

UNITED REPUBLIC OF TANZANIA

PRESIDENT'S OFFICE - PUBLIC SERVICE RECRUITMENT SECRETARIAT



**PROJECT FOR IMPROVEMENT OF PO-PSRS RECRUITMENT SYSTEM (AJIRA
PORTAL)**

SYSTEM DESIGN DOCUMENT (SDD)

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ACRONYMS

ACSEE	Advanced Certificate Of Secondary Education Examination
AP	Ajira Portal
BEMIS	Basic Education Management Information System
BRD	Business Requirement Document
CSEE	Certificate Of Secondary Education Examination
DC	District Council
DSEE	Diploma in Secondary Education Examination
DSE-SNE	Diploma in Secondary Education in Special Needs Education Examination
GATCE	Grade A Teachers Certificate Examination
GATSCCE	Grade A Teachers Special Course Certificate Examination Formats
GCU	Government Communication Unit
GoT	Government of Tanzania
HCMIS	Human Capital Management Information System
HGCU	Head of Government Communication Unit

HoD	Head of Division
HICT	Head of ICT
HGCU	Head of Government Communication Unit
HQCD	Head of Quality Control Division
HRD	Head of Recruitment Division
ICT	Information and Communication Technology
IJA	Institute of Judicial Administration
LGTI	Local Government Training Institute
MDAs	Ministries, Departments and Agencies
MTTF	Mean Time to Fix
NACTE	National Council for Technical Education
NECTA	National Examination Council of Tanzania
NIDA	National Identification Authority
NIN	National Identification Number
OC	Occurring Charges
OTEAS	Online Teachers Employment Application System

PE	Personal Emoluments
PI	Public Institution
PlanRep	Planning and Reporting System
PO-PSC	President's Office-Public Service Commission
PO-PSMGG	President's Office-Public Service Management and Good Governance
PO-PSRS	President's Office-Public Service Recruitment Secretariat
PO-RALG	President's Office-Regional Authorities and Local Government
PO-TPSC	President's Office-Tanzania Public Service College
RITA	Registration Insolvency and Trusteeship Agency
RS	Regional Secretariat
SDP	Service Delivery Point
SMS	Short Message Services
SOS	Scheme of Service
TCU	Tanzania Commission for Universities
TRA	Tanzania Revenue Authority
UN	User Need

VETA	Vocational Education and Training Authority
WISN/POA	Workload Indicators of Staffing Needs/Priority Optimization Analysis

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1.0 INTRODUCTION

1.1 Background

The Government of Tanzania (GoT) established the Public Service Recruitment Secretariat (PO-PSRS) as an independent department vide Section 29 (1) of the Public Service Act CAP 298 as amended by the miscellaneous amendment Act No. 18 of 2007. PO-PSRS was established to facilitate the recruitment process on behalf of the Government. The PO-PSRS mandates are stipulates as follows: -

- Search for various professionals with special skills and prepare database for such professionals for easier recruitment.
- Register graduates and professionals for purposes of ease of reference in filling vacant posts.
- Advertise vacant posts occurring in the public service.
- Engage appropriate experts for purposes of conducting interviews.
- Advise employers on various matters related to recruitment, and
- Do any other act or thing which may be directed by the Minister responsible for Public Service.

PO-PSRS handles all recruitment on behalf of Public Service Institutions. However, some cadres which had great demand within the Government of Tanzania were managed by their respective ministries including teachers, health workers, agriculture and livestock related fields. To date, recruitment of teachers and health workers are managed by Presidents Office Regional Authorities and Local Government (PO-RALG).

PO-PSRS, therefore, links the President's office Public Service Management and Good Governance (PO-PSMGG) on one hand and employers, which are the receiving hand for new employees.

PO-PSRS started its operations in 2010. During the early years of its existence up to financial year 2013/2014, it carried out its operations manually in that all its processes from receipt of recruitment permits, communication with employers, advertisements, interviews through to placement of successful candidates were done manually. However as more public service institutions sought PO-PSRS services its operations became costly, time consuming and as would be expected, the operations were prone to

errors. It is this background and other factors which prompted PO-PSRS to find ways to streamline its operations.

PO-PSRS developed an electronic recruitment system called Ajira Portal (AP) in order to minimize the costs involved in its operations. The use of Ajira Portal over time has considerably injected efficiency in the institution's core operations. PO-PSRS has become more visible to its stakeholders at a lesser effort and costs. This has resulted in attracting more public service institutions to seek PO-PSRS services. This requires the system to have sufficient capacity for efficiently handling increased workload. However, the system use is limited to the advertisement of vacancies, receiving job applications, and providing feedback to applicants. Many tasks are still carried out manually. Currently the recruitment system is not linked with other GoT Human Resource (HR) related systems, which would significantly enhance efficiency in PSRS operations.

The conditions mentioned above coupled with opportunities offered by the advance in ICT has once again prompted PO-PSRS to embark on a project to review the Ajira Portal system with the purpose of enhancing efficiency and inclusiveness in its operations and the Government's HR operations in general.

PO-PSRS approached Public Sector System Strengthening Plus (PS3+) Project for support, to which PS3+ agreed, since the support is in line with the objectives of the project; to provide technical assistance to support the Government of Tanzania (GOT) to strengthen and institutionalize public service systems that are responsive to citizens' needs for quality services. The agreement between PO-PSRS and PS3+, is to carry out implementation in three phases as shown in figure 1 below.

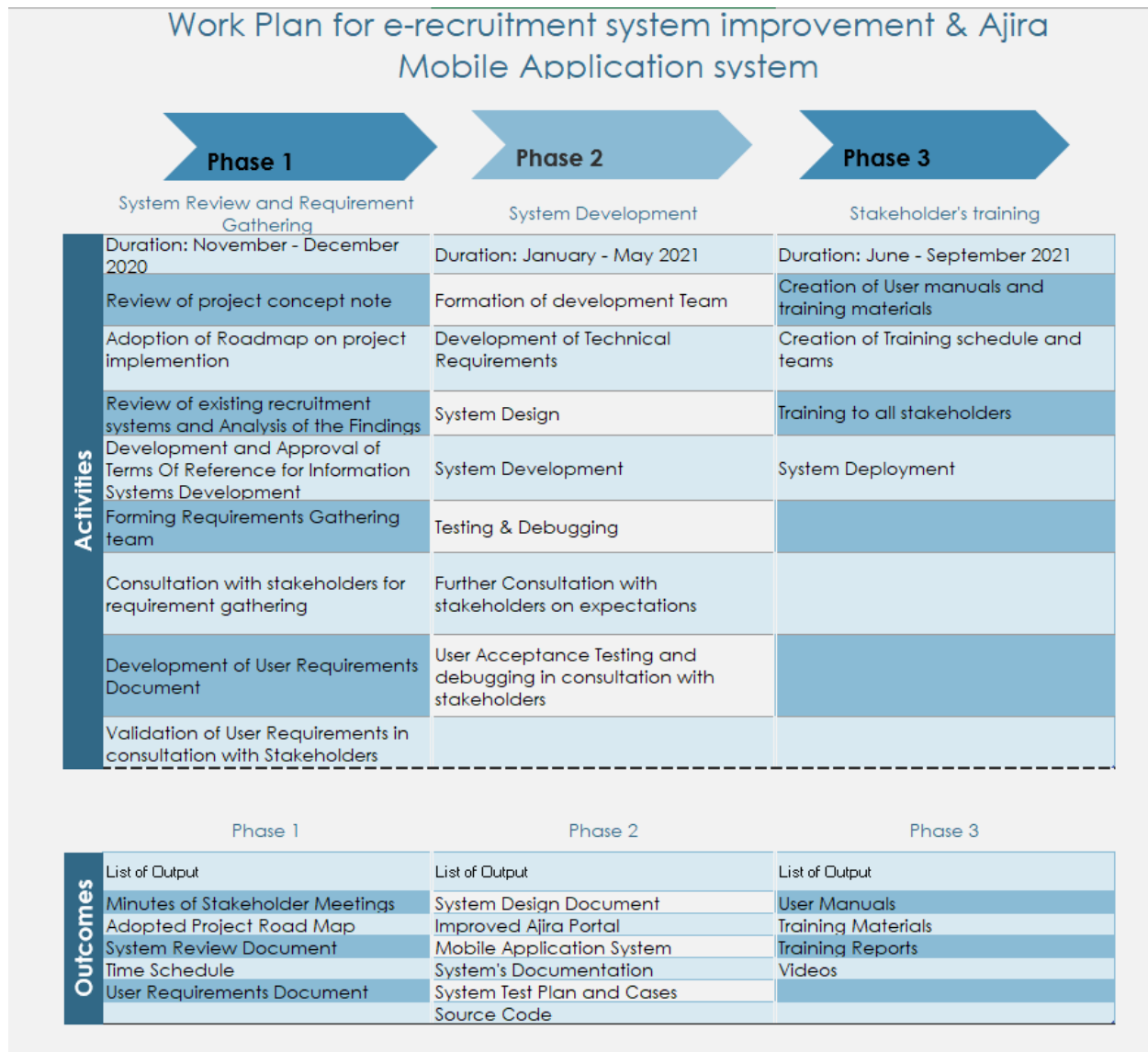


Figure 1: Work Plan for e-recruitment Improvement and Mobile App Development

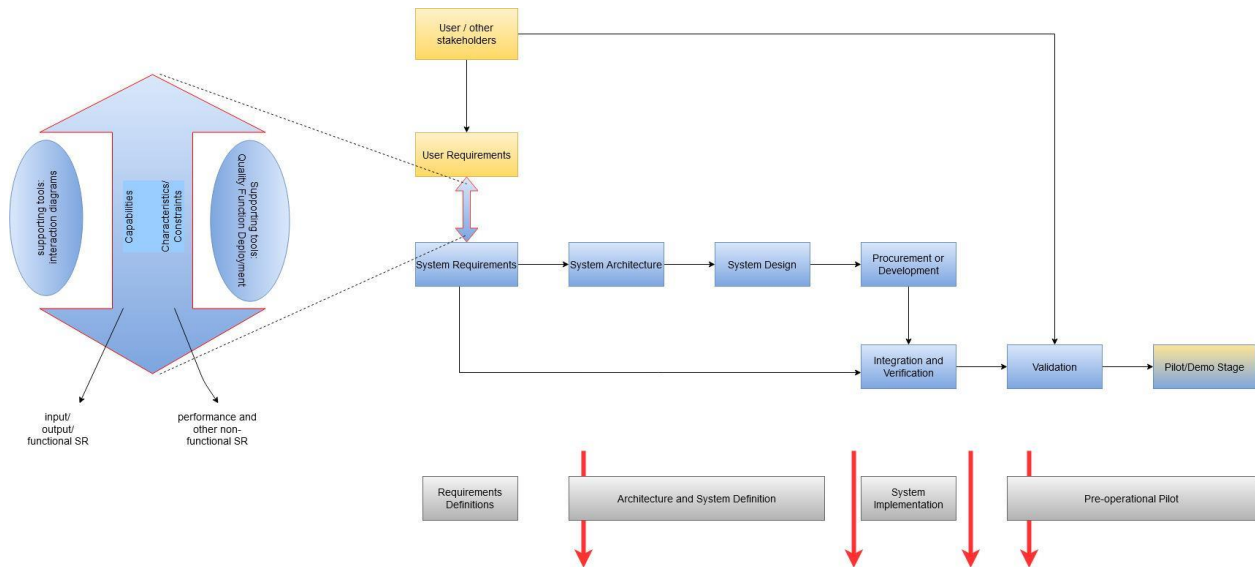


Figure 2: The AP Specification and Development process

1.2 Ajira Portal and Public Service Recruitment

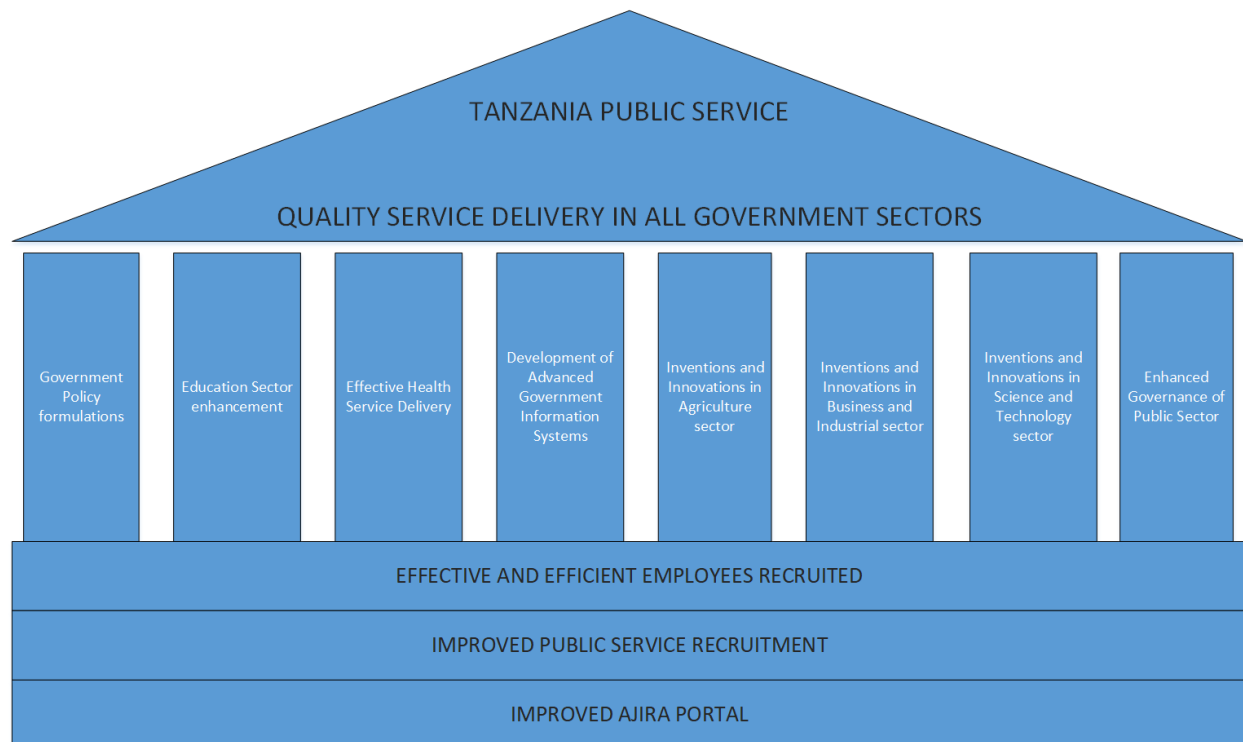


Figure 3: AP Context in Public Sector Service Delivery

1.3 Ajira Portal Improvement Project Overview

S. No	Area of Concern	Improvements Designed	Output	Impact	Remarks
1	Applicant Module	UI/UX	Improved User Experience	User satisfaction, time saving in using the system	Accommodated
2	Delegated Cadre	User roles and User management	Delegated Cadre recruitment process accommodated with AP	Streamlined recruitment process saving time and money. Increased transparency of the recruitment process	Accommodated
3	Education and Health Sector Cadres Recruitment	Business Logic and Application Logic	Education and Health Sector cadres recruitment process accommodated with AP	Streamlined recruitment process saving time and money.	Accommodated

4	Database	New tables design and performance enhancement to accommodate delegated cadres, education and health sector recruitment	A number of new tables and Additional Business logic to accommodate the different requirements for the various cadres		Accommodated
5	User Roles/ User Matrix	New users and user roles to accommodate the various functions for delegated cadres, education and health sector recruitment process	New User matrix		Accommodated
6	Mobile App	App design	New app to cater for the applicants side of the AP business logic		Accommodated
7	Interview Module	Designed to accommodate the scheduling and conducting of interviews online	New Interview Module for online aptitude tests		Future

8	Integration	To facilitate data sharing across different systems and stakeholders	Improved AP architecture	Automation of data sharing, validation and verification It will save Time and Money	Accommodated

Table 1: Summary of AP Improvements designed

1.4 objectives

The main objective is to implement the phase II of Ajira Portal review project involving system improvement review design work. The under mentioned specific objectives will be addressed:

- Document systems baseline information: and Carry out Ajira Portal system design review
- Define Design characteristics

The expected output from this exercise is Ajira portal improvement System Design Document (SDD)

1.5 Purpose of the SDD

The system design document tracks all the necessary information required to effectively define the architecture and system design to give the development team guidance on the architecture of the system to be developed. Design documents are incrementally and iteratively produced during the system development life cycle, based on the particular circumstances of the information technology (IT) project and the system development methodology used for developing the system.

1.6 Scope of Work

This SDD will cover system and network architecture design, mockups (UIs), use cases, database schema and system security control checklist which are essential in system development. All of the aforementioned parts have been designed to accommodate

both functional and non-functional requirements. Non-functional requirements describe how the system works, while functional requirements describe what the system should do.

The proposed solution will simply add additional features and functionality to the existing solution to meet the original scope and vision of the Ajira Portal (AP). These features will extend AP to be an integrated public service recruitment portal.

Key points that relate to the design and architecture of the proposed system.

- i. No major changes to existing architecture
- ii. No major changes to system design
- iii. Major positive impact to the user community
- iv. Major feature extensions to automate operational functions where applicable.

1.7 Design Constraints

The existing architecture will be improved as shown in the diagram below;

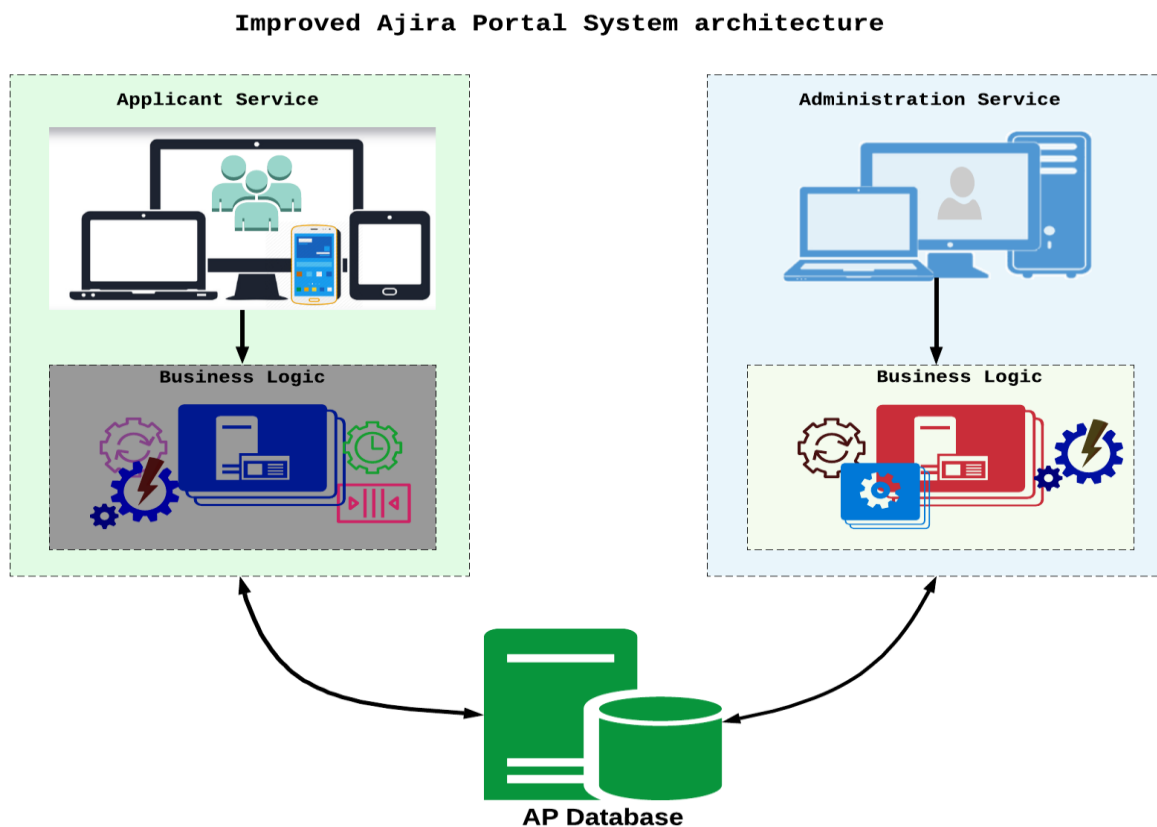


Figure 4: The improved architecture

The current solution is hosted by GoT data center. Performance, storage, security, and access can be easily scaled to meet the minimal amount of additional resources the proposed solution will require.

Technical

The development and integration of the new software components into the existing software application is a major constraint. Specific skills and technical understanding of recruitment management and demand response management and optimization will be required. This knowledge and skillset is very specific and narrow. Detailed business requirements and use cases will assist in minimizing this challenge.

Due to the fact that the application is currently hosted and managed by PSRS staff, we do not envision any technical, computer hardware, network, internet, or database maintenance challenges.

Institutional

The improved system will be utilized by multiple third party agencies and organizations. This will require coordination and collaboration across the organizations and agencies. Stakeholders that currently have automated systems may have to integrate into the improved system via “API coordination module” API or comparable solution.

1.8 Intended Audience

The system requirements specifications document plays a major role in system development and implementation, as it:

- Form the basis of improvement of system architecture and design.
- Form the basis of improvement suggested system integration and verification.
- Act as reference for validation and stakeholder acceptance.
- Act as a bridge between technical staff and other stakeholders that interact throughout the project.

Therefore, the intended audiences of this document include but are not limited to: Project sponsors, PO-PSRS Steering Committee, System Designers, System Architects, Database Administrator, System Developer, System Security Experts, Quality Assurance Specialists, Hardware Specialist, Network Engineers, Subject Matter Experts, Employees and other key Stakeholders such as Applicants and certification and verification authorities.

2.0 DESIGN APPROACH

2.1 Design overview

The current solution was built by PSRS through funding from GoT. PSRS has labeled this application Recruitment Portal now simply dubbed Ajira Portal. AP is an open source recruitment management that manages public service recruitment process from Job advertisement to placement of successful applicants.

AP is built on an open source framework. Source code is available using standard open source management tools such as Git. All source code is stored in a GitLab repository.

AP utilizes an open-source web server, Apache. Apache is a free open source web server. Apache is focused on high performance, high concurrency and low memory usage. Additional features on top of the web server functionality, like load balancing, caching, access and bandwidth control, and the ability to integrate efficiently with a variety of applications, have helped to make Apache a good choice for modern website architectures.

AP's development language is PHP. Software developers must be familiar with this framework in order to maintain or build additional functionality into the application.

AP's database is MySQL. MySQL is also open source and it is very popular and utilized across many open source applications. MySQL is an object-relational database (ORDBMS). It has an emphasis on extensibility and standards compliance.

RabbitMQ is message broker that implements Message Queue Protocol (AMQP), to help AP to communicate with other systems.

GitLab is used as the software development platform. GitLab provides version control and source code management.

In summary, the existing system design includes the following sub-systems:

1. AP Web Application
2. MySQL Database
3. Apache Web Server
4. CodeIgniter Development Platform
5. Government data center
6. GitLab Version and Source Code Control

However, the proposed improvement are expected to be done using latest technologies, this is done so as to start modernizing AP, as the technologies that were used are outdated and their technical support is being phased out.

2.2 System Assumptions/Constraints/Dependencies/Risks

2.2.1 Assumptions

The largest assumption is that the existing AP application will be extended to support the proposed new features (Improvements). The existing architecture and system design will be used including all existing components and sub-systems. It is certain that additional functionality will be added to the existing system.

2.2.2 Constraints

There are no hardware, software, or software technical constraints identified with this project. Institutional constraints may exist due to the systems need for inter-institutional coordination, participation, and interoperability.

2.2.3 Dependencies

The current application is dependent on many third party systems. These include: NIN system (NIDA), certificate verification system (NECTA and NACTE), HCMIS (PO-PSM), RITA, VETA, TRA and Training Institutions

2.2.4 Risks

Minimal risk is associated with the system design. This is primarily due to the fact that the existing system design and architecture will not be modified to meet the needs of the improved AP solution. Ongoing maintenance of the system will also be a concern.

Alignment with Government IT Architectures. The current and proposed solution aligns with the government IT architecture. The proposed solution, if implemented, will adhere to all appropriate government IT architecture mandates.

The current solution does not provide automated complaint handling mechanism, nor does it provide the ability to coordinate various processes in the recruitment because there are done outside the AP system. The solution must be improved to support these additional functional needs as identified in the SRS document. The proposed system will dramatically improve complaints handling mechanism, interview handling, placement, operations of delegated cadre recruitment, and, most importantly, the customer experience i.e. both applicants and employers. Customers will be able to initiate recruitment process within the system (employers) and apply using smartphones (applicants) among other things. Employers will be able to contact PSRS through an online portal to initiate recruitment, receive updates of the recruitment process, provide additional information or ask for clarification. Applicants will have the ability to apply, review their applications, follow up their applications, file complaints, provide and receive feedback via their smartphones. Automated scheduling of

interviews, venues will be available to optimize human and financial resources involved in the interview handling. Automated complaint handling tools will be available to the help desk officers and complaint handling officers and to employers and applicants, which will enable online communications. This will create a single coordinated system for public service recruitment and demand response recruitment. Employers, including those with delegated authority will be integrated into the solution for a true multi-modal application. Recruitment data analytics will be available at a various levels. Ultimately, the proposed system will execute the intended vision and requirements of a “unified” public services recruitment management solution.

2.3 Development Method and Contingencies

The basics of a good architecture is to layer the application into multiple autocratic and autonomous applications that can be replaced individually and allow us to keep the application running while we are working on a specific layer. The communication between each layer should be a RESTful API call with JSON content.

2.3.1 Design Considerations

AP is a Public Service recruitment management system designed to meet the GoT recruitment needs. It:

- Provides unified recruitment management;
- Works on computers, tablets, and smartphones;
- Is tailored to GoT recruitment needs; and
- Empowers PSRS staff to deliver improved services.

The major design considerations for the proposed extended features are related to system performance and scalability of the solution.

2.3.2 Goals and Guidelines

The following goals must be addressed in the execution of the proposed solution.

Leverage Existing Architecture

The improved AP solution must leverage the current architecture and system design used by current AP. This minimizes negative impacts on usability, user experience, and financials. The improved solution will simply extend the current system to support additional features, functionality, and use cases.

Development Environment

The improved AP application development environment must remain consistent. This minimizes negative impacts to interoperability and quality. Improved AP does not wish to re-write or re-engineer the existing application unless absolutely necessary.

Ease of Use

The improved AP and its features must be easy to use and provide a strong user experience. New or improved features cannot impact existing functionality from a user perspective.

Extensibility

The proposed improvement features must be extensible. Features can be enabled as needed or required by the users.

Gateway/API Enabled

Interoperability and integration coordination is a key driver of the improvements sought. The application must be gateway/API centric and support an open and published gateway/API architecture.

RESTful Framework

The application and underlying architecture must be a REST framework.

2.3.3 Operational and Development Environment

Front end

Latest Angular framework

Backend

- Spring boot framework
- Postgre SQL

Mobile App

- Flutter

Reports

- Jasper

Functional goals of the proposed improvements to AP system includes:

- Extending functionality of the existing application to mobile app (Applicant)
- Improving application performance
- Integration with other systems
- Accommodating Education and health Sector cadre's recruitment, Delegated Cadre recruitment and other Employers not under PO-PSMGG.

3. ARCHITECTURAL DESIGN

This section describes the **Enterprise Architecture**, which addresses the strategic question of how the improved AP can best be utilized and aligned to support business needs of PSRS and the **Solution Architecture**, which addresses the tactical question of how best to improve AP that best address specific business needs of PSRS.

This proposed architecture has been proposed as it helps to provide information and awareness to every involved stakeholder that will work with it, ones that will use data from it, ones that will provide data to it and the policy makers who want all that done in adherence to public service recruitment guidelines and policies. The architecture is expected to specifically attain the following:

- i. Highlight key use-cases and scenarios for Improved AP
- ii. Address requirements as specified from prospective users and process owners.
- iii. Quality assurance in the built improved AP system.
- iv. Expose how the system works while concealing its core working mechanism.
- v. Show the relation between functional, quality and business requirements.
- vi. Make Improved AP interoperable with existing and foreseen systems and technologies.
- vii. Specify technical resources to attain the requirements gathered.
- viii. Serve public interest while protecting Applicants privacy.

The role of Architecture

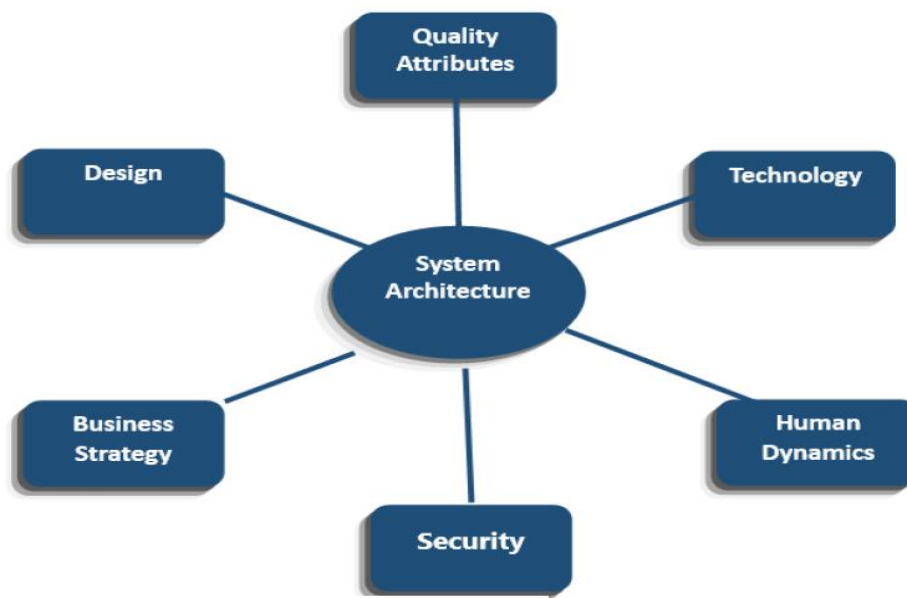


Figure 5: The Role of System Architecture

3.1 System Architecture

The proposed architecture is structured to conform to all technical and operational requirements that have been analyzed in Public Sector Recruitment. In doing so it enhances performance and security in our context as a country.

3.1.1 Architecture Qualities

AP business considerations were used to determine the qualities that must be accommodated in the improved AP system architecture.

- **System Qualities:** availability, modifiability, performance, security, testability, usability, others.
- **Business Qualities:** time to market, cost and benefit, product lifetime, target market, roll-out schedule, integration, others.
- **Architectural Qualities:** conceptual integrity, correctness and completeness.

AP quality attribute scenario is made up of the following six attributes or parts as shown in the figure below.

- **Source of Stimulus:** the entity generating the stimulus. Could be an actor, an actuator, a sensor, and another system.
- **Stimulus:** a condition arriving at a system. Includes faults, stated intentions by actors, and so on.
- **Environment:** the conditions surrounding the stimulus. Might be normal operation, degraded operation, overload, and so on.
- **Artifact:** the part or parts of the system stimulated.
- **Response:** the response the system takes to the stimulus.
- **Response Measure:** how the response can be measured and test.

S.No	Quality	Description
System Quality Attributes		
1	Availability	• The availability attribute is concerned with system failures. Faults are problems that are corrected or masked by the system. Failures are uncorrected errors that are user-visible. • $\text{availability} = [\text{mean time to failure}] /$

		([mean time to failure] + [mean time to repair])
2	Modifiability	What can change, when are changes made, and who makes the changes.
3	Performance	response times and similar measures for various events
4	Security	- Non-repudiation - Confidentiality - Integrity - Assurance or authenticity - Availability (no denial of service) - Auditing
5	Testability	Detecting failure modes. This means architectural support for testing that reduces test cost and time. We need to control the internal state of and inputs to each unit, then observe the corresponding output of that unit.
6	Usability	- How easy it is to learn the features of the system - How efficiently the user can use the system - How well the system handles user errors - How well the system adapts to user needs - To what degree the system gives the user confidence in the correctness of its actions.
Business Quality Attributes		
1	Time to Market	Architectural reuse affects development time.
2	Projected Lifetime of the System	Long-lived systems require architectures that are modifiable and scalable.

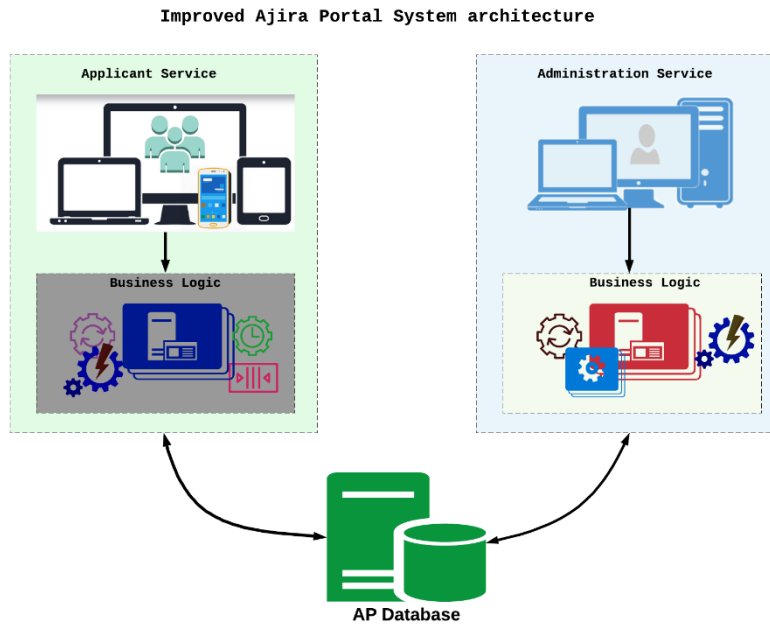
3	Roll-out Schedule	If functionality is planned to increase over time, the architecture needs to be customizable and flexible.
4	Integration with Legacy Systems	The architecture of the legacy system being integrated will influence the overall system's improvement architecture.
Architectural Quality Attributes		
1	Conceptual Integrity	The underlying vision or theme unifying the components and their interactions. The architecture should do similar things in similar ways.
2	Correctness and Completeness	Checking the architecture for errors and omissions.
3	Buildability	The organization's capabilities to actually construct the architecture in question.

3.1.2 Service Oriented Architecture

Enterprise Applications are often built in three main parts: a client-side user interface (consisting of views running in a browser on the user's machine), a database (consisting of many tables inserted into a common, and usually relational, database management system), and a server-side application that serves as the backend running application logics and routines. The server-side application will handle HTTP requests, execute domain logic, retrieve and update data from the database, and select and populate HTML views to be sent to the browser or a desktop view.

We analyzed our demands in improving Improved AP and current resources that are future proof and saw that SOA approach will be used with existing technologies of the AP while the improved components will be developed using new technologies.

Figure 6: System Architecture Diagrams



3.2 Software Architecture

The three-tier architecture is a popular pattern for user-facing applications. The tiers that comprise this architecture include the presentation tier, the logic tier (business logic), and the data tier. The presentation tier represents the component that users directly interact with (such as a web page, mobile app UI, etc.). The logic tier contains the code required to translate user actions at the presentation tier to the functionality that drives the application's behavior. The data tier consists of storage media (databases, object stores, caches, file systems, etc.) that hold the data relevant to the application.

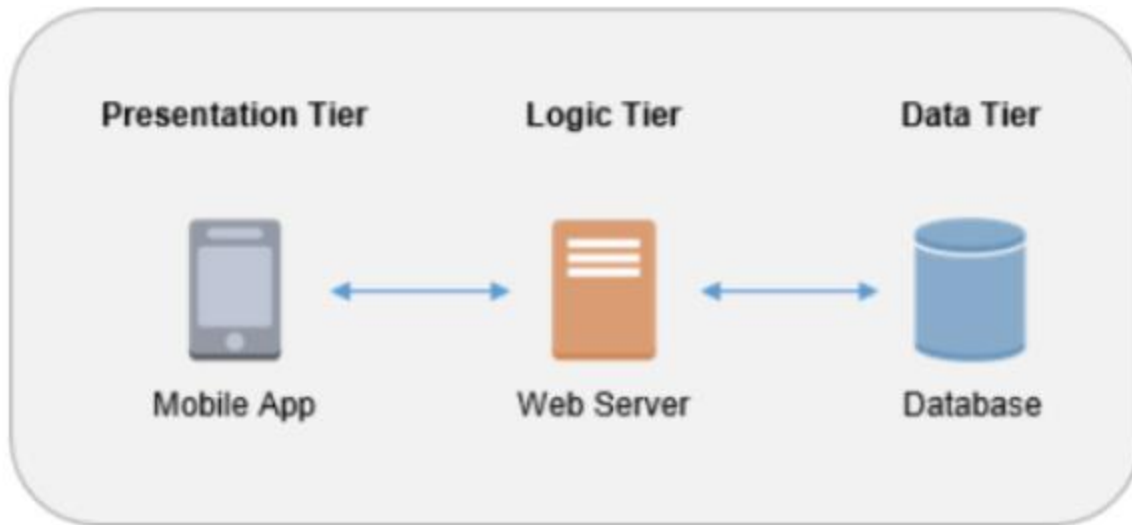


Figure 7: Software Architecture- Separation of Concerns

3.2.1 Security Software Architecture

There are a number of principles applied to current and proposed system security.

- Apply security at all layers: Rather than running security appliances (e.g., firewalls) only at the edge of your infrastructure, use firewalls and other security controls on all of your resources (e.g., every virtual server, load balancer, and network subnet).
- Enable traceability: Log and audit all actions and changes to your environment.
- Implement a principle of least privilege: Ensure that authorization is appropriate for each interaction with AP resources and implement strong logical access controls directly on resources.

3.3 Component Architecture

For components that will be making up our architecture we propose a set of different technical components that have been reviewed based on the resources (human resource, finance and technological resources) at hand and requirements collected.

3.3.1 UI/UX

The user experience is everything today. Everything you do must be optimized to create an exceptional digital experience. The average user shouldn't have to change their

behavior to adapt to our improved AP application. In this design we proposes a modularized reference UI application which runs in a browser and uses API calls to expose the application logic and functionality to end users. Improved AP into mobile app version will employ specific UIs using respective technologies and frameworks.

Web Based Interface: Language: HTML5, CSS3, Typescript. Proposed frameworks: Angular, Angular Material + Bootstrap+

Mobile Interface: Language: Dart. Proposed Framework: Flutter

Other Frameworks: Docker, Kubernetes (environment), NPM & Yarn (package manager), Grunt & Webpack (task running), Karma (Unit Testing), Lucid and Proto IO (mocking).

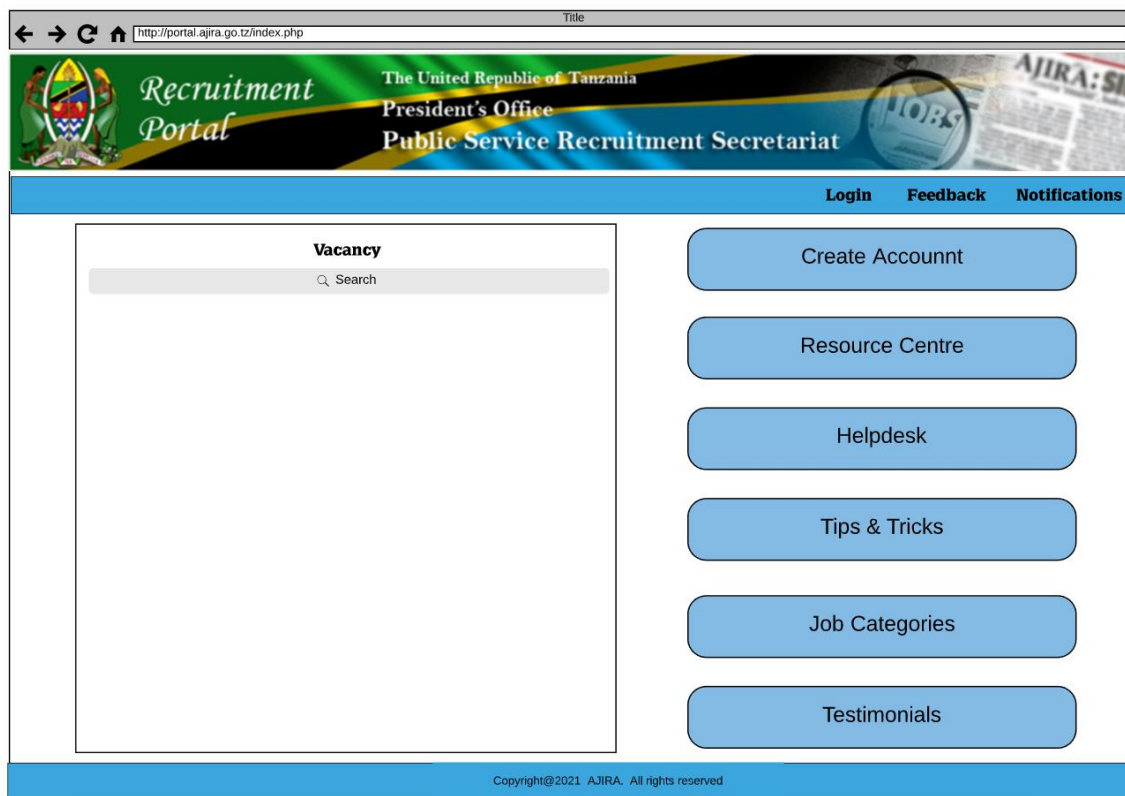


Figure 8: New Look of Ajira Portal Home page

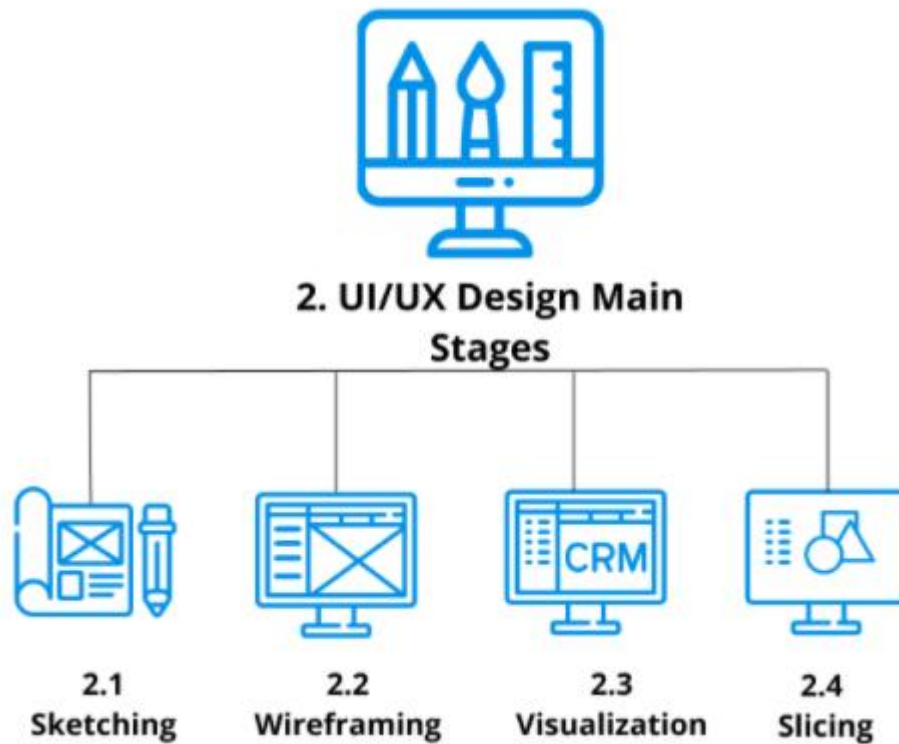


Figure 9: UI/UX Design stages

3.3.3 Database

The proposed improvements of AP uses the existing database which employs SOA architecture. During the design phase the existing Ajira Portal database, along with applications that control access to it were reviewed to ensure that, they meet the new requirements calling for improvement of AP. During this design phase the conceptual, logical, and physical design of the existing AP database was closely analyzed to see their suitability in accommodating the new requirements and their proposed improvements to the existing system.

Forms and reports which provide controlled access to the database were reviewed to make sure that the new requirements for user interface are met in the existing database schema. To ensure consistent and satisfaction of user requirements, each transaction and search queries pathways were traced from entity to entity on the composite database scheme to ensure it is possible to link to relevant entities and extract the relevant attributes to satisfy the query.

3.3.4 Backend

The proposed improvements of AP uses the existing backend which employs monolithic architecture. During the design phase the existing Ajira Portal backend, along with its codes that connects the web to a database, manages user connections, and powers the web application were analyzed and reviewed to ensure compatibility with the requested improvements of AP. Backend development works in tandem with the front end to deliver the final product to the end use.

During this design phase the existing APIs, codes that interact with the database, libraries, and business processes, and data architecture were reviewed for their suitability in accommodating the new requirements and their proposed improvements to the existing system.

3.3.5 API

The proposed improvements of AP uses the existing APIs. The existing Ajira Portal APIs, were reviewed on how they handle errors gracefully using standard HTTP/S codes that helps consumers deal with the problem. The improvements require that the APIs should accept JSON/XML for request payload and also send responses to JSON/XML. The only exception is if we're trying to send and receive files between client and server. Then we need to handle file responses and send form data from client to server.

To eliminate confusion for AP, API consumers when an error occurs, we should handle errors gracefully and return HTTP response codes that indicate what kind of error occurred. Common error HTTP status codes include:

- 400 Bad Request – This means that client-side input fails validation.
- 401 Unauthorized – This means the user isn't not authorized to access a resource. It usually returns when the user isn't authenticated.
- 403 Forbidden – This means the user is authenticated, but it's not allowed to access a resource.
- 404 Not Found – This indicates that a resource is not found.
- 500 Internal server error – This is a generic server error. It probably shouldn't be thrown explicitly.
- 502 Bad Gateway – This indicates an invalid response from an upstream server.
- 503 Service Unavailable – This indicates that something unexpected happened on server side (It can be anything like server overload, some parts of the system failed, etc.).

3.3.6 Dashboards

We propose setting up dashboards as another improvement to the AP that runs alongside the main application and database. The dashboard layer shall have scheduled synchronization that either pulls data from the AP application or the AP application shall have the ability to push data to the dashboard database. This data will be stored and then viewed in a retrospective manner. The data in the dashboards shall have a minimal gap from the AP data as it won't be real-time data visualization.

The abstraction is a strategic effort to avoid overloading the application servers during report production and visualizations. The visualizations should pull data from their own databases that are solely for reports and visualizations. This will make the production of reports far speedier whilst avoiding system lags to the users who are in the application whose reports are being queried.

Language: Java, PHP, JavaScript, JavaScript, HTML5, CSS3

Frameworks: Charts and Graphs – Chart.JS

4.0 INTEROPERABILITY ARCHITECTURE

The design team proposes that the interoperability be handled in a scalable and sustainable manner, whereby, collaborating organizations rather strive for a loose coupling of their information systems instead of a tight integration: the collaborating information systems should be able to work together but retain as much independency as possible. The scaling should be in terms of technologies that are integrated in Improved AP over time.

The design of interoperability architecture was involved in reviewing and analysed the suitability of a number of interoperability issues as follows:

- Operational or Business Interoperability reviewed how business processes are to be shared,
- **Information Interoperability** reviewed how information is to be shared,
- **Technical Interoperability** reviewed how technical services are to be shared or at least connect to one another.
- From an IT perspective, it is also useful to consider interoperability in a similar vein to Enterprise Application Integration (EAI); specifically:
- **Presentation Integration/Interoperability** reviewed and designed how to maintain a common look-and-feel approach through a common portal-like solution to guides the user to the underlying functionality of the systems
- **Information Integration/Interoperability** reviewed the corporate information to ensure seamless sharing between the various corporate applications to achieve, for example, a common set of client information.
- Based upon a commonly accepted corporate ontology and shared services for the structure, quality, access, and security/privacy for the information.
- **Application Integration/Interoperability** was reviewed to ensure corporate functionality is integrated and shareable so that the applications are not duplicated (e.g., one change of address service/component; not one for every application) and are seamlessly linked together through functionality such as workflow. *This impacts the business and infrastructure applications and is very closely linked to corporate business process unification/interoperability.*
- **Technical Integration/Interoperability** was reviewed and designed to ensure common methods and shared services for the communication, storage, processing, and access to data primarily in the application platform and communications infrastructure domains. This interoperability is premised upon the degree of rationalization of the PSRS/GoT IT infrastructure, based upon standards and/or common IT platforms. For example, multiple applications sharing one infrastructure or thousands of corporate websites using one centralized content management/web server (rather than thousands of servers and webmasters spread throughout the country).

The AP Integration Architecture designed provides a bridge between the heterogeneous operational applications and platforms. This architecture ties together the mix of platforms, operating systems, transports, and applications. Integration of business applications between agencies. This Architecture encompasses the multiple layers of new and existing systems and the middleware in between. AP Integration Architecture enables new applications to use existing resources with minimal disruption.

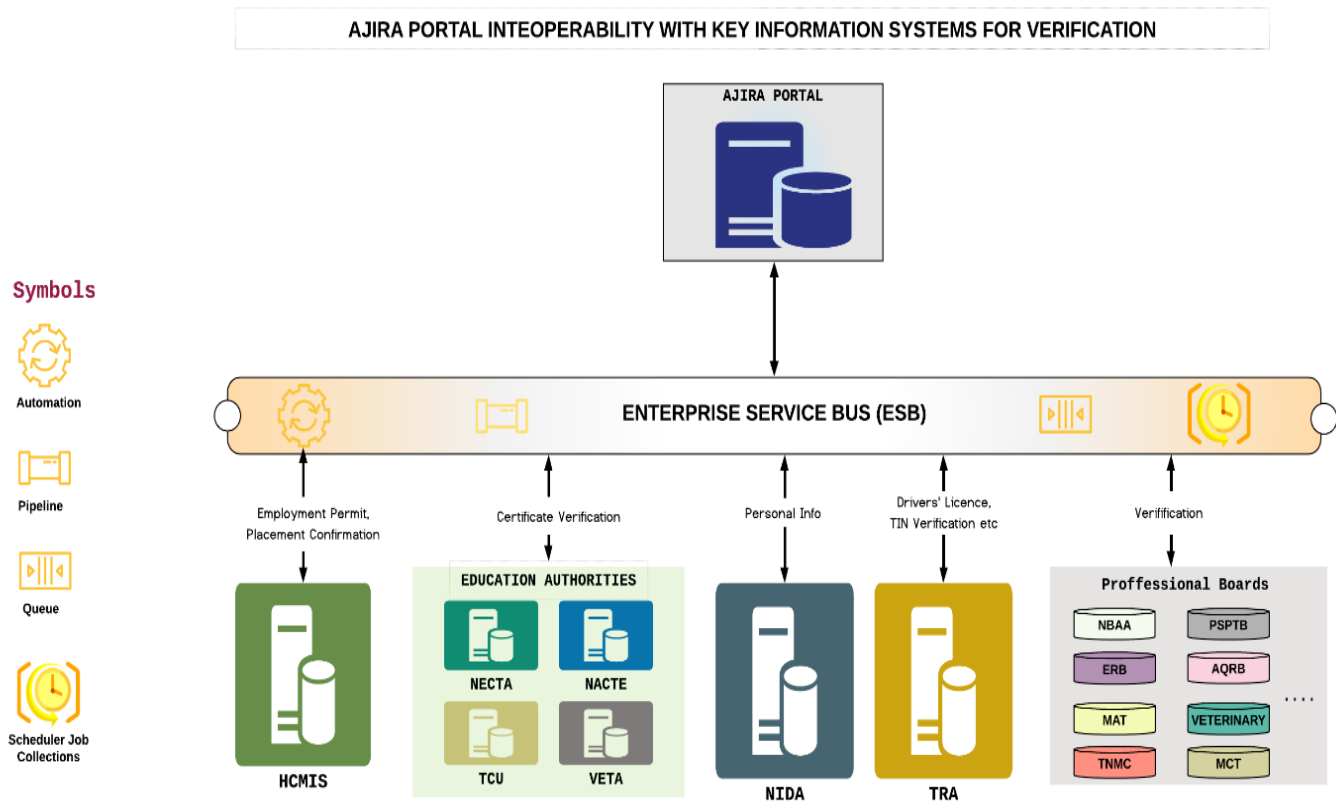


Figure 10: Ajira Portal Interoperability Framework

5.0 NETWORK ARCHITECTURE

Based on the information that was availed to Improved AP improvement design team, it was highlighted that current systems that is used by PSRS recruitment management information is centralized systems. We propose that the network architecture should remain a centralized one as Improved AP is to be used by multiple applicants and employers assessing the central system for services.

The physical and logical design of the software, hardware, protocols, and media of the transmission of data were reviewed to assess their suitability to accommodate the proposed improvements for the improved AP.

5.1 Client- Server

In client server formation, the client requests a resource and the server provides that resource as requested. A server may serve multiple clients at the same time while a client is in contact with only one server per request made. Both the client and server communicate via a computer network and as part of a distributed system. Current AP is mostly structured in client-server network architecture in both in-facility setup and central repository settings. The design team proposes that we keep using client-server architecture in improved AP settings.

5.2 Application

The design team, made a review of current and future proof architectures that are used in building enterprise-level applications and the existing application architecture and decided that the improved AP should maintain the existing architecture which is still meeting the current and future needs of PSRS.. The application architecture in this context covers all four areas of a working distributed system as shown below.

5.3 Infrastructure Architecture

The existing AP application is currently deployed on 125GB RAM, 1TB HDD/SSD, Gigabit Network, Ubuntu 16.04 and Database server with 125GB RAM, 3.5TB HDD/SSD and Ubuntu 16.04. Client computers need at least 2GB RAM, Windows 8 or Ubuntu LTS. On the Employer and Applicants side they need standard PC/Laptop and the applicants can also access the system through mobile AP. The requirement for mobile APP users is IOS 8 and Android 6 as minimum OS requirements.

5.4 Conceptual Framework

How this architecture fits in the overall GoT IT conceptual framework? Here we will highlight the components of the framework that it will work with and the ones that it will represent. We have to put some text that corroborate the conceptual framework bigger picture.

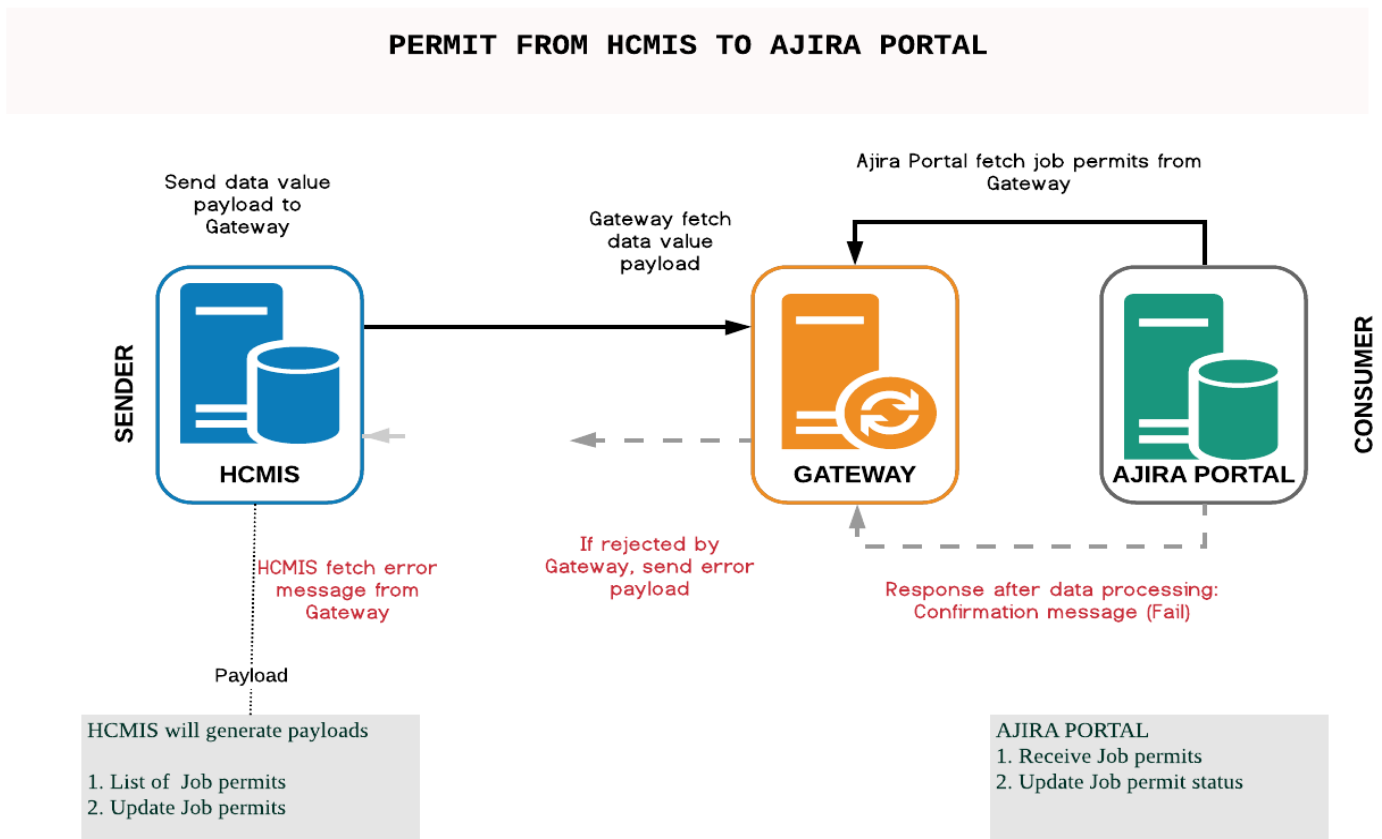


Figure 11: AP Conceptual Framework with HCMIS (As representative of other systems)

6.0 SYSTEM USE CASES

This section provides a diagrammatic description of the system uses cases, their descriptions and activity flows.

6.1 Employment Permit Use case

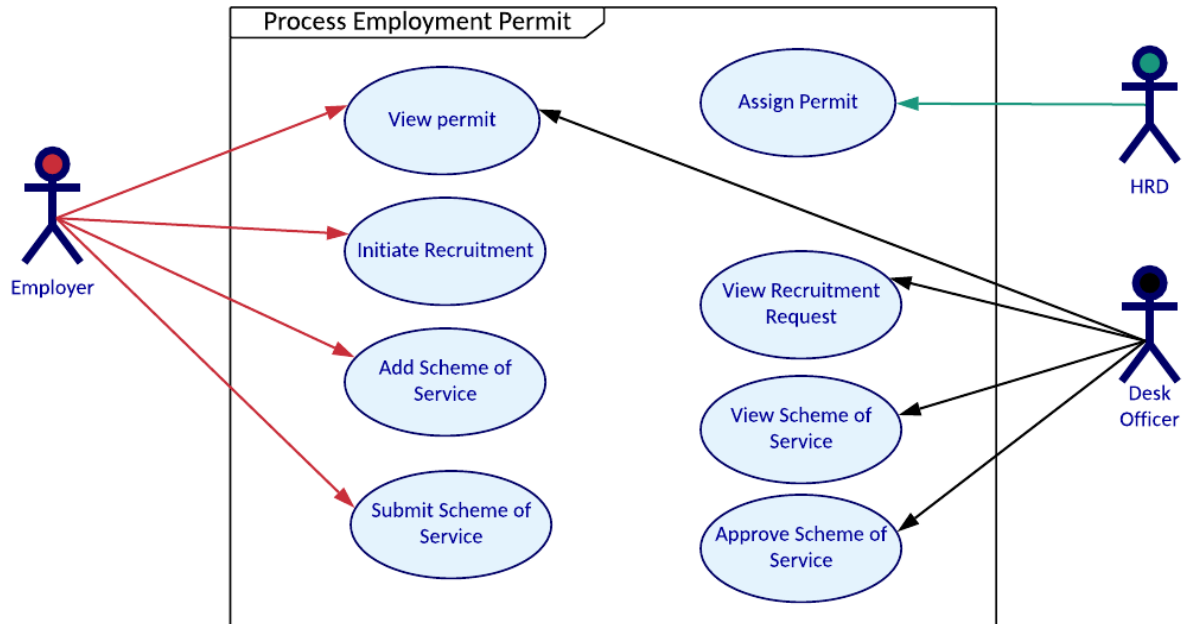


Figure 12: Employment Permit Use case

Employment Permit Use Case Description

Use Case ID:	UCAP001	Variables Dictionary	Employment Permit
Use Case Name:	View Job Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
<Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for a complete job permit.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	i. Responsible users will receive notification with a link to view Job permit (s). ii. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. iii. User will be able to add scheme of service to align with cadre as per job permit if the scheme is not in the system. iv. The added scheme should follow approval process, once approved the		

	scheme will be stored. v. System will provide window for user to send comment and/or notification for missing information on job permit.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Ajira Portal is linked with HCMIS and can share job permit information
Main Success Scenario	i. User View Job Permits ii. User select Job Permit(s). iii. System display job permit information(s) iv. User confirm and proceed to next steps.
Extension Scenario	i. Job Permit is not complete (Missing Information) ii. System provide window for users' feedback once there is missing information. iii. System administrators would be notified on the particular case. iv. System administrator will communicate with HCMIS on the missing info.

Use Case ID:	UCAP002	Variables Dictionary	Employment Permit
Use Case Name:	Add Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	The system will allow user to add and map scheme of service to a particular cadre if not found on the list stored by the system. The system will then store the scheme of service for future use and reference		
Trigger:	View Job Permit		
Static Preconditions:	Authorized Access Receipt of notification for new job permit		
< Dynamic Preconditions >:	UCAP001		
Success Post conditions:	The system successfully save and map the scheme of service to a particular cadre.		
Failed Post conditions:	The system fails to save and map the scheme of service.		
Operations Concepts	i. Users will view job permit and scheme of services to see if all cadres have been mapped to corresponding scheme of services. ii. If scheme of service is missing, the system will provide option to add scheme of service and map with the corresponding cadre iii. The system will store the information and make it available for future use and references.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	All cadres must be linked and mapped with correct scheme of service.
Main Success Scenario	i. User View Job Permits information on cadres and corresponding scheme of services ii. User select option to add new scheme of service iii. System display field for user to enter information iv. User enter information and save. v. System display successfully message Scheme of service is stored and can be accessed.
Extension Scenario	i. Missing entry on mandated field ii. System display error message "This field is required" iii. System return user to missing info field iv. Duplicate Entry v. System display error message "This entry is already in the system" vi. System return user to the stored scheme of service

Use Case ID:	UCAP003	Variables Dictionary	Employment Permit
Use Case Name:	Submit Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	A newly added scheme of service must be submitted to decision making levels for further scrutiny (reviews and confirmation). The system will provide option for employer to submit scheme of service		
Trigger:	New scheme of service is added into the system.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP002		
Success Post conditions:	The scheme of service is submitted to other levels for review and approval.		
Failed Post conditions:	The system fails to submit the scheme of service.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Scheme of service must align with policy and guidelines.		

Main Success Scenario	i. The system display list of newly added scheme of service ii. User select newly added scheme of service iii. User click “Submit” button iv. System display success message v. The submitted scheme of service is removed from the list.
Extension Scenario	

Use Case ID:	UCAP004	Variables Dictionary	Employment Permit
Use Case Name:	View Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	The system shall store list of scheme of service per cadre. Authorized users will be able to view scheme of service.		
Trigger:			
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of scheme of service and information to all fields.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	i. The system will store a list of scheme of service. This scheme of service will be categorized as approved or not approved ii. Only approved scheme of service (s) will be eligible to be mapped with cadre iii. Authorize users will be able to view the list of schemes, from the list they can further explore individual by clicking on the 'view' for further display		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	i. User view list of scheme of service ii. User select scheme of service iii. System display scheme of service information(s) iv. User confirm and proceed to other phases.
Extension Scenario	

Use Case ID:	UCAP005	Variables Dictionary	Employment Permit
Use Case Name:	Approve Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, it must be approved before being referred for use and mapping with corresponding cadre.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		

Success Post conditions:	System display list of scheme of service
Failed Post conditions:	The system fails to display information.
Operations Concepts	i. System will display list of scheme of services for approval ii. System will provide window for user to approve or send comment on scheme of service (if satisfied). iii. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. iv. If approved, the scheme of service will then be stored and available for use
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines. Scheme of service will be mapped with corresponding cadre
Main Success Scenario	i. System display list of submitted scheme of service ii. User select scheme of service. iii. User confirm approval of scheme of service or make comments and return iv. System display successfully message (returned or approved) v. The scheme of service status changes to approved.
Extension Scenario	i. Scheme of Service need modification ii. System provide window for users' comments and feedback. iii. High level user comments on modification to be done into the SOS and return the SOS to original user. iv. Original user gets notification on SOS to be modified. After working on

	the comments, the user then submit (forward) to Desk officer. v. The system should record the back and forth process till the SOS is approved. vi. Once finally approved, the status changes to 'approved' and SOS is stored for reference and future use.

Use Case ID	UCAP-P006	Variables Dictionary	Employment Permit
Use Case Name:	Assign Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD		
Description:	To facilitate the recruitment process, the system will provide option for permit to be assigned to as many users as possible.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
< Dynamic Preconditions >:	UCAP001 (View Permit)		
Success Post conditions:	The system assign permits to user		
Failed Post conditions:	The system fails to assign permits.		
Operations Concepts	i. Responsible users will receive notification with a link to view Job permit (s). ii. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. iii. The system will provide option for permits to be assigned to users to facilitate the recruitment process iv. Once assigned user will be able to perform all activities aligned with the recruitment process		
<Input Summary>:	View Job Permit		

<Output Summary>:	List of assigned job permit
Frequency of Use:	On demand
Assumptions:	A designated taskforce can work on multiple permits to facilitate and speed up the recruitment process.
Main Success Scenario	i. System displays all available permits ii. User select Job Permit(s). iii. User assign job permit to other users iv. System display success message v. Assigned users are able to see the list of assigned permit to work with.
Extension Scenario	

Use Case ID:	UCAP007	Variables Dictionary	Employment Permit
Use Case Name:	Initiate Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	After verifying the job permit and all requirement (eg mapping SOS, validity etc), an employer will signal the initiation of the recruitment process. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		
Trigger:	Permit issuance		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display success message.		
Failed Post conditions:	The system fails to display successful message.		
Operations Concepts	i. Responsible users will view permit upon receiving notification, they will scrutinize the permit and if necessary add more information to it ii. Once the permit has been cleared, users will signal the start of the recruitment process iii. The system should send notification to authorize to inform on the recruitment process trigger. iv. The initiation recruitment process involves further scrutiny by higher level users. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		

Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Responsible institution must show the intent for recruitment process to begin. Ajira Portal is linked with HCMIS for job permit information exchange. The system can also allow users who do not receive Job permit directly from HCMIS to enter it manually into the system.
Main Success Scenario	i. The job permit review is complete and provide option to move to initiate recruitment stage ii. User click on the initiate recruitment and the system prompt for confirmation iii. Upon confirmation the system display success message.
Extension Scenario	

Use Case ID:	UCAP008	Variables Dictionary	Employment Permit
Use Case Name:	View Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	Once the employer has confirmed to begin the recruitment process, authorized users will be able to view the contents of the recruitment package.		
Trigger:	Initiate Recruitment		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for complete recruitment process.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	i. The system send notification to authorized user to inform on the recruitment process trigger (Initiation of recruitment) ii. The notification will bear a link which upon opening it, it will go directly to the initiate process. iii. The system will view list of permits that has been cleared for recruitment processes to begin.		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	Authorized user must be able to view all permits that has been approved for recruitment process. They can then review and continue with the process or provide advice for improvement.
Main Success Scenario	i. Notification is sent to authorized users'. ii. Users click on the notification iii. The system display the list of all permits that has been approved and cleared for the recruitment process to begin.
Extension Scenario	

Use Case ID:	UCAP009	Variables Dictionary	Employment Permit
Use Case Name:	Reject Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, authorized users will have to review any addition or edition to scheme of service and can approve or reject it.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		
Success Post conditions:	System display list of scheme of service		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	i. System will display list of scheme of services for approval ii. System will provide window for user to approve or send comment on scheme of service (if satisfied). iii. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. If no consensus is reached then the scheme of service is rejected and will be assigned status. iv. The rejected scheme of service will not be in display for use.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines.
Main Success Scenario	i. System display list of submitted scheme of service ii. User select scheme of service. iii. User confirm rejection of scheme of service and make comments and return for improvement iv. System display successfully message (rejected) v. The scheme of service status changes to rejected.
Extension Scenario	

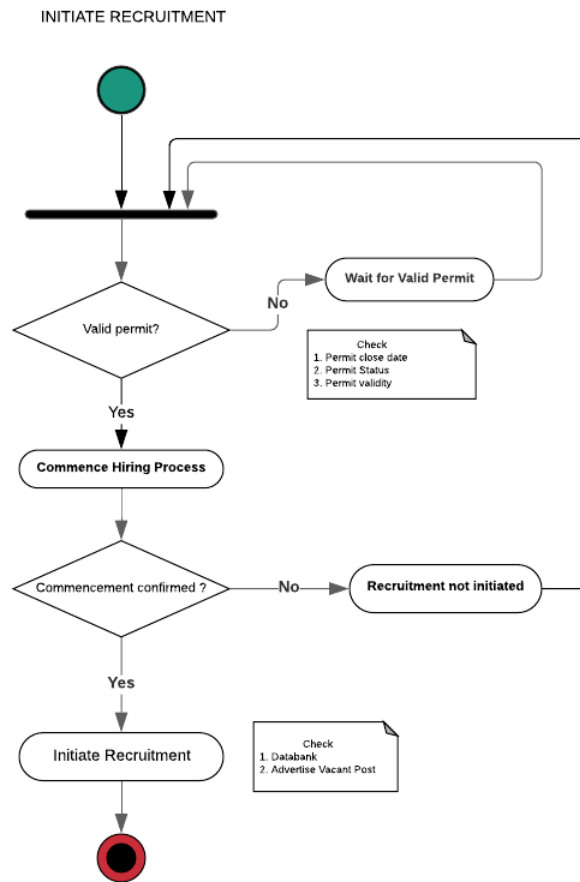


Figure 13: Employment Permit Activity Flow

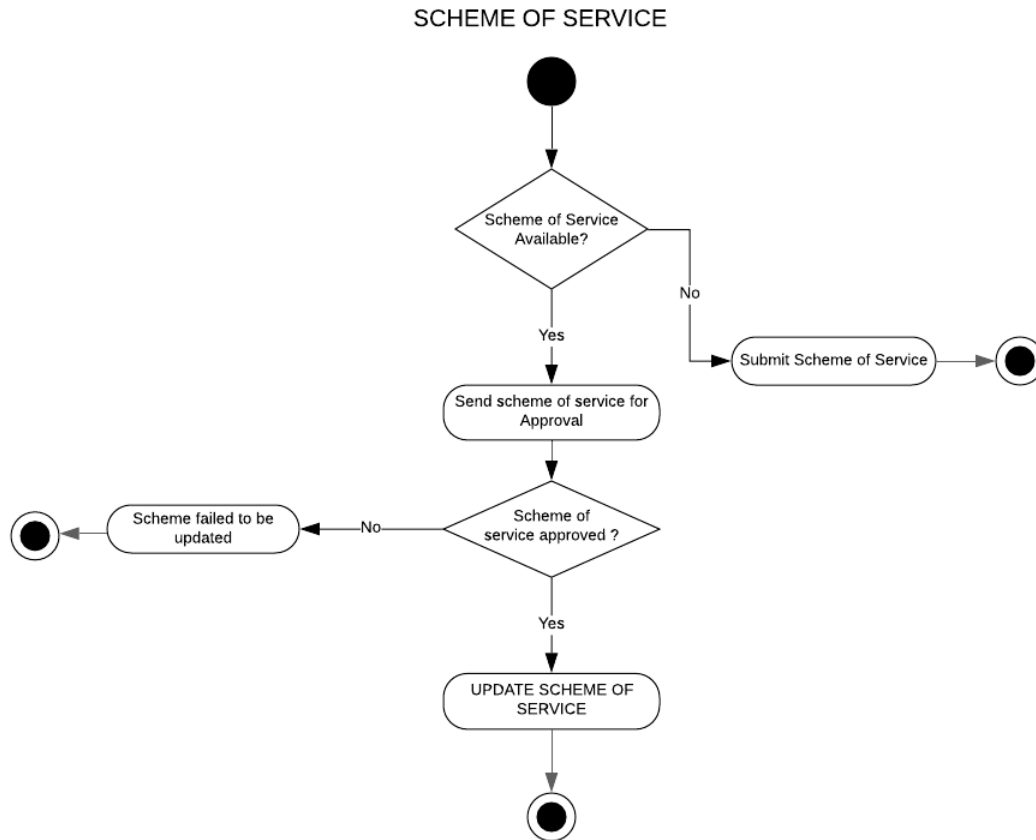


Figure 14: Scheme of Service Activity Flow

6.2 Job Advertisement Use Case

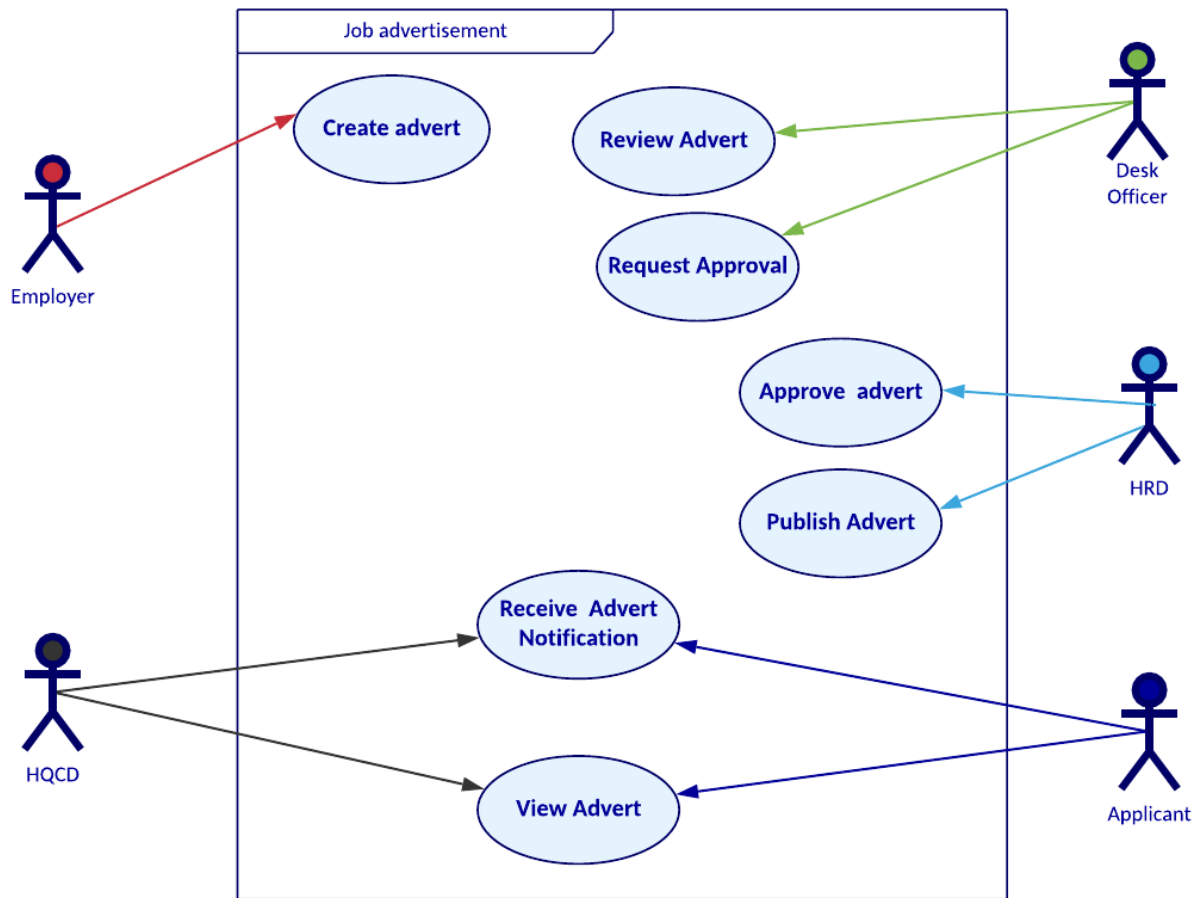


Figure 15: Job Advertisement Use Case

Use Case # UCAP015: Create Advert

Use Case ID:	UCAP015	Variables Dictionary	Job Advertisement
Use Case Name:	Create Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013, API07, API08		

Actors:	Employer, Desk Officer
Description:	This is one of important process in the recruitment cycle. Once the internal initiation of recruitment has passed, authorized user are required to create a job advert for the approved vacancies in order to inform the public of the availability of vacancies.
Trigger:	Initiate Recruitment
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Job Permit, Initiate Recruitment
Success Post conditions:	The system create job advert
Failed Post conditions:	The system fails to create advert
Operations Concepts	- Authorized user approved the recruitment process to begin. - The system notifies responsible users on the recruitment process. - Responsible users create advert as per job vacancy description - Responsible user submit advert for approval
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	The public must be informed on the availability of the vacancies
Main Success Scenario	- User view notification on recruitment process alert - User create advert - User save advert and the system displays a successfully message - User confirm and proceed to next steps.
Extension Scenario	

Use Case # UCAP016: Review Advert

Use Case ID:	UCAP016	Variables Dictionary	Job Advertisement
Use Case Name:	Review Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP018,		
Actors:	Desk Officer, HRD		
Description:	Upon advert creation, authorized user will receive notification on the availability of the advert and will have to review to ensure it adhered to standard and align with policies and guidelines.		
Trigger:	Create Job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert		
Success Post conditions:	The system display all job advert information		
Failed Post conditions:	The system fails to display job advert information		
Operations Concepts	- A job advert is created and submitted for approve - Authorized users will view list of all job advert created - The system will display all information on a job advert for review - Authorized users will review and scrutinize the job advert - Authorized users will then signal for the next steps (Publish or edit)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	A Job advert must adhere to standard and align to policy and guidelines.		
Main Success Scenario	- System display all list of job advert created - Authorized users select job advert for review - System displays job advert information - Authorized users confirm the review is OK - System display successfully message		
Extension Scenario	a) Job advert needs modification - System provide window for users' comments and feedback. - Authorized user(s) enter comments on modification to be done into the job advert and return the job advert to original user.		

	3. Job advert creator (user) gets notification on issues to be modified. After working on the comments, the user then submit (forward) to authorize users. 4. Once finally reviewed and approved, the system display successful message

Use Case # UCAP017: Request job advert approval

Use Case ID:	UCAP017	Variables Dictionary	Job Advertisement
Use Case Name:	Request job advertisement approval		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP008, AP010		
Actors:	Employer, Desk Officer		
Description:	An employer would request for review and approval of a job advert to ensure it adhered to standards, policies and guidelines.		
Trigger:	Create advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create advert		
Success Post conditions:	The system submit the job advert for approval.		
Failed Post conditions:	The system fails to submit the job advert.		
Operations Concepts	- The system successfully save the created job alert - Authorized user will then forward the job advert for approval - The authorized user will view the created advert and act accordingly - If approved the advert will wait for the next stage (Go live into public)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Job advert must adhere to standards, policies and guidelines before sent to public.		
Main Success Scenario	- The system send notification to authorized user on the availability of job advert for approve - Authorized user see list of all job advert created - Authorized user select a job advert - The system displays all the information on job alert - Authorized user then comment or confirm the validity of a job advert - The system stores the approved job advert and give 'approve status'		
Extension Scenario			

Use Case # UCAP018: Approve advert

Use Case ID:	UCAP018	Variables Dictionary	Job Advertisement
Use Case Name:	Approve advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP015, AP014, AP019, AP020		
Actors:	Employer, HRD, Desk Officer		
Description:	All job adverts created within AP must be approved for public consumptions. The approval process is crucial to ensure that the job advert adhered to employment process standards and align with policies and guidelines.		
Trigger:	Create Job Advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system provide option to approve job advert		
Failed Post conditions:	The system fails to approve the job advert.		
Operations Concepts	- The system will display all job alerts for approve - User will select the job advert and the system will display information for each job advert - Authorized user will then be able to approve and move to next step or reject job alert and return for modification		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:			
Main Success Scenario	- The system send notification to authorized user on the availability of job advert for approve - Authorized user see list of all job advert created - Authorized user select a job advert - The system displays all the information on job alert - Authorized user then comment or confirm the validity of a job advert - The system stores the approved job advert and give 'approve status'		

Extension Scenario	

Use Case # UCAP019: Publish Advert

Use Case ID:	UCAP019	Variables Dictionary	Job Advertisement
Use Case Name:	Publish Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP016, AP021		
Actors:	Employer, HRD		
Description:	After being approved, the job alert will be finalized and published for public consumptions. The system will provide a PDF version of the advert and other format that will be published through public mediums and Ajira Portal website		
Trigger:	Create job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create job advert, approve job advert		
Success Post conditions:	System publish		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	- The system will display a list of all approved job adverts - Authorized user will then prompt the system to publish the job advert - The system will generate the job advert into a readable format (PDF) - Authorized user can then publish it through approved mediums		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	GOT vacancies are open for each Tanzanians to apply provided is qualified for the vacancy. Thus the public must be informed once there is availability of job vacancies.		
Main Success Scenario	- System display list of all approved job advert - User select job advert. - User click on publish job advert - The system generates the complete job advert		
Extension Scenario			

Use Case # UCAP020: Receive Job advert Notification

Use Case ID:	UCAP020	Variables Dictionary	Job advertisement
Use Case Name:	Receive Job advert notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP055, AP017		
Actors:	Applicant, HQCD		
Description:	All applicants who have registered with Ajira Portal will receive notification once a job advert has been published. Thus all potential applicants should register with Ajira Portal for quick notification once a new job vacancy has been published		
Trigger:	Publish job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Created job advert, Publish job advert		
Success Post conditions:	System send notification		
Failed Post conditions:	The system fails to send notification		
Operations Concepts	System will send notification to all applicant on availability of new job adverts		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Every applicant has right to be quickly informed on the availability of vacancies so as can prepare for job application		
Main Success Scenario	- System send notification to applicants - Applicant get notification through approved medium (Eg email, SMS, mobile app). - The system can also display notification through the notification icon.		
Extension Scenario			

Use Case # UCAP021: View job advert

Use Case ID:	UCAP005	Variables Dictionary	Job Advertisement
Use Case Name:	View Job advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP016, AP021		
Actors:	Applicant, HQCD		
Description:	When the job advert has been published applicants and public in general will be able to view the job advert.		
Trigger:	Publish Job Advert, Job alert notification		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert, Publish Job Advert, Job alert notification		
Success Post conditions:	System display job advert		
Failed Post conditions:	The system fails to display job advert		
Operations Concepts	System will publish the job alert to public mediums for public and applicant to view		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	The public has right to see job advert once it has been published.		
Main Success Scenario	- System publishes a new job advert into Ajira Portal Website - Applicant and public able to see the job alert		
Extension Scenario			

Job Advertisement Activity Flow

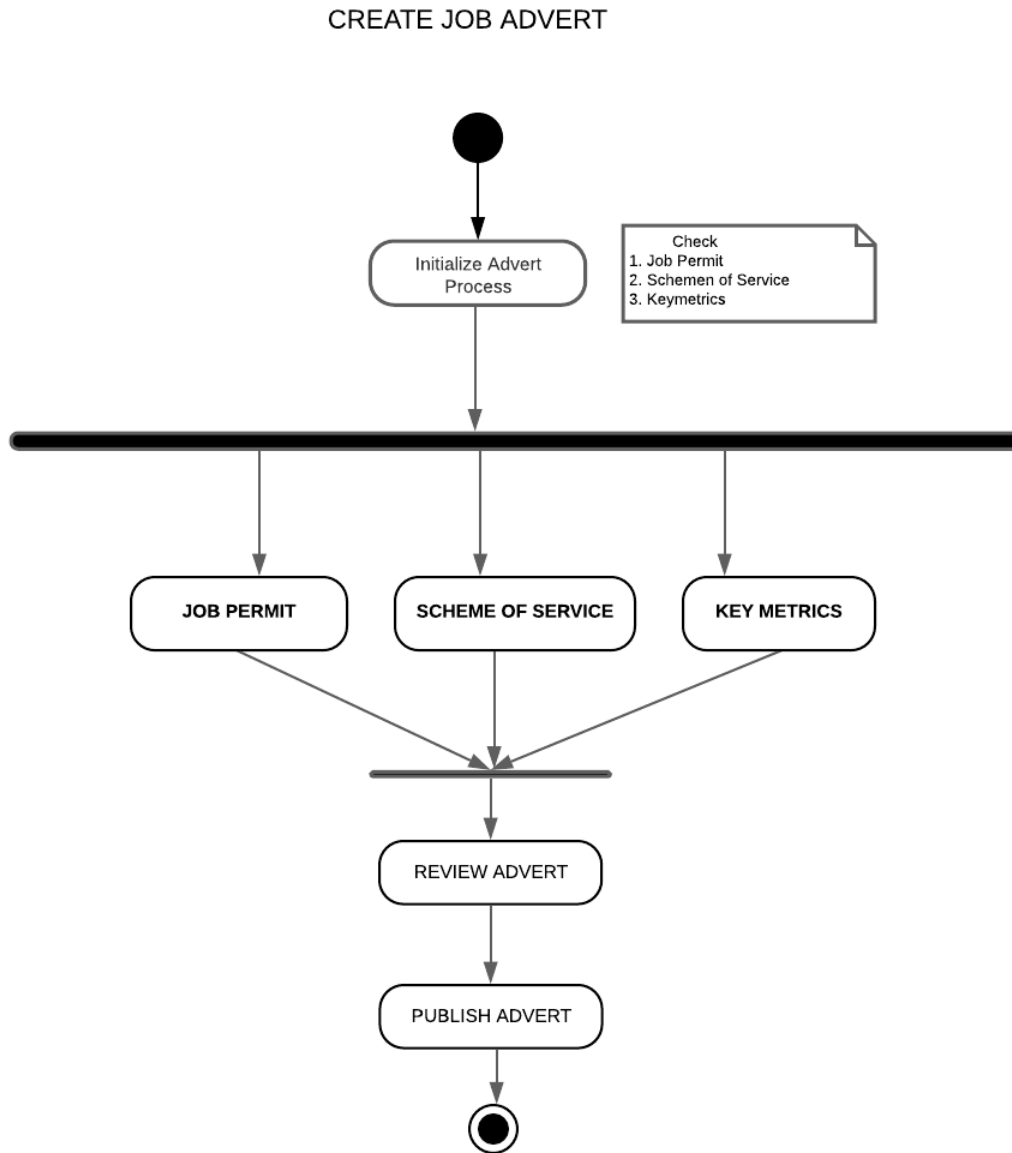


Figure 16: Job Advertisement Activity Flow

6.3 Job Application Use case

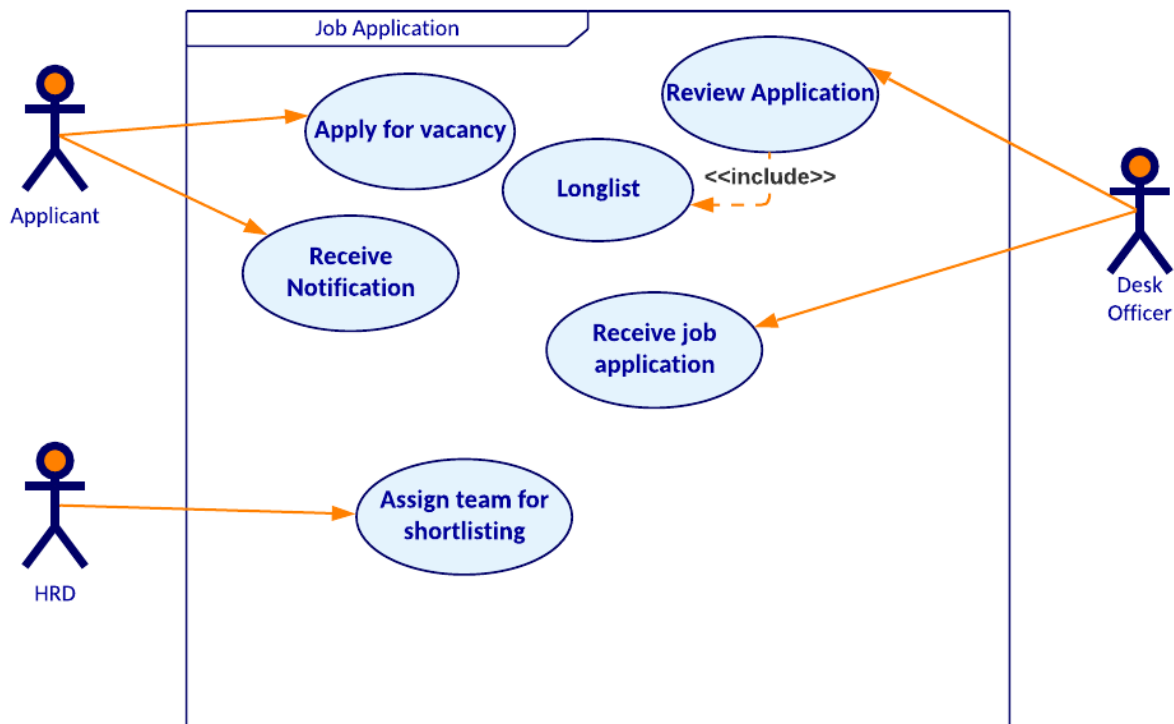


Figure 17: Job Application Use case

Use Case # UCAP010: Apply for Vacancy

Use Case ID:	UCAP010	Variables Dictionary	Job Application
Use Case Name:	Apply for Vacancy		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Once applicants have received job alert notification, they will be able to see a list of vacancies that has been advertised. Applicants will apply to particular position(s) according to their qualifications. Job adverts will be set with expire (deadline) date and		

	thus applicant should be aware.
Trigger:	• Job Advertisement • Job Alert Notification
Static Preconditions:	• Authorized Access
< Dynamic Preconditions >:	Job advertisement
Success Post conditions:	The system display list of advertised posts, users select preferred vacancies and apply for a job.
Failed Post conditions:	The system fails to display information.
Operations Concepts	• Applicants receive notification on job vacancies and can see the list of all advertised vacancies. (The system should display all vacancies regardless of applicant qualification) • Applicant can then apply from the list as per qualification (the system should limit users from applying jobs out of their professional, qualification) • Applicant should fill all the information needed including attaching an application letter. • Applicant will then submit application for further steps. • The system will store all applicant's application and will be available review until the job advert time expired. • The system will prevent applicant to review application process (Eg. Altering application letter) when the deadline date is reached.
<input summary>:	Job advertisement, job alert notifications
<output summary>:	List of successfully applicants application (s)
Frequency of Use:	On demand
Assumptions:	All eligible applicant will be able to apply for a job vacant once published
Main Success Scenario	1. Applicant receive job alert notification(s) 2. Applicant able to view list of all job vacancies (regardless of qualification/professional categorization) 3. Applicant select vacancies as per qualification 4. Applicant fills required information including attaching application letter 5. Applicant save the information and then click submit 6. The system display 'Success Message' to confirm application has been submitted. 7. The system display list of all application that has been done by an applicant
Extension Scenario	a) Applicant Reviews Application 1. Applicant go to 'My application' menu. 2. System display all applications and statuses (Active, Closed) 3. If the application is <i>active</i>, the system will provide option for applicant to review the information and can edit the attachment letter. 4. If the application is <i>closed</i>, then the system will not give option for edition. b) Rejected Application

	1. If the applicant has not qualified for a job vacancy then the system will not display any information for application. 2. If applicant information are either insufficient or overqualified for a certain position then the system will reject the application.

Use Case # UCAP011: Receive Job Advert Notification

Use Case ID:	UCAP011	Variables Dictionary	Job Application
Use Case Name:	Receive Job Advert Notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Upon publication of a job advertisement, eligible applicants (whose profile have a 70% completion rate) will be notified on the availability of new vacancies. Applicants will be able to see the notification with description of the advertised vacancy upon which they can start application.		
Trigger:	Publish Job Advertisement		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Publish Job advertisement		
Success Post conditions:	The system successfully send notification to applicant.		
Failed Post conditions:	The system fails to send notification.		
Operations Concepts	- When responsible users finishes the process of preparing job advert and publish, the system will automatically send notification to users (applicant) - Applicant will be able to see the notification icon displaying an alert with a number indicating the presence of a new notification - Upon clicking the notification menu, applicant will be able to see all job related notifications (in this case a new vacancy)		
<Input Summary>:	Publish Job advertisement		
<Output Summary>:	List of notification to be embedded on the notification icon		
Frequency of Use:	On demand		
Assumptions:	Since the recruitment process has time limitation, applicant must be informed immediately upon availability of new job vacancy.		
Main Success Scenario	- User View Job Permits information on cadres and corresponding scheme of services - User select option to add new scheme of service - System display field for user to enter information - User enter information and save. - System display successfully message		

	6. Scheme of service is stored and can be accessed.
Extension Scenario	a) Missing entry on mandated field 1. System display error message "This field is required" 2. System return user to missing info field b) Duplicate Entry 1. System display error message "This entry is already in the system" 2. System return user to the stored scheme of service

Use Case # UCAP012: Assign team for shortlisting

Use Case ID:	UCAP012	Variables Dictionary	Job Application
Use Case Name:	Assign team for shortlisting		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP039, AP040, AP042, AP043		
Actors:	HRD		
Description:	Once application period has ended, a taskforce will be assigned to review all application and provide a list of qualified applicant that can proceed to other stages such as interviews etc.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	The system is able to assign team for shortlisting.		
Failed Post conditions:	The system fails to assign team for shortlisting.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All job application must be reviewed by a qualified team		
Main Success Scenario	- The display number of application for a certain cadre - The system provide window to add number of available force - The system provide window to enter the approximated number of application a member of a taskforce can review. - The system will then automatically calculate the suggested strength of a taskforce		
Extension Scenario			

Use Case # UCAP013: Review Application (Long list)

Use Case ID:	UCAP013	Variables Dictionary	Job Application
Use Case Name:	Review Application (Long list)		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	API11, API10, AP023,		
Actors:	HRD, Desk Officer		
Description:	All applications will be reviewed once application period has ended. The review will provide a list of possible candidates (long list) for a position that are to be further tested through other stages (ie interviews).		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of all applications per each vacancy (cadre).		
Failed Post conditions:	The system fails to display list of applications per each cadre.		
Operations Concepts	- After application period ends, the system will lock any attempt for applicant to apply for a job. - The system will display all applicant per cadre they've applied (with number) - Responsible user must go through each applicant information to verify if that applicant has qualified and is eligible to apply for that particular job. - Upon completion of review process, the system will provide a list of successfully applicant and send notification on the next stages (interviews)		
Exceptions:	N/A		
Includes:	Receive Application		
Frequency of Use:	On demand		
Assumptions:	All application must be reviewed to ensure applicants have adhered to the needs of the vacancy		
Main Success Scenario	- System send notification on the closing of the application period - Responsible users responds to the notification by opening and see a list of applicants that have applied for a particular cadre - The system will provide window for quick preview on applicants information such as attachments, personal info etc		

	4. Each candidates selected will be sent with notification indicating the status of his/her application (success or rejected - with a reason) 5. The system will finally list all successfully candidates that will have to go through next stages (interviews)
Extension Scenario	

Use Case # UCAP014: Receive Job Application

Use Case ID:	UCAP014	Variables Dictionary	Job Application
Use Case Name:	Job Application		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP023, AP024, AP026		
Actors:	Desk Officer		
Description:	Authorized users will be able to see all applications as they unfold during and after application period has ended.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	System display list of applications		
Failed Post conditions:	The system fails to list of applications.		
Operations Concepts	- The system provides window for applicants to apply for a job vacancy - After filling all required information, applicant will then submit the application - The system will allow authorized users to see a real time progress as the application process is unfolding with increasing number. - Authorized users will be able to view the list of all application per given cadres.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All applications must be accounted for within the system.		
Main Success Scenario	- System display list of application with a counter to monitor number of application - Authorized users can navigate through different job vacancy to monitor the progress of job application processes		
Extension Scenario			

Job Application Activity Flow

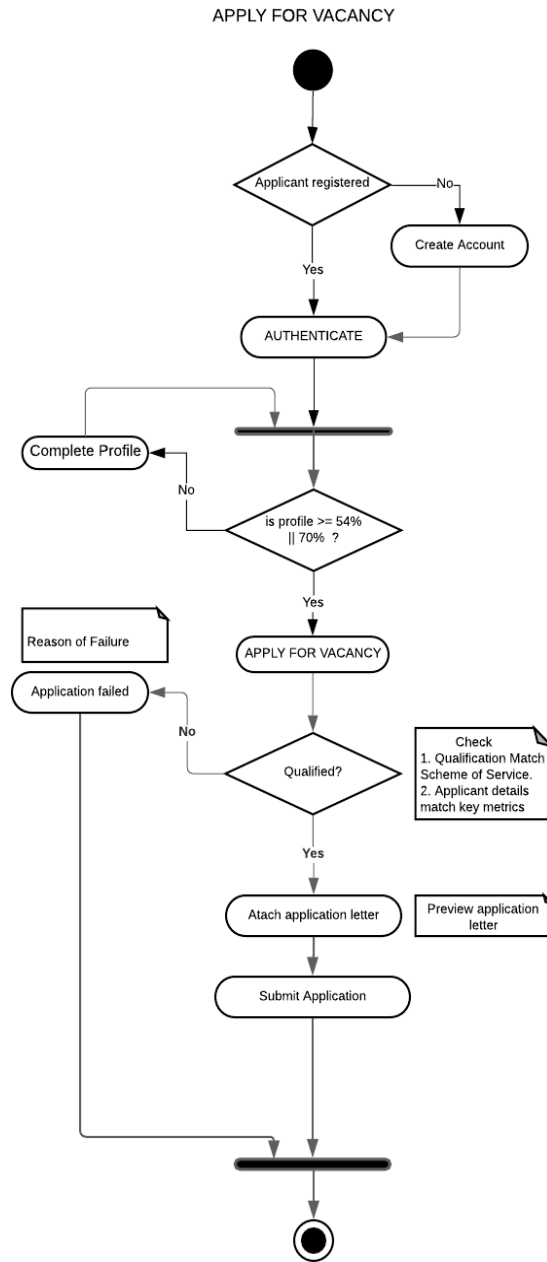


Figure 18: Job Application Activity Flow

6.4 Interview Question Use Case

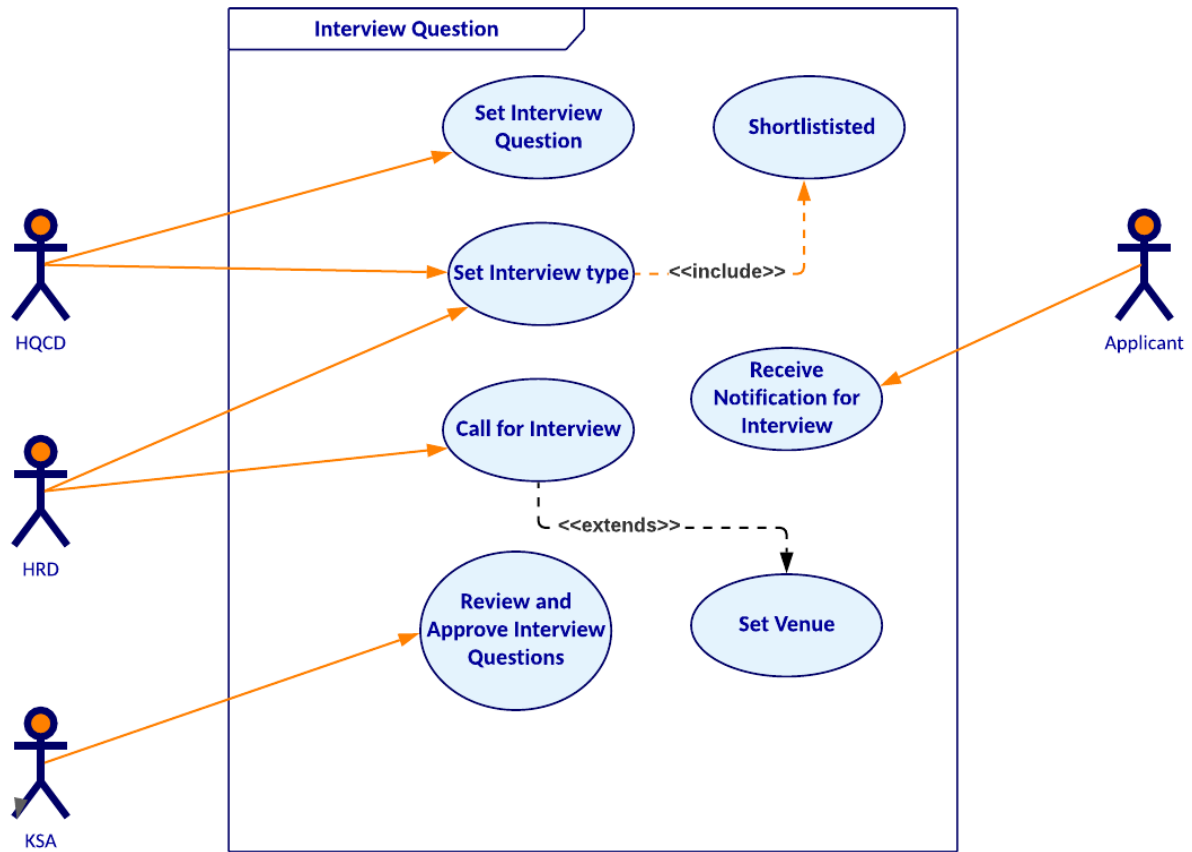


Figure 19: Interview Question Use Case

Interview Question Use Case Description

Use case Descriptions

Use Case ID:	UCAP012	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question- Set Interview type		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	When the Shortlisting completes HQCD and HRD setting up the interview type which will be based on the number of Shortlisted Applicant and Type of Cadre. Interview type can be Written (Aptitude), Practical and Oral Interview.		
Trigger:	Receive number of Shortlisted Candidate		
Static Preconditions:	Authorized Access Receive Notification		
< Dynamic Preconditions >:	Shortlisted Applicant		
Success Post conditions:	The system displays the number of Interviews to be done to a particular Cadre.		
Failed Post conditions:	The system fails to display the type of interview to be done.		
Operations Concepts	Responsible users will receive a number of shortlisted applicants.. Responsible users will compare number of post to the number of Shortlisted Candidate so as to check if the cadre has Written(Aptitude) interview		

	Responsible users will also check the Type of Cadre if it has Practical Interview Then the Responsible users will set the Oral Interview
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Based on Number of Shortlisted Candidate to determine type of Interview
Main Success Scenario	Set up of interview to each Cadre Allocate Schedule and Venue to each Cadre
Extension Scenario	

Use Case ID:	UCAP013	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	After analysis of the type of interview the responsible user prepares the interview question which will depend on the type of interview i.e Written (Aptitude), Practical, Oral Interview.		

Trigger:	Receive analysis of the type of interview Prepare Interview Questions according to the Duties and Responsibility of the Particular Cadre.
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Type of Cadre and the type of interview
Success Post conditions:	Presenting the Interview Questions for all types of Interview according to the nature of each Cadre.
Failed Post conditions:	Fail to prepare Interview Questions to each Interview Type.
Operations Concepts	Responsible users will receive the number of Interview types set for each Cadre. Responsible users will communicate with the sources of Interview questions. Responsible users receive the draft of the Interview Question from the Sources. Responsible Users will review the drafts of the Interview Question. After Reviewing the Interview Question the responsible users will submit the drafted interview Question to the CEO for approval. The CEO will review received set of draft interview questions After reviewing the Interview Questions the CEO will approve the received Draft Interview Questions so as to be used in the Interview.
Exceptions:	N/A
Includes:	N/A

Frequency of Use:	On demand
Assumptions:	Based on Type of Interview and nature of the Cadre
Main Success Scenario	Set the Interview Question to each stage of the Interview
Extension Scenario	

Use Case ID:	UCAP014	Variables Dictionary	Employment Permit
Use Case Name:	Call for Interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, Applicant		
Description:	When the Set up of Interview Type, Interview Venue and Shortlisting Process complete the following process is Call for Interview.		
Trigger:	Receive type of Interview and Venue for each Cadre Prepare Invigilator and Markers for the Interview Question. Interview number to each successful candidate and reasons to those who are unsuccessful.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Type of Interview and the number of Successful Candidate		

Success Post conditions:	Notification to all responsible Users for Call for Interview announcement
Failed Post conditions:	Fail to give notification of the Call for Interview.
Operations Concepts	Responsible users will set an interview Timetable and allocate Venue for each Cadre. Responsible users will issue a Call for Interview announcement in a PO-PSRS Website and SMS. Responsible users provide feedback to applicants on the status of their application. Applicant will accept/deny call for interview feedback Responsible Users will form invigilators and/or interview panels.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Set of Interview Type, Set of Interview Venue and Shortlisting process complete.
Main Success Scenario	Set the Interview Venue and Timetable Notification to the applicant and all responsible Users Issue of Call Interview announcement to PO-PSRS website Applicant receive notification on the application status
Extension Scenario	

Interview Question Activity Flow

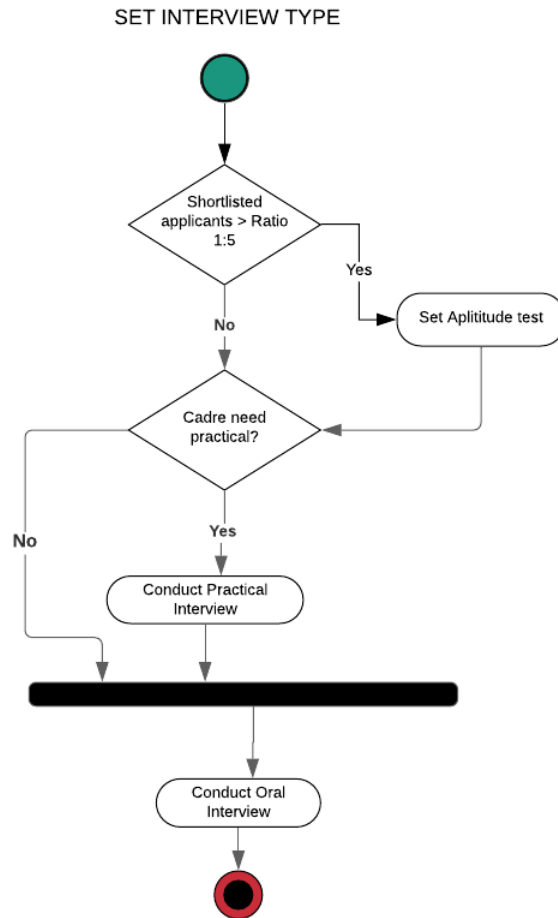


Figure 20: Interview Question Activity Flow

6.5 Applicant Shortlist Use Case

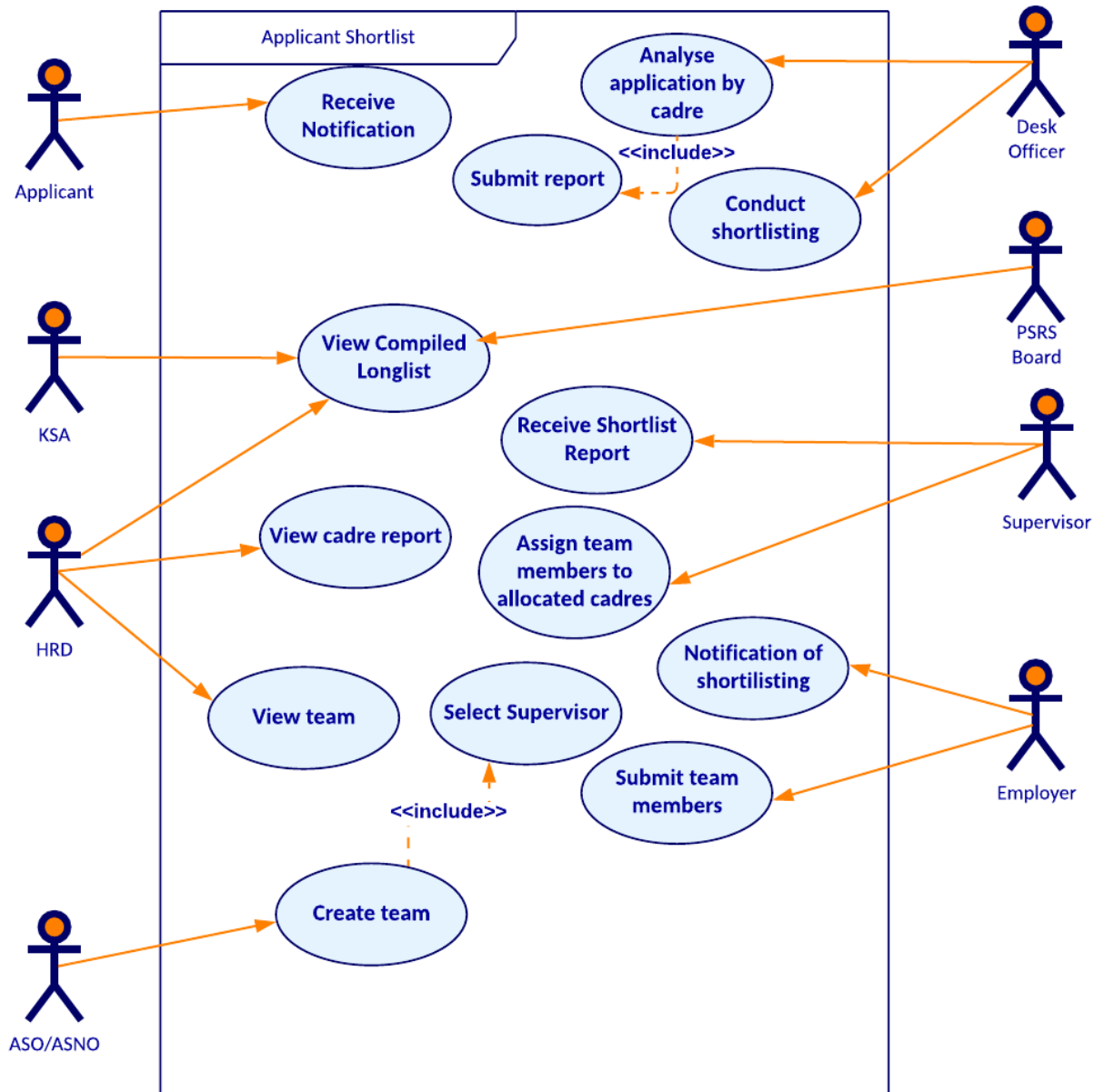


Figure 21: Applicant Shortlist Use Case

1. Applicant Shortlist Use Case Description

Use Case ID:	UCAP015	Variables Dictionary	Employment Permit
Use Case Name:	Applicants Shortlist		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Applicant, Desk Officer, KSA, PSRS Board, HRD, Supervisor, Employer, ASO/ASNO		
Description:	Immediately after advert deadline system will start shortlisting of applicants by cadre and generate various shortlisting report e.g. - Shortlisted candidate by gender. - Shortlisted candidate by disability. - Shortlisted candidate by age; - Shortlisted candidate by University.		
Input Summary:			
Output Summary:			
Trigger:	1. Receive notification after advert deadline reached		
Static Preconditions:	- Authorized Access - Receipt of notification		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	- System will analyze application by cadre and generate shortlisting report. - ASO/ASNO will form team and select supervisors to conduct shortlisting. - Employer will receive notification and submit members that will participate in the shortlisting. - Supervisor(s) will distribute compiled longlist to the selected team for shortlisting. - HRD and KSA will receive compiled longlist and shortlisted reports. - Applicants will receive notification i.e. successful and unsuccessful.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	1. Advert deadline must be reached.		
Main Success Scenario	- Applicant to successful apply for the available vacant. - System to generate compiled longlist report. - User to conduct shortlisting. - User view shortlisting report. - User to receive notification. - Applicant to receive notification.		

Extension Scenario	a) Applicant shortlist is not complete Recruitment termination during shortlisting process.

Applicant Shortlist Activity Flow

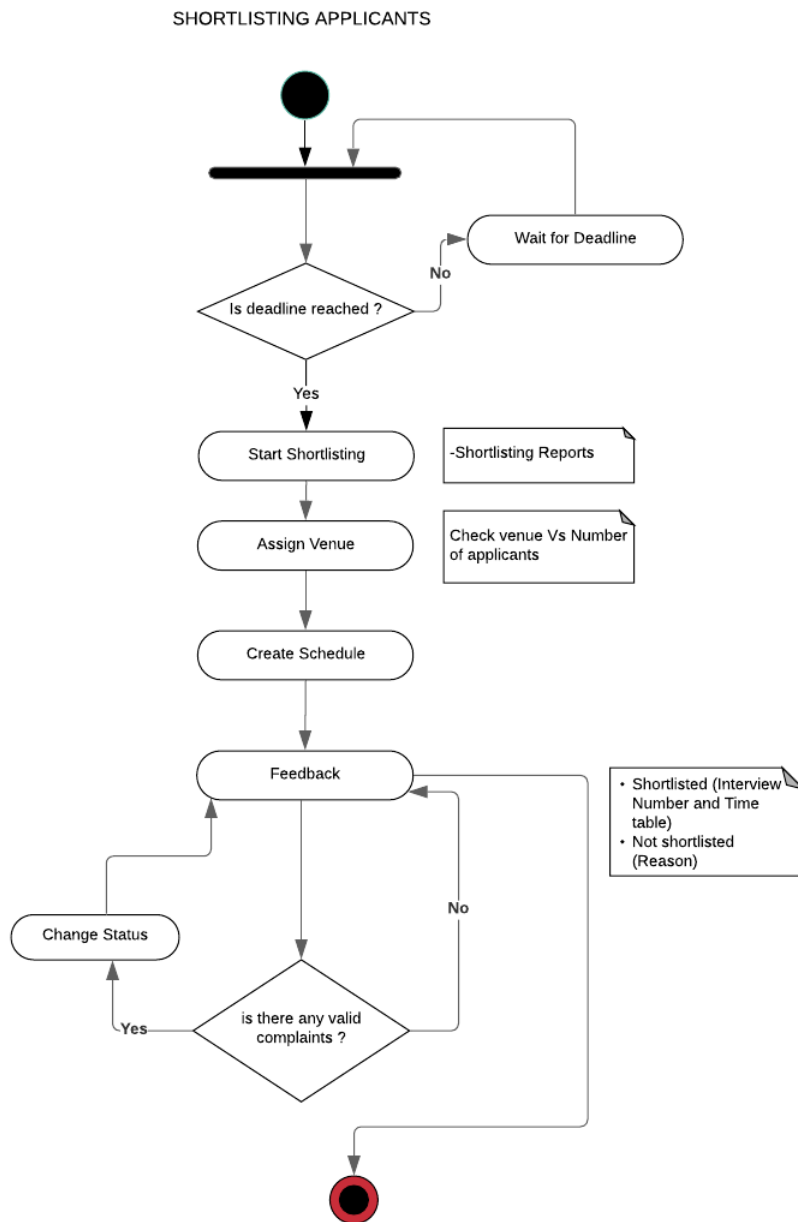


Figure 22: Applicant Shortlist Activity Flow

6.6 Call for Interview Use Case

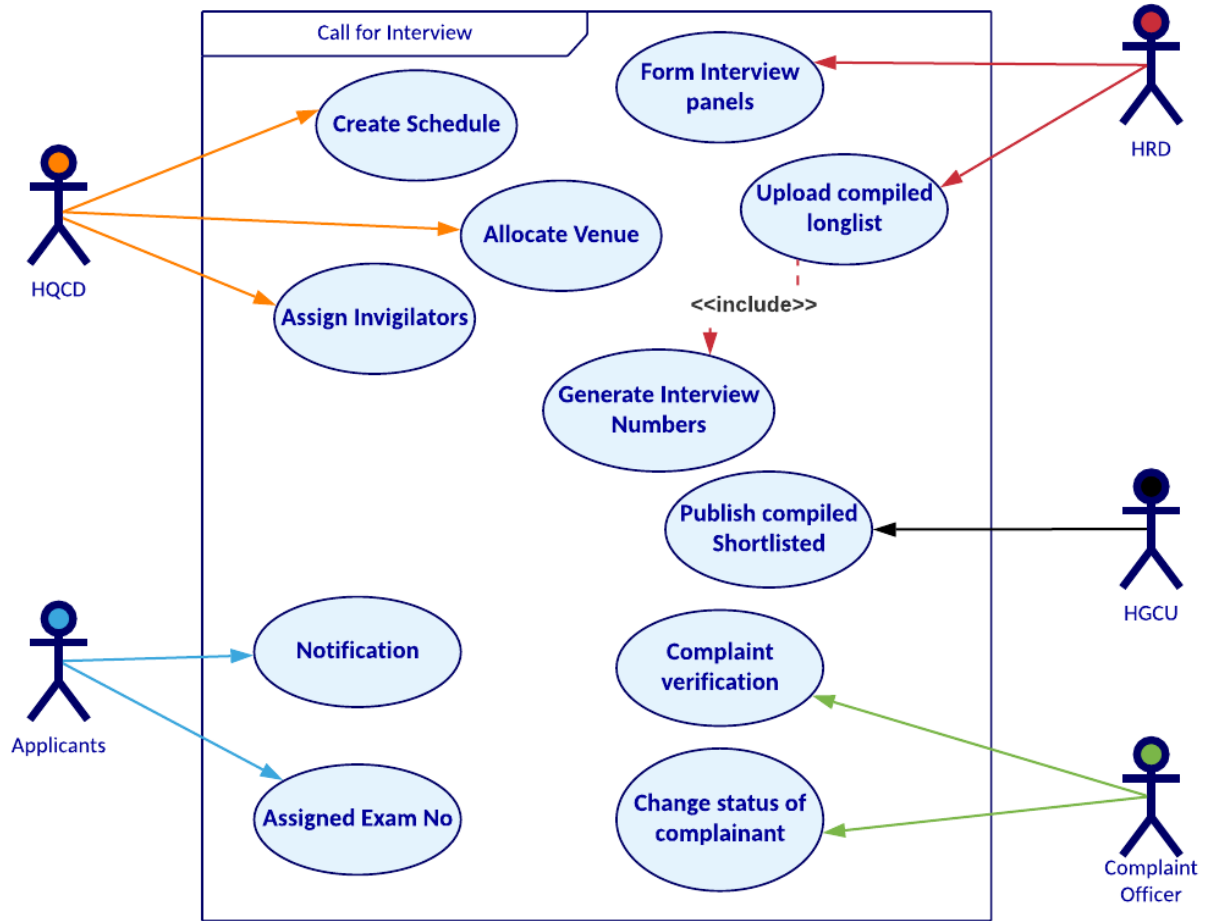


Figure 23: Call for Interview Use Case

2. Call for Interview Use case Description

Use Case ID:	UCAP016	Variables Dictionary	Call for interview
Use Case Name:	Call for interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD, HGCU, Complaint Officer, Applicants		
Description:	Immediately after shortlisting, interview panel will be created, upon successful creating panel venue will be suggested with their respective applicants and invigilators ready to initiate call for interview.		
Input Summary:			
Output Summary:			
Trigger:	i. Advert reached deadline ii. Shortlisting (Generation of compiled longlist)		
Static Preconditions:	Compiled longlist established.		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	Failure Notification.		
Operations Concepts	i. System will generate compiled longlist. ii. HRD will form interview panels and upload compiled longlist. iii. HQCD will create venue, allocate venue and assign invigilators. iv. Applicant will receive interview number upon successfully selected on the shortlisting process. v. To attend interview applicant must confirm to attend in the interview.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Shortlisting completed successful		
Main Success Scenario	i. System to generate compiled longlist. ii. User to create team for interview (Panelist and Invigilator). iii. User to create venue and assign applicants to venue. iv. Applicants to attend interview.		
Extension Scenario	N/A		

Call for Interview Activity Flow

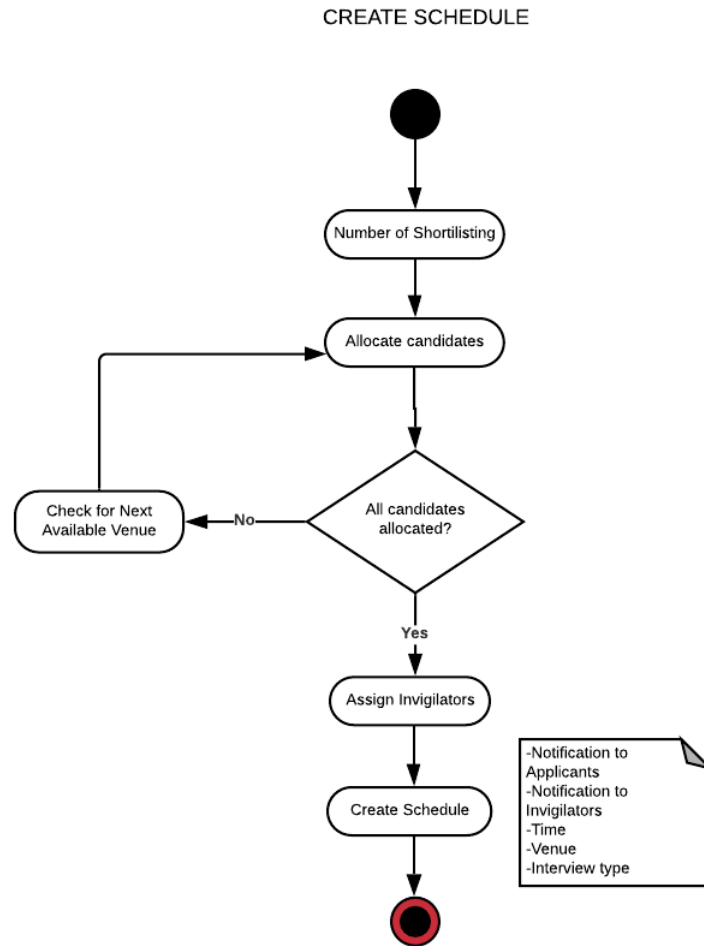


Figure 24: Call for Interview Activity Flow

6.7 Conduct Interview Use Case

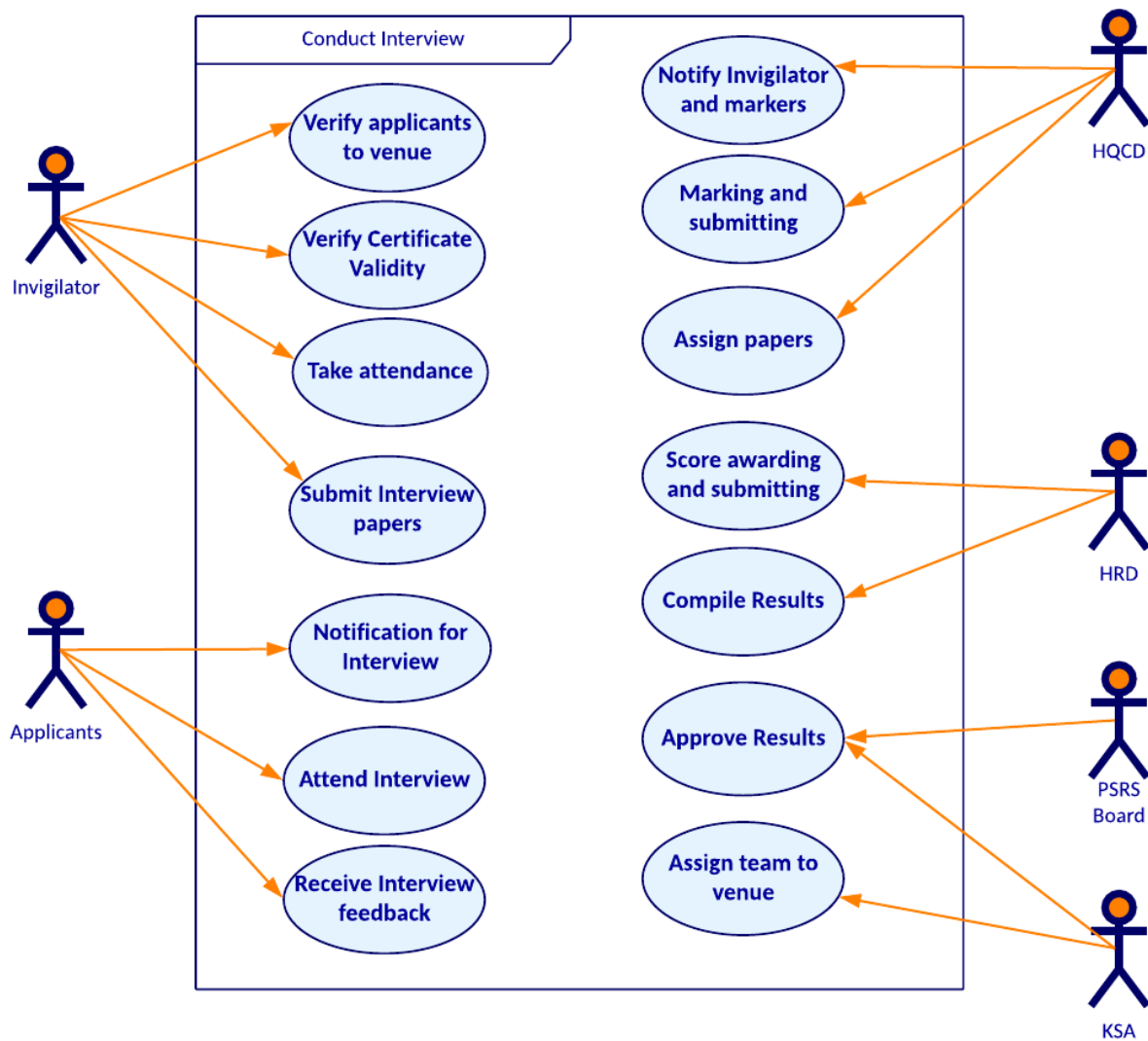


Figure 25: Conduct Interview Use Case

Conduct Interview Use Case Description

	Use Case ID:	UCAP017	Variables Dictionary	
	Use Case Name:	Conduct Interview		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		Invigilator, HQCD, HRD, Applicant, KSA, PSRS Board		
Description:		Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:		1. Applicant Shortlist		
Static Preconditions:		i. Compiled Applicant shortlist ii. Interview questions iii. Interview panels (Invigilators/ Panellist, Markers) iv. Applicants and Interview panels assigned to interview venues		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		N/A		
Failed Post conditions:		The system fails to display information.		
Operations Concepts		i. Responsible users will verify applicants and certificates. ii. Conduct interview iii. Mark interview iv. Submit interview results v. HRD/HQCD compile results, produce and submit interview reports vi. Review interview reports by the Board		
Exceptions:		Cadres that do not go through the Interview process		
Includes:		N/A		
Frequency of Use:		On demand		
Assumptions:				
Main Success Scenario		i. The system shall notify user on selection ii. User can verify applicant against certificates and venue iii. The system displays approved compiled interview results iv. Applicants to get interview feedback from the system		
Extension Scenario		N/A		

Conduct Interview Activity Flow

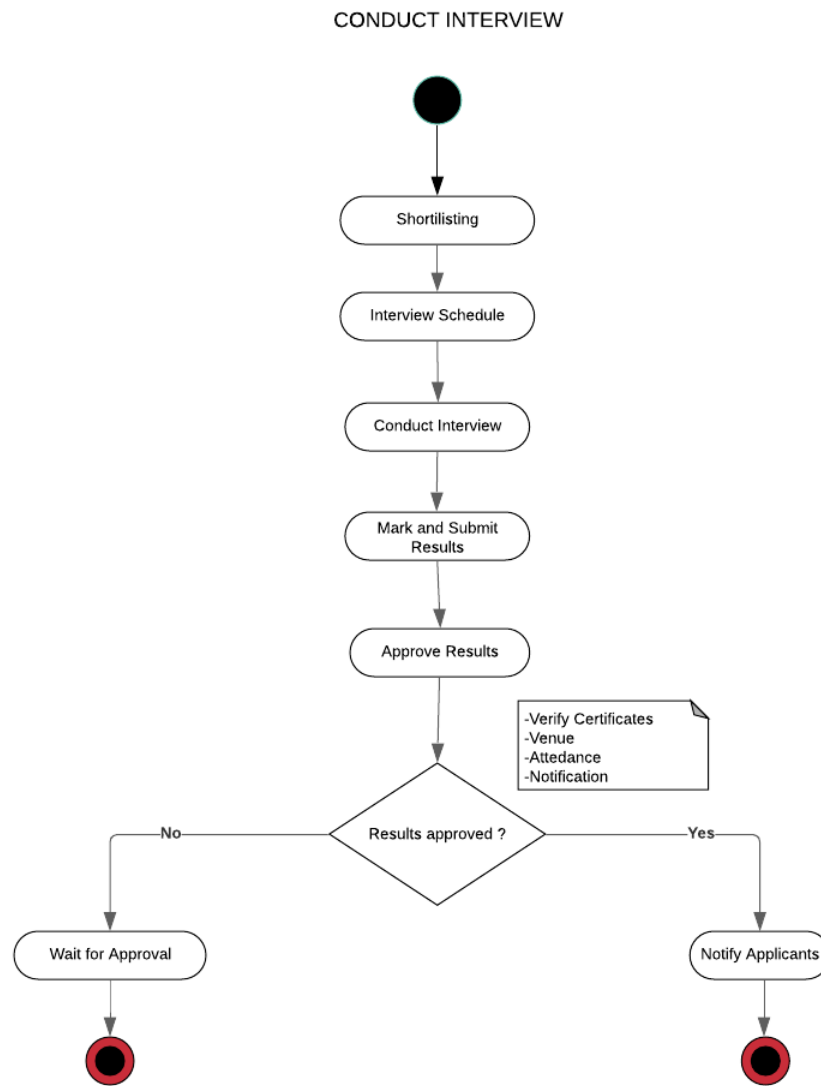


Figure 26: Conduct Interview Activity Flow

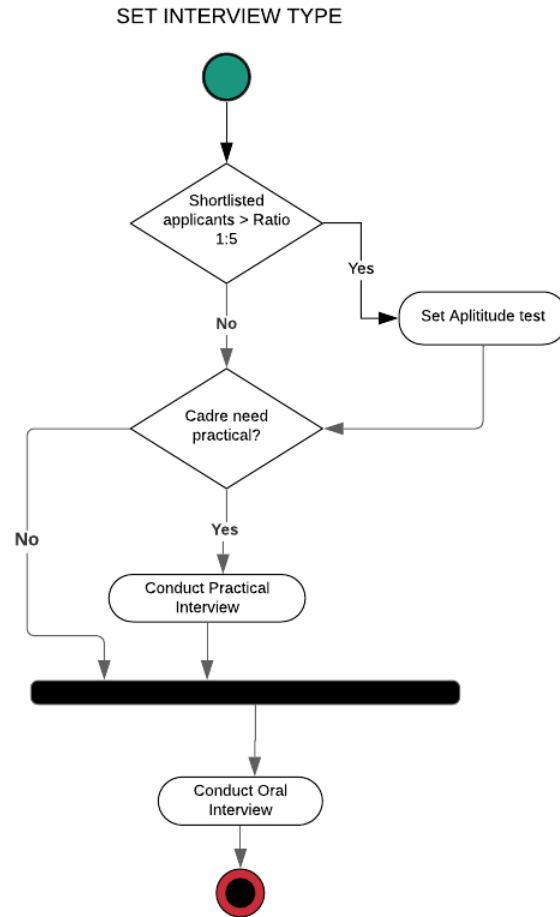


Figure 27: Set interview type

6.8 Placement Use Case

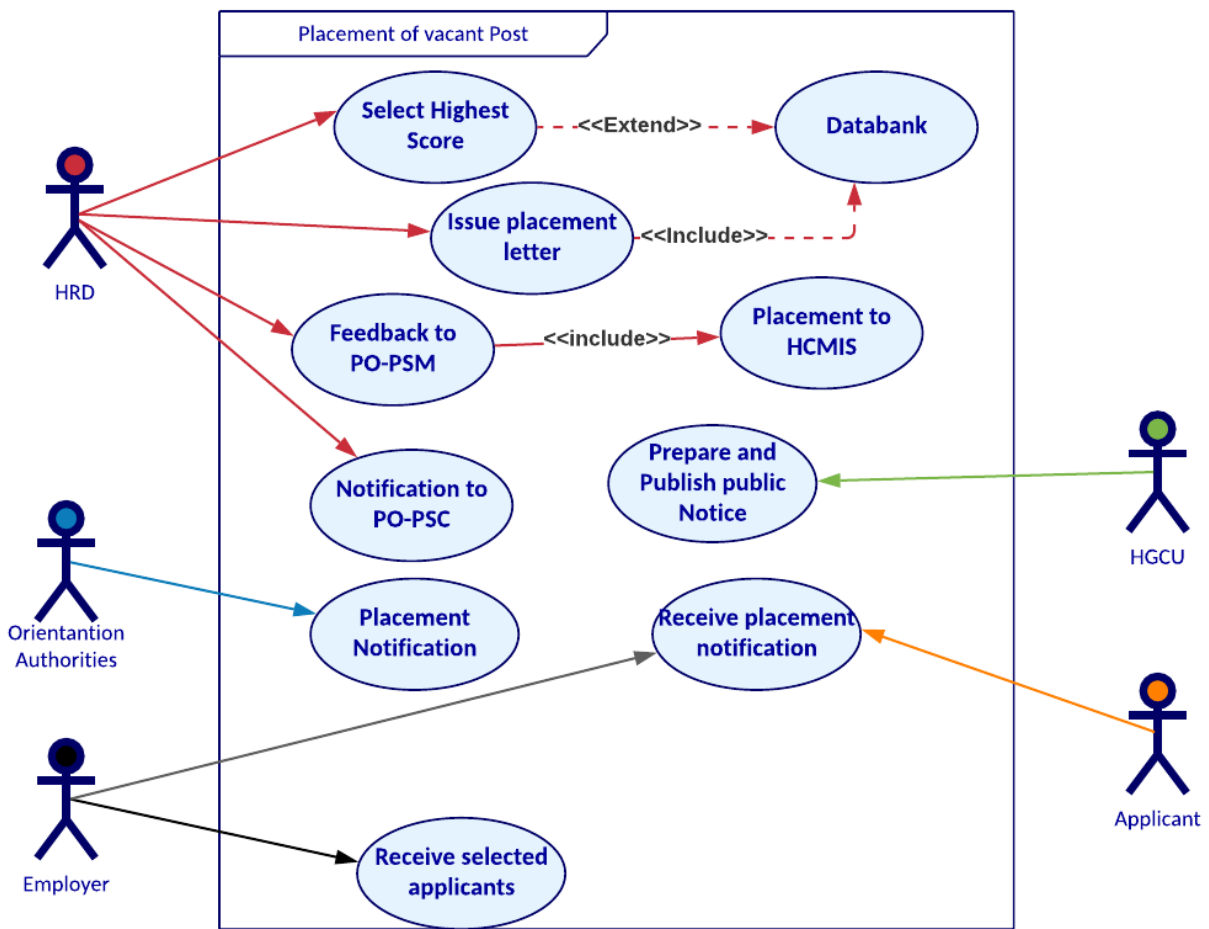


Figure 28: Placement Use Case

Placement Use Case Description

Use Case ID:	UCAP018	Variables Dictionary	Employment permit
Use Case Name:	Placement from Databank		
Created By:	PSRS	Last Updated By:	
Date Created:	18/01/2021	Last Revision Date:	18/01/2021
Actors:	HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:	After permit analysis, the user/system checks for availability of suitable candidates to be placed from the Databank. If suitable candidates are available the systems places them according to the requirements, if they are not sufficient or unavailable the next of advertising vacant posts is triggered		
Trigger:	complete permit analysis		
Preconditions:	Valid permit, with its associated scheme of service.		
Post conditions:	i. System places available suitable candidates ii. where there are insufficient or unavailable suitable candidates, system triggers advertisement of the vacant posts		
Normal Flow:	i. Issue letter of placement. ii. Issue notification to employer. iii. To provide feedback to PO - PSM (Placement into HCMIS) iv. Issue notification to PO-PSC v. Issue public notice for call for engagement vi. Issue notification to orientation authorities vii. if available candidates are insufficient to fill vacant posts advertise the remaining vacant post viii. if there are no suitable candidates in the databank advertise vacant posts		
Exceptions:	some cadres may not follow the normal recruitment process for placement		
Includes:	1. issuance of placement letter 2. placement into HCMIS		
Frequency of Use:	On demand		
Assumptions:			
Notes and Issues:	N/A		

Placement from Advertising Vacant Post

	Use Case ID:	UCAP019	Variables Dictionary	
	Use Case Name:	Placement from advertising vacant Post		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:		Following the interview process and approval of final results, successful applicants are placed in vacant posts. The remaining unplaced successful candidates are stored in the databank.		
Trigger:		Completed interview process		
Static Preconditions:		1. Passed candidates 2. Valid permit		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		i. System places available suitable candidates ii. System triggers advertisement of the vacant posts when there are insufficient or unavailable suitable candidates iii. System stores unplaced successful candidates in databank.		
Failed Post conditions:		The system fails to place successful candidates to vacant posts and databank		
Operations Concepts		i. Sort candidates in descending order of scored marks ii. Place candidates with highest scores first iii. Print placement letter iv. Issue notice to employer on placement and provide feedback to PO - PSM (Placement into HCMIS) v. Issue notification to PO-PSC vi. Issue placement advert to appropriate media vii. Issue notification to orientation authorities viii. Storage of unplaced successful candidates in databank		

Exceptions:	When two or more candidates have the same high score the following criteria should be used to decide on who gets placed first:- - If one of the candidates is disabled, then that candidate will get placed first. - If all or none of the candidates are disabled, then the female candidate will get placed first. - If all or none of the candidates are female, then the oldest candidate will get placed first. - If the candidates are the same age, then alphabetical order of names is followed.
Includes:	- Issuance of placement letter - Placement into HCMIS - Storage of unplaced successful candidates in databank
Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	- Arrangement of highest scores of candidates - Placement of successful candidates - Issuance of placement letter - Issuance of placement details to Employer and PO-PSM (through HCMIS) - Issuance of notification of placement to PO-PSC and Orientation Authorities - Issuance of placement advert to public via appropriate media
Extension Scenario	N/A

Placement Activity Flow

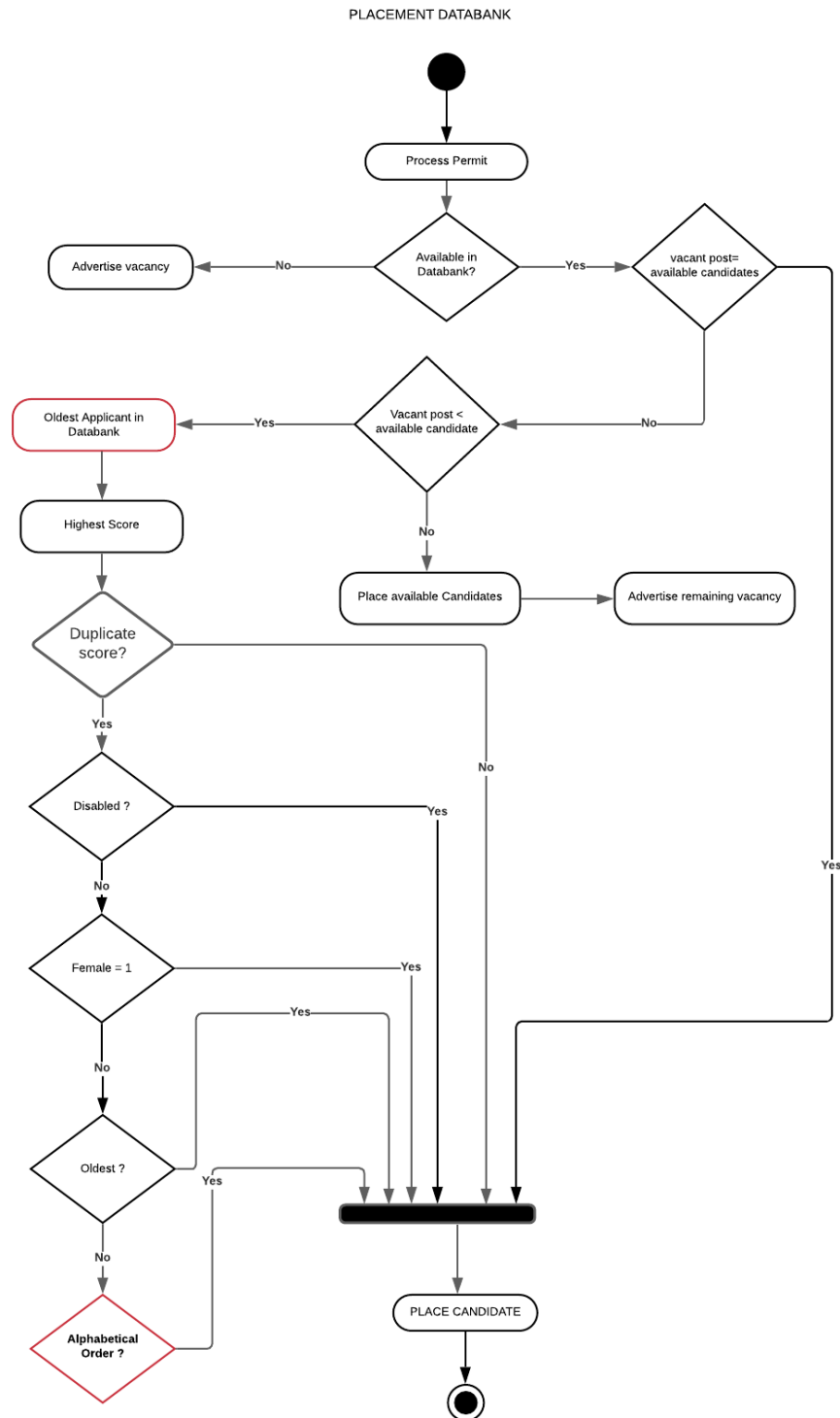


Figure 29: Placement Activity Flow

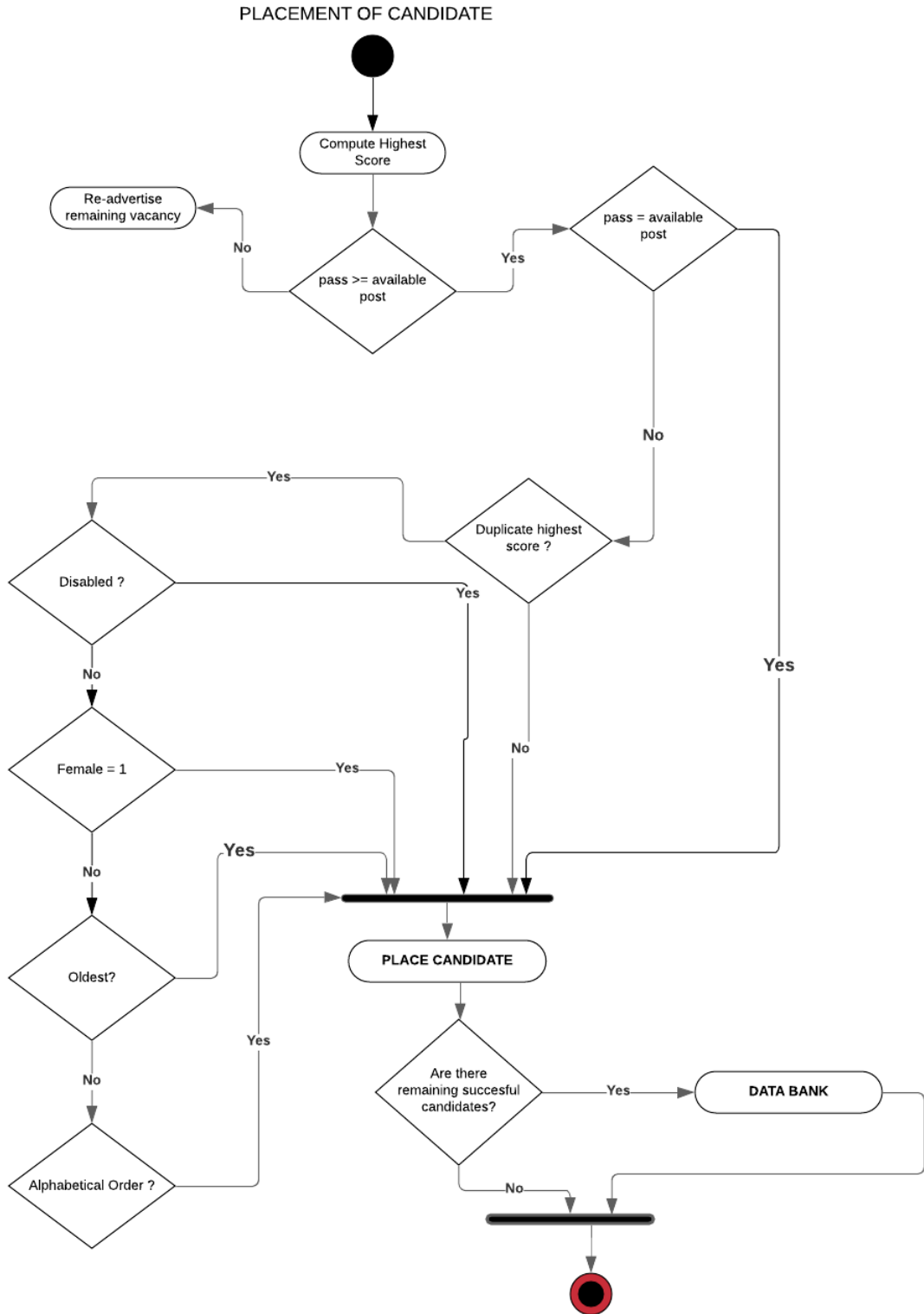


Figure 30: Figure 29: Placement of Candidates

7.0 MOCKUPS (User Interface (UI) and User Experience (UX) Design)

Our 3-week design sprint was definitely not enough to completely redesign Ajira Portals' web UI, however, we feel that we tackled the design task project successfully. Our UI/UX met the needs of our applicant persona by making the job searching process quick, easy, convenient, and transparent. Although we did not have the time to fully redesign the employer's side of the web app, we took our employer persona's needs and frustrations into consideration in our design.

As AP's existing web app was identified to have usability issues, it needed a responsive web app designed from scratch to improve a noticeably cumbersome experience.

Our design process consisted of 5 phases which were executed using agile methodology: 1) Research 2) Plan 3) Design 4) Test 5) Iterate.

Personas

To compile and visualize our user research, we took our participants' responses and created 2 affinity diagrams — 1 for job seekers and 1 for employers. From these affinity diagrams, we devised 2 user personas that will represent AP's target users. These personas guided us throughout our design sprint to ensure that we design for our users' specific goals and needs.

Planning

After compiling and analyzing all of our research, we came up with some ideas for Ajira Portal websites and mobile app. Because we were limited by time, the design team focused on the applicant's user flow for the current improvements to the AP portal — how they would navigate the web and mobile app — instead of designing both the applicant's and employer's user flows. This would include the following tasks:

- Create a profile
- Search for jobs
- Apply to jobs
- feedback/notifications/messaging
- Track applications and interviews

Site Map

With these features in mind, we created a site map to help us visualize the structure and organization of the content in the web and mobile app.

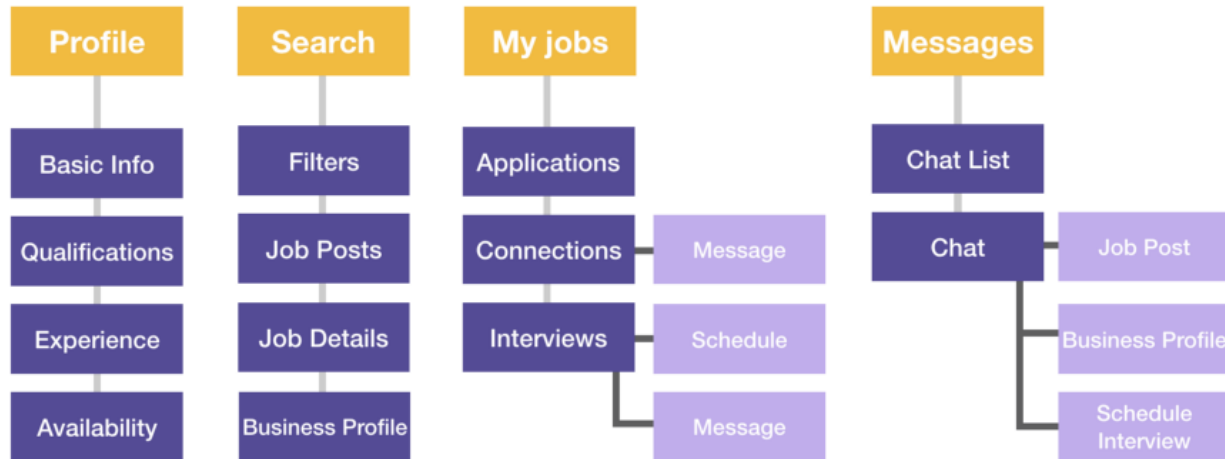


Figure 31: UI/UX Sitemap guide

UI Design Direction

As we began the design stage of our project, we had to nail down the style direction that AP's web and mobile app would take. We wanted the platform to seem friendly, modern, and fresh, while still evoking a professional and trustworthy feel, so as to resonate with our young millennial users.

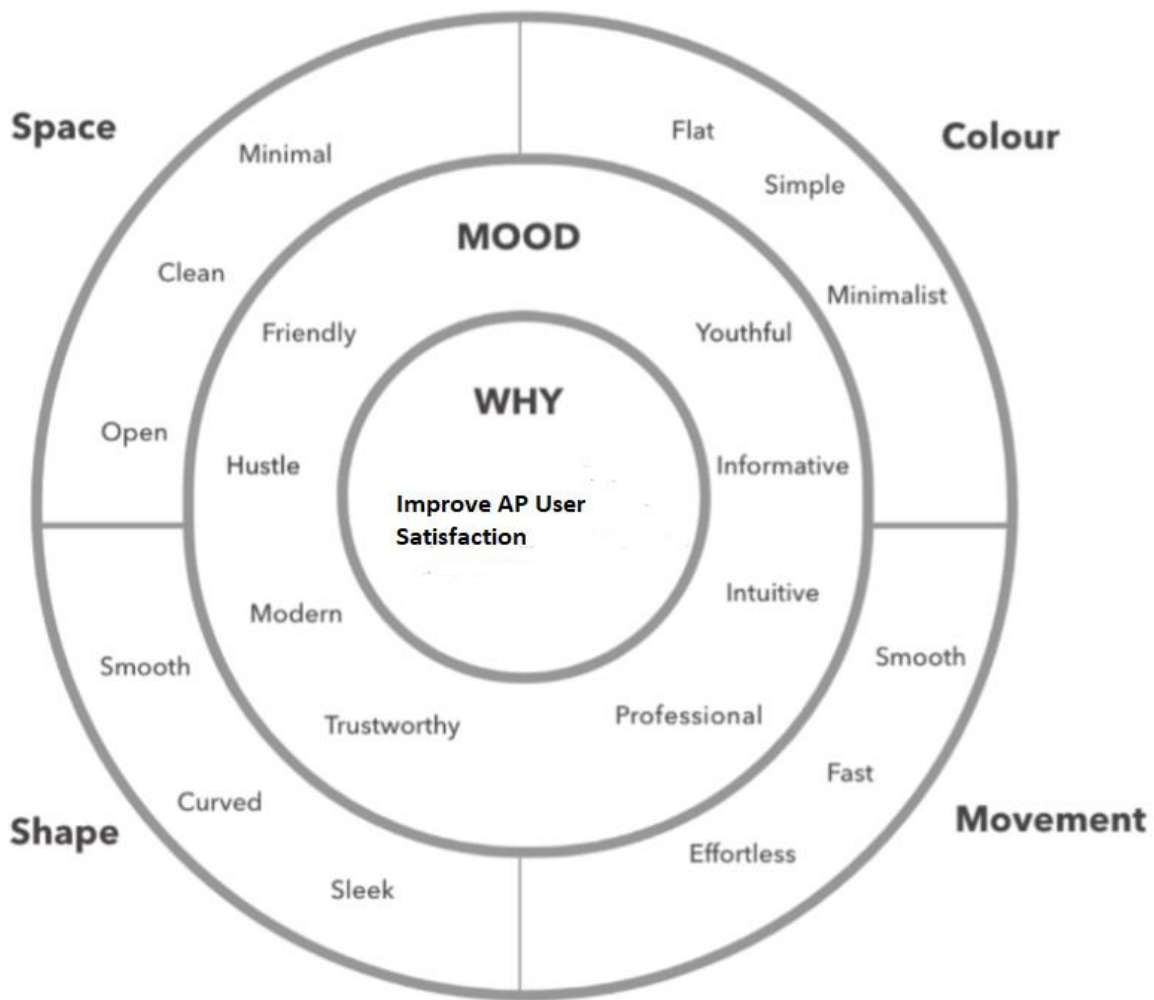


Figure 32: UI/UX Inception

Testing

We tested our design mockups. The goal was to find out if the web and mobile app we designed were straightforward and easy to navigate. The task was to create a profile, find a bar-back position, apply to the job, and schedule an interview (view interview schedule and confirm participation). In order for the test to be successful, participants had to successfully complete the task in less than 5 error clicks. The results from our testing showed that 7 out of the 8 attempts were successful, meaning that from a UX standpoint our web and mobile app were good to go!

Web - Desktop/Laptop Screens Mock ups

1. Home page

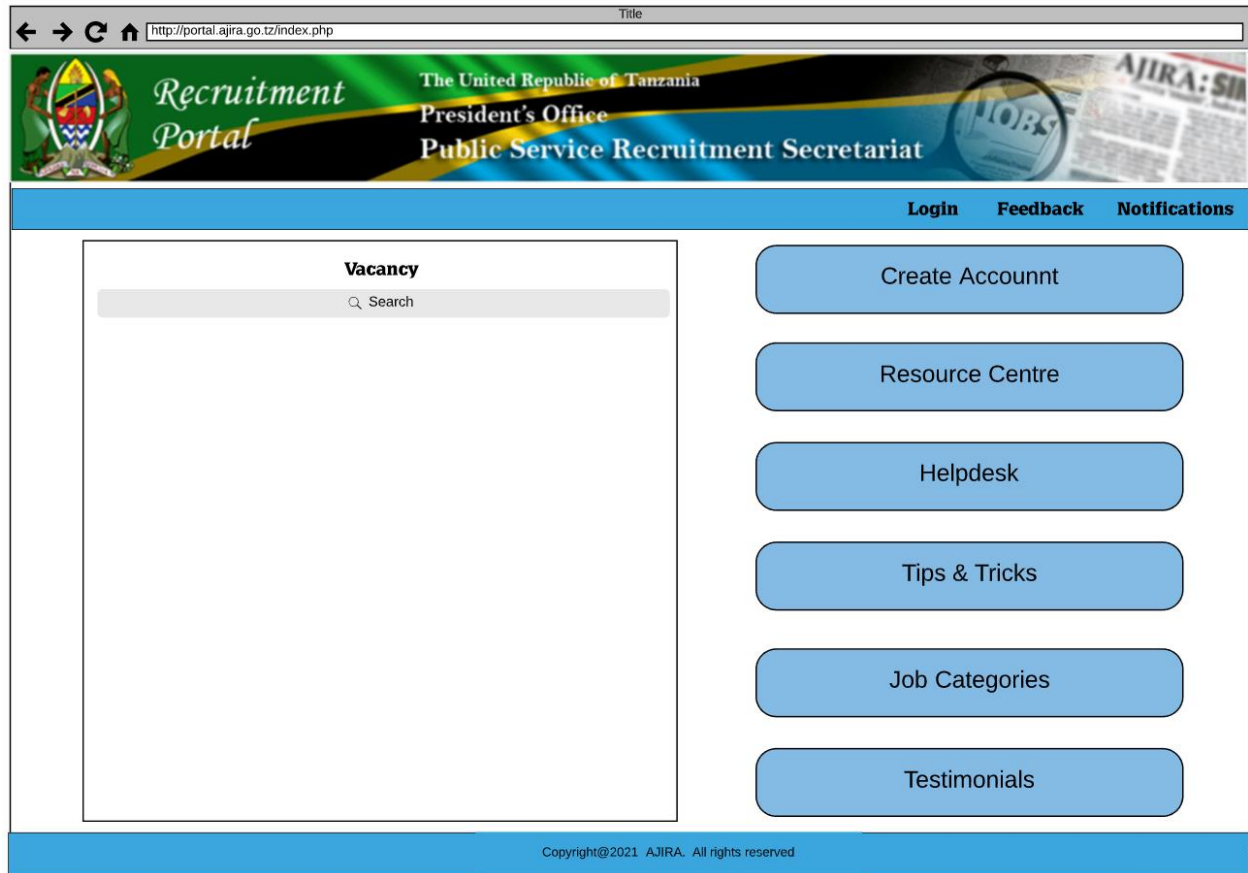


Figure 33: Home page

Landing page

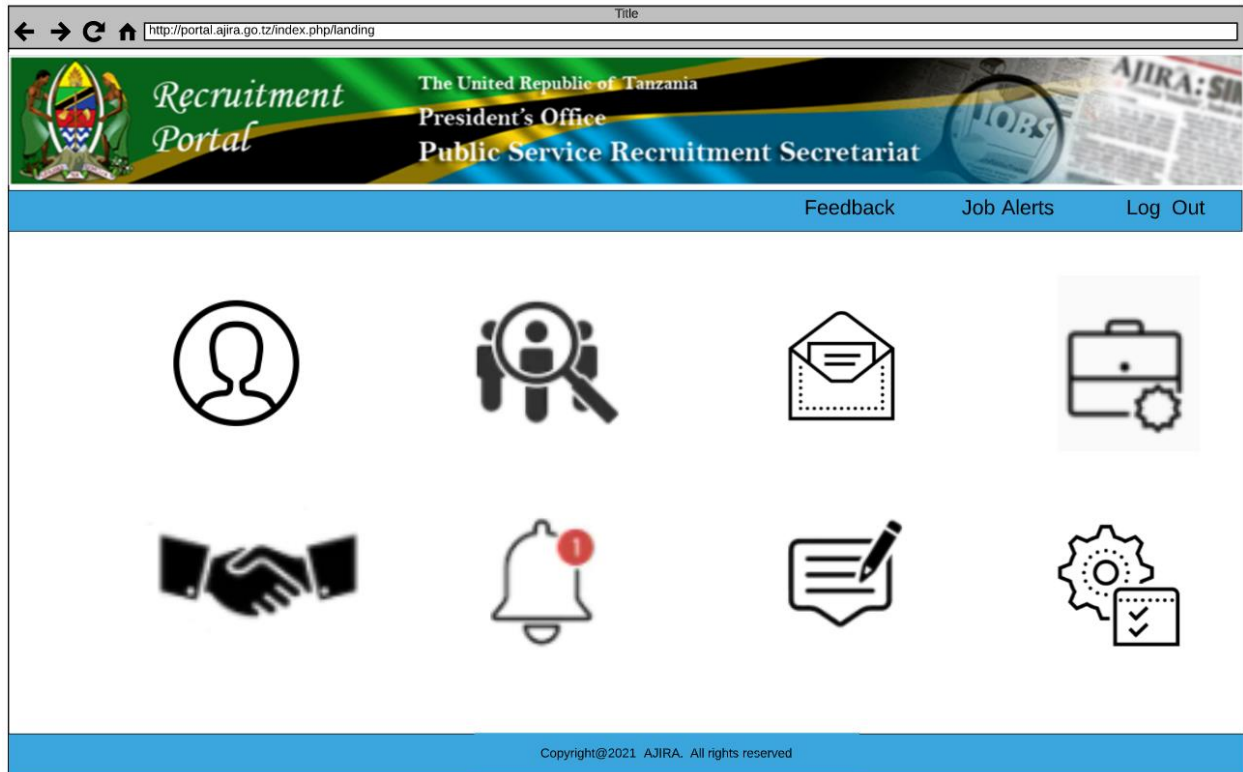


Figure 34: Landing page

My Profile landing page

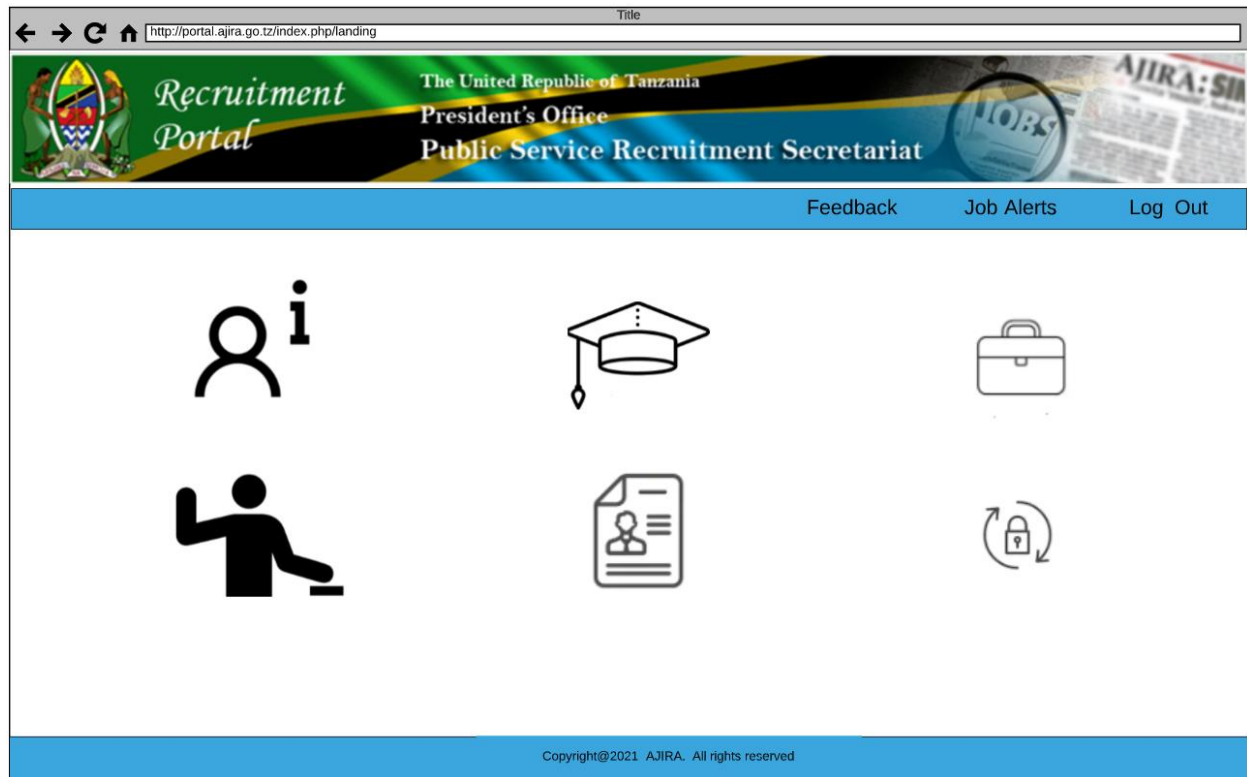
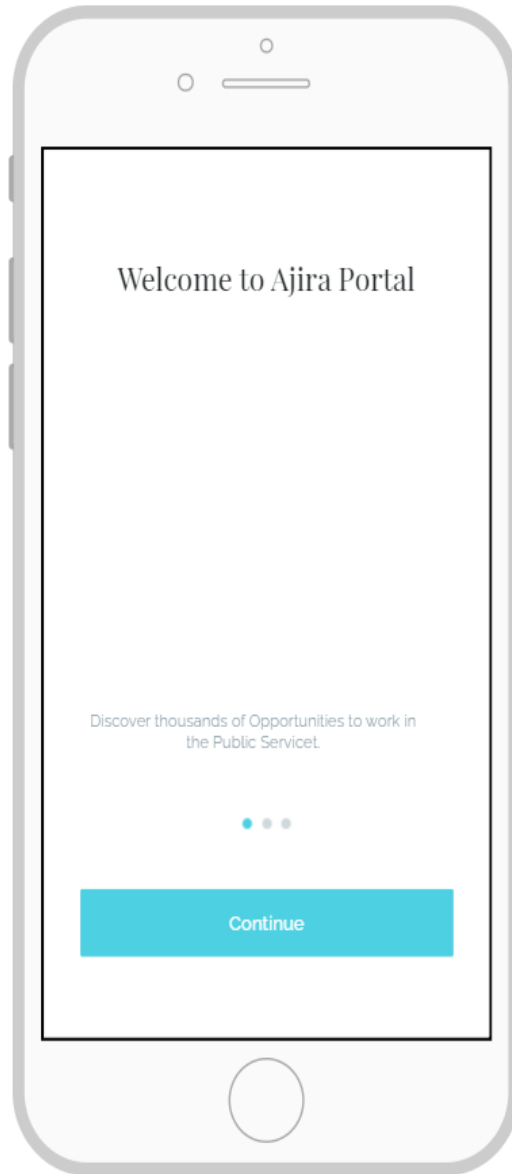


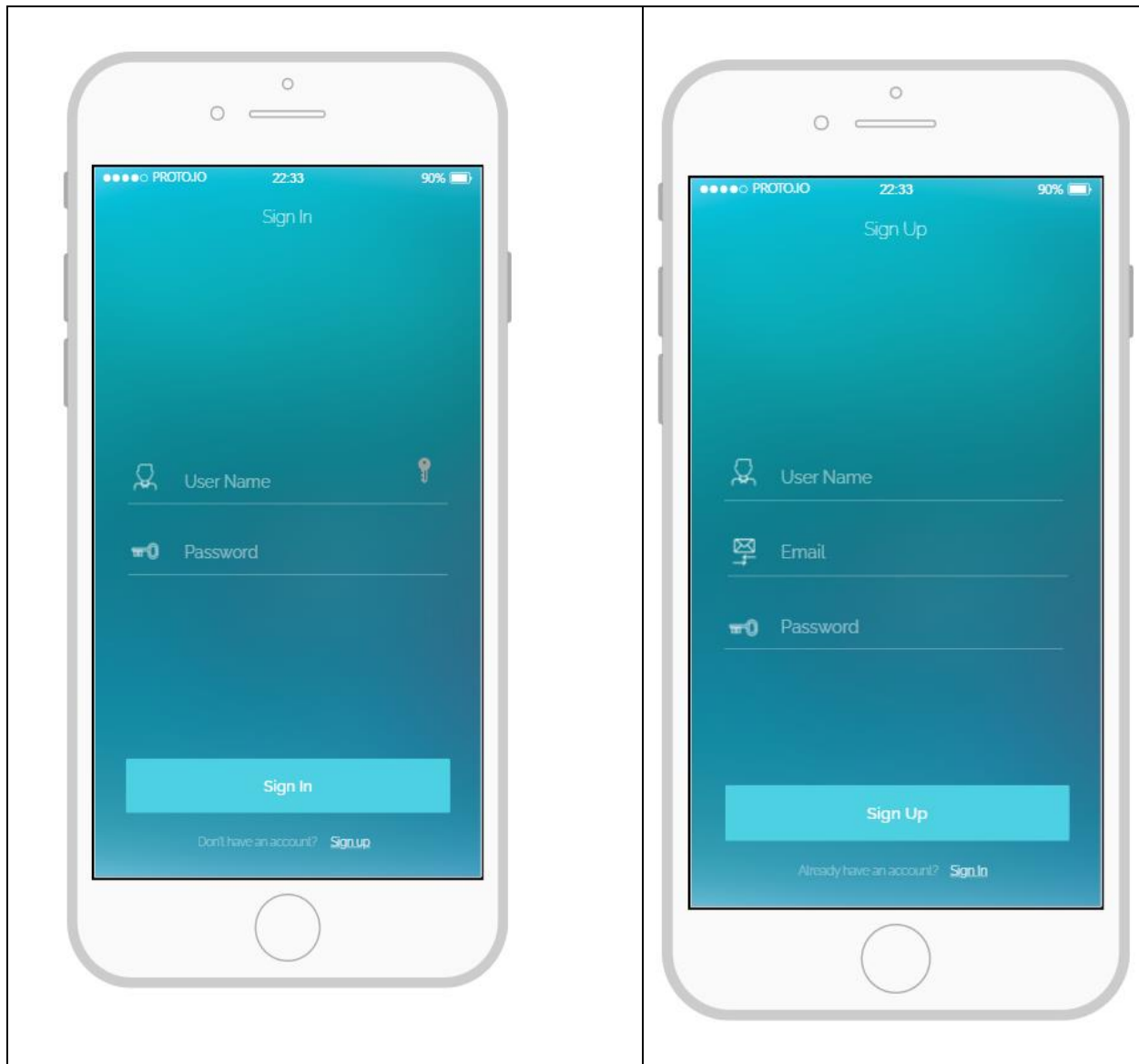
Figure 35: My Profile landing page

Mobile app Screens Mock ups

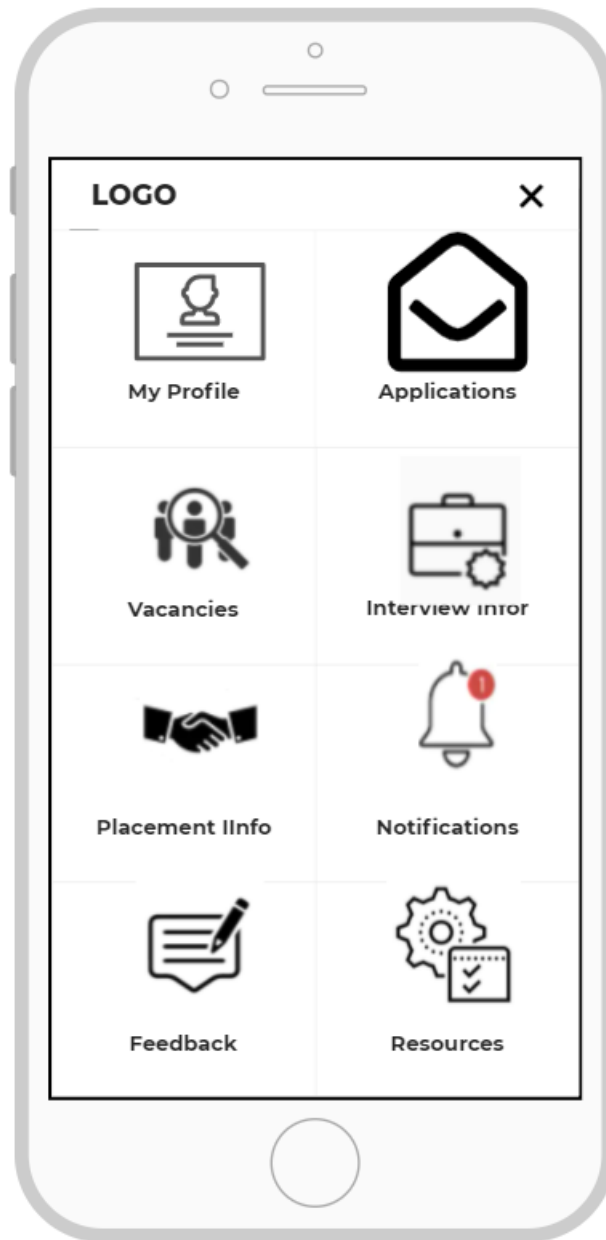
Welcome Screen



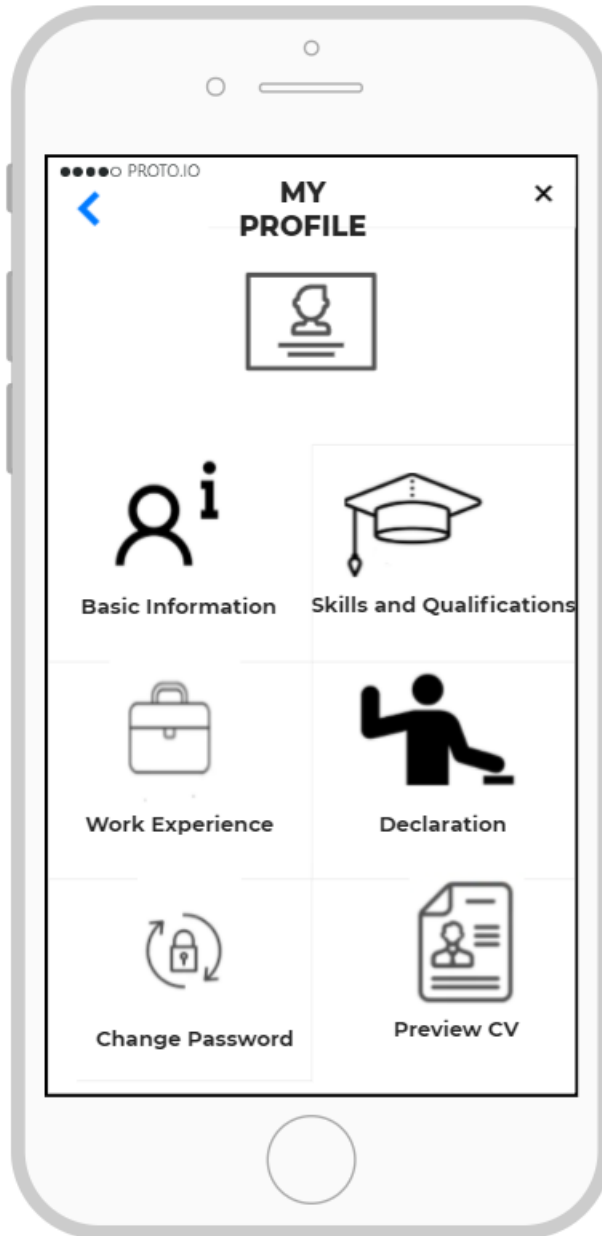
Login/Sign up screen



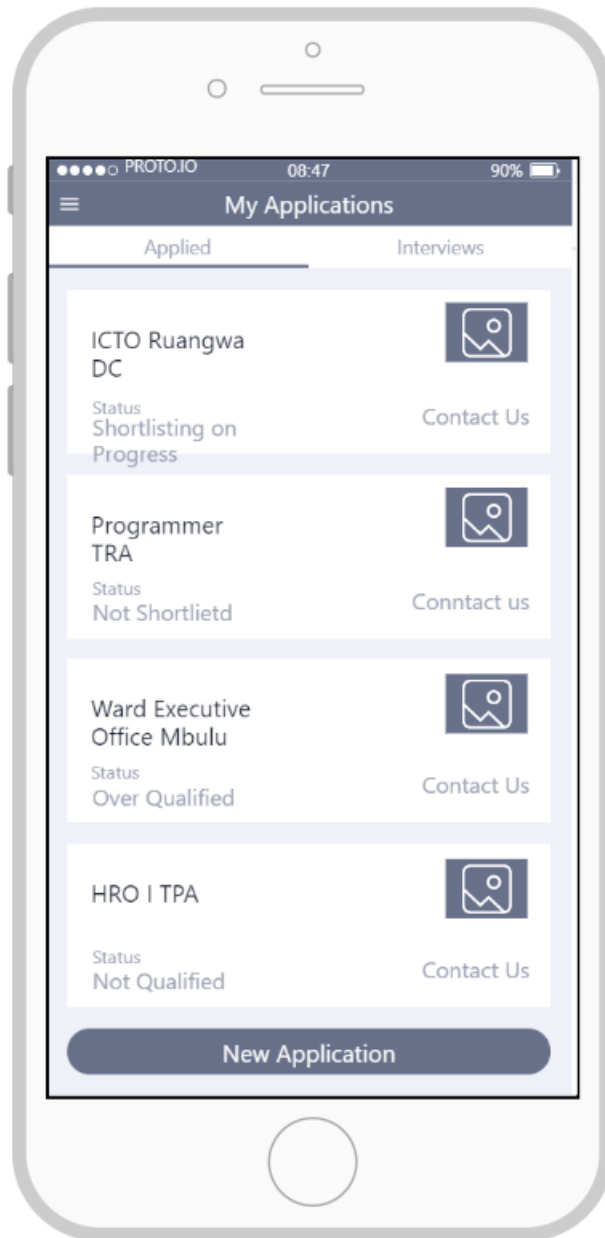
Home Screen



My Profile



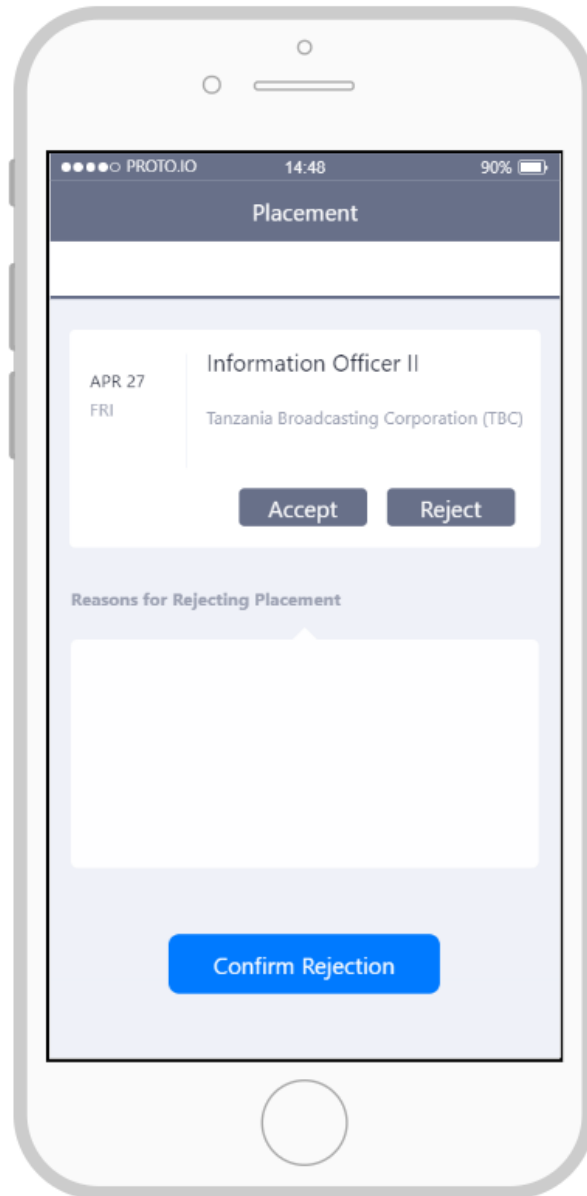
My Applications Screen

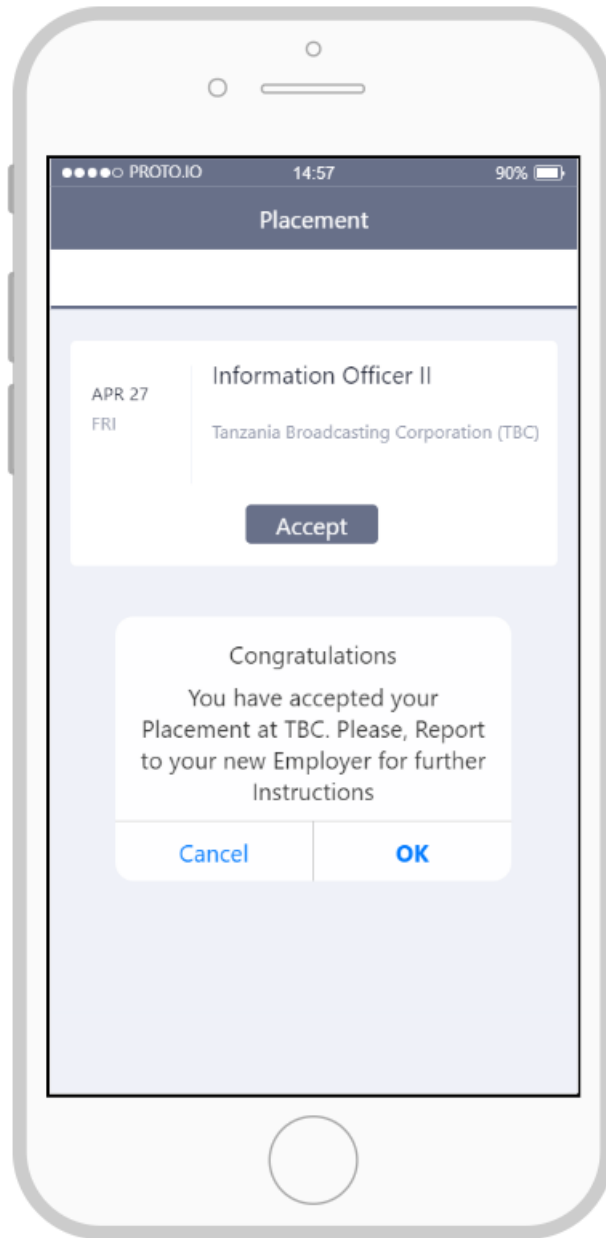


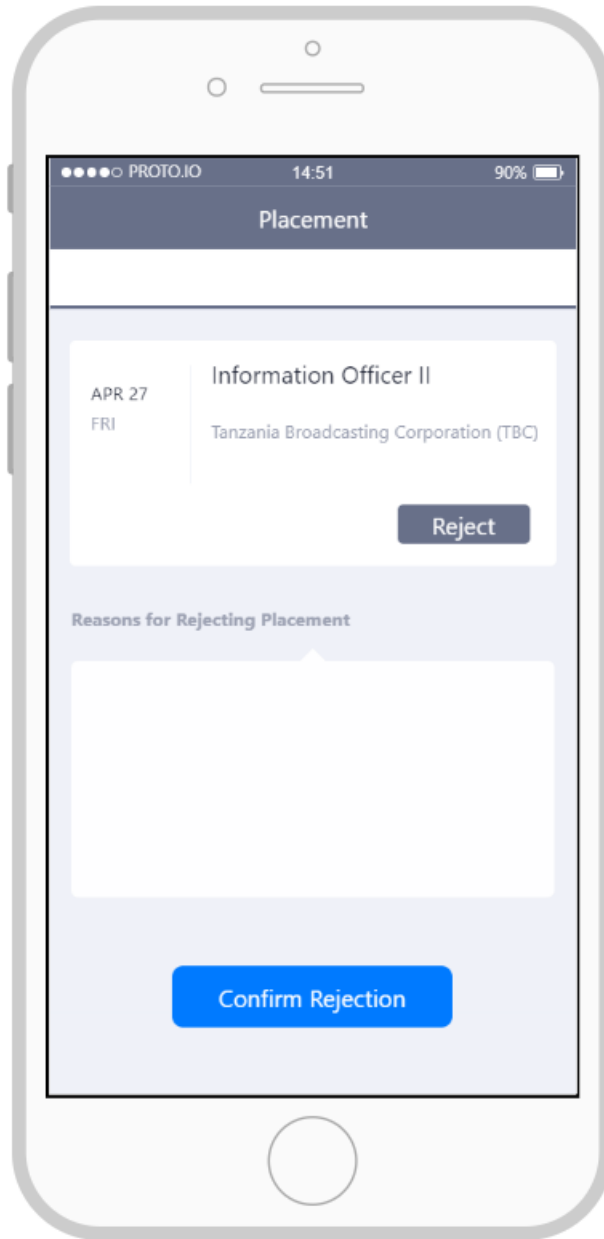
Vacancies Screen



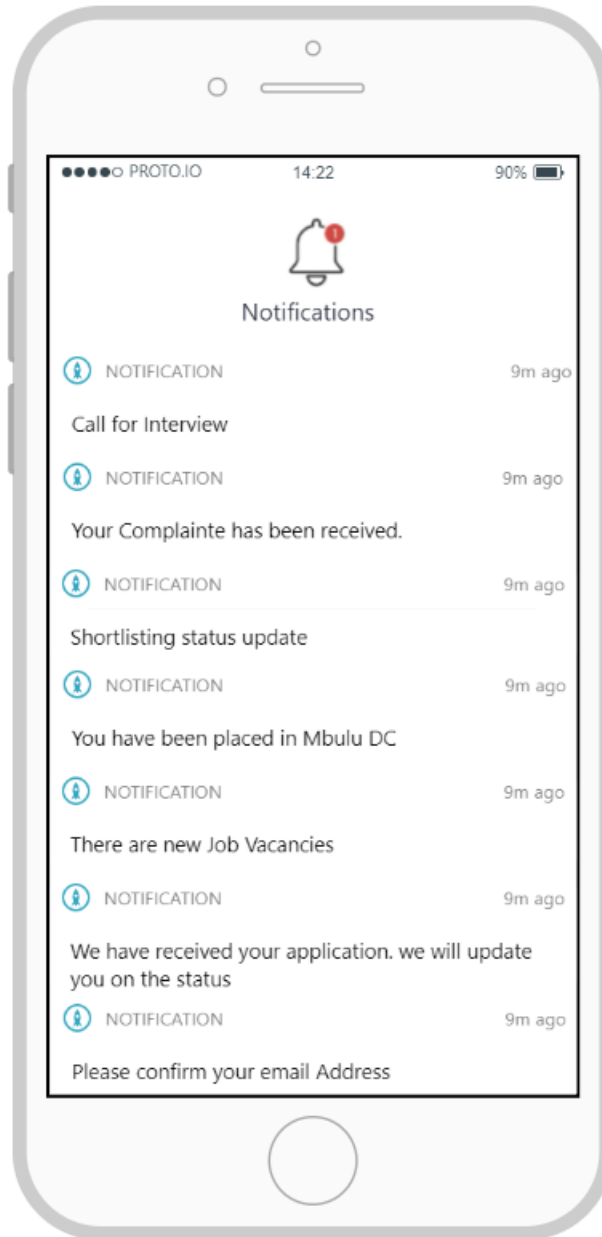
Placement Information



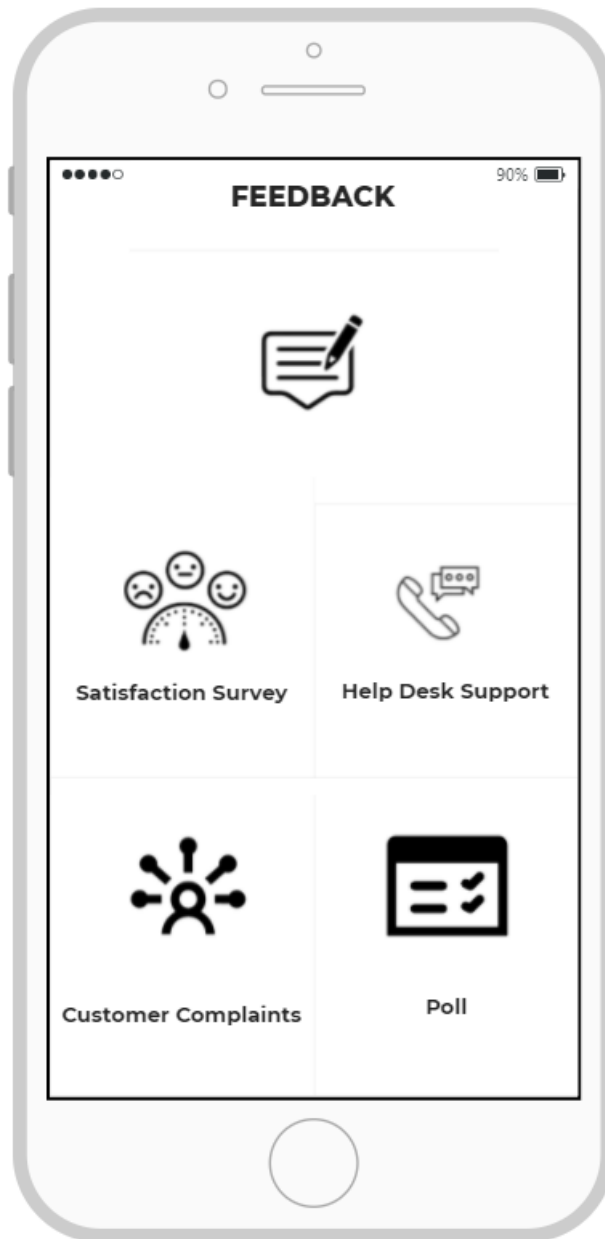




Notifications



Feedback Screen



This design focused on quality than quantity. The team originally started out with a much wider scope than was doable in the time that was available. Once we narrowed our scope, we were able to focus on making our designs top-notch and as robust as possible.

8.0 DATABASE

The improved AP will have one database which is the existing database of the application. This database was critically analyzed and reviewed to access its suitability and compatibility to cater for the required improvements to be implemented in the new AP application. The review was guided by the following metrics and criteria:

- Applicants can register as job seekers, build their profiles, and look for jobs matching their skill sets.
- Applicants can upload their existing resumes. If they do not have one, they should be able to fill out a form and have a resume built for them.
- Applicants can apply directly to posted jobs.
- Employers can register, post jobs, and search job seeker profiles.
- Employers' representatives should be able to register and post jobs.
- Employers can initiate the recruitment process, or perform some other action related to their post.
- Registered users (Applicants) should be able to search for jobs and filter the results based on location, required skills, salary, experience level, etc.

After considering the above criteria, the following three broad functional categories were also analyzed for suitability:

- i. **User Management:** How the portal manages users, i.e. job seekers, HR personnel, and employers.
- ii. **Profile Builder:** How the portal allows job seekers and employers to create profiles and resumes.
- iii. **Posting and Looking Up Jobs:** How the portal facilitates the process of posting, searching, and applying for jobs.

After a thorough review of the database design in relation to the improvements requirements, the design team identified the areas of database design improvements as shown in the table below:

S. No	Improvements	Remark
	Delegated Cadre	User Management, Business Logic
	Education and Health Sectors	

	User Management: User Roles and Permissions	To accommodate Delegated Cadres and Education and Health Sectors recruitment process and other employers not under PO-PSMGG.  roles and privileges.xlsx
	Interview – Panelists results uploads	Automation
	Applicant	Accommodates New requirements for Education and health Sectors
	Integration	New Integration mechanisms

The current Database Schema is shown below



The improved AP Database schema is shown below:

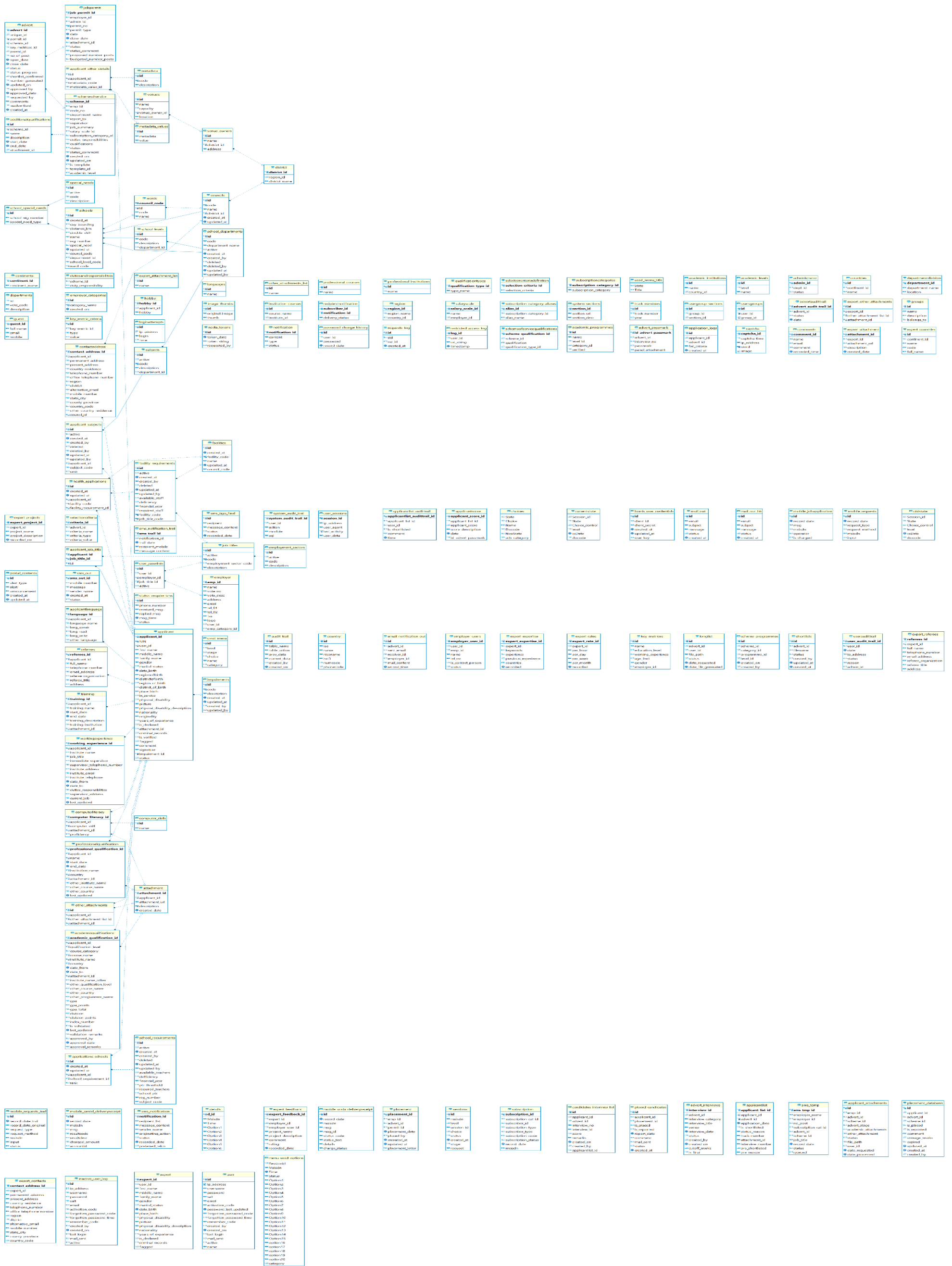


Figure 36: The improved AP Database schema

9.0 ANALYTICS AND REPORTS

Reporting and data analytics is an extremely important component of the improved AP system. Systems and users must be able to access the data in the system via standard



ripoti zote.xlsx

and ad hoc reports. AP reports are detailed in the attached file:

Major Object Reports

- Applications
- Employers
- Interview
- Placement

Report Use case description

Theme	Need	Description	Acceptance Criteria	Notes
User Interface	Access the report module	User can add, edit, or review report related information	<given>a user with rights to report module needs to launch report module<when>the user selects a report tab/button/section <then>report module is displayed	UI design for module accessibility will be important. Accessing information very quickly is very important
User Interface	Search for reports	User can easily find reports	<given>a user needs to quickly search for a single or multiple data elements <when>the user provides report parameters or wild card <then>the system	Fast and easy search functions are important

			filters all data elements that meet criteria	
User Interface	Access reports	User can easily run reports that I have permissions to access	<given>a user needs to run a report<when> the user searches or selects a report <then> the report is run and displayed	Administration must provide ability to set permissions at the report level
User Interface	Run reports with parameters	User can easily select different parameters for the report	<given> the user wants to run a report with valid permissions<when> user selects report <then>a parameter form is presented that allows user to enter various report parameters and pass into report	Common Parameters: Date Range, Group By, Sort By, Filter By, Sum, Average
User Interface	View Reports in Folders	User can easily organize reports by functional area	<given>user has permissions to access report module <when> user selects NEW FOLDER function <then> system allows user to create a folder under PERSONAL REPORTS	Standard Report Objects: Applicants, Employer, Operations, Productivity, Financial, Exceptions, Dashboards
User Interface	Create custom reports	User can easily create their own reports and save them to public or private	<given>user has permissions to create ad hoc reports <when> user selects NEW REPORT <then>NEW REPORT FORM is displayed that allows user to create	UX: Major differentiator opportunity.

		folders	custom report with desired fields, grouping, sorting, filters, graphs, pivots, and logic	
User Interface	Export reports	User can easily email or export to other formats	<given> user has permission to run reports<when>user runs selected report<then>user has options to export or email to standard file formats	CSV, PDF are two most common
User Interface	Standard Reports	User can easily view common and standard reports	<given> user has permission to run reports<when>user can easily find and select reports<then>user can run desired standard reports with various parameters	Users cannot SAVE standard reports. Only SAVE AS to Personal Workspace

10.0 SECURITY CONSIDERATIONS

This section outlines security controls review of the existing system as an input to the design of improved AP portal that need to be taken into consideration during AP portal improvements to meet the new and improvements requirements during the development phase to implement the approved improvements. The aim of the system design review was to ensure that the improved AP portal will continue to effectively secure the systems, networks, and software as a security-first approach to data protection that allows PSRS to not only meet compliance requirements but defend themselves from theft, unauthorized access and modifications, and accidental or unintentional damage to data and or system.

The table below shows the results of security design review for the existing and their suitability for accommodating new improvements.

Security Control	INPUT VALIDATION
Description	This is the property of testing any input supplied by a source (an end-user, another application, a malicious user, or any other sources). It prevents improperly formed data from entering an information system, the application checks and validates any input supplied by a user entered into a system.
Scope	Application control
Security Goal	Integrity
Risk	SQL Injection, XSS
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUTHENTICATION AND AUTHORIZATION
Description	These are mechanisms to ensure that only users who are authenticated and authorized are granted privileges to

	access the system.
Scope	Application control
Security Goal	Data confidentiality and Integrity
Risk	Unauthorized access, Elevation of privilege
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	PASSWORD MANAGEMENT
Description	This section describes the proper way of managing passwords used within the system
Scope	Application control
Security Goal	confidentiality
Risk	Weak passwords are susceptible to attacks
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	SESSION MANAGEMENT
Description	Session management refers to the process of securely handling multiple requests to a web-based application or service from a single user or entity. Websites and browsers use HTTP to communicate, and a session is a series of HTTP requests and transactions initiated by the same user.

Scope	Application control
Security Goal	Confidentiality and integrity
Risk	repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	ERROR HANDLING
Description	This is the process of handling all errors, logs, and exceptions raised during the system operations. System should provide the best way to handle error and logs to avoid exposing system operation issues when error occurs e.g. system data and passwords.
Scope	Application control
Security Goal	Confidentiality and Availability
Risk	Disclosure of how the system works and leak of sensitive information about the system
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DATABASE SECURITY
Description	This is to ensure that the database is secured such that only authorized users can access. Database should provide the means for keeping the integrity of data by providing encryption and hashing of data. Sensitive data such as personnel detail and password should be

	encrypted.
Scope	Database control
Security Goal	Confidentiality, Integrity and Availability
Risk	Unauthorized access and modification of data
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	FILE MANAGEMENT
Description	This is the proper testing of all uploaded file if they meet system requirement, this is done by validating fields and source of the file. System should also control the access such that only authorized can access the file. System should provide means to encrypt files
Scope	System control
Security Goal	Confidentiality and Integrity
Risk	Disclosing files information
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUDIT TRAIL
Description	Audit trails maintain a record of system activity both by system and application processes and by user activity of systems and applications. In conjunction with appropriate tools and procedures, audit trails can assist in detecting security violations, performance problems,

	and flaws in applications
Scope	System control
Security Goal	Confidentiality, Integrity and Availability
Risk	Repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP
Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP

Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.

System Integrity Controls

The following are security integrity controls designed for the improved AP

- Internal security to restrict access of critical data items to only those access types required by users/operators
- The current system is roles and permission based. Form and field level security will be available in the improved AP system. Based on user roles and permissions, system administrators can control data access by user and provider.
- Audit procedures to meet control, reporting, and retention period requirements for operational and management reports
- Audit logs and audit trail is proposed in the current use cases. All changes to data must be recorded by date, time, and user. Data will be managed indefinitely or until a system admin purges the data.
- Application audit trails to dynamically audit retrieval access to designated critical data.

- Ability to identify all audit information by user identification, network terminal identification, date, time, and data accessed or changed.
- Data audit trails and logging will provide detailed audit of all data. Network and application logs identify network terminations, user terminations, bugs, and catastrophic failures. These allow system admin to improve the application and hosting environment.
- Standard tables to be used or requested for validating data fields
- Industry standard data validation rules, triggers, and processes have been identified.
- Verification processes for additions, deletions, or updates of critical data

Verification of additions, deletion, updates, etc... are controlled in the data validation functions described in another section.

UNITED REPUBLIC OF TANZANIA

PRESIDENT'S OFFICE - PUBLIC SERVICE RECRUITMENT SECRETARIAT



**PROJECT FOR IMPROVEMENT OF PO-PSRS RECRUITMENT SYSTEM (AJIRA
PORTAL)**

SYSTEM DESIGN DOCUMENT (SDD)

FEBRUARY, 2021

APPROVAL

Title	
Issue Number	Revision Number
Author	Date
Approved By	Date of Approval

CHANGE LOG

Reason for change	Issue Nr.	Revision Number	Date

CHANGE RECORD

Issue Number	Revision Number		
Reason for change	Date	Pages	Paragraph(s)

DISTRIBUTION

[illegible]

ACRONYMS

ACSEE	Advanced Certificate Of Secondary Education Examination
AP	Ajira Portal
BEMIS	Basic Education Management Information System
BRD	Business Requirement Document
CSEE	Certificate Of Secondary Education Examination
DC	District Council
DSEE	Diploma in Secondary Education Examination
DSE-SNE	Diploma in Secondary Education in Special Needs Education Examination
GATCE	Grade A Teachers Certificate Examination
GATSCCE	Grade A Teachers Special Course Certificate Examination Formats
GCU	Government Communication Unit
GoT	Government of Tanzania
HCMIS	Human Capital Management Information System
HGCU	Head of Government Communication Unit

HoD	Head of Division
HICT	Head of ICT
HGCU	Head of Government Communication Unit
HQCD	Head of Quality Control Division
HRD	Head of Recruitment Division
ICT	Information and Communication Technology
IJA	Institute of Judicial Administration
LGTI	Local Government Training Institute
MDAs	Ministries, Departments and Agencies
MTTF	Mean Time to Fix
NACTE	National Council for Technical Education
NECTA	National Examination Council of Tanzania
NIDA	National Identification Authority
NIN	National Identification Number
OC	Occurring Charges
OTEAS	Online Teachers Employment Application System

PE	Personal Emoluments
PI	Public Institution
PlanRep	Planning and Reporting System
PO-PSC	President's Office-Public Service Commission
PO-PSMGG	President's Office-Public Service Management and Good Governance
PO-PSRS	President's Office-Public Service Recruitment Secretariat
PO-RALG	President's Office-Regional Authorities and Local Government
PO-TPSC	President's Office-Tanzania Public Service College
RITA	Registration Insolvency and Trusteeship Agency
RS	Regional Secretariat
SDP	Service Delivery Point
SMS	Short Message Services
SOS	Scheme of Service
TCU	Tanzania Commission for Universities
TRA	Tanzania Revenue Authority
UN	User Need

VETA	Vocational Education and Training Authority
WISN/POA	Workload Indicators of Staffing Needs/Priority Optimization Analysis

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1.0 INTRODUCTION

1.1 Background

The Government of Tanzania (GoT) established the Public Service Recruitment Secretariat (PO-PSRS) as an independent department vide Section 29 (1) of the Public Service Act CAP 298 as amended by the miscellaneous amendment Act No. 18 of 2007. PO-PSRS was established to facilitate the recruitment process on behalf of the Government. The PO-PSRS mandates are stipulates as follows: -

- Search for various professionals with special skills and prepare database for such professionals for easier recruitment.
- Register graduates and professionals for purposes of ease of reference in filling vacant posts.
- Advertise vacant posts occurring in the public service.
- Engage appropriate experts for purposes of conducting interviews.
- Advise employers on various matters related to recruitment, and
- Do any other act or thing which may be directed by the Minister responsible for Public Service.

PO-PSRS handles all recruitment on behalf of Public Service Institutions. However, some cadres which had great demand within the Government of Tanzania were managed by their respective ministries including teachers, health workers, agriculture and livestock related fields. To date, recruitment of teachers and health workers are managed by Presidents Office Regional Authorities and Local Government (PO-RALG).

PO-PSRS, therefore, links the President's office Public Service Management and Good Governance (PO-PSMGG) on one hand and employers, which are the receiving hand for new employees.

PO-PSRS started its operations in 2010. During the early years of its existence up to financial year 2013/2014, it carried out its operations manually in that all its processes from receipt of recruitment permits, communication with employers, advertisements, interviews through to placement of successful candidates were done manually. However as more public service institutions sought PO-PSRS services its operations became costly, time consuming and as would be expected, the operations were prone to

errors. It is this background and other factors which prompted PO-PSRS to find ways to streamline its operations.

PO-PSRS developed an electronic recruitment system called Ajira Portal (AP) in order to minimize the costs involved in its operations. The use of Ajira Portal over time has considerably injected efficiency in the institution's core operations. PO-PSRS has become more visible to its stakeholders at a lesser effort and costs. This has resulted in attracting more public service institutions to seek PO-PSRS services. This requires the system to have sufficient capacity for efficiently handling increased workload. However, the system use is limited to the advertisement of vacancies, receiving job applications, and providing feedback to applicants. Many tasks are still carried out manually. Currently the recruitment system is not linked with other GoT Human Resource (HR) related systems, which would significantly enhance efficiency in PSRS operations.

The conditions mentioned above coupled with opportunities offered by the advance in ICT has once again prompted PO-PSRS to embark on a project to review the Ajira Portal system with the purpose of enhancing efficiency and inclusiveness in its operations and the Government's HR operations in general.

PO-PSRS approached Public Sector System Strengthening Plus (PS3+) Project for support, to which PS3+ agreed, since the support is in line with the objectives of the project; to provide technical assistance to support the Government of Tanzania (GOT) to strengthen and institutionalize public service systems that are responsive to citizens' needs for quality services. The agreement between PO-PSRS and PS3+, is to carry out implementation in three phases as shown in figure 1 below.

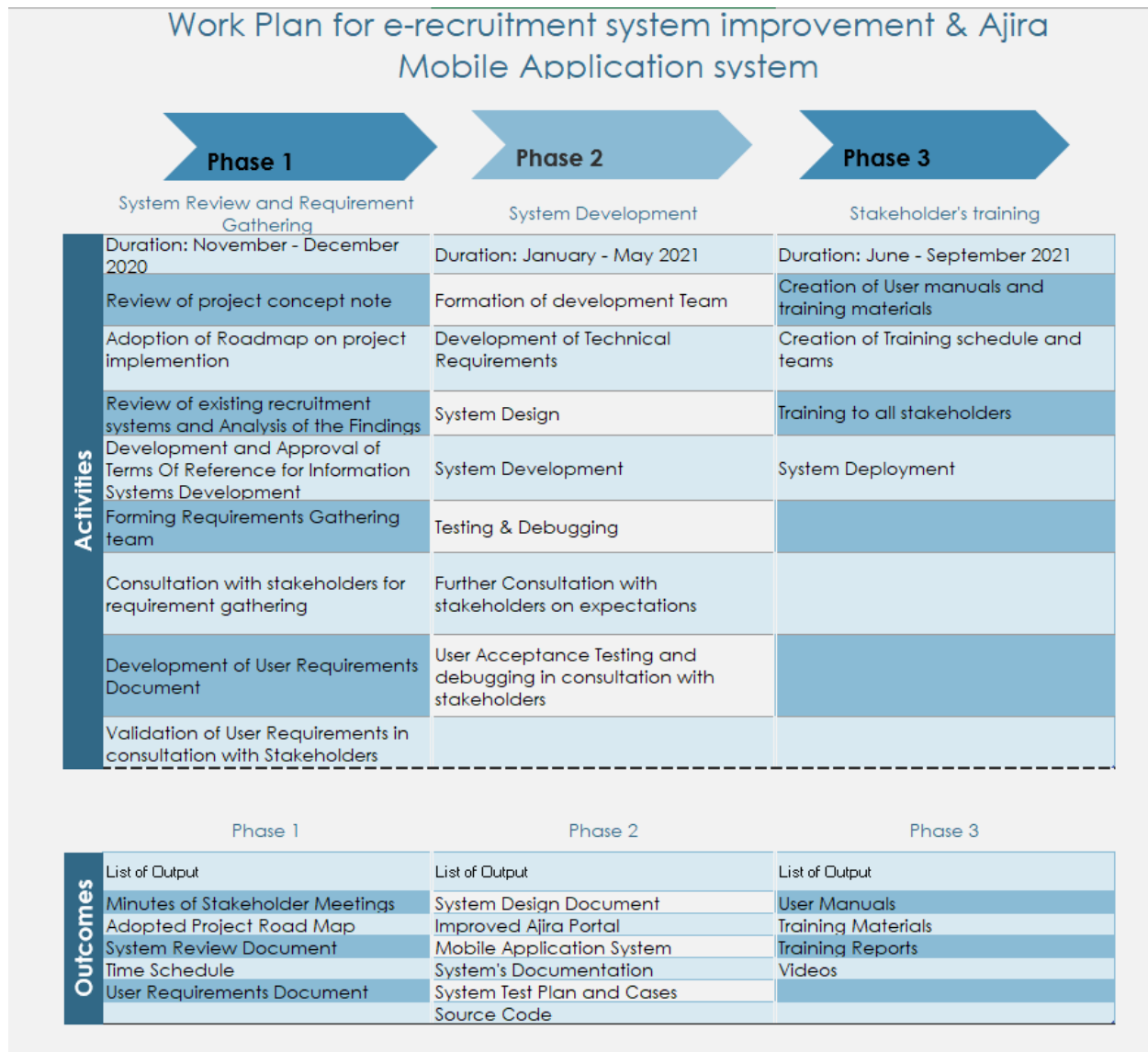


Figure 37: Work Plan for e-recruitment Improvement and Mobile App Development

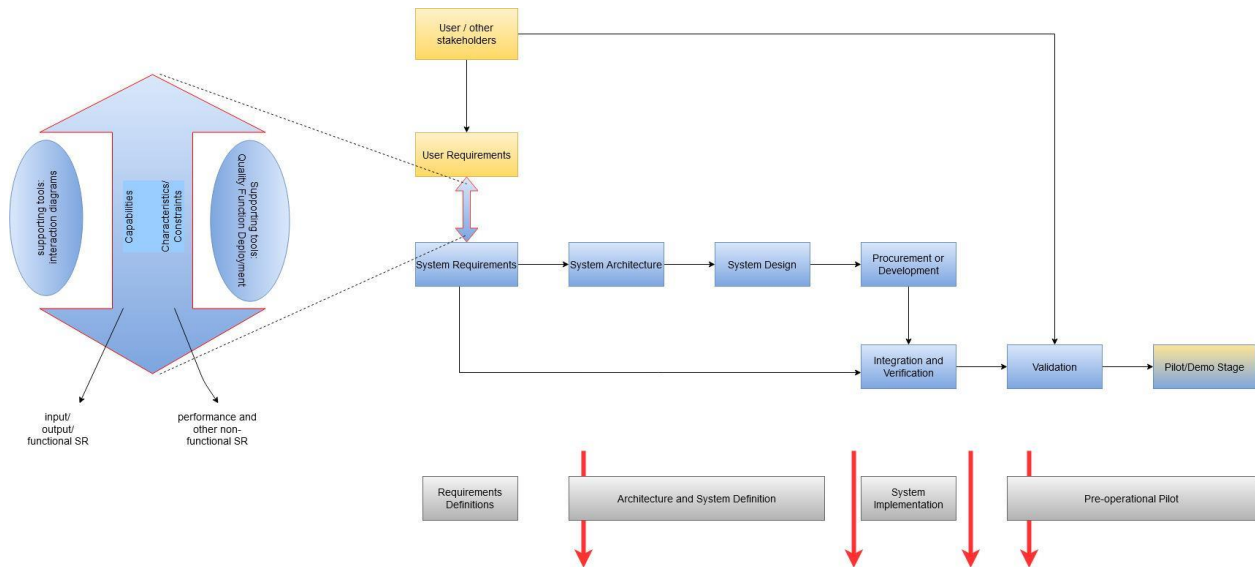


Figure 38: The AP Specification and Development process

1.2 Ajira Portal and Public Service Recruitment

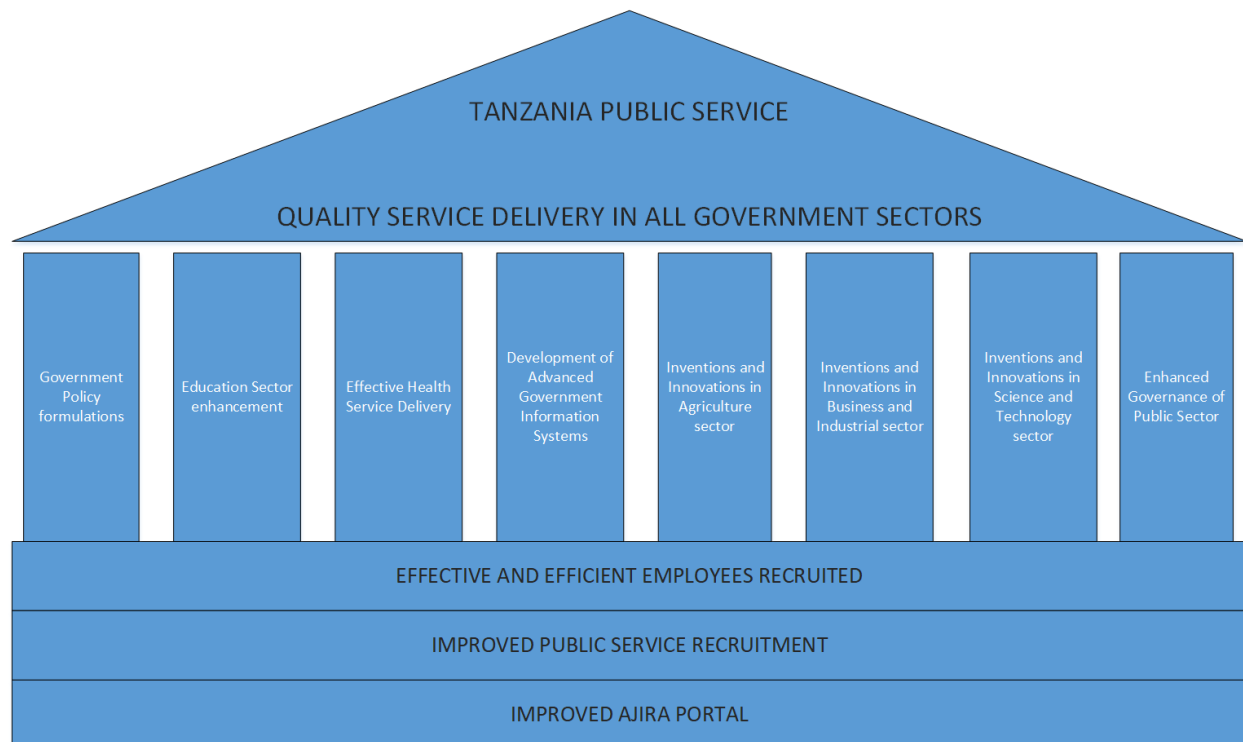


Figure 39: AP Context in Public Sector Service Delivery

1.3 Ajira Portal Improvement Project Overview

S. No	Area of Concern	Improvements Designed	Output	Impact	Remarks
1	Applicant Module	UI/UX	Improved User Experience	User satisfaction, time saving in using the system	Accommodated
2	Delegated Cadre	User roles and User management	Delegated Cadre recruitment process accommodated with AP	Streamlined recruitment process saving time and money. Increased transparency of the recruitment process	Accommodated
3	Education and Health Sector Cadres Recruitment	Business Logic and Application Logic	Education and Health Sector cadres recruitment process accommodated with AP	Streamlined recruitment process saving time and money.	Accommodated

4	Database	New tables design and performance enhancement to accommodate delegated cadres, education and health sector recruitment	A number of new tables and Additional Business logic to accommodate the different requirements for the various cadres		Accommodated
5	User Roles/ User Matrix	New users and user roles to accommodate the various functions for delegated cadres, education and health sector recruitment process	New User matrix		Accommodated
6	Mobile App	App design	New app to cater for the applicants side of the AP business logic		Accommodated
7	Interview Module	Designed to accommodate the scheduling and conducting of interviews online	New Interview Module for online aptitude tests		Future

8	Integration	To facilitate data sharing across different systems and stakeholders	Improved AP architecture	Automation of data sharing, validation and verification It will save Time and Money	Accommodated

Table 2: Summary of AP Improvements designed

1.4 objectives

The main objective is to implement the phase II of Ajira Portal review project involving system improvement review design work. The under mentioned specific objectives will be addressed:

- Document systems baseline information: and Carry out Ajira Portal system design review
- Define Design characteristics

The expected output from this exercise is Ajira portal improvement System Design Document (SDD)

1.5 Purpose of the SDD

The system design document tracks all the necessary information required to effectively define the architecture and system design to give the development team guidance on the architecture of the system to be developed. Design documents are incrementally and iteratively produced during the system development life cycle, based on the particular circumstances of the information technology (IT) project and the system development methodology used for developing the system.

1.6 Scope of Work

This SDD will cover system and network architecture design, mockups (UIs), use cases, database schema and system security control checklist which are essential in system development. All of the aforementioned parts have been designed to accommodate

both functional and non-functional requirements. Non-functional requirements describe how the system works, while functional requirements describe what the system should do.

The proposed solution will simply add additional features and functionality to the existing solution to meet the original scope and vision of the Ajira Portal (AP). These features will extend AP to be an integrated public service recruitment portal.

Key points that relate to the design and architecture of the proposed system.

- v. No major changes to existing architecture
- vi. No major changes to system design
- vii. Major positive impact to the user community
- viii. Major feature extensions to automate operational functions where applicable.

1.8 Design Constraints

The existing architecture will be improved as shown in the diagram below;

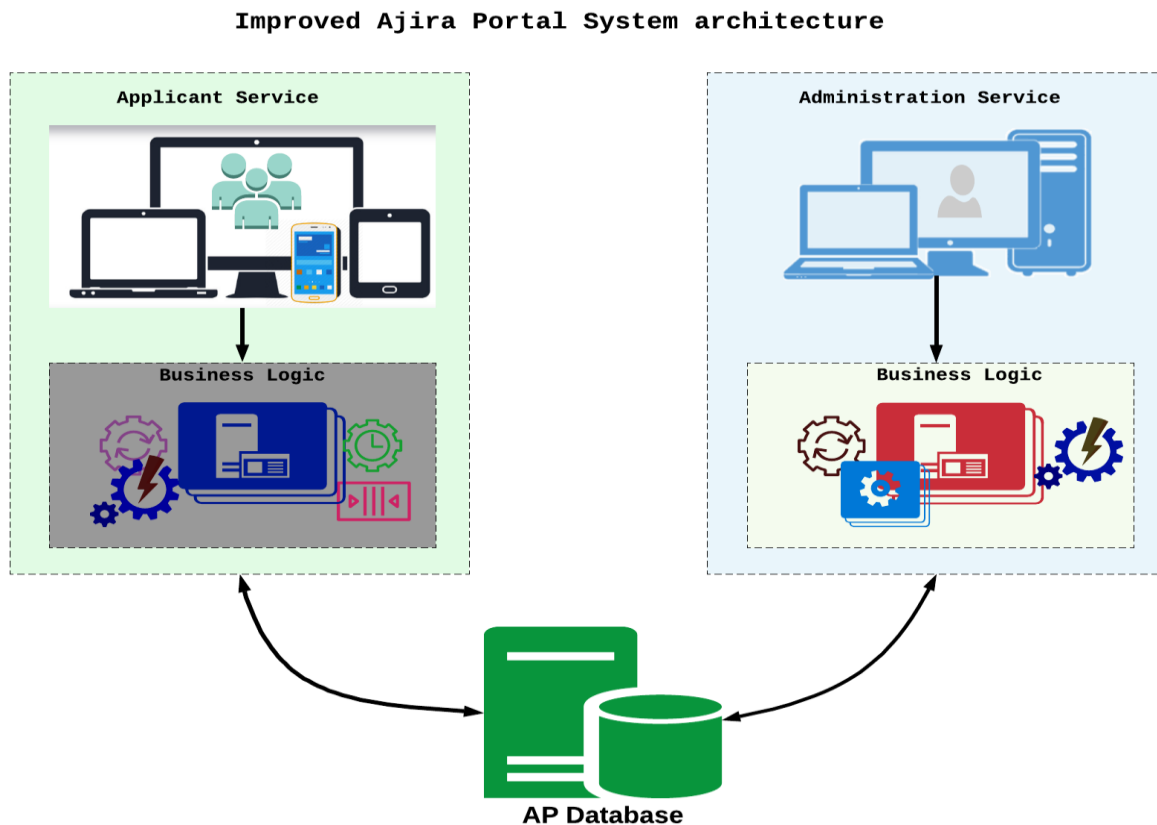


Figure 40: The improved architecture

The current solution is hosted by GoT data center. Performance, storage, security, and access can be easily scaled to meet the minimal amount of additional resources the proposed solution will require.

Technical

The development and integration of the new software components into the existing software application is a major constraint. Specific skills and technical understanding of recruitment management and demand response management and optimization will be required. This knowledge and skillset is very specific and narrow. Detailed business requirements and use cases will assist in minimizing this challenge.

Due to the fact that the application is currently hosted and managed by PSRS staff, we do not envision any technical, computer hardware, network, internet, or database maintenance challenges.

Institutional

The improved system will be utilized by multiple third party agencies and organizations. This will require coordination and collaboration across the organizations and agencies. Stakeholders that currently have automated systems may have to integrate into the improved system via “API coordination module” API or comparable solution.

1.8 Intended Audience

The system requirements specifications document plays a major role in system development and implementation, as it:

- Form the basis of improvement of system architecture and design.
- Form the basis of improvement suggested system integration and verification.
- Act as reference for validation and stakeholder acceptance.
- Act as a bridge between technical staff and other stakeholders that interact throughout the project.

Therefore, the intended audiences of this document include but are not limited to: Project sponsors, PO-PSRS Steering Committee, System Designers, System Architects, Database Administrator, System Developer, System Security Experts, Quality Assurance Specialists, Hardware Specialist, Network Engineers, Subject Matter Experts, Employees and other key Stakeholders such as Applicants and certification and verification authorities.

2.0 DESIGN APPROACH

2.1 Design overview

The current solution was built by PSRS through funding from GoT. PSRS has labeled this application Recruitment Portal now simply dubbed Ajira Portal. AP is an open source recruitment management that manages public service recruitment process from Job advertisement to placement of successful applicants.

AP is built on an open source framework. Source code is available using standard open source management tools such as Git. All source code is stored in a GitLab repository.

AP utilizes an open-source web server, Apache. Apache is a free open source web server. Apache is focused on high performance, high concurrency and low memory usage. Additional features on top of the web server functionality, like load balancing, caching, access and bandwidth control, and the ability to integrate efficiently with a variety of applications, have helped to make Apache a good choice for modern website architectures.

AP's development language is PHP. Software developers must be familiar with this framework in order to maintain or build additional functionality into the application.

AP's database is MySQL. MySQL is also open source and it is very popular and utilized across many open source applications. MySQL is an object-relational database (ORDBMS). It has an emphasis on extensibility and standards compliance.

RabbitMQ is message broker that implements Message Queue Protocol (AMQP), to help AP to communicate with other systems.

GitLab is used as the software development platform. GitLab provides version control and source code management.

In summary, the existing system design includes the following sub-systems:

1. AP Web Application
2. MySQL Database
3. Apache Web Server
4. CodeIgniter Development Platform
5. Government data center
6. GitLab Version and Source Code Control

However, the proposed improvement are expected to be done using latest technologies, this is done so as to start modernizing AP, as the technologies that were used are outdated and their technical support is being phased out.

2.3 System Assumptions/Constraints/Dependencies/Risks

2.2.1 Assumptions

The largest assumption is that the existing AP application will be extended to support the proposed new features (Improvements). The existing architecture and system design will be used including all existing components and sub-systems. It is certain that additional functionality will be added to the existing system.

2.2.2 Constraints

There are no hardware, software, or software technical constraints identified with this project. Institutional constraints may exist due to the systems need for inter-institutional coordination, participation, and interoperability.

2.2.3 Dependencies

The current application is dependent on many third party systems. These include: NIN system (NIDA), certificate verification system (NECTA and NACTE), HCMIS (PO-PSM), RITA, VETA, TRA and Training Institutions

2.2.4 Risks

Minimal risk is associated with the system design. This is primarily due to the fact that the existing system design and architecture will not be modified to meet the needs of the improved AP solution. Ongoing maintenance of the system will also be a concern.

Alignment with Government IT Architectures. The current and proposed solution aligns with the government IT architecture. The proposed solution, if implemented, will adhere to all appropriate government IT architecture mandates.

The current solution does not provide automated complaint handling mechanism, nor does it provide the ability to coordinate various processes in the recruitment because there are done outside the AP system. The solution must be improved to support these additional functional needs as identified in the SRS document. The proposed system will dramatically improve complaints handling mechanism, interview handling, placement, operations of delegated cadre recruitment, and, most importantly, the customer experience i.e. both applicants and employers. Customers will be able to initiate recruitment process within the system (employers) and apply using smartphones (applicants) among other things. Employers will be able to contact PSRS through an online portal to initiate recruitment, receive updates of the recruitment process, provide additional information or ask for clarification. Applicants will have the ability to apply, review their applications, follow up their applications, file complaints, provide and receive feedback via their smartphones. Automated scheduling of

interviews, venues will be available to optimize human and financial resources involved in the interview handling. Automated complaint handling tools will be available to the help desk officers and complaint handling officers and to employers and applicants, which will enable online communications. This will create a single coordinated system for public service recruitment and demand response recruitment. Employers, including those with delegated authority will be integrated into the solution for a true multi-modal application. Recruitment data analytics will be available at a various levels. Ultimately, the proposed system will execute the intended vision and requirements of a “unified” public services recruitment management solution.

2.3 Development Method and Contingencies

The basics of a good architecture is to layer the application into multiple autocratic and autonomous applications that can be replaced individually and allow us to keep the application running while we are working on a specific layer. The communication between each layer should be a RESTful API call with JSON content.

2.3.1 Design Considerations

AP is a Public Service recruitment management system designed to meet the GoT recruitment needs. It:

- Provides unified recruitment management;
- Works on computers, tablets, and smartphones;
- Is tailored to GoT recruitment needs; and
- Empowers PSRS staff to deliver improved services.

The major design considerations for the proposed extended features are related to system performance and scalability of the solution.

2.3.2 Goals and Guidelines

The following goals must be addressed in the execution of the proposed solution.

Leverage Existing Architecture

The improved AP solution must leverage the current architecture and system design used by current AP. This minimizes negative impacts on usability, user experience, and financials. The improved solution will simply extend the current system to support additional features, functionality, and use cases.

Development Environment

The improved AP application development environment must remain consistent. This minimizes negative impacts to interoperability and quality. Improved AP does not wish to re-write or re-engineer the existing application unless absolutely necessary.

Ease of Use

The improved AP and its features must be easy to use and provide a strong user experience. New or improved features cannot impact existing functionality from a user perspective.

Extensibility

The proposed improvement features must be extensible. Features can be enabled as needed or required by the users.

Gateway/API Enabled

Interoperability and integration coordination is a key driver of the improvements sought. The application must be gateway/API centric and support an open and published gateway/API architecture.

RESTful Framework

The application and underlying architecture must be a REST framework.

2.3.3 Operational and Development Environment

Front end

Latest Angular framework

Backend

- Spring boot framework
- Postgre SQL

Mobile App

- Flutter

Reports

- Jasper

Functional goals of the proposed improvements to AP system includes:

- Extending functionality of the existing application to mobile app (Applicant)
- Improving application performance
- Integration with other systems
- Accommodating Education and health Sector cadre's recruitment, Delegated Cadre recruitment and other Employers not under PO-PSMGG.

3. ARCHITECTURAL DESIGN

This section describes the **Enterprise Architecture**, which addresses the strategic question of how the improved AP can best be utilized and aligned to support business needs of PSRS and the **Solution Architecture**, which addresses the tactical question of how best to improve AP that best address specific business needs of PSRS.

This proposed architecture has been proposed as it helps to provide information and awareness to every involved stakeholder that will work with it, ones that will use data from it, ones that will provide data to it and the policy makers who want all that done in adherence to public service recruitment guidelines and policies. The architecture is expected to specifically attain the following:

- ix. Highlight key use-cases and scenarios for Improved AP
- x. Address requirements as specified from prospective users and process owners.
- xi. Quality assurance in the built improved AP system.
- xii. Expose how the system works while concealing its core working mechanism.
- xiii. Show the relation between functional, quality and business requirements.
- xiv. Make Improved AP interoperable with existing and foreseen systems and technologies.
- xv. Specify technical resources to attain the requirements gathered.
- xvi. Serve public interest while protecting Applicants privacy.

The role of Architecture

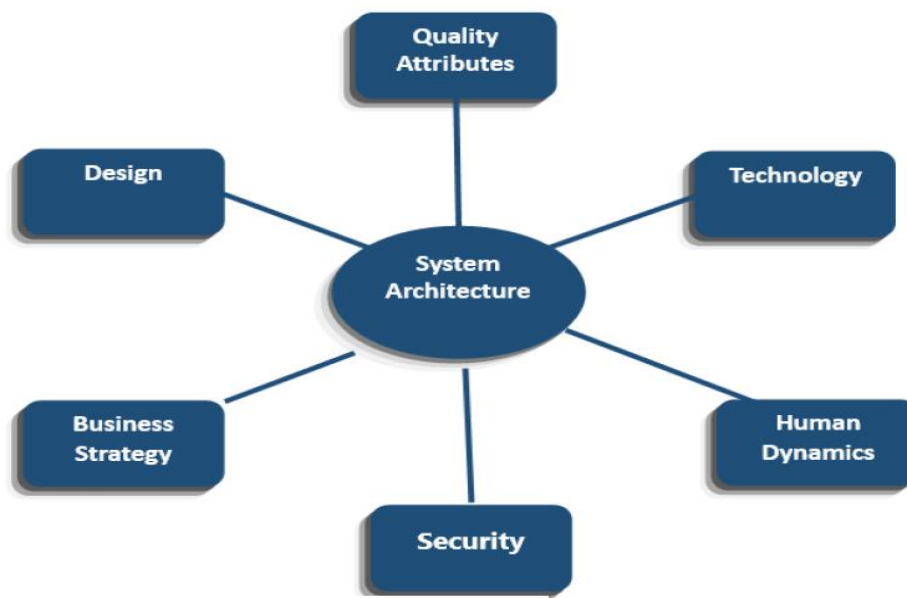


Figure 41: The Role of System Architecture

3.1 System Architecture

The proposed architecture is structured to conform to all technical and operational requirements that have been analyzed in Public Sector Recruitment. In doing so it enhances performance and security in our context as a country.

3.1.1 Architecture Qualities

AP business considerations were used to determine the qualities that must be accommodated in the improved AP system architecture.

- **System Qualities:** availability, modifiability, performance, security, testability, usability, others.
- **Business Qualities:** time to market, cost and benefit, product lifetime, target market, roll-out schedule, integration, others.
- **Architectural Qualities:** conceptual integrity, correctness and completeness.

AP quality attribute scenario is made up of the following six attributes or parts as shown in the figure below.

- **Source of Stimulus:** the entity generating the stimulus. Could be an actor, an actuator, a sensor, and another system.
- **Stimulus:** a condition arriving at a system. Includes faults, stated intentions by actors, and so on.
- **Environment:** the conditions surrounding the stimulus. Might be normal operation, degraded operation, overload, and so on.
- **Artifact:** the part or parts of the system stimulated.
- **Response:** the response the system takes to the stimulus.
- **Response Measure:** how the response can be measured and test.

S.No	Quality	Description
System Quality Attributes		
1	Availability	• The availability attribute is concerned with system failures. Faults are problems that are corrected or masked by the system. Failures are uncorrected errors that are user-visible. • $\text{availability} = [\text{mean time to failure}] /$

		$([\text{mean time to failure}] + [\text{mean time to repair}])$
2	Modifiability	What can change, when are changes made, and who makes the changes.
3	Performance	response times and similar measures for various events
4	Security	- Non-repudiation - Confidentiality - Integrity - Assurance or authenticity - Availability (no denial of service) - Auditing
5	Testability	Detecting failure modes. This means architectural support for testing that reduces test cost and time. We need to control the internal state of and inputs to each unit, then observe the corresponding output of that unit.
6	Usability	- How easy it is to learn the features of the system - How efficiently the user can use the system - How well the system handles user errors - How well the system adapts to user needs - To what degree the system gives the user confidence in the correctness of its actions.
Business Quality Attributes		
1	Time to Market	Architectural reuse affects development time.
2	Projected Lifetime of the System	Long-lived systems require architectures that are modifiable and scalable.

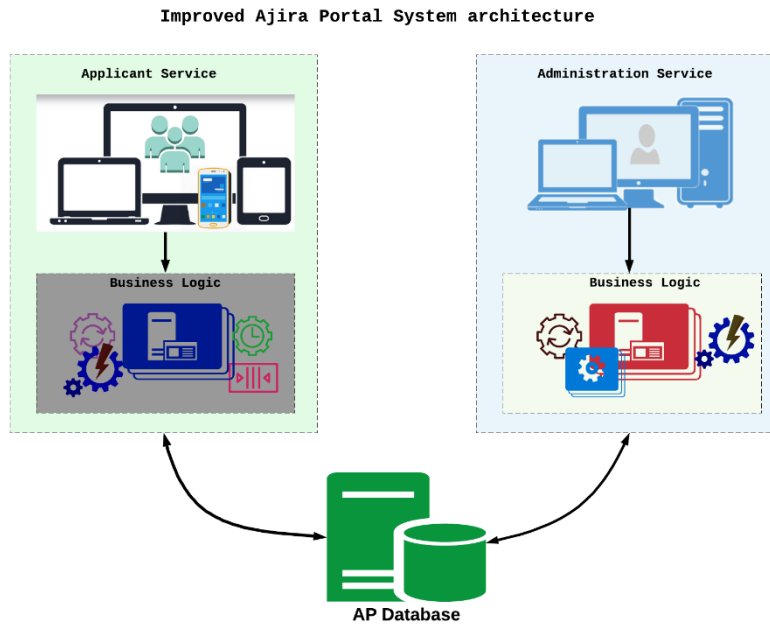
3	Roll-out Schedule	If functionality is planned to increase over time, the architecture needs to be customizable and flexible.
4	Integration with Legacy Systems	The architecture of the legacy system being integrated will influence the overall system's improvement architecture.
Architectural Quality Attributes		
1	Conceptual Integrity	The underlying vision or theme unifying the components and their interactions. The architecture should do similar things in similar ways.
2	Correctness and Completeness	Checking the architecture for errors and omissions.
3	Buildability	The organization's capabilities to actually construct the architecture in question.

3.1.2 Service Oriented Architecture

Enterprise Applications are often built in three main parts: a client-side user interface (consisting of views running in a browser on the user's machine), a database (consisting of many tables inserted into a common, and usually relational, database management system), and a server-side application that serves as the backend running application logics and routines. The server-side application will handle HTTP requests, execute domain logic, retrieve and update data from the database, and select and populate HTML views to be sent to the browser or a desktop view.

We analyzed our demands in improving Improved AP and current resources that are future proof and saw that SOA approach will be used with existing technologies of the AP while the improved components will be developed using new technologies.

Figure 42: System Architecture Diagrams



3.2 Software Architecture

The three-tier architecture is a popular pattern for user-facing applications. The tiers that comprise this architecture include the presentation tier, the logic tier (business logic), and the data tier. The presentation tier represents the component that users directly interact with (such as a web page, mobile app UI, etc.). The logic tier contains the code required to translate user actions at the presentation tier to the functionality that drives the application's behavior. The data tier consists of storage media (databases, object stores, caches, file systems, etc.) that hold the data relevant to the application.

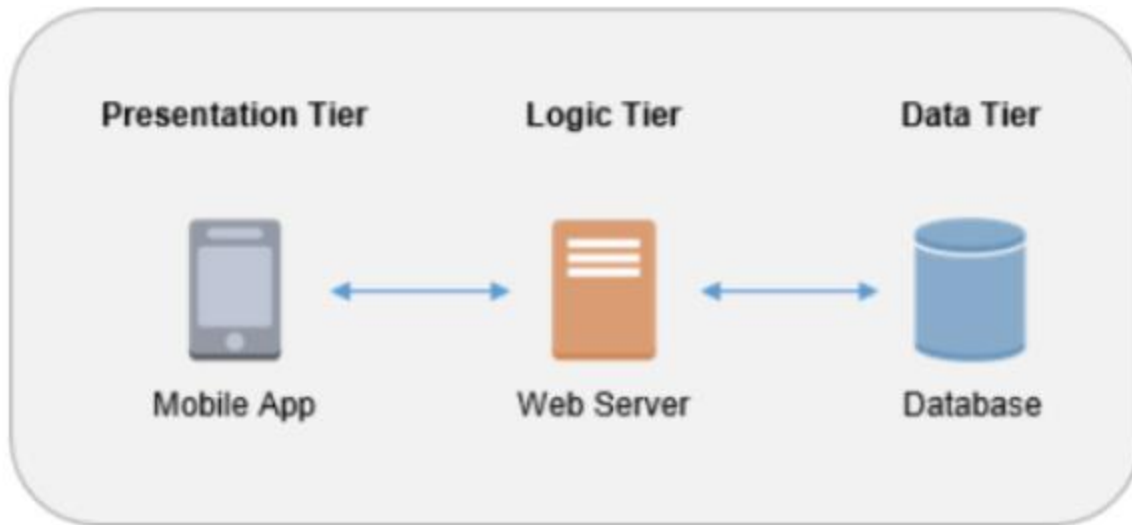


Figure 43: Software Architecture- Separation of Concerns

3.2.1 Security Software Architecture

There are a number of principles applied to current and proposed system security.

- Apply security at all layers: Rather than running security appliances (e.g., firewalls) only at the edge of your infrastructure, use firewalls and other security controls on all of your resources (e.g., every virtual server, load balancer, and network subnet).
- Enable traceability: Log and audit all actions and changes to your environment.
- Implement a principle of least privilege: Ensure that authorization is appropriate for each interaction with AP resources and implement strong logical access controls directly on resources.

3.3 Component Architecture

For components that will be making up our architecture we propose a set of different technical components that have been reviewed based on the resources (human resource, finance and technological resources) at hand and requirements collected.

3.3.1 UI/UX

The user experience is everything today. Everything you do must be optimized to create an exceptional digital experience. The average user shouldn't have to change their

behavior to adapt to our improved AP application. In this design we proposes a modularized reference UI application which runs in a browser and uses API calls to expose the application logic and functionality to end users. Improved AP into mobile app version will employ specific UIs using respective technologies and frameworks.

Web Based Interface: Language: HTML5, CSS3, Typescript. Proposed frameworks: Angular, Angular Material + Bootstrap+

Mobile Interface: Language: Dart. Proposed Framework: Flutter

Other Frameworks: Docker, Kubernetes (environment), NPM & Yarn (package manager), Grunt & Webpack (task running), Karma (Unit Testing), Lucid and Proto IO (mocking).

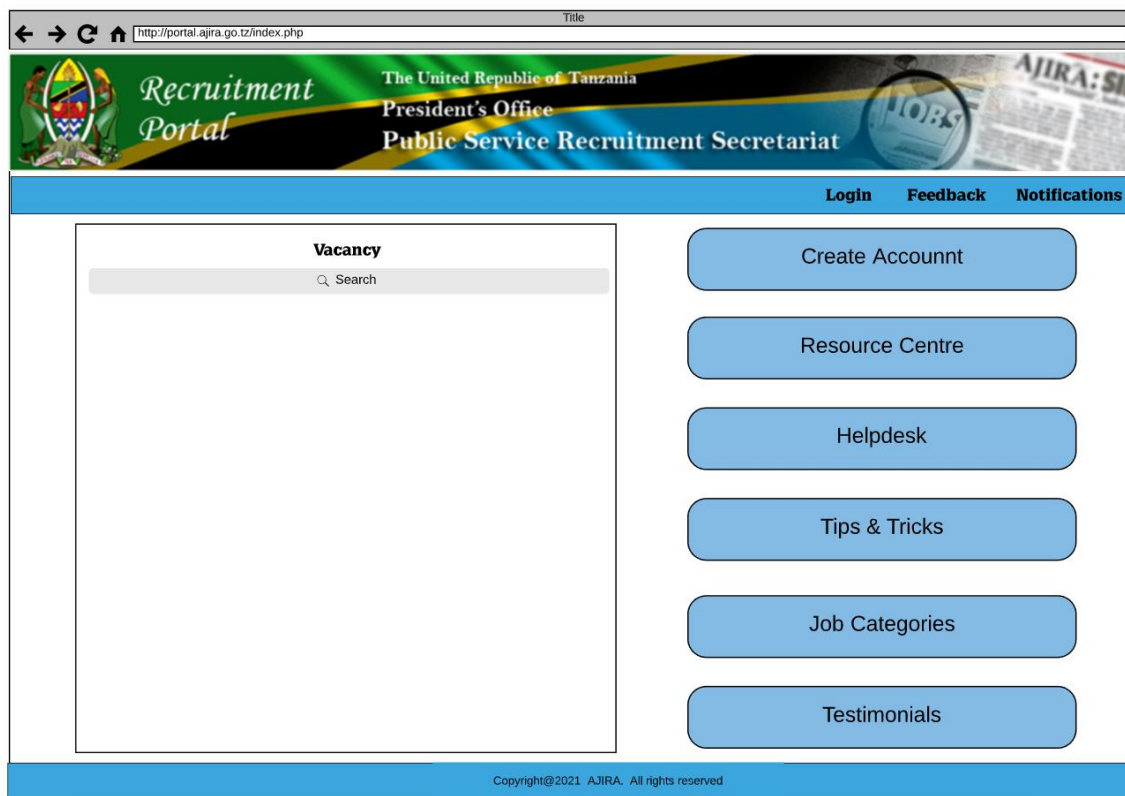


Figure 44: New Look of Ajira Portal Home page

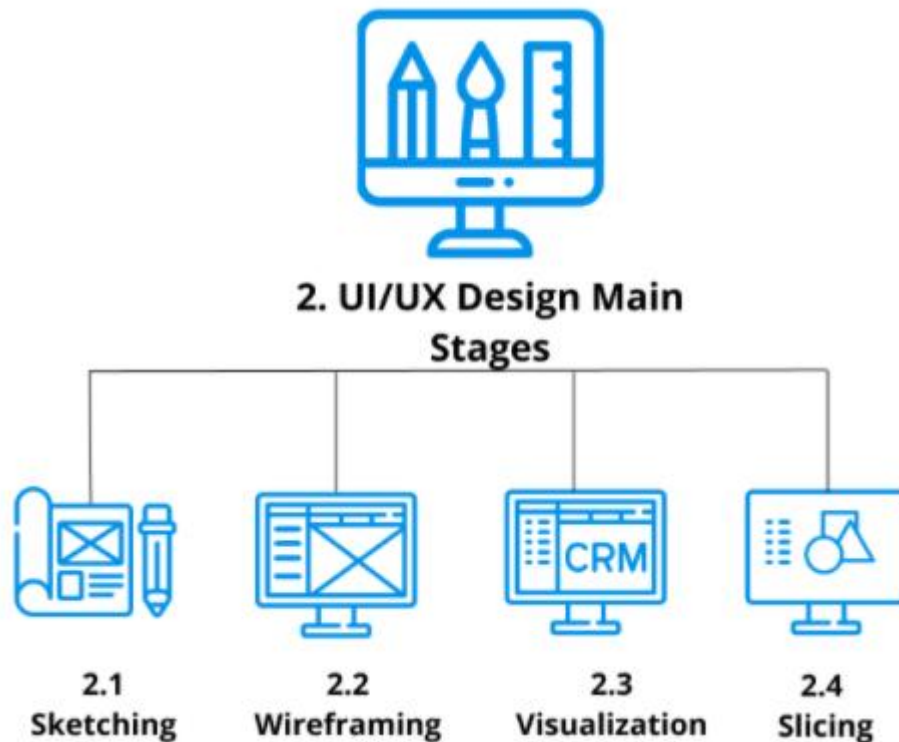


Figure 45: UI/UX Design stages

3.3.3 Database

The proposed improvements of AP uses the existing database which employs SOA architecture. During the design phase the existing Ajira Portal database, along with applications that control access to it were reviewed to ensure that, they meet the new requirements calling for improvement of AP. During this design phase the conceptual, logical, and physical design of the existing AP database was closely analyzed to see their suitability in accommodating the new requirements and their proposed improvements to the existing system.

Forms and reports which provide controlled access to the database were reviewed to make sure that the new requirements for user interface are met in the existing database schema. To ensure consistent and satisfaction of user requirements, each transaction and search queries pathways were traced from entity to entity on the composite database scheme to ensure it is possible to link to relevant entities and extract the relevant attributes to satisfy the query.

3.3.4 Backend

The proposed improvements of AP uses the existing backend which employs monolithic architecture. During the design phase the existing Ajira Portal backend, along with its codes that connects the web to a database, manages user connections, and powers the web application were analyzed and reviewed to ensure compatibility with the requested improvements of AP. Backend development works in tandem with the front end to deliver the final product to the end use.

During this design phase the existing APIs, codes that interact with the database, libraries, and business processes, and data architecture were reviewed for their suitability in accommodating the new requirements and their proposed improvements to the existing system.

3.3.5 API

The proposed improvements of AP uses the existing APIs. The existing Ajira Portal APIs, were reviewed on how they handle errors gracefully using standard HTTP/S codes that helps consumers deal with the problem. The improvements require that the APIs should accept JSON/XML for request payload and also send responses to JSON/XML. The only exception is if we're trying to send and receive files between client and server. Then we need to handle file responses and send form data from client to server.

To eliminate confusion for AP, API consumers when an error occurs, we should handle errors gracefully and return HTTP response codes that indicate what kind of error occurred. Common error HTTP status codes include:

- 400 Bad Request – This means that client-side input fails validation.
- 401 Unauthorized – This means the user isn't not authorized to access a resource. It usually returns when the user isn't authenticated.
- 403 Forbidden – This means the user is authenticated, but it's not allowed to access a resource.
- 404 Not Found – This indicates that a resource is not found.
- 500 Internal server error – This is a generic server error. It probably shouldn't be thrown explicitly.
- 502 Bad Gateway – This indicates an invalid response from an upstream server.
- 503 Service Unavailable – This indicates that something unexpected happened on server side (It can be anything like server overload, some parts of the system failed, etc.).

3.3.6 Dashboards

We propose setting up dashboards as another improvement to the AP that runs alongside the main application and database. The dashboard layer shall have scheduled synchronization that either pulls data from the AP application or the AP application shall have the ability to push data to the dashboard database. This data will be stored and then viewed in a retrospective manner. The data in the dashboards shall have a minimal gap from the AP data as it won't be real-time data visualization.

The abstraction is a strategic effort to avoid overloading the application servers during report production and visualizations. The visualizations should pull data from their own databases that are solely for reports and visualizations. This will make the production of reports far speedier whilst avoiding system lags to the users who are in the application whose reports are being queried.

Language: Java, PHP, JavaScript, JavaScript, HTML5, CSS3

Frameworks: Charts and Graphs – Chart.JS

4.0 INTEROPERABILITY ARCHITECTURE

The design team proposes that the interoperability be handled in a scalable and sustainable manner, whereby, collaborating organizations rather strive for a loose coupling of their information systems instead of a tight integration: the collaborating information systems should be able to work together but retain as much independency as possible. The scaling should be in terms of technologies that are integrated in Improved AP over time.

The design of interoperability architecture was involved in reviewing and analysed the suitability of a number of interoperability issues as follows:

- Operational or Business Interoperability reviewed how business processes are to be shared,
- **Information Interoperability** reviewed how information is to be shared,
- **Technical Interoperability** reviewed how technical services are to be shared or at least connect to one another.
- From an IT perspective, it is also useful to consider interoperability in a similar vein to Enterprise Application Integration (EAI); specifically:
- **Presentation Integration/Interoperability** reviewed and designed how to maintain a common look-and-feel approach through a common portal-like solution to guides the user to the underlying functionality of the systems
- **Information Integration/Interoperability** reviewed the corporate information to ensure seamless sharing between the various corporate applications to achieve, for example, a common set of client information.
- Based upon a commonly accepted corporate ontology and shared services for the structure, quality, access, and security/privacy for the information.
- **Application Integration/Interoperability** was reviewed to ensure corporate functionality is integrated and shareable so that the applications are not duplicated (e.g., one change of address service/component; not one for every application) and are seamlessly linked together through functionality such as workflow. *This impacts the business and infrastructure applications and is very closely linked to corporate business process unification/interoperability.*
- **Technical Integration/Interoperability** was reviewed and designed to ensure common methods and shared services for the communication, storage, processing, and access to data primarily in the application platform and communications infrastructure domains. This interoperability is premised upon the degree of rationalization of the PSRS/GoT IT infrastructure, based upon standards and/or common IT platforms. For example, multiple applications sharing one infrastructure or thousands of corporate websites using one centralized content management/web server (rather than thousands of servers and webmasters spread throughout the country).

The AP Integration Architecture designed provides a bridge between the heterogeneous operational applications and platforms. This architecture ties together the mix of platforms, operating systems, transports, and applications. Integration of business applications between agencies. This Architecture encompasses the multiple layers of new and existing systems and the middleware in between. AP Integration Architecture enables new applications to use existing resources with minimal disruption.

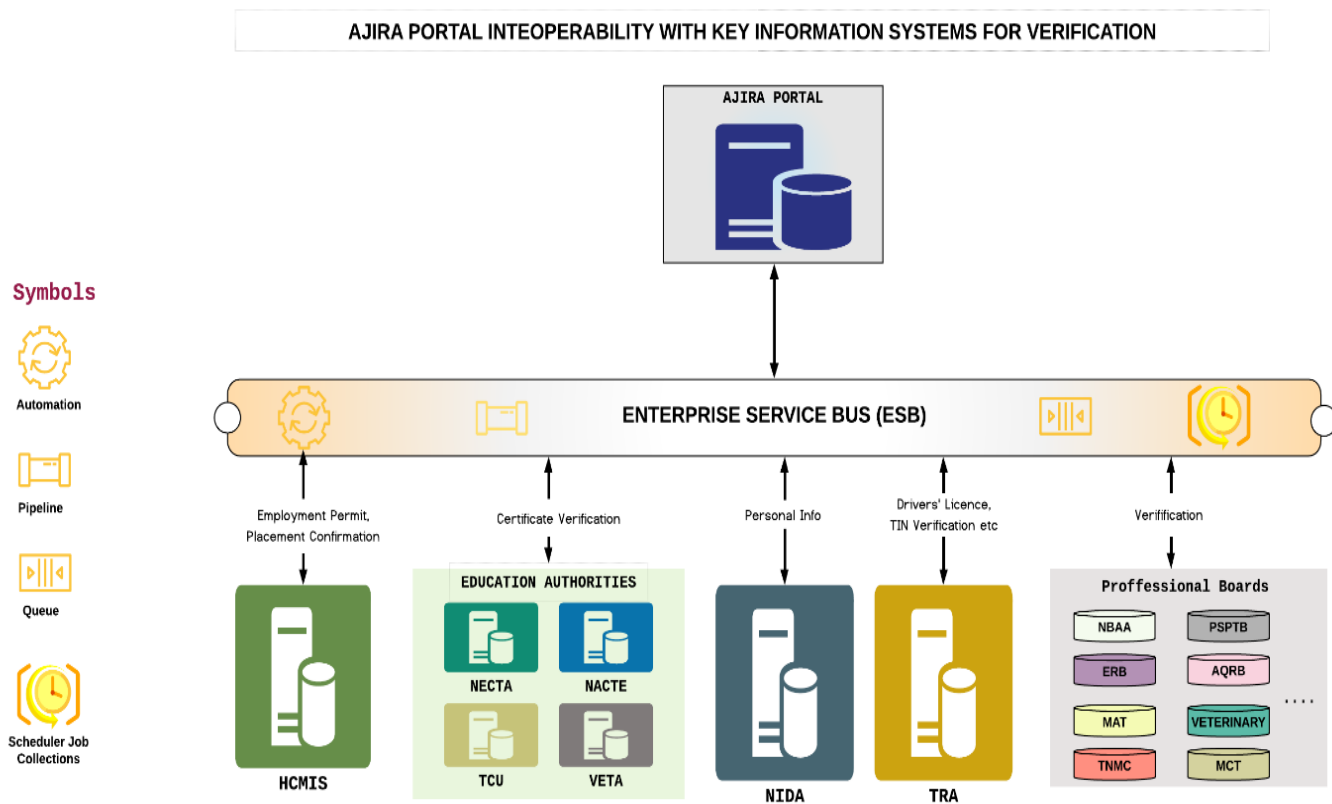


Figure 46: Ajira Portal Interoperability Framework

5.0 NETWORK ARCHITECTURE

Based on the information that was availed to Improved AP improvement design team, it was highlighted that current systems that is used by PSRS recruitment management information is centralized systems. We propose that the network architecture should remain a centralized one as Improved AP is to be used by multiple applicants and employers assessing the central system for services.

The physical and logical design of the software, hardware, protocols, and media of the transmission of data were reviewed to assess their suitability to accommodate the proposed improvements for the improved AP.

5.1 Client- Server

In client server formation, the client requests a resource and the server provides that resource as requested. A server may serve multiple clients at the same time while a client is in contact with only one server per request made. Both the client and server communicate via a computer network and as part of a distributed system. Current AP is mostly structured in client-server network architecture in both in-facility setup and central repository settings. The design team proposes that we keep using client-server architecture in improved AP settings.

5.2 Application

The design team, made a review of current and future proof architectures that are used in building enterprise-level applications and the existing application architecture and decided that the improved AP should maintain the existing architecture which is still meeting the current and future needs of PSRS.. The application architecture in this context covers all four areas of a working distributed system as shown below.

5.3 Infrastructure Architecture

The existing AP application is currently deployed on 125GB RAM, 1TB HDD/SSD, Gigabit Network, Ubuntu 16.04 and Database server with 125GB RAM, 3.5TB HDD/SSD and Ubuntu 16.04. Client computers need at least 2GB RAM, Windows 8 or Ubuntu LTS. On the Employer and Applicants side they need standard PC/Laptop and the applicants can also access the system through mobile AP. The requirement for mobile APP users is IOS 8 and Android 6 as minimum OS requirements.

5.4 Conceptual Framework

How this architecture fits in the overall GoT IT conceptual framework? Here we will highlight the components of the framework that it will work with and the ones that it will represent. We have to put some text that corroborate the conceptual framework bigger picture.

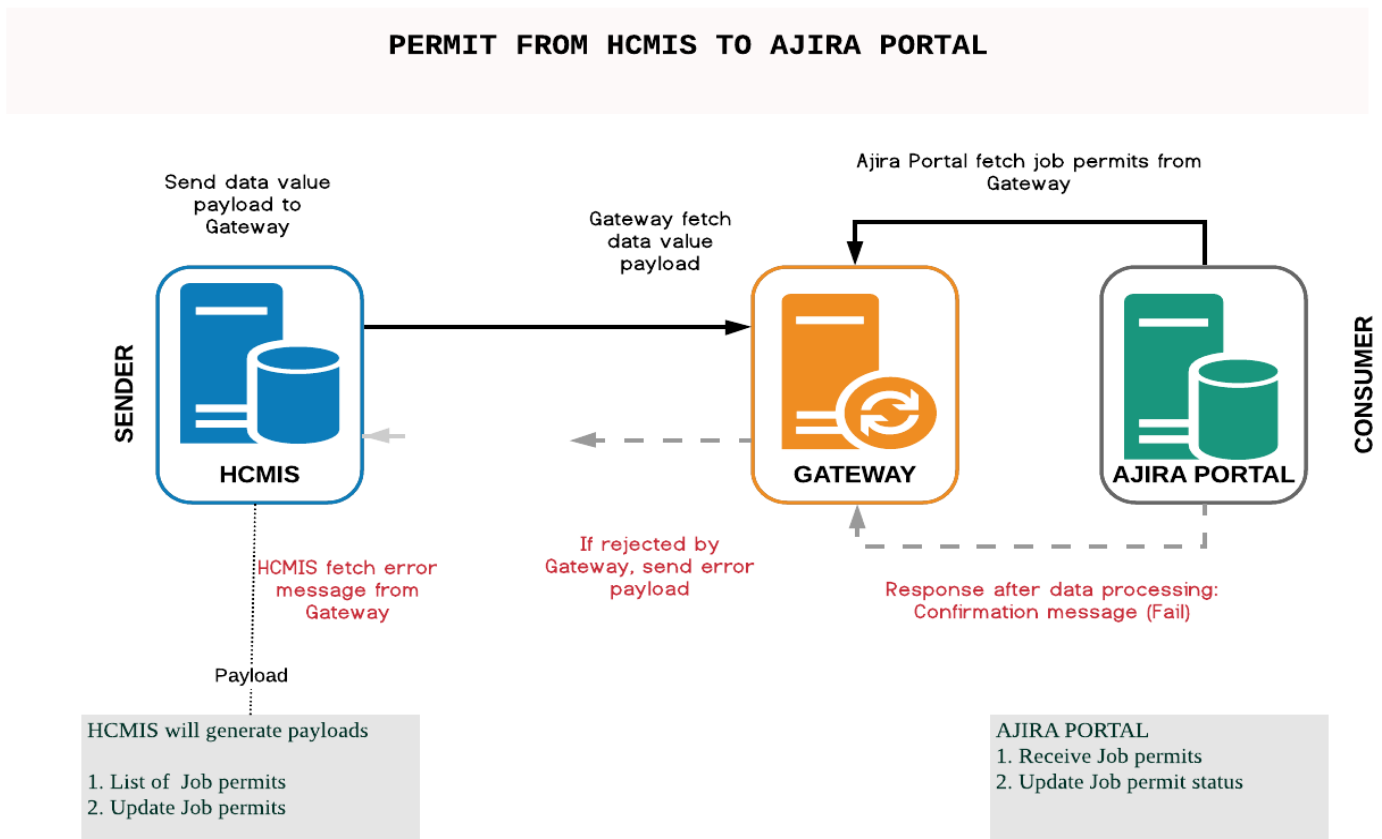


Figure 47: AP Conceptual Framework with HCMIS (As representative of other systems)

6.0 SYSTEM USE CASES

This section provides a diagrammatic description of the system uses cases, their descriptions and activity flows.

6.1 Employment Permit Use case

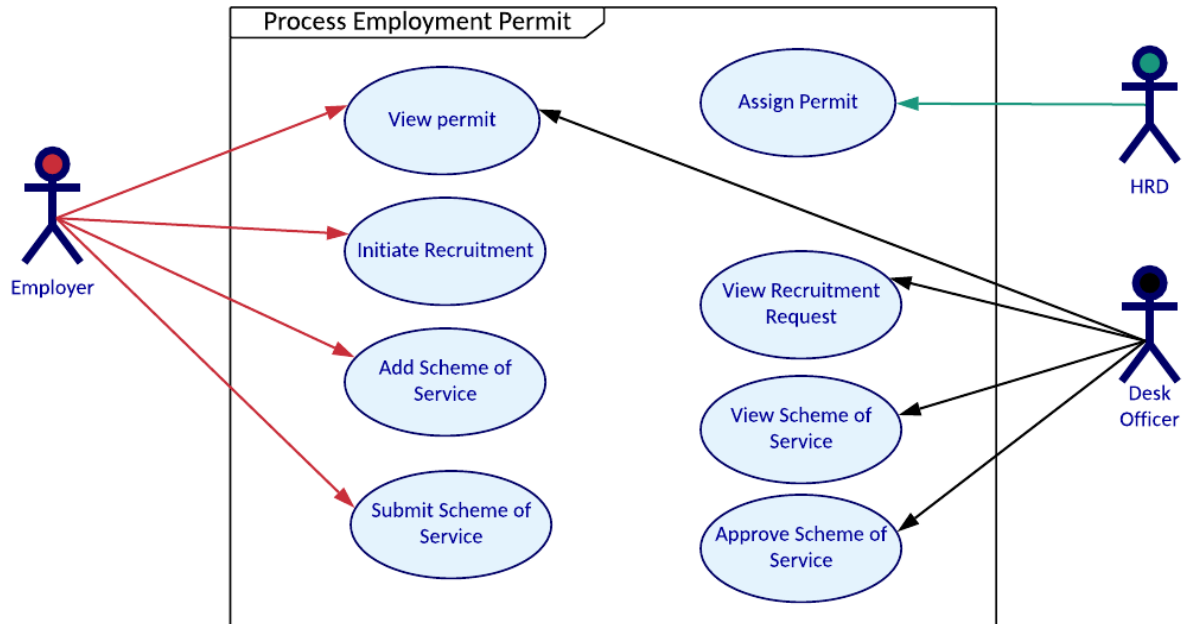


Figure 48: Employment Permit Use case

Employment Permit Use Case Description

Use Case ID:	UCAP001	Variables Dictionary	Employment Permit
Use Case Name:	View Job Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
<Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for a complete job permit.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	vi. Responsible users will receive notification with a link to view Job permit (s). vii. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. viii. User will be able to add scheme of service to align with cadre as per job permit if the scheme is not in the system. ix. The added scheme should follow approval process, once approved the		

	scheme will be stored. x. System will provide window for user to send comment and/or notification for missing information on job permit.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Ajira Portal is linked with HCMIS and can share job permit information
Main Success Scenario	v. User View Job Permits vi. User select Job Permit(s). vii. System display job permit information(s) viii. User confirm and proceed to next steps.
Extension Scenario	v. Job Permit is not complete (Missing Information) vi. System provide window for users' feedback once there is missing information. vii. System administrators would be notified on the particular case. viii. System administrator will communicate with HCMIS on the missing info.

Use Case ID:	UCAP002	Variables Dictionary	Employment Permit
Use Case Name:	Add Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	The system will allow user to add and map scheme of service to a particular cadre if not found on the list stored by the system. The system will then store the scheme of service for future use and reference		
Trigger:	View Job Permit		
Static Preconditions:	Authorized Access Receipt of notification for new job permit		
< Dynamic Preconditions >:	UCAP001		
Success Post conditions:	The system successfully save and map the scheme of service to a particular cadre.		
Failed Post conditions:	The system fails to save and map the scheme of service.		
Operations Concepts	iv. Users will view job permit and scheme of services to see if all cadres have been mapped to corresponding scheme of services. v. If scheme of service is missing, the system will provide option to add scheme of service and map with the corresponding cadre vi. The system will store the information and make it available for future use and references.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	All cadres must be linked and mapped with correct scheme of service.
Main Success Scenario	vi. User View Job Permits information on cadres and corresponding scheme of services vii. User select option to add new scheme of service viii. System display field for user to enter information ix. User enter information and save. x. System display successfully message Scheme of service is stored and can be accessed.
Extension Scenario	vii. Missing entry on mandated field viii. System display error message "This field is required" ix. System return user to missing info field x. Duplicate Entry xi. System display error message "This entry is already in the system" xii. System return user to the stored scheme of service

Use Case ID:	UCAP003	Variables Dictionary	Employment Permit
Use Case Name:	Submit Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	A newly added scheme of service must be submitted to decision making levels for further scrutiny (reviews and confirmation). The system will provide option for employer to submit scheme of service		
Trigger:	New scheme of service is added into the system.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP002		
Success Post conditions:	The scheme of service is submitted to other levels for review and approval.		
Failed Post conditions:	The system fails to submit the scheme of service.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Scheme of service must align with policy and guidelines.		

Main Success Scenario	vi. The system display list of newly added scheme of service vii. User select newly added scheme of service viii. User click “Submit” button ix. System display success message x. The submitted scheme of service is removed from the list.
Extension Scenario	

Use Case ID:	UCAP004	Variables Dictionary	Employment Permit
Use Case Name:	View Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	The system shall store list of scheme of service per cadre. Authorized users will be able to view scheme of service.		
Trigger:			
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of scheme of service and information to all fields.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	iv. The system will store a list of scheme of service. This scheme of service will be categorized as approved or not approved v. Only approved scheme of service (s) will be eligible to be mapped with cadre vi. Authorize users will be able to view the list of schemes, from the list they can further explore individual by clicking on the 'view' for further display		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	v. User view list of scheme of service vi. User select scheme of service vii. System display scheme of service information(s) viii. User confirm and proceed to other phases.
Extension Scenario	

Use Case ID:	UCAP005	Variables Dictionary	Employment Permit
Use Case Name:	Approve Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, it must be approved before being referred for use and mapping with corresponding cadre.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		

Success Post conditions:	System display list of scheme of service
Failed Post conditions:	The system fails to display information.
Operations Concepts	v. System will display list of scheme of services for approval vi. System will provide window for user to approve or send comment on scheme of service (if satisfied). vii. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. viii. If approved, the scheme of service will then be stored and available for use
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines. Scheme of service will be mapped with corresponding cadre
Main Success Scenario	vi. System display list of submitted scheme of service vii. User select scheme of service. viii. User confirm approval of scheme of service or make comments and return ix. System display successfully message (returned or approved) x. The scheme of service status changes to approved.
Extension Scenario	vii. Scheme of Service need modification viii. System provide window for users' comments and feedback. ix. High level user comments on modification to be done into the SOS and return the SOS to original user. x. Original user gets notification on SOS to be modified. After working on

	the comments, the user then submit (forward) to Desk officer. xi. The system should record the back and forth process till the SOS is approved. xii. Once finally approved, the status changes to 'approved' and SOS is stored for reference and future use.

Use Case ID	UCAP-P006	Variables Dictionary	Employment Permit
Use Case Name:	Assign Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD		
Description:	To facilitate the recruitment process, the system will provide option for permit to be assigned to as many users as possible.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
< Dynamic Preconditions >:	UCAP001 (View Permit)		
Success Post conditions:	The system assign permits to user		
Failed Post conditions:	The system fails to assign permits.		
Operations Concepts	v. Responsible users will receive notification with a link to view Job permit (s). vi. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. vii. The system will provide option for permits to be assigned to users to facilitate the recruitment process viii. Once assigned user will be able to perform all activities aligned with the recruitment process		
<Input Summary>:	View Job Permit		

<Output Summary>:	List of assigned job permit
Frequency of Use:	On demand
Assumptions:	A designated taskforce can work on multiple permits to facilitate and speed up the recruitment process.
Main Success Scenario	vi. System displays all available permits vii. User select Job Permit(s). viii. User assign job permit to other users ix. System display success message x. Assigned users are able to see the list of assigned permit to work with.
Extension Scenario	

Use Case ID:	UCAP007	Variables Dictionary	Employment Permit
Use Case Name:	Initiate Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	After verifying the job permit and all requirement (eg mapping SOS, validity etc), an employer will signal the initiation of the recruitment process. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		
Trigger:	Permit issuance		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display success message.		
Failed Post conditions:	The system fails to display successful message.		
Operations Concepts	v. Responsible users will view permit upon receiving notification, they will scrutinize the permit and if necessary add more information to it vi. Once the permit has been cleared, users will signal the start of the recruitment process vii. The system should send notification to authorize to inform on the recruitment process trigger. viii. The initiation recruitment process involves further scrutiny by higher level users. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		

Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Responsible institution must show the intent for recruitment process to begin. Ajira Portal is linked with HCMIS for job permit information exchange. The system can also allow users who do not receive Job permit directly from HCMIS to enter it manually into the system.
Main Success Scenario	iv. The job permit review is complete and provide option to move to initiate recruitment stage v. User click on the initiate recruitment and the system prompt for confirmation vi. Upon confirmation the system display success message.
Extension Scenario	

Use Case ID:	UCAP008	Variables Dictionary	Employment Permit
Use Case Name:	View Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	Once the employer has confirmed to begin the recruitment process, authorized users will be able to view the contents of the recruitment package.		
Trigger:	Initiate Recruitment		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for complete recruitment process.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	iv. The system send notification to authorized user to inform on the recruitment process trigger (Initiation of recruitment) v. The notification will bear a link which upon opening it, it will go directly to the initiate process. vi. The system will view list of permits that has been cleared for recruitment processes to begin.		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	Authorized user must be able to view all permits that has been approved for recruitment process. They can then review and continue with the process or provide advice for improvement.
Main Success Scenario	iv. Notification is sent to authorized users'. v. Users click on the notification vi. The system display the list of all permits that has been approved and cleared for the recruitment process to begin.
Extension Scenario	

Use Case ID:	UCAP009	Variables Dictionary	Employment Permit
Use Case Name:	Reject Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, authorized users will have to review any addition or edition to scheme of service and can approve or reject it.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		
Success Post conditions:	System display list of scheme of service		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	v. System will display list of scheme of services for approval vi. System will provide window for user to approve or send comment on scheme of service (if satisfied). vii. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. If no consensus is reached then the scheme of service is rejected and will be assigned status. viii. The rejected scheme of service will not be in display for use.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines.
Main Success Scenario	vi. System display list of submitted scheme of service vii. User select scheme of service. viii. User confirm rejection of scheme of service and make comments and return for improvement ix. System display successfully message (rejected) x. The scheme of service status changes to rejected.
Extension Scenario	

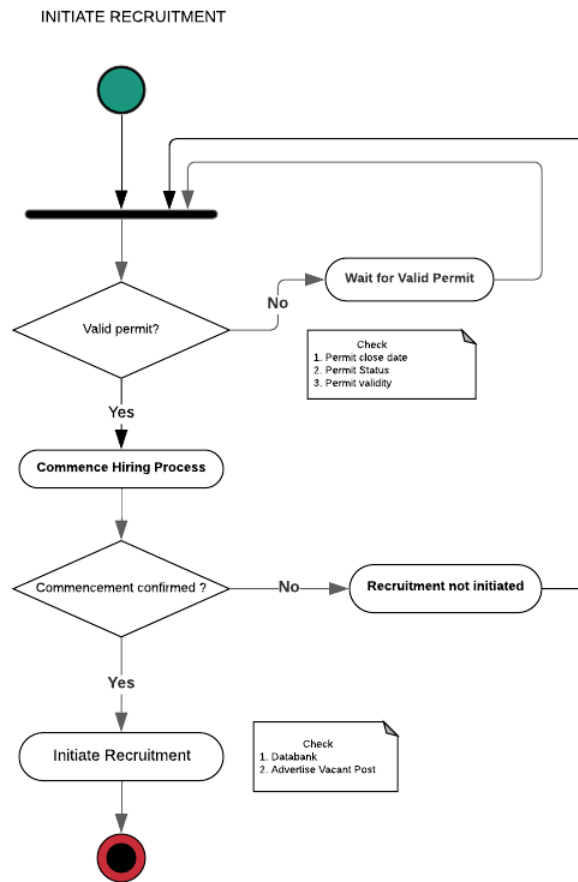


Figure 49: Employment Permit Activity Flow

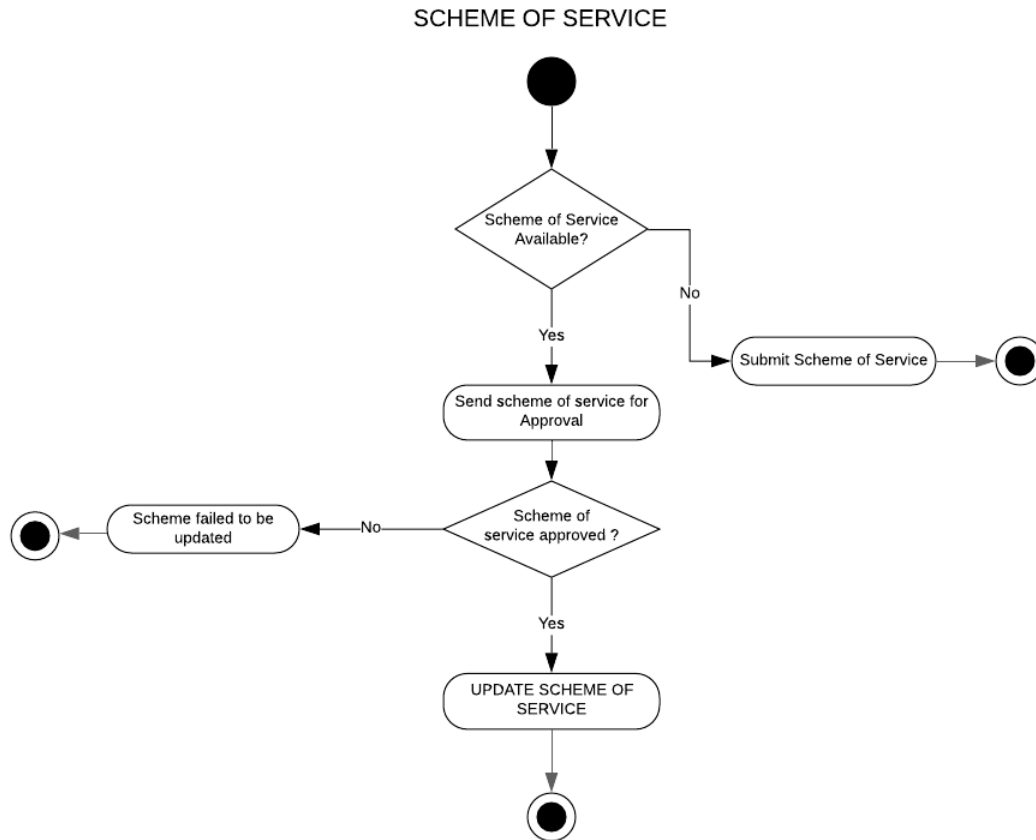


Figure 50: Scheme of Service Activity Flow

6.2 Job Advertisement Use Case

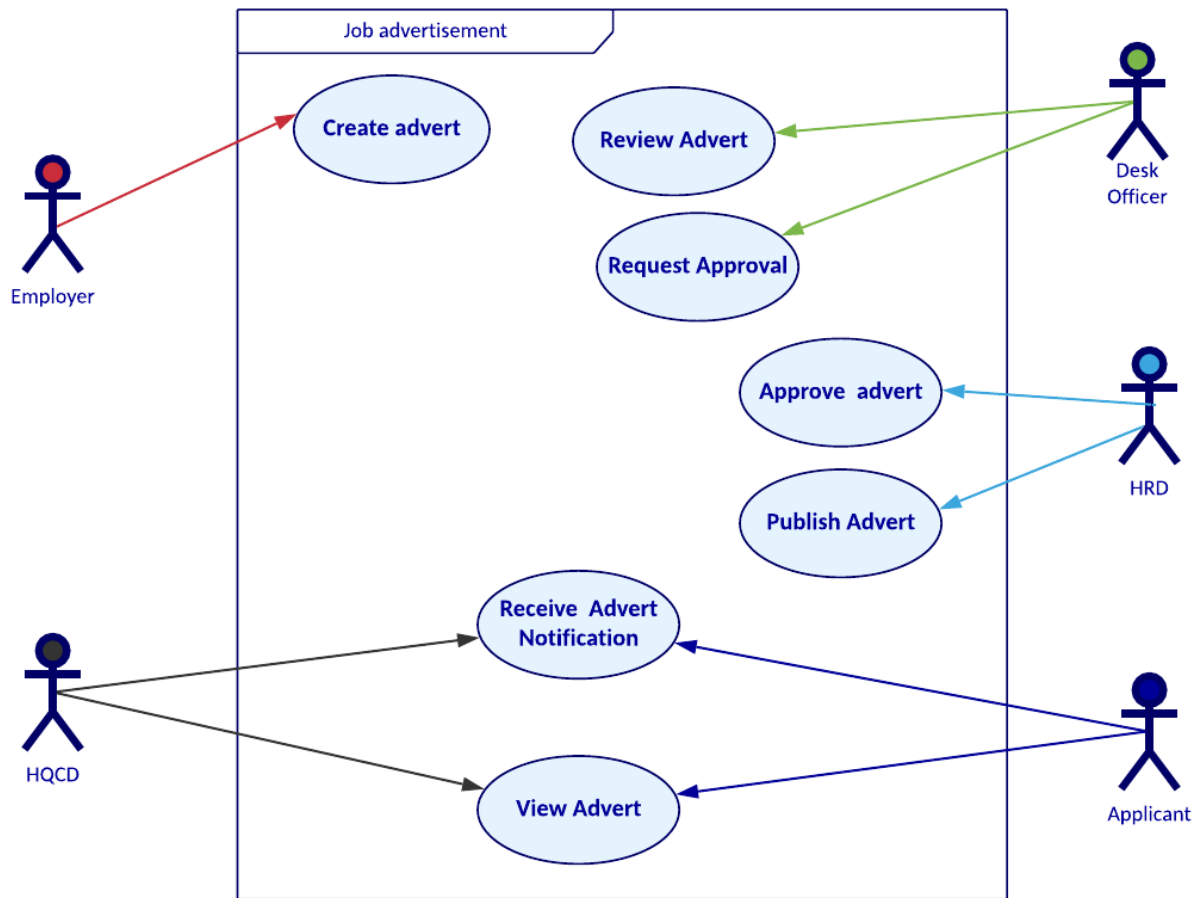


Figure 51: Job Advertisement Use Case

Use Case # UCAP015: Create Advert

Use Case ID:	UCAP015	Variables Dictionary	Job Advertisement
Use Case Name:	Create Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013, API07, API08		

Actors:	Employer, Desk Officer
Description:	This is one of important process in the recruitment cycle. Once the internal initiation of recruitment has passed, authorized user are required to create a job advert for the approved vacancies in order to inform the public of the availability of vacancies.
Trigger:	Initiate Recruitment
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Job Permit, Initiate Recruitment
Success Post conditions:	The system create job advert
Failed Post conditions:	The system fails to create advert
Operations Concepts	- Authorized user approved the recruitment process to begin. - The system notifies responsible users on the recruitment process. - Responsible users create advert as per job vacancy description - Responsible user submit advert for approval
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	The public must be informed on the availability of the vacancies
Main Success Scenario	- User view notification on recruitment process alert - User create advert - User save advert and the system displays a successfully message - User confirm and proceed to next steps.
Extension Scenario	

Use Case # UCAP016: Review Advert

Use Case ID:	UCAP016	Variables Dictionary	Job Advertisement
Use Case Name:	Review Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP018,		
Actors:	Desk Officer, HRD		
Description:	Upon advert creation, authorized user will receive notification on the availability of the advert and will have to review to ensure it adhered to standard and align with policies and guidelines.		
Trigger:	Create Job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert		
Success Post conditions:	The system display all job advert information		
Failed Post conditions:	The system fails to display job advert information		
Operations Concepts	- A job advert is created and submitted for approve - Authorized users will view list of all job advert created - The system will display all information on a job advert for review - Authorized users will review and scrutinize the job advert - Authorized users will then signal for the next steps (Publish or edit)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	A Job advert must adhere to standard and align to policy and guidelines.		
Main Success Scenario	6. System display all list of job advert created 7. Authorized users select job advert for review 8. System displays job advert information 9. Authorized users confirm the review is OK 10. System display successfully message		
Extension Scenario	b) Job advert needs modification 5. System provide window for users' comments and feedback. 6. Authorized user(s) enter comments on modification to be done into the job advert and return the job advert to original user.		

	7. Job advert creator (user) gets notification on issues to be modified. After working on the comments, the user then submit (forward) to authorize users. 8. Once finally reviewed and approved, the system display successful message

Use Case # UCAP017: Request job advert approval

Use Case ID:	UCAP017	Variables Dictionary	Job Advertisement
Use Case Name:	Request job advertisement approval		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP008, AP010		
Actors:	Employer, Desk Officer		
Description:	An employer would request for review and approval of a job advert to ensure it adhered to standards, policies and guidelines.		
Trigger:	Create advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create advert		
Success Post conditions:	The system submit the job advert for approval.		
Failed Post conditions:	The system fails to submit the job advert.		
Operations Concepts	- The system successfully save the created job alert - Authorized user will then forward the job advert for approval - The authorized user will view the created advert and act accordingly - If approved the advert will wait for the next stage (Go live into public)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Job advert must adhere to standards, policies and guidelines before sent to public.		
Main Success Scenario	7. The system send notification to authorized user on the availability of job advert for approve 8. Authorized user see list of all job advert created 9. Authorized user select a job advert 10. The system displays all the information on job alert 11. Authorized user then comment or confirm the validity of a job advert 12. The system stores the approved job advert and give 'approve status'		
Extension Scenario			

Use Case # UCAP018: Approve advert

Use Case ID:	UCAP018	Variables Dictionary	Job Advertisement
Use Case Name:	Approve advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP015, AP014, AP019, AP020		
Actors:	Employer, HRD, Desk Officer		
Description:	All job adverts created within AP must be approved for public consumptions. The approval process is crucial to ensure that the job advert adhered to employment process standards and align with policies and guidelines.		
Trigger:	Create Job Advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system provide option to approve job advert		
Failed Post conditions:	The system fails to approve the job advert.		
Operations Concepts	- The system will display all job alerts for approve - User will select the job advert and the system will display information for each job advert - Authorized user will then be able to approve and move to next step or reject job alert and return for modification		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:			
Main Success Scenario	- The system send notification to authorized user on the availability of job advert for approve - Authorized user see list of all job advert created - Authorized user select a job advert - The system displays all the information on job alert - Authorized user then comment or confirm the validity of a job advert - The system stores the approved job advert and give 'approve status'		

Extension Scenario	

Use Case # UCAP019: Publish Advert

Use Case ID:	UCAP019	Variables Dictionary	Job Advertisement
Use Case Name:	Publish Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP016, AP021		
Actors:	Employer, HRD		
Description:	After being approved, the job alert will be finalized and published for public consumptions. The system will provide a PDF version of the advert and other format that will be published through public mediums and Ajira Portal website		
Trigger:	Create job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create job advert, approve job advert		
Success Post conditions:	System publish		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	- The system will display a list of all approved job adverts - Authorized user will then prompt the system to publish the job advert - The system will generate the job advert into a readable format (PDF) - Authorized user can then publish it through approved mediums		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	GOT vacancies are open for each Tanzanians to apply provided is qualified for the vacancy. Thus the public must be informed once there is availability of job vacancies.		
Main Success Scenario	- System display list of all approved job advert - User select job advert. - User click on publish job advert - The system generates the complete job advert		
Extension Scenario			

Use Case # UCAP020: Receive Job advert Notification

Use Case ID:	UCAP020	Variables Dictionary	Job advertisement
Use Case Name:	Receive Job advert notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP055, AP017		
Actors:	Applicant, HQCD		
Description:	All applicants who have registered with Ajira Portal will receive notification once a job advert has been published. Thus all potential applicants should register with Ajira Portal for quick notification once a new job vacancy has been published		
Trigger:	Publish job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Created job advert, Publish job advert		
Success Post conditions:	System send notification		
Failed Post conditions:	The system fails to send notification		
Operations Concepts	System will send notification to all applicant on availability of new job adverts		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Every applicant has right to be quickly informed on the availability of vacancies so as can prepare for job application		
Main Success Scenario	4. System send notification to applicants 5. Applicant get notification through approved medium (Eg email, SMS, mobile app). 6. The system can also display notification through the notification icon.		
Extension Scenario			

Use Case # UCAP021: View job advert

Use Case ID:	UCAP005	Variables Dictionary	Job Advertisement
Use Case Name:	View Job advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP016, AP021		
Actors:	Applicant, HQCD		
Description:	When the job advert has been published applicants and public in general will be able to view the job advert.		
Trigger:	Publish Job Advert, Job alert notification		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert, Publish Job Advert, Job alert notification		
Success Post conditions:	System display job advert		
Failed Post conditions:	The system fails to display job advert		
Operations Concepts	System will publish the job alert to public mediums for public and applicant to view		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	The public has right to see job advert once it has been published.		
Main Success Scenario	3. System publishes a new job advert into Ajira Portal Website 4. Applicant and public able to see the job alert		
Extension Scenario			

Job Advertisement Activity Flow

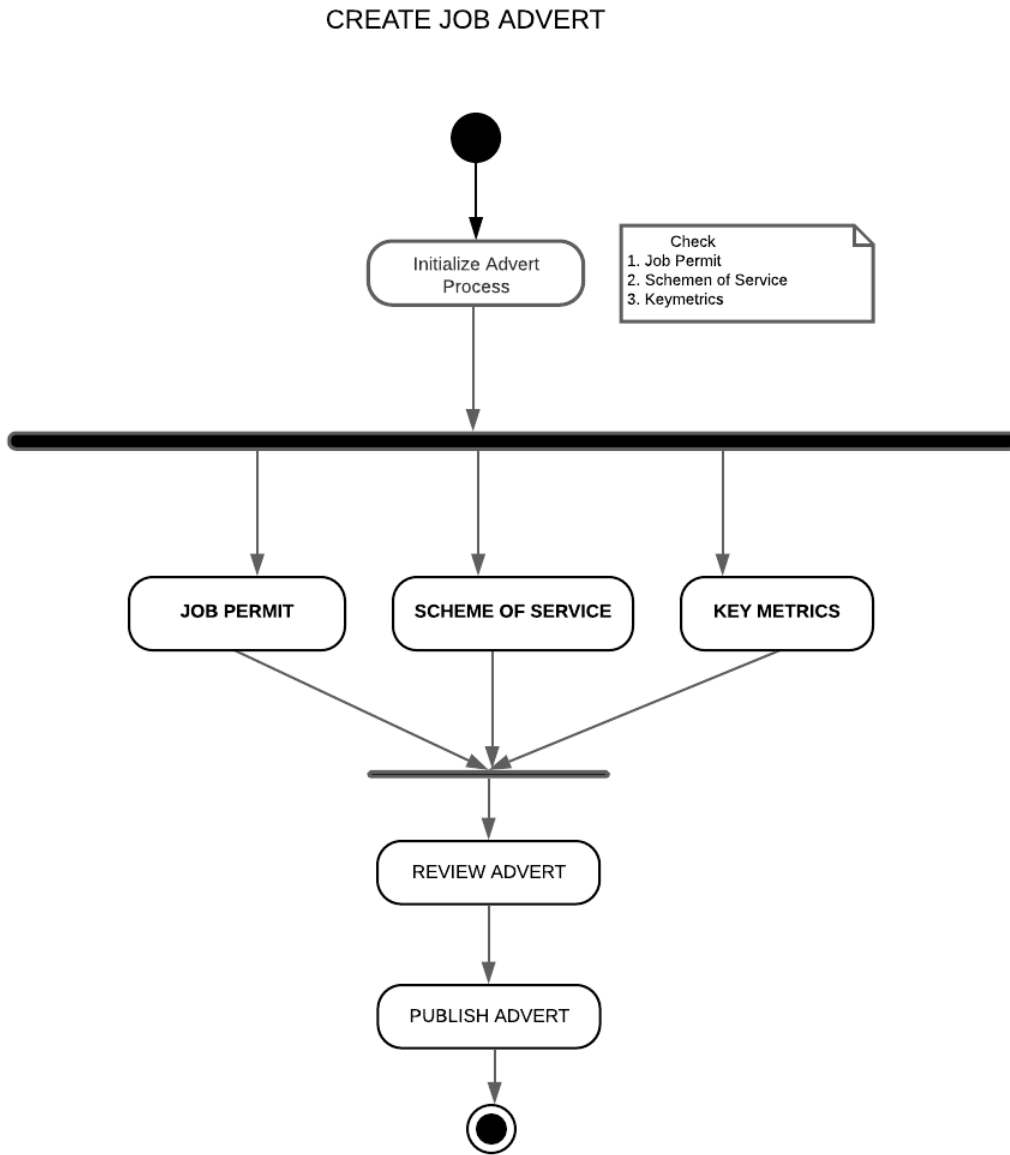


Figure 52: Job Advertisement Activity Flow

6.3 Job Application Use case

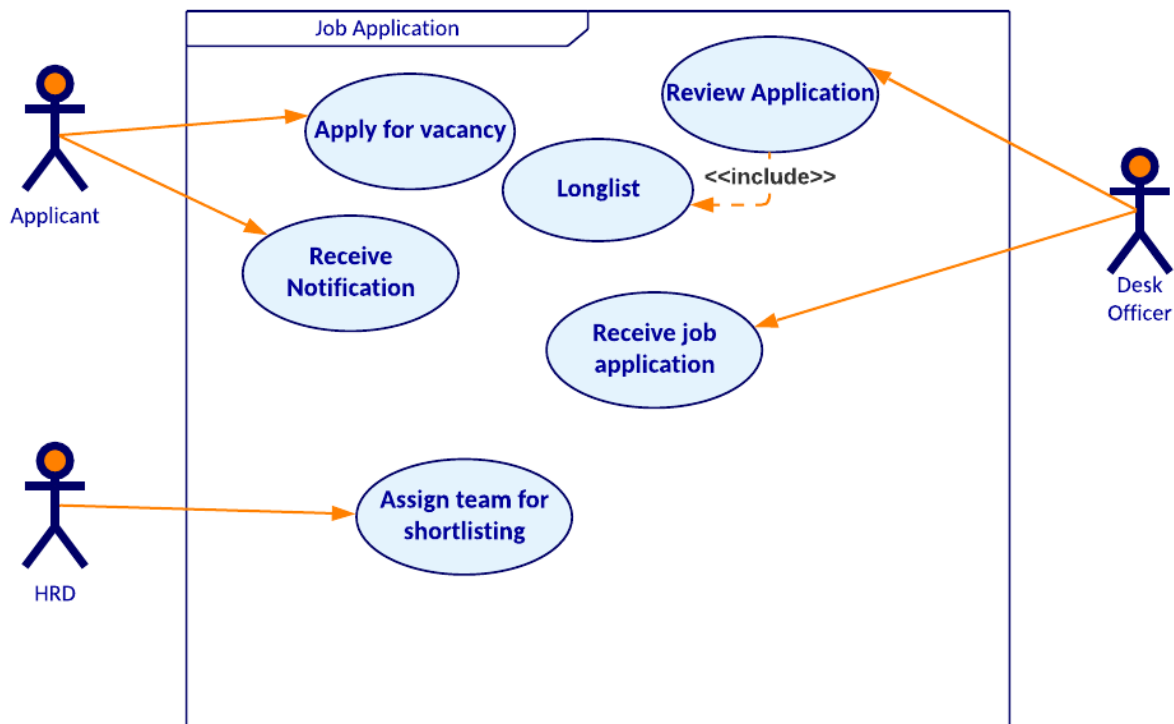


Figure 53: Job Application Use case

Use Case # UCAP010: Apply for Vacancy

Use Case ID:	UCAP010	Variables Dictionary	Job Application
Use Case Name:	Apply for Vacancy		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Once applicants have received job alert notification, they will be able to see a list of vacancies that has been advertised. Applicants will apply to particular position(s) according to their qualifications. Job adverts will be set with expire (deadline) date and		

	thus applicant should be aware.
Trigger:	• Job Advertisement • Job Alert Notification
Static Preconditions:	• Authorized Access
< Dynamic Preconditions >:	Job advertisement
Success Post conditions:	The system display list of advertised posts, users select preferred vacancies and apply for a job.
Failed Post conditions:	The system fails to display information.
Operations Concepts	• Applicants receive notification on job vacancies and can see the list of all advertised vacancies. (The system should display all vacancies regardless of applicant qualification) • Applicant can then apply from the list as per qualification (the system should limit users from applying jobs out of their professional, qualification) • Applicant should fill all the information needed including attaching an application letter. • Applicant will then submit application for further steps. • The system will store all applicant's application and will be available review until the job advert time expired. • The system will prevent applicant to review application process (Eg. Altering application letter) when the deadline date is reached.
<input summary>:	Job advertisement, job alert notifications
<output summary>:	List of successfully applicants application (s)
Frequency of Use:	On demand
Assumptions:	All eligible applicant will be able to apply for a job vacant once published
Main Success Scenario	8. Applicant receive job alert notification(s) 9. Applicant able to view list of all job vacancies (regardless of qualification/professional categorization) 10. Applicant select vacancies as per qualification 11. Applicant fills required information including attaching application letter 12. Applicant save the information and then click submit 13. The system display 'Success Message' to confirm application has been submitted. 14. The system display list of all application that has been done by an applicant
Extension Scenario	c) Applicant Reviews Application 5. Applicant go to 'My application' menu. 6. System display all applications and statuses (Active, Closed) 7. If the application is <i>active</i>, the system will provide option for applicant to review the information and can edit the attachment letter. 8. If the application is <i>closed</i>, then the system will not give option for edition. d) Rejected Application

	3. If the applicant has not qualified for a job vacancy then the system will not display any information for application. 4. If applicant information are either insufficient or overqualified for a certain position then the system will reject the application.

Use Case # UCAP011: Receive Job Advert Notification

Use Case ID:	UCAP011	Variables Dictionary	Job Application
Use Case Name:	Receive Job Advert Notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Upon publication of a job advertisement, eligible applicants (whose profile have a 70% completion rate) will be notified on the availability of new vacancies. Applicants will be able to see the notification with description of the advertised vacancy upon which they can start application.		
Trigger:	Publish Job Advertisement		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Publish Job advertisement		
Success Post conditions:	The system successfully send notification to applicant.		
Failed Post conditions:	The system fails to send notification.		
Operations Concepts	- When responsible users finishes the process of preparing job advert and publish, the system will automatically send notification to users (applicant) - Applicant will be able to see the notification icon displaying an alert with a number indicating the presence of a new notification - Upon clicking the notification menu, applicant will be able to see all job related notifications (in this case a new vacancy)		
<Input Summary>:	Publish Job advertisement		
<Output Summary>:	List of notification to be embedded on the notification icon		
Frequency of Use:	On demand		
Assumptions:	Since the recruitment process has time limitation, applicant must be informed immediately upon availability of new job vacancy.		
Main Success Scenario	- User View Job Permits information on cadres and corresponding scheme of services - User select option to add new scheme of service - System display field for user to enter information - User enter information and save. - System display successfully message		

	12. Scheme of service is stored and can be accessed.
Extension Scenario	c) Missing entry on mandated field 3. System display error message "This field is required" 4. System return user to missing info field d) Duplicate Entry 3. System display error message "This entry is already in the system" 4. System return user to the stored scheme of service

Use Case # UCAP012: Assign team for shortlisting

Use Case ID:	UCAP012	Variables Dictionary	Job Application
Use Case Name:	Assign team for shortlisting		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP039, AP040, AP042, AP043		
Actors:	HRD		
Description:	Once application period has ended, a taskforce will be assigned to review all application and provide a list of qualified applicant that can proceed to other stages such as interviews etc.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	The system is able to assign team for shortlisting.		
Failed Post conditions:	The system fails to assign team for shortlisting.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All job application must be reviewed by a qualified team		
Main Success Scenario	5. The display number of application for a certain cadre 6. The system provide window to add number of available force 7. The system provide window to enter the approximated number of application a member of a taskforce can review. 8. The system will then automatically calculate the suggested strength of a taskforce		
Extension Scenario			

Use Case # UCAP013: Review Application (Long list)

Use Case ID:	UCAP013	Variables Dictionary	Job Application
Use Case Name:	Review Application (Long list)		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	API11, API10, AP023,		
Actors:	HRD, Desk Officer		
Description:	All applications will be reviewed once application period has ended. The review will provide a list of possible candidates (long list) for a position that are to be further tested through other stages (ie interviews).		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of all applications per each vacancy (cadre).		
Failed Post conditions:	The system fails to display list of applications per each cadre.		
Operations Concepts	- After application period ends, the system will lock any attempt for applicant to apply for a job. - The system will display all applicant per cadre they've applied (with number) - Responsible user must go through each applicant information to verify if that applicant has qualified and is eligible to apply for that particular job. - Upon completion of review process, the system will provide a list of successfully applicant and send notification on the next stages (interviews)		
Exceptions:	N/A		
Includes:	Receive Application		
Frequency of Use:	On demand		
Assumptions:	All application must be reviewed to ensure applicants have adhered to the needs of the vacancy		
Main Success Scenario	6. System send notification on the closing of the application period 7. Responsible users responds to the notification by opening and see a list of applicants that have applied for a particular cadre 8. The system will provide window for quick preview on applicants information such as attachments, personal info etc		

	9. Each candidates selected will be sent with notification indicating the status of his/her application (success or rejected - with a reason) 10. The system will finally list all successfully candidates that will have to go through next stages (interviews)
Extension Scenario	

Use Case # UCAP014: Receive Job Application

Use Case ID:	UCAP014	Variables Dictionary	Job Application
Use Case Name:	Job Application		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP023, AP024, AP026		
Actors:	Desk Officer		
Description:	Authorized users will be able to see all applications as they unfold during and after application period has ended.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	System display list of applications		
Failed Post conditions:	The system fails to list of applications.		
Operations Concepts	- The system provides window for applicants to apply for a job vacancy - After filling all required information, applicant will then submit the application - The system will allow authorized users to see a real time progress as the application process is unfolding with increasing number. - Authorized users will be able to view the list of all application per given cadres.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All applications must be accounted for within the system.		
Main Success Scenario	3. System display list of application with a counter to monitor number of application 4. Authorized users can navigate through different job vacancy to monitor the progress of job application processes		
Extension Scenario			

Job Application Activity Flow

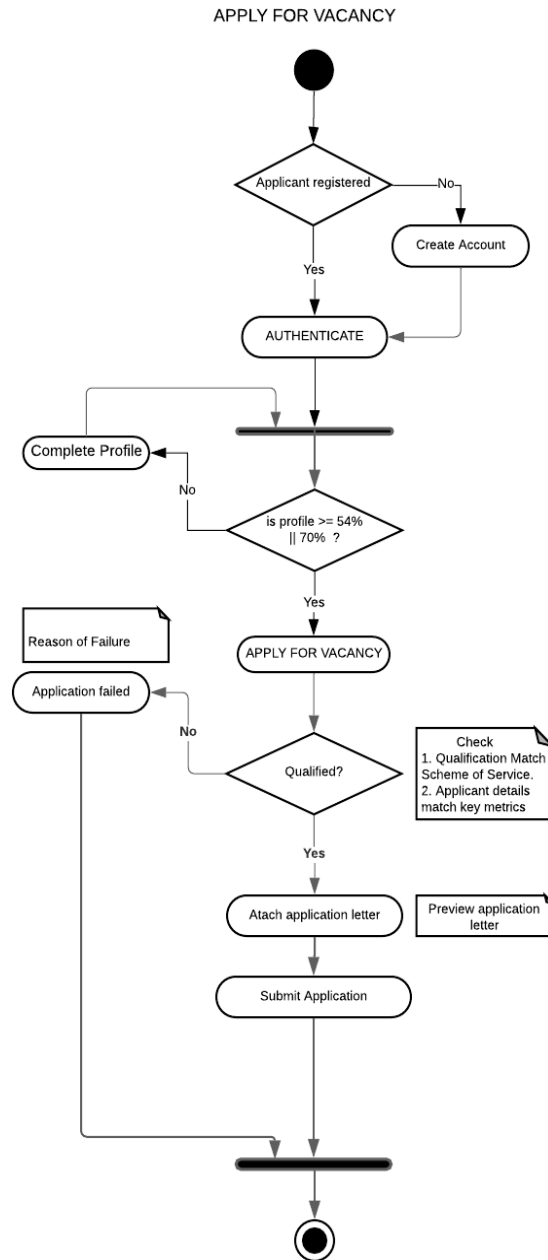


Figure 54: Job Application Activity Flow

6.4 Interview Question Use Case

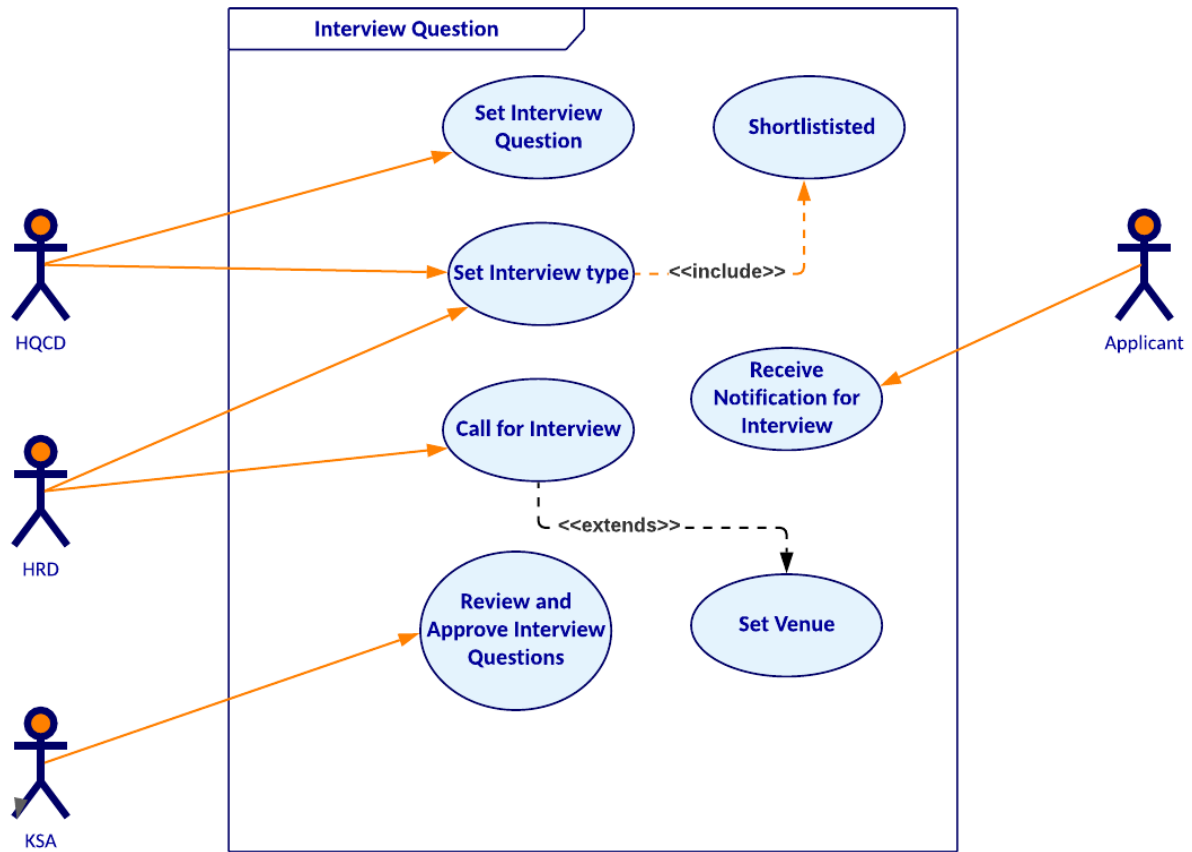


Figure 55: Interview Question Use Case

Interview Question Use Case Description

Use case Descriptions

Use Case ID:	UCAP012	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question- Set Interview type		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	When the Shortlisting completes HQCD and HRD setting up the interview type which will be based on the number of Shortlisted Applicant and Type of Cadre. Interview type can be Written (Aptitude), Practical and Oral Interview.		
Trigger:	Receive number of Shortlisted Candidate		
Static Preconditions:	Authorized Access Receive Notification		
< Dynamic Preconditions >:	Shortlisted Applicant		
Success Post conditions:	The system displays the number of Interviews to be done to a particular Cadre.		
Failed Post conditions:	The system fails to display the type of interview to be done.		
Operations Concepts	Responsible users will receive a number of shortlisted applicants.. Responsible users will compare number of post to the number of Shortlisted Candidate so as to check if the cadre has Written(Aptitude) interview		

	Responsible users will also check the Type of Cadre if it has Practical Interview Then the Responsible users will set the Oral Interview
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Based on Number of Shortlisted Candidate to determine type of Interview
Main Success Scenario	Set up of interview to each Cadre Allocate Schedule and Venue to each Cadre
Extension Scenario	

Use Case ID:	UCAP013	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	After analysis of the type of interview the responsible user prepares the interview question which will depend on the type of interview i.e Written (Aptitude), Practical, Oral Interview.		

Trigger:	Receive analysis of the type of interview Prepare Interview Questions according to the Duties and Responsibility of the Particular Cadre.
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Type of Cadre and the type of interview
Success Post conditions:	Presenting the Interview Questions for all types of Interview according to the nature of each Cadre.
Failed Post conditions:	Fail to prepare Interview Questions to each Interview Type.
Operations Concepts	Responsible users will receive the number of Interview types set for each Cadre. Responsible users will communicate with the sources of Interview questions. Responsible users receive the draft of the Interview Question from the Sources. Responsible Users will review the drafts of the Interview Question. After Reviewing the Interview Question the responsible users will submit the drafted interview Question to the CEO for approval. The CEO will review received set of draft interview questions After reviewing the Interview Questions the CEO will approve the received Draft Interview Questions so as to be used in the Interview.
Exceptions:	N/A
Includes:	N/A

Frequency of Use:	On demand
Assumptions:	Based on Type of Interview and nature of the Cadre
Main Success Scenario	Set the Interview Question to each stage of the Interview
Extension Scenario	

Use Case ID:	UCAP014	Variables Dictionary	Employment Permit
Use Case Name:	Call for Interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, Applicant		
Description:	When the Set up of Interview Type, Interview Venue and Shortlisting Process complete the following process is Call for Interview.		
Trigger:	Receive type of Interview and Venue for each Cadre Prepare Invigilator and Markers for the Interview Question. Interview number to each successful candidate and reasons to those who are unsuccessful.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Type of Interview and the number of Successful Candidate		

Success Post conditions:	Notification to all responsible Users for Call for Interview announcement
Failed Post conditions:	Fail to give notification of the Call for Interview.
Operations Concepts	Responsible users will set an interview Timetable and allocate Venue for each Cadre. Responsible users will issue a Call for Interview announcement in a PO-PSRS Website and SMS. Responsible users provide feedback to applicants on the status of their application. Applicant will accept/deny call for interview feedback Responsible Users will form invigilators and/or interview panels.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Set of Interview Type, Set of Interview Venue and Shortlisting process complete.
Main Success Scenario	Set the Interview Venue and Timetable Notification to the applicant and all responsible Users Issue of Call Interview announcement to PO-PSRS website Applicant receive notification on the application status
Extension Scenario	

Interview Question Activity Flow

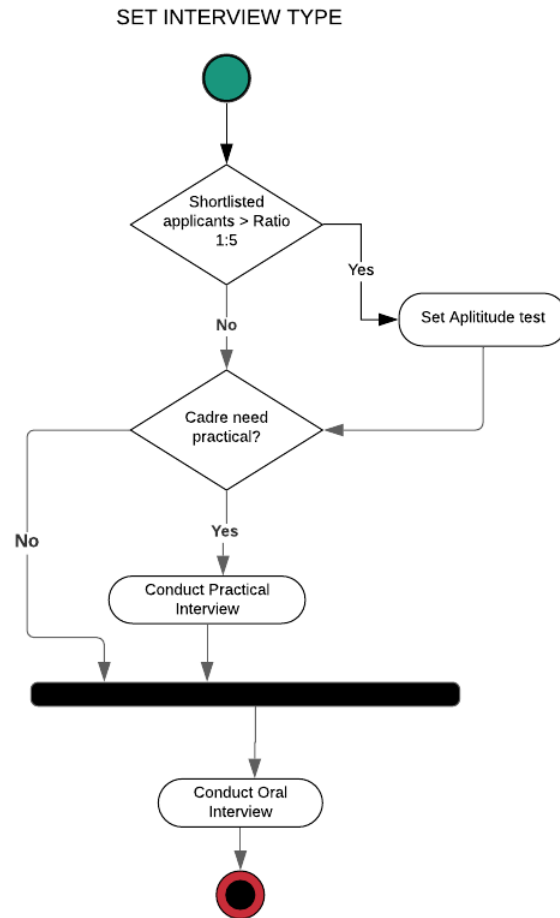


Figure 56: Interview Question Activity Flow

6.5 Applicant Shortlist Use Case

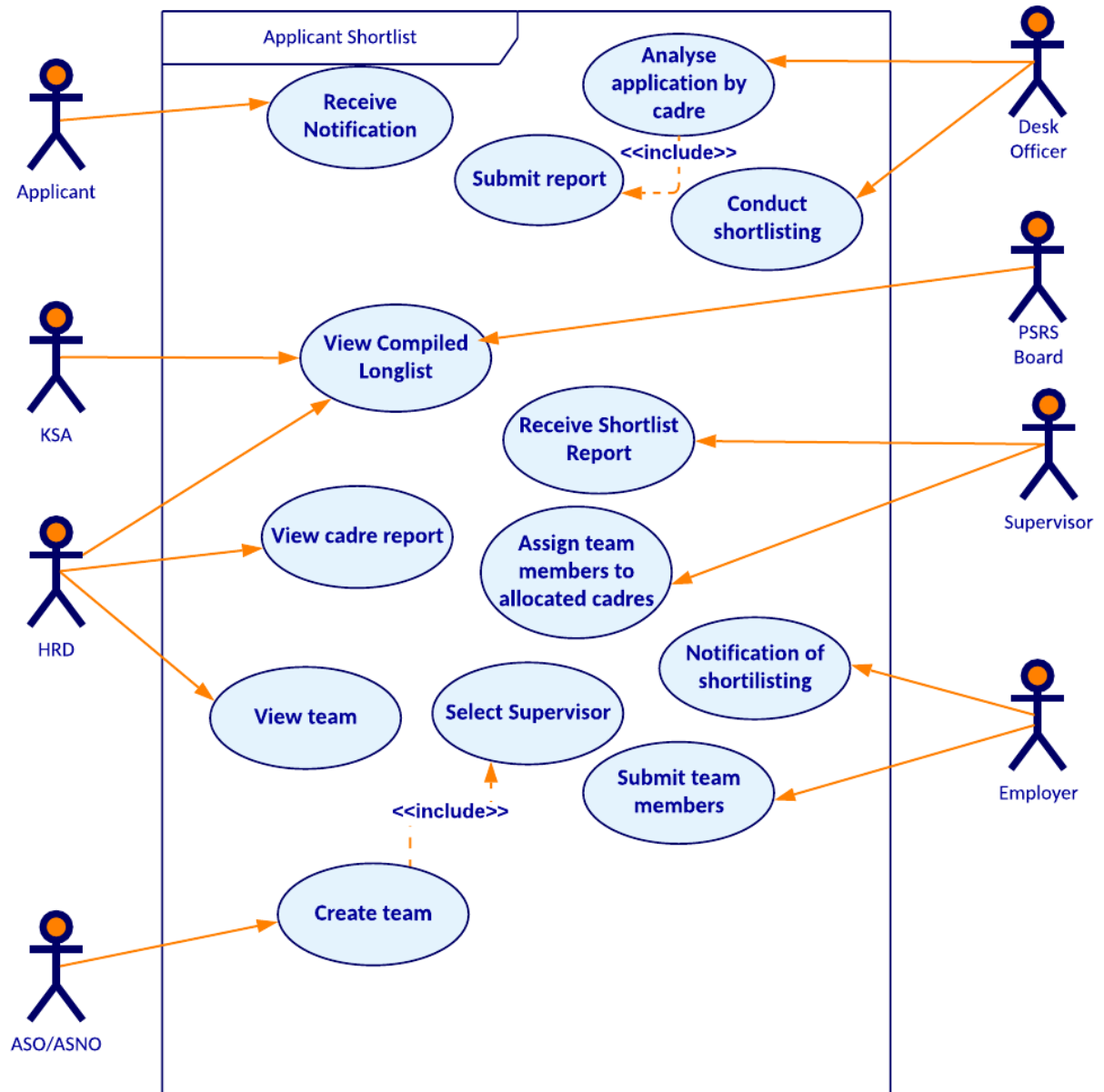


Figure 57: Applicant Shortlist Use Case

3. Applicant Shortlist Use Case Description

Use Case ID:	UCAP015	Variables Dictionary	Employment Permit
Use Case Name:	Applicants Shortlist		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Applicant, Desk Officer, KSA, PSRS Board, HRD, Supervisor, Employer, ASO/ASNO		
Description:	Immediately after advert deadline system will start shortlisting of applicants by cadre and generate various shortlisting report e.g. v. Shortlisted candidate by gender. vi. Shortlisted candidate by disability. vii. Shortlisted candidate by age; viii. Shortlisted candidate by University.		
Input Summary:			
Output Summary:			
Trigger:	2. Receive notification after advert deadline reached		
Static Preconditions:	iii. Authorized Access iv. Receipt of notification		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	vii. System will analyze application by cadre and generate shortlisting report. viii. ASO/ASNO will form team and select supervisors to conduct shortlisting. ix. Employer will receive notification and submit members that will participate in the shortlisting. x. Supervisor(s) will distribute compiled longlist to the selected team for shortlisting. xi. HRD and KSA will receive compiled longlist and shortlisted reports. xii. Applicants will receive notification i.e. successful and unsuccessful.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	2. Advert deadline must be reached.		
Main Success Scenario	vii. Applicant to successful apply for the available vacant. viii. System to generate compiled longlist report. ix. User to conduct shortlisting. x. User view shortlisting report. xi. User to receive notification. xii. Applicant to receive notification.		

Extension Scenario	b) Applicant shortlist is not complete Recruitment termination during shortlisting process.

Applicant Shortlist Activity Flow

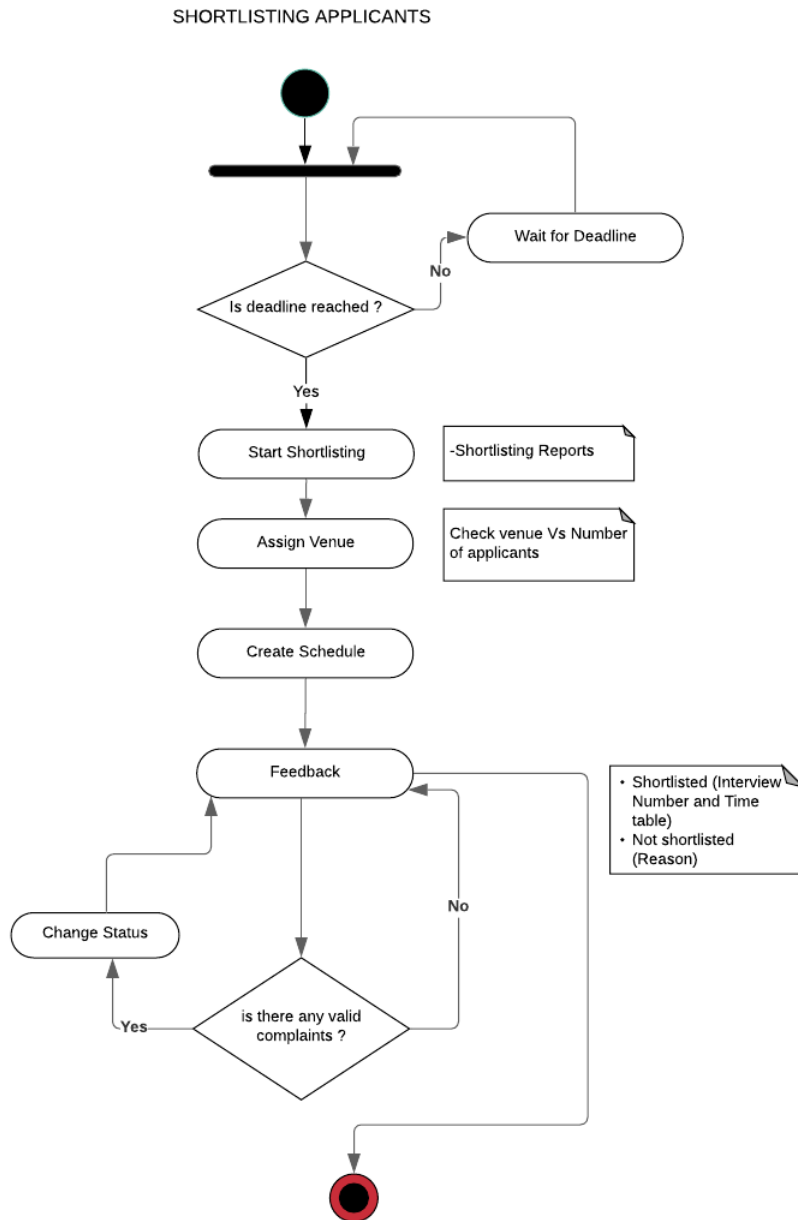


Figure 58: Applicant Shortlist Activity Flow

6.6 Call for Interview Use Case

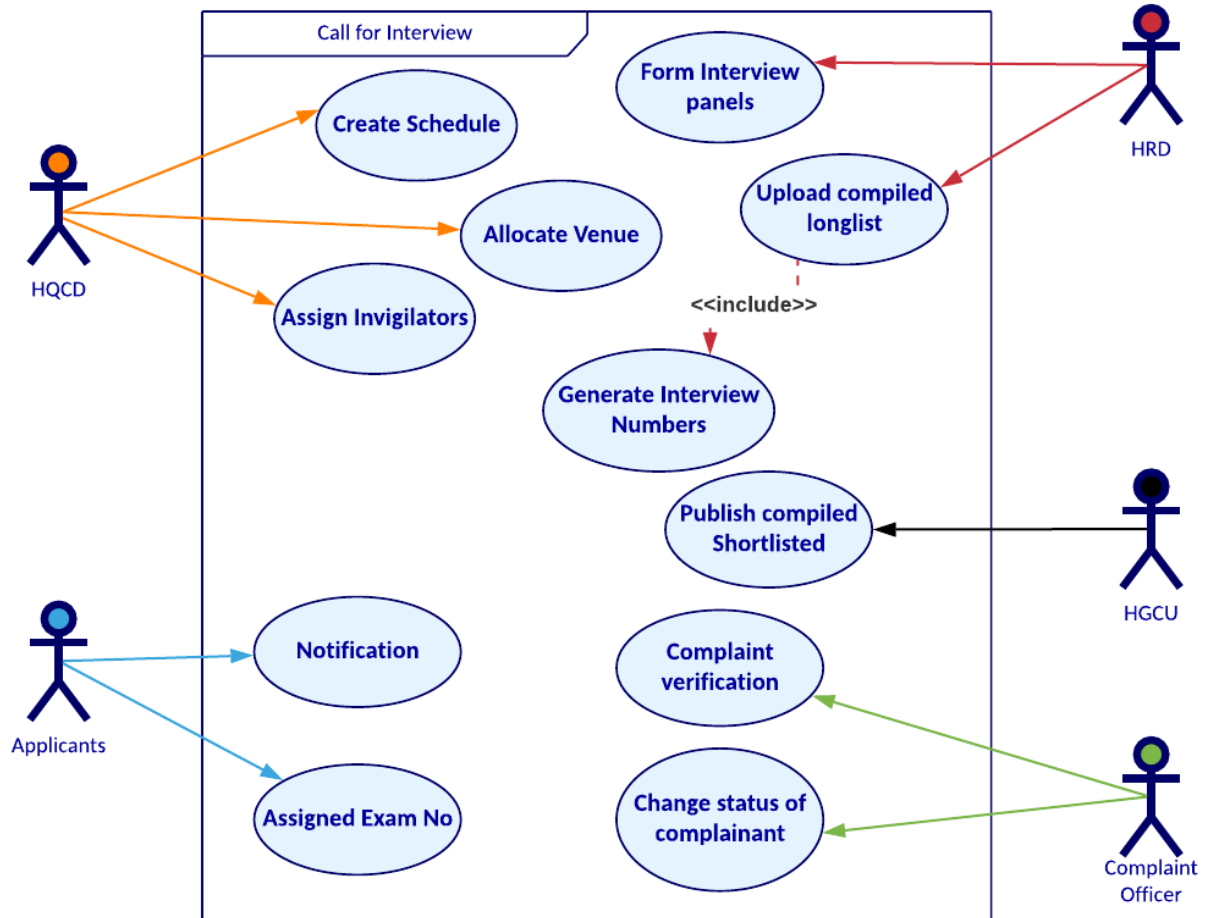


Figure 59: Call for Interview Use Case

4. Call for Interview Use case Description

Use Case ID:	UCAP016	Variables Dictionary	Call for interview
Use Case Name:	Call for interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD, HGCU, Complaint Officer, Applicants		
Description:	Immediately after shortlisting, interview panel will be created, upon successful creating panel venue will be suggested with their respective applicants and invigilators ready to initiate call for interview.		
Input Summary:			
Output Summary:			
Trigger:	iii. Advert reached deadline iv. Shortlisting (Generation of compiled longlist)		
Static Preconditions:	Compiled longlist established.		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	Failure Notification.		
Operations Concepts	vi. System will generate compiled longlist. vii. HRD will form interview panels and upload compiled longlist. viii. HQCD will create venue, allocate venue and assign invigilators. ix. Applicant will receive interview number upon successfully selected on the shortlisting process. x. To attend interview applicant must confirm to attend in the interview.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Shortlisting completed successful		
Main Success Scenario	v. System to generate compiled longlist. vi. User to create team for interview (Panelist and Invigilator). vii. User to create venue and assign applicants to venue. viii. Applicants to attend interview.		
Extension Scenario	N/A		

Call for Interview Activity Flow

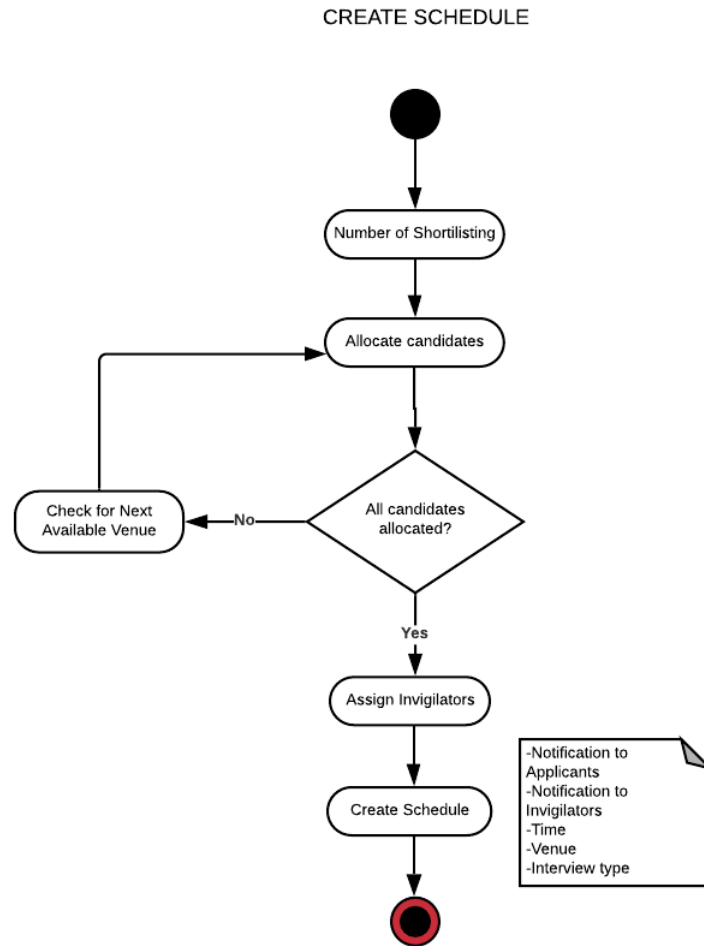


Figure 60: Call for Interview Activity Flow

6.7 Conduct Interview Use Case

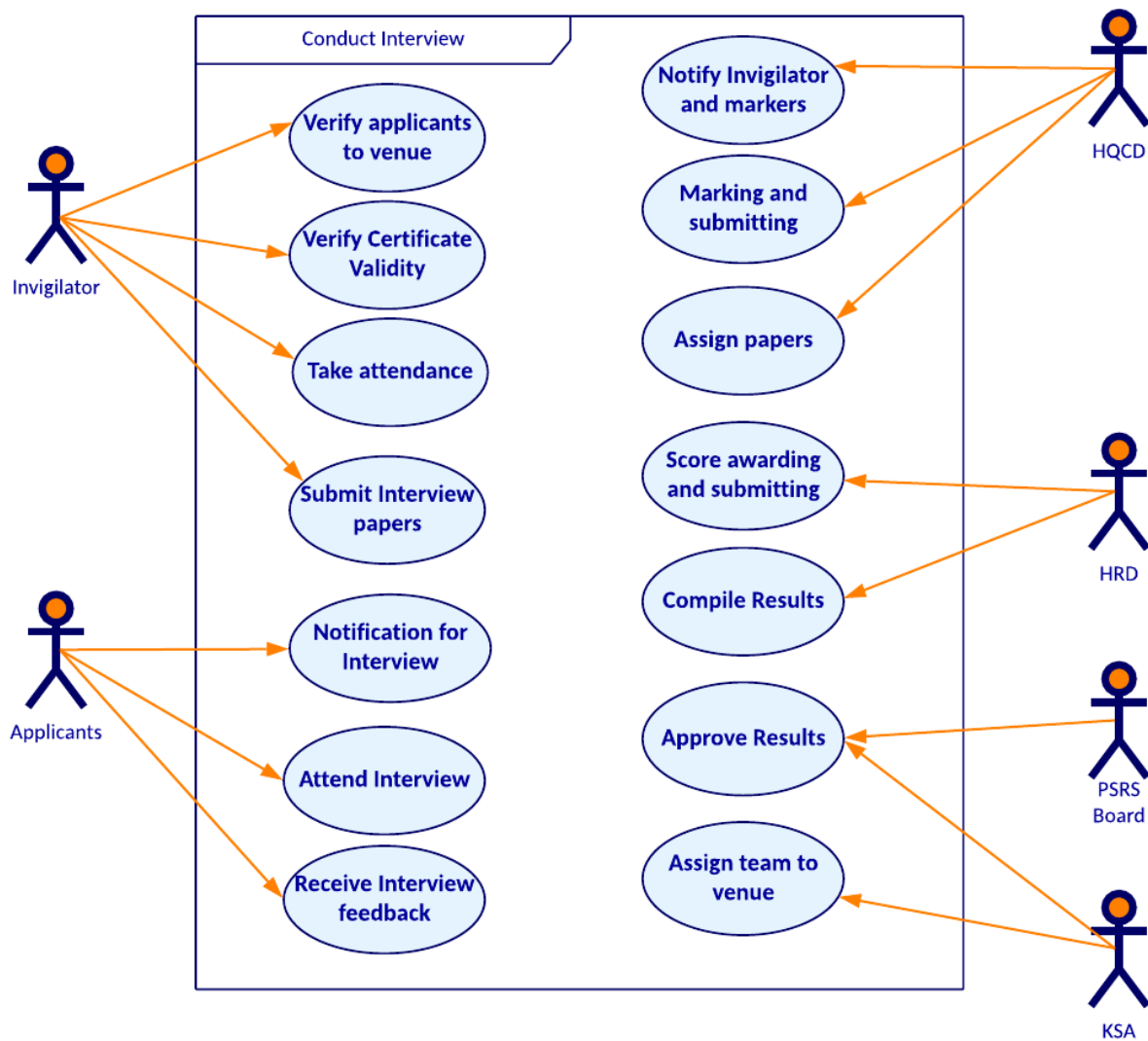


Figure 61: Conduct Interview Use Case

Conduct Interview Use Case Description

	Use Case ID:	UCAP017	Variables Dictionary	
	Use Case Name:	Conduct Interview		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		Invigilator, HQCD, HRD, Applicant, KSA, PSRS Board		
Description:		Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:		2. Applicant Shortlist		
Static Preconditions:		v. Compiled Applicant shortlist vi. Interview questions vii. Interview panels (Invigilators/ Panellist, Markers) viii. Applicants and Interview panels assigned to interview venues		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		N/A		
Failed Post conditions:		The system fails to display information.		
Operations Concepts		vii. Responsible users will verify applicants and certificates. viii. Conduct interview ix. Mark interview x. Submit interview results xi. HRD/HQCD compile results, produce and submit interview reports xii. Review interview reports by the Board		
Exceptions:		Cadres that do not go through the Interview process		
Includes:		N/A		
Frequency of Use:		On demand		
Assumptions:				
Main Success Scenario		v. The system shall notify user on selection vi. User can verify applicant against certificates and venue vii. The system displays approved compiled interview results viii. Applicants to get interview feedback from the system		
Extension Scenario		N/A		

Conduct Interview Activity Flow

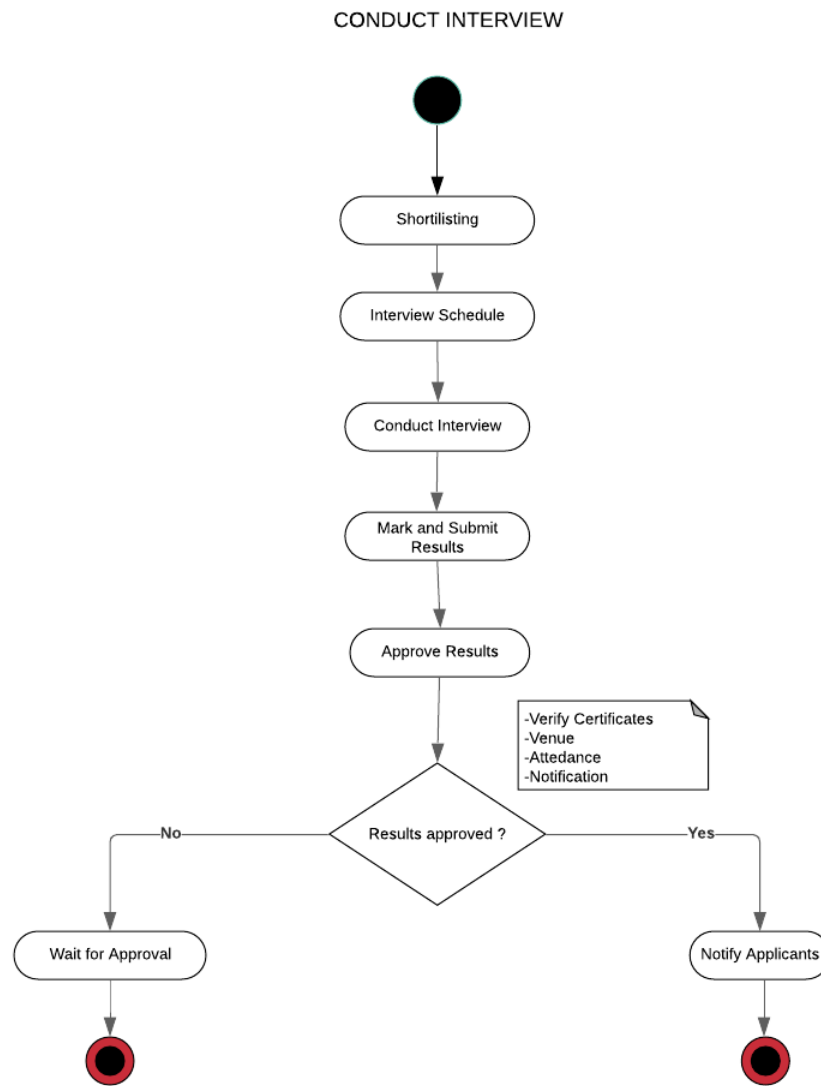


Figure 62: Conduct Interview Activity Flow

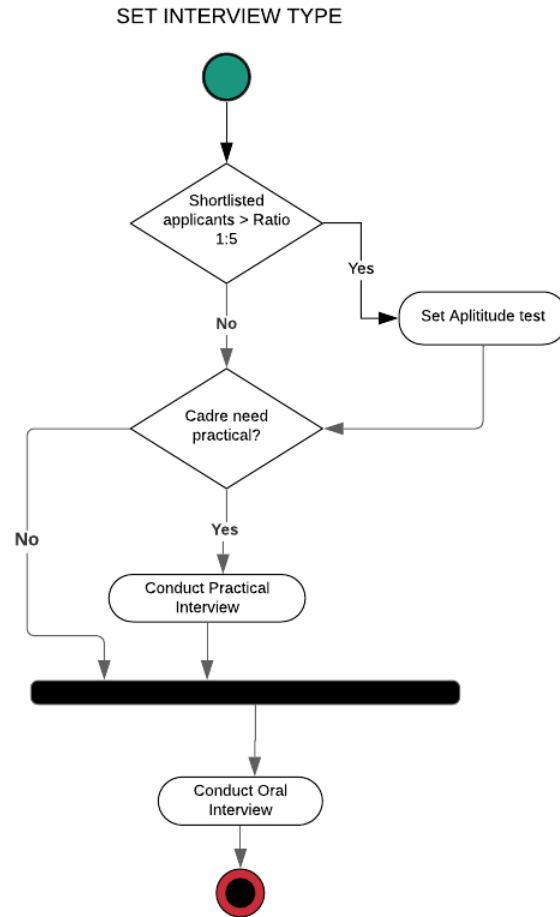


Figure 63: Set interview type

6.8 Placement Use Case

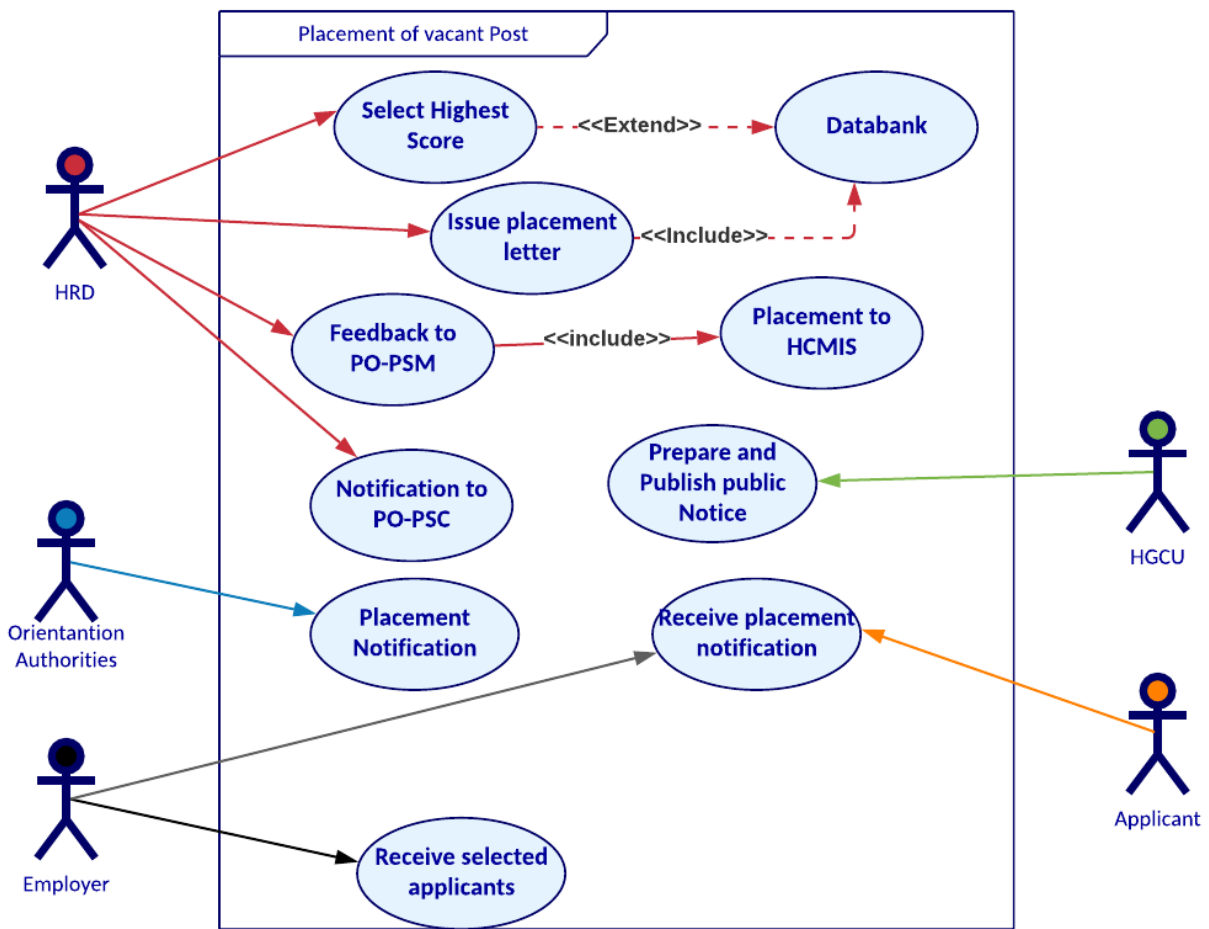


Figure 64: Placement Use Case

Placement Use Case Description

Use Case ID:	UCAP018	Variables Dictionary	Employment permit
Use Case Name:	Placement from Databank		
Created By:	PSRS	Last Updated By:	
Date Created:	18/01/2021	Last Revision Date:	18/01/2021
Actors:	HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:	After permit analysis, the user/system checks for availability of suitable candidates to be placed from the Databank. If suitable candidates are available the systems places them according to the requirements, if they are not sufficient or unavailable the next of advertising vacant posts is triggered		
Trigger:	complete permit analysis		
Preconditions:	Valid permit, with its associated scheme of service.		
Post conditions:	iii. System places available suitable candidates iv. where there are insufficient or unavailable suitable candidates, system triggers advertisement of the vacant posts		
Normal Flow:	ix. Issue letter of placement. x. Issue notification to employer. xi. To provide feedback to PO - PSM (Placement into HCMIS) xii. Issue notification to PO-PSC xiii. Issue public notice for call for engagement xiv. Issue notification to orientation authorities xv. if available candidates are insufficient to fill vacant posts advertise the remaining vacant post xvi. if there are no suitable candidates in the databank advertise vacant posts		
Exceptions:	some cadres may not follow the normal recruitment process for placement		
Includes:	3. issuance of placement letter 4. placement into HCMIS		
Frequency of Use:	On demand		
Assumptions:			
Notes and Issues:	N/A		

Placement from Advertising Vacant Post

	Use Case ID:	UCAP019	Variables Dictionary	
	Use Case Name:	Placement from advertising vacant Post		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:		Following the interview process and approval of final results, successful applicants are placed in vacant posts. The remaining unplaced successful candidates are stored in the databank.		
Trigger:		Completed interview process		
Static Preconditions:		1. Passed candidates 2. Valid permit		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		iv. System places available suitable candidates v. System triggers advertisement of the vacant posts when there are insufficient or unavailable suitable candidates vi. System stores unplaced successful candidates in databank.		
Failed Post conditions:		The system fails to place successful candidates to vacant posts and databank		
Operations Concepts		ix. Sort candidates in descending order of scored marks x. Place candidates with highest scores first xi. Print placement letter xii. Issue notice to employer on placement and provide feedback to PO - PSM (Placement into HCMIS) xiii. Issue notification to PO-PSC xiv. Issue placement advert to appropriate media xv. Issue notification to orientation authorities xvi. Storage of unplaced successful candidates in databank		

Exceptions:	When two or more candidates have the same high score the following criteria should be used to decide on who gets placed first:- v. If one of the candidates is disabled, then that candidate will get placed first. vi. If all or none of the candidates are disabled, then the female candidate will get placed first. vii. If all or none of the candidates are female, then the oldest candidate will get placed first. viii. If the candidates are the same age, then alphabetical order of names is followed.
Includes:	iv. Issuance of placement letter v. Placement into HCMIS vi. Storage of unplaced successful candidates in databank
Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	vii. Arrangement of highest scores of candidates viii. Placement of successful candidates ix. Issuance of placement letter x. Issuance of placement details to Employer and PO-PSM (through HCMIS) xi. Issuance of notification of placement to PO-PSC and Orientation Authorities xii. Issuance of placement advert to public via appropriate media
Extension Scenario	N/A

Placement Activity Flow

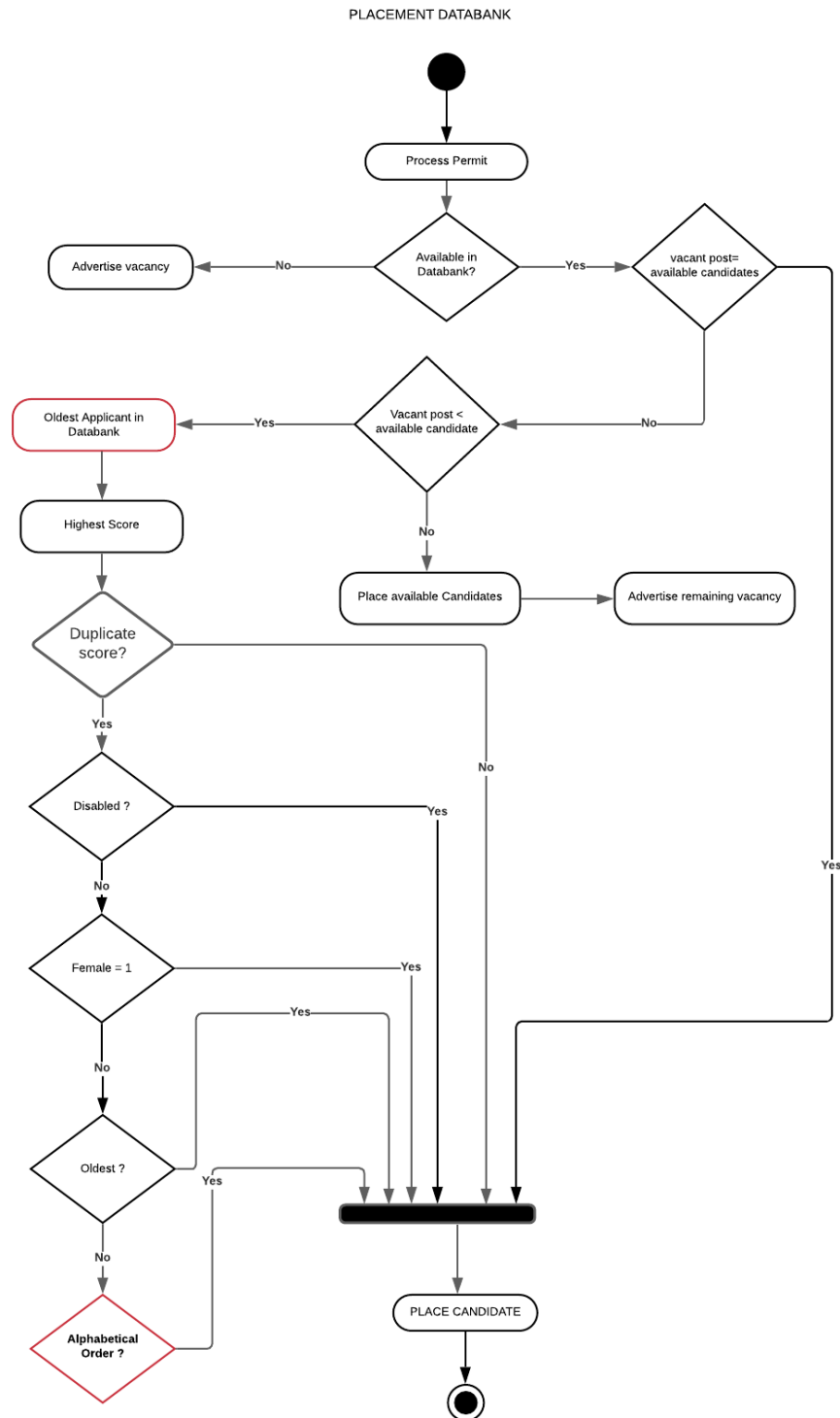


Figure 65: Placement Activity Flow

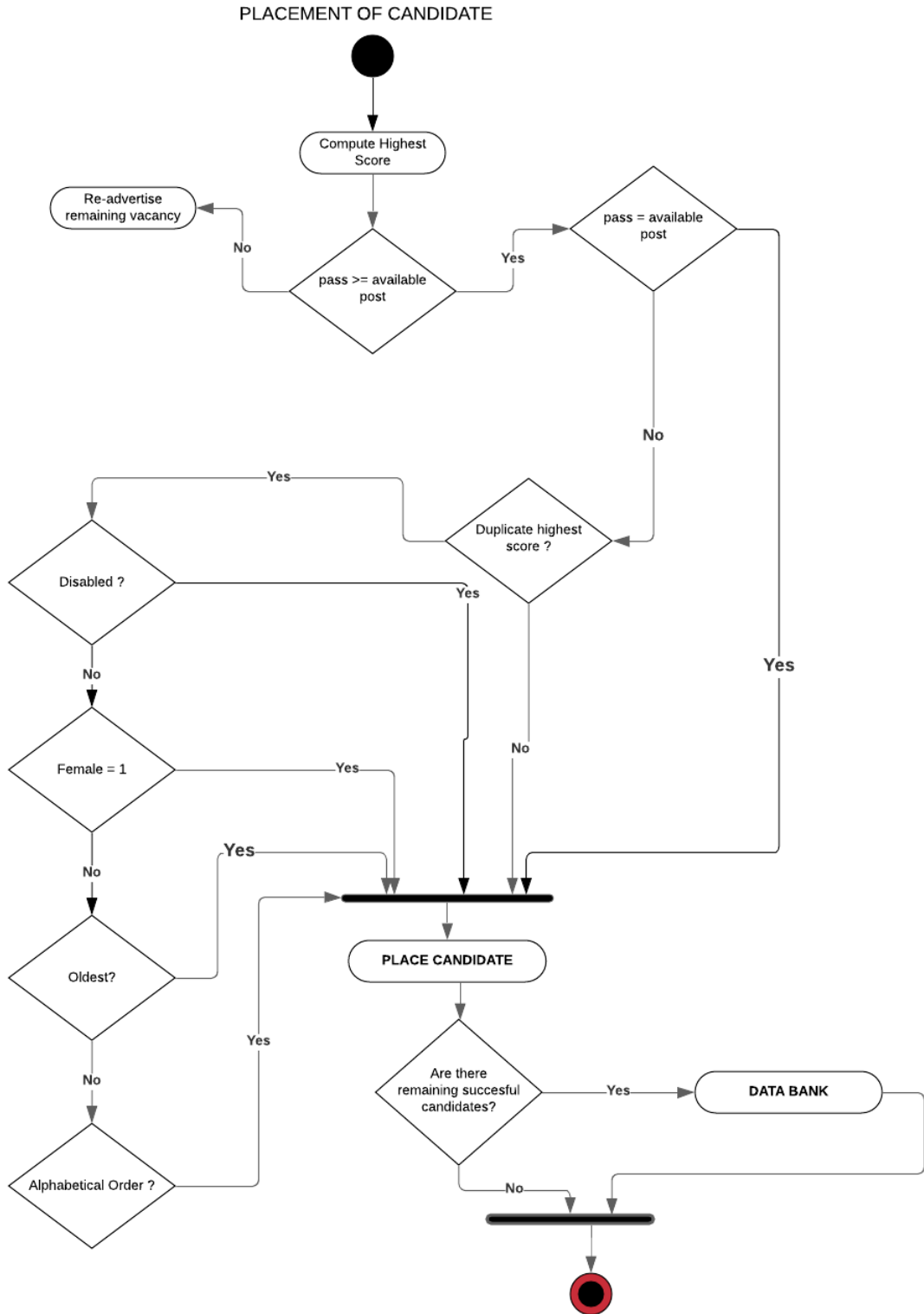


Figure 66: Figure 29: Placement of Candidates

7.0 MOCKUPS (User Interface (UI) and User Experience (UX) Design)

Our 3-week design sprint was definitely not enough to completely redesign Ajira Portals' web UI, however, we feel that we tackled the design task project successfully. Our UI/UX met the needs of our applicant persona by making the job searching process quick, easy, convenient, and transparent. Although we did not have the time to fully redesign the employer's side of the web app, we took our employer persona's needs and frustrations into consideration in our design.

As AP's existing web app was identified to have usability issues, it needed a responsive web app designed from scratch to improve a noticeably cumbersome experience.

Our design process consisted of 5 phases which were executed using agile methodology: 1) Research 2) Plan 3) Design 4) Test 5) Iterate.

Personas

To compile and visualize our user research, we took our participants' responses and created 2 affinity diagrams — 1 for job seekers and 1 for employers. From these affinity diagrams, we devised 2 user personas that will represent AP's target users. These personas guided us throughout our design sprint to ensure that we design for our users' specific goals and needs.

Planning

After compiling and analyzing all of our research, we came up with some ideas for Ajira Portal websites and mobile app. Because we were limited by time, the design team focused on the applicant's user flow for the current improvements to the AP portal — how they would navigate the web and mobile app — instead of designing both the applicant's and employer's user flows. This would include the following tasks:

- Create a profile
- Search for jobs
- Apply to jobs
- feedback/notifications/messaging
- Track applications and interviews

Site Map

With these features in mind, we created a site map to help us visualize the structure and organization of the content in the web and mobile app.

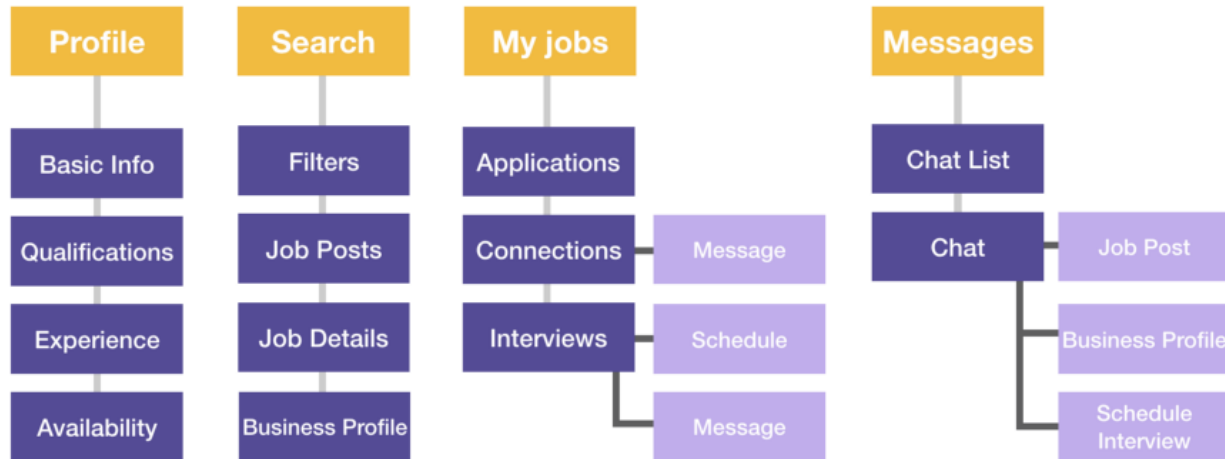


Figure 67: UI/UX Sitemap guide

UI Design Direction

As we began the design stage of our project, we had to nail down the style direction that AP's web and mobile app would take. We wanted the platform to seem friendly, modern, and fresh, while still evoking a professional and trustworthy feel, so as to resonate with our young millennial users.

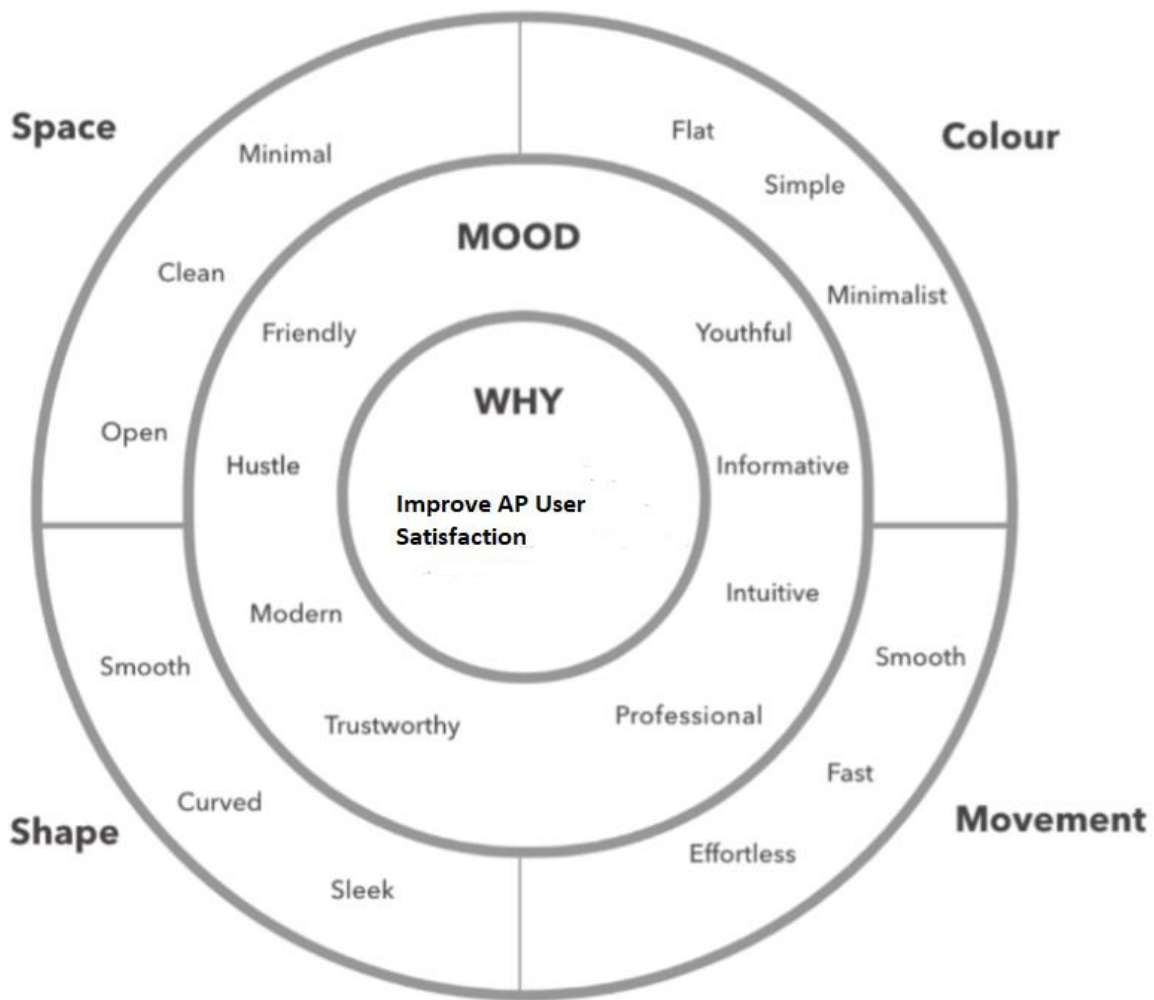


Figure 68: UI/UX Inception

Testing

We tested our design mockups. The goal was to find out if the web and mobile app we designed were straightforward and easy to navigate. The task was to create a profile, find a bar-back position, apply to the job, and schedule an interview (view interview schedule and confirm participation). In order for the test to be successful, participants had to successfully complete the task in less than 5 error clicks. The results from our testing showed that 7 out of the 8 attempts were successful, meaning that from a UX standpoint our web and mobile app were good to go!

Web - Desktop/Laptop Screens Mock ups

1. Home page

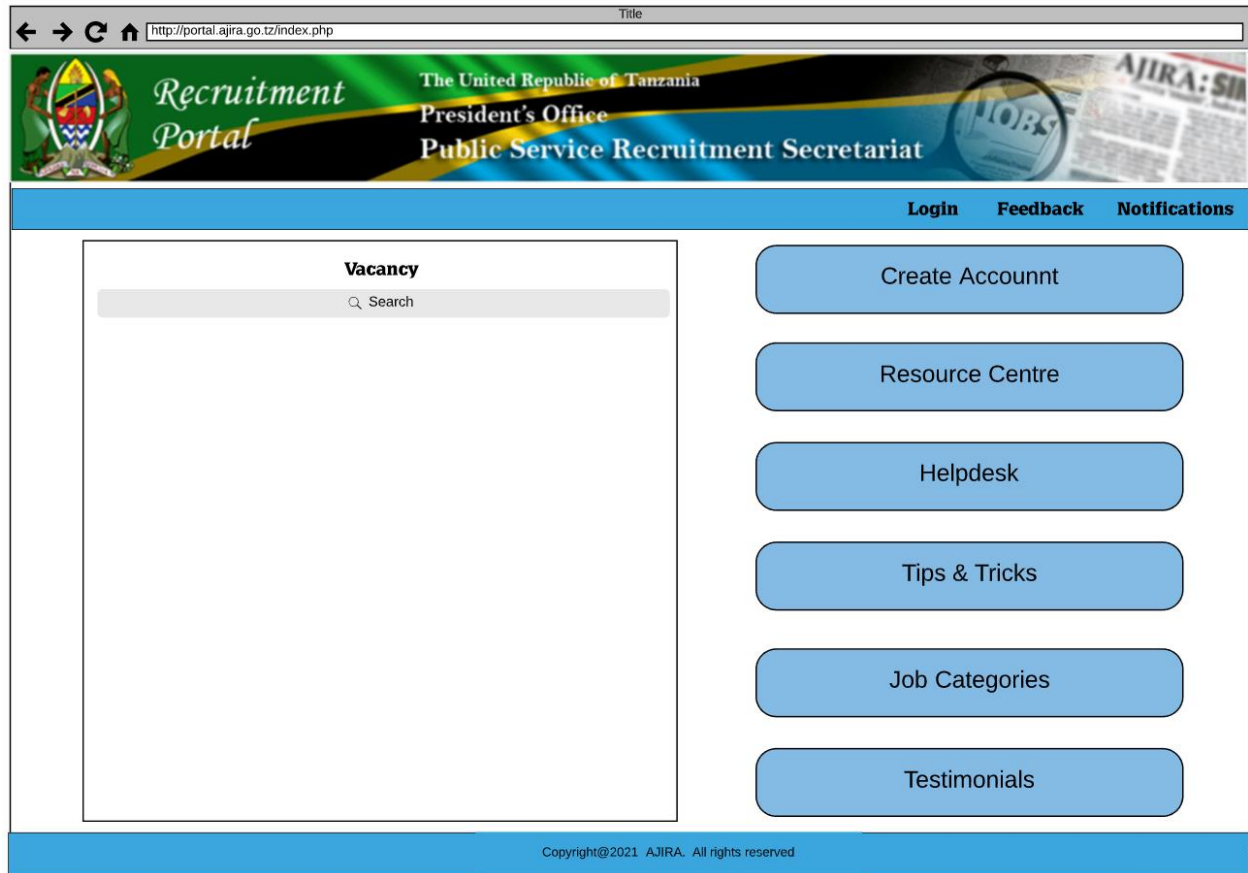


Figure 69: Home page

Landing page

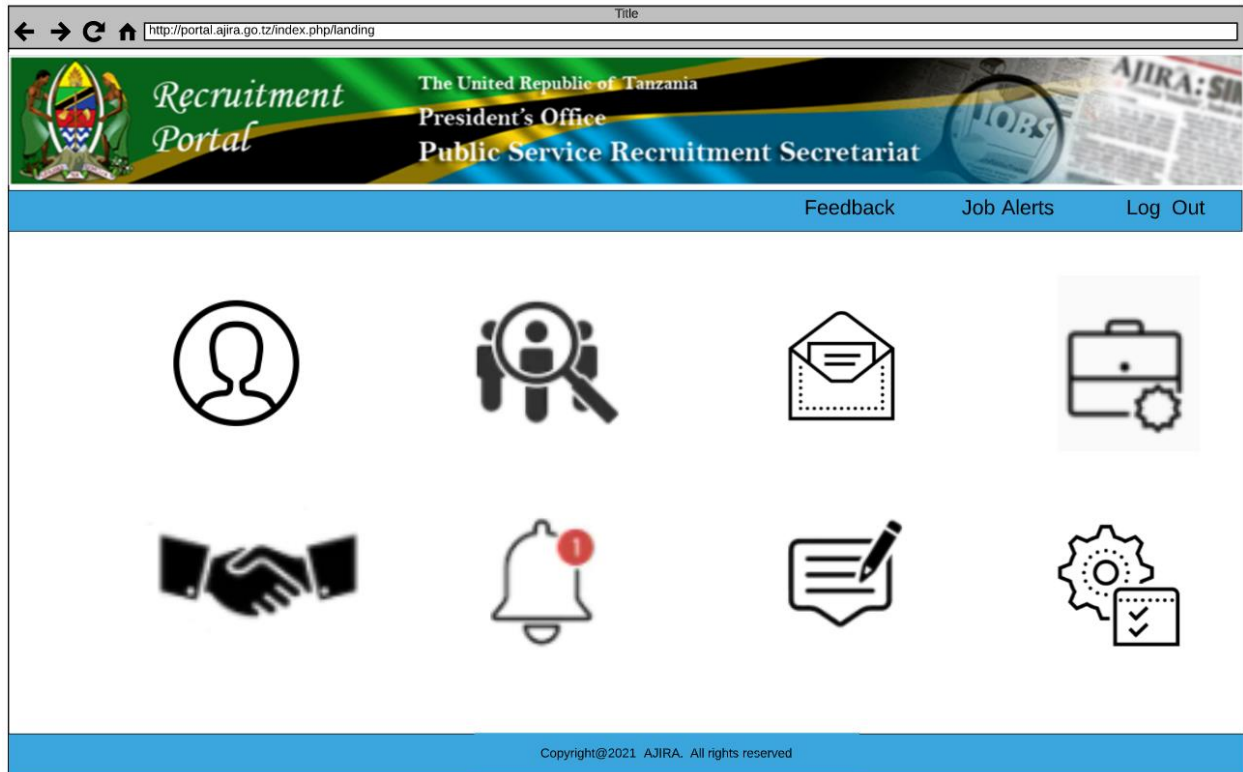


Figure 70: Landing page

My Profile landing page

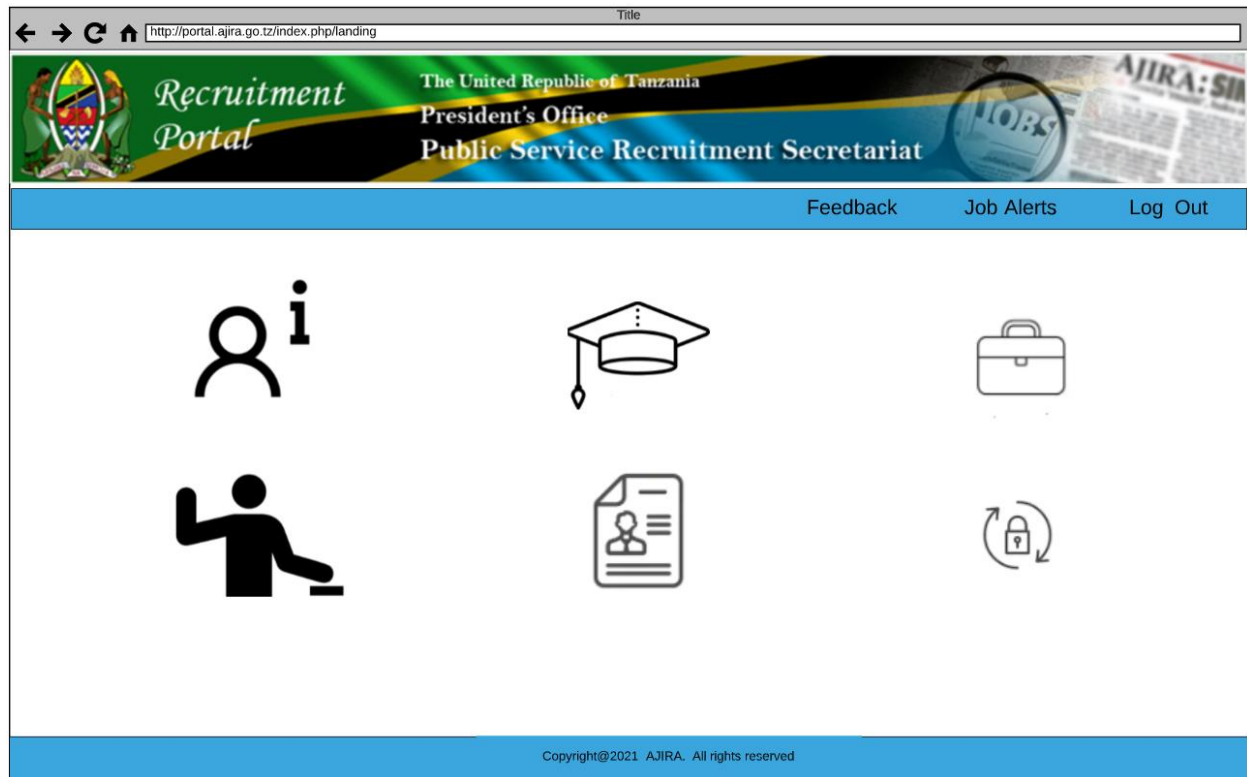
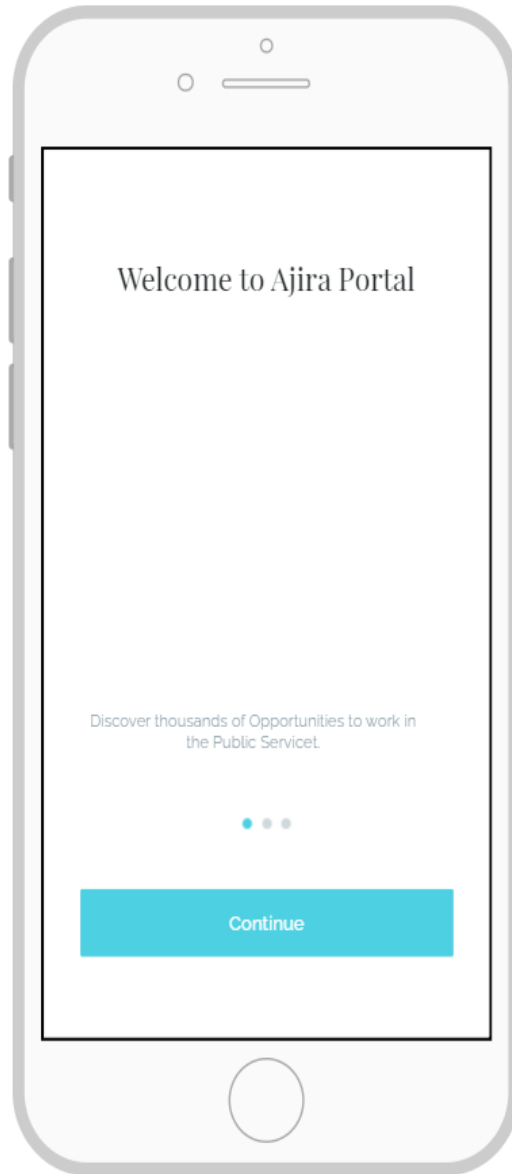


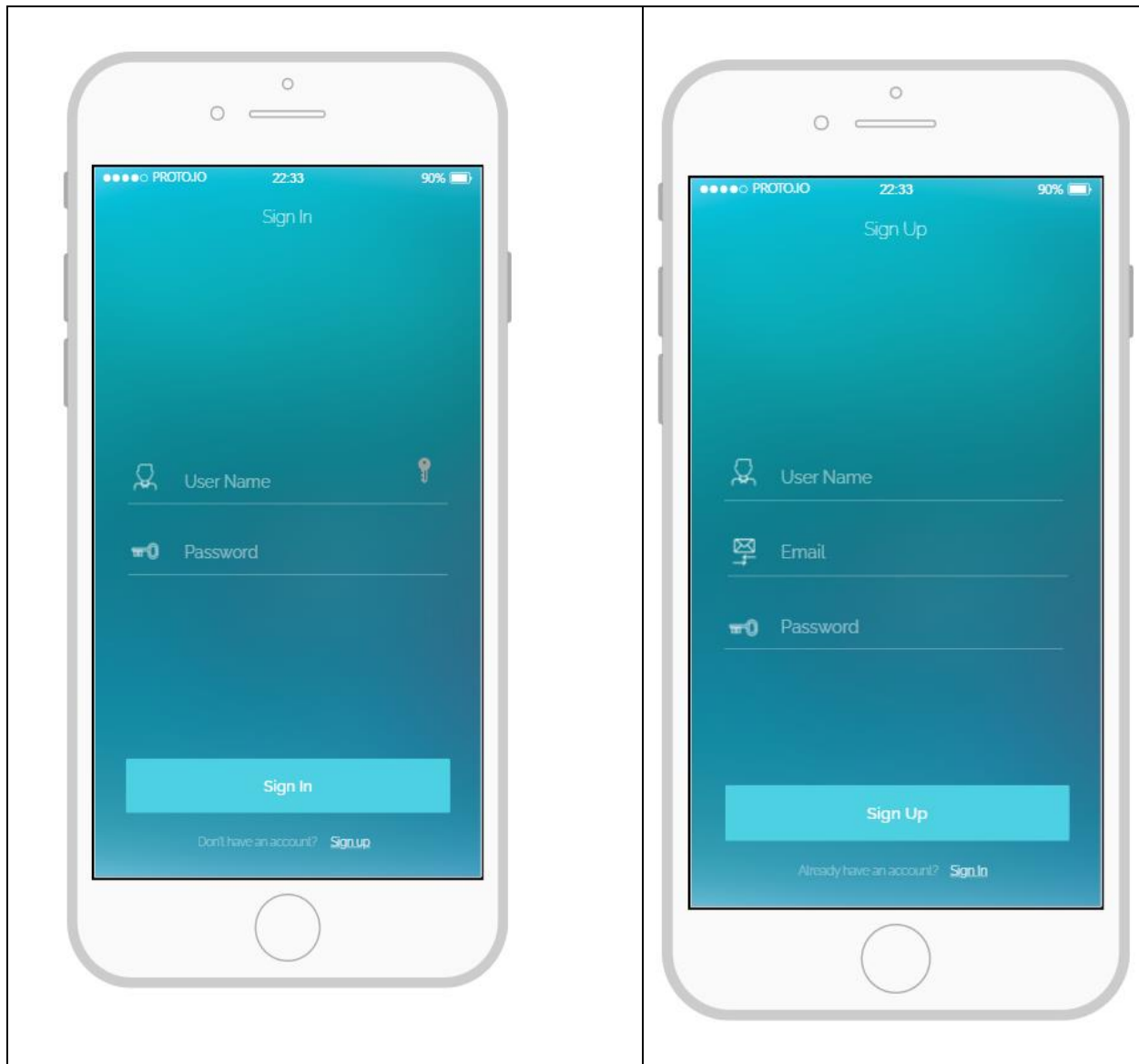
Figure 71: My Profile landing page

Mobile app Screens Mock ups

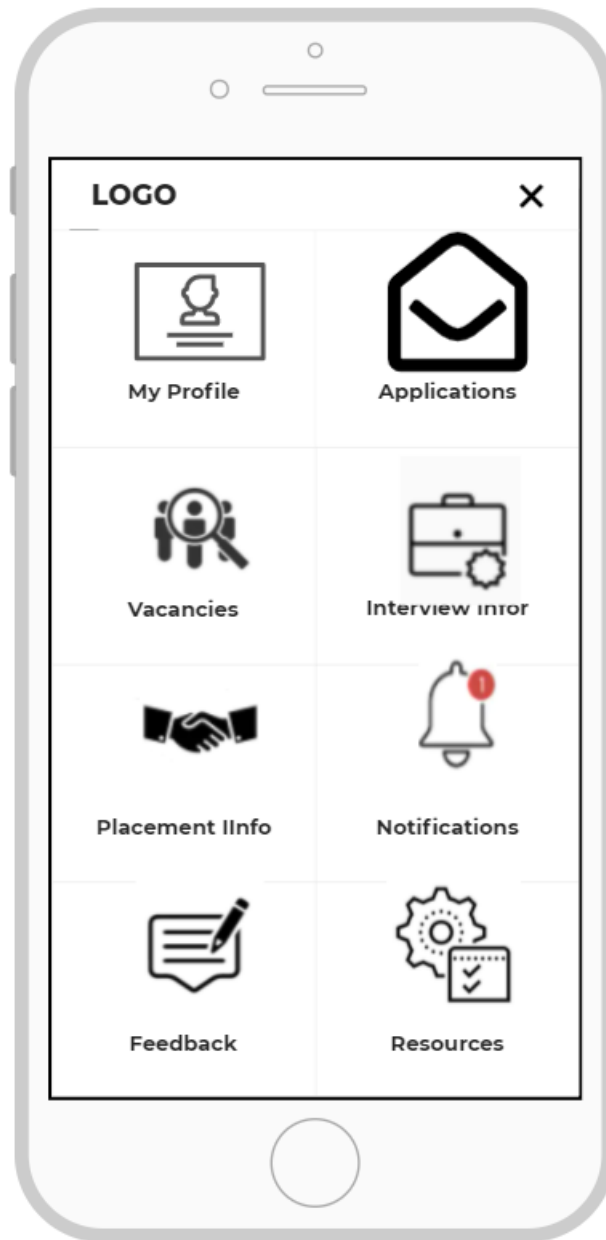
Welcome Screen



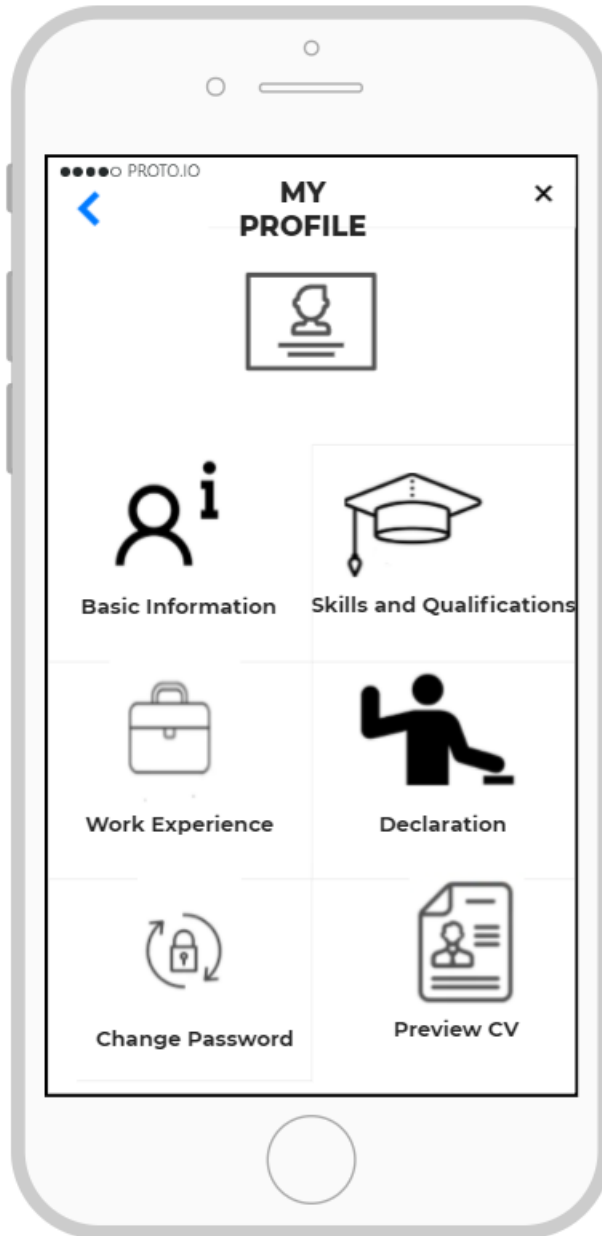
Login/Sign up screen



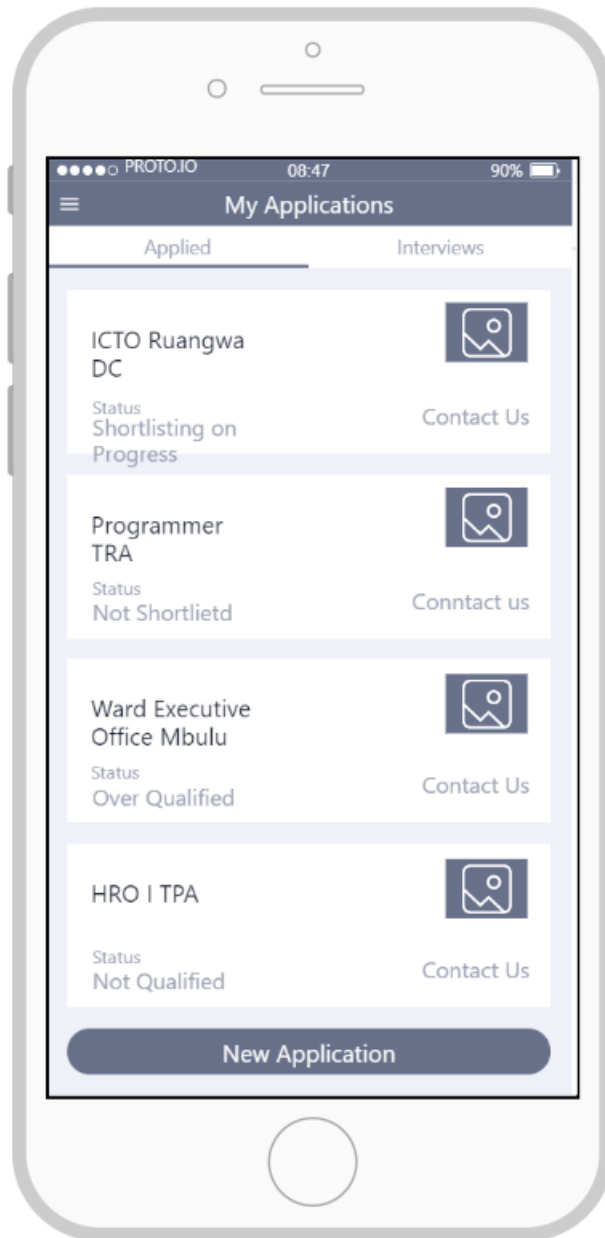
Home Screen



My Profile



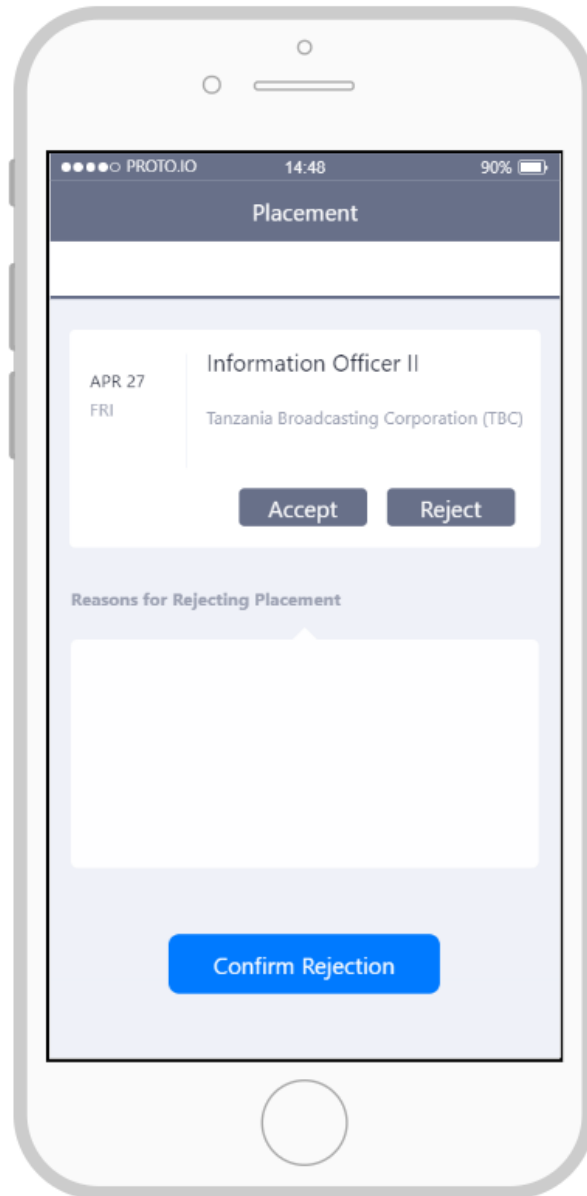
My Applications Screen

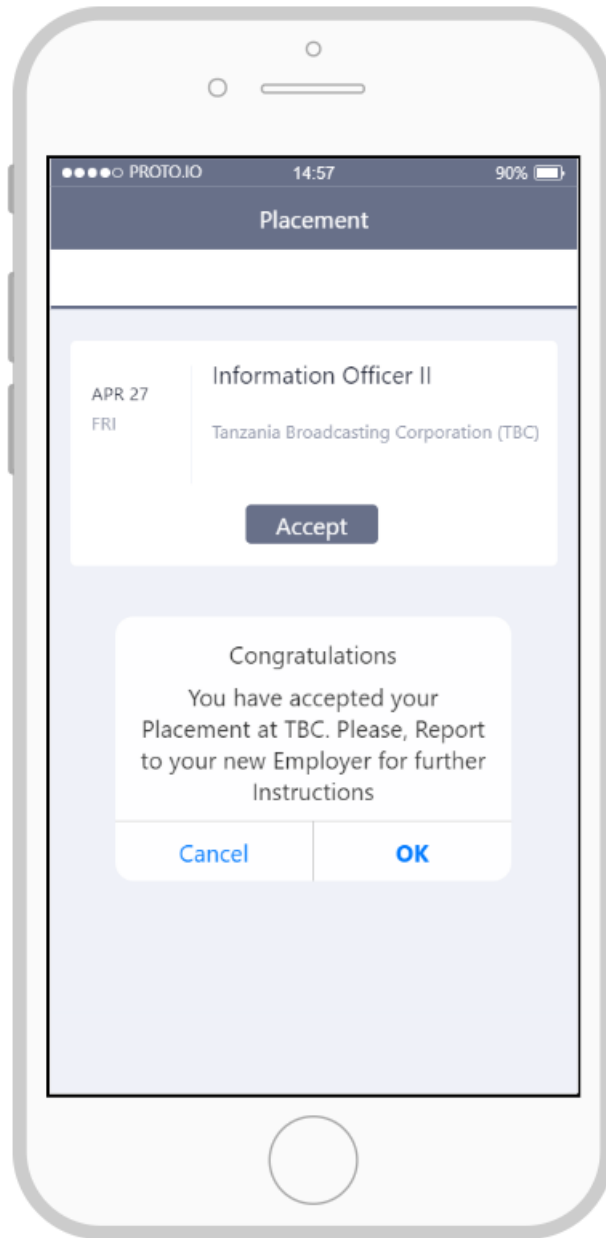


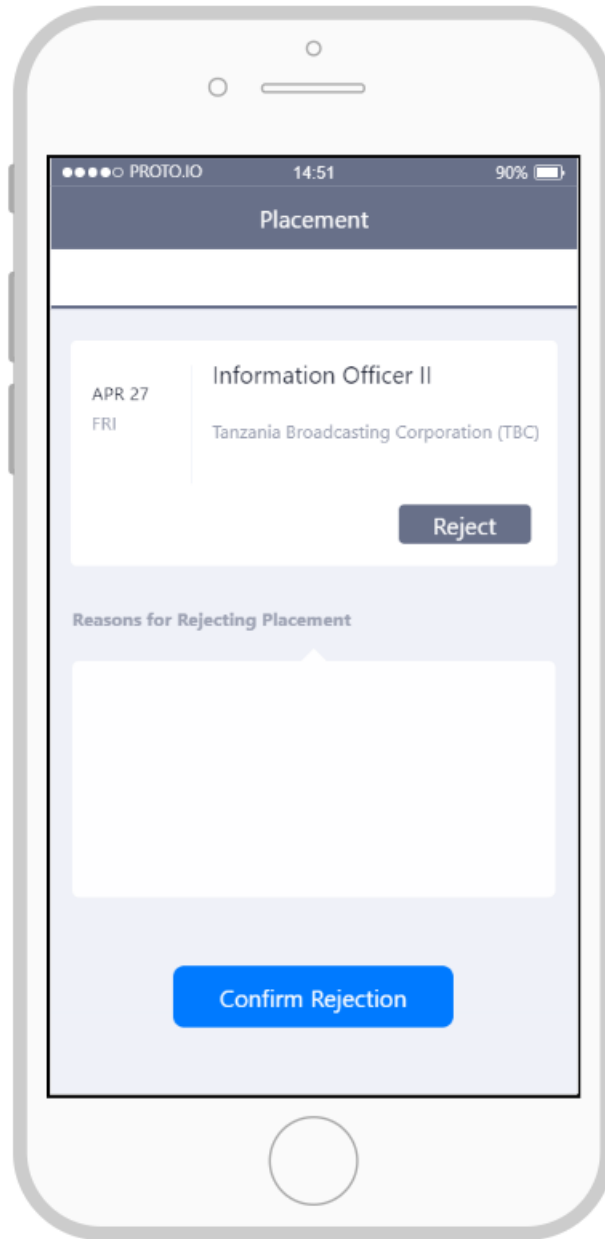
Vacancies Screen



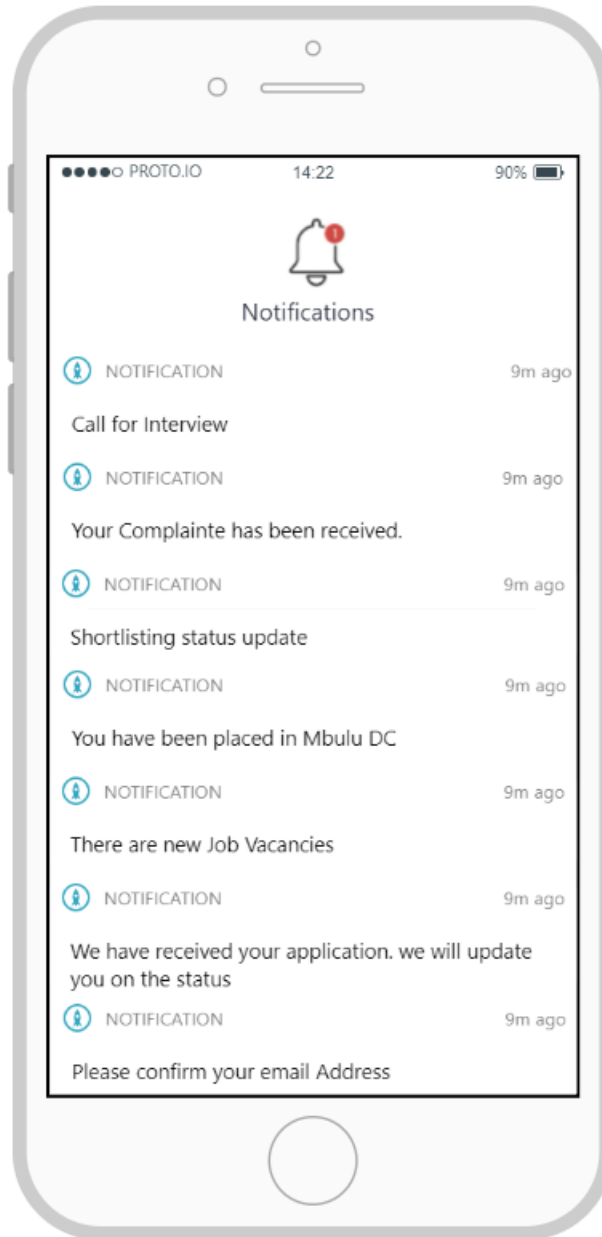
Placement Information



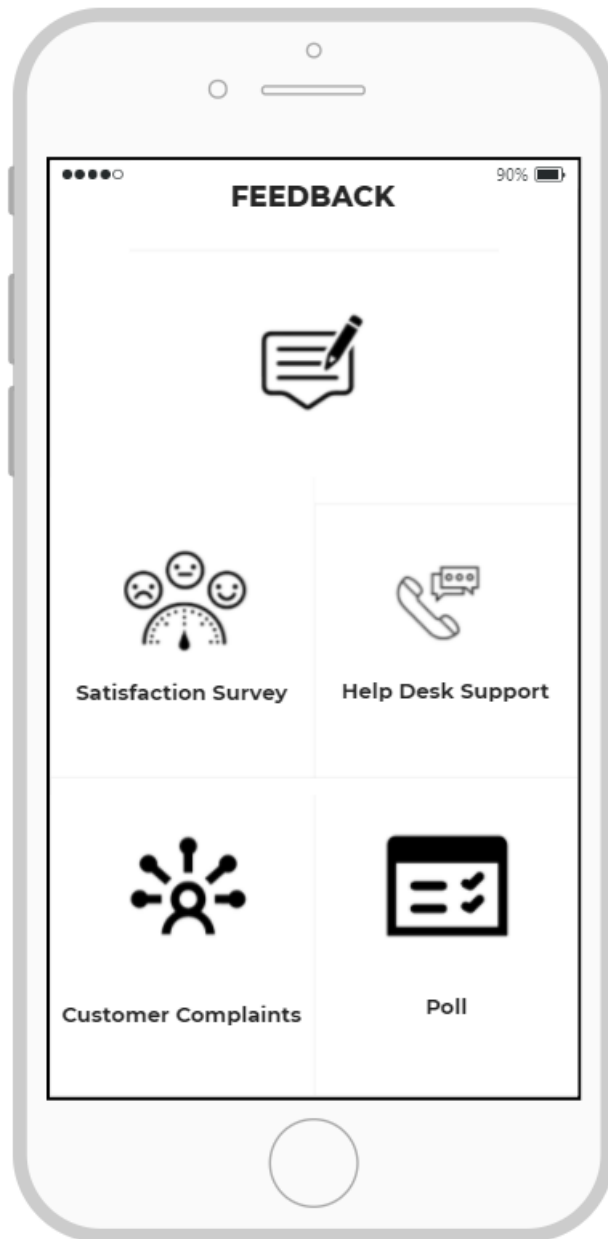




Notifications



Feedback Screen



This design focused on quality than quantity. The team originally started out with a much wider scope than was doable in the time that was available. Once we narrowed our scope, we were able to focus on making our designs top-notch and as robust as possible.

8.0 DATABASE

The improved AP will have one database which is the existing database of the application. This database was critically analyzed and reviewed to access its suitability and compatibility to cater for the required improvements to be implemented in the new AP application. The review was guided by the following metrics and criteria:

- Applicants can register as job seekers, build their profiles, and look for jobs matching their skill sets.
- Applicants can upload their existing resumes. If they do not have one, they should be able to fill out a form and have a resume built for them.
- Applicants can apply directly to posted jobs.
- Employers can register, post jobs, and search job seeker profiles.
- Employers' representatives should be able to register and post jobs.
- Employers can initiate the recruitment process, or perform some other action related to their post.
- Registered users (Applicants) should be able to search for jobs and filter the results based on location, required skills, salary, experience level, etc.

After considering the above criteria, the following three broad functional categories were also analyzed for suitability:

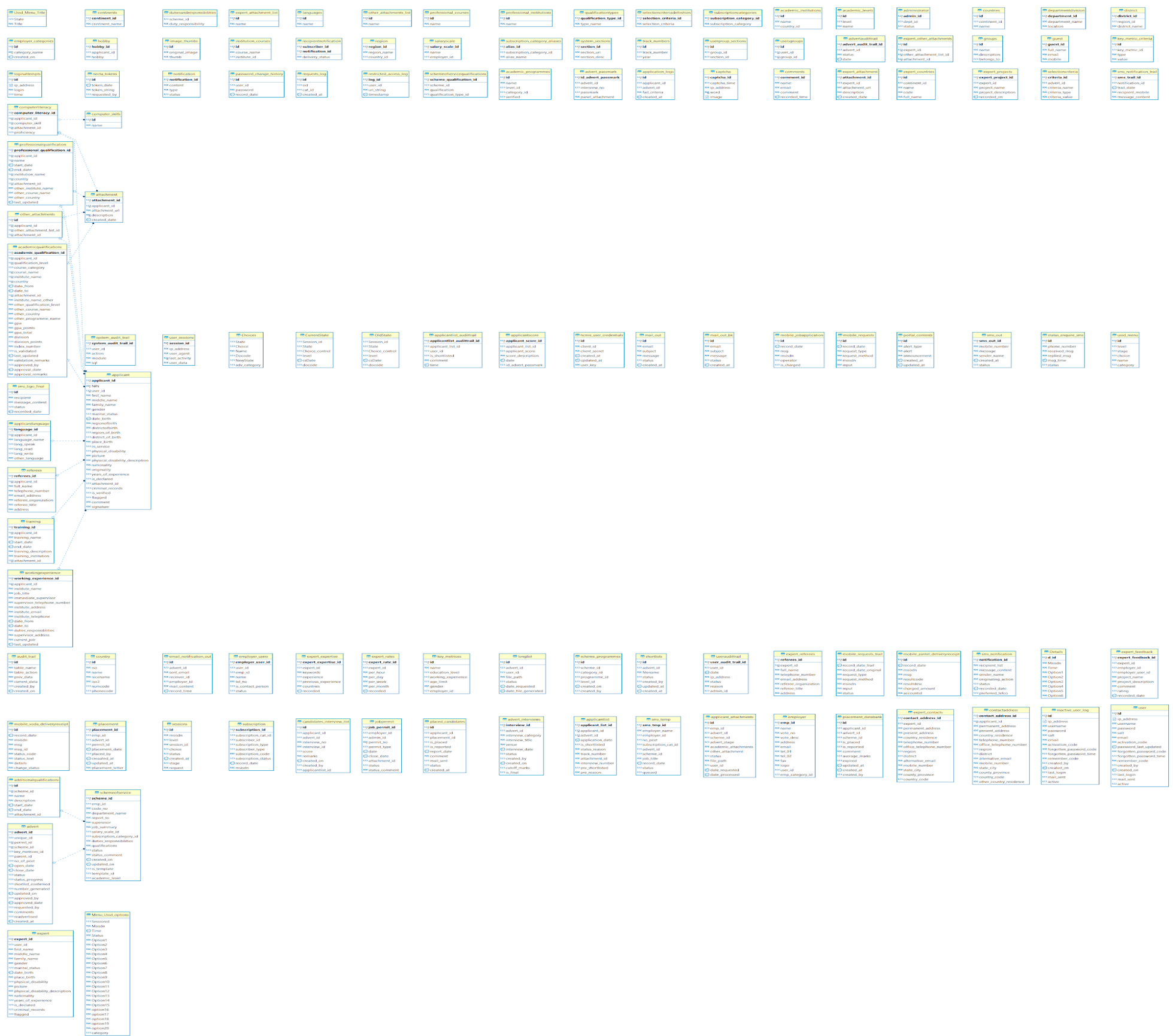
- iv. **User Management:** How the portal manages users, i.e. job seekers, HR personnel, and employers.
- v. **Profile Builder:** How the portal allows job seekers and employers to create profiles and resumes.
- vi. **Posting and Looking Up Jobs:** How the portal facilitates the process of posting, searching, and applying for jobs.

After a thorough review of the database design in relation to the improvements requirements, the design team identified the areas of database design improvements as shown in the table below:

S. No	Improvements	Remark
	Delegated Cadre	User Management, Business Logic
	Education and Health Sectors	

	User Management: User Roles and Permissions	To accommodate Delegated Cadres and Education and Health Sectors recruitment process and other employers not under PO-PSMGG.  roles and privileges.xlsx
	Interview – Panelists results uploads	Automation
	Applicant	Accommodates New requirements for Education and health Sectors
	Integration	New Integration mechanisms

The current Database Schema is shown below



The improved AP Database schema is shown below:

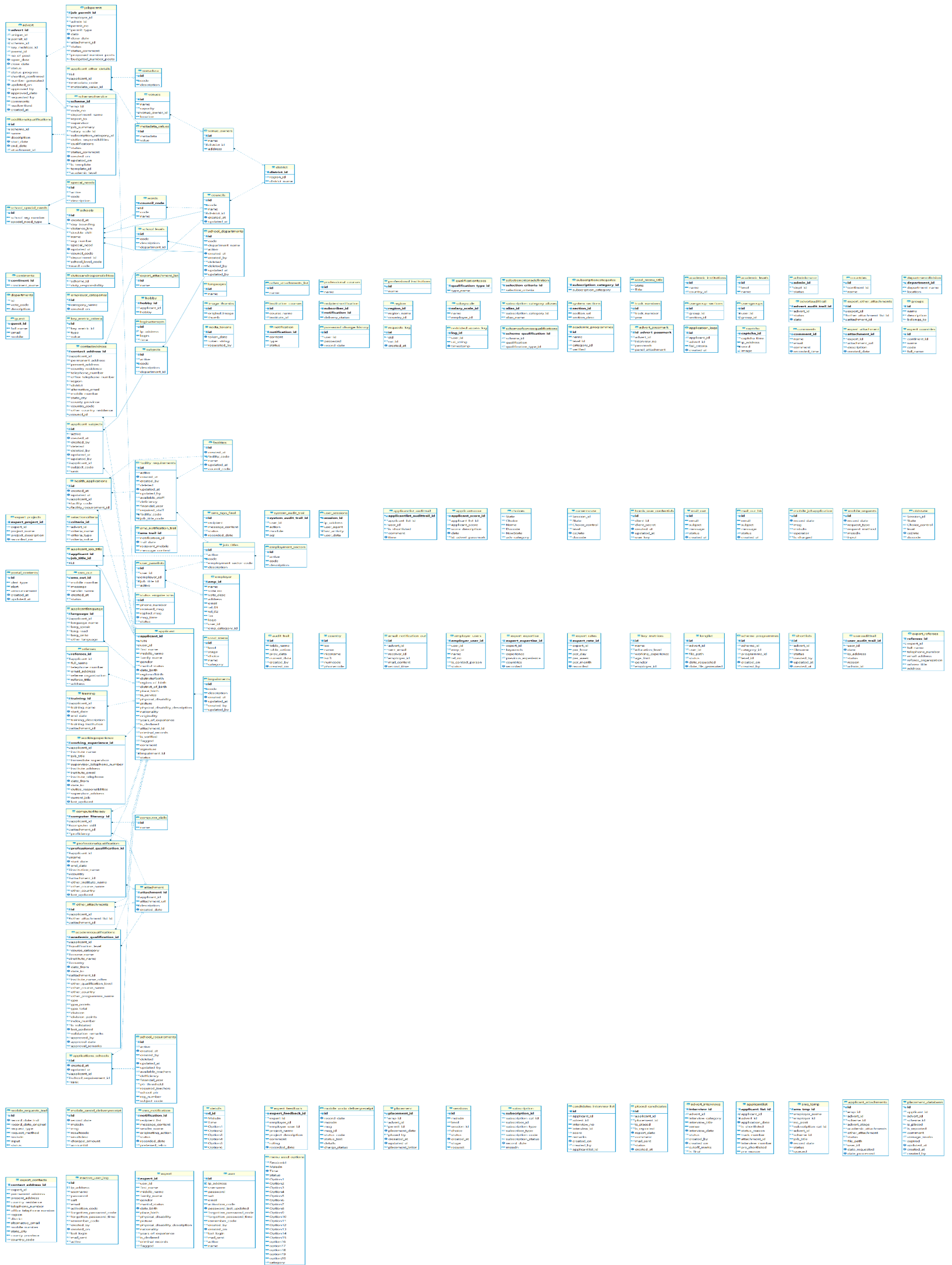


Figure 72: The improved AP Database schema

9.0 ANALYTICS AND REPORTS

Reporting and data analytics is an extremely important component of the improved AP system. Systems and users must be able to access the data in the system via standard



ripoti zote.xlsx

and ad hoc reports. AP reports are detailed in the attached file:

Major Object Reports

- Applications
- Employers
- Interview
- Placement

Report Use case description

Theme	Need	Description	Acceptance Criteria	Notes
User Interface	Access the report module	User can add, edit, or review report related information	<given>a user with rights to report module needs to launch report module<when>the user selects a report tab/button/section <then>report module is displayed	UI design for module accessibility will be important. Accessing information very quickly is very important
User Interface	Search for reports	User can easily find reports	<given>a user needs to quickly search for a single or multiple data elements <when>the user provides report parameters or wild card <then>the system	Fast and easy search functions are important

			filters all data elements that meet criteria	
User Interface	Access reports	User can easily run reports that I have permissions to access	<given>a user needs to run a report<when> the user searches or selects a report <then> the report is run and displayed	Administration must provide ability to set permissions at the report level
User Interface	Run reports with parameters	User can easily select different parameters for the report	<given> the user wants to run a report with valid permissions<when> user selects report <then>a parameter form is presented that allows user to enter various report parameters and pass into report	Common Parameters: Date Range, Group By, Sort By, Filter By, Sum, Average
User Interface	View Reports in Folders	User can easily organize reports by functional area	<given>user has permissions to access report module <when> user selects NEW FOLDER function <then> system allows user to create a folder under PERSONAL REPORTS	Standard Report Objects: Applicants, Employer, Operations, Productivity, Financial, Exceptions, Dashboards
User Interface	Create custom reports	User can easily create their own reports and save them to public or private	<given>user has permissions to create ad hoc reports <when> user selects NEW REPORT <then>NEW REPORT FORM is displayed that allows user to create	UX: Major differentiator opportunity.

		folders	custom report with desired fields, grouping, sorting, filters, graphs, pivots, and logic	
User Interface	Export reports	User can easily email or export to other formats	<given> user has permission to run reports<when>user runs selected report<then>user has options to export or email to standard file formats	CSV, PDF are two most common
User Interface	Standard Reports	User can easily view common and standard reports	<given> user has permission to run reports<when>user can easily find and select reports<then>user can run desired standard reports with various parameters	Users cannot SAVE standard reports. Only SAVE AS to Personal Workspace

10.0 SECURITY CONSIDERATIONS

This section outlines security controls review of the existing system as an input to the design of improved AP portal that need to be taken into consideration during AP portal improvements to meet the new and improvements requirements during the development phase to implement the approved improvements. The aim of the system design review was to ensure that the improved AP portal will continue to effectively secure the systems, networks, and software as a security-first approach to data protection that allows PSRS to not only meet compliance requirements but defend themselves from theft, unauthorized access and modifications, and accidental or unintentional damage to data and or system.

The table below shows the results of security design review for the existing and their suitability for accommodating new improvements.

Security Control	INPUT VALIDATION
Description	This is the property of testing any input supplied by a source (an end-user, another application, a malicious user, or any other sources). It prevents improperly formed data from entering an information system, the application checks and validates any input supplied by a user entered into a system.
Scope	Application control
Security Goal	Integrity
Risk	SQL Injection, XSS
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUTHENTICATION AND AUTHORIZATION
Description	These are mechanisms to ensure that only users who are authenticated and authorized are granted privileges to

	access the system.
Scope	Application control
Security Goal	Data confidentiality and Integrity
Risk	Unauthorized access, Elevation of privilege
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	PASSWORD MANAGEMENT
Description	This section describes the proper way of managing passwords used within the system
Scope	Application control
Security Goal	confidentiality
Risk	Weak passwords are susceptible to attacks
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	SESSION MANAGEMENT
Description	Session management refers to the process of securely handling multiple requests to a web-based application or service from a single user or entity. Websites and browsers use HTTP to communicate, and a session is a series of HTTP requests and transactions initiated by the same user.

Scope	Application control
Security Goal	Confidentiality and integrity
Risk	repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	ERROR HANDLING
Description	This is the process of handling all errors, logs, and exceptions raised during the system operations. System should provide the best way to handle error and logs to avoid exposing system operation issues when error occurs e.g. system data and passwords.
Scope	Application control
Security Goal	Confidentiality and Availability
Risk	Disclosure of how the system works and leak of sensitive information about the system
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DATABASE SECURITY
Description	This is to ensure that the database is secured such that only authorized users can access. Database should provide the means for keeping the integrity of data by providing encryption and hashing of data. Sensitive data such as personnel detail and password should be

	encrypted.
Scope	Database control
Security Goal	Confidentiality, Integrity and Availability
Risk	Unauthorized access and modification of data
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	FILE MANAGEMENT
Description	This is the proper testing of all uploaded file if they meet system requirement, this is done by validating fields and source of the file. System should also control the access such that only authorized can access the file. System should provide means to encrypt files
Scope	System control
Security Goal	Confidentiality and Integrity
Risk	Disclosing files information
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUDIT TRAIL
Description	Audit trails maintain a record of system activity both by system and application processes and by user activity of systems and applications. In conjunction with appropriate tools and procedures, audit trails can assist in detecting security violations, performance problems,

	and flaws in applications
Scope	System control
Security Goal	Confidentiality, Integrity and Availability
Risk	Repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP
Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP

Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.

System Integrity Controls

The following are security integrity controls designed for the improved AP

- Internal security to restrict access of critical data items to only those access types required by users/operators
- The current system is roles and permission based. Form and field level security will be available in the improved AP system. Based on user roles and permissions, system administrators can control data access by user and provider.
- Audit procedures to meet control, reporting, and retention period requirements for operational and management reports
- Audit logs and audit trail is proposed in the current use cases. All changes to data must be recorded by date, time, and user. Data will be managed indefinitely or until a system admin purges the data.
- Application audit trails to dynamically audit retrieval access to designated critical data.

- Ability to identify all audit information by user identification, network terminal identification, date, time, and data accessed or changed.
- Data audit trails and logging will provide detailed audit of all data. Network and application logs identify network terminations, user terminations, bugs, and catastrophic failures. These allow system admin to improve the application and hosting environment.
- Standard tables to be used or requested for validating data fields
- Industry standard data validation rules, triggers, and processes have been identified.
- Verification processes for additions, deletions, or updates of critical data

Verification of additions, deletion, updates, etc... are controlled in the data validation functions described in another section.

UNITED REPUBLIC OF TANZANIA

PRESIDENT'S OFFICE - PUBLIC SERVICE RECRUITMENT SECRETARIAT



**PROJECT FOR IMPROVEMENT OF PO-PSRS RECRUITMENT SYSTEM (AJIRA
PORTAL)**

SYSTEM DESIGN DOCUMENT (SDD)

FEBRUARY, 2021

APPROVAL

Title	
Issue Number	Revision Number
Author	Date
Approved By	Date of Approval

CHANGE LOG

Reason for change	Issue Nr.	Revision Number	Date

CHANGE RECORD

Issue Number	Revision Number		
Reason for change	Date	Pages	Paragraph(s)

DISTRIBUTION

Name/Organizational Unit

ACRONYMS

ACSEE	Advanced Certificate Of Secondary Education Examination
AP	Ajira Portal
BEMIS	Basic Education Management Information System
BRD	Business Requirement Document
CSEE	Certificate Of Secondary Education Examination
DC	District Council
DSEE	Diploma in Secondary Education Examination
DSE-SNE	Diploma in Secondary Education in Special Needs Education Examination
GATCE	Grade A Teachers Certificate Examination
GATSCCE	Grade A Teachers Special Course Certificate Examination Formats
GCU	Government Communication Unit
GoT	Government of Tanzania
HCMIS	Human Capital Management Information System
HGCU	Head of Government Communication Unit

HoD	Head of Division
HICT	Head of ICT
HGCU	Head of Government Communication Unit
HQCD	Head of Quality Control Division
HRD	Head of Recruitment Division
ICT	Information and Communication Technology
IJA	Institute of Judicial Administration
LGTI	Local Government Training Institute
MDAs	Ministries, Departments and Agencies
MTTF	Mean Time to Fix
NACTE	National Council for Technical Education
NECTA	National Examination Council of Tanzania
NIDA	National Identification Authority
NIN	National Identification Number
OC	Occurring Charges
OTEAS	Online Teachers Employment Application System

PE	Personal Emoluments
PI	Public Institution
PlanRep	Planning and Reporting System
PO-PSC	President's Office-Public Service Commission
PO-PSMGG	President's Office-Public Service Management and Good Governance
PO-PSRS	President's Office-Public Service Recruitment Secretariat
PO-RALG	President's Office-Regional Authorities and Local Government
PO-TPSC	President's Office-Tanzania Public Service College
RITA	Registration Insolvency and Trusteeship Agency
RS	Regional Secretariat
SDP	Service Delivery Point
SMS	Short Message Services
SOS	Scheme of Service
TCU	Tanzania Commission for Universities
TRA	Tanzania Revenue Authority
UN	User Need

VETA	Vocational Education and Training Authority
WISN/POA	Workload Indicators of Staffing Needs/Priority Optimization Analysis

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1.0 INTRODUCTION

1.1 Background

The Government of Tanzania (GoT) established the Public Service Recruitment Secretariat (PO-PSRS) as an independent department vide Section 29 (1) of the Public Service Act CAP 298 as amended by the miscellaneous amendment Act No. 18 of 2007. PO-PSRS was established to facilitate the recruitment process on behalf of the Government. The PO-PSRS mandates are stipulates as follows: -

- Search for various professionals with special skills and prepare database for such professionals for easier recruitment.
- Register graduates and professionals for purposes of ease of reference in filling vacant posts.
- Advertise vacant posts occurring in the public service.
- Engage appropriate experts for purposes of conducting interviews.
- Advise employers on various matters related to recruitment, and
- Do any other act or thing which may be directed by the Minister responsible for Public Service.

PO-PSRS handles all recruitment on behalf of Public Service Institutions. However, some cadres which had great demand within the Government of Tanzania were managed by their respective ministries including teachers, health workers, agriculture and livestock related fields. To date, recruitment of teachers and health workers are managed by Presidents Office Regional Authorities and Local Government (PO-RALG).

PO-PSRS, therefore, links the President's office Public Service Management and Good Governance (PO-PSMGG) on one hand and employers, which are the receiving hand for new employees.

PO-PSRS started its operations in 2010. During the early years of its existence up to financial year 2013/2014, it carried out its operations manually in that all its processes from receipt of recruitment permits, communication with employers, advertisements, interviews through to placement of successful candidates were done manually. However as more public service institutions sought PO-PSRS services its operations became costly, time consuming and as would be expected, the operations were prone to

errors. It is this background and other factors which prompted PO-PSRS to find ways to streamline its operations.

PO-PSRS developed an electronic recruitment system called Ajira Portal (AP) in order to minimize the costs involved in its operations. The use of Ajira Portal over time has considerably injected efficiency in the institution's core operations. PO-PSRS has become more visible to its stakeholders at a lesser effort and costs. This has resulted in attracting more public service institutions to seek PO-PSRS services. This requires the system to have sufficient capacity for efficiently handling increased workload. However, the system use is limited to the advertisement of vacancies, receiving job applications, and providing feedback to applicants. Many tasks are still carried out manually. Currently the recruitment system is not linked with other GoT Human Resource (HR) related systems, which would significantly enhance efficiency in PSRS operations.

The conditions mentioned above coupled with opportunities offered by the advance in ICT has once again prompted PO-PSRS to embark on a project to review the Ajira Portal system with the purpose of enhancing efficiency and inclusiveness in its operations and the Government's HR operations in general.

PO-PSRS approached Public Sector System Strengthening Plus (PS3+) Project for support, to which PS3+ agreed, since the support is in line with the objectives of the project; to provide technical assistance to support the Government of Tanzania (GOT) to strengthen and institutionalize public service systems that are responsive to citizens' needs for quality services. The agreement between PO-PSRS and PS3+, is to carry out implementation in three phases as shown in figure 1 below.

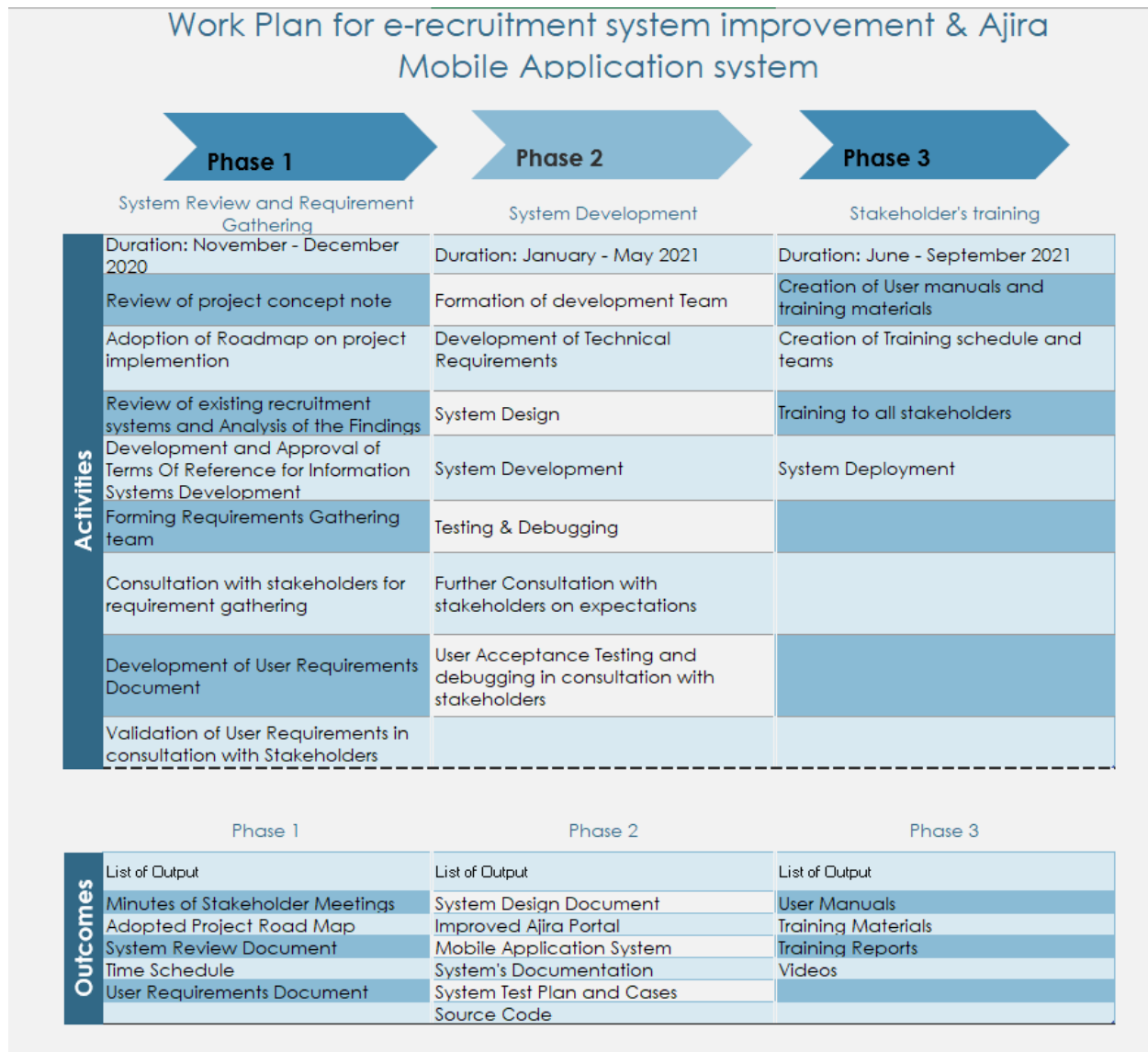


Figure 73: Work Plan for e-recruitment Improvement and Mobile App Development

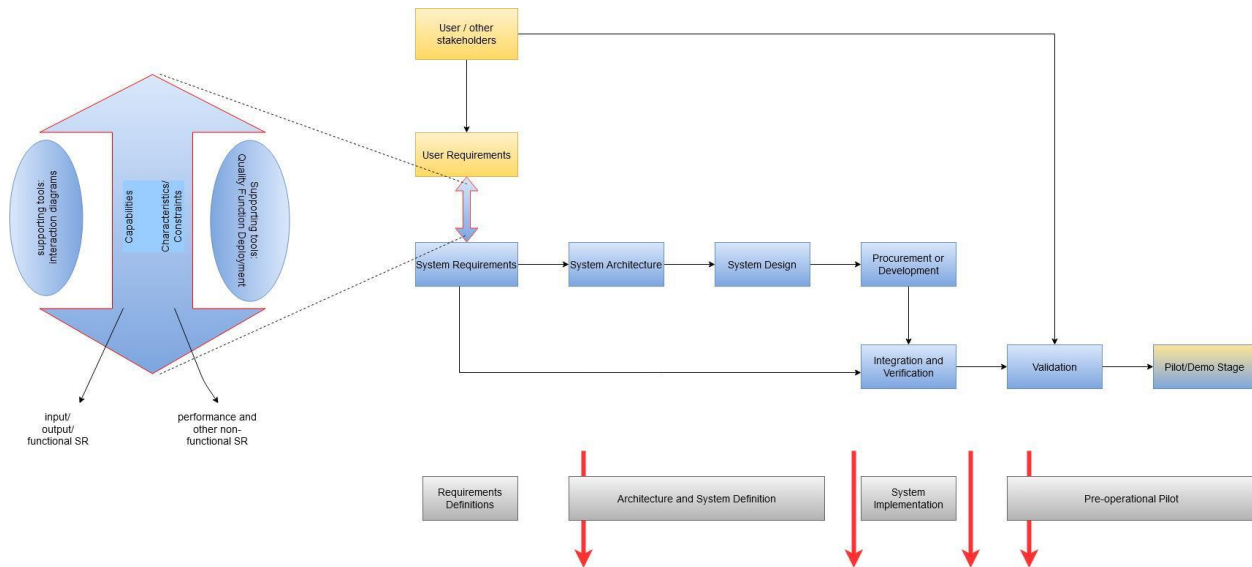


Figure 74: The AP Specification and Development process

1.2 Ajira Portal and Public Service Recruitment

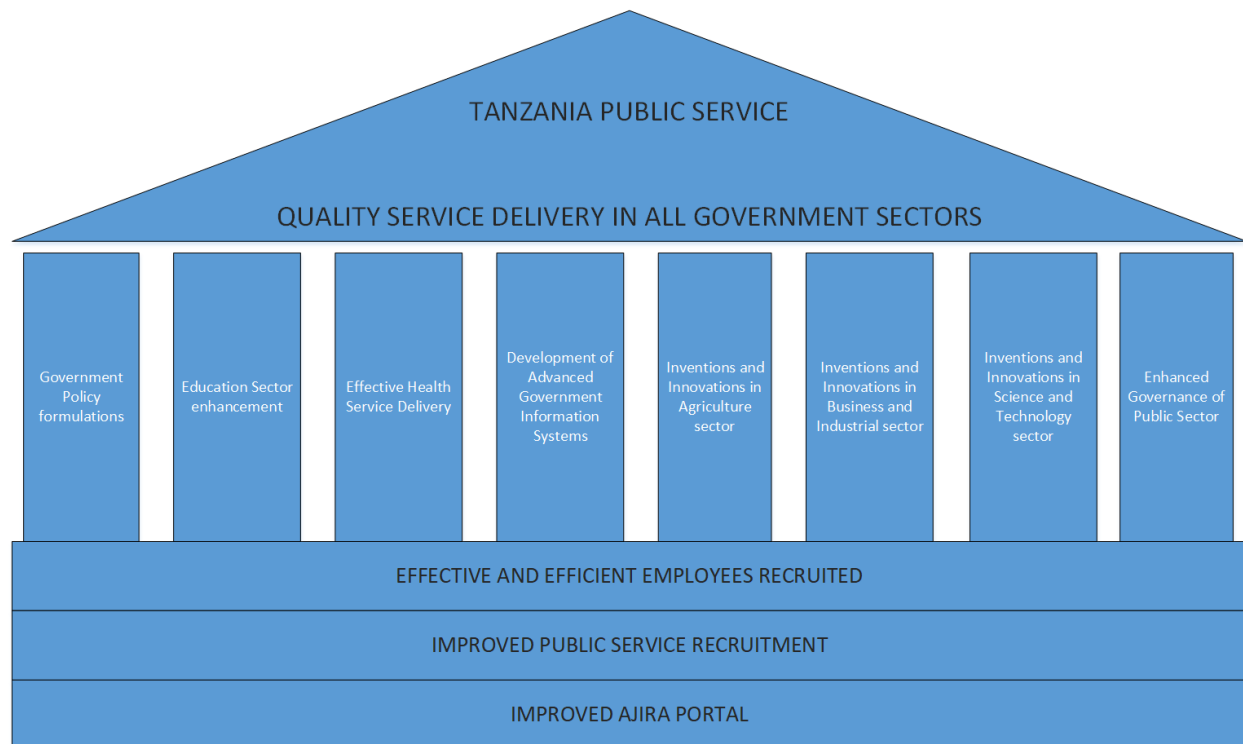


Figure 75: AP Context in Public Sector Service Delivery

1.3 Ajira Portal Improvement Project Overview

S. No	Area of Concern	Improvements Designed	Output	Impact	Remarks
1	Applicant Module	UI/UX	Improved User Experience	User satisfaction, time saving in using the system	Accommodated
2	Delegated Cadre	User roles and User management	Delegated Cadre recruitment process accommodated with AP	Streamlined recruitment process saving time and money. Increased transparency of the recruitment process	Accommodated
3	Education and Health Sector Cadres Recruitment	Business Logic and Application Logic	Education and Health Sector cadres recruitment process accommodated with AP	Streamlined recruitment process saving time and money.	Accommodated

4	Database	New tables design and performance enhancement to accommodate delegated cadres, education and health sector recruitment	A number of new tables and Additional Business logic to accommodate the different requirements for the various cadres		Accommodated
5	User Roles/ User Matrix	New users and user roles to accommodate the various functions for delegated cadres, education and health sector recruitment process	New User matrix		Accommodated
6	Mobile App	App design	New app to cater for the applicants side of the AP business logic		Accommodated
7	Interview Module	Designed to accommodate the scheduling and conducting of interviews online	New Interview Module for online aptitude tests		Future

8	Integration	To facilitate data sharing across different systems and stakeholders	Improved AP architecture	Automation of data sharing, validation and verification It will save Time and Money	Accommodated

Table 3: Summary of AP Improvements designed

1.4 objectives

The main objective is to implement the phase II of Ajira Portal review project involving system improvement review design work. The under mentioned specific objectives will be addressed:

- Document systems baseline information: and Carry out Ajira Portal system design review
- Define Design characteristics

The expected output from this exercise is Ajira portal improvement System Design Document (SDD)

1.5 Purpose of the SDD

The system design document tracks all the necessary information required to effectively define the architecture and system design to give the development team guidance on the architecture of the system to be developed. Design documents are incrementally and iteratively produced during the system development life cycle, based on the particular circumstances of the information technology (IT) project and the system development methodology used for developing the system.

1.6 Scope of Work

This SDD will cover system and network architecture design, mockups (UIs), use cases, database schema and system security control checklist which are essential in system development. All of the aforementioned parts have been designed to accommodate

both functional and non-functional requirements. Non-functional requirements describe how the system works, while functional requirements describe what the system should do.

The proposed solution will simply add additional features and functionality to the existing solution to meet the original scope and vision of the Ajira Portal (AP). These features will extend AP to be an integrated public service recruitment portal.

Key points that relate to the design and architecture of the proposed system.

- ix. No major changes to existing architecture
- x. No major changes to system design
- xi. Major positive impact to the user community
- xii. Major feature extensions to automate operational functions where applicable.

1.9 Design Constraints

The existing architecture will be improved as shown in the diagram below;

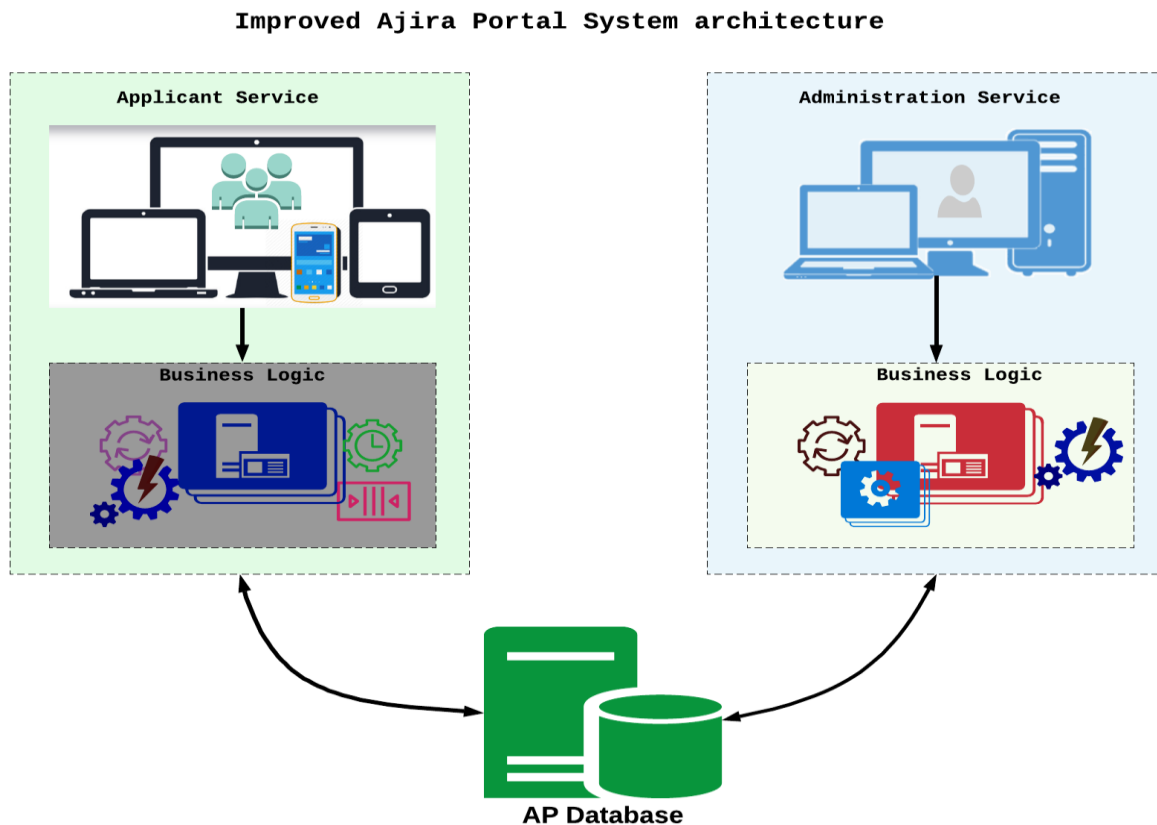


Figure 76: The improved architecture

The current solution is hosted by GoT data center. Performance, storage, security, and access can be easily scaled to meet the minimal amount of additional resources the proposed solution will require.

Technical

The development and integration of the new software components into the existing software application is a major constraint. Specific skills and technical understanding of recruitment management and demand response management and optimization will be required. This knowledge and skillset is very specific and narrow. Detailed business requirements and use cases will assist in minimizing this challenge.

Due to the fact that the application is currently hosted and managed by PSRS staff, we do not envision any technical, computer hardware, network, internet, or database maintenance challenges.

Institutional

The improved system will be utilized by multiple third party agencies and organizations. This will require coordination and collaboration across the organizations and agencies. Stakeholders that currently have automated systems may have to integrate into the improved system via “API coordination module” API or comparable solution.

1.8 Intended Audience

The system requirements specifications document plays a major role in system development and implementation, as it:

- Form the basis of improvement of system architecture and design.
- Form the basis of improvement suggested system integration and verification.
- Act as reference for validation and stakeholder acceptance.
- Act as a bridge between technical staff and other stakeholders that interact throughout the project.

Therefore, the intended audiences of this document include but are not limited to: Project sponsors, PO-PSRS Steering Committee, System Designers, System Architects, Database Administrator, System Developer, System Security Experts, Quality Assurance Specialists, Hardware Specialist, Network Engineers, Subject Matter Experts, Employees and other key Stakeholders such as Applicants and certification and verification authorities.

2.0 DESIGN APPROACH

2.1 Design overview

The current solution was built by PSRS through funding from GoT. PSRS has labeled this application Recruitment Portal now simply dubbed Ajira Portal. AP is an open source recruitment management that manages public service recruitment process from Job advertisement to placement of successful applicants.

AP is built on an open source framework. Source code is available using standard open source management tools such as Git. All source code is stored in a GitLab repository.

AP utilizes an open-source web server, Apache. Apache is a free open source web server. Apache is focused on high performance, high concurrency and low memory usage. Additional features on top of the web server functionality, like load balancing, caching, access and bandwidth control, and the ability to integrate efficiently with a variety of applications, have helped to make Apache a good choice for modern website architectures.

AP's development language is PHP. Software developers must be familiar with this framework in order to maintain or build additional functionality into the application.

AP's database is MySQL. MySQL is also open source and it is very popular and utilized across many open source applications. MySQL is an object-relational database (ORDBMS). It has an emphasis on extensibility and standards compliance.

RabbitMQ is message broker that implements Message Queue Protocol (AMQP), to help AP to communicate with other systems.

GitLab is used as the software development platform. GitLab provides version control and source code management.

In summary, the existing system design includes the following sub-systems:

1. AP Web Application
2. MySQL Database
3. Apache Web Server
4. CodeIgniter Development Platform
5. Government data center
6. GitLab Version and Source Code Control

However, the proposed improvement are expected to be done using latest technologies, this is done so as to start modernizing AP, as the technologies that were used are outdated and their technical support is being phased out.

2.4 System Assumptions/Constraints/Dependencies/Risks

2.2.1 Assumptions

The largest assumption is that the existing AP application will be extended to support the proposed new features (Improvements). The existing architecture and system design will be used including all existing components and sub-systems. It is certain that additional functionality will be added to the existing system.

2.2.2 Constraints

There are no hardware, software, or software technical constraints identified with this project. Institutional constraints may exist due to the systems need for inter-institutional coordination, participation, and interoperability.

2.2.3 Dependencies

The current application is dependent on many third party systems. These include: NIN system (NIDA), certificate verification system (NECTA and NACTE), HCMIS (PO-PSM), RITA, VETA, TRA and Training Institutions

2.2.4 Risks

Minimal risk is associated with the system design. This is primarily due to the fact that the existing system design and architecture will not be modified to meet the needs of the improved AP solution. Ongoing maintenance of the system will also be a concern.

Alignment with Government IT Architectures. The current and proposed solution aligns with the government IT architecture. The proposed solution, if implemented, will adhere to all appropriate government IT architecture mandates.

The current solution does not provide automated complaint handling mechanism, nor does it provide the ability to coordinate various processes in the recruitment because there are done outside the AP system. The solution must be improved to support these additional functional needs as identified in the SRS document. The proposed system will dramatically improve complaints handling mechanism, interview handling, placement, operations of delegated cadre recruitment, and, most importantly, the customer experience i.e. both applicants and employers. Customers will be able to initiate recruitment process within the system (employers) and apply using smartphones (applicants) among other things. Employers will be able to contact PSRS through an online portal to initiate recruitment, receive updates of the recruitment process, provide additional information or ask for clarification. Applicants will have the ability to apply, review their applications, follow up their applications, file complaints, provide and receive feedback via their smartphones. Automated scheduling of

interviews, venues will be available to optimize human and financial resources involved in the interview handling. Automated complaint handling tools will be available to the help desk officers and complaint handling officers and to employers and applicants, which will enable online communications. This will create a single coordinated system for public service recruitment and demand response recruitment. Employers, including those with delegated authority will be integrated into the solution for a true multi-modal application. Recruitment data analytics will be available at a various levels. Ultimately, the proposed system will execute the intended vision and requirements of a “unified” public services recruitment management solution.

2.3 Development Method and Contingencies

The basics of a good architecture is to layer the application into multiple autocratic and autonomous applications that can be replaced individually and allow us to keep the application running while we are working on a specific layer. The communication between each layer should be a RESTful API call with JSON content.

2.3.1 Design Considerations

AP is a Public Service recruitment management system designed to meet the GoT recruitment needs. It:

- Provides unified recruitment management;
- Works on computers, tablets, and smartphones;
- Is tailored to GoT recruitment needs; and
- Empowers PSRS staff to deliver improved services.

The major design considerations for the proposed extended features are related to system performance and scalability of the solution.

2.3.2 Goals and Guidelines

The following goals must be addressed in the execution of the proposed solution.

Leverage Existing Architecture

The improved AP solution must leverage the current architecture and system design used by current AP. This minimizes negative impacts on usability, user experience, and financials. The improved solution will simply extend the current system to support additional features, functionality, and use cases.

Development Environment

The improved AP application development environment must remain consistent. This minimizes negative impacts to interoperability and quality. Improved AP does not wish to re-write or re-engineer the existing application unless absolutely necessary.

Ease of Use

The improved AP and its features must be easy to use and provide a strong user experience. New or improved features cannot impact existing functionality from a user perspective.

Extensibility

The proposed improvement features must be extensible. Features can be enabled as needed or required by the users.

Gateway/API Enabled

Interoperability and integration coordination is a key driver of the improvements sought. The application must be gateway/API centric and support an open and published gateway/API architecture.

RESTful Framework

The application and underlying architecture must be a REST framework.

2.3.3 Operational and Development Environment

Front end

Latest Angular framework

Backend

- Spring boot framework
- Postgre SQL

Mobile App

- Flutter

Reports

- Jasper

Functional goals of the proposed improvements to AP system includes:

- Extending functionality of the existing application to mobile app (Applicant)
- Improving application performance
- Integration with other systems
- Accommodating Education and health Sector cadre's recruitment, Delegated Cadre recruitment and other Employers not under PO-PSMGG.

3. ARCHITECTURAL DESIGN

This section describes the **Enterprise Architecture**, which addresses the strategic question of how the improved AP can best be utilized and aligned to support business needs of PSRS and the **Solution Architecture**, which addresses the tactical question of how best to improve AP that best address specific business needs of PSRS.

This proposed architecture has been proposed as it helps to provide information and awareness to every involved stakeholder that will work with it, ones that will use data from it, ones that will provide data to it and the policy makers who want all that done in adherence to public service recruitment guidelines and policies. The architecture is expected to specifically attain the following:

- xvii. Highlight key use-cases and scenarios for Improved AP
- xviii. Address requirements as specified from prospective users and process owners.
- xix. Quality assurance in the built improved AP system.
 - xx. Expose how the system works while concealing its core working mechanism.
 - xxi. Show the relation between functional, quality and business requirements.
- xxii. Make Improved AP interoperable with existing and foreseen systems and technologies.
- xxiii. Specify technical resources to attain the requirements gathered.
- xxiv. Serve public interest while protecting Applicants privacy.

The role of Architecture

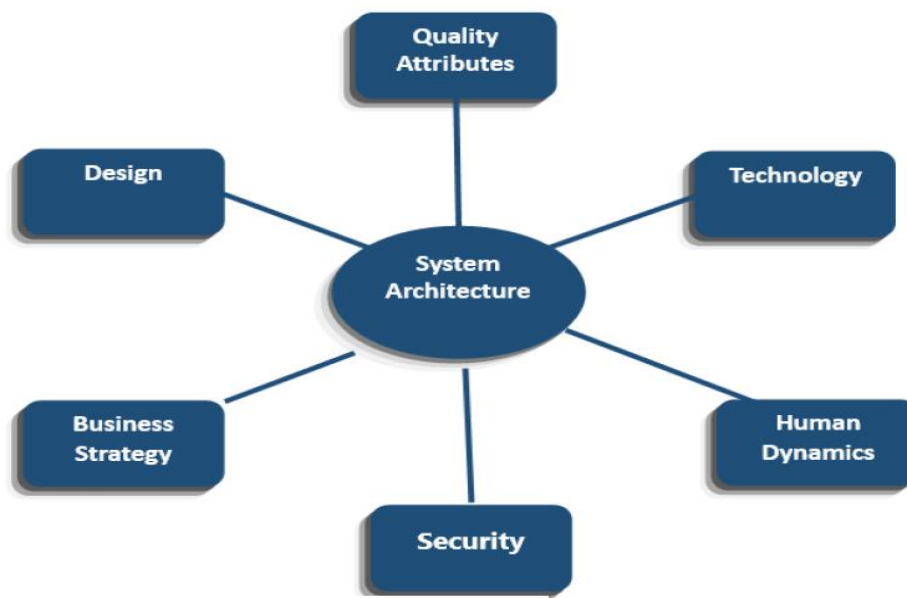


Figure 77: The Role of System Architecture

3.1 System Architecture

The proposed architecture is structured to conform to all technical and operational requirements that have been analyzed in Public Sector Recruitment. In doing so it enhances performance and security in our context as a country.

3.1.1 Architecture Qualities

AP business considerations were used to determine the qualities that must be accommodated in the improved AP system architecture.

- **System Qualities:** availability, modifiability, performance, security, testability, usability, others.
- **Business Qualities:** time to market, cost and benefit, product lifetime, target market, roll-out schedule, integration, others.
- **Architectural Qualities:** conceptual integrity, correctness and completeness.

AP quality attribute scenario is made up of the following six attributes or parts as shown in the figure below.

- **Source of Stimulus:** the entity generating the stimulus. Could be an actor, an actuator, a sensor, and another system.
- **Stimulus:** a condition arriving at a system. Includes faults, stated intentions by actors, and so on.
- **Environment:** the conditions surrounding the stimulus. Might be normal operation, degraded operation, overload, and so on.
- **Artifact:** the part or parts of the system stimulated.
- **Response:** the response the system takes to the stimulus.
- **Response Measure:** how the response can be measured and test.

S.No	Quality	Description
System Quality Attributes		
1	Availability	• The availability attribute is concerned with system failures. Faults are problems that are corrected or masked by the system. Failures are uncorrected errors that are user-visible. • $\text{availability} = [\text{mean time to failure}] /$

		([mean time to failure] + [mean time to repair])
2	Modifiability	What can change, when are changes made, and who makes the changes.
3	Performance	response times and similar measures for various events
4	Security	- Non-repudiation - Confidentiality - Integrity - Assurance or authenticity - Availability (no denial of service) - Auditing
5	Testability	Detecting failure modes. This means architectural support for testing that reduces test cost and time. We need to control the internal state of and inputs to each unit, then observe the corresponding output of that unit.
6	Usability	- How easy it is to learn the features of the system - How efficiently the user can use the system - How well the system handles user errors - How well the system adapts to user needs - To what degree the system gives the user confidence in the correctness of its actions.
Business Quality Attributes		
1	Time to Market	Architectural reuse affects development time.
2	Projected Lifetime of the System	Long-lived systems require architectures that are modifiable and scalable.

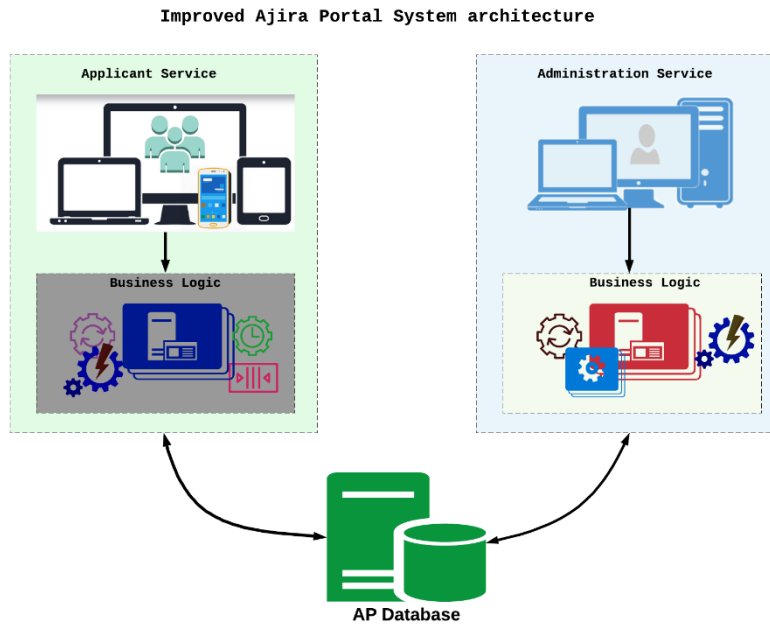
3	Roll-out Schedule	If functionality is planned to increase over time, the architecture needs to be customizable and flexible.
4	Integration with Legacy Systems	The architecture of the legacy system being integrated will influence the overall system's improvement architecture.
Architectural Quality Attributes		
1	Conceptual Integrity	The underlying vision or theme unifying the components and their interactions. The architecture should do similar things in similar ways.
2	Correctness and Completeness	Checking the architecture for errors and omissions.
3	Buildability	The organization's capabilities to actually construct the architecture in question.

3.1.2 Service Oriented Architecture

Enterprise Applications are often built in three main parts: a client-side user interface (consisting of views running in a browser on the user's machine), a database (consisting of many tables inserted into a common, and usually relational, database management system), and a server-side application that serves as the backend running application logics and routines. The server-side application will handle HTTP requests, execute domain logic, retrieve and update data from the database, and select and populate HTML views to be sent to the browser or a desktop view.

We analyzed our demands in improving Improved AP and current resources that are future proof and saw that SOA approach will be used with existing technologies of the AP while the improved components will be developed using new technologies.

Figure 78: System Architecture Diagrams



3.2 Software Architecture

The three-tier architecture is a popular pattern for user-facing applications. The tiers that comprise this architecture include the presentation tier, the logic tier (business logic), and the data tier. The presentation tier represents the component that users directly interact with (such as a web page, mobile app UI, etc.). The logic tier contains the code required to translate user actions at the presentation tier to the functionality that drives the application's behavior. The data tier consists of storage media (databases, object stores, caches, file systems, etc.) that hold the data relevant to the application.

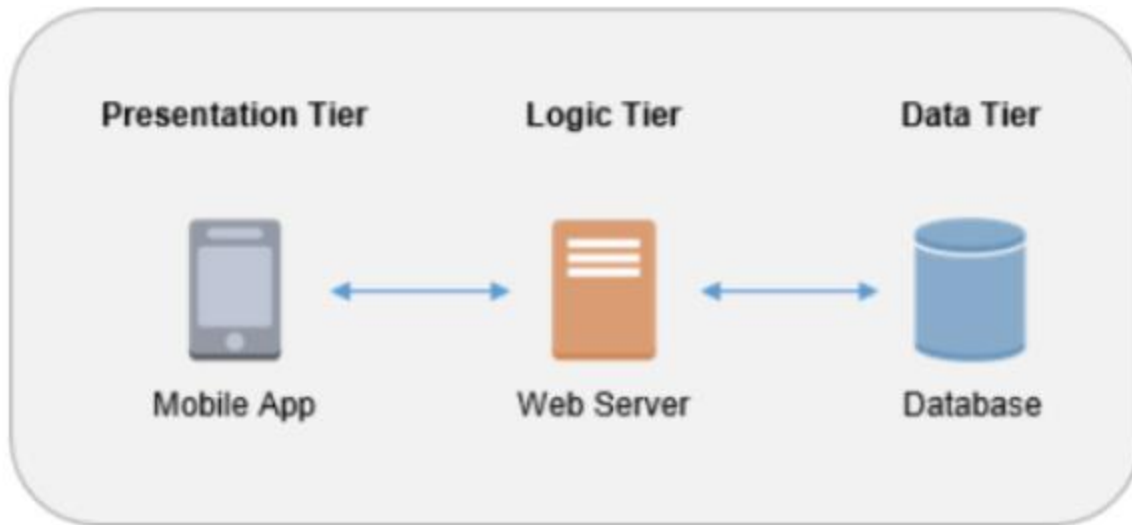


Figure 79: Software Architecture- Separation of Concerns

3.2.1 Security Software Architecture

There are a number of principles applied to current and proposed system security.

- Apply security at all layers: Rather than running security appliances (e.g., firewalls) only at the edge of your infrastructure, use firewalls and other security controls on all of your resources (e.g., every virtual server, load balancer, and network subnet).
- Enable traceability: Log and audit all actions and changes to your environment.
- Implement a principle of least privilege: Ensure that authorization is appropriate for each interaction with AP resources and implement strong logical access controls directly on resources.

3.3 Component Architecture

For components that will be making up our architecture we propose a set of different technical components that have been reviewed based on the resources (human resource, finance and technological resources) at hand and requirements collected.

3.3.1 UI/UX

The user experience is everything today. Everything you do must be optimized to create an exceptional digital experience. The average user shouldn't have to change their

behavior to adapt to our improved AP application. In this design we proposes a modularized reference UI application which runs in a browser and uses API calls to expose the application logic and functionality to end users. Improved AP into mobile app version will employ specific UIs using respective technologies and frameworks.

Web Based Interface: Language: HTML5, CSS3, Typescript. Proposed frameworks: Angular, Angular Material + Bootstrap+

Mobile Interface: Language: Dart. Proposed Framework: Flutter

Other Frameworks: Docker, Kubernetes (environment), NPM & Yarn (package manager), Grunt & Webpack (task running), Karma (Unit Testing), Lucid and Proto IO (mocking).

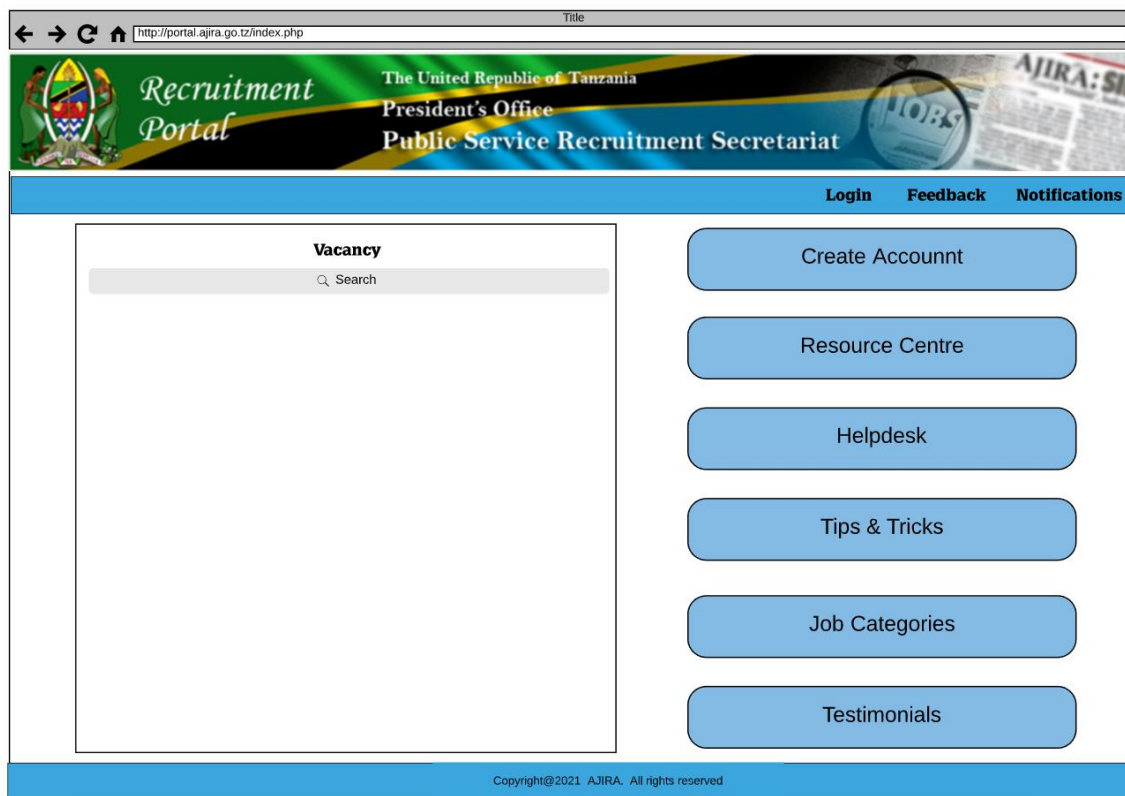


Figure 80: New Look of Ajira Portal Home page

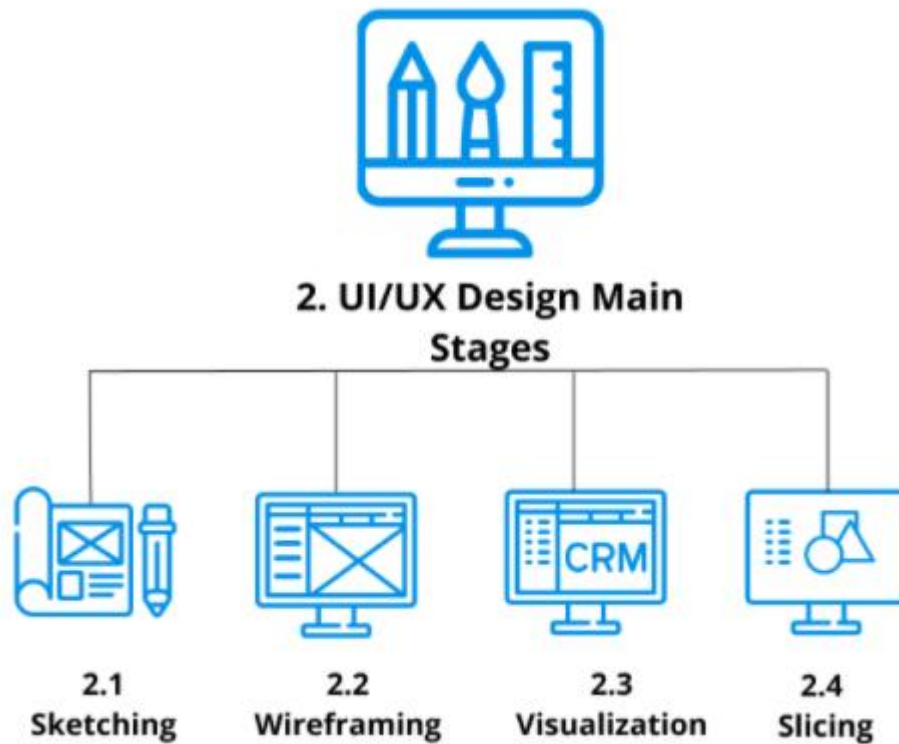


Figure 81: UI/UX Design stages

3.3.3 Database

The proposed improvements of AP uses the existing database which employs SOA architecture. During the design phase the existing Ajira Portal database, along with applications that control access to it were reviewed to ensure that, they meet the new requirements calling for improvement of AP. During this design phase the conceptual, logical, and physical design of the existing AP database was closely analyzed to see their suitability in accommodating the new requirements and their proposed improvements to the existing system.

Forms and reports which provide controlled access to the database were reviewed to make sure that the new requirements for user interface are met in the existing database schema. To ensure consistent and satisfaction of user requirements, each transaction and search queries pathways were traced from entity to entity on the composite database scheme to ensure it is possible to link to relevant entities and extract the relevant attributes to satisfy the query.

3.3.4 Backend

The proposed improvements of AP uses the existing backend which employs monolithic architecture. During the design phase the existing Ajira Portal backend, along with its codes that connects the web to a database, manages user connections, and powers the web application were analyzed and reviewed to ensure compatibility with the requested improvements of AP. Backend development works in tandem with the front end to deliver the final product to the end use.

During this design phase the existing APIs, codes that interact with the database, libraries, and business processes, and data architecture were reviewed for their suitability in accommodating the new requirements and their proposed improvements to the existing system.

3.3.5 API

The proposed improvements of AP uses the existing APIs. The existing Ajira Portal APIs, were reviewed on how they handle errors gracefully using standard HTTP/S codes that helps consumers deal with the problem. The improvements require that the APIs should accept JSON/XML for request payload and also send responses to JSON/XML. The only exception is if we're trying to send and receive files between client and server. Then we need to handle file responses and send form data from client to server.

To eliminate confusion for AP, API consumers when an error occurs, we should handle errors gracefully and return HTTP response codes that indicate what kind of error occurred. Common error HTTP status codes include:

- 400 Bad Request – This means that client-side input fails validation.
- 401 Unauthorized – This means the user isn't not authorized to access a resource. It usually returns when the user isn't authenticated.
- 403 Forbidden – This means the user is authenticated, but it's not allowed to access a resource.
- 404 Not Found – This indicates that a resource is not found.
- 500 Internal server error – This is a generic server error. It probably shouldn't be thrown explicitly.
- 502 Bad Gateway – This indicates an invalid response from an upstream server.
- 503 Service Unavailable – This indicates that something unexpected happened on server side (It can be anything like server overload, some parts of the system failed, etc.).

3.3.6 Dashboards

We propose setting up dashboards as another improvement to the AP that runs alongside the main application and database. The dashboard layer shall have scheduled synchronization that either pulls data from the AP application or the AP application shall have the ability to push data to the dashboard database. This data will be stored and then viewed in a retrospective manner. The data in the dashboards shall have a minimal gap from the AP data as it won't be real-time data visualization.

The abstraction is a strategic effort to avoid overloading the application servers during report production and visualizations. The visualizations should pull data from their own databases that are solely for reports and visualizations. This will make the production of reports far speedier whilst avoiding system lags to the users who are in the application whose reports are being queried.

Language: Java, PHP, JavaScript, JavaScript, HTML5, CSS3

Frameworks: Charts and Graphs – Chart.JS

4.0 INTEROPERABILITY ARCHITECTURE

The design team proposes that the interoperability be handled in a scalable and sustainable manner, whereby, collaborating organizations rather strive for a loose coupling of their information systems instead of a tight integration: the collaborating information systems should be able to work together but retain as much independency as possible. The scaling should be in terms of technologies that are integrated in Improved AP over time.

The design of interoperability architecture was involved in reviewing and analysed the suitability of a number of interoperability issues as follows:

- Operational or Business Interoperability reviewed how business processes are to be shared,
- **Information Interoperability** reviewed how information is to be shared,
- **Technical Interoperability** reviewed how technical services are to be shared or at least connect to one another.
- From an IT perspective, it is also useful to consider interoperability in a similar vein to Enterprise Application Integration (EAI); specifically:
- **Presentation Integration/Interoperability** reviewed and designed how to maintain a common look-and-feel approach through a common portal-like solution to guides the user to the underlying functionality of the systems
- **Information Integration/Interoperability** reviewed the corporate information to ensure seamless sharing between the various corporate applications to achieve, for example, a common set of client information.
- Based upon a commonly accepted corporate ontology and shared services for the structure, quality, access, and security/privacy for the information.
- **Application Integration/Interoperability** was reviewed to ensure corporate functionality is integrated and shareable so that the applications are not duplicated (e.g., one change of address service/component; not one for every application) and are seamlessly linked together through functionality such as workflow. *This impacts the business and infrastructure applications and is very closely linked to corporate business process unification/interoperability.*
- **Technical Integration/Interoperability** was reviewed and designed to ensure common methods and shared services for the communication, storage, processing, and access to data primarily in the application platform and communications infrastructure domains. This interoperability is premised upon the degree of rationalization of the PSRS/GoT IT infrastructure, based upon standards and/or common IT platforms. For example, multiple applications sharing one infrastructure or thousands of corporate websites using one centralized content management/web server (rather than thousands of servers and webmasters spread throughout the country).

The AP Integration Architecture designed provides a bridge between the heterogeneous operational applications and platforms. This architecture ties together the mix of platforms, operating systems, transports, and applications. Integration of business applications between agencies. This Architecture encompasses the multiple layers of new and existing systems and the middleware in between. AP Integration Architecture enables new applications to use existing resources with minimal disruption.

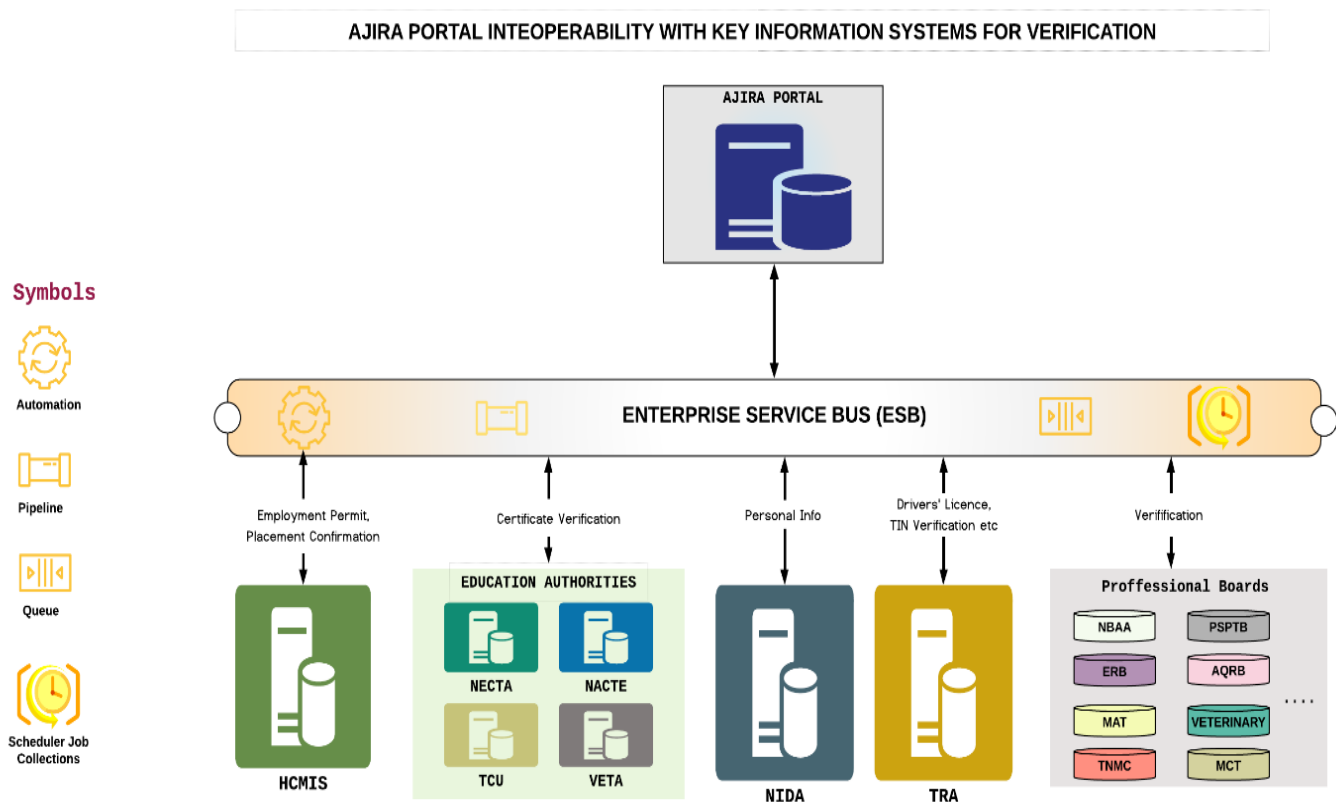


Figure 82: Ajira Portal Interoperability Framework

5.0 NETWORK ARCHITECTURE

Based on the information that was availed to Improved AP improvement design team, it was highlighted that current systems that is used by PSRS recruitment management information is centralized systems. We propose that the network architecture should remain a centralized one as Improved AP is to be used by multiple applicants and employers assessing the central system for services.

The physical and logical design of the software, hardware, protocols, and media of the transmission of data were reviewed to assess their suitability to accommodate the proposed improvements for the improved AP.

5.1 Client- Server

In client server formation, the client requests a resource and the server provides that resource as requested. A server may serve multiple clients at the same time while a client is in contact with only one server per request made. Both the client and server communicate via a computer network and as part of a distributed system. Current AP is mostly structured in client-server network architecture in both in-facility setup and central repository settings. The design team proposes that we keep using client-server architecture in improved AP settings.

5.2 Application

The design team, made a review of current and future proof architectures that are used in building enterprise-level applications and the existing application architecture and decided that the improved AP should maintain the existing architecture which is still meeting the current and future needs of PSRS.. The application architecture in this context covers all four areas of a working distributed system as shown below.

5.3 Infrastructure Architecture

The existing AP application is currently deployed on 125GB RAM, 1TB HDD/SSD, Gigabit Network, Ubuntu 16.04 and Database server with 125GB RAM, 3.5TB HDD/SSD and Ubuntu 16.04 Client computers need at least 2GB RAM, Windows 8 or Ubuntu LTS. On the Employer and Applicants side they need standard PC/Laptop and the applicants can also access the system through mobile AP. The requirement for mobile APP users is IOS 8 and Android 6 as minimum OS requirements.

5.4 Conceptual Framework

How this architecture fits in the overall GoT IT conceptual framework? Here we will highlight the components of the framework that it will work with and the ones that it will represent. We have to put some text that corroborate the conceptual framework bigger picture.

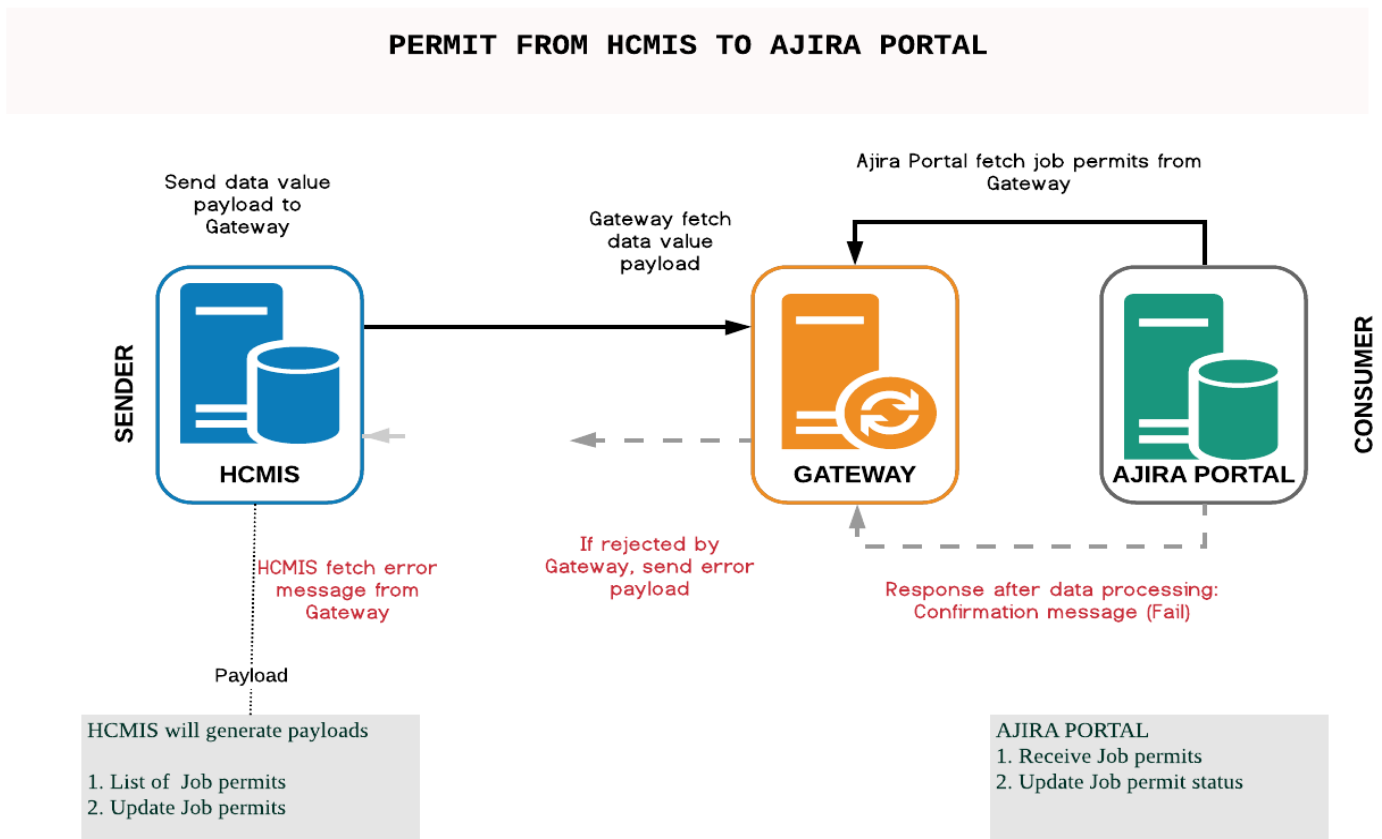


Figure 83: AP Conceptual Framework with HCMIS (As representative of other systems)

6.0 SYSTEM USE CASES

This section provides a diagrammatic description of the system uses cases, their descriptions and activity flows.

6.1 Employment Permit Use case

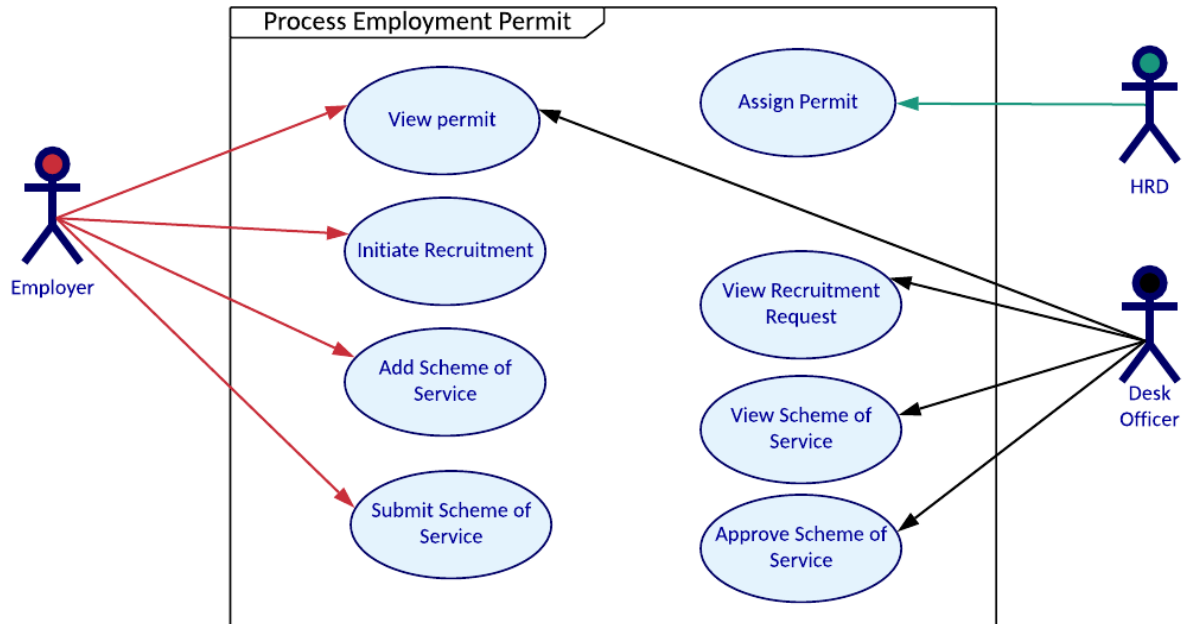


Figure 84: Employment Permit Use case

Employment Permit Use Case Description

Use Case ID:	UCAP001	Variables Dictionary	Employment Permit
Use Case Name:	View Job Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
<Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for a complete job permit.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	xi. Responsible users will receive notification with a link to view Job permit (s). xii. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. xiii. User will be able to add scheme of service to align with cadre as per job permit if the scheme is not in the system. xiv. The added scheme should follow approval process, once approved the		

	scheme will be stored. xv. System will provide window for user to send comment and/or notification for missing information on job permit.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Ajira Portal is linked with HCMIS and can share job permit information
Main Success Scenario	ix. User View Job Permits x. User select Job Permit(s). xi. System display job permit information(s) xii. User confirm and proceed to next steps.
Extension Scenario	ix. Job Permit is not complete (Missing Information) x. System provide window for users' feedback once there is missing information. xi. System administrators would be notified on the particular case. xii. System administrator will communicate with HCMIS on the missing info.

Use Case ID:	UCAP002	Variables Dictionary	Employment Permit
Use Case Name:	Add Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	The system will allow user to add and map scheme of service to a particular cadre if not found on the list stored by the system. The system will then store the scheme of service for future use and reference		
Trigger:	View Job Permit		
Static Preconditions:	Authorized Access Receipt of notification for new job permit		
< Dynamic Preconditions >:	UCAP001		
Success Post conditions:	The system successfully save and map the scheme of service to a particular cadre.		
Failed Post conditions:	The system fails to save and map the scheme of service.		
Operations Concepts	vii. Users will view job permit and scheme of services to see if all cadres have been mapped to corresponding scheme of services. viii. If scheme of service is missing, the system will provide option to add scheme of service and map with the corresponding cadre ix. The system will store the information and make it available for future use and references.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	All cadres must be linked and mapped with correct scheme of service.
Main Success Scenario	xi. User View Job Permits information on cadres and corresponding scheme of services xii. User select option to add new scheme of service xiii. System display field for user to enter information xiv. User enter information and save. xv. System display successfully message Scheme of service is stored and can be accessed.
Extension Scenario	xiii. Missing entry on mandated field xiv. System display error message "This field is required" xv. System return user to missing info field xvi. Duplicate Entry xvii. System display error message "This entry is already in the system" - xviii. System return user to the stored scheme of service

Use Case ID:	UCAP003	Variables Dictionary	Employment Permit
Use Case Name:	Submit Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	A newly added scheme of service must be submitted to decision making levels for further scrutiny (reviews and confirmation). The system will provide option for employer to submit scheme of service		
Trigger:	New scheme of service is added into the system.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP002		
Success Post conditions:	The scheme of service is submitted to other levels for review and approval.		
Failed Post conditions:	The system fails to submit the scheme of service.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Scheme of service must align with policy and guidelines.		

Main Success Scenario	xi. The system display list of newly added scheme of service xii. User select newly added scheme of service xiii. User click “Submit” button xiv. System display success message xv. The submitted scheme of service is removed from the list.
Extension Scenario	

Use Case ID:	UCAP004	Variables Dictionary	Employment Permit
Use Case Name:	View Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	The system shall store list of scheme of service per cadre. Authorized users will be able to view scheme of service.		
Trigger:			
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of scheme of service and information to all fields.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	vii. The system will store a list of scheme of service. This scheme of service will be categorized as approved or not approved viii. Only approved scheme of service (s) will be eligible to be mapped with cadre ix. Authorize users will be able to view the list of schemes, from the list they can further explore individual by clicking on the 'view' for further display		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	ix. User view list of scheme of service x. User select scheme of service xi. System display scheme of service information(s) xii. User confirm and proceed to other phases.
Extension Scenario	

Use Case ID:	UCAP005	Variables Dictionary	Employment Permit
Use Case Name:	Approve Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, it must be approved before being referred for use and mapping with corresponding cadre.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		

Success Post conditions:	System display list of scheme of service
Failed Post conditions:	The system fails to display information.
Operations Concepts	ix. System will display list of scheme of services for approval x. System will provide window for user to approve or send comment on scheme of service (if satisfied). xi. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. xii. If approved, the scheme of service will then be stored and available for use
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines. Scheme of service will be mapped with corresponding cadre
Main Success Scenario	xi. System display list of submitted scheme of service xii. User select scheme of service. xiii. User confirm approval of scheme of service or make comments and return xiv. System display successfully message (returned or approved) xv. The scheme of service status changes to approved.
Extension Scenario	xiii. Scheme of Service need modification xiv. System provide window for users' comments and feedback. xv. High level user comments on modification to be done into the SOS and return the SOS to original user. xvi. Original user gets notification on SOS to be modified. After working on

	the comments, the user then submit (forward) to Desk officer. xvii. The system should record the back and forth process till the SOS is approved. xviii. Once finally approved, the status changes to 'approved' and SOS is stored for reference and future use.

Use Case ID	UCAP-P006	Variables Dictionary	Employment Permit
Use Case Name:	Assign Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD		
Description:	To facilitate the recruitment process, the system will provide option for permit to be assigned to as many users as possible.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
< Dynamic Preconditions >:	UCAP001 (View Permit)		
Success Post conditions:	The system assign permits to user		
Failed Post conditions:	The system fails to assign permits.		
Operations Concepts	ix. Responsible users will receive notification with a link to view Job permit (s). x. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. xi. The system will provide option for permits to be assigned to users to facilitate the recruitment process xii. Once assigned user will be able to perform all activities aligned with the recruitment process		
<Input Summary>:	View Job Permit		

<Output Summary>:	List of assigned job permit
Frequency of Use:	On demand
Assumptions:	A designated taskforce can work on multiple permits to facilitate and speed up the recruitment process.
Main Success Scenario	xi. System displays all available permits xii. User select Job Permit(s). xiii. User assign job permit to other users xiv. System display success message xv. Assigned users are able to see the list of assigned permit to work with.
Extension Scenario	

Use Case ID:	UCAP007	Variables Dictionary	Employment Permit
Use Case Name:	Initiate Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	After verifying the job permit and all requirement (eg mapping SOS, validity etc), an employer will signal the initiation of the recruitment process. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		
Trigger:	Permit issuance		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display success message.		
Failed Post conditions:	The system fails to display successful message.		
Operations Concepts	ix. Responsible users will view permit upon receiving notification, they will scrutinize the permit and if necessary add more information to it x. Once the permit has been cleared, users will signal the start of the recruitment process xi. The system should send notification to authorize to inform on the recruitment process trigger. xii. The initiation recruitment process involves further scrutiny by higher level users. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		

Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Responsible institution must show the intent for recruitment process to begin. Ajira Portal is linked with HCMIS for job permit information exchange. The system can also allow users who do not receive Job permit directly from HCMIS to enter it manually into the system.
Main Success Scenario	vii. The job permit review is complete and provide option to move to initiate recruitment stage viii. User click on the initiate recruitment and the system prompt for confirmation ix. Upon confirmation the system display success message.
Extension Scenario	

Use Case ID:	UCAP008	Variables Dictionary	Employment Permit
Use Case Name:	View Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	Once the employer has confirmed to begin the recruitment process, authorized users will be able to view the contents of the recruitment package.		
Trigger:	Initiate Recruitment		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for complete recruitment process.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	vii. The system send notification to authorized user to inform on the recruitment process trigger (Initiation of recruitment) viii. The notification will bear a link which upon opening it, it will go directly to the initiate process. ix. The system will view list of permits that has been cleared for recruitment processes to begin.		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	Authorized user must be able to view all permits that has been approved for recruitment process. They can then review and continue with the process or provide advice for improvement.
Main Success Scenario	vii. Notification is sent to authorized users’. viii. Users click on the notification ix. The system display the list of all permits that has been approved and cleared for the recruitment process to begin.
Extension Scenario	

Use Case ID:	UCAP009	Variables Dictionary	Employment Permit
Use Case Name:	Reject Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, authorized users will have to review any addition or edition to scheme of service and can approve or reject it.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		
Success Post conditions:	System display list of scheme of service		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	ix. System will display list of scheme of services for approval x. System will provide window for user to approve or send comment on scheme of service (if satisfied). xi. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. If no consensus is reached then the scheme of service is rejected and will be assigned status. xii. The rejected scheme of service will not be in display for use.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines.
Main Success Scenario	xi. System display list of submitted scheme of service xii. User select scheme of service. xiii. User confirm rejection of scheme of service and make comments and return for improvement xiv. System display successfully message (rejected) xv. The scheme of service status changes to rejected.
Extension Scenario	

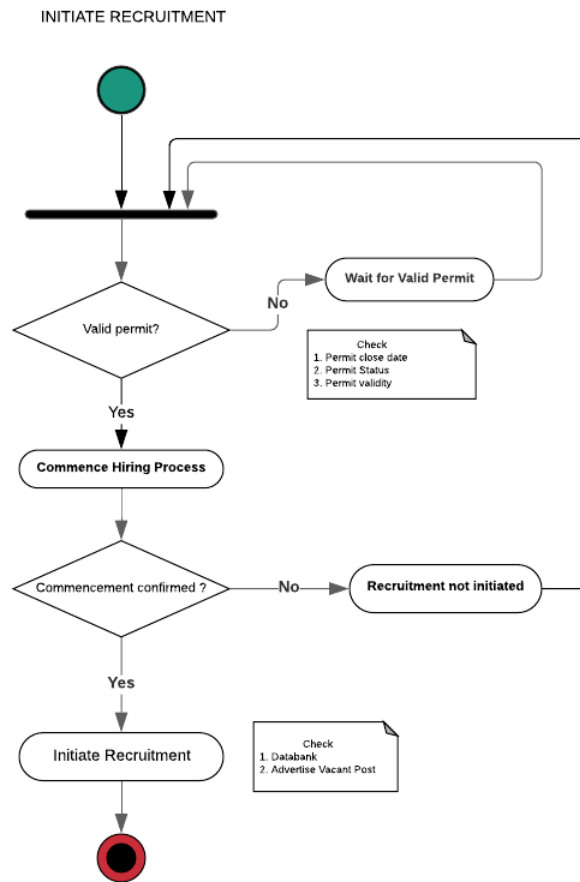


Figure 85: Employment Permit Activity Flow

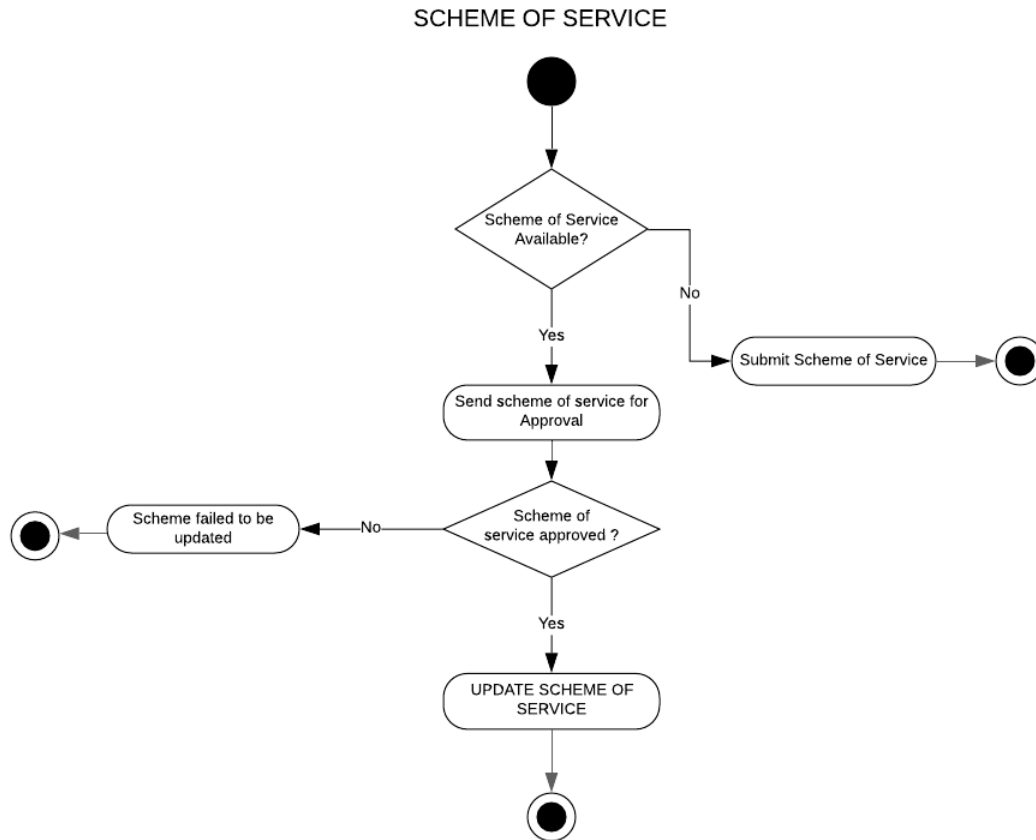


Figure 86: Scheme of Service Activity Flow

6.2 Job Advertisement Use Case

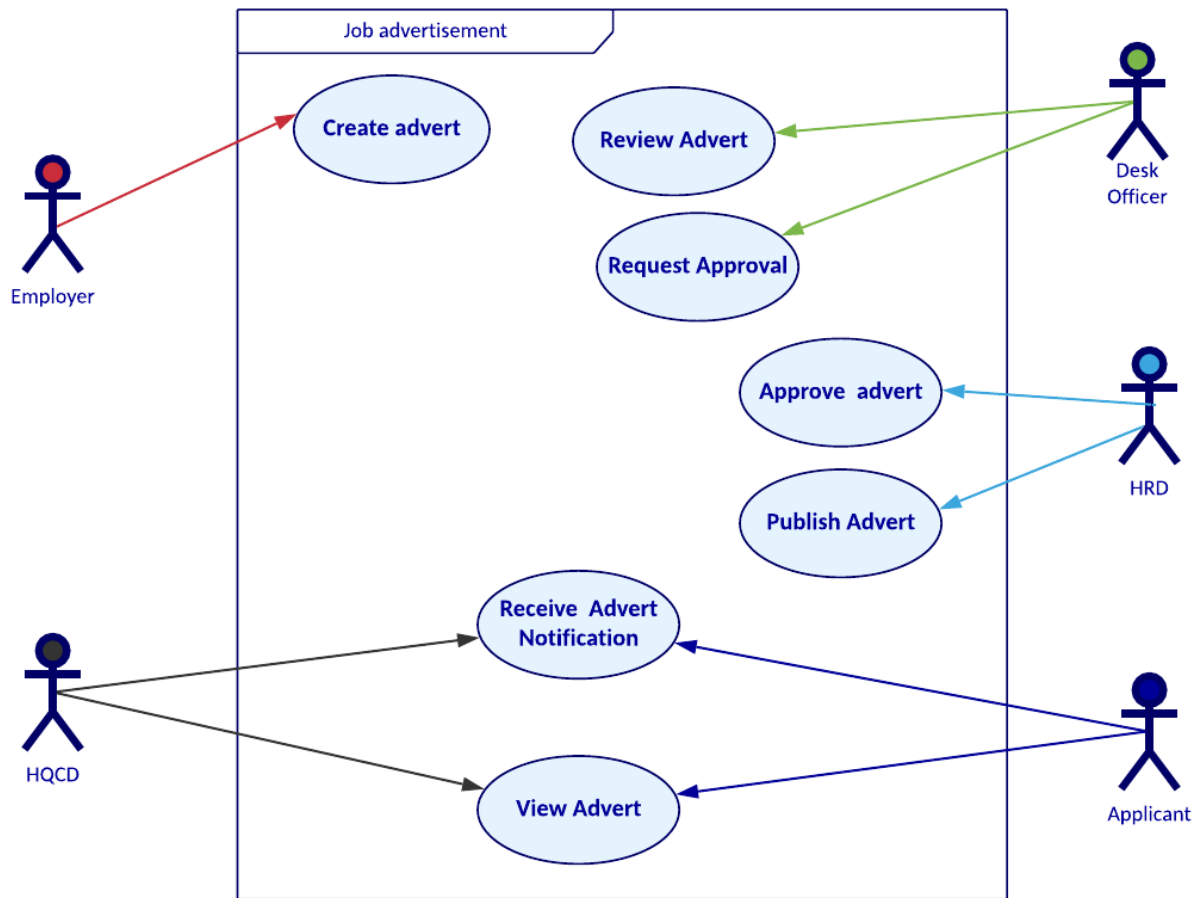


Figure 87: Job Advertisement Use Case

Use Case # UCAP015: Create Advert

Use Case ID:	UCAP015	Variables Dictionary	Job Advertisement
Use Case Name:	Create Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013, API07, API08		

Actors:	Employer, Desk Officer
Description:	This is one of important process in the recruitment cycle. Once the internal initiation of recruitment has passed, authorized user are required to create a job advert for the approved vacancies in order to inform the public of the availability of vacancies.
Trigger:	Initiate Recruitment
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Job Permit, Initiate Recruitment
Success Post conditions:	The system create job advert
Failed Post conditions:	The system fails to create advert
Operations Concepts	- Authorized user approved the recruitment process to begin. - The system notifies responsible users on the recruitment process. - Responsible users create advert as per job vacancy description - Responsible user submit advert for approval
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	The public must be informed on the availability of the vacancies
Main Success Scenario	9. User view notification on recruitment process alert 10. User create advert 11. User save advert and the system displays a successfully message 12. User confirm and proceed to next steps.
Extension Scenario	

Use Case # UCAP016: Review Advert

Use Case ID:	UCAP016	Variables Dictionary	Job Advertisement
Use Case Name:	Review Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP018,		
Actors:	Desk Officer, HRD		
Description:	Upon advert creation, authorized user will receive notification on the availability of the advert and will have to review to ensure it adhered to standard and align with policies and guidelines.		
Trigger:	Create Job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert		
Success Post conditions:	The system display all job advert information		
Failed Post conditions:	The system fails to display job advert information		
Operations Concepts	- A job advert is created and submitted for approve - Authorized users will view list of all job advert created - The system will display all information on a job advert for review - Authorized users will review and scrutinize the job advert - Authorized users will then signal for the next steps (Publish or edit)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	A Job advert must adhere to standard and align to policy and guidelines.		
Main Success Scenario	11. System display all list of job advert created 12. Authorized users select job advert for review 13. System displays job advert information 14. Authorized users confirm the review is OK 15. System display successfully message		
Extension Scenario	c)Job advert needs modification 9. System provide window for users' comments and feedback. 10. Authorized user(s) enter comments on modification to be done into the job advert and return the job advert to original user.		

	11. Job advert creator (user) gets notification on issues to be modified. After working on the comments, the user then submit (forward) to authorize users. 12. Once finally reviewed and approved, the system display successful message

Use Case # UCAP017: Request job advert approval

Use Case ID:	UCAP017	Variables Dictionary	Job Advertisement
Use Case Name:	Request job advertisement approval		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP008, AP010		
Actors:	Employer, Desk Officer		
Description:	An employer would request for review and approval of a job advert to ensure it adhered to standards, policies and guidelines.		
Trigger:	Create advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create advert		
Success Post conditions:	The system submit the job advert for approval.		
Failed Post conditions:	The system fails to submit the job advert.		
Operations Concepts	- The system successfully save the created job alert - Authorized user will then forward the job advert for approval - The authorized user will view the created advert and act accordingly - If approved the advert will wait for the next stage (Go live into public)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Job advert must adhere to standards, policies and guidelines before sent to public.		
Main Success Scenario	13. The system send notification to authorized user on the availability of job advert for approve 14. Authorized user see list of all job advert created 15. Authorized user select a job advert 16. The system displays all the information on job alert 17. Authorized user then comment or confirm the validity of a job advert 18. The system stores the approved job advert and give 'approve status'		
Extension Scenario			

Use Case # UCAP018: Approve advert

Use Case ID:	UCAP018	Variables Dictionary	Job Advertisement
Use Case Name:	Approve advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP015, AP014, AP019, AP020		
Actors:	Employer, HRD, Desk Officer		
Description:	All job adverts created within AP must be approved for public consumptions. The approval process is crucial to ensure that the job advert adhered to employment process standards and align with policies and guidelines.		
Trigger:	Create Job Advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system provide option to approve job advert		
Failed Post conditions:	The system fails to approve the job advert.		
Operations Concepts	- The system will display all job alerts for approve - User will select the job advert and the system will display information for each job advert - Authorized user will then be able to approve and move to next step or reject job alert and return for modification		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:			
Main Success Scenario	13. The system send notification to authorized user on the availability of job advert for approve 14. Authorized user see list of all job advert created 15. Authorized user select a job advert 16. The system displays all the information on job alert 17. Authorized user then comment or confirm the validity of a job advert 18. The system stores the approved job advert and give 'approve status'		

Extension Scenario	

Use Case # UCAP019: Publish Advert

Use Case ID:	UCAP019	Variables Dictionary	Job Advertisement
Use Case Name:	Publish Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP016, AP021		
Actors:	Employer, HRD		
Description:	After being approved, the job alert will be finalized and published for public consumptions. The system will provide a PDF version of the advert and other format that will be published through public mediums and Ajira Portal website		
Trigger:	Create job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create job advert, approve job advert		
Success Post conditions:	System publish		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	- The system will display a list of all approved job adverts - Authorized user will then prompt the system to publish the job advert - The system will generate the job advert into a readable format (PDF) - Authorized user can then publish it through approved mediums		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	GOT vacancies are open for each Tanzanians to apply provided is qualified for the vacancy. Thus the public must be informed once there is availability of job vacancies.		
Main Success Scenario	9. System display list of all approved job advert 10. User select job advert. 11. User click on publish job advert 12. The system generates the complete job advert		
Extension Scenario			

Use Case # UCAP020: Receive Job advert Notification

Use Case ID:	UCAP020	Variables Dictionary	Job advertisement
Use Case Name:	Receive Job advert notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP055, AP017		
Actors:	Applicant, HQCD		
Description:	All applicants who have registered with Ajira Portal will receive notification once a job advert has been published. Thus all potential applicants should register with Ajira Portal for quick notification once a new job vacancy has been published		
Trigger:	Publish job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Created job advert, Publish job advert		
Success Post conditions:	System send notification		
Failed Post conditions:	The system fails to send notification		
Operations Concepts	System will send notification to all applicant on availability of new job adverts		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Every applicant has right to be quickly informed on the availability of vacancies so as can prepare for job application		
Main Success Scenario	7. System send notification to applicants 8. Applicant get notification through approved medium (Eg email, SMS, mobile app). 9. The system can also display notification through the notification icon.		
Extension Scenario			

Use Case # UCAP021: View job advert

Use Case ID:	UCAP005	Variables Dictionary	Job Advertisement
Use Case Name:	View Job advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP016, AP021		
Actors:	Applicant, HQCD		
Description:	When the job advert has been published applicants and public in general will be able to view the job advert.		
Trigger:	Publish Job Advert, Job alert notification		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert, Publish Job Advert, Job alert notification		
Success Post conditions:	System display job advert		
Failed Post conditions:	The system fails to display job advert		
Operations Concepts	System will publish the job alert to public mediums for public and applicant to view		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	The public has right to see job advert once it has been published.		
Main Success Scenario	5. System publishes a new job advert into Ajira Portal Website 6. Applicant and public able to see the job alert		
Extension Scenario			

Job Advertisement Activity Flow

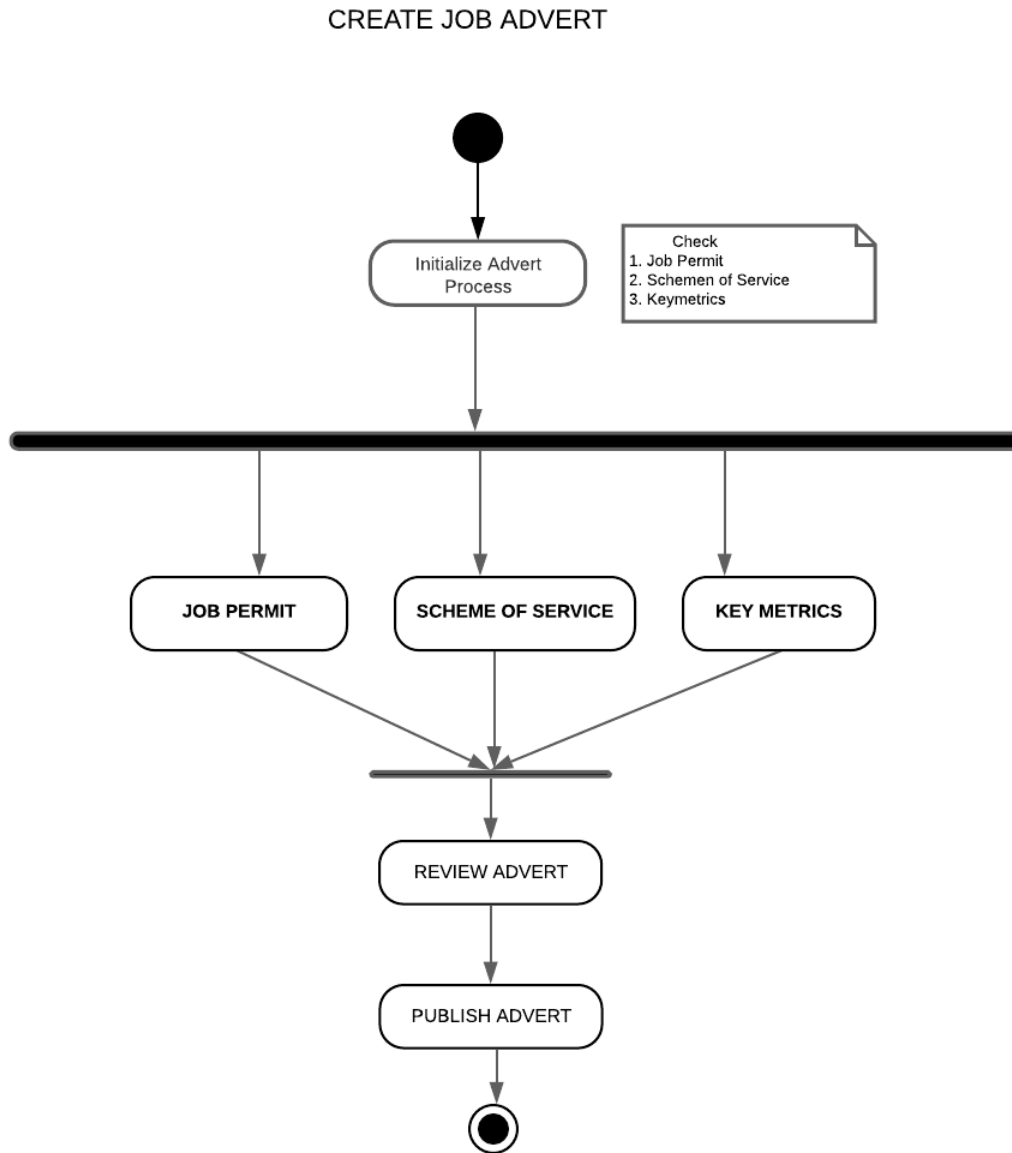


Figure 88: Job Advertisement Activity Flow

6.3 Job Application Use case

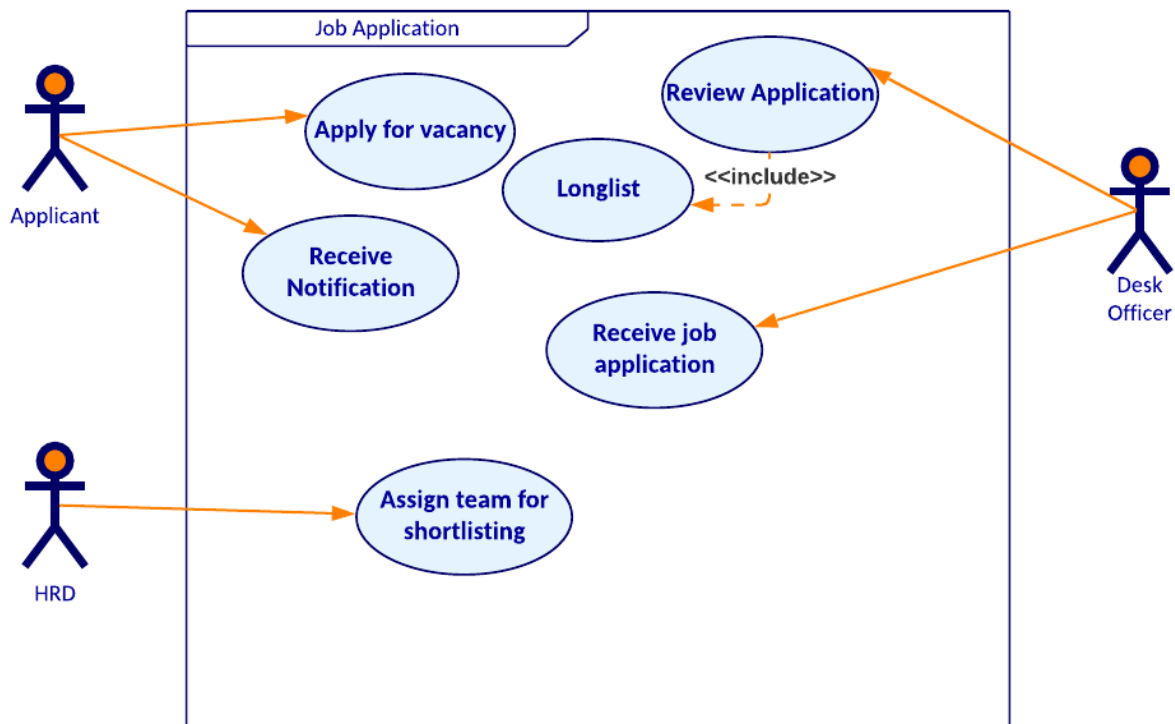


Figure 89: Job Application Use case

Use Case # UCAP010: Apply for Vacancy

Use Case ID:	UCAP010	Variables Dictionary	Job Application
Use Case Name:	Apply for Vacancy		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Once applicants have received job alert notification, they will be able to see a list of vacancies that has been advertised. Applicants will apply to particular position(s) according to their qualifications. Job adverts will be set with expire (deadline) date and		

	thus applicant should be aware.
Trigger:	• Job Advertisement • Job Alert Notification
Static Preconditions:	• Authorized Access
< Dynamic Preconditions >:	Job advertisement
Success Post conditions:	The system display list of advertised posts, users select preferred vacancies and apply for a job.
Failed Post conditions:	The system fails to display information.
Operations Concepts	• Applicants receive notification on job vacancies and can see the list of all advertised vacancies. (The system should display all vacancies regardless of applicant qualification) • Applicant can then apply from the list as per qualification (the system should limit users from applying jobs out of their professional, qualification) • Applicant should fill all the information needed including attaching an application letter. • Applicant will then submit application for further steps. • The system will store all applicant's application and will be available review until the job advert time expired. • The system will prevent applicant to review application process (Eg. Altering application letter) when the deadline date is reached.
<input summary>:	Job advertisement, job alert notifications
<output summary>:	List of successfully applicants application (s)
Frequency of Use:	On demand
Assumptions:	All eligible applicant will be able to apply for a job vacant once published
Main Success Scenario	15. Applicant receive job alert notification(s) 16. Applicant able to view list of all job vacancies (regardless of qualification/professional categorization) 17. Applicant select vacancies as per qualification 18. Applicant fills required information including attaching application letter 19. Applicant save the information and then click submit 20. The system display 'Success Message' to confirm application has been submitted. 21. The system display list of all application that has been done by an applicant
Extension Scenario	e) Applicant Reviews Application 9. Applicant go to 'My application' menu. 10. System display all applications and statuses (Active, Closed) 11. If the application is <i>active</i> , the system will provide option for applicant to review the information and can edit the attachment letter. 12. If the application is <i>closed</i> , then the system will not give option for edition. f) Rejected Application

	5. If the applicant has not qualified for a job vacancy then the system will not display any information for application. 6. If applicant information are either insufficient or overqualified for a certain position then the system will reject the application.

Use Case # UCAP011: Receive Job Advert Notification

Use Case ID:	UCAP011	Variables Dictionary	Job Application
Use Case Name:	Receive Job Advert Notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Upon publication of a job advertisement, eligible applicants (whose profile have a 70% completion rate) will be notified on the availability of new vacancies. Applicants will be able to see the notification with description of the advertised vacancy upon which they can start application.		
Trigger:	Publish Job Advertisement		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Publish Job advertisement		
Success Post conditions:	The system successfully send notification to applicant.		
Failed Post conditions:	The system fails to send notification.		
Operations Concepts	- When responsible users finishes the process of preparing job advert and publish, the system will automatically send notification to users (applicant) - Applicant will be able to see the notification icon displaying an alert with a number indicating the presence of a new notification - Upon clicking the notification menu, applicant will be able to see all job related notifications (in this case a new vacancy)		
<Input Summary>:	Publish Job advertisement		
<Output Summary>:	List of notification to be embedded on the notification icon		
Frequency of Use:	On demand		
Assumptions:	Since the recruitment process has time limitation, applicant must be informed immediately upon availability of new job vacancy.		
Main Success Scenario	13. User View Job Permits information on cadres and corresponding scheme of services 14. User select option to add new scheme of service 15. System display field for user to enter information 16. User enter information and save. 17. System display successfully message		

	18. Scheme of service is stored and can be accessed.
Extension Scenario	e) Missing entry on mandated field 5. System display error message "This field is required" 6. System return user to missing info field f) Duplicate Entry 5. System display error message "This entry is already in the system" 6. System return user to the stored scheme of service

Use Case # UCAP012: Assign team for shortlisting

Use Case ID:	UCAP012	Variables Dictionary	Job Application
Use Case Name:	Assign team for shortlisting		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP039, AP040, AP042, AP043		
Actors:	HRD		
Description:	Once application period has ended, a taskforce will be assigned to review all application and provide a list of qualified applicant that can proceed to other stages such as interviews etc.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	The system is able to assign team for shortlisting.		
Failed Post conditions:	The system fails to assign team for shortlisting.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All job application must be reviewed by a qualified team		
Main Success Scenario	9. The display number of application for a certain cadre 10. The system provide window to add number of available force 11. The system provide window to enter the approximated number of application a member of a taskforce can review. 12. The system will then automatically calculate the suggested strength of a taskforce		
Extension Scenario			

Use Case # UCAP013: Review Application (Long list)

Use Case ID:	UCAP013	Variables Dictionary	Job Application
Use Case Name:	Review Application (Long list)		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	API11, API10, AP023,		
Actors:	HRD, Desk Officer		
Description:	All applications will be reviewed once application period has ended. The review will provide a list of possible candidates (long list) for a position that are to be further tested through other stages (ie interviews).		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of all applications per each vacancy (cadre).		
Failed Post conditions:	The system fails to display list of applications per each cadre.		
Operations Concepts	- After application period ends, the system will lock any attempt for applicant to apply for a job. - The system will display all applicant per cadre they've applied (with number) - Responsible user must go through each applicant information to verify if that applicant has qualified and is eligible to apply for that particular job. - Upon completion of review process, the system will provide a list of successfully applicant and send notification on the next stages (interviews)		
Exceptions:	N/A		
Includes:	Receive Application		
Frequency of Use:	On demand		
Assumptions:	All application must be reviewed to ensure applicants have adhered to the needs of the vacancy		
Main Success Scenario	11. System send notification on the closing of the application period 12. Responsible users responds to the notification by opening and see a list of applicants that have applied for a particular cadre 13. The system will provide window for quick preview on applicants information such as attachments, personal info etc		

	14. Each candidates selected will be sent with notification indicating the status of his/her application (success or rejected - with a reason) 15. The system will finally list all successfully candidates that will have to go through next stages (interviews)
Extension Scenario	

Use Case # UCAP014: Receive Job Application

Use Case ID:	UCAP014	Variables Dictionary	Job Application
Use Case Name:	Job Application		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP023, AP024, AP026		
Actors:	Desk Officer		
Description:	Authorized users will be able to see all applications as they unfold during and after application period has ended.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	System display list of applications		
Failed Post conditions:	The system fails to list of applications.		
Operations Concepts	- The system provides window for applicants to apply for a job vacancy - After filling all required information, applicant will then submit the application - The system will allow authorized users to see a real time progress as the application process is unfolding with increasing number. - Authorized users will be able to view the list of all application per given cadres.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All applications must be accounted for within the system.		
Main Success Scenario	5. System display list of application with a counter to monitor number of application 6. Authorized users can navigate through different job vacancy to monitor the progress of job application processes		
Extension Scenario			

Job Application Activity Flow

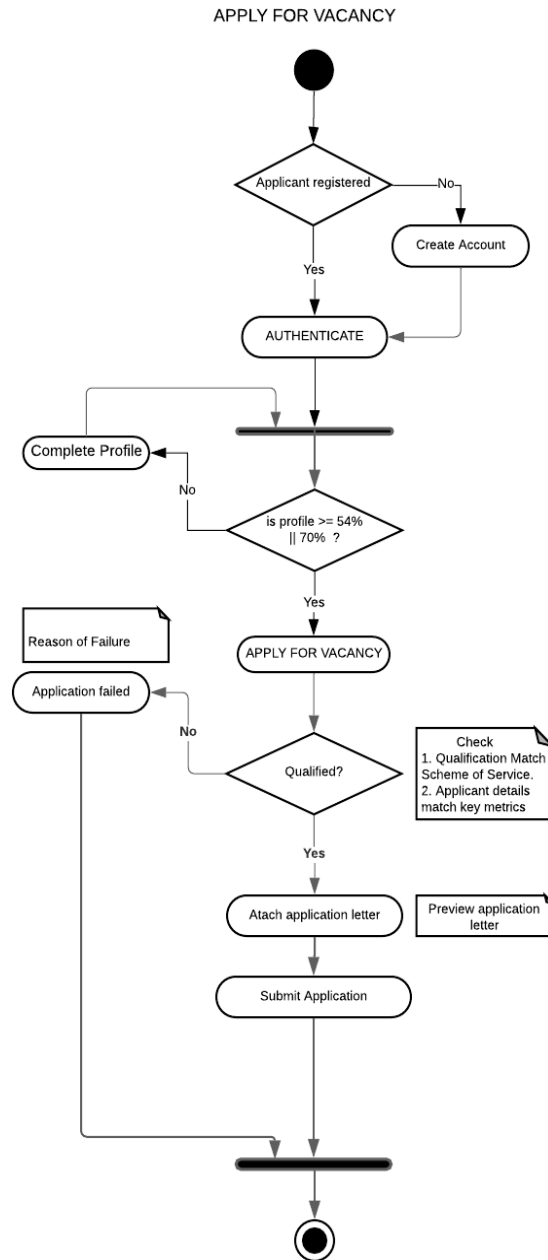


Figure 90: Job Application Activity Flow

6.4 Interview Question Use Case

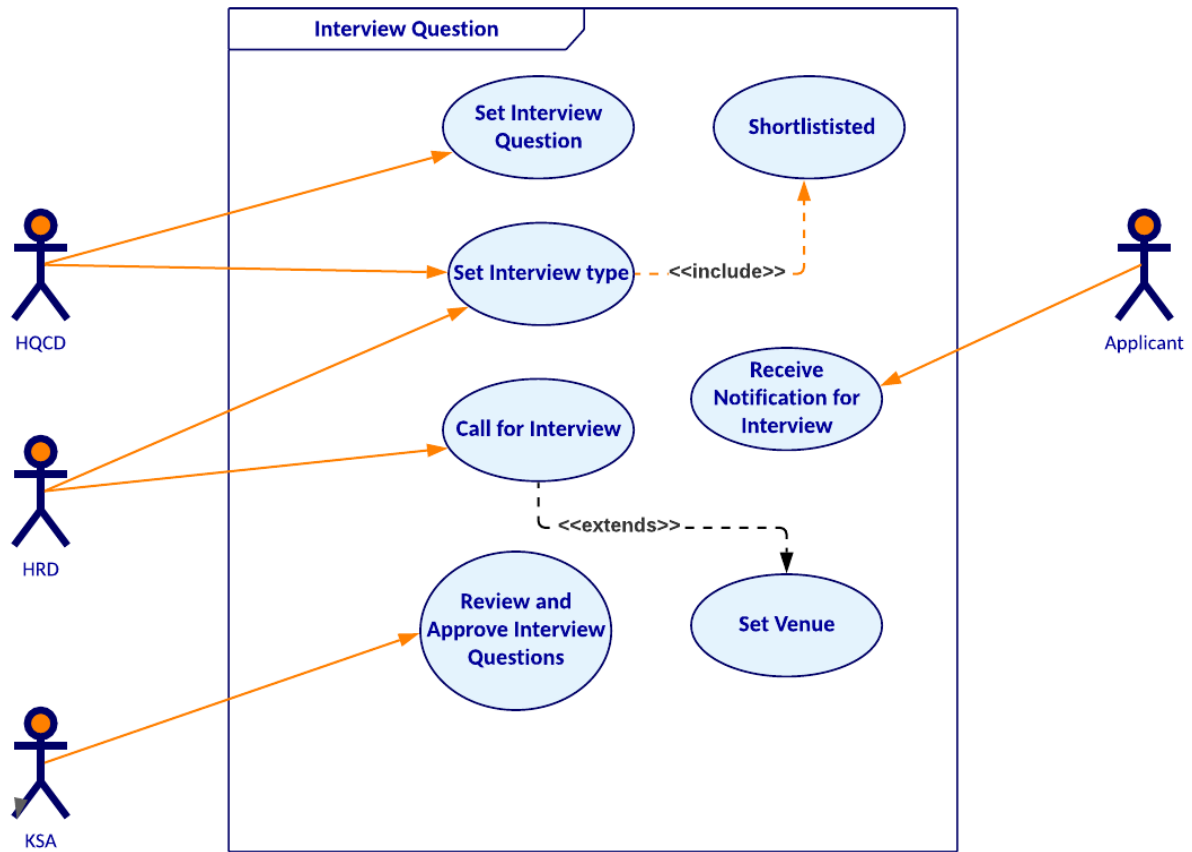


Figure 91: Interview Question Use Case

Interview Question Use Case Description

Use case Descriptions

Use Case ID:	UCAP012	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question- Set Interview type		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	When the Shortlisting completes HQCD and HRD setting up the interview type which will be based on the number of Shortlisted Applicant and Type of Cadre. Interview type can be Written (Aptitude), Practical and Oral Interview.		
Trigger:	Receive number of Shortlisted Candidate		
Static Preconditions:	Authorized Access Receive Notification		
< Dynamic Preconditions >:	Shortlisted Applicant		
Success Post conditions:	The system displays the number of Interviews to be done to a particular Cadre.		
Failed Post conditions:	The system fails to display the type of interview to be done.		
Operations Concepts	Responsible users will receive a number of shortlisted applicants.. Responsible users will compare number of post to the number of Shortlisted Candidate so as to check if the cadre has Written(Aptitude) interview		

	Responsible users will also check the Type of Cadre if it has Practical Interview Then the Responsible users will set the Oral Interview
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Based on Number of Shortlisted Candidate to determine type of Interview
Main Success Scenario	Set up of interview to each Cadre Allocate Schedule and Venue to each Cadre
Extension Scenario	

Use Case ID:	UCAP013	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	After analysis of the type of interview the responsible user prepares the interview question which will depend on the type of interview i.e Written (Aptitude), Practical, Oral Interview.		

Trigger:	Receive analysis of the type of interview Prepare Interview Questions according to the Duties and Responsibility of the Particular Cadre.
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Type of Cadre and the type of interview
Success Post conditions:	Presenting the Interview Questions for all types of Interview according to the nature of each Cadre.
Failed Post conditions:	Fail to prepare Interview Questions to each Interview Type.
Operations Concepts	Responsible users will receive the number of Interview types set for each Cadre. Responsible users will communicate with the sources of Interview questions. Responsible users receive the draft of the Interview Question from the Sources. Responsible Users will review the drafts of the Interview Question. After Reviewing the Interview Question the responsible users will submit the drafted interview Question to the CEO for approval. The CEO will review received set of draft interview questions After reviewing the Interview Questions the CEO will approve the received Draft Interview Questions so as to be used in the Interview.
Exceptions:	N/A
Includes:	N/A

Frequency of Use:	On demand
Assumptions:	Based on Type of Interview and nature of the Cadre
Main Success Scenario	Set the Interview Question to each stage of the Interview
Extension Scenario	

Use Case ID:	UCAP014	Variables Dictionary	Employment Permit
Use Case Name:	Call for Interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, Applicant		
Description:	When the Set up of Interview Type, Interview Venue and Shortlisting Process complete the following process is Call for Interview.		
Trigger:	Receive type of Interview and Venue for each Cadre Prepare Invigilator and Markers for the Interview Question. Interview number to each successful candidate and reasons to those who are unsuccessful.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Type of Interview and the number of Successful Candidate		

Success Post conditions:	Notification to all responsible Users for Call for Interview announcement
Failed Post conditions:	Fail to give notification of the Call for Interview.
Operations Concepts	Responsible users will set an interview Timetable and allocate Venue for each Cadre. Responsible users will issue a Call for Interview announcement in a PO-PSRS Website and SMS. Responsible users provide feedback to applicants on the status of their application. Applicant will accept/deny call for interview feedback Responsible Users will form invigilators and/or interview panels.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Set of Interview Type, Set of Interview Venue and Shortlisting process complete.
Main Success Scenario	Set the Interview Venue and Timetable Notification to the applicant and all responsible Users Issue of Call Interview announcement to PO-PSRS website Applicant receive notification on the application status
Extension Scenario	

Interview Question Activity Flow

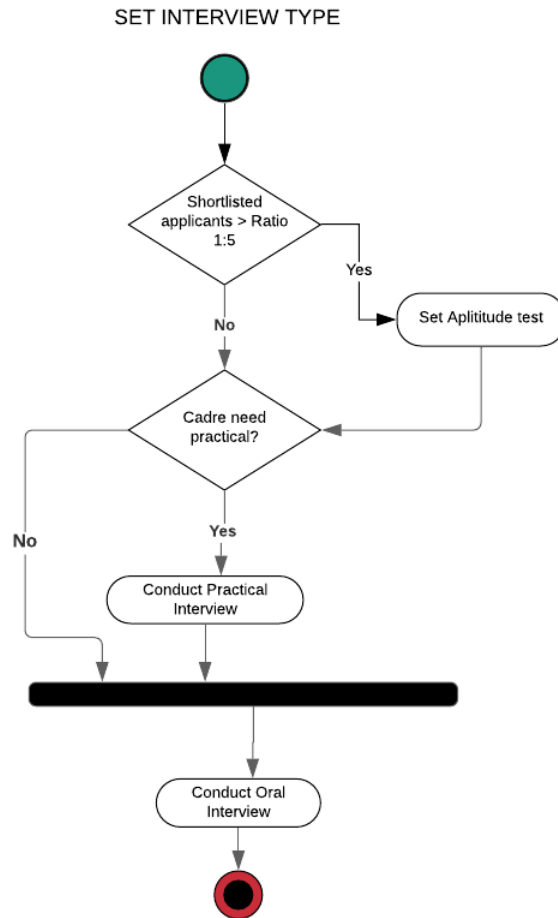


Figure 92: Interview Question Activity Flow

6.5 Applicant Shortlist Use Case

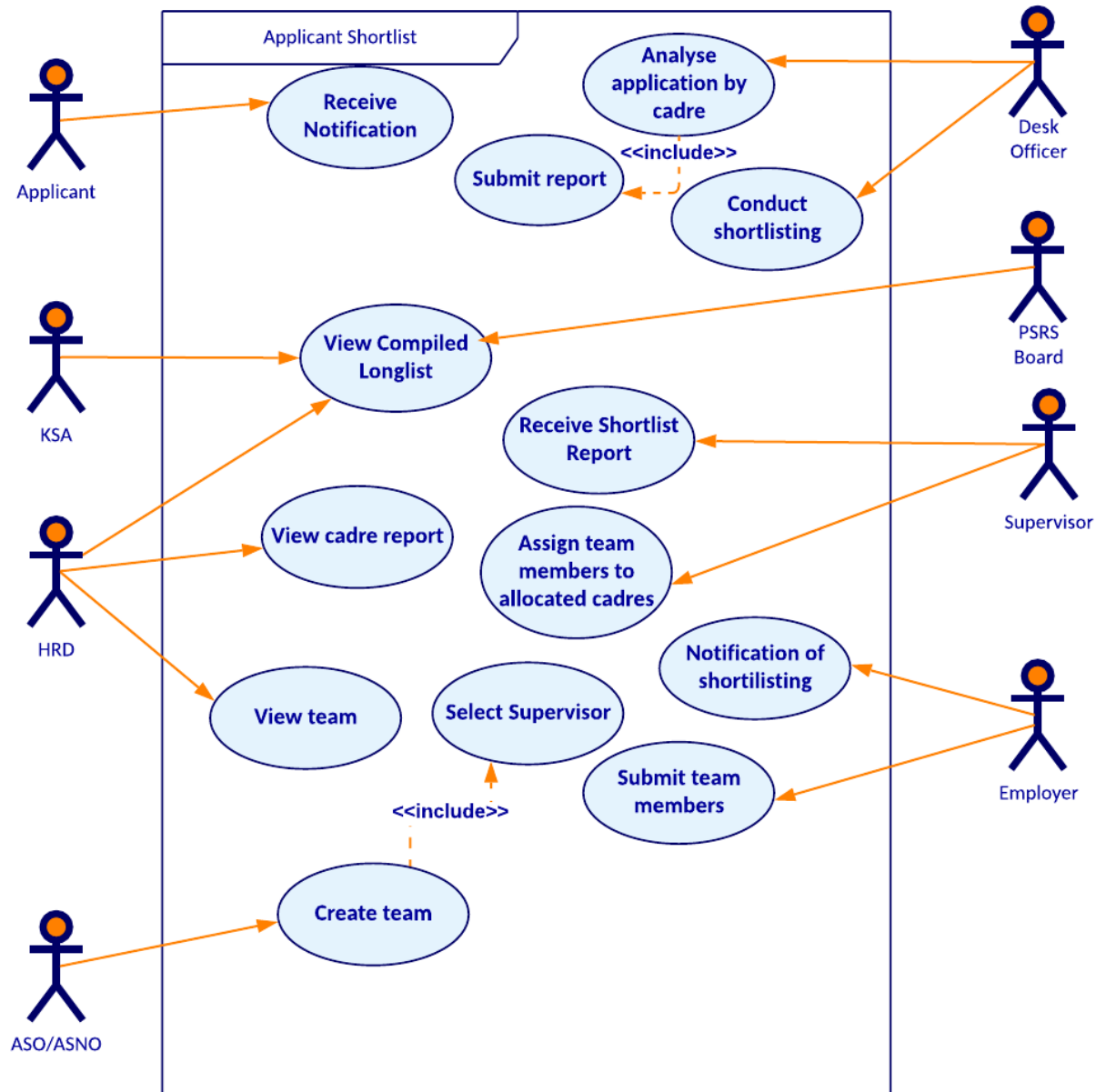


Figure 93: Applicant Shortlist Use Case

5. Applicant Shortlist Use Case Description

Use Case ID:	UCAP015	Variables Dictionary	Employment Permit
Use Case Name:	Applicants Shortlist		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Applicant, Desk Officer, KSA, PSRS Board, HRD, Supervisor, Employer, ASO/ASNO		
Description:	Immediately after advert deadline system will start shortlisting of applicants by cadre and generate various shortlisting report e.g. ix. Shortlisted candidate by gender. x. Shortlisted candidate by disability. xi. Shortlisted candidate by age; xii. Shortlisted candidate by University.		
Input Summary:			
Output Summary:			
Trigger:	3. Receive notification after advert deadline reached		
Static Preconditions:	v. Authorized Access vi. Receipt of notification		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	xiii. System will analyze application by cadre and generate shortlisting report. xiv. ASO/ASNO will form team and select supervisors to conduct shortlisting. xv. Employer will receive notification and submit members that will participate in the shortlisting. xvi. Supervisor(s) will distribute compiled longlist to the selected team for shortlisting. xvii. HRD and KSA will receive compiled longlist and shortlisted reports. - xviii. Applicants will receive notification i.e. successful and unsuccessful.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	3. Advert deadline must be reached.		
Main Success Scenario	xiii. Applicant to successful apply for the available vacant. xiv. System to generate compiled longlist report. xv. User to conduct shortlisting. xvi. User view shortlisting report. xvii. User to receive notification. - xviii. Applicant to receive notification.		

Extension Scenario	c) Applicant shortlist is not complete Recruitment termination during shortlisting process.

Applicant Shortlist Activity Flow

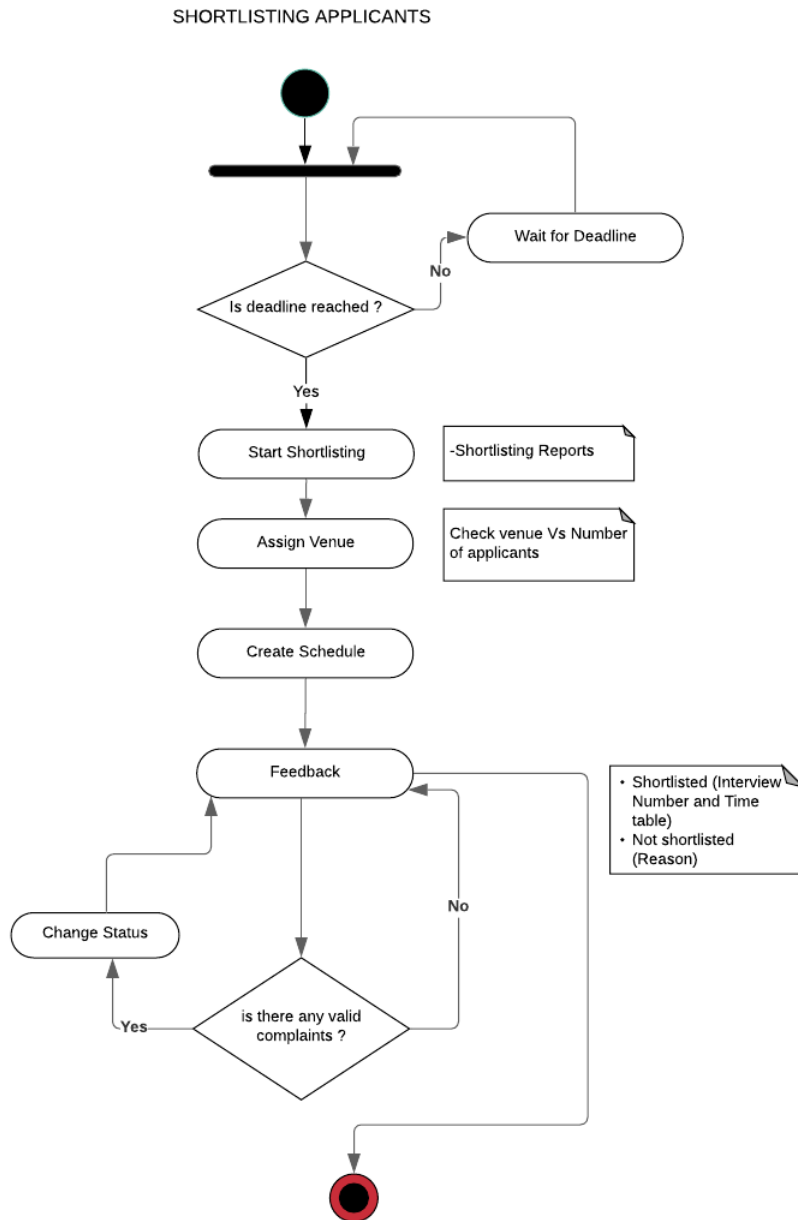


Figure 94: Applicant Shortlist Activity Flow

6.6 Call for Interview Use Case

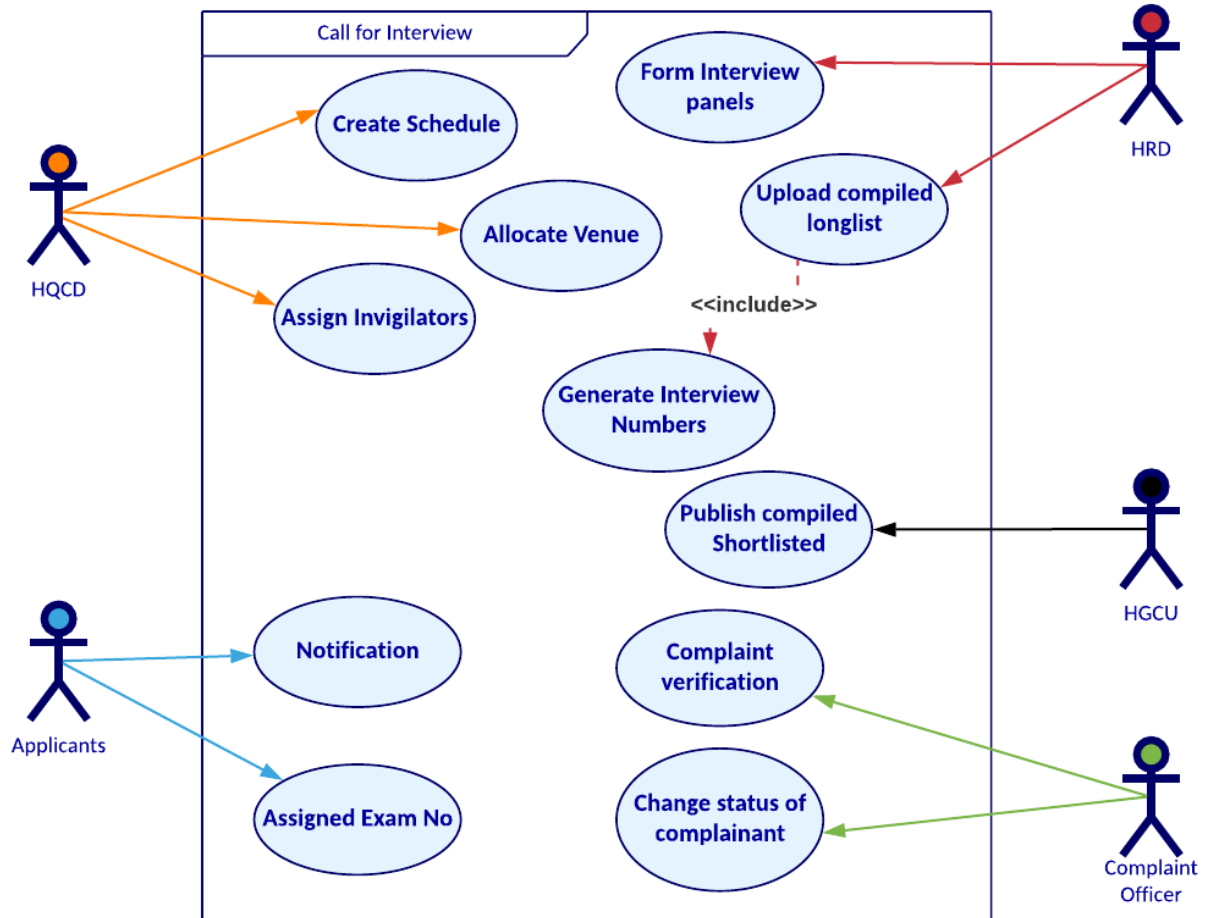


Figure 95: Call for Interview Use Case

6. Call for Interview Use case Description

Use Case ID:	UCAP016	Variables Dictionary	Call for interview
Use Case Name:	Call for interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD, HGCU, Complaint Officer, Applicants		
Description:	Immediately after shortlisting, interview panel will be created, upon successful creating panel venue will be suggested with their respective applicants and invigilators ready to initiate call for interview.		
Input Summary:			
Output Summary:			
Trigger:	v. Advert reached deadline vi. Shortlisting (Generation of compiled longlist)		
Static Preconditions:	Compiled longlist established.		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	Failure Notification.		
Operations Concepts	xi. System will generate compiled longlist. xii. HRD will form interview panels and upload compiled longlist. xiii. HQCD will create venue, allocate venue and assign invigilators. xiv. Applicant will receive interview number upon successfully selected on the shortlisting process. xv. To attend interview applicant must confirm to attend in the interview.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Shortlisting completed successful		
Main Success Scenario	ix. System to generate compiled longlist. x. User to create team for interview (Panelist and Invigilator). xi. User to create venue and assign applicants to venue. xii. Applicants to attend interview.		
Extension Scenario	N/A		

Call for Interview Activity Flow

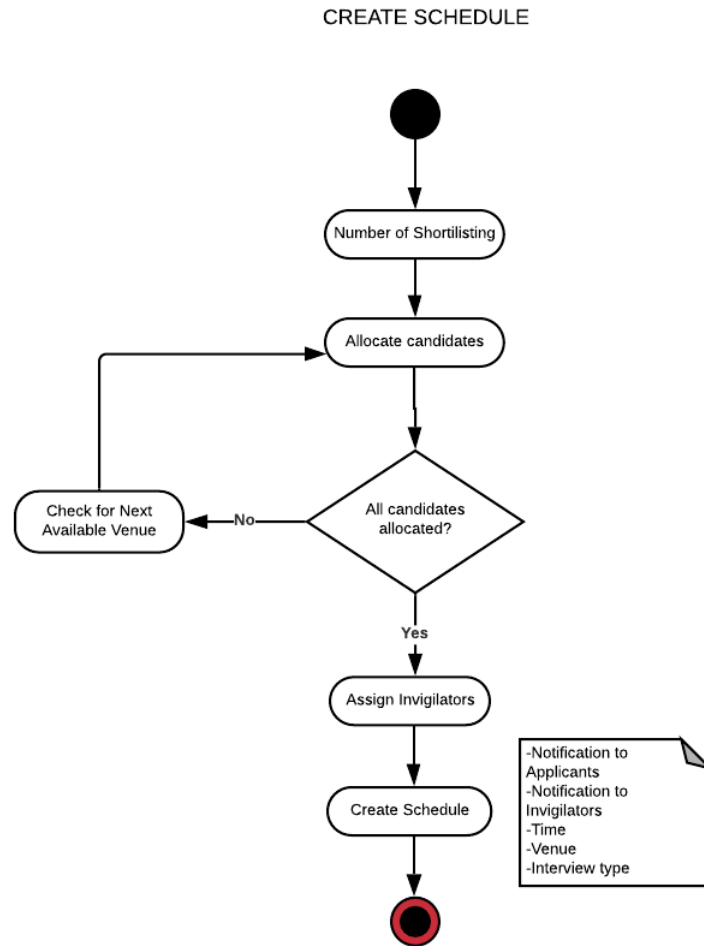


Figure 96: Call for Interview Activity Flow

6.7 Conduct Interview Use Case

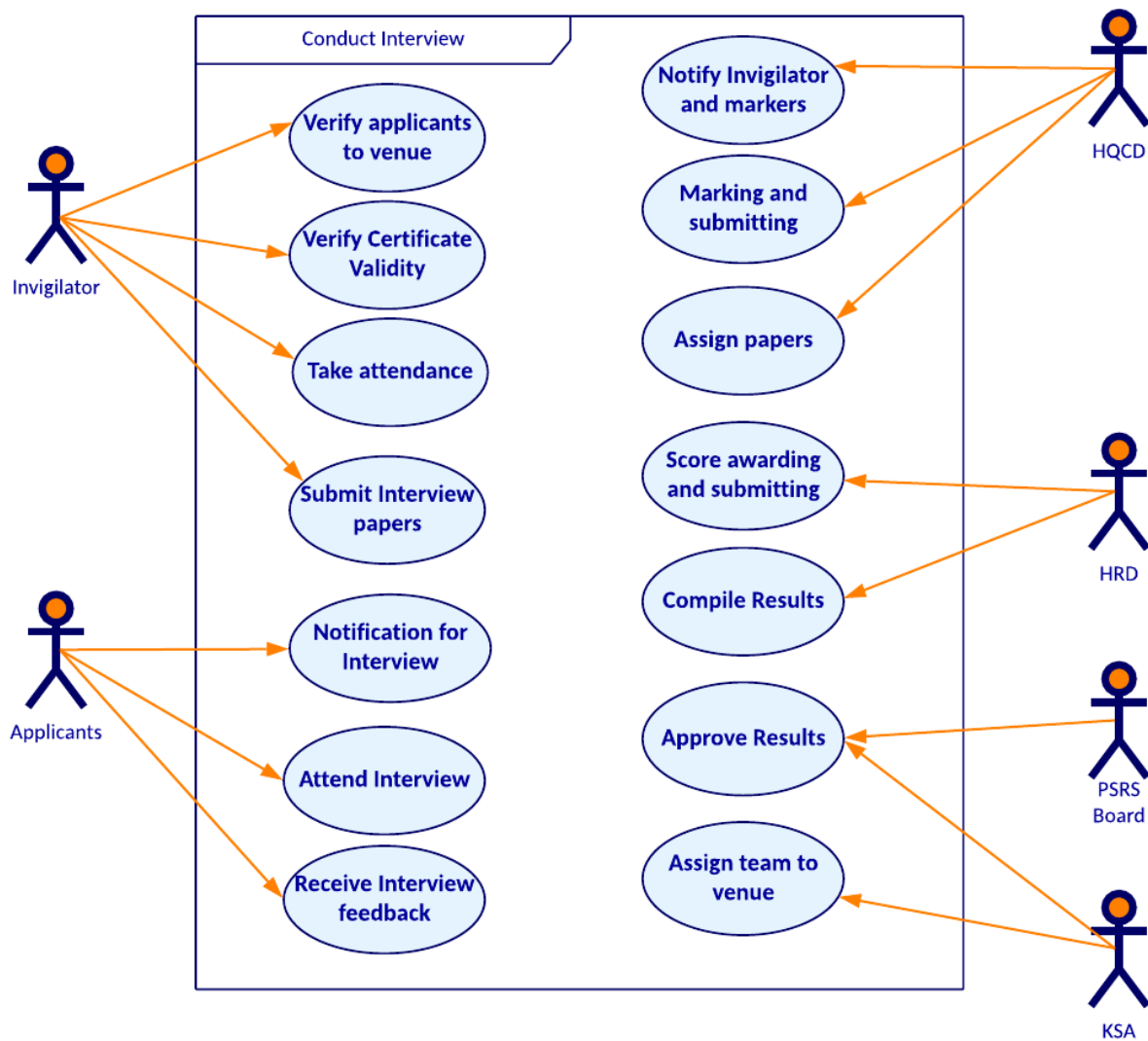


Figure 97: Conduct Interview Use Case

Conduct Interview Use Case Description

	Use Case ID:	UCAP017	Variables Dictionary	
	Use Case Name:	Conduct Interview		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		Invigilator, HQCD, HRD, Applicant, KSA, PSRS Board		
Description:		Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:		3. Applicant Shortlist		
Static Preconditions:		ix. Compiled Applicant shortlist x. Interview questions xi. Interview panels (Invigilators/ Panellist, Markers) xii. Applicants and Interview panels assigned to interview venues		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		N/A		
Failed Post conditions:		The system fails to display information.		
Operations Concepts		xiii. Responsible users will verify applicants and certificates. xiv. Conduct interview xv. Mark interview xvi. Submit interview results xvii. HRD/HQCD compile results, produce and submit interview reports xviii. Review interview reports by the Board		
Exceptions:		Cadres that do not go through the Interview process		
Includes:		N/A		
Frequency of Use:		On demand		
Assumptions:				
Main Success Scenario		ix. The system shall notify user on selection x. User can verify applicant against certificates and venue xi. The system displays approved compiled interview results xii. Applicants to get interview feedback from the system		
Extension Scenario		N/A		

Conduct Interview Activity Flow

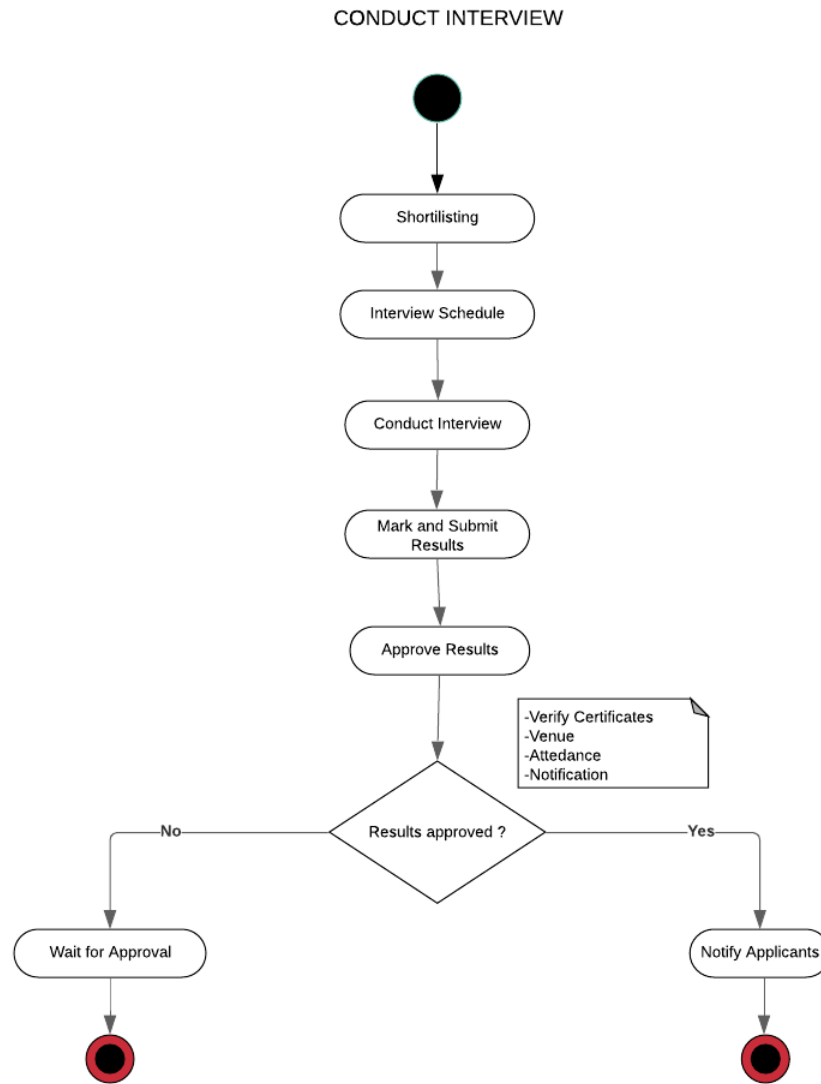


Figure 98: Conduct Interview Activity Flow

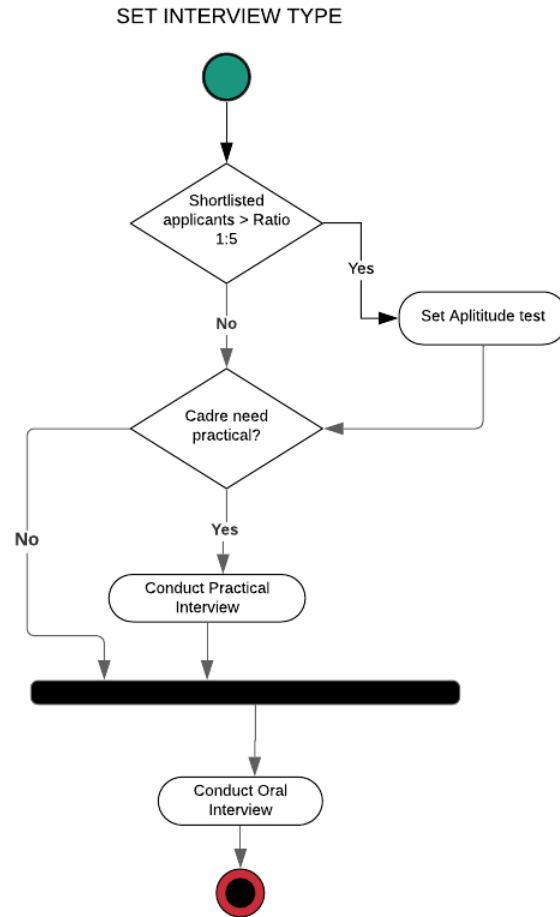


Figure 99: Set interview type

6.8 Placement Use Case

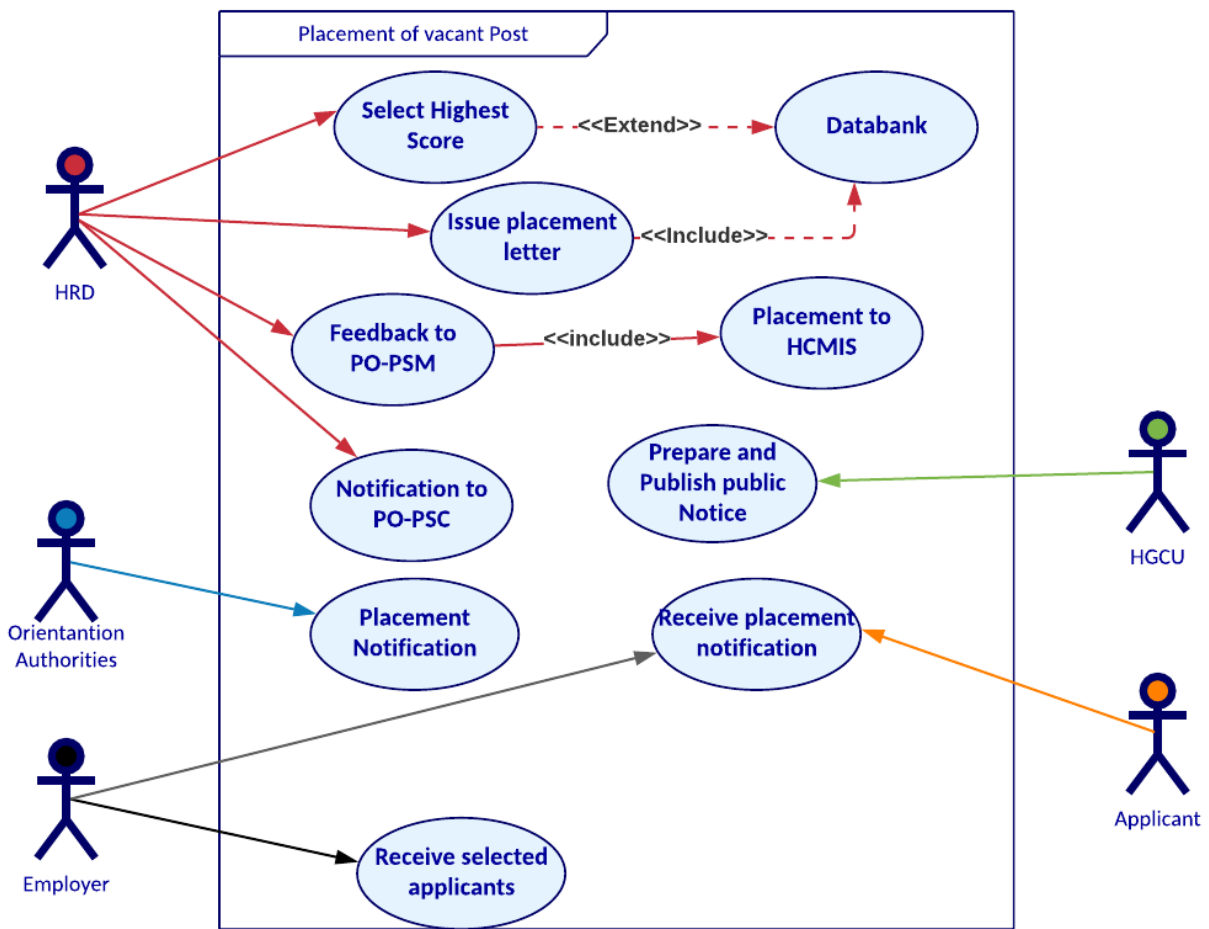


Figure 100: Placement Use Case

Placement Use Case Description

Use Case ID:	UCAP018	Variables Dictionary	Employment permit
Use Case Name:	Placement from Databank		
Created By:	PSRS	Last Updated By:	
Date Created:	18/01/2021	Last Revision Date:	18/01/2021
Actors:	HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:	After permit analysis, the user/system checks for availability of suitable candidates to be placed from the Databank. If suitable candidates are available the systems places them according to the requirements, if they are not sufficient or unavailable the next of advertising vacant posts is triggered		
Trigger:	complete permit analysis		
Preconditions:	Valid permit, with its associated scheme of service.		
Post conditions:	v. System places available suitable candidates vi. where there are insufficient or unavailable suitable candidates, system triggers advertisement of the vacant posts		
Normal Flow:	xvii. Issue letter of placement. xviii. Issue notification to employer. xix. To provide feedback to PO - PSM (Placement into HCMIS) xx. Issue notification to PO-PSC xxi. Issue public notice for call for engagement xxii. Issue notification to orientation authorities xxiii. if available candidates are insufficient to fill vacant posts advertise the remaining vacant post xxiv. if there are no suitable candidates in the databank advertise vacant posts		
Exceptions:	some cadres may not follow the normal recruitment process for placement		
Includes:	5. issuance of placement letter 6. placement into HCMIS		
Frequency of Use:	On demand		
Assumptions:			
Notes and Issues:	N/A		

Placement from Advertising Vacant Post

	Use Case ID:	UCAP019	Variables Dictionary	
	Use Case Name:	Placement from advertising vacant Post		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:		Following the interview process and approval of final results, successful applicants are placed in vacant posts. The remaining unplaced successful candidates are stored in the databank.		
Trigger:		Completed interview process		
Static Preconditions:		1. Passed candidates 2. Valid permit		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		vii. System places available suitable candidates viii. System triggers advertisement of the vacant posts when there are insufficient or unavailable suitable candidates ix. System stores unplaced successful candidates in databank.		
Failed Post conditions:		The system fails to place successful candidates to vacant posts and databank		
Operations Concepts		xvii. Sort candidates in descending order of scored marks - xviii. Place candidates with highest scores first xix. Print placement letter xx. Issue notice to employer on placement and provide feedback to PO - PSM (Placement into HCMIS) xxi. Issue notification to PO-PSC xxii. Issue placement advert to appropriate media - xxiii. Issue notification to orientation authorities xxiv. Storage of unplaced successful candidates in databank		

Exceptions:	When two or more candidates have the same high score the following criteria should be used to decide on who gets placed first:- ix. If one of the candidates is disabled, then that candidate will get placed first. x. If all or none of the candidates are disabled, then the female candidate will get placed first. xi. If all or none of the candidates are female, then the oldest candidate will get placed first. xii. If the candidates are the same age, then alphabetical order of names is followed.
Includes:	vii. Issuance of placement letter viii. Placement into HCMIS ix. Storage of unplaced successful candidates in databank
Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	xiii. Arrangement of highest scores of candidates xiv. Placement of successful candidates xv. Issuance of placement letter xvi. Issuance of placement details to Employer and PO-PSM (through HCMIS) xvii. Issuance of notification of placement to PO-PSC and Orientation Authorities - xviii. Issuance of placement advert to public via appropriate media
Extension Scenario	N/A

Placement Activity Flow

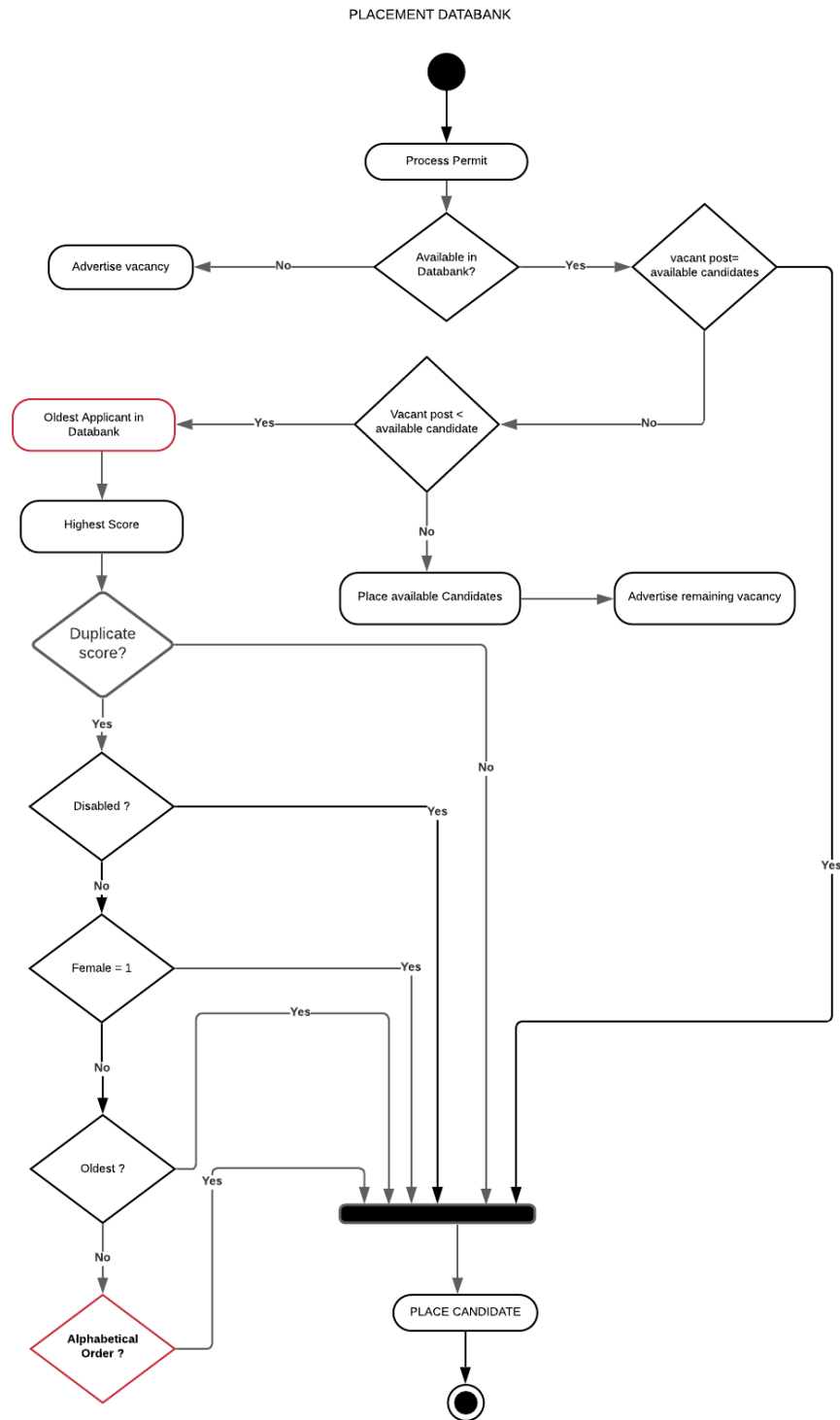


Figure 101: Placement Activity Flow

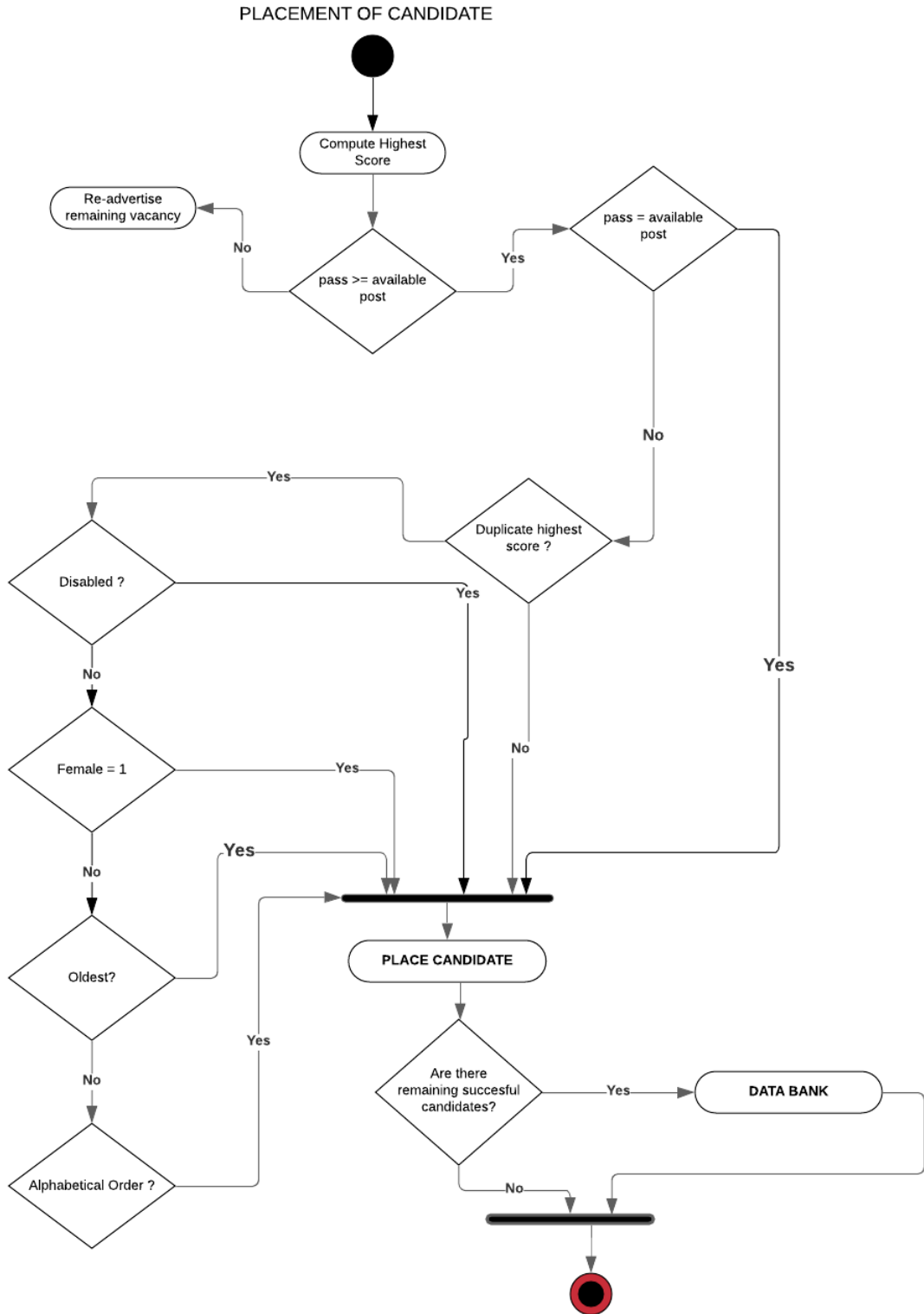


Figure 102: Figure 29: Placement of Candidates

7.0 MOCKUPS (User Interface (UI) and User Experience (UX) Design)

Our 3-week design sprint was definitely not enough to completely redesign Ajira Portals' web UI, however, we feel that we tackled the design task project successfully. Our UI/UX met the needs of our applicant persona by making the job searching process quick, easy, convenient, and transparent. Although we did not have the time to fully redesign the employer's side of the web app, we took our employer persona's needs and frustrations into consideration in our design.

As AP's existing web app was identified to have usability issues, it needed a responsive web app designed from scratch to improve a noticeably cumbersome experience.

Our design process consisted of 5 phases which were executed using agile methodology: 1) Research 2) Plan 3) Design 4) Test 5) Iterate.

Personas

To compile and visualize our user research, we took our participants' responses and created 2 affinity diagrams — 1 for job seekers and 1 for employers. From these affinity diagrams, we devised 2 user personas that will represent AP's target users. These personas guided us throughout our design sprint to ensure that we design for our users' specific goals and needs.

Planning

After compiling and analyzing all of our research, we came up with some ideas for Ajira Portal websites and mobile app. Because we were limited by time, the design team focused on the applicant's user flow for the current improvements to the AP portal — how they would navigate the web and mobile app — instead of designing both the applicant's and employer's user flows. This would include the following tasks:

- Create a profile
- Search for jobs
- Apply to jobs
- feedback/notifications/messaging
- Track applications and interviews

Site Map

With these features in mind, we created a site map to help us visualize the structure and organization of the content in the web and mobile app.

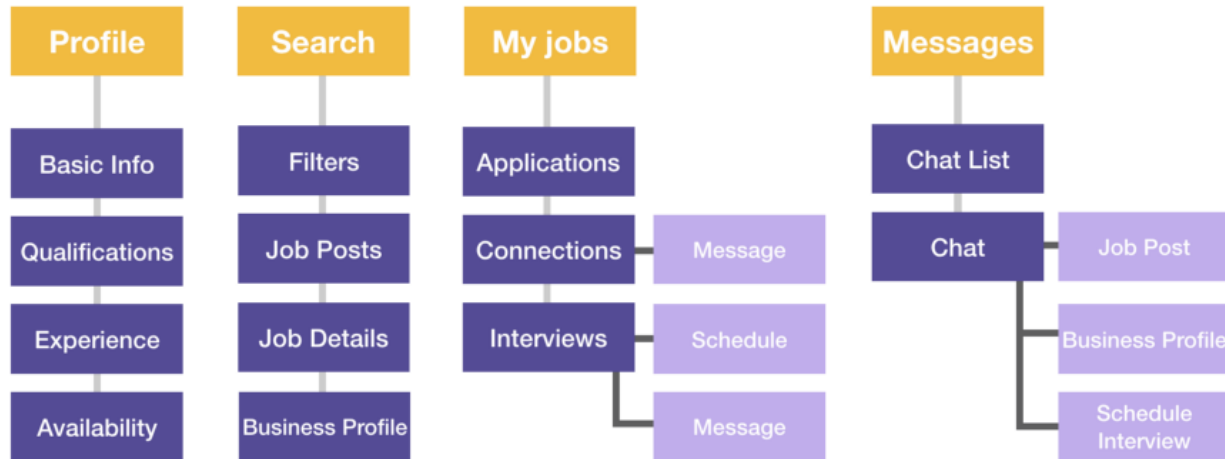


Figure 103: UI/UX Sitemap guide

UI Design Direction

As we began the design stage of our project, we had to nail down the style direction that AP's web and mobile app would take. We wanted the platform to seem friendly, modern, and fresh, while still evoking a professional and trustworthy feel, so as to resonate with our young millennial users.

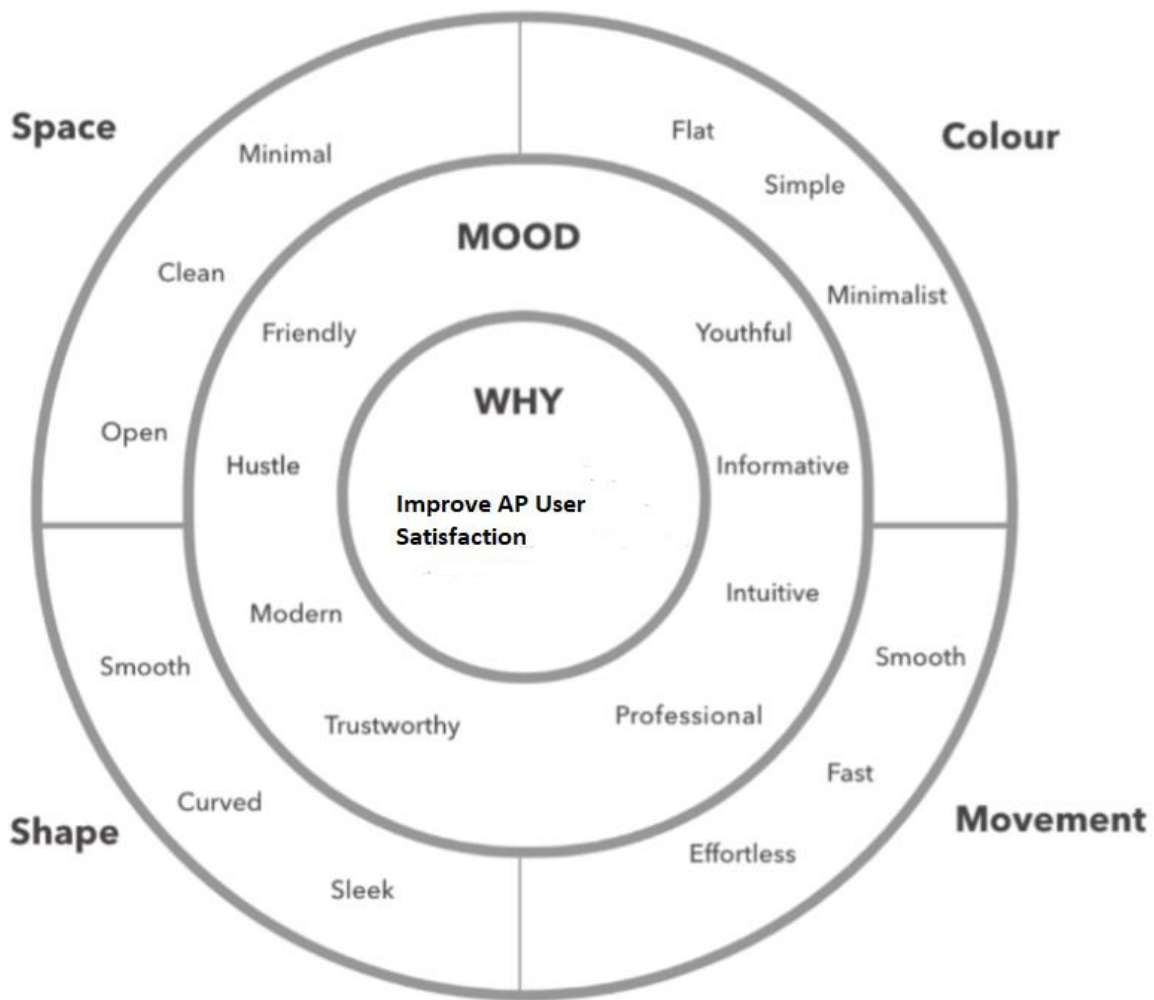


Figure 104: UI/UX Inception

Testing

We tested our design mockups. The goal was to find out if the web and mobile app we designed were straightforward and easy to navigate. The task was to create a profile, find a bar-back position, apply to the job, and schedule an interview (view interview schedule and confirm participation). In order for the test to be successful, participants had to successfully complete the task in less than 5 error clicks. The results from our testing showed that 7 out of the 8 attempts were successful, meaning that from a UX standpoint our web and mobile app were good to go!

Web - Desktop/Laptop Screens Mock ups

1. Home page

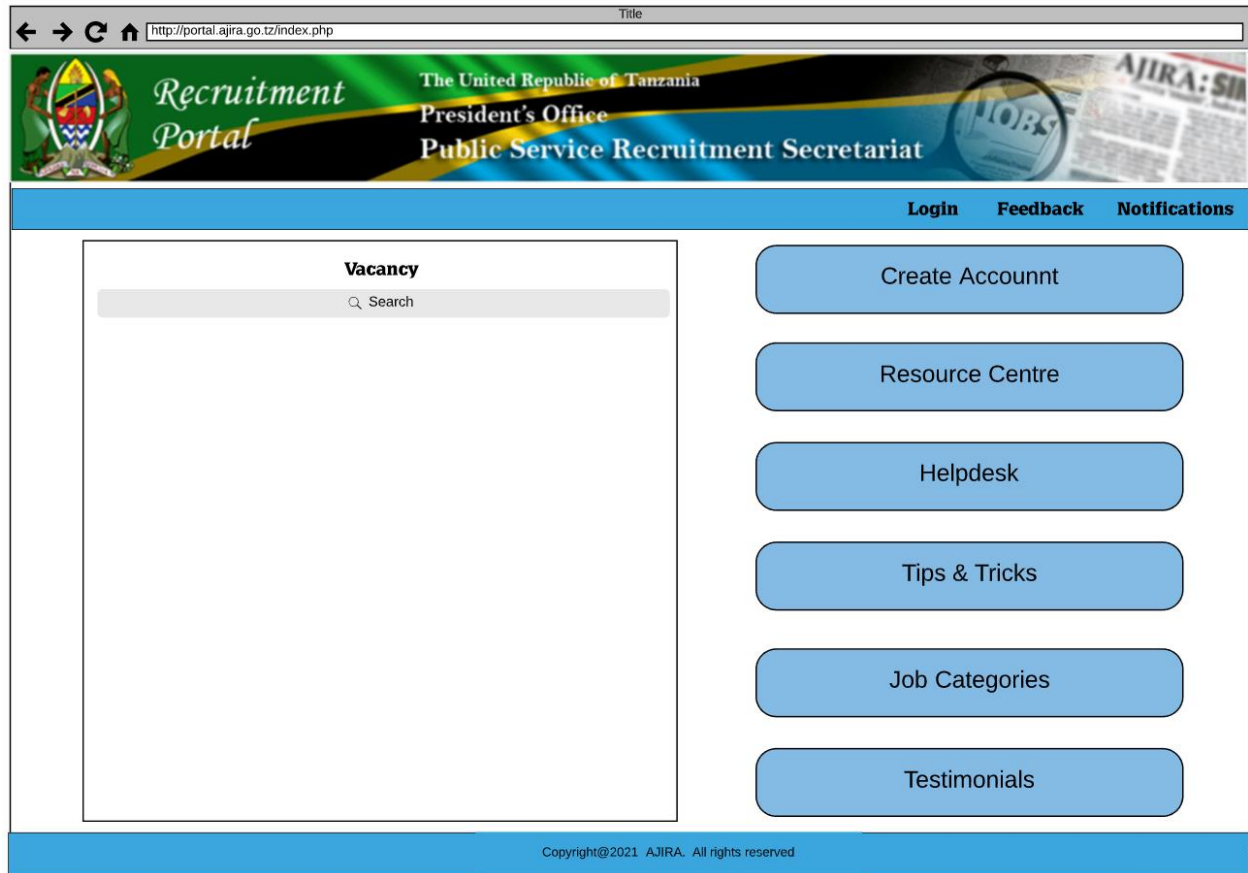


Figure 105: Home page

Landing page

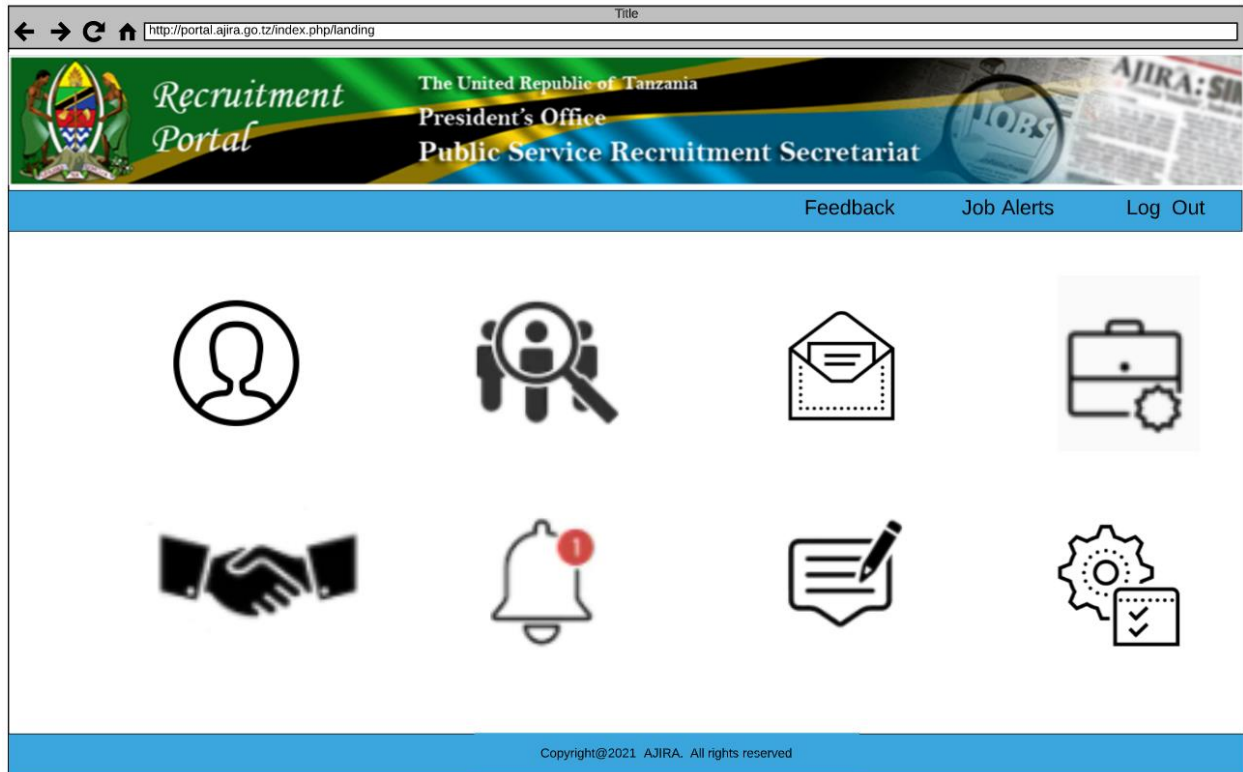


Figure 106: Landing page

My Profile landing page

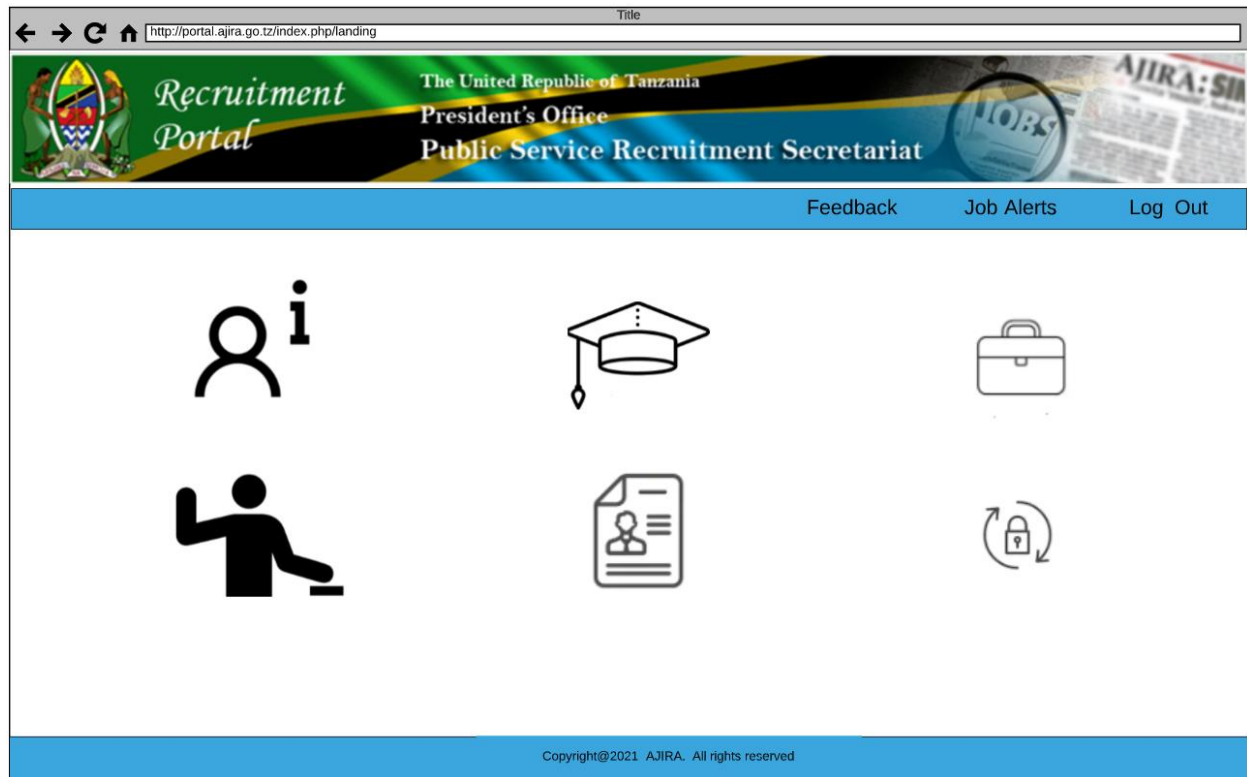
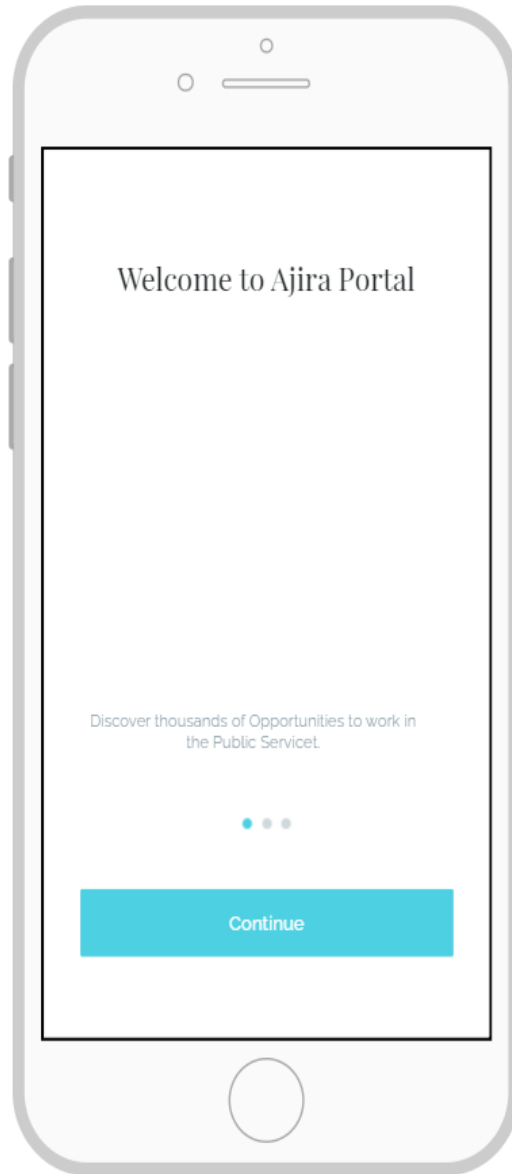


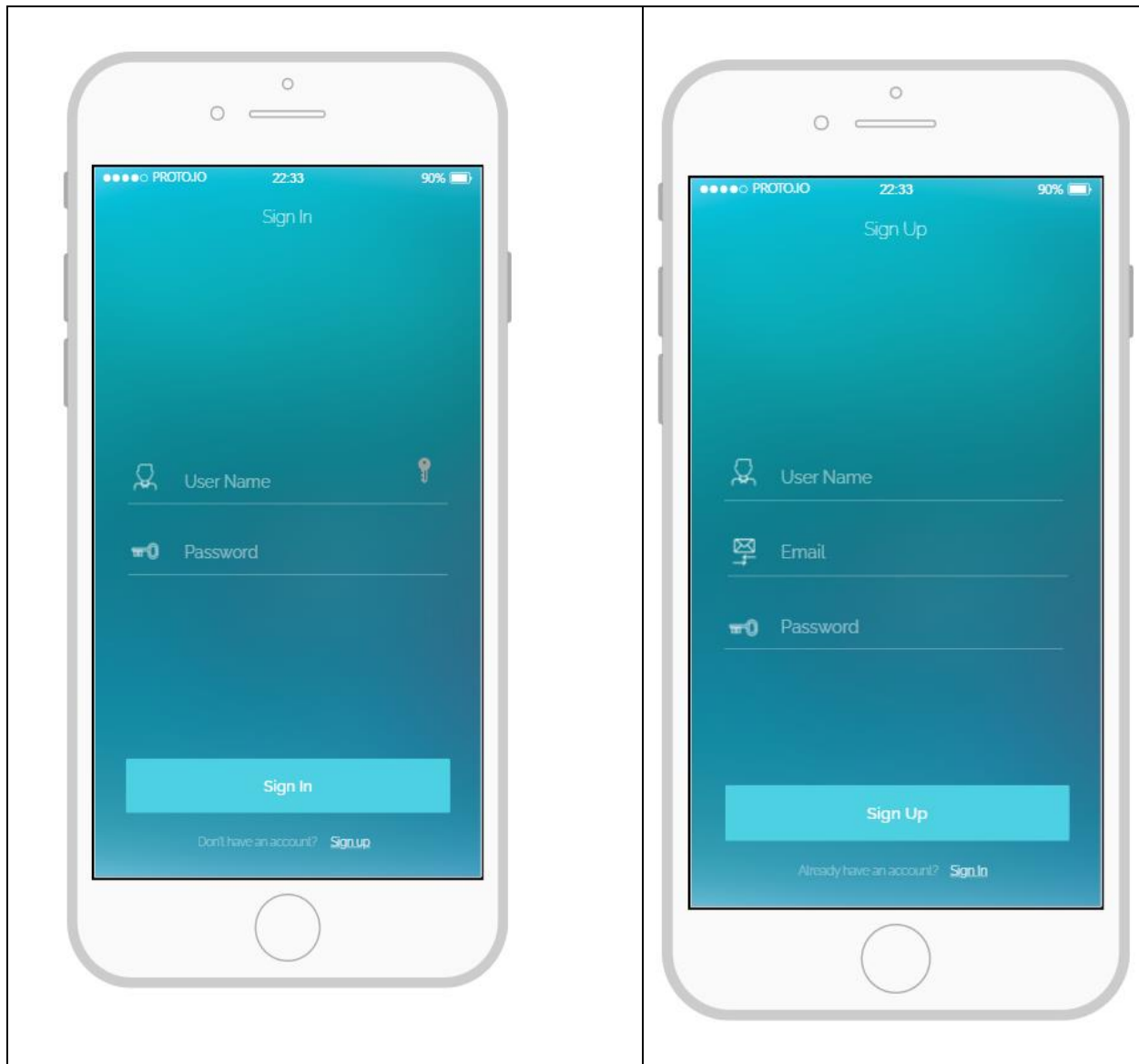
Figure 107: My Profile landing page

Mobile app Screens Mock ups

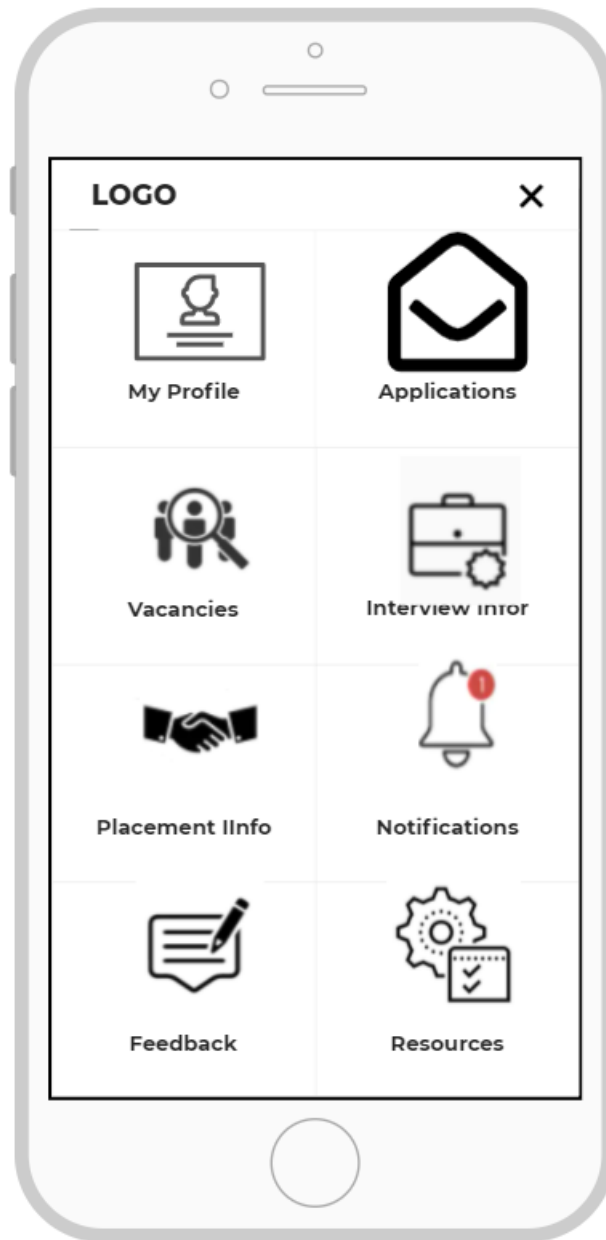
Welcome Screen



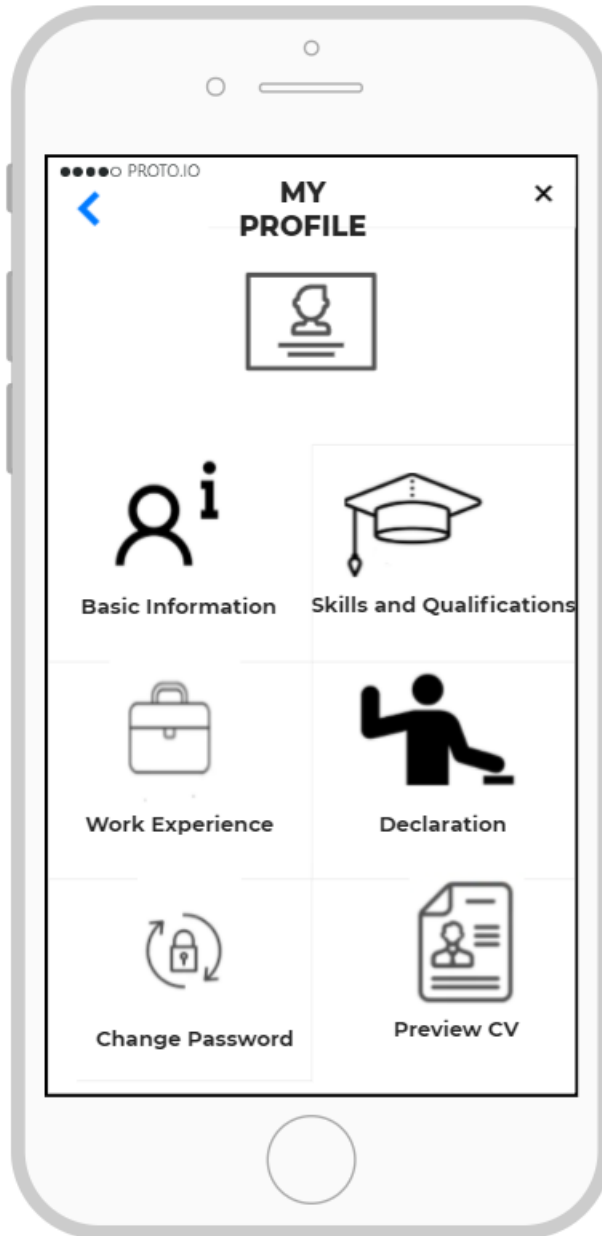
Login/Sign up screen



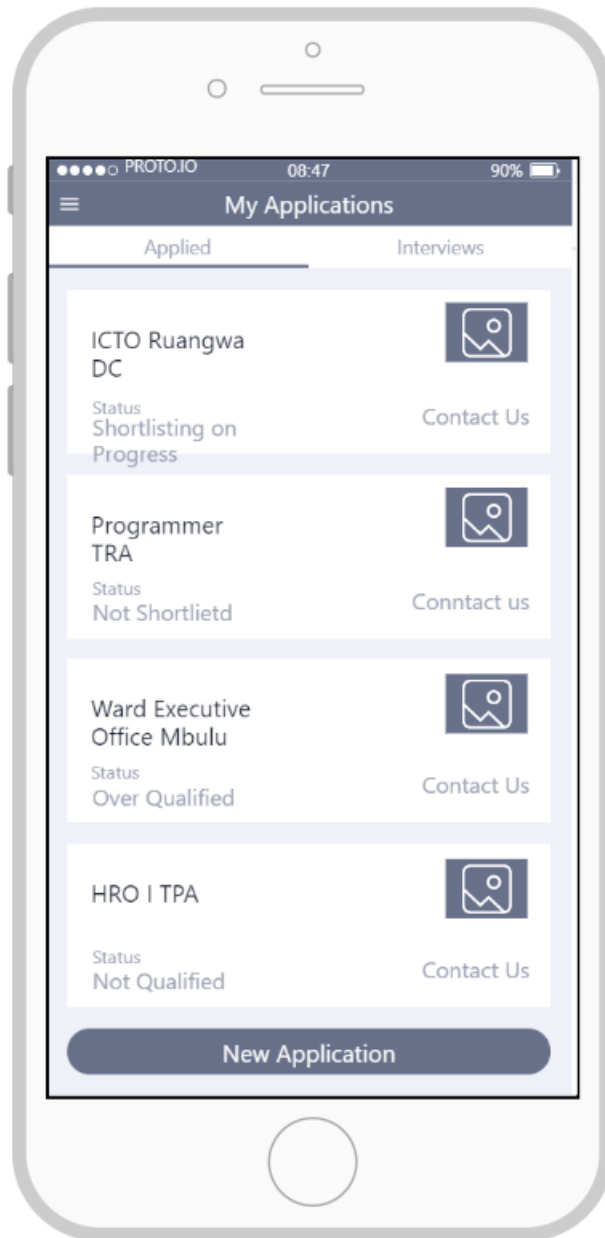
Home Screen



My Profile



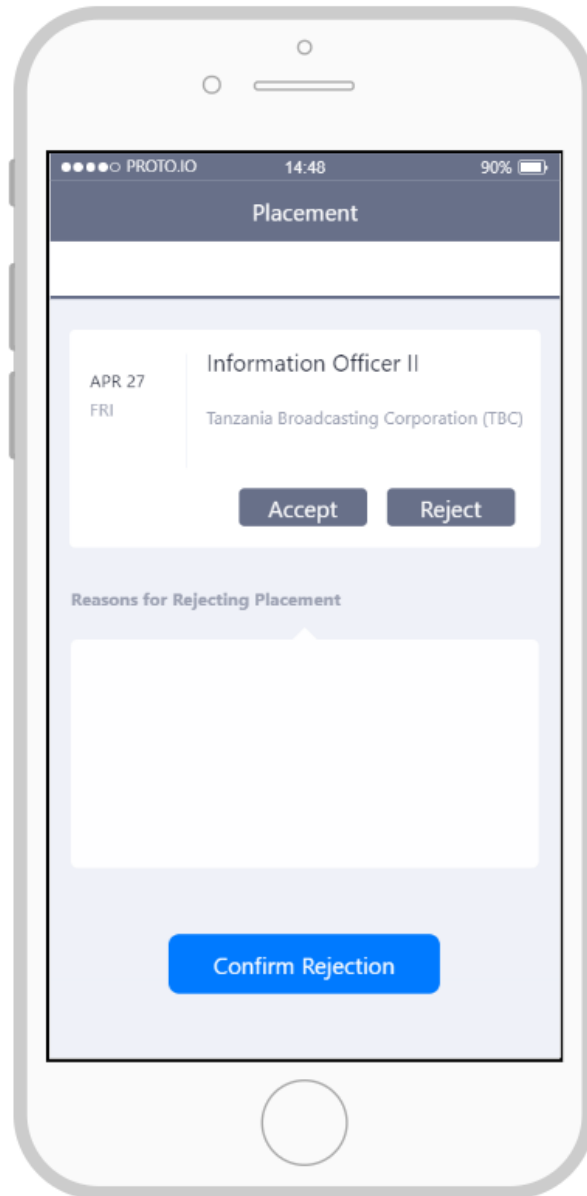
My Applications Screen

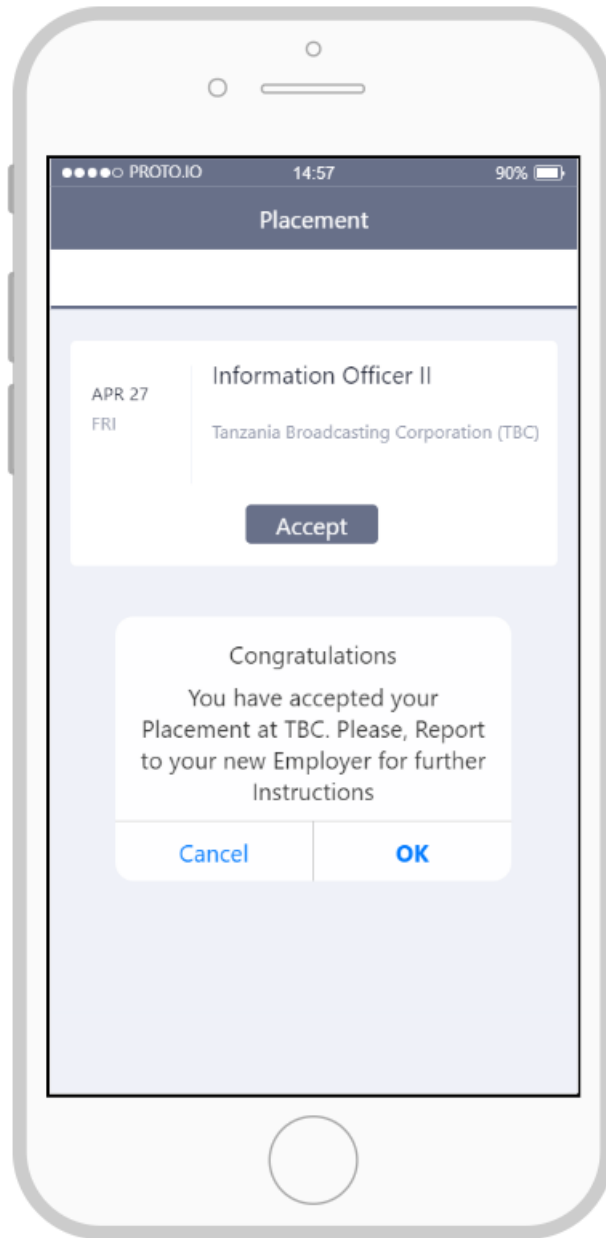


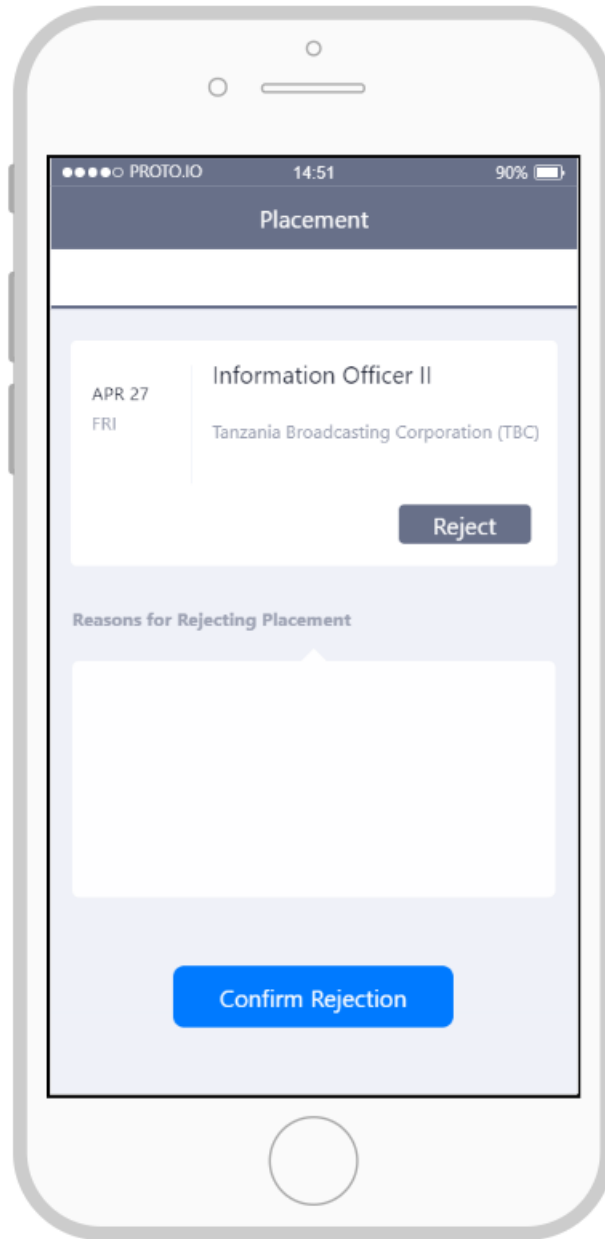
Vacancies Screen



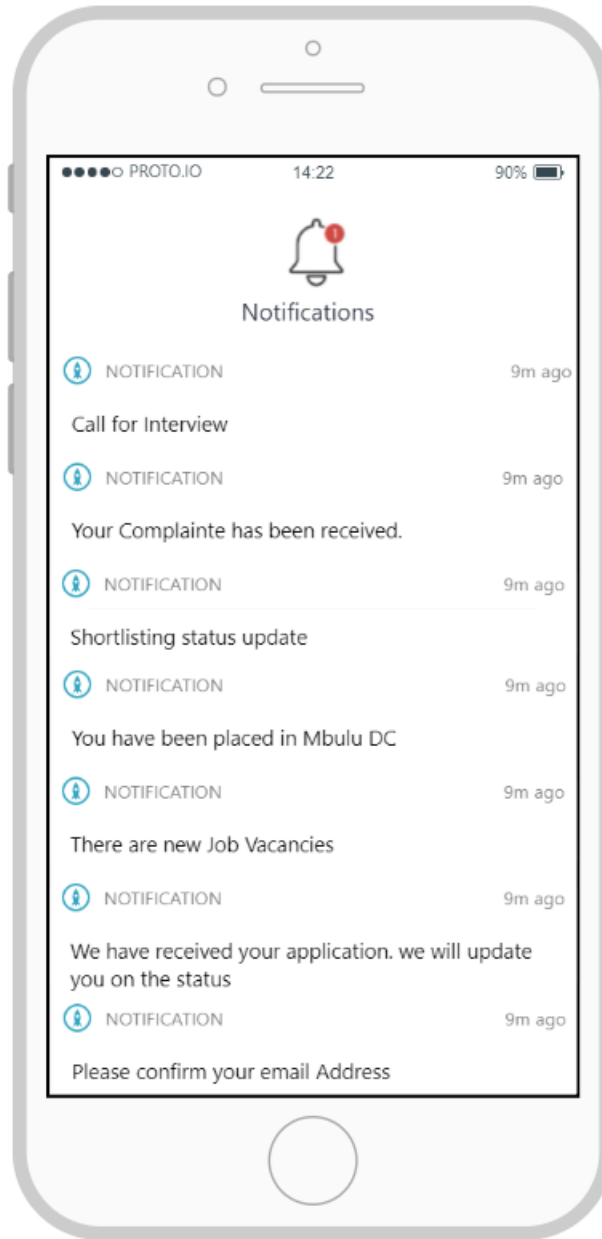
Placement Information



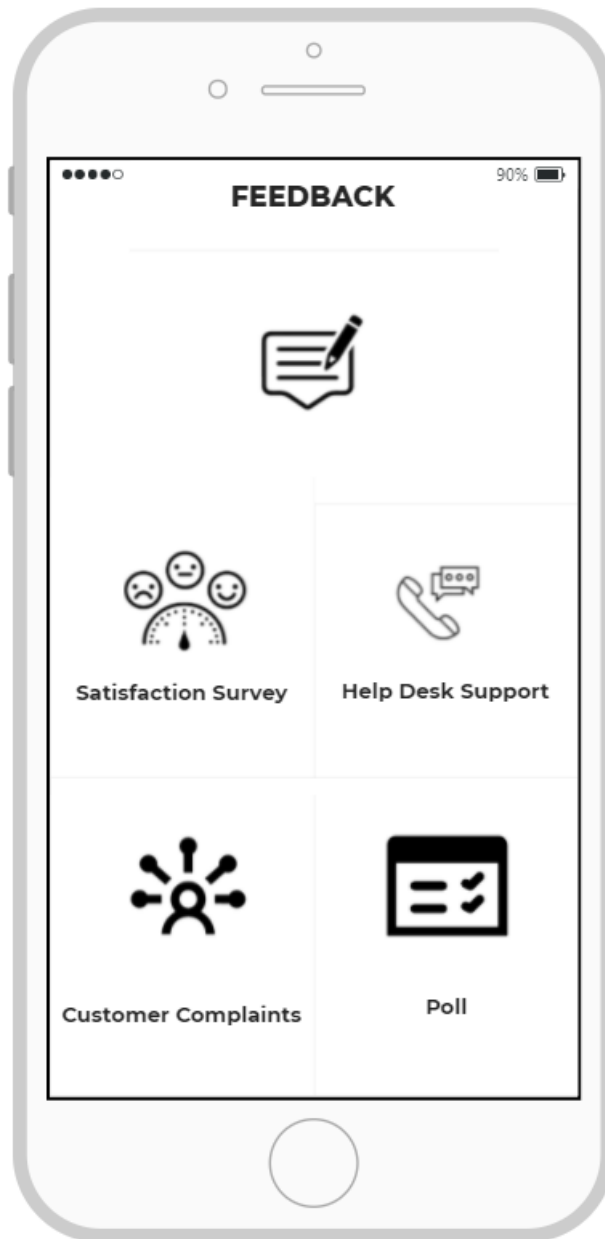




Notifications



Feedback Screen



This design focused on quality than quantity. The team originally started out with a much wider scope than was doable in the time that was available. Once we narrowed our scope, we were able to focus on making our designs top-notch and as robust as possible.

8.0 DATABASE

The improved AP will have one database which is the existing database of the application. This database was critically analyzed and reviewed to access its suitability and compatibility to cater for the required improvements to be implemented in the new AP application. The review was guided by the following metrics and criteria:

- Applicants can register as job seekers, build their profiles, and look for jobs matching their skill sets.
- Applicants can upload their existing resumes. If they do not have one, they should be able to fill out a form and have a resume built for them.
- Applicants can apply directly to posted jobs.
- Employers can register, post jobs, and search job seeker profiles.
- Employers' representatives should be able to register and post jobs.
- Employers can initiate the recruitment process, or perform some other action related to their post.
- Registered users (Applicants) should be able to search for jobs and filter the results based on location, required skills, salary, experience level, etc.

After considering the above criteria, the following three broad functional categories were also analyzed for suitability:

- vii. **User Management:** How the portal manages users, i.e. job seekers, HR personnel, and employers.
- viii. **Profile Builder:** How the portal allows job seekers and employers to create profiles and resumes.
- ix. **Posting and Looking Up Jobs:** How the portal facilitates the process of posting, searching, and applying for jobs.

After a thorough review of the database design in relation to the improvements requirements, the design team identified the areas of database design improvements as shown in the table below:

S. No	Improvements	Remark
	Delegated Cadre	User Management, Business Logic
	Education and Health Sectors	

	User Management: User Roles and Permissions	To accommodate Delegated Cadres and Education and Health Sectors recruitment process and other employers not under PO-PSMGG.  roles and privileges.xlsx
	Interview – Panelists results uploads	Automation
	Applicant	Accommodates New requirements for Education and health Sectors
	Integration	New Integration mechanisms

The current Database Schema is shown below



The improved AP Database schema is shown below:

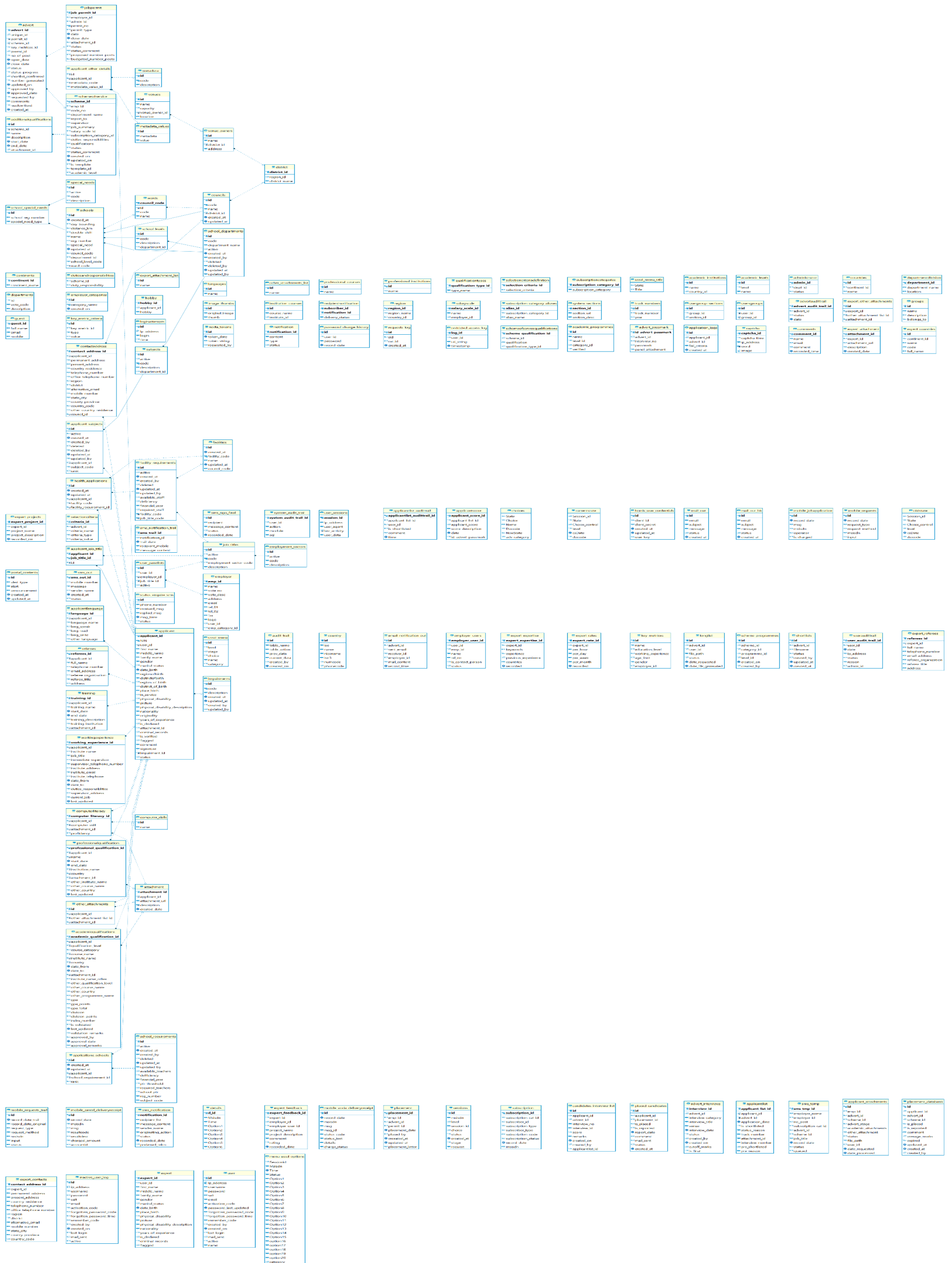


Figure 108: The improved AP Database schema

9.0 ANALYTICS AND REPORTS

Reporting and data analytics is an extremely important component of the improved AP system. Systems and users must be able to access the data in the system via standard



ripoti zote.xlsx

and ad hoc reports. AP reports are detailed in the attached file:

Major Object Reports

- Applications
- Employers
- Interview
- Placement

Report Use case description

Theme	Need	Description	Acceptance Criteria	Notes
User Interface	Access the report module	User can add, edit, or review report related information	<given>a user with rights to report module needs to launch report module<when>the user selects a report tab/button/section <then>report module is displayed	UI design for module accessibility will be important. Accessing information very quickly is very important
User Interface	Search for reports	User can easily find reports	<given>a user needs to quickly search for a single or multiple data elements <when>the user provides report parameters or wild card <then>the system	Fast and easy search functions are important

			filters all data elements that meet criteria	
User Interface	Access reports	User can easily run reports that I have permissions to access	<given>a user needs to run a report<when> the user searches or selects a report <then> the report is run and displayed	Administration must provide ability to set permissions at the report level
User Interface	Run reports with parameters	User can easily select different parameters for the report	<given> the user wants to run a report with valid permissions<when> user selects report <then>a parameter form is presented that allows user to enter various report parameters and pass into report	Common Parameters: Date Range, Group By, Sort By, Filter By, Sum, Average
User Interface	View Reports in Folders	User can easily organize reports by functional area	<given>user has permissions to access report module <when> user selects NEW FOLDER function <then> system allows user to create a folder under PERSONAL REPORTS	Standard Report Objects: Applicants, Employer, Operations, Productivity, Financial, Exceptions, Dashboards
User Interface	Create custom reports	User can easily create their own reports and save them to public or private	<given>user has permissions to create ad hoc reports <when> user selects NEW REPORT <then>NEW REPORT FORM is displayed that allows user to create	UX: Major differentiator opportunity.

		folders	custom report with desired fields, grouping, sorting, filters, graphs, pivots, and logic	
User Interface	Export reports	User can easily email or export to other formats	<given> user has permission to run reports<when>user runs selected report<then>user has options to export or email to standard file formats	CSV, PDF are two most common
User Interface	Standard Reports	User can easily view common and standard reports	<given> user has permission to run reports<when>user can easily find and select reports<then>user can run desired standard reports with various parameters	Users cannot SAVE standard reports. Only SAVE AS to Personal Workspace

10.0 SECURITY CONSIDERATIONS

This section outlines security controls review of the existing system as an input to the design of improved AP portal that need to be taken into consideration during AP portal improvements to meet the new and improvements requirements during the development phase to implement the approved improvements. The aim of the system design review was to ensure that the improved AP portal will continue to effectively secure the systems, networks, and software as a security-first approach to data protection that allows PSRS to not only meet compliance requirements but defend themselves from theft, unauthorized access and modifications, and accidental or unintentional damage to data and or system.

The table below shows the results of security design review for the existing and their suitability for accommodating new improvements.

Security Control	INPUT VALIDATION
Description	This is the property of testing any input supplied by a source (an end-user, another application, a malicious user, or any other sources). It prevents improperly formed data from entering an information system, the application checks and validates any input supplied by a user entered into a system.
Scope	Application control
Security Goal	Integrity
Risk	SQL Injection, XSS
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUTHENTICATION AND AUTHORIZATION
Description	These are mechanisms to ensure that only users who are authenticated and authorized are granted privileges to

	access the system.
Scope	Application control
Security Goal	Data confidentiality and Integrity
Risk	Unauthorized access, Elevation of privilege
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	PASSWORD MANAGEMENT
Description	This section describes the proper way of managing passwords used within the system
Scope	Application control
Security Goal	confidentiality
Risk	Weak passwords are susceptible to attacks
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	SESSION MANAGEMENT
Description	Session management refers to the process of securely handling multiple requests to a web-based application or service from a single user or entity. Websites and browsers use HTTP to communicate, and a session is a series of HTTP requests and transactions initiated by the same user.

Scope	Application control
Security Goal	Confidentiality and integrity
Risk	repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	ERROR HANDLING
Description	This is the process of handling all errors, logs, and exceptions raised during the system operations. System should provide the best way to handle error and logs to avoid exposing system operation issues when error occurs e.g. system data and passwords.
Scope	Application control
Security Goal	Confidentiality and Availability
Risk	Disclosure of how the system works and leak of sensitive information about the system
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DATABASE SECURITY
Description	This is to ensure that the database is secured such that only authorized users can access. Database should provide the means for keeping the integrity of data by providing encryption and hashing of data. Sensitive data such as personnel detail and password should be

	encrypted.
Scope	Database control
Security Goal	Confidentiality, Integrity and Availability
Risk	Unauthorized access and modification of data
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	FILE MANAGEMENT
Description	This is the proper testing of all uploaded file if they meet system requirement, this is done by validating fields and source of the file. System should also control the access such that only authorized can access the file. System should provide means to encrypt files
Scope	System control
Security Goal	Confidentiality and Integrity
Risk	Disclosing files information
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUDIT TRAIL
Description	Audit trails maintain a record of system activity both by system and application processes and by user activity of systems and applications. In conjunction with appropriate tools and procedures, audit trails can assist in detecting security violations, performance problems,

	and flaws in applications
Scope	System control
Security Goal	Confidentiality, Integrity and Availability
Risk	Repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP
Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP

Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.

System Integrity Controls

The following are security integrity controls designed for the improved AP

- Internal security to restrict access of critical data items to only those access types required by users/operators
- The current system is roles and permission based. Form and field level security will be available in the improved AP system. Based on user roles and permissions, system administrators can control data access by user and provider.
- Audit procedures to meet control, reporting, and retention period requirements for operational and management reports
- Audit logs and audit trail is proposed in the current use cases. All changes to data must be recorded by date, time, and user. Data will be managed indefinitely or until a system admin purges the data.
- Application audit trails to dynamically audit retrieval access to designated critical data.

- Ability to identify all audit information by user identification, network terminal identification, date, time, and data accessed or changed.
- Data audit trails and logging will provide detailed audit of all data. Network and application logs identify network terminations, user terminations, bugs, and catastrophic failures. These allow system admin to improve the application and hosting environment.
- Standard tables to be used or requested for validating data fields
- Industry standard data validation rules, triggers, and processes have been identified.
- Verification processes for additions, deletions, or updates of critical data

Verification of additions, deletion, updates, etc... are controlled in the data validation functions described in another section.

UNITED REPUBLIC OF TANZANIA

PRESIDENT'S OFFICE - PUBLIC SERVICE RECRUITMENT SECRETARIAT



**PROJECT FOR IMPROVEMENT OF PO-PSRS RECRUITMENT SYSTEM (AJIRA
PORTAL)**

SYSTEM DESIGN DOCUMENT (SDD)

FEBRUARY, 2021

APPROVAL

Title	
Issue Number	Revision Number
Author	Date
Approved By	Date of Approval

CHANGE LOG

Reason for change	Issue Nr.	Revision Number	Date

CHANGE RECORD

Issue Number	Revision Number		
Reason for change	Date	Pages	Paragraph(s)

DISTRIBUTION

[illegible]

ACRONYMS

ACSEE	Advanced Certificate Of Secondary Education Examination
AP	Ajira Portal
BEMIS	Basic Education Management Information System
BRD	Business Requirement Document
CSEE	Certificate Of Secondary Education Examination
DC	District Council
DSEE	Diploma in Secondary Education Examination
DSE-SNE	Diploma in Secondary Education in Special Needs Education Examination
GATCE	Grade A Teachers Certificate Examination
GATSCCE	Grade A Teachers Special Course Certificate Examination Formats
GCU	Government Communication Unit
GoT	Government of Tanzania
HCMIS	Human Capital Management Information System
HGCU	Head of Government Communication Unit

HoD	Head of Division
HICT	Head of ICT
HGCU	Head of Government Communication Unit
HQCD	Head of Quality Control Division
HRD	Head of Recruitment Division
ICT	Information and Communication Technology
IJA	Institute of Judicial Administration
LGTI	Local Government Training Institute
MDAs	Ministries, Departments and Agencies
MTTF	Mean Time to Fix
NACTE	National Council for Technical Education
NECTA	National Examination Council of Tanzania
NIDA	National Identification Authority
NIN	National Identification Number
OC	Occurring Charges
OTEAS	Online Teachers Employment Application System

PE	Personal Emoluments
PI	Public Institution
PlanRep	Planning and Reporting System
PO-PSC	President's Office-Public Service Commission
PO-PSMGG	President's Office-Public Service Management and Good Governance
PO-PSRS	President's Office-Public Service Recruitment Secretariat
PO-RALG	President's Office-Regional Authorities and Local Government
PO-TPSC	President's Office-Tanzania Public Service College
RITA	Registration Insolvency and Trusteeship Agency
RS	Regional Secretariat
SDP	Service Delivery Point
SMS	Short Message Services
SOS	Scheme of Service
TCU	Tanzania Commission for Universities
TRA	Tanzania Revenue Authority
UN	User Need

VETA	Vocational Education and Training Authority
WISN/POA	Workload Indicators of Staffing Needs/Priority Optimization Analysis

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1.0 INTRODUCTION

1.1 Background

The Government of Tanzania (GoT) established the Public Service Recruitment Secretariat (PO-PSRS) as an independent department vide Section 29 (1) of the Public Service Act CAP 298 as amended by the miscellaneous amendment Act No. 18 of 2007. PO-PSRS was established to facilitate the recruitment process on behalf of the Government. The PO-PSRS mandates are stipulates as follows: -

- Search for various professionals with special skills and prepare database for such professionals for easier recruitment.
- Register graduates and professionals for purposes of ease of reference in filling vacant posts.
- Advertise vacant posts occurring in the public service.
- Engage appropriate experts for purposes of conducting interviews.
- Advise employers on various matters related to recruitment, and
- Do any other act or thing which may be directed by the Minister responsible for Public Service.

PO-PSRS handles all recruitment on behalf of Public Service Institutions. However, some cadres which had great demand within the Government of Tanzania were managed by their respective ministries including teachers, health workers, agriculture and livestock related fields. To date, recruitment of teachers and health workers are managed by Presidents Office Regional Authorities and Local Government (PO-RALG).

PO-PSRS, therefore, links the President's office Public Service Management and Good Governance (PO-PSMGG) on one hand and employers, which are the receiving hand for new employees.

PO-PSRS started its operations in 2010. During the early years of its existence up to financial year 2013/2014, it carried out its operations manually in that all its processes from receipt of recruitment permits, communication with employers, advertisements, interviews through to placement of successful candidates were done manually. However as more public service institutions sought PO-PSRS services its operations became costly, time consuming and as would be expected, the operations were prone to

errors. It is this background and other factors which prompted PO-PSRS to find ways to streamline its operations.

PO-PSRS developed an electronic recruitment system called Ajira Portal (AP) in order to minimize the costs involved in its operations. The use of Ajira Portal over time has considerably injected efficiency in the institution's core operations. PO-PSRS has become more visible to its stakeholders at a lesser effort and costs. This has resulted in attracting more public service institutions to seek PO-PSRS services. This requires the system to have sufficient capacity for efficiently handling increased workload. However, the system use is limited to the advertisement of vacancies, receiving job applications, and providing feedback to applicants. Many tasks are still carried out manually. Currently the recruitment system is not linked with other GoT Human Resource (HR) related systems, which would significantly enhance efficiency in PSRS operations.

The conditions mentioned above coupled with opportunities offered by the advance in ICT has once again prompted PO-PSRS to embark on a project to review the Ajira Portal system with the purpose of enhancing efficiency and inclusiveness in its operations and the Government's HR operations in general.

PO-PSRS approached Public Sector System Strengthening Plus (PS3+) Project for support, to which PS3+ agreed, since the support is in line with the objectives of the project; to provide technical assistance to support the Government of Tanzania (GOT) to strengthen and institutionalize public service systems that are responsive to citizens' needs for quality services. The agreement between PO-PSRS and PS3+, is to carry out implementation in three phases as shown in figure 1 below.

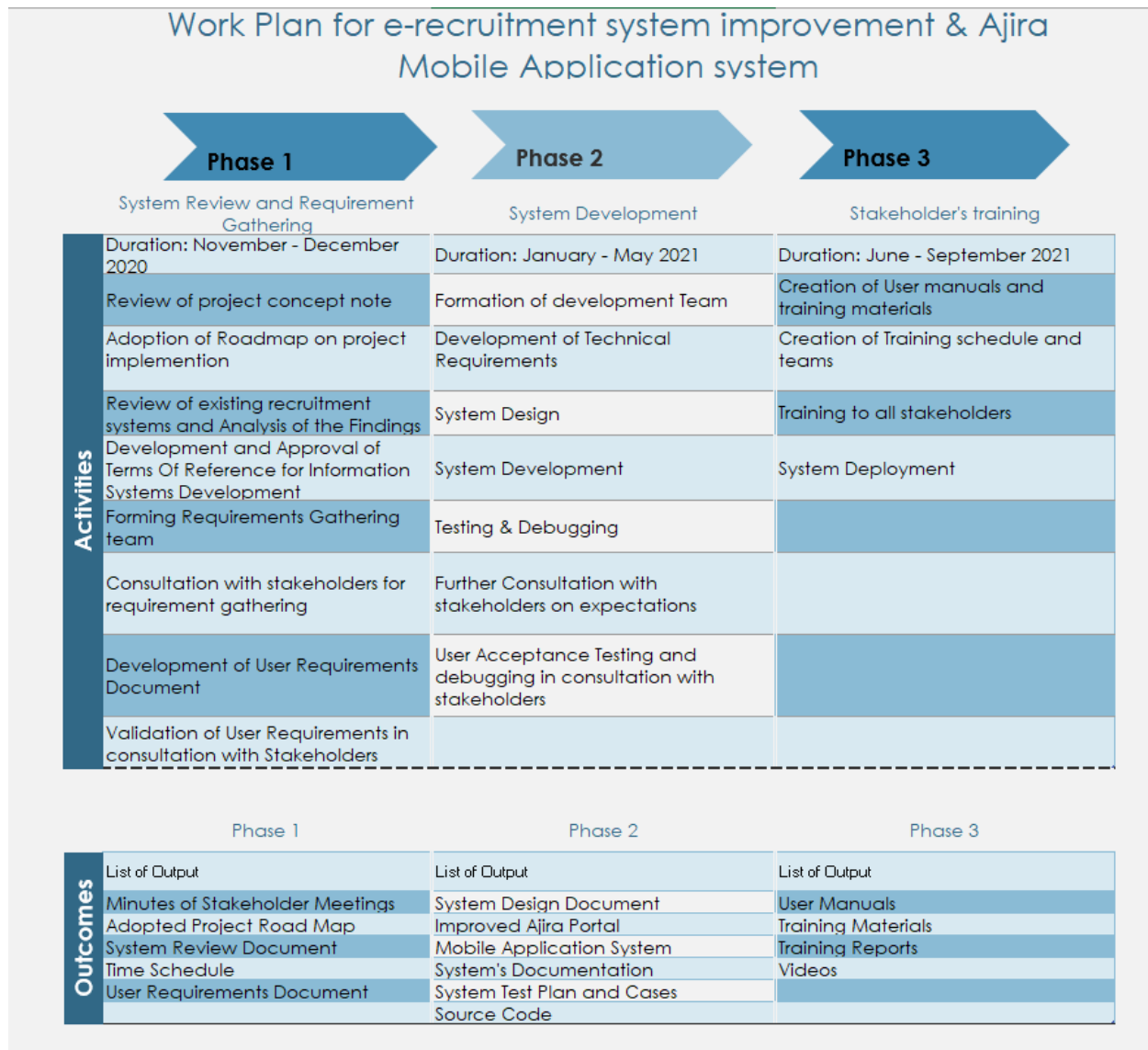


Figure 109: Work Plan for e-recruitment Improvement and Mobile App Development

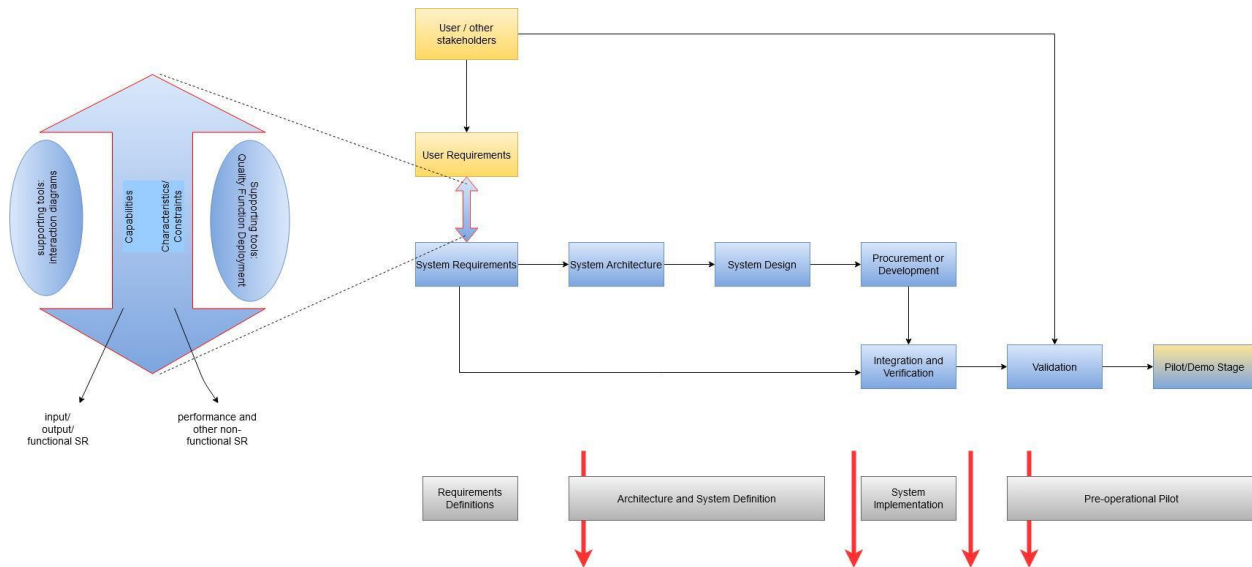


Figure 110: The AP Specification and Development process

1.2 Ajira Portal and Public Service Recruitment

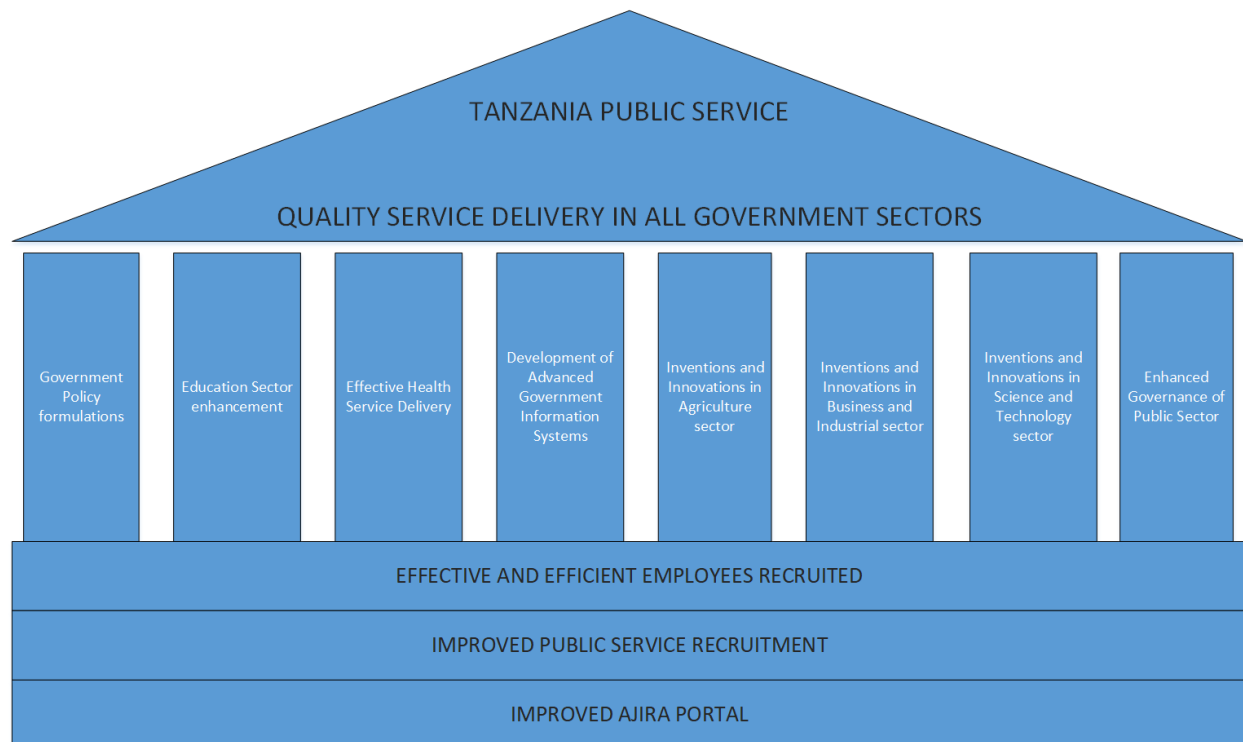


Figure 111: AP Context in Public Sector Service Delivery

1.3 Ajira Portal Improvement Project Overview

S. No	Area of Concern	Improvements Designed	Output	Impact	Remarks
1	Applicant Module	UI/UX	Improved User Experience	User satisfaction, time saving in using the system	Accommodated
2	Delegated Cadre	User roles and User management	Delegated Cadre recruitment process accommodated with AP	Streamlined recruitment process saving time and money. Increased transparency of the recruitment process	Accommodated
3	Education and Health Sector Cadres Recruitment	Business Logic and Application Logic	Education and Health Sector cadres recruitment process accommodated with AP	Streamlined recruitment process saving time and money.	Accommodated

4	Database	New tables design and performance enhancement to accommodate delegated cadres, education and health sector recruitment	A number of new tables and Additional Business logic to accommodate the different requirements for the various cadres		Accommodated
5	User Roles/ User Matrix	New users and user roles to accommodate the various functions for delegated cadres, education and health sector recruitment process	New User matrix		Accommodated
6	Mobile App	App design	New app to cater for the applicants side of the AP business logic		Accommodated
7	Interview Module	Designed to accommodate the scheduling and conducting of interviews online	New Interview Module for online aptitude tests		Future

8	Integration	To facilitate data sharing across different systems and stakeholders	Improved AP architecture	Automation of data sharing, validation and verification It will save Time and Money	Accommodated

Table 4: Summary of AP Improvements designed

1.4 objectives

The main objective is to implement the phase II of Ajira Portal review project involving system improvement review design work. The under mentioned specific objectives will be addressed:

- Document systems baseline information: and Carry out Ajira Portal system design review
- Define Design characteristics

The expected output from this exercise is Ajira portal improvement System Design Document (SDD)

1.5 Purpose of the SDD

The system design document tracks all the necessary information required to effectively define the architecture and system design to give the development team guidance on the architecture of the system to be developed. Design documents are incrementally and iteratively produced during the system development life cycle, based on the particular circumstances of the information technology (IT) project and the system development methodology used for developing the system.

1.6 Scope of Work

This SDD will cover system and network architecture design, mockups (UIs), use cases, database schema and system security control checklist which are essential in system development. All of the aforementioned parts have been designed to accommodate

both functional and non-functional requirements. Non-functional requirements describe how the system works, while functional requirements describe what the system should do.

The proposed solution will simply add additional features and functionality to the existing solution to meet the original scope and vision of the Ajira Portal (AP). These features will extend AP to be an integrated public service recruitment portal.

Key points that relate to the design and architecture of the proposed system.

- xiii. No major changes to existing architecture
- xiv. No major changes to system design
- xv. Major positive impact to the user community
- xvi. Major feature extensions to automate operational functions where applicable.

1.10 Design Constraints

The existing architecture will be improved as shown in the diagram below;

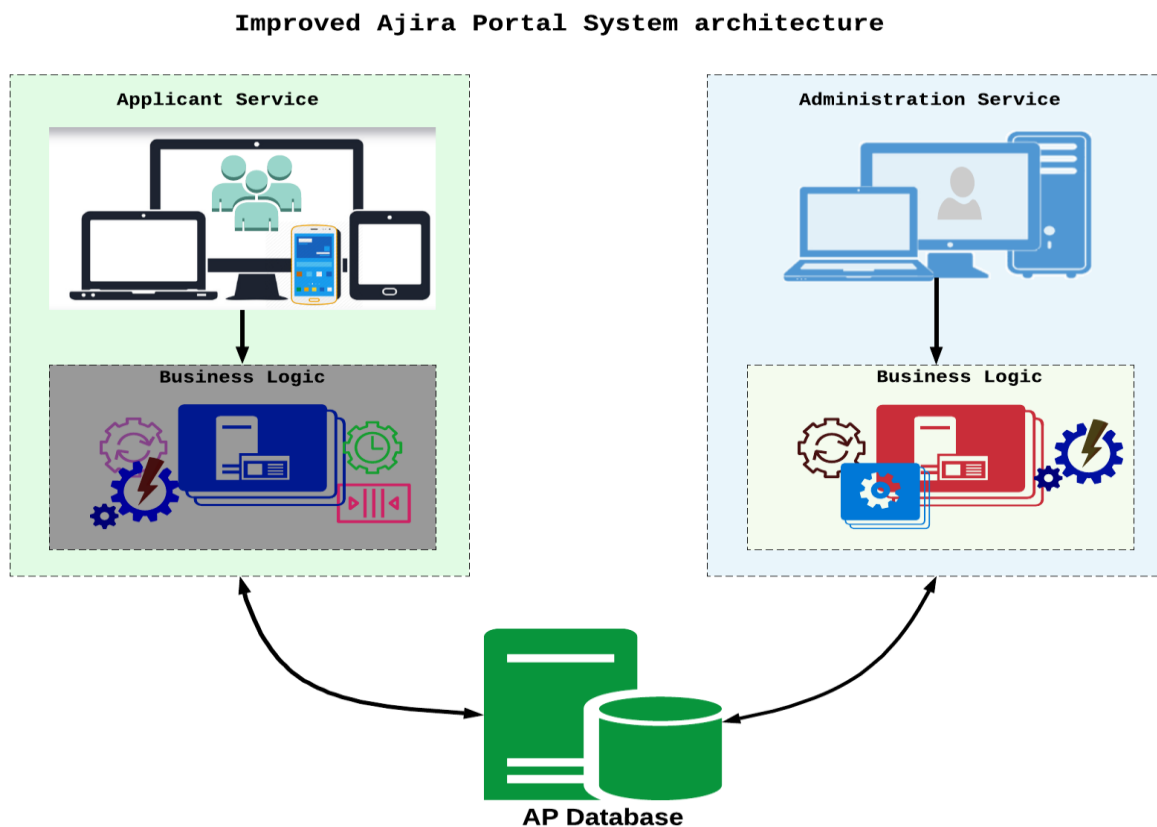


Figure 112: The improved architecture

The current solution is hosted by GoT data center. Performance, storage, security, and access can be easily scaled to meet the minimal amount of additional resources the proposed solution will require.

Technical

The development and integration of the new software components into the existing software application is a major constraint. Specific skills and technical understanding of recruitment management and demand response management and optimization will be required. This knowledge and skillset is very specific and narrow. Detailed business requirements and use cases will assist in minimizing this challenge.

Due to the fact that the application is currently hosted and managed by PSRS staff, we do not envision any technical, computer hardware, network, internet, or database maintenance challenges.

Institutional

The improved system will be utilized by multiple third party agencies and organizations. This will require coordination and collaboration across the organizations and agencies. Stakeholders that currently have automated systems may have to integrate into the improved system via “API coordination module” API or comparable solution.

1.8 Intended Audience

The system requirements specifications document plays a major role in system development and implementation, as it:

- Form the basis of improvement of system architecture and design.
- Form the basis of improvement suggested system integration and verification.
- Act as reference for validation and stakeholder acceptance.
- Act as a bridge between technical staff and other stakeholders that interact throughout the project.

Therefore, the intended audiences of this document include but are not limited to: Project sponsors, PO-PSRS Steering Committee, System Designers, System Architects, Database Administrator, System Developer, System Security Experts, Quality Assurance Specialists, Hardware Specialist, Network Engineers, Subject Matter Experts, Employees and other key Stakeholders such as Applicants and certification and verification authorities.

2.0 DESIGN APPROACH

2.1 Design overview

The current solution was built by PSRS through funding from GoT. PSRS has labeled this application Recruitment Portal now simply dubbed Ajira Portal. AP is an open source recruitment management that manages public service recruitment process from Job advertisement to placement of successful applicants.

AP is built on an open source framework. Source code is available using standard open source management tools such as Git. All source code is stored in a GitLab repository.

AP utilizes an open-source web server, Apache. Apache is a free open source web server. Apache is focused on high performance, high concurrency and low memory usage. Additional features on top of the web server functionality, like load balancing, caching, access and bandwidth control, and the ability to integrate efficiently with a variety of applications, have helped to make Apache a good choice for modern website architectures.

AP's development language is PHP. Software developers must be familiar with this framework in order to maintain or build additional functionality into the application.

AP's database is MySQL. MySQL is also open source and it is very popular and utilized across many open source applications. MySQL is an object-relational database (ORDBMS). It has an emphasis on extensibility and standards compliance.

RabbitMQ is message broker that implements Message Queue Protocol (AMQP), to help AP to communicate with other systems.

GitLab is used as the software development platform. GitLab provides version control and source code management.

In summary, the existing system design includes the following sub-systems:

1. AP Web Application
2. MySQL Database
3. Apache Web Server
4. CodeIgniter Development Platform
5. Government data center
6. GitLab Version and Source Code Control

However, the proposed improvement are expected to be done using latest technologies, this is done so as to start modernizing AP, as the technologies that were used are outdated and their technical support is being phased out.

2.5 System Assumptions/Constraints/Dependencies/Risks

2.2.1 Assumptions

The largest assumption is that the existing AP application will be extended to support the proposed new features (Improvements). The existing architecture and system design will be used including all existing components and sub-systems. It is certain that additional functionality will be added to the existing system.

2.2.2 Constraints

There are no hardware, software, or software technical constraints identified with this project. Institutional constraints may exist due to the systems need for inter-institutional coordination, participation, and interoperability.

2.2.3 Dependencies

The current application is dependent on many third party systems. These include: NIN system (NIDA), certificate verification system (NECTA and NACTE), HCMIS (PO-PSM), RITA, VETA, TRA and Training Institutions

2.2.4 Risks

Minimal risk is associated with the system design. This is primarily due to the fact that the existing system design and architecture will not be modified to meet the needs of the improved AP solution. Ongoing maintenance of the system will also be a concern.

Alignment with Government IT Architectures. The current and proposed solution aligns with the government IT architecture. The proposed solution, if implemented, will adhere to all appropriate government IT architecture mandates.

The current solution does not provide automated complaint handling mechanism, nor does it provide the ability to coordinate various processes in the recruitment because there are done outside the AP system. The solution must be improved to support these additional functional needs as identified in the SRS document. The proposed system will dramatically improve complaints handling mechanism, interview handling, placement, operations of delegated cadre recruitment, and, most importantly, the customer experience i.e. both applicants and employers. Customers will be able to initiate recruitment process within the system (employers) and apply using smartphones (applicants) among other things. Employers will be able to contact PSRS through an online portal to initiate recruitment, receive updates of the recruitment process, provide additional information or ask for clarification. Applicants will have the ability to apply, review their applications, follow up their applications, file complaints, provide and receive feedback via their smartphones. Automated scheduling of

interviews, venues will be available to optimize human and financial resources involved in the interview handling. Automated complaint handling tools will be available to the help desk officers and complaint handling officers and to employers and applicants, which will enable online communications. This will create a single coordinated system for public service recruitment and demand response recruitment. Employers, including those with delegated authority will be integrated into the solution for a true multi-modal application. Recruitment data analytics will be available at a various levels. Ultimately, the proposed system will execute the intended vision and requirements of a “unified” public services recruitment management solution.

2.3 Development Method and Contingencies

The basics of a good architecture is to layer the application into multiple autocratic and autonomous applications that can be replaced individually and allow us to keep the application running while we are working on a specific layer. The communication between each layer should be a RESTful API call with JSON content.

2.3.1 Design Considerations

AP is a Public Service recruitment management system designed to meet the GoT recruitment needs. It:

- Provides unified recruitment management;
- Works on computers, tablets, and smartphones;
- Is tailored to GoT recruitment needs; and
- Empowers PSRS staff to deliver improved services.

The major design considerations for the proposed extended features are related to system performance and scalability of the solution.

2.3.2 Goals and Guidelines

The following goals must be addressed in the execution of the proposed solution.

Leverage Existing Architecture

The improved AP solution must leverage the current architecture and system design used by current AP. This minimizes negative impacts on usability, user experience, and financials. The improved solution will simply extend the current system to support additional features, functionality, and use cases.

Development Environment

The improved AP application development environment must remain consistent. This minimizes negative impacts to interoperability and quality. Improved AP does not wish to re-write or re-engineer the existing application unless absolutely necessary.

Ease of Use

The improved AP and its features must be easy to use and provide a strong user experience. New or improved features cannot impact existing functionality from a user perspective.

Extensibility

The proposed improvement features must be extensible. Features can be enabled as needed or required by the users.

Gateway/API Enabled

Interoperability and integration coordination is a key driver of the improvements sought. The application must be gateway/API centric and support an open and published gateway/API architecture.

RESTful Framework

The application and underlying architecture must be a REST framework.

2.3.3 Operational and Development Environment

Front end

Latest Angular framework

Backend

- Spring boot framework
- Postgre SQL

Mobile App

- Flutter

Reports

- Jasper

Functional goals of the proposed improvements to AP system includes:

- Extending functionality of the existing application to mobile app (Applicant)
- Improving application performance
- Integration with other systems
- Accommodating Education and health Sector cadre's recruitment, Delegated Cadre recruitment and other Employers not under PO-PSMGG.

3. ARCHITECTURAL DESIGN

This section describes the **Enterprise Architecture**, which addresses the strategic question of how the improved AP can best be utilized and aligned to support business needs of PSRS and the **Solution Architecture**, which addresses the tactical question of how best to improve AP that best address specific business needs of PSRS.

This proposed architecture has been proposed as it helps to provide information and awareness to every involved stakeholder that will work with it, ones that will use data from it, ones that will provide data to it and the policy makers who want all that done in adherence to public service recruitment guidelines and policies. The architecture is expected to specifically attain the following:

- xxv. Highlight key use-cases and scenarios for Improved AP
- xxvi. Address requirements as specified from prospective users and process owners.
- xxvii. Quality assurance in the built improved AP system.
- xxviii. Expose how the system works while concealing its core working mechanism.
- xxix. Show the relation between functional, quality and business requirements.
- xxx. Make Improved AP interoperable with existing and foreseen systems and technologies.
- xxxi. Specify technical resources to attain the requirements gathered.
- xxxii. Serve public interest while protecting Applicants privacy.

The role of Architecture

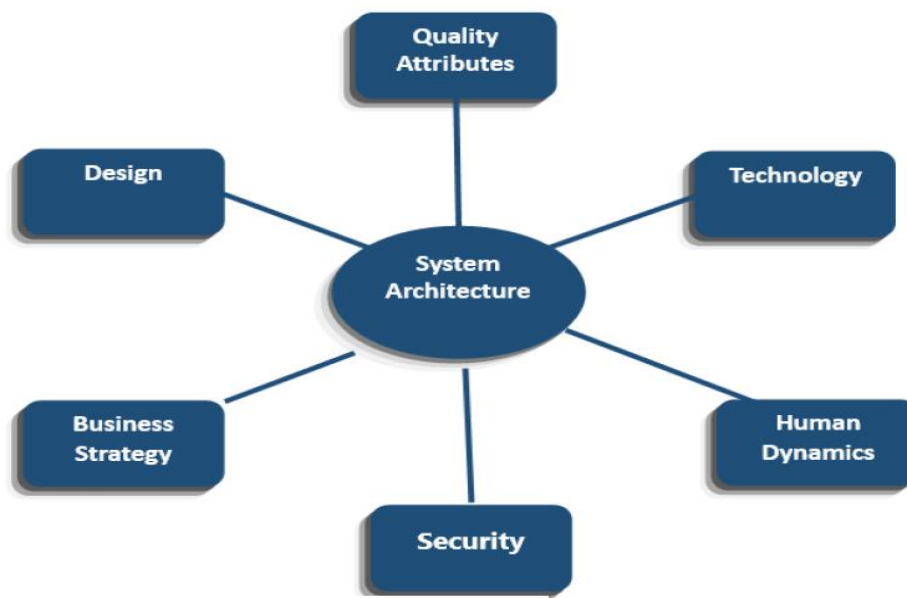


Figure 113: The Role of System Architecture

3.1 System Architecture

The proposed architecture is structured to conform to all technical and operational requirements that have been analyzed in Public Sector Recruitment. In doing so it enhances performance and security in our context as a country.

3.1.1 Architecture Qualities

AP business considerations were used to determine the qualities that must be accommodated in the improved AP system architecture.

- **System Qualities:** availability, modifiability, performance, security, testability, usability, others.
- **Business Qualities:** time to market, cost and benefit, product lifetime, target market, roll-out schedule, integration, others.
- **Architectural Qualities:** conceptual integrity, correctness and completeness.

AP quality attribute scenario is made up of the following six attributes or parts as shown in the figure below.

- **Source of Stimulus:** the entity generating the stimulus. Could be an actor, an actuator, a sensor, and another system.
- **Stimulus:** a condition arriving at a system. Includes faults, stated intentions by actors, and so on.
- **Environment:** the conditions surrounding the stimulus. Might be normal operation, degraded operation, overload, and so on.
- **Artifact:** the part or parts of the system stimulated.
- **Response:** the response the system takes to the stimulus.
- **Response Measure:** how the response can be measured and test.

S.No	Quality	Description
System Quality Attributes		
1	Availability	• The availability attribute is concerned with system failures. Faults are problems that are corrected or masked by the system. Failures are uncorrected errors that are user-visible. • $\text{availability} = [\text{mean time to failure}] /$

		([mean time to failure] + [mean time to repair])
2	Modifiability	What can change, when are changes made, and who makes the changes.
3	Performance	response times and similar measures for various events
4	Security	- Non-repudiation - Confidentiality - Integrity - Assurance or authenticity - Availability (no denial of service) - Auditing
5	Testability	Detecting failure modes. This means architectural support for testing that reduces test cost and time. We need to control the internal state of and inputs to each unit, then observe the corresponding output of that unit.
6	Usability	- How easy it is to learn the features of the system - How efficiently the user can use the system - How well the system handles user errors - How well the system adapts to user needs - To what degree the system gives the user confidence in the correctness of its actions.
Business Quality Attributes		
1	Time to Market	Architectural reuse affects development time.
2	Projected Lifetime of the System	Long-lived systems require architectures that are modifiable and scalable.

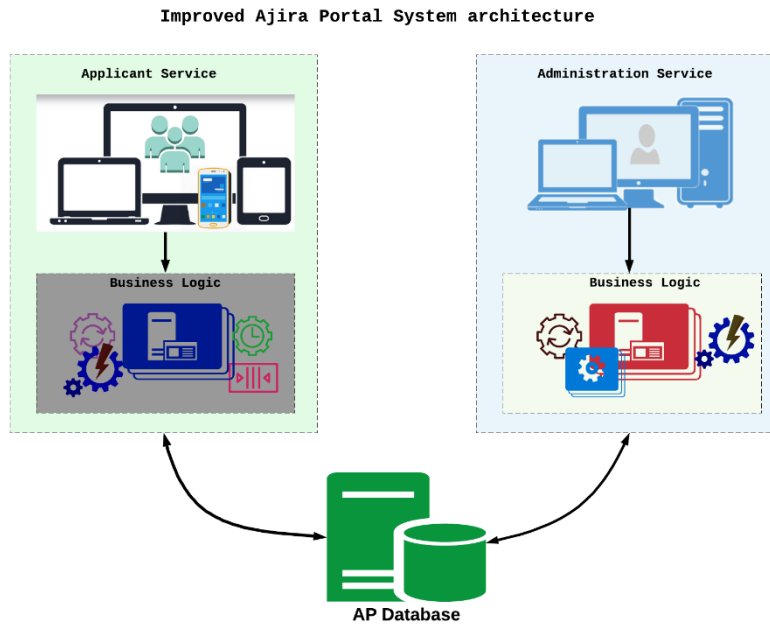
3	Roll-out Schedule	If functionality is planned to increase over time, the architecture needs to be customizable and flexible.
4	Integration with Legacy Systems	The architecture of the legacy system being integrated will influence the overall system's improvement architecture.
Architectural Quality Attributes		
1	Conceptual Integrity	The underlying vision or theme unifying the components and their interactions. The architecture should do similar things in similar ways.
2	Correctness and Completeness	Checking the architecture for errors and omissions.
3	Buildability	The organization's capabilities to actually construct the architecture in question.

3.1.2 Service Oriented Architecture

Enterprise Applications are often built in three main parts: a client-side user interface (consisting of views running in a browser on the user's machine), a database (consisting of many tables inserted into a common, and usually relational, database management system), and a server-side application that serves as the backend running application logics and routines. The server-side application will handle HTTP requests, execute domain logic, retrieve and update data from the database, and select and populate HTML views to be sent to the browser or a desktop view.

We analyzed our demands in improving Improved AP and current resources that are future proof and saw that SOA approach will be used with existing technologies of the AP while the improved components will be developed using new technologies.

Figure 114: System Architecture Diagrams



3.2 Software Architecture

The three-tier architecture is a popular pattern for user-facing applications. The tiers that comprise this architecture include the presentation tier, the logic tier (business logic), and the data tier. The presentation tier represents the component that users directly interact with (such as a web page, mobile app UI, etc.). The logic tier contains the code required to translate user actions at the presentation tier to the functionality that drives the application's behavior. The data tier consists of storage media (databases, object stores, caches, file systems, etc.) that hold the data relevant to the application.

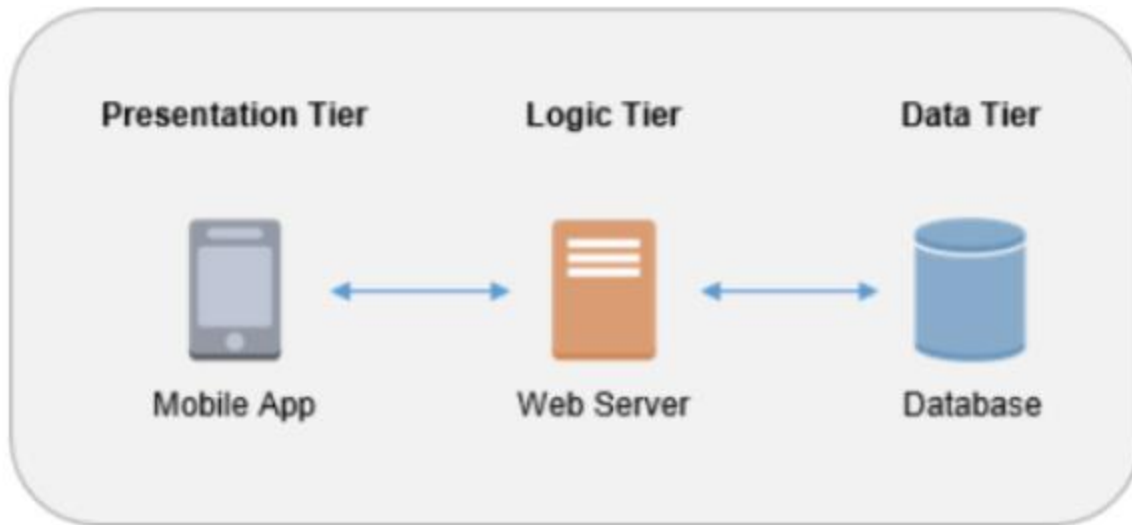


Figure 115: Software Architecture- Separation of Concerns

3.2.1 Security Software Architecture

There are a number of principles applied to current and proposed system security.

- Apply security at all layers: Rather than running security appliances (e.g., firewalls) only at the edge of your infrastructure, use firewalls and other security controls on all of your resources (e.g., every virtual server, load balancer, and network subnet).
- Enable traceability: Log and audit all actions and changes to your environment.
- Implement a principle of least privilege: Ensure that authorization is appropriate for each interaction with AP resources and implement strong logical access controls directly on resources.

3.3 Component Architecture

For components that will be making up our architecture we propose a set of different technical components that have been reviewed based on the resources (human resource, finance and technological resources) at hand and requirements collected.

3.3.1 UI/UX

The user experience is everything today. Everything you do must be optimized to create an exceptional digital experience. The average user shouldn't have to change their

behavior to adapt to our improved AP application. In this design we proposes a modularized reference UI application which runs in a browser and uses API calls to expose the application logic and functionality to end users. Improved AP into mobile app version will employ specific UIs using respective technologies and frameworks.

Web Based Interface: Language: HTML5, CSS3, Typescript. Proposed frameworks: Angular, Angular Material + Bootstrap+

Mobile Interface: Language: Dart. Proposed Framework: Flutter

Other Frameworks: Docker, Kubernetes (environment), NPM & Yarn (package manager), Grunt & Webpack (task running), Karma (Unit Testing), Lucid and Proto IO (mocking).

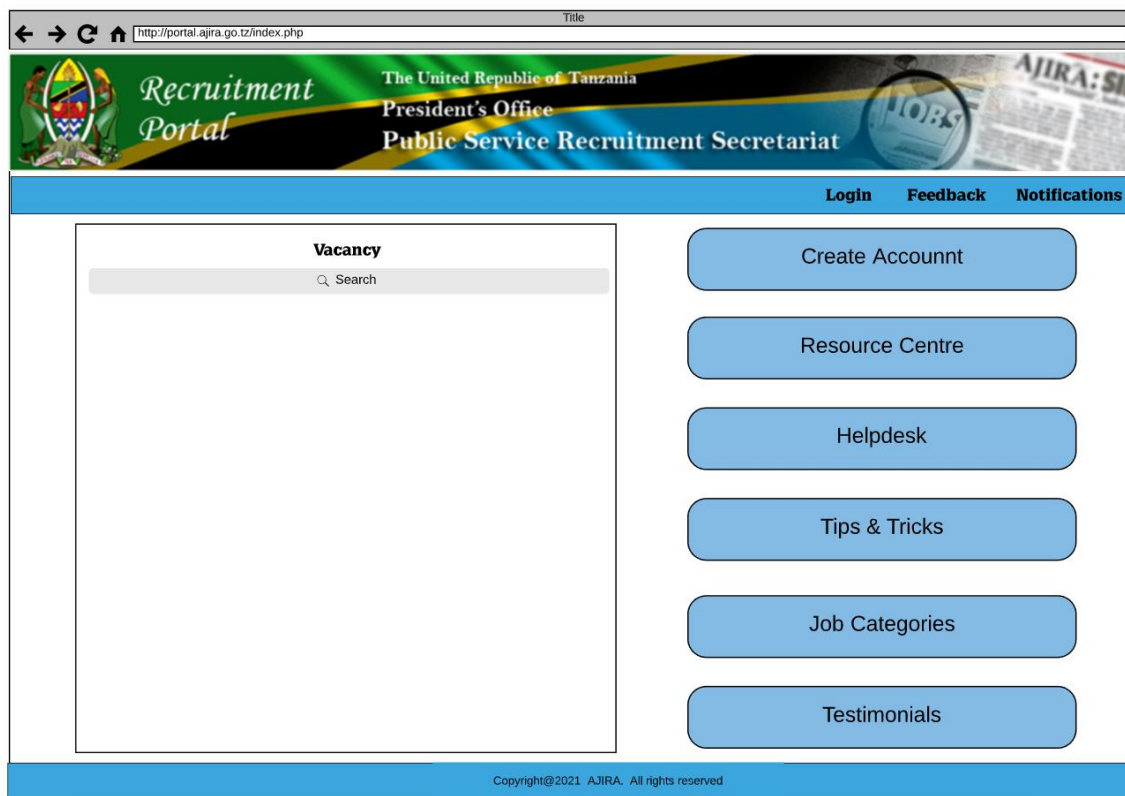


Figure 116: New Look of Ajira Portal Home page

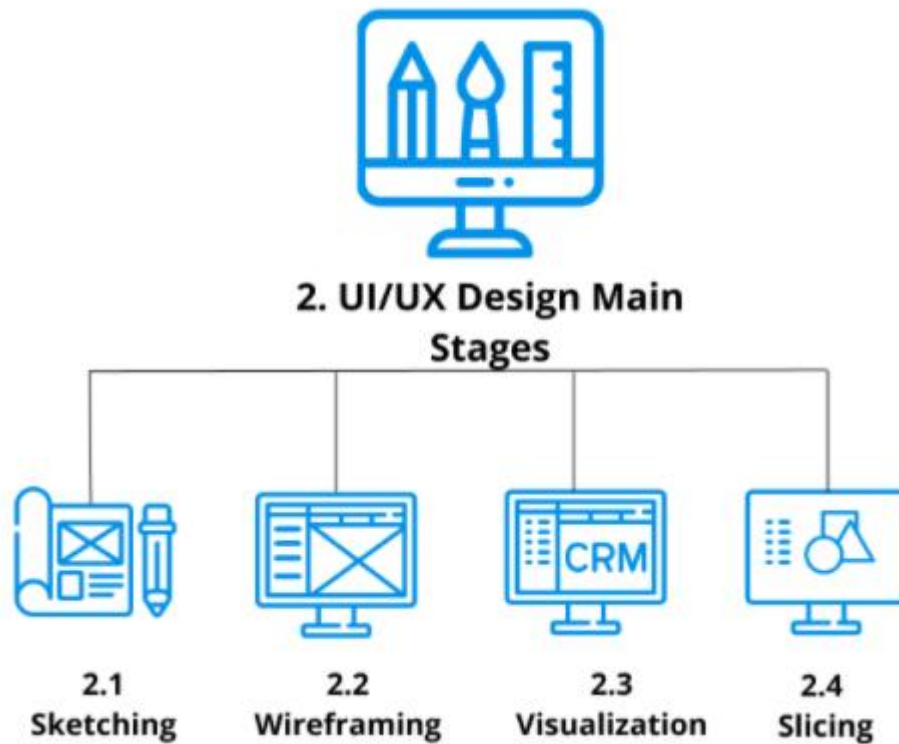


Figure 117: UI/UX Design stages

3.3.3 Database

The proposed improvements of AP uses the existing database which employs SOA architecture. During the design phase the existing Ajira Portal database, along with applications that control access to it were reviewed to ensure that, they meet the new requirements calling for improvement of AP. During this design phase the conceptual, logical, and physical design of the existing AP database was closely analyzed to see their suitability in accommodating the new requirements and their proposed improvements to the existing system.

Forms and reports which provide controlled access to the database were reviewed to make sure that the new requirements for user interface are met in the existing database schema. To ensure consistent and satisfaction of user requirements, each transaction and search queries pathways were traced from entity to entity on the composite database scheme to ensure it is possible to link to relevant entities and extract the relevant attributes to satisfy the query.

3.3.4 Backend

The proposed improvements of AP uses the existing backend which employs monolithic architecture. During the design phase the existing Ajira Portal backend, along with its codes that connects the web to a database, manages user connections, and powers the web application were analyzed and reviewed to ensure compatibility with the requested improvements of AP. Backend development works in tandem with the front end to deliver the final product to the end use.

During this design phase the existing APIs, codes that interact with the database, libraries, and business processes, and data architecture were reviewed for their suitability in accommodating the new requirements and their proposed improvements to the existing system.

3.3.5 API

The proposed improvements of AP uses the existing APIs. The existing Ajira Portal APIs, were reviewed on how they handle errors gracefully using standard HTTP/S codes that helps consumers deal with the problem. The improvements require that the APIs should accept JSON/XML for request payload and also send responses to JSON/XML. The only exception is if we're trying to send and receive files between client and server. Then we need to handle file responses and send form data from client to server.

To eliminate confusion for AP, API consumers when an error occurs, we should handle errors gracefully and return HTTP response codes that indicate what kind of error occurred. Common error HTTP status codes include:

- 400 Bad Request – This means that client-side input fails validation.
- 401 Unauthorized – This means the user isn't not authorized to access a resource. It usually returns when the user isn't authenticated.
- 403 Forbidden – This means the user is authenticated, but it's not allowed to access a resource.
- 404 Not Found – This indicates that a resource is not found.
- 500 Internal server error – This is a generic server error. It probably shouldn't be thrown explicitly.
- 502 Bad Gateway – This indicates an invalid response from an upstream server.
- 503 Service Unavailable – This indicates that something unexpected happened on server side (It can be anything like server overload, some parts of the system failed, etc.).

3.3.6 Dashboards

We propose setting up dashboards as another improvement to the AP that runs alongside the main application and database. The dashboard layer shall have scheduled synchronization that either pulls data from the AP application or the AP application shall have the ability to push data to the dashboard database. This data will be stored and then viewed in a retrospective manner. The data in the dashboards shall have a minimal gap from the AP data as it won't be real-time data visualization.

The abstraction is a strategic effort to avoid overloading the application servers during report production and visualizations. The visualizations should pull data from their own databases that are solely for reports and visualizations. This will make the production of reports far speedier whilst avoiding system lags to the users who are in the application whose reports are being queried.

Language: Java, PHP, JavaScript, JavaScript, HTML5, CSS3

Frameworks: Charts and Graphs – Chart.JS

4.0 INTEROPERABILITY ARCHITECTURE

The design team proposes that the interoperability be handled in a scalable and sustainable manner, whereby, collaborating organizations rather strive for a loose coupling of their information systems instead of a tight integration: the collaborating information systems should be able to work together but retain as much independency as possible. The scaling should be in terms of technologies that are integrated in Improved AP over time.

The design of interoperability architecture was involved in reviewing and analysed the suitability of a number of interoperability issues as follows:

- Operational or Business Interoperability reviewed how business processes are to be shared,
- **Information Interoperability** reviewed how information is to be shared,
- **Technical Interoperability** reviewed how technical services are to be shared or at least connect to one another.
- From an IT perspective, it is also useful to consider interoperability in a similar vein to Enterprise Application Integration (EAI); specifically:
- **Presentation Integration/Interoperability** reviewed and designed how to maintain a common look-and-feel approach through a common portal-like solution to guides the user to the underlying functionality of the systems
- **Information Integration/Interoperability** reviewed the corporate information to ensure seamless sharing between the various corporate applications to achieve, for example, a common set of client information.
- Based upon a commonly accepted corporate ontology and shared services for the structure, quality, access, and security/privacy for the information.
- **Application Integration/Interoperability** was reviewed to ensure corporate functionality is integrated and shareable so that the applications are not duplicated (e.g., one change of address service/component; not one for every application) and are seamlessly linked together through functionality such as workflow. *This impacts the business and infrastructure applications and is very closely linked to corporate business process unification/interoperability.*
- **Technical Integration/Interoperability** was reviewed and designed to ensure common methods and shared services for the communication, storage, processing, and access to data primarily in the application platform and communications infrastructure domains. This interoperability is premised upon the degree of rationalization of the PSRS/GoT IT infrastructure, based upon standards and/or common IT platforms. For example, multiple applications sharing one infrastructure or thousands of corporate websites using one centralized content management/web server (rather than thousands of servers and webmasters spread throughout the country).

The AP Integration Architecture designed provides a bridge between the heterogeneous operational applications and platforms. This architecture ties together the mix of platforms, operating systems, transports, and applications. Integration of business applications between agencies. This Architecture encompasses the multiple layers of new and existing systems and the middleware in between. AP Integration Architecture enables new applications to use existing resources with minimal disruption.

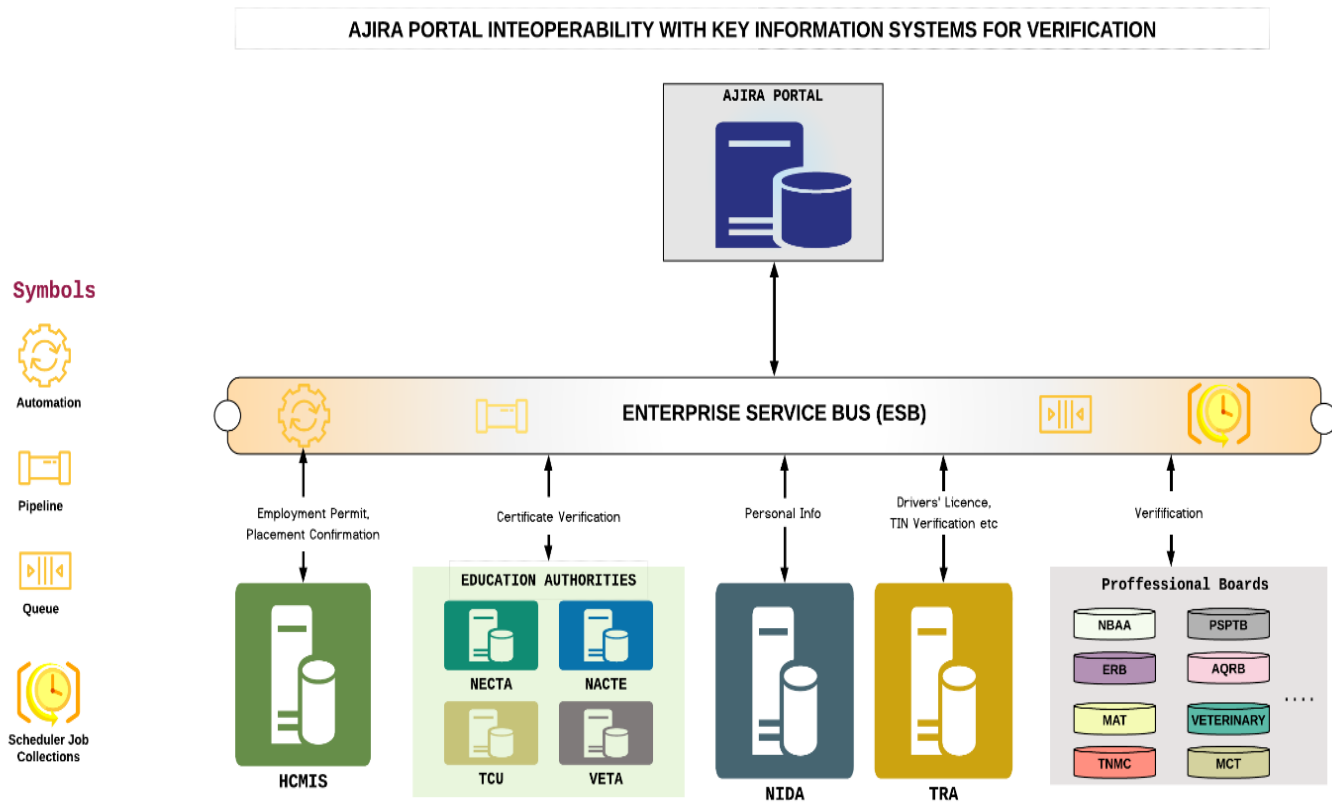


Figure 118: Ajira Portal Interoperability Framework

5.0 NETWORK ARCHITECTURE

Based on the information that was availed to Improved AP improvement design team, it was highlighted that current systems that is used by PSRS recruitment management information is centralized systems. We propose that the network architecture should remain a centralized one as Improved AP is to be used by multiple applicants and employers assessing the central system for services.

The physical and logical design of the software, hardware, protocols, and media of the transmission of data were reviewed to assess their suitability to accommodate the proposed improvements for the improved AP.

5.1 Client- Server

In client server formation, the client requests a resource and the server provides that resource as requested. A server may serve multiple clients at the same time while a client is in contact with only one server per request made. Both the client and server communicate via a computer network and as part of a distributed system. Current AP is mostly structured in client-server network architecture in both in-facility setup and central repository settings. The design team proposes that we keep using client-server architecture in improved AP settings.

5.2 Application

The design team, made a review of current and future proof architectures that are used in building enterprise-level applications and the existing application architecture and decided that the improved AP should maintain the existing architecture which is still meeting the current and future needs of PSRS.. The application architecture in this context covers all four areas of a working distributed system as shown below.

5.3 Infrastructure Architecture

The existing AP application is currently deployed on 125GB RAM, 1TB HDD/SSD, Gigabit Network, Ubuntu 16.04 and Database server with 125GB RAM, 3.5TB HDD/SSD and Ubuntu 16.04. Client computers need at least 2GB RAM, Windows 8 or Ubuntu LTS. On the Employer and Applicants side they need standard PC/Laptop and the applicants can also access the system through mobile AP. The requirement for mobile APP users is IOS 8 and Android 6 as minimum OS requirements.

5.4 Conceptual Framework

How this architecture fits in the overall GoT IT conceptual framework? Here we will highlight the components of the framework that it will work with and the ones that it will represent. We have to put some text that corroborate the conceptual framework bigger picture.

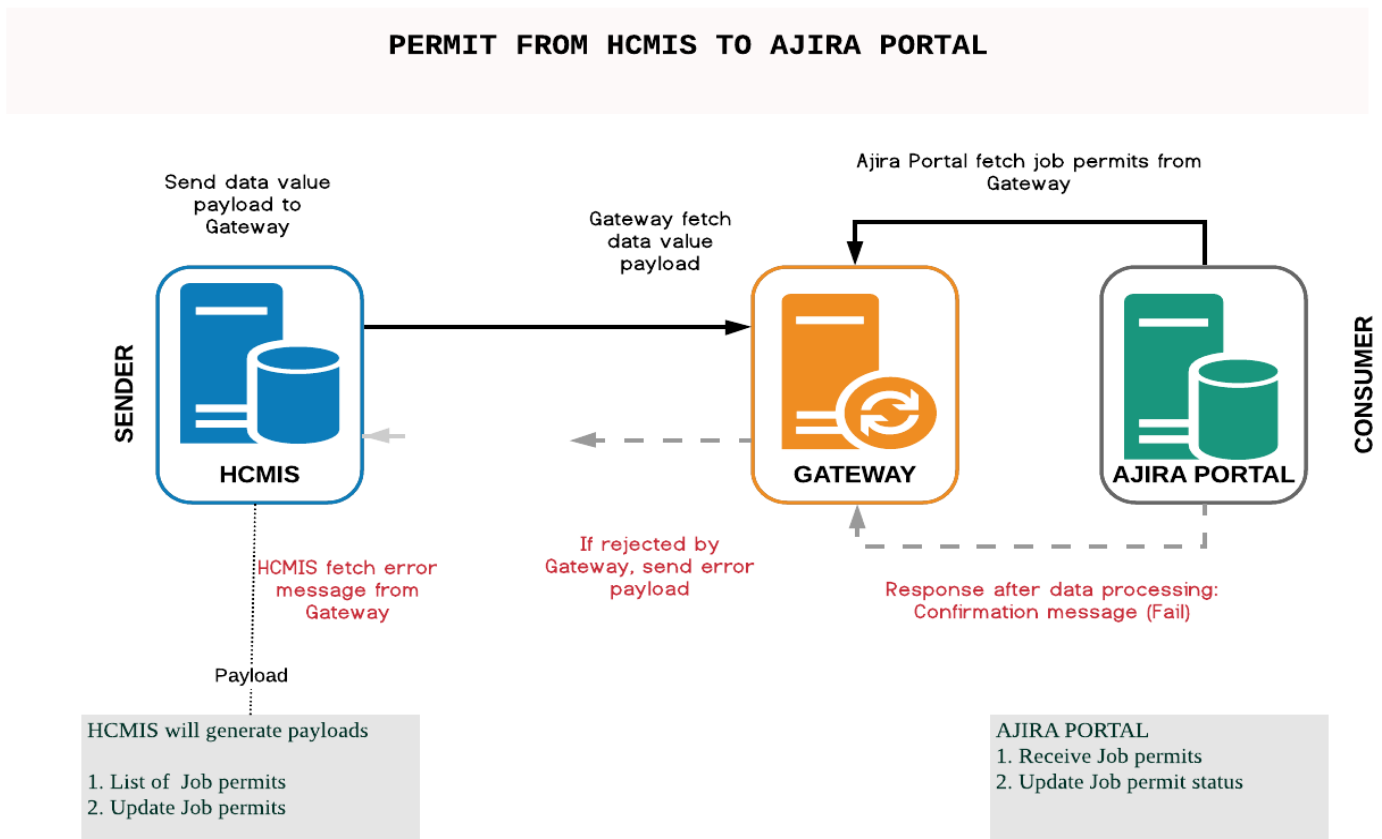


Figure 119: AP Conceptual Framework with HCMIS (As representative of other systems)

6.0 SYSTEM USE CASES

This section provides a diagrammatic description of the system uses cases, their descriptions and activity flows.

6.1 Employment Permit Use case

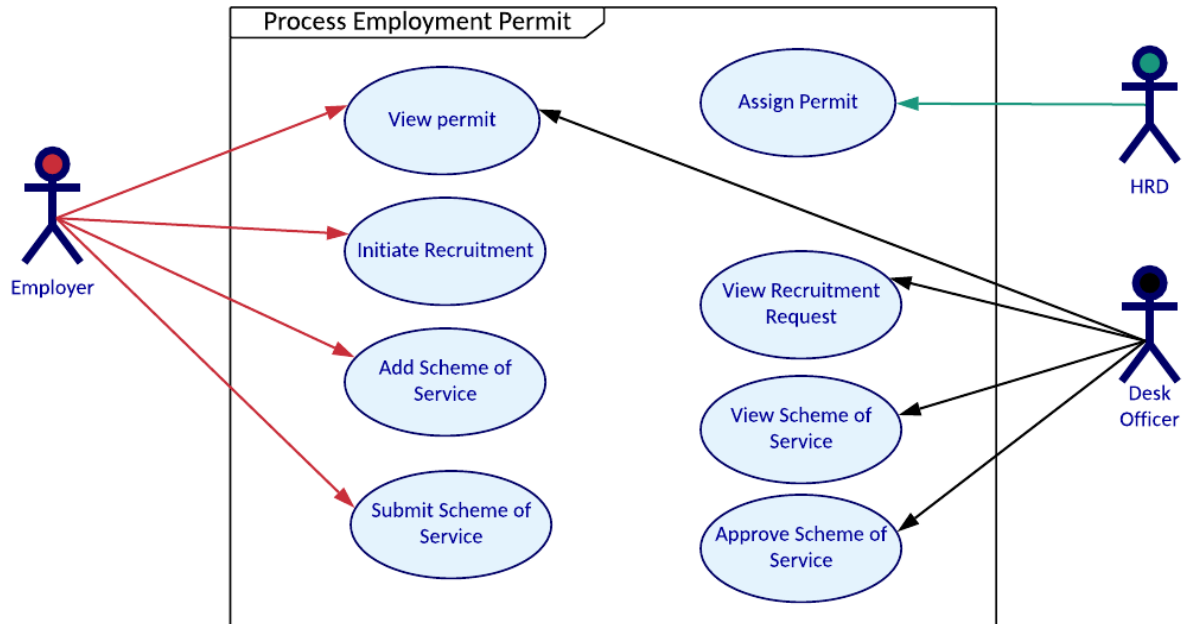


Figure 120: Employment Permit Use case

Employment Permit Use Case Description

Use Case ID:	UCAP001	Variables Dictionary	Employment Permit
Use Case Name:	View Job Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
<Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for a complete job permit.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	xvi. Responsible users will receive notification with a link to view Job permit (s). xvii. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. xviii. User will be able to add scheme of service to align with cadre as per job permit if the scheme is not in the system. xix. The added scheme should follow approval process, once approved the		

	scheme will be stored. xx. System will provide window for user to send comment and/or notification for missing information on job permit.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Ajira Portal is linked with HCMIS and can share job permit information
Main Success Scenario	xiii. User View Job Permits xiv. User select Job Permit(s). xv. System display job permit information(s) xvi. User confirm and proceed to next steps.
Extension Scenario	xiii. Job Permit is not complete (Missing Information) xiv. System provide window for users' feedback once there is missing information. xv. System administrators would be notified on the particular case. xvi. System administrator will communicate with HCMIS on the missing info.

Use Case ID:	UCAP002	Variables Dictionary	Employment Permit
Use Case Name:	Add Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	The system will allow user to add and map scheme of service to a particular cadre if not found on the list stored by the system. The system will then store the scheme of service for future use and reference		
Trigger:	View Job Permit		
Static Preconditions:	Authorized Access Receipt of notification for new job permit		
< Dynamic Preconditions >:	UCAP001		
Success Post conditions:	The system successfully save and map the scheme of service to a particular cadre.		
Failed Post conditions:	The system fails to save and map the scheme of service.		
Operations Concepts	x. Users will view job permit and scheme of services to see if all cadres have been mapped to corresponding scheme of services. xi. If scheme of service is missing, the system will provide option to add scheme of service and map with the corresponding cadre xii. The system will store the information and make it available for future use and references.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	All cadres must be linked and mapped with correct scheme of service.
Main Success Scenario	xvi. User View Job Permits information on cadres and corresponding scheme of services xvii. User select option to add new scheme of service - xviii. System display field for user to enter information xix. User enter information and save. xx. System display successfully message Scheme of service is stored and can be accessed.
Extension Scenario	xix. Missing entry on mandated field xx. System display error message "This field is required" xxi. System return user to missing info field xxii. Duplicate Entry - xxiii. System display error message "This entry is already in the system" xxiv. System return user to the stored scheme of service

Use Case ID:	UCAP003	Variables Dictionary	Employment Permit
Use Case Name:	Submit Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer		
Description:	A newly added scheme of service must be submitted to decision making levels for further scrutiny (reviews and confirmation). The system will provide option for employer to submit scheme of service		
Trigger:	New scheme of service is added into the system.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP002		
Success Post conditions:	The scheme of service is submitted to other levels for review and approval.		
Failed Post conditions:	The system fails to submit the scheme of service.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Scheme of service must align with policy and guidelines.		

Main Success Scenario	xvi. The system display list of newly added scheme of service xvii. User select newly added scheme of service - xviii. User click “Submit” button xix. System display success message xx. The submitted scheme of service is removed from the list.
Extension Scenario	

Use Case ID:	UCAP004	Variables Dictionary	Employment Permit
Use Case Name:	View Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	The system shall store list of scheme of service per cadre. Authorized users will be able to view scheme of service.		
Trigger:			
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of scheme of service and information to all fields.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	x. The system will store a list of scheme of service. This scheme of service will be categorized as approved or not approved xi. Only approved scheme of service (s) will be eligible to be mapped with cadre xii. Authorize users will be able to view the list of schemes, from the list they can further explore individual by clicking on the 'view' for further display		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	xiii. User view list of scheme of service xiv. User select scheme of service xv. System display scheme of service information(s) xvi. User confirm and proceed to other phases.
Extension Scenario	

Use Case ID:	UCAP005	Variables Dictionary	Employment Permit
Use Case Name:	Approve Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, it must be approved before being referred for use and mapping with corresponding cadre.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		

Success Post conditions:	System display list of scheme of service
Failed Post conditions:	The system fails to display information.
Operations Concepts	xiii. System will display list of scheme of services for approval xiv. System will provide window for user to approve or send comment on scheme of service (if satisfied). xv. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. xvi. If approved, the scheme of service will then be stored and available for use
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines. Scheme of service will be mapped with corresponding cadre
Main Success Scenario	xvi. System display list of submitted scheme of service xvii. User select scheme of service. - xviii. User confirm approval of scheme of service or make comments and return xix. System display successfully message (returned or approved) xx. The scheme of service status changes to approved.
Extension Scenario	xix. Scheme of Service need modification xx. System provide window for users' comments and feedback. xxi. High level user comments on modification to be done into the SOS and return the SOS to original user. xxii. Original user gets notification on SOS to be modified. After working on

	the comments, the user then submit (forward) to Desk officer. xxiii. The system should record the back and forth process till the SOS is approved. xxiv. Once finally approved, the status changes to 'approved' and SOS is stored for reference and future use.

Use Case ID	UCAP-P006	Variables Dictionary	Employment Permit
Use Case Name:	Assign Permit		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD		
Description:	To facilitate the recruitment process, the system will provide option for permit to be assigned to as many users as possible.		
Trigger:	Receive notification on permit availability		
Static Preconditions:	Authorized Access Receipt of notification		
< Dynamic Preconditions >:	UCAP001 (View Permit)		
Success Post conditions:	The system assign permits to user		
Failed Post conditions:	The system fails to assign permits.		
Operations Concepts	xiii. Responsible users will receive notification with a link to view Job permit (s). xiv. System will display all key information such as cadre permit number, disaggregation, post head count, start and end date etc. xv. The system will provide option for permits to be assigned to users to facilitate the recruitment process xvi. Once assigned user will be able to perform all activities aligned with the recruitment process		
<Input Summary>:	View Job Permit		

<Output Summary>:	List of assigned job permit
Frequency of Use:	On demand
Assumptions:	A designated taskforce can work on multiple permits to facilitate and speed up the recruitment process.
Main Success Scenario	xvi. System displays all available permits xvii. User select Job Permit(s). - xviii. User assign job permit to other users xix. System display success message xx. Assigned users are able to see the list of assigned permit to work with.
Extension Scenario	

Use Case ID:	UCAP007	Variables Dictionary	Employment Permit
Use Case Name:	Initiate Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	After verifying the job permit and all requirement (eg mapping SOS, validity etc), an employer will signal the initiation of the recruitment process. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		
Trigger:	Permit issuance		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display success message.		
Failed Post conditions:	The system fails to display successful message.		
Operations Concepts	xiii. Responsible users will view permit upon receiving notification, they will scrutinize the permit and if necessary add more information to it xiv. Once the permit has been cleared, users will signal the start of the recruitment process xv. The system should send notification to authorize to inform on the recruitment process trigger. xvi. The initiation recruitment process involves further scrutiny by higher level users. Upon approval the system will move to next phases which will include Placement from Databank or advertising the vacancy position to public.		

Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Responsible institution must show the intent for recruitment process to begin. Ajira Portal is linked with HCMIS for job permit information exchange. The system can also allow users who do not receive Job permit directly from HCMIS to enter it manually into the system.
Main Success Scenario	x. The job permit review is complete and provide option to move to initiate recruitment stage xi. User click on the initiate recruitment and the system prompt for confirmation xii. Upon confirmation the system display success message.
Extension Scenario	

Use Case ID:	UCAP008	Variables Dictionary	Employment Permit
Use Case Name:	View Recruitment		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, Desk Officer		
Description:	Once the employer has confirmed to begin the recruitment process, authorized users will be able to view the contents of the recruitment package.		
Trigger:	Initiate Recruitment		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system displays all fields required as indicated for complete recruitment process.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	x. The system send notification to authorized user to inform on the recruitment process trigger (Initiation of recruitment) xi. The notification will bear a link which upon opening it, it will go directly to the initiate process. xii. The system will view list of permits that has been cleared for recruitment processes to begin.		
Exceptions:	N/A		
Includes:	N/A		

Frequency of Use:	On demand
Assumptions:	Authorized user must be able to view all permits that has been approved for recruitment process. They can then review and continue with the process or provide advice for improvement.
Main Success Scenario	x. Notification is sent to authorized users'. xi. Users click on the notification xii. The system display the list of all permits that has been approved and cleared for the recruitment process to begin.
Extension Scenario	

Use Case ID:	UCAP009	Variables Dictionary	Employment Permit
Use Case Name:	Reject Scheme of Service		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Employer, HRD, Desk Officer		
Description:	Scheme of service must align and comply with policy and guidelines. Thus, authorized users will have to review any addition or edition to scheme of service and can approve or reject it.		
Trigger:	A new or edition on Scheme of service		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	UCAP001, UCAP002		
Success Post conditions:	System display list of scheme of service		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	xiii. System will display list of scheme of services for approval xiv. System will provide window for user to approve or send comment on scheme of service (if satisfied). xv. The system will provide a forth and back mechanism between responsible users until agreement has been reached for approve. If no consensus is reached then the scheme of service is rejected and will be assigned status. xvi. The rejected scheme of service will not be in display for use.		
Exceptions:	N/A		

Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Scheme of service must align and comply with policy and guidelines.
Main Success Scenario	xvi. System display list of submitted scheme of service xvii. User select scheme of service. - xviii. User confirm rejection of scheme of service and make comments and return for improvement xix. System display successfully message (rejected) xx. The scheme of service status changes to rejected.
Extension Scenario	

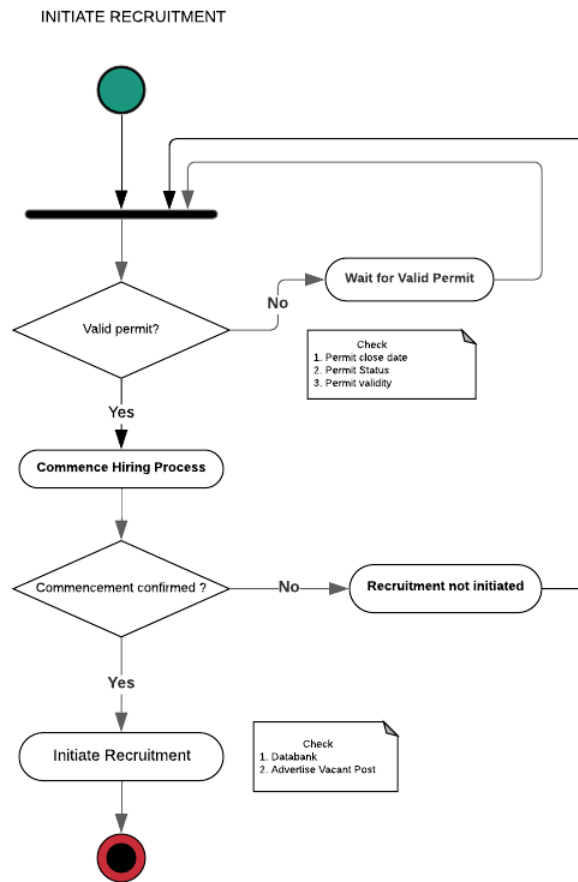


Figure 121: Employment Permit Activity Flow

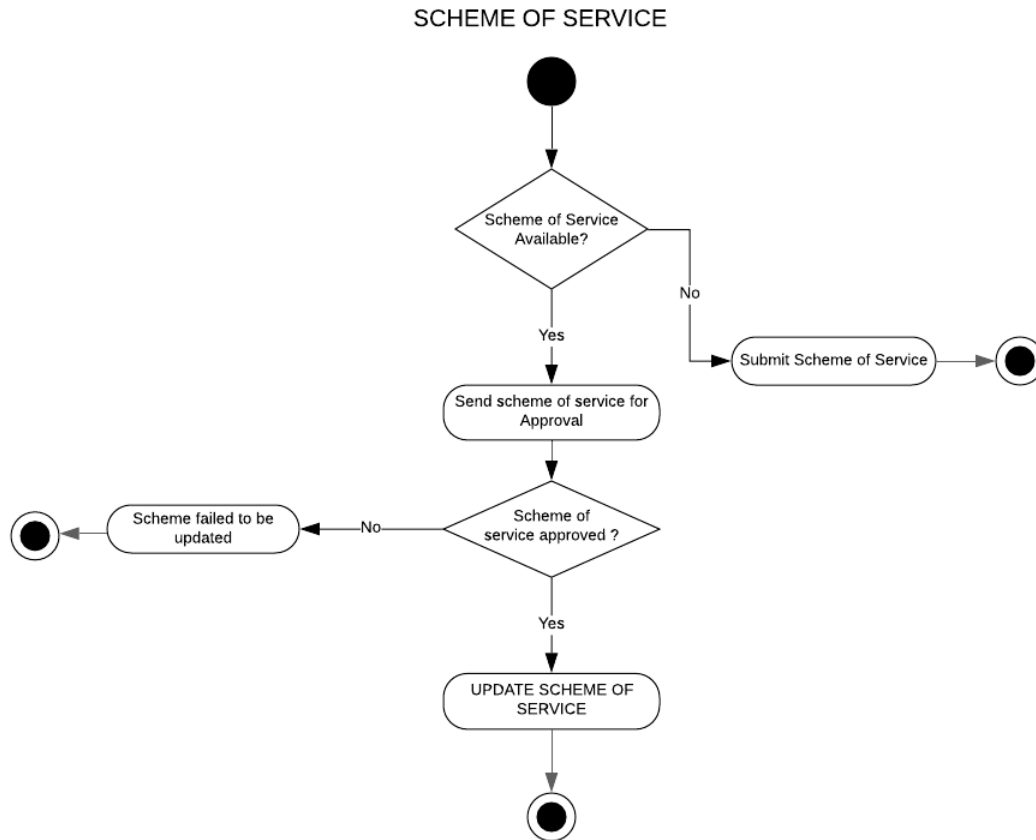


Figure 122: Scheme of Service Activity Flow

6.2 Job Advertisement Use Case

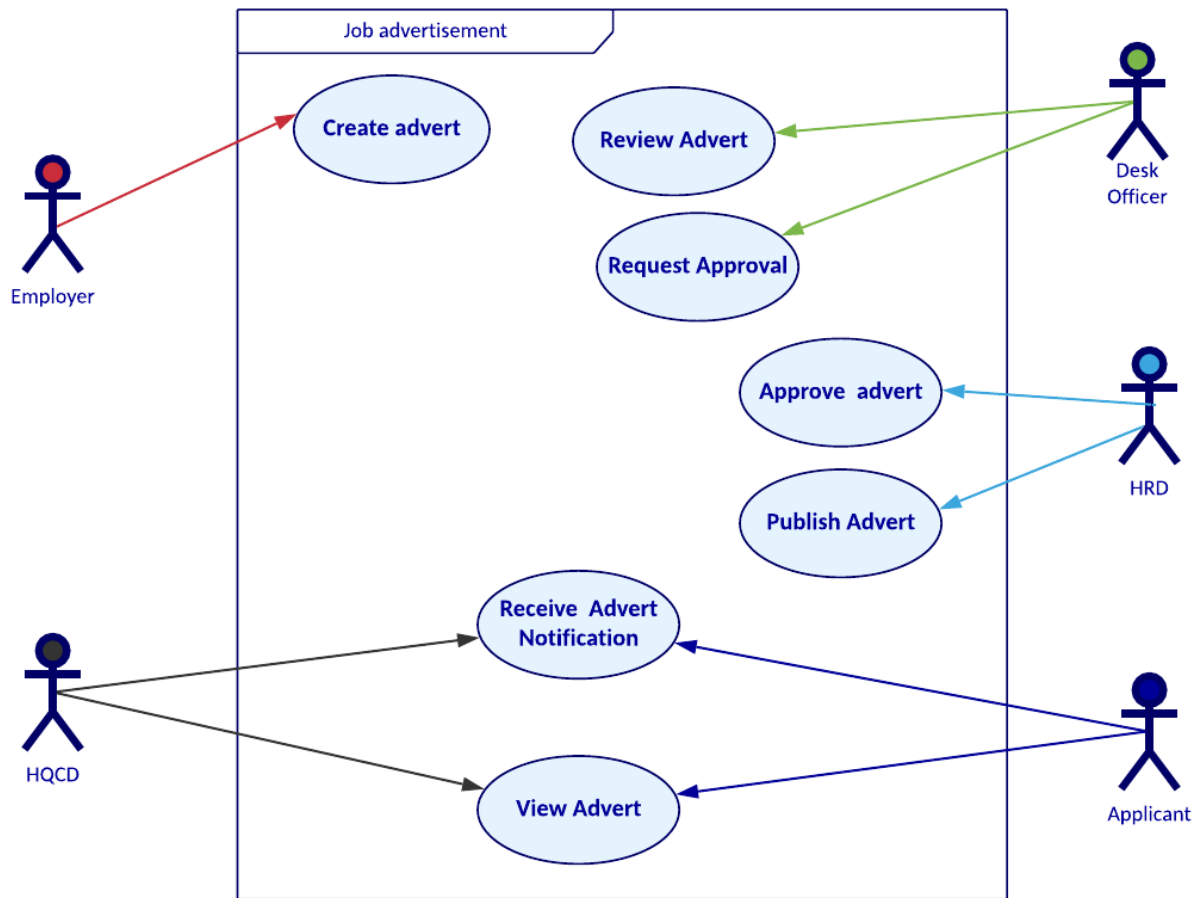


Figure 123: Job Advertisement Use Case

Use Case # UCAP015: Create Advert

Use Case ID:	UCAP015	Variables Dictionary	Job Advertisement
Use Case Name:	Create Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013, API07, API08		

Actors:	Employer, Desk Officer
Description:	This is one of important process in the recruitment cycle. Once the internal initiation of recruitment has passed, authorized user are required to create a job advert for the approved vacancies in order to inform the public of the availability of vacancies.
Trigger:	Initiate Recruitment
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Job Permit, Initiate Recruitment
Success Post conditions:	The system create job advert
Failed Post conditions:	The system fails to create advert
Operations Concepts	- Authorized user approved the recruitment process to begin. - The system notifies responsible users on the recruitment process. - Responsible users create advert as per job vacancy description - Responsible user submit advert for approval
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	The public must be informed on the availability of the vacancies
Main Success Scenario	13. User view notification on recruitment process alert 14. User create advert 15. User save advert and the system displays a successfully message 16. User confirm and proceed to next steps.
Extension Scenario	

Use Case # UCAP016: Review Advert

Use Case ID:	UCAP016	Variables Dictionary	Job Advertisement
Use Case Name:	Review Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP018,		
Actors:	Desk Officer, HRD		
Description:	Upon advert creation, authorized user will receive notification on the availability of the advert and will have to review to ensure it adhered to standard and align with policies and guidelines.		
Trigger:	Create Job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert		
Success Post conditions:	The system display all job advert information		
Failed Post conditions:	The system fails to display job advert information		
Operations Concepts	- A job advert is created and submitted for approve - Authorized users will view list of all job advert created - The system will display all information on a job advert for review - Authorized users will review and scrutinize the job advert - Authorized users will then signal for the next steps (Publish or edit)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	A Job advert must adhere to standard and align to policy and guidelines.		
Main Success Scenario	16. System display all list of job advert created 17. Authorized users select job advert for review 18. System displays job advert information 19. Authorized users confirm the review is OK 20. System display successfully message		
Extension Scenario	d) Job advert needs modification 13. System provide window for users' comments and feedback. 14. Authorized user(s) enter comments on modification to be done into the job advert and return the job advert to original user.		

	15. Job advert creator (user) gets notification on issues to be modified. After working on the comments, the user then submit (forward) to authorize users. 16. Once finally reviewed and approved, the system display successful message

Use Case # UCAP017: Request job advert approval

Use Case ID:	UCAP017	Variables Dictionary	Job Advertisement
Use Case Name:	Request job advertisement approval		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP008, AP010		
Actors:	Employer, Desk Officer		
Description:	An employer would request for review and approval of a job advert to ensure it adhered to standards, policies and guidelines.		
Trigger:	Create advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create advert		
Success Post conditions:	The system submit the job advert for approval.		
Failed Post conditions:	The system fails to submit the job advert.		
Operations Concepts	- The system successfully save the created job alert - Authorized user will then forward the job advert for approval - The authorized user will view the created advert and act accordingly - If approved the advert will wait for the next stage (Go live into public)		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Job advert must adhere to standards, policies and guidelines before sent to public.		
Main Success Scenario	19. The system send notification to authorized user on the availability of job advert for approve 20. Authorized user see list of all job advert created 21. Authorized user select a job advert 22. The system displays all the information on job alert 23. Authorized user then comment or confirm the validity of a job advert 24. The system stores the approved job advert and give 'approve status'		
Extension Scenario			

Use Case # UCAP018: Approve advert

Use Case ID:	UCAP018	Variables Dictionary	Job Advertisement
Use Case Name:	Approve advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP015, AP014, AP019, AP020		
Actors:	Employer, HRD, Desk Officer		
Description:	All job adverts created within AP must be approved for public consumptions. The approval process is crucial to ensure that the job advert adhered to employment process standards and align with policies and guidelines.		
Trigger:	Create Job Advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system provide option to approve job advert		
Failed Post conditions:	The system fails to approve the job advert.		
Operations Concepts	- The system will display all job alerts for approve - User will select the job advert and the system will display information for each job advert - Authorized user will then be able to approve and move to next step or reject job alert and return for modification		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:			
Main Success Scenario	19. The system send notification to authorized user on the availability of job advert for approve 20. Authorized user see list of all job advert created 21. Authorized user select a job advert 22. The system displays all the information on job alert 23. Authorized user then comment or confirm the validity of a job advert 24. The system stores the approved job advert and give 'approve status'		

Extension Scenario	

Use Case # UCAP019: Publish Advert

Use Case ID:	UCAP019	Variables Dictionary	Job Advertisement
Use Case Name:	Publish Advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP014, AP016, AP021		
Actors:	Employer, HRD		
Description:	After being approved, the job alert will be finalized and published for public consumptions. The system will provide a PDF version of the advert and other format that will be published through public mediums and Ajira Portal website		
Trigger:	Create job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create job advert, approve job advert		
Success Post conditions:	System publish		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	- The system will display a list of all approved job adverts - Authorized user will then prompt the system to publish the job advert - The system will generate the job advert into a readable format (PDF) - Authorized user can then publish it through approved mediums		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	GOT vacancies are open for each Tanzanians to apply provided is qualified for the vacancy. Thus the public must be informed once there is availability of job vacancies.		
Main Success Scenario	13. System display list of all approved job advert 14. User select job advert. 15. User click on publish job advert 16. The system generates the complete job advert		
Extension Scenario			

Use Case # UCAP020: Receive Job advert Notification

Use Case ID:	UCAP020	Variables Dictionary	Job advertisement
Use Case Name:	Receive Job advert notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP055, AP017		
Actors:	Applicant, HQCD		
Description:	All applicants who have registered with Ajira Portal will receive notification once a job advert has been published. Thus all potential applicants should register with Ajira Portal for quick notification once a new job vacancy has been published		
Trigger:	Publish job advert		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Created job advert, Publish job advert		
Success Post conditions:	System send notification		
Failed Post conditions:	The system fails to send notification		
Operations Concepts	System will send notification to all applicant on availability of new job adverts		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Every applicant has right to be quickly informed on the availability of vacancies so as can prepare for job application		
Main Success Scenario	10. System send notification to applicants 11. Applicant get notification through approved medium (Eg email, SMS, mobile app). 12. The system can also display notification through the notification icon.		
Extension Scenario			

Use Case # UCAP021: View job advert

Use Case ID:	UCAP005	Variables Dictionary	Job Advertisement
Use Case Name:	View Job advert		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP016, AP021		
Actors:	Applicant, HQCD		
Description:	When the job advert has been published applicants and public in general will be able to view the job advert.		
Trigger:	Publish Job Advert, Job alert notification		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Create Job advert, Publish Job Advert, Job alert notification		
Success Post conditions:	System display job advert		
Failed Post conditions:	The system fails to display job advert		
Operations Concepts	System will publish the job alert to public mediums for public and applicant to view		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	The public has right to see job advert once it has been published.		
Main Success Scenario	7. System publishes a new job advert into Ajira Portal Website 8. Applicant and public able to see the job alert		
Extension Scenario			

Job Advertisement Activity Flow

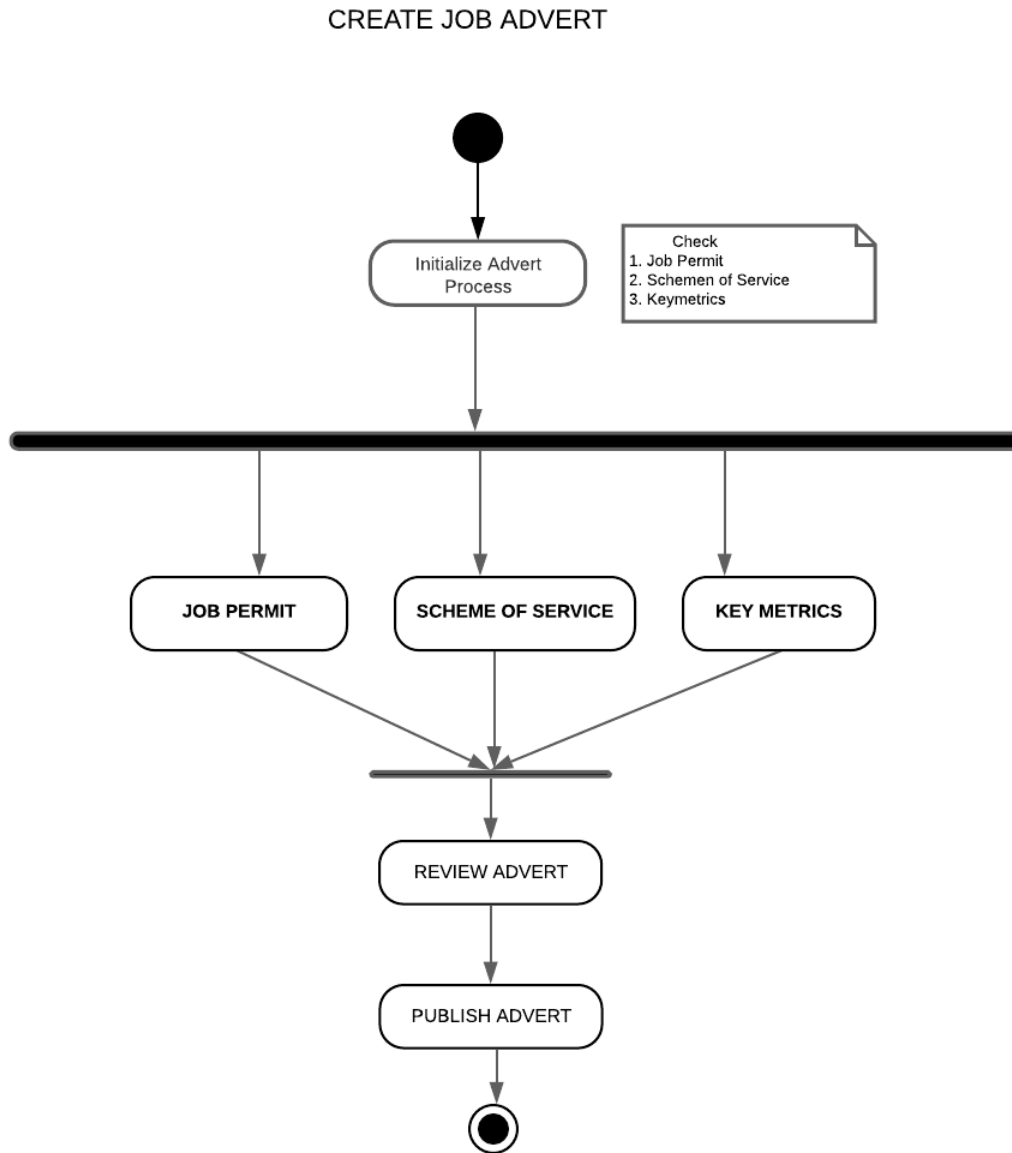


Figure 124: Job Advertisement Activity Flow

6.3 Job Application Use case

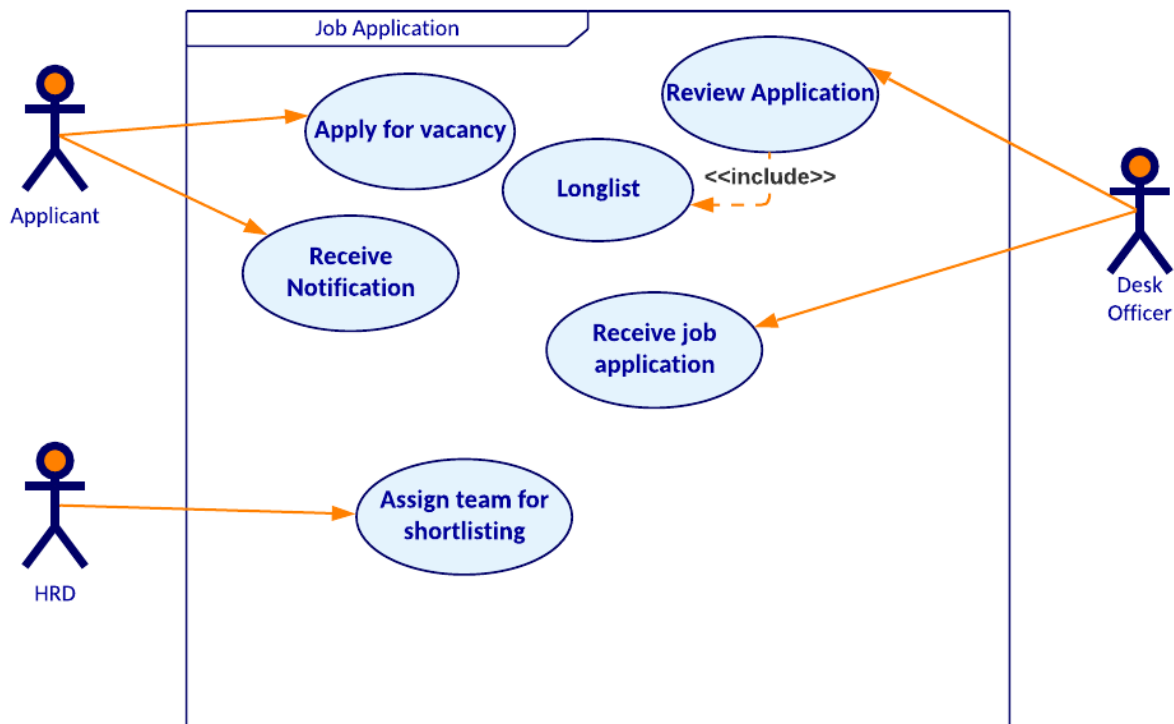


Figure 125: Job Application Use case

Use Case # UCAP010: Apply for Vacancy

Use Case ID:	UCAP010	Variables Dictionary	Job Application
Use Case Name:	Apply for Vacancy		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Once applicants have received job alert notification, they will be able to see a list of vacancies that has been advertised. Applicants will apply to particular position(s) according to their qualifications. Job adverts will be set with expire (deadline) date and		

	thus applicant should be aware.
Trigger:	• Job Advertisement • Job Alert Notification
Static Preconditions:	• Authorized Access
< Dynamic Preconditions >:	Job advertisement
Success Post conditions:	The system display list of advertised posts, users select preferred vacancies and apply for a job.
Failed Post conditions:	The system fails to display information.
Operations Concepts	• Applicants receive notification on job vacancies and can see the list of all advertised vacancies. (The system should display all vacancies regardless of applicant qualification) • Applicant can then apply from the list as per qualification (the system should limit users from applying jobs out of their professional, qualification) • Applicant should fill all the information needed including attaching an application letter. • Applicant will then submit application for further steps. • The system will store all applicant's application and will be available review until the job advert time expired. • The system will prevent applicant to review application process (Eg. Altering application letter) when the deadline date is reached.
<input summary>:	Job advertisement, job alert notifications
<output summary>:	List of successfully applicants application (s)
Frequency of Use:	On demand
Assumptions:	All eligible applicant will be able to apply for a job vacant once published
Main Success Scenario	22. Applicant receive job alert notification(s) 23. Applicant able to view list of all job vacancies (regardless of qualification/professional categorization) 24. Applicant select vacancies as per qualification 25. Applicant fills required information including attaching application letter 26. Applicant save the information and then click submit 27. The system display 'Success Message' to confirm application has been submitted. 28. The system display list of all application that has been done by an applicant
Extension Scenario	g) Applicant Reviews Application 13. Applicant go to 'My application' menu. 14. System display all applications and statuses (Active, Closed) 15. If the application is <i>active</i> , the system will provide option for applicant to review the information and can edit the attachment letter. 16. If the application is <i>closed</i> , then the system will not give option for edition. h) Rejected Application

	7. If the applicant has not qualified for a job vacancy then the system will not display any information for application. 8. If applicant information are either insufficient or overqualified for a certain position then the system will reject the application.

Use Case # UCAP011: Receive Job Advert Notification

Use Case ID:	UCAP011	Variables Dictionary	Job Application
Use Case Name:	Receive Job Advert Notification		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP013		
Actors:	Applicant		
Description:	Upon publication of a job advertisement, eligible applicants (whose profile have a 70% completion rate) will be notified on the availability of new vacancies. Applicants will be able to see the notification with description of the advertised vacancy upon which they can start application.		
Trigger:	Publish Job Advertisement		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Publish Job advertisement		
Success Post conditions:	The system successfully send notification to applicant.		
Failed Post conditions:	The system fails to send notification.		
Operations Concepts	- When responsible users finishes the process of preparing job advert and publish, the system will automatically send notification to users (applicant) - Applicant will be able to see the notification icon displaying an alert with a number indicating the presence of a new notification - Upon clicking the notification menu, applicant will be able to see all job related notifications (in this case a new vacancy)		
<Input Summary>:	Publish Job advertisement		
<Output Summary>:	List of notification to be embedded on the notification icon		
Frequency of Use:	On demand		
Assumptions:	Since the recruitment process has time limitation, applicant must be informed immediately upon availability of new job vacancy.		
Main Success Scenario	19. User View Job Permits information on cadres and corresponding scheme of services 20. User select option to add new scheme of service 21. System display field for user to enter information 22. User enter information and save. 23. System display successfully message		

	24. Scheme of service is stored and can be accessed.
Extension Scenario	g) Missing entry on mandated field 7. System display error message "This field is required" 8. System return user to missing info field h) Duplicate Entry 7. System display error message "This entry is already in the system" 8. System return user to the stored scheme of service

Use Case # UCAP012: Assign team for shortlisting

Use Case ID:	UCAP012	Variables Dictionary	Job Application
Use Case Name:	Assign team for shortlisting		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP039, AP040, AP042, AP043		
Actors:	HRD		
Description:	Once application period has ended, a taskforce will be assigned to review all application and provide a list of qualified applicant that can proceed to other stages such as interviews etc.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	The system is able to assign team for shortlisting.		
Failed Post conditions:	The system fails to assign team for shortlisting.		
Operations Concepts	Once new scheme of service is added, the system give a mandatory option to submit to next levels		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All job application must be reviewed by a qualified team		
Main Success Scenario	13. The display number of application for a certain cadre 14. The system provide window to add number of available force 15. The system provide window to enter the approximated number of application a member of a taskforce can review. 16. The system will then automatically calculate the suggested strength of a taskforce		
Extension Scenario			

Use Case # UCAP013: Review Application (Long list)

Use Case ID:	UCAP013	Variables Dictionary	Job Application
Use Case Name:	Review Application (Long list)		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	API11, API10, AP023,		
Actors:	HRD, Desk Officer		
Description:	All applications will be reviewed once application period has ended. The review will provide a list of possible candidates (long list) for a position that are to be further tested through other stages (ie interviews).		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	N/A		
Success Post conditions:	The system display list of all applications per each vacancy (cadre).		
Failed Post conditions:	The system fails to display list of applications per each cadre.		
Operations Concepts	- After application period ends, the system will lock any attempt for applicant to apply for a job. - The system will display all applicant per cadre they've applied (with number) - Responsible user must go through each applicant information to verify if that applicant has qualified and is eligible to apply for that particular job. - Upon completion of review process, the system will provide a list of successfully applicant and send notification on the next stages (interviews)		
Exceptions:	N/A		
Includes:	Receive Application		
Frequency of Use:	On demand		
Assumptions:	All application must be reviewed to ensure applicants have adhered to the needs of the vacancy		
Main Success Scenario	16. System send notification on the closing of the application period 17. Responsible users responds to the notification by opening and see a list of applicants that have applied for a particular cadre 18. The system will provide window for quick preview on applicants information such as attachments, personal info etc		

	19. Each candidates selected will be sent with notification indicating the status of his/her application (success or rejected - with a reason) 20. The system will finally list all successfully candidates that will have to go through next stages (interviews)
Extension Scenario	

Use Case # UCAP014: Receive Job Application

Use Case ID:	UCAP014	Variables Dictionary	Job Application
Use Case Name:	Job Application		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Requirement Xref	AP023, AP024, AP026		
Actors:	Desk Officer		
Description:	Authorized users will be able to see all applications as they unfold during and after application period has ended.		
Trigger:	Job application		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Job application		
Success Post conditions:	System display list of applications		
Failed Post conditions:	The system fails to list of applications.		
Operations Concepts	- The system provides window for applicants to apply for a job vacancy - After filling all required information, applicant will then submit the application - The system will allow authorized users to see a real time progress as the application process is unfolding with increasing number. - Authorized users will be able to view the list of all application per given cadres.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	All applications must be accounted for within the system.		
Main Success Scenario	7. System display list of application with a counter to monitor number of application 8. Authorized users can navigate through different job vacancy to monitor the progress of job application processes		
Extension Scenario			

Job Application Activity Flow

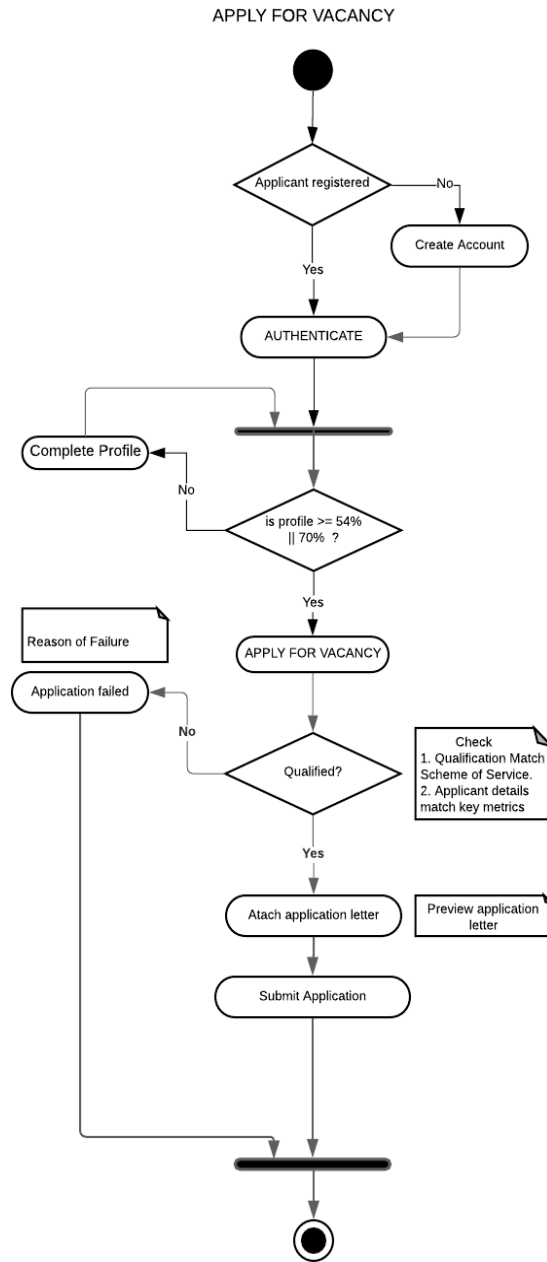


Figure 126: Job Application Activity Flow

6.4 Interview Question Use Case

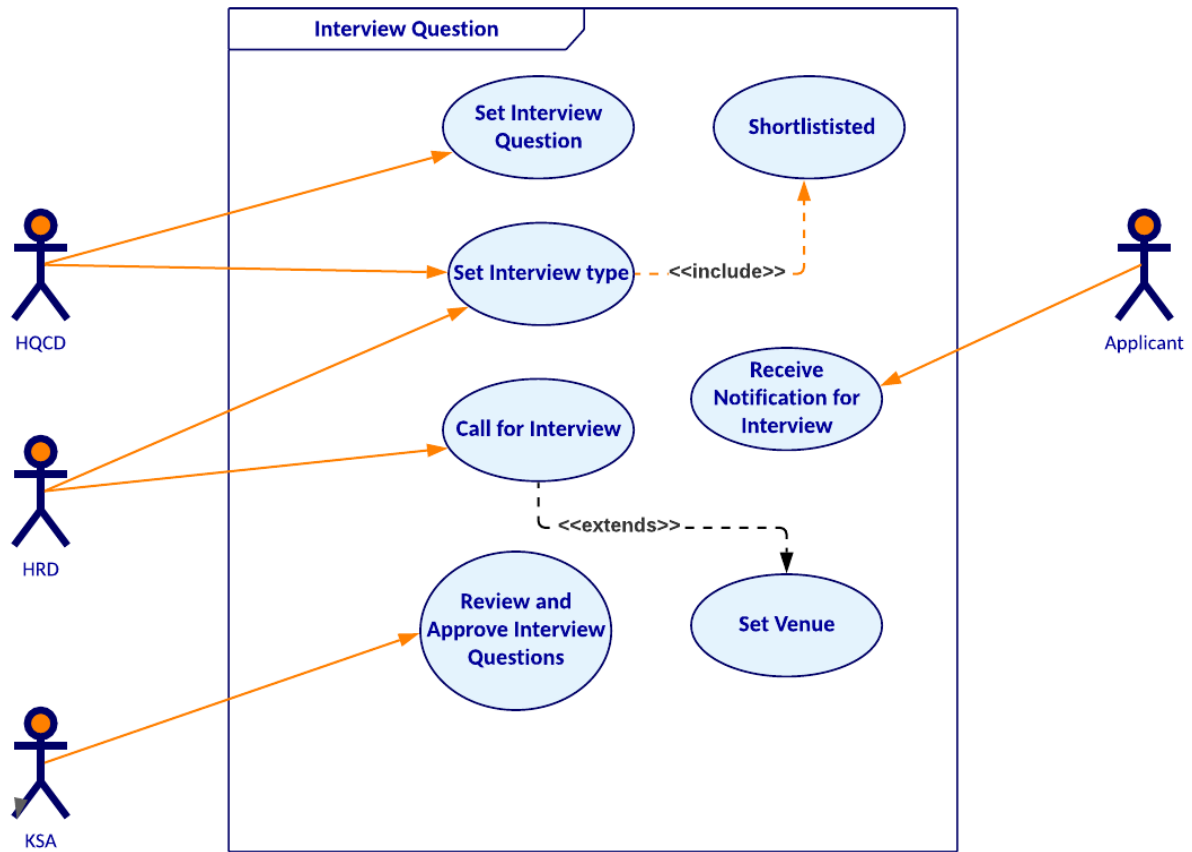


Figure 127: Interview Question Use Case

Interview Question Use Case Description

Use case Descriptions

Use Case ID:	UCAP012	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question- Set Interview type		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	When the Shortlisting completes HQCD and HRD setting up the interview type which will be based on the number of Shortlisted Applicant and Type of Cadre. Interview type can be Written (Aptitude), Practical and Oral Interview.		
Trigger:	Receive number of Shortlisted Candidate		
Static Preconditions:	Authorized Access Receive Notification		
< Dynamic Preconditions >:	Shortlisted Applicant		
Success Post conditions:	The system displays the number of Interviews to be done to a particular Cadre.		
Failed Post conditions:	The system fails to display the type of interview to be done.		
Operations Concepts	Responsible users will receive a number of shortlisted applicants.. Responsible users will compare number of post to the number of Shortlisted Candidate so as to check if the cadre has Written(Aptitude) interview		

	Responsible users will also check the Type of Cadre if it has Practical Interview Then the Responsible users will set the Oral Interview
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Based on Number of Shortlisted Candidate to determine type of Interview
Main Success Scenario	Set up of interview to each Cadre Allocate Schedule and Venue to each Cadre
Extension Scenario	

Use Case ID:	UCAP013	Variables Dictionary	Employment Permit
Use Case Name:	Interview Question		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD		
Description:	After analysis of the type of interview the responsible user prepares the interview question which will depend on the type of interview i.e Written (Aptitude), Practical, Oral Interview.		

Trigger:	Receive analysis of the type of interview Prepare Interview Questions according to the Duties and Responsibility of the Particular Cadre.
Static Preconditions:	Authorized Access
< Dynamic Preconditions >:	Type of Cadre and the type of interview
Success Post conditions:	Presenting the Interview Questions for all types of Interview according to the nature of each Cadre.
Failed Post conditions:	Fail to prepare Interview Questions to each Interview Type.
Operations Concepts	Responsible users will receive the number of Interview types set for each Cadre. Responsible users will communicate with the sources of Interview questions. Responsible users receive the draft of the Interview Question from the Sources. Responsible Users will review the drafts of the Interview Question. After Reviewing the Interview Question the responsible users will submit the drafted interview Question to the CEO for approval. The CEO will review received set of draft interview questions After reviewing the Interview Questions the CEO will approve the received Draft Interview Questions so as to be used in the Interview.
Exceptions:	N/A
Includes:	N/A

Frequency of Use:	On demand
Assumptions:	Based on Type of Interview and nature of the Cadre
Main Success Scenario	Set the Interview Question to each stage of the Interview
Extension Scenario	

Use Case ID:	UCAP014	Variables Dictionary	Employment Permit
Use Case Name:	Call for Interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, Applicant		
Description:	When the Set up of Interview Type, Interview Venue and Shortlisting Process complete the following process is Call for Interview.		
Trigger:	Receive type of Interview and Venue for each Cadre Prepare Invigilator and Markers for the Interview Question. Interview number to each successful candidate and reasons to those who are unsuccessful.		
Static Preconditions:	Authorized Access		
< Dynamic Preconditions >:	Type of Interview and the number of Successful Candidate		

Success Post conditions:	Notification to all responsible Users for Call for Interview announcement
Failed Post conditions:	Fail to give notification of the Call for Interview.
Operations Concepts	Responsible users will set an interview Timetable and allocate Venue for each Cadre. Responsible users will issue a Call for Interview announcement in a PO-PSRS Website and SMS. Responsible users provide feedback to applicants on the status of their application. Applicant will accept/deny call for interview feedback Responsible Users will form invigilators and/or interview panels.
Exceptions:	N/A
Includes:	N/A
Frequency of Use:	On demand
Assumptions:	Set of Interview Type, Set of Interview Venue and Shortlisting process complete.
Main Success Scenario	Set the Interview Venue and Timetable Notification to the applicant and all responsible Users Issue of Call Interview announcement to PO-PSRS website Applicant receive notification on the application status
Extension Scenario	

Interview Question Activity Flow

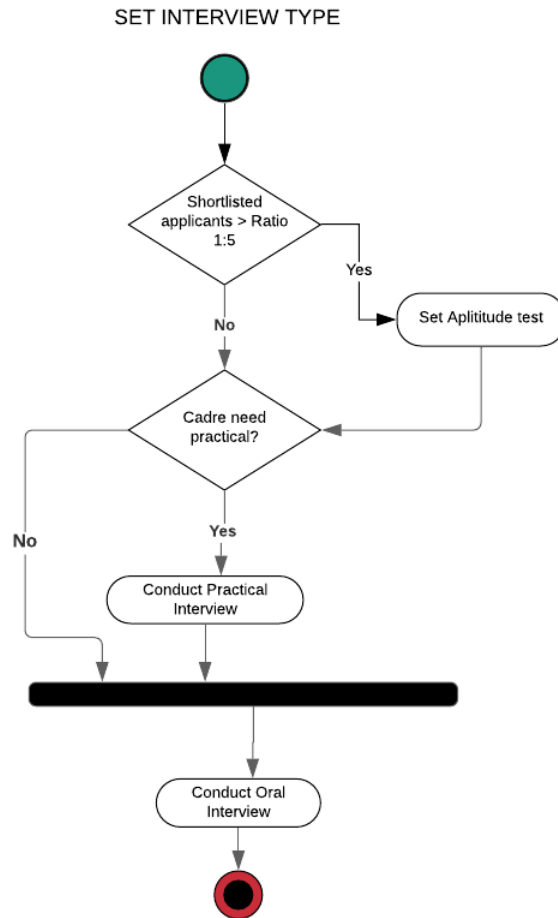


Figure 128: Interview Question Activity Flow

6.5 Applicant Shortlist Use Case

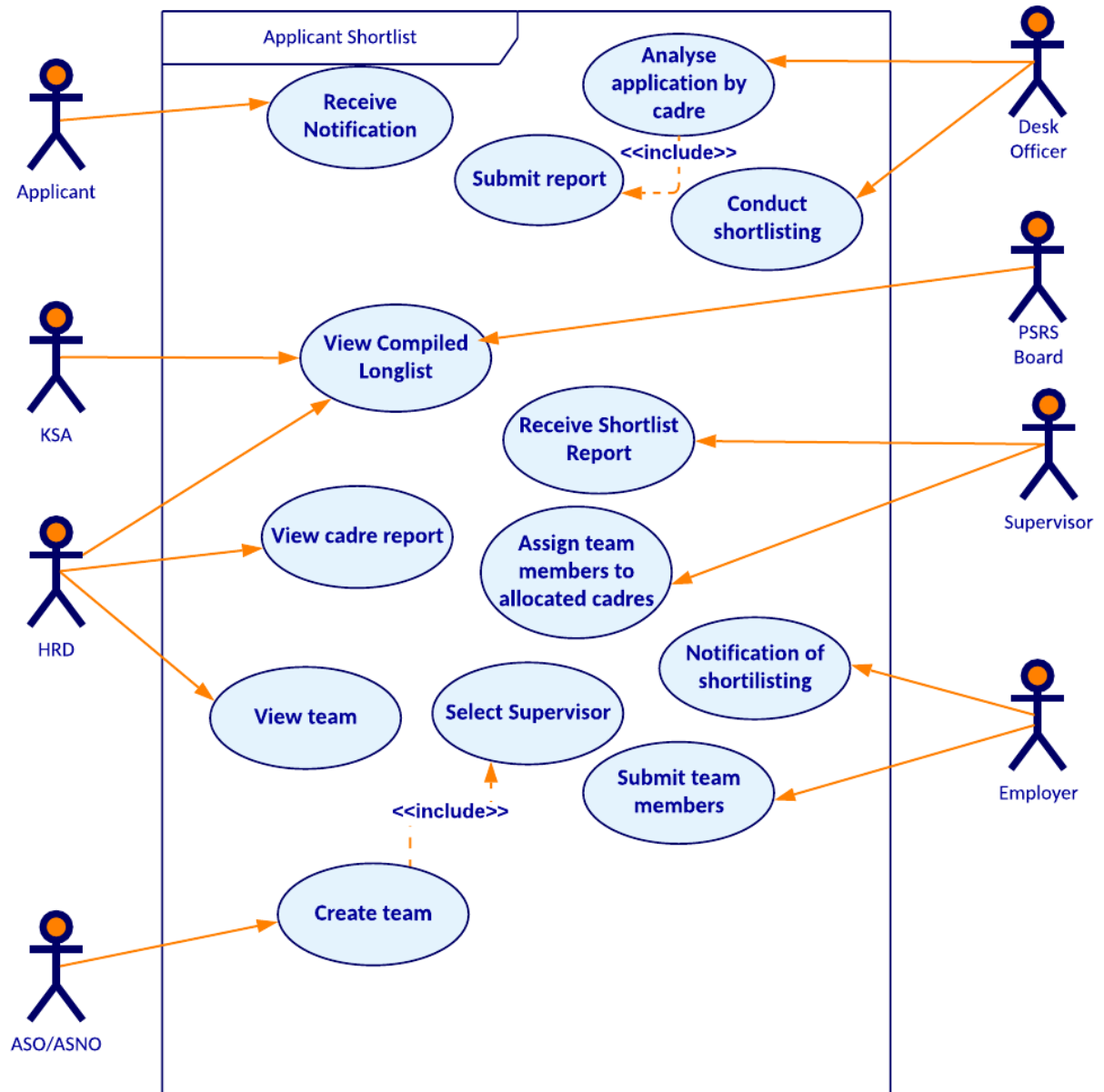


Figure 129: Applicant Shortlist Use Case

7. Applicant Shortlist Use Case Description

Use Case ID:	UCAP015	Variables Dictionary	Employment Permit
Use Case Name:	Applicants Shortlist		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	Applicant, Desk Officer, KSA, PSRS Board, HRD, Supervisor, Employer, ASO/ASNO		
Description:	Immediately after advert deadline system will start shortlisting of applicants by cadre and generate various shortlisting report e.g. xiii. Shortlisted candidate by gender. xiv. Shortlisted candidate by disability. xv. Shortlisted candidate by age; xvi. Shortlisted candidate by University.		
Input Summary:			
Output Summary:			
Trigger:	4. Receive notification after advert deadline reached		
Static Preconditions:	vii. Authorized Access viii. Receipt of notification		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	The system fails to display information.		
Operations Concepts	xix. System will analyze application by cadre and generate shortlisting report. xx. ASO/ASNO will form team and select supervisors to conduct shortlisting. xxi. Employer will receive notification and submit members that will participate in the shortlisting. xxii. Supervisor(s) will distribute compiled longlist to the selected team for shortlisting. - xxiii. HRD and KSA will receive compiled longlist and shortlisted reports. xxiv. Applicants will receive notification i.e. successful and unsuccessful.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	4. Advert deadline must be reached.		
Main Success Scenario	xix. Applicant to successful apply for the available vacant. xx. System to generate compiled longlist report. xxi. User to conduct shortlisting. xxii. User view shortlisting report. - xxiii. User to receive notification. xxiv. Applicant to receive notification.		

Extension Scenario	d) Applicant shortlist is not complete Recruitment termination during shortlisting process.

Applicant Shortlist Activity Flow

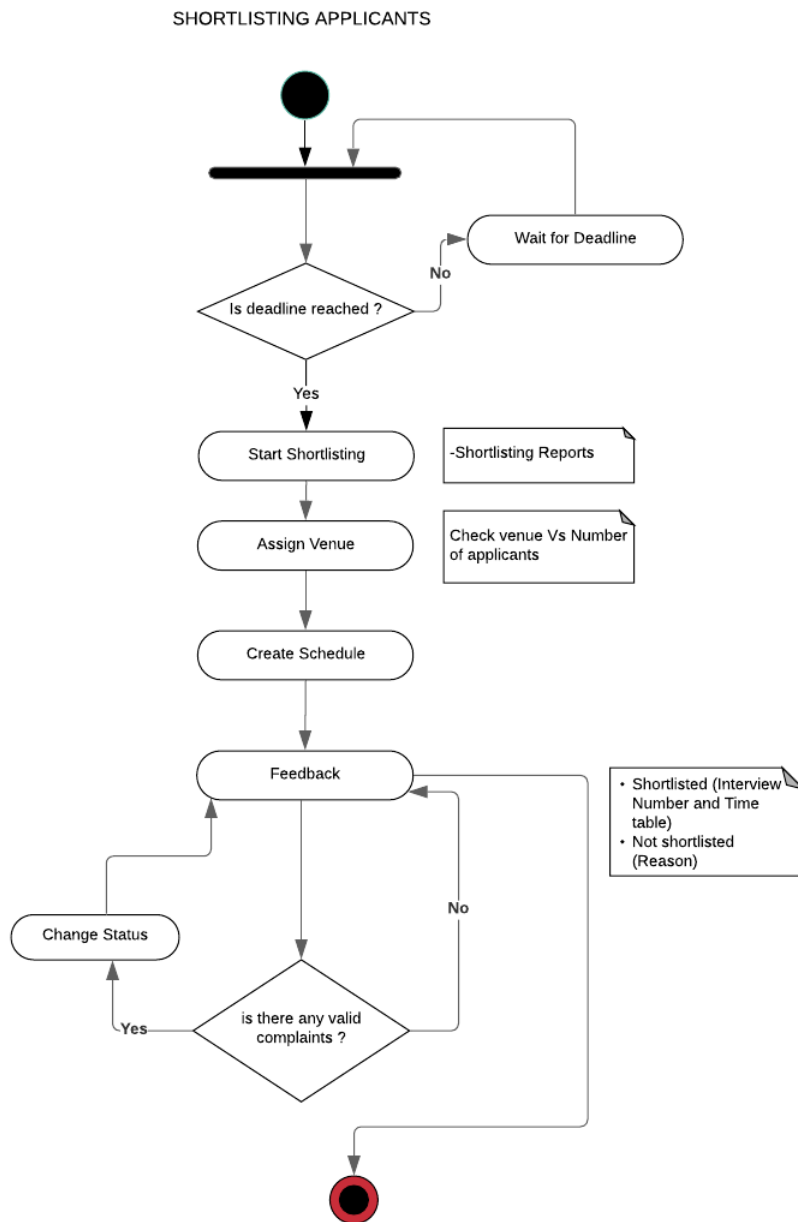


Figure 130: Applicant Shortlist Activity Flow

6.6 Call for Interview Use Case

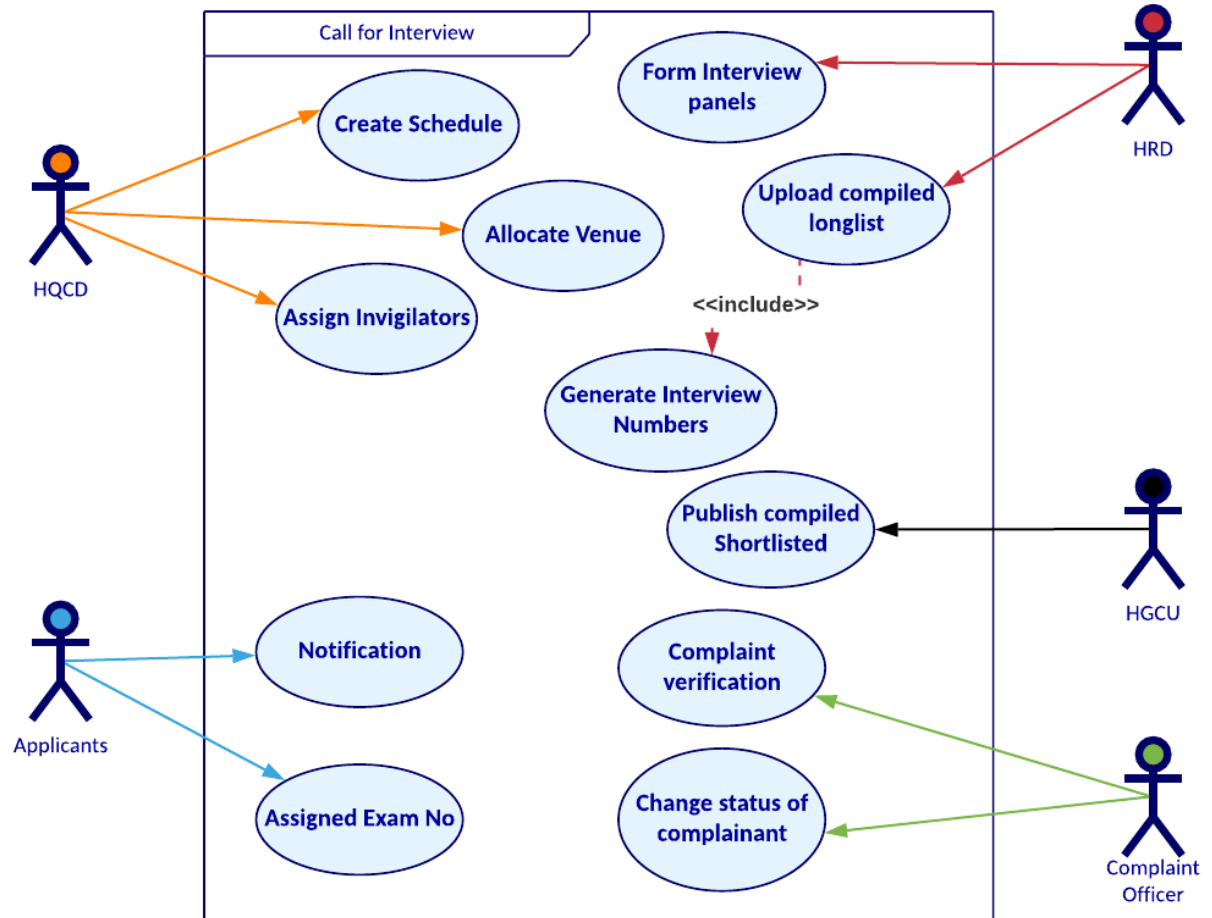


Figure 131: Call for Interview Use Case

8. Call for Interview Use case Description

Use Case ID:	UCAP016	Variables Dictionary	Call for interview
Use Case Name:	Call for interview		
Created By:	PSRS	Last Updated By:	PSRS
Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:	HQCD, HRD, HGCU, Complaint Officer, Applicants		
Description:	Immediately after shortlisting, interview panel will be created, upon successful creating panel venue will be suggested with their respective applicants and invigilators ready to initiate call for interview.		
Input Summary:			
Output Summary:			
Trigger:	vii. Advert reached deadline viii. Shortlisting (Generation of compiled longlist)		
Static Preconditions:	Compiled longlist established.		
< Dynamic Preconditions >:	Lock application on specific cadres after reaching deadline.		
Success Post conditions:	The system displays all fields required as indicated for starting applicant shortlist.		
Failed Post conditions:	Failure Notification.		
Operations Concepts	xvi. System will generate compiled longlist. xvii. HRD will form interview panels and upload compiled longlist. xviii. HQCD will create venue, allocate venue and assign invigilators. xix. Applicant will receive interview number upon successfully selected on the shortlisting process. xx. To attend interview applicant must confirm to attend in the interview.		
Exceptions:	N/A		
Includes:	N/A		
Frequency of Use:	On demand		
Assumptions:	Shortlisting completed successful		
Main Success Scenario	xiii. System to generate compiled longlist. xiv. User to create team for interview (Panelist and Invigilator). xv. User to create venue and assign applicants to venue. xvi. Applicants to attend interview.		
Extension Scenario	N/A		

Call for Interview Activity Flow

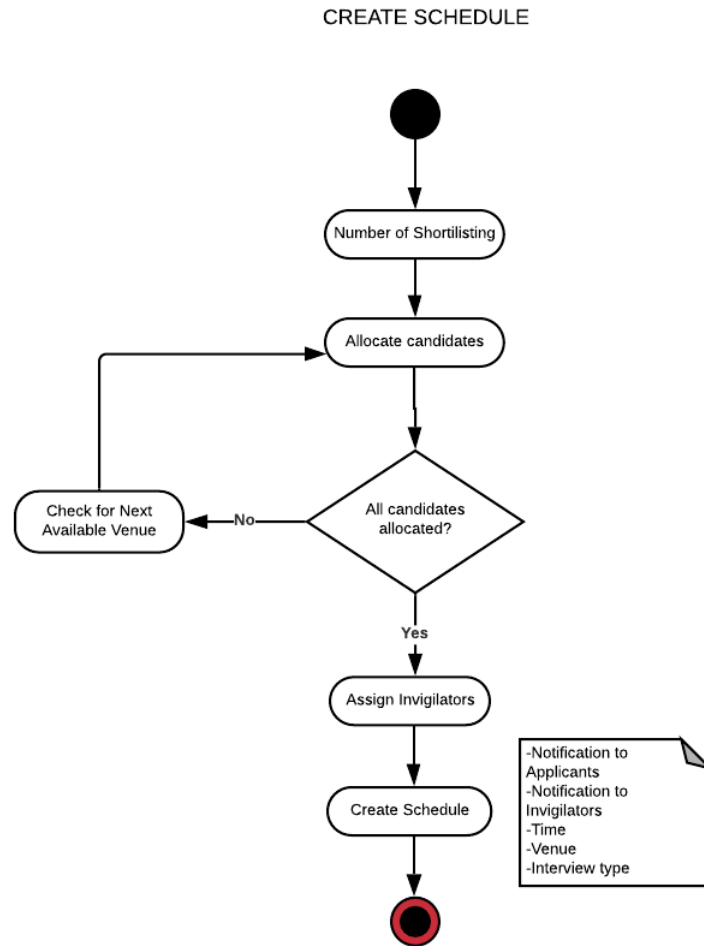


Figure 132: Call for Interview Activity Flow

6.7 Conduct Interview Use Case

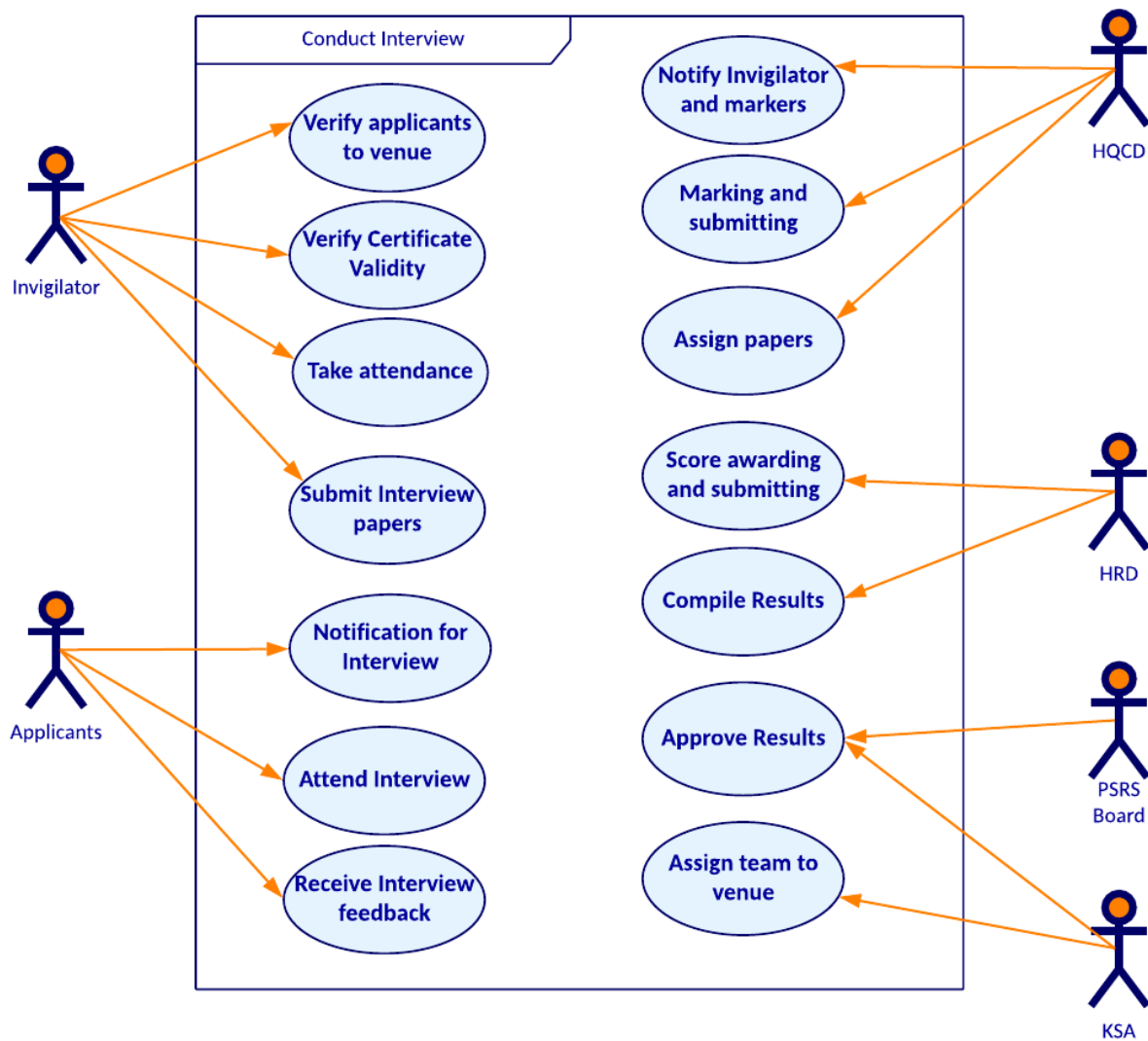


Figure 133: Conduct Interview Use Case

Conduct Interview Use Case Description

	Use Case ID:	UCAP017	Variables Dictionary	
	Use Case Name:	Conduct Interview		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		Invigilator, HQCD, HRD, Applicant, KSA, PSRS Board		
Description:		Upon issuance of a job permit, the system will send notification(s), employer will be able to view the job permit and review the permit information.		
Trigger:		4. Applicant Shortlist		
Static Preconditions:		xiii. Compiled Applicant shortlist xiv. Interview questions xv. Interview panels (Invigilators/ Panellist, Markers) xvi. Applicants and Interview panels assigned to interview venues		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		N/A		
Failed Post conditions:		The system fails to display information.		
Operations Concepts		xix. Responsible users will verify applicants and certificates. xx. Conduct interview xxi. Mark interview xxii. Submit interview results xxiii. HRD/HQCD compile results, produce and submit interview reports xxiv. Review interview reports by the Board		
Exceptions:		Cadres that do not go through the Interview process		
Includes:		N/A		
Frequency of Use:		On demand		
Assumptions:				
Main Success Scenario		xiii. The system shall notify user on selection xiv. User can verify applicant against certificates and venue xv. The system displays approved compiled interview results xvi. Applicants to get interview feedback from the system		
Extension Scenario		N/A		

Conduct Interview Activity Flow

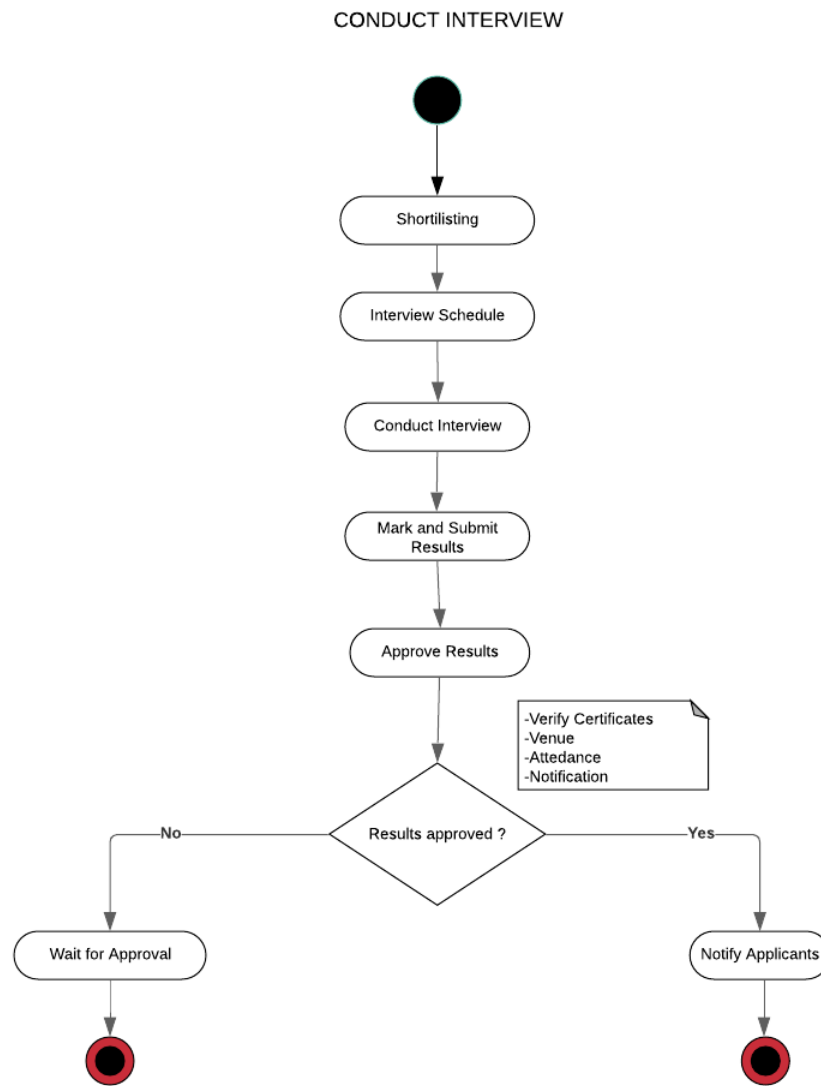


Figure 134: Conduct Interview Activity Flow

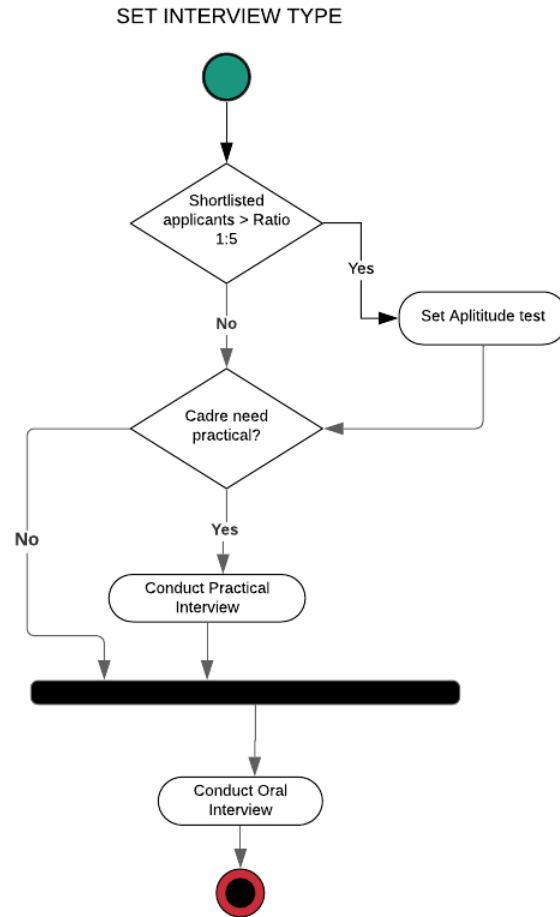


Figure 135: Set interview type

6.8 Placement Use Case

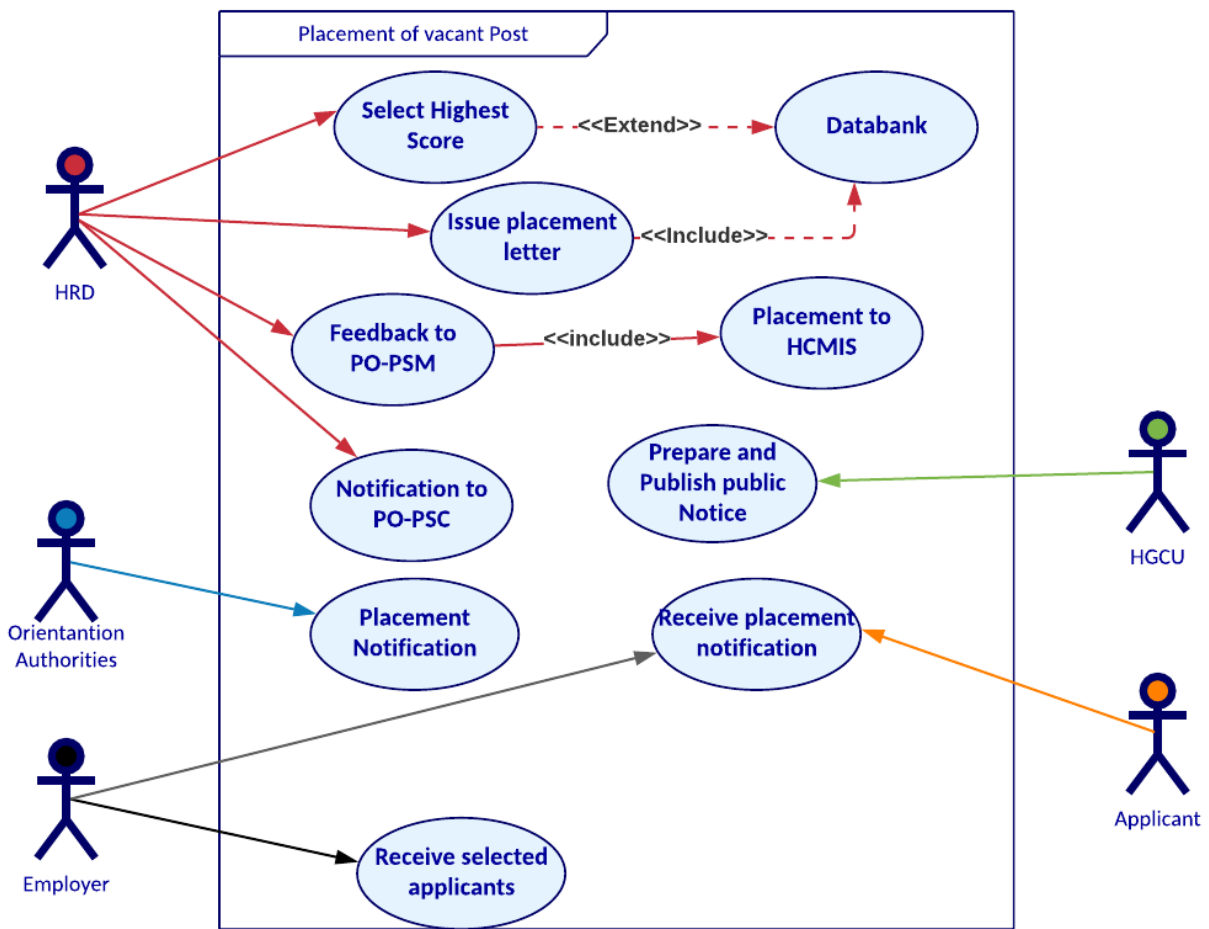


Figure 136: Placement Use Case

Placement Use Case Description

Use Case ID:	UCAP018	Variables Dictionary	Employment permit
Use Case Name:	Placement from Databank		
Created By:	PSRS	Last Updated By:	
Date Created:	18/01/2021	Last Revision Date:	18/01/2021
Actors:	HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:	After permit analysis, the user/system checks for availability of suitable candidates to be placed from the Databank. If suitable candidates are available the systems places them according to the requirements, if they are not sufficient or unavailable the next of advertising vacant posts is triggered		
Trigger:	complete permit analysis		
Preconditions:	Valid permit, with its associated scheme of service.		
Post conditions:	vii. System places available suitable candidates viii. where there are insufficient or unavailable suitable candidates, system triggers advertisement of the vacant posts		
Normal Flow:	xxv. Issue letter of placement. xxvi. Issue notification to employer. xxvii. To provide feedback to PO - PSM (Placement into HCMIS) xxviii. Issue notification to PO-PSC xxix. Issue public notice for call for engagement xxx. Issue notification to orientation authorities xxxi. if available candidates are insufficient to fill vacant posts advertise the remaining vacant post xxxii. if there are no suitable candidates in the databank advertise vacant posts		
Exceptions:	some cadres may not follow the normal recruitment process for placement		
Includes:	7. issuance of placement letter 8. placement into HCMIS		
Frequency of Use:	On demand		
Assumptions:			
Notes and Issues:	N/A		

Placement from Advertising Vacant Post

	Use Case ID:	UCAP019	Variables Dictionary	
	Use Case Name:	Placement from advertising vacant Post		
	Created By:	PSRS	Last Updated By:	PSRS
	Date Created:	22/01/2021	Last Revision Date:	23/01/2021
Actors:		HRD, Employer, HGCU, Applicant, Orientation Authorities		
Description:		Following the interview process and approval of final results, successful applicants are placed in vacant posts. The remaining unplaced successful candidates are stored in the databank.		
Trigger:		Completed interview process		
Static Preconditions:		1. Passed candidates 2. Valid permit		
< Dynamic Preconditions >:		N/A		
Success Post conditions:		x. System places available suitable candidates xi. System triggers advertisement of the vacant posts when there are insufficient or unavailable suitable candidates xii. System stores unplaced successful candidates in databank.		
Failed Post conditions:		The system fails to place successful candidates to vacant posts and databank		
Operations Concepts		xxv. Sort candidates in descending order of scored marks xxvi. Place candidates with highest scores first - xxvii. Print placement letter - xxviii. Issue notice to employer on placement and provide feedback to PO - PSM (Placement into HCMIS) xxix. Issue notification to PO-PSC xxx. Issue placement advert to appropriate media xxxi. Issue notification to orientation authorities - xxxii. Storage of unplaced successful candidates in databank		

Exceptions:	When two or more candidates have the same high score the following criteria should be used to decide on who gets placed first:- xiii. If one of the candidates is disabled, then that candidate will get placed first. xiv. If all or none of the candidates are disabled, then the female candidate will get placed first. xv. If all or none of the candidates are female, then the oldest candidate will get placed first. xvi. If the candidates are the same age, then alphabetical order of names is followed.
Includes:	x. Issuance of placement letter xi. Placement into HCMIS xii. Storage of unplaced successful candidates in databank
Frequency of Use:	On demand
Assumptions:	
Main Success Scenario	xix. Arrangement of highest scores of candidates xx. Placement of successful candidates xxi. Issuance of placement letter xxii. Issuance of placement details to Employer and PO-PSM (through HCMIS) - xxiii. Issuance of notification of placement to PO-PSC and Orientation Authorities xxiv. Issuance of placement advert to public via appropriate media
Extension Scenario	N/A

Placement Activity Flow

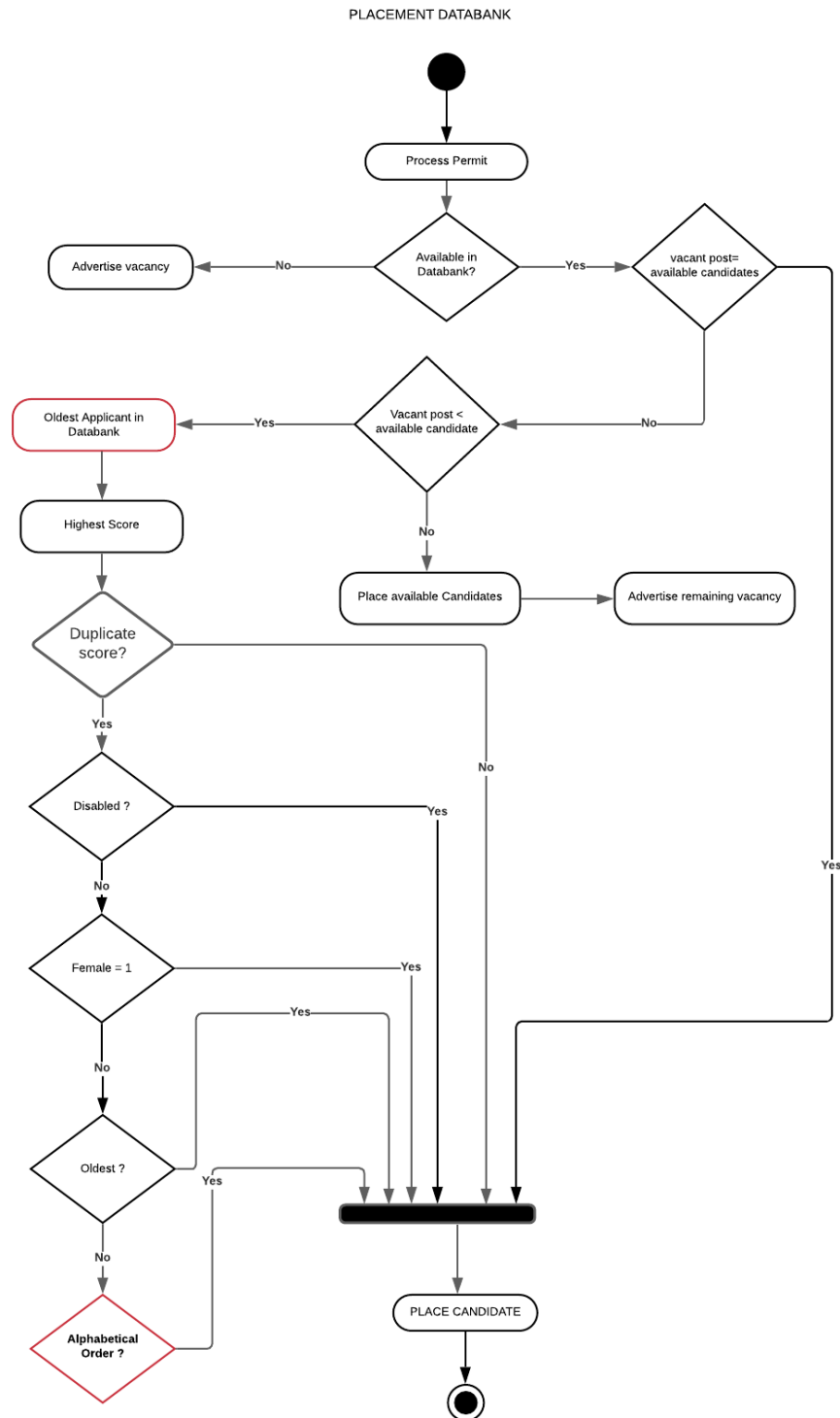


Figure 137: Placement Activity Flow

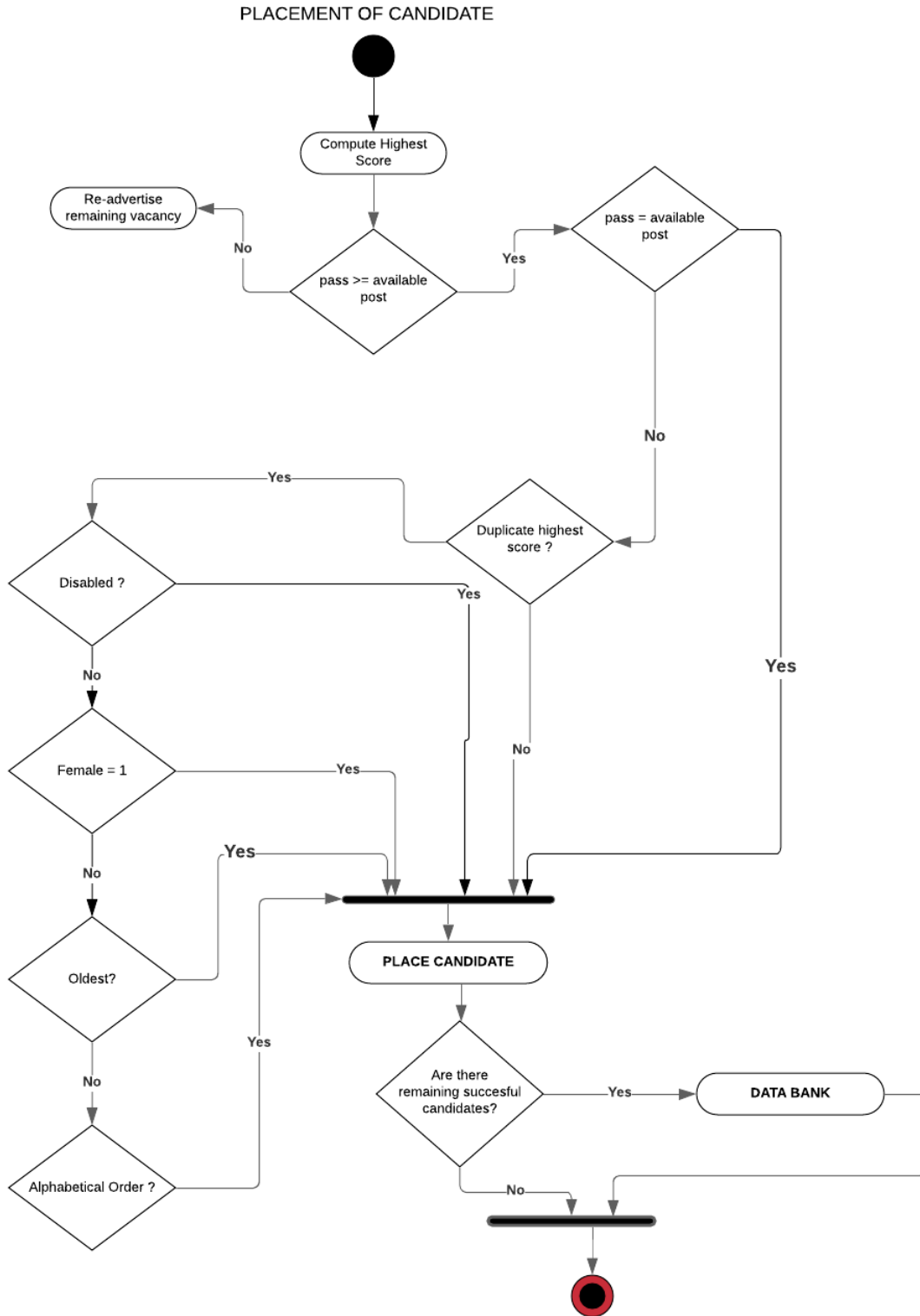


Figure 138: Figure 29: Placement of Candidates

7.0 MOCKUPS (User Interface (UI) and User Experience (UX) Design)

Our 3-week design sprint was definitely not enough to completely redesign Ajira Portals' web UI, however, we feel that we tackled the design task project successfully. Our UI/UX met the needs of our applicant persona by making the job searching process quick, easy, convenient, and transparent. Although we did not have the time to fully redesign the employer's side of the web app, we took our employer persona's needs and frustrations into consideration in our design.

As AP's existing web app was identified to have usability issues, it needed a responsive web app designed from scratch to improve a noticeably cumbersome experience.

Our design process consisted of 5 phases which were executed using agile methodology: 1) Research 2) Plan 3) Design 4) Test 5) Iterate.

Personas

To compile and visualize our user research, we took our participants' responses and created 2 affinity diagrams — 1 for job seekers and 1 for employers. From these affinity diagrams, we devised 2 user personas that will represent AP's target users. These personas guided us throughout our design sprint to ensure that we design for our users' specific goals and needs.

Planning

After compiling and analyzing all of our research, we came up with some ideas for Ajira Portal websites and mobile app. Because we were limited by time, the design team focused on the applicant's user flow for the current improvements to the AP portal — how they would navigate the web and mobile app — instead of designing both the applicant's and employer's user flows. This would include the following tasks:

- Create a profile
- Search for jobs
- Apply to jobs
- feedback/notifications/messaging
- Track applications and interviews

Site Map

With these features in mind, we created a site map to help us visualize the structure and organization of the content in the web and mobile app.

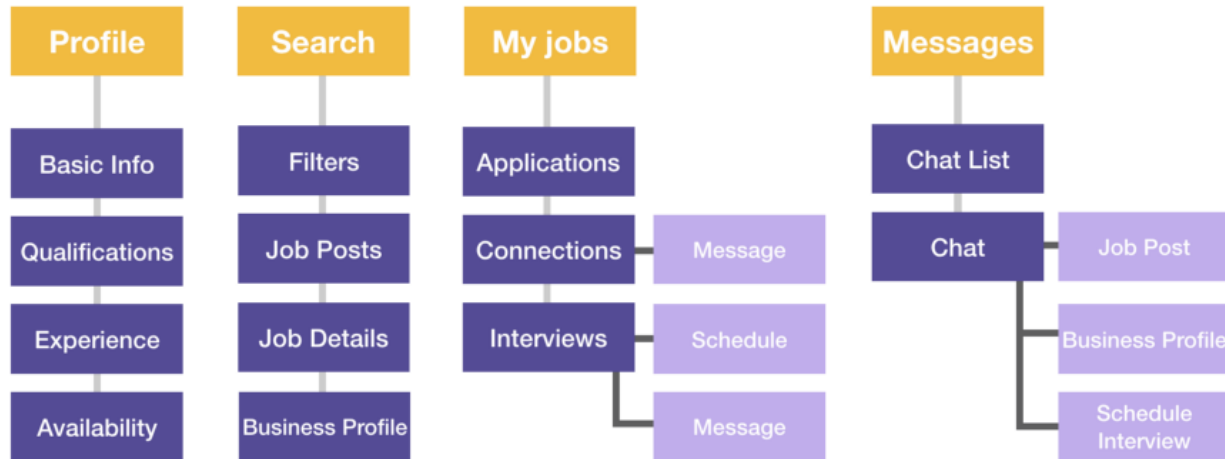


Figure 139: UI/UX Sitemap guide

UI Design Direction

As we began the design stage of our project, we had to nail down the style direction that AP's web and mobile app would take. We wanted the platform to seem friendly, modern, and fresh, while still evoking a professional and trustworthy feel, so as to resonate with our young millennial users.

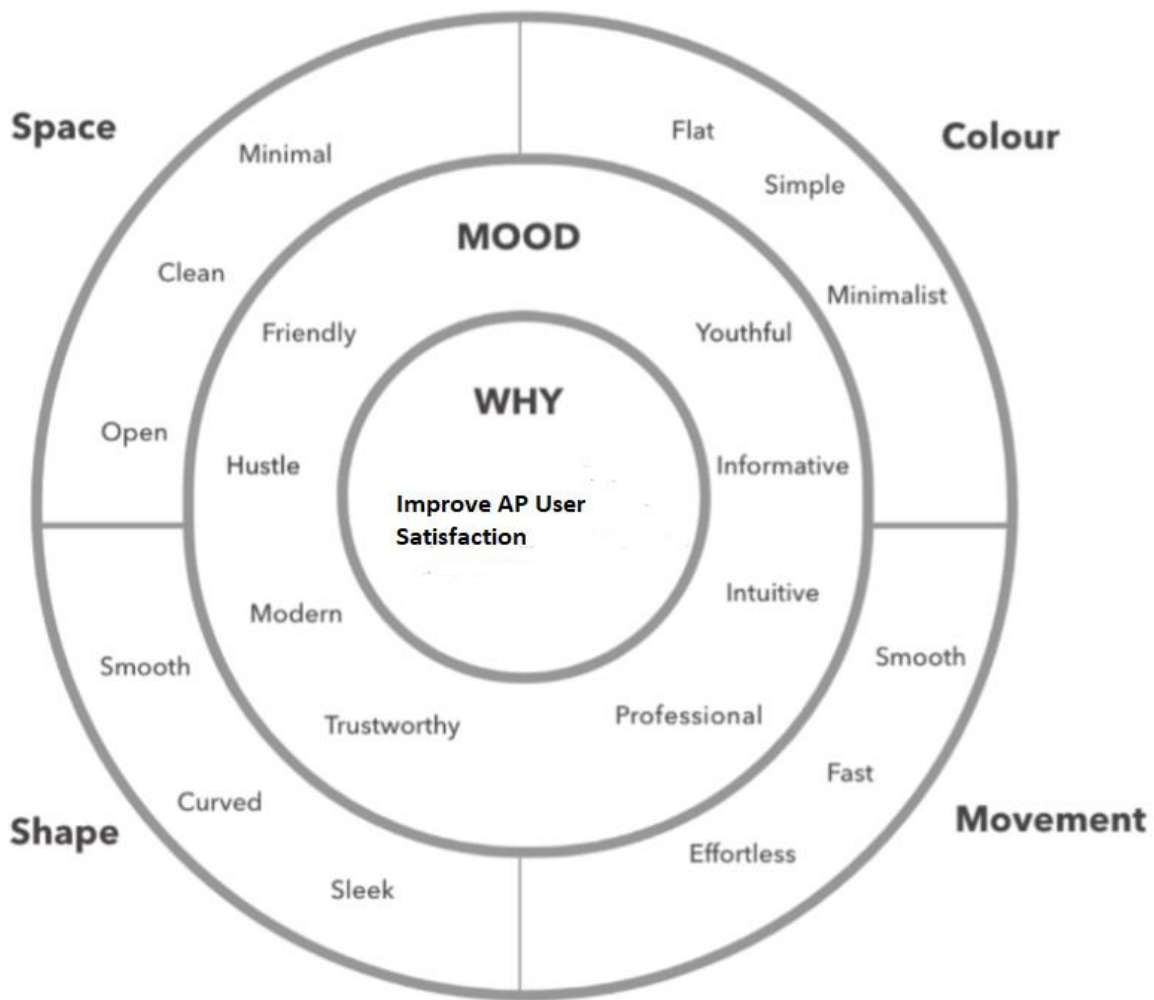


Figure 140: UI/UX Inception

Testing

We tested our design mockups. The goal was to find out if the web and mobile app we designed were straightforward and easy to navigate. The task was to create a profile, find a bar-back position, apply to the job, and schedule an interview (view interview schedule and confirm participation). In order for the test to be successful, participants had to successfully complete the task in less than 5 error clicks. The results from our testing showed that 7 out of the 8 attempts were successful, meaning that from a UX standpoint our web and mobile app were good to go!

Web - Desktop/Laptop Screens Mock ups

1. Home page

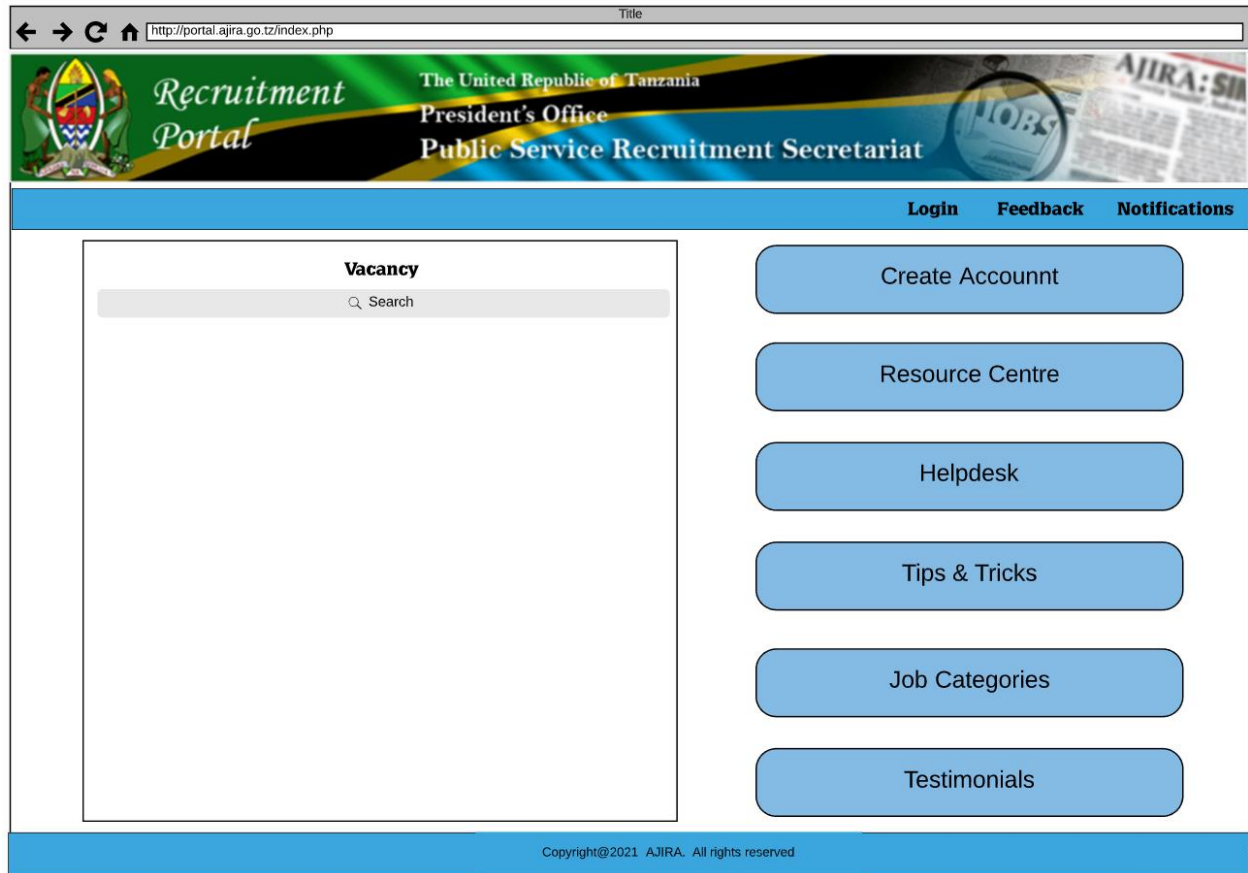


Figure 141: Home page

Landing page

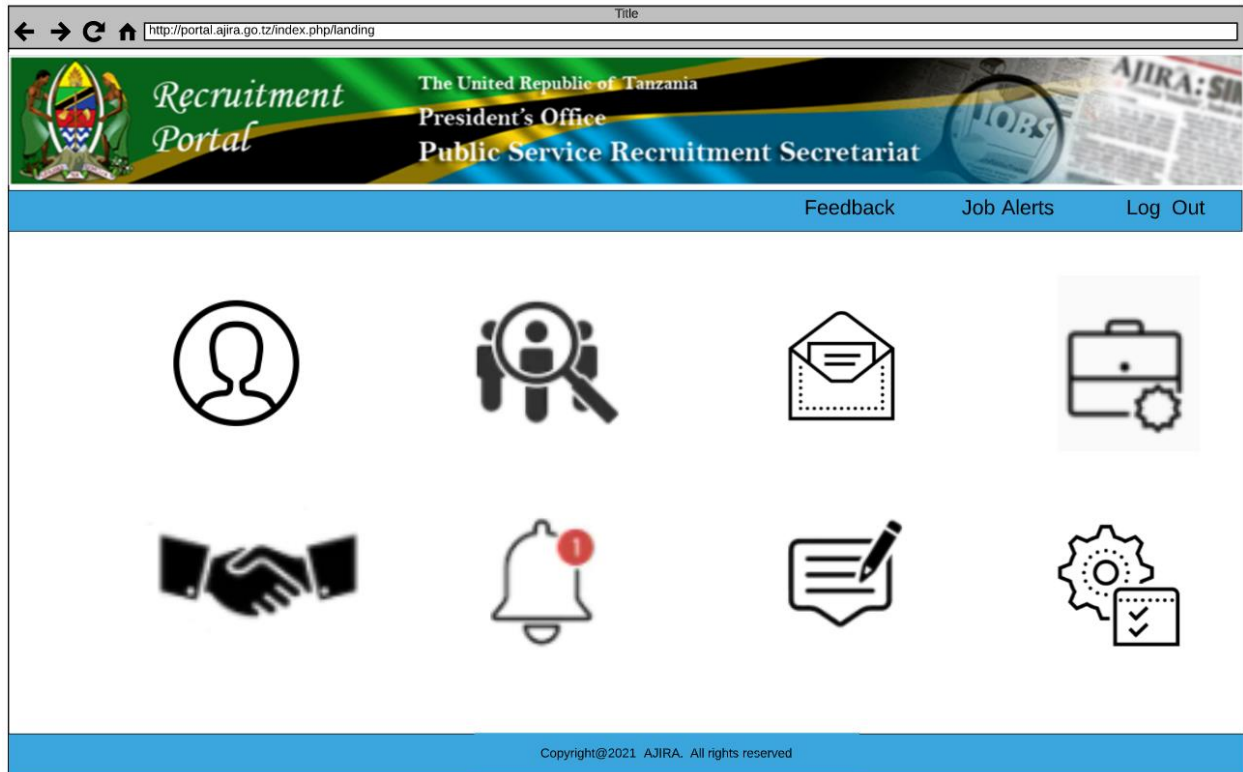


Figure 142: Landing page

My Profile landing page

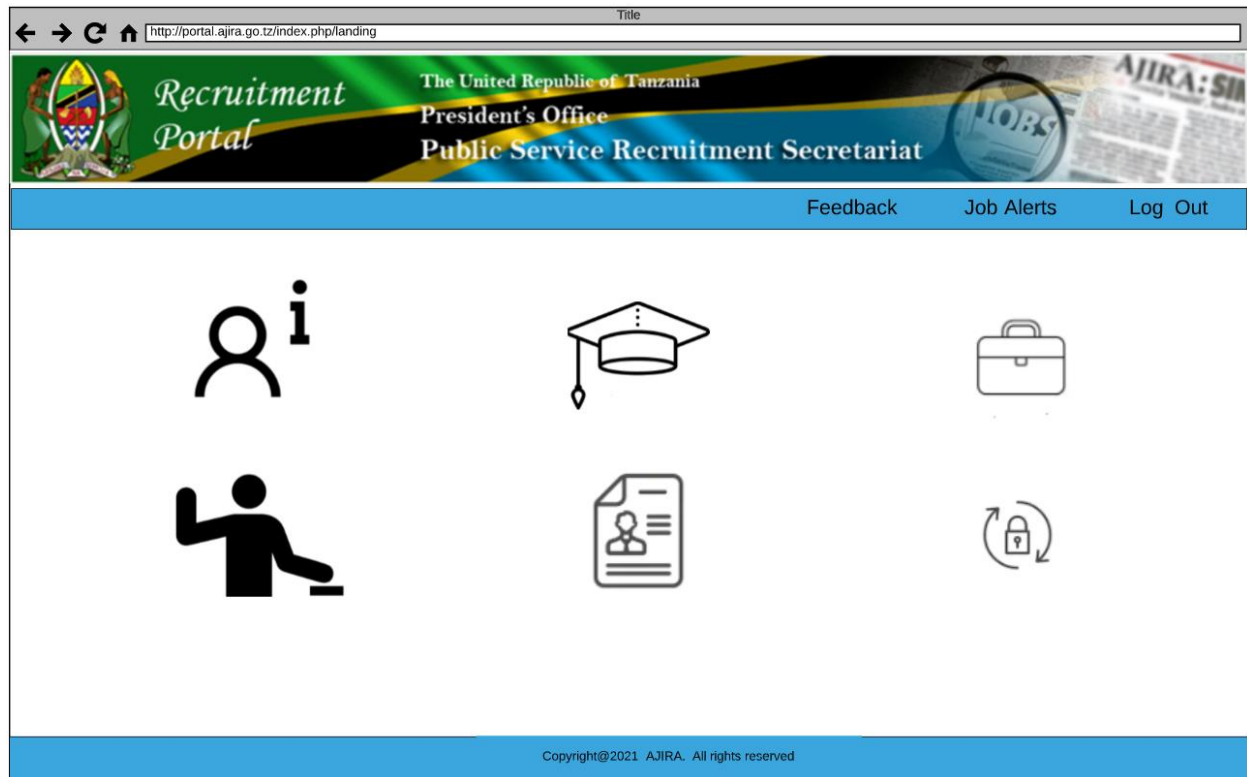
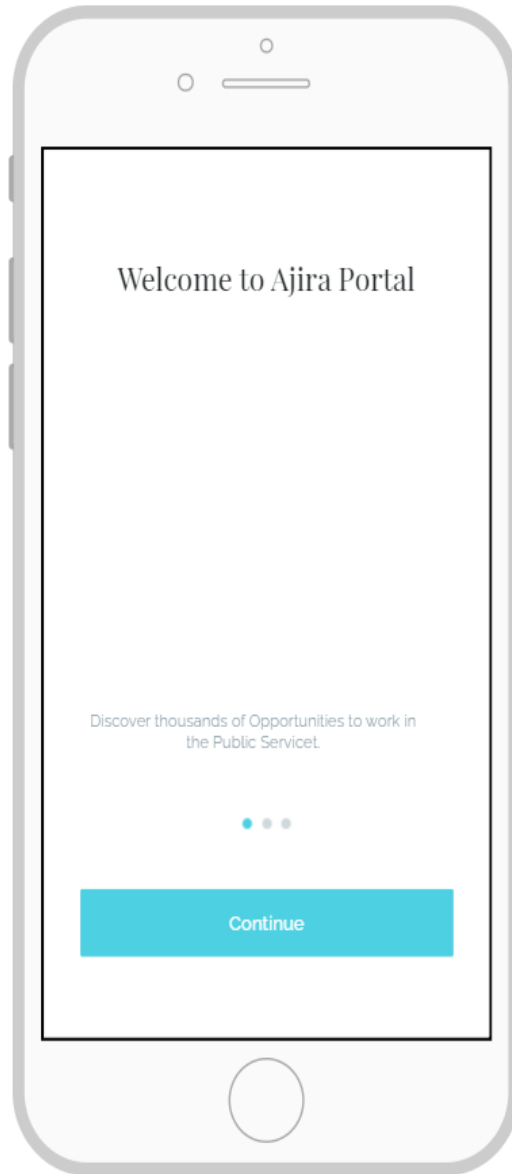


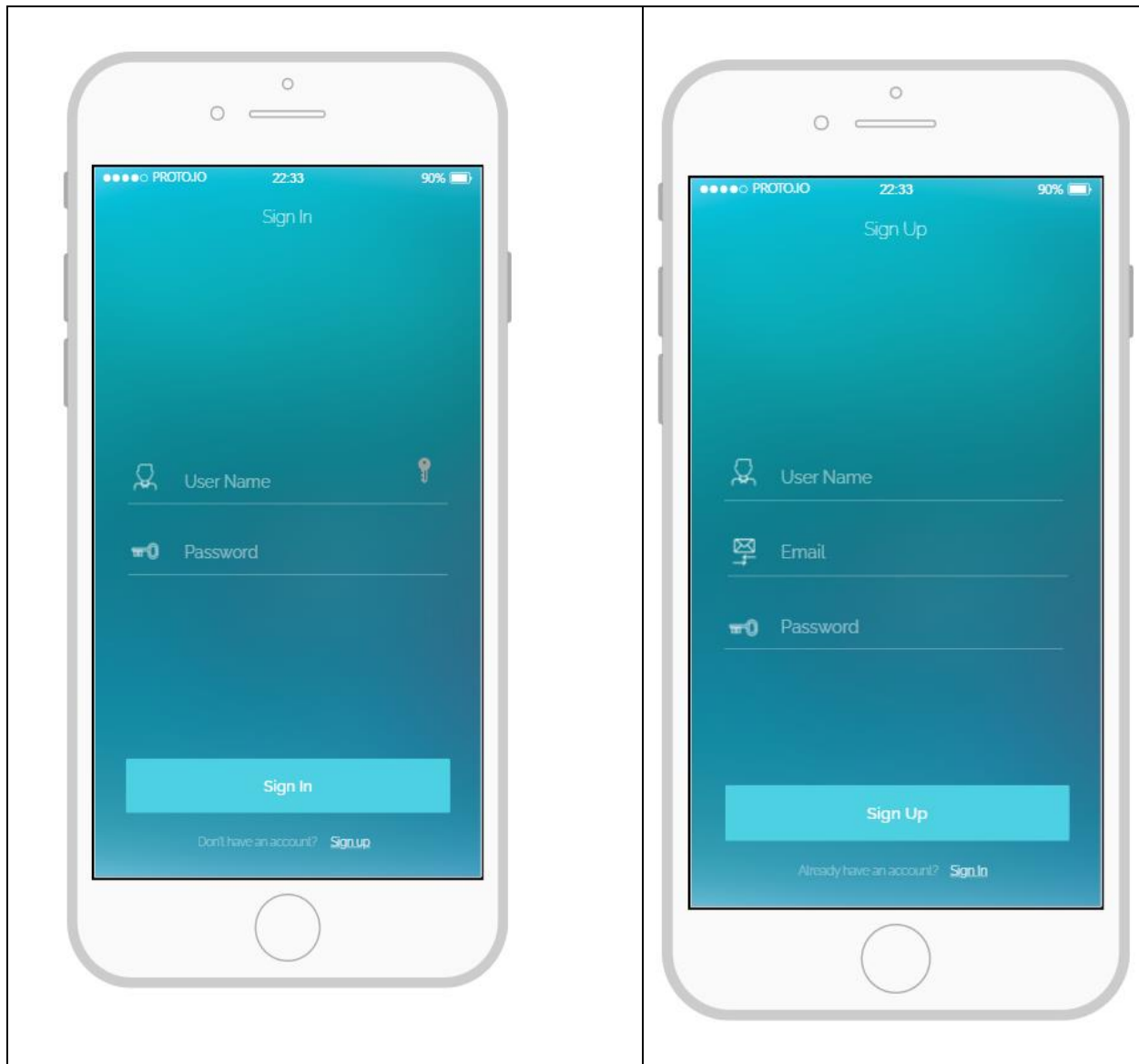
Figure 143: My Profile landing page

Mobile app Screens Mock ups

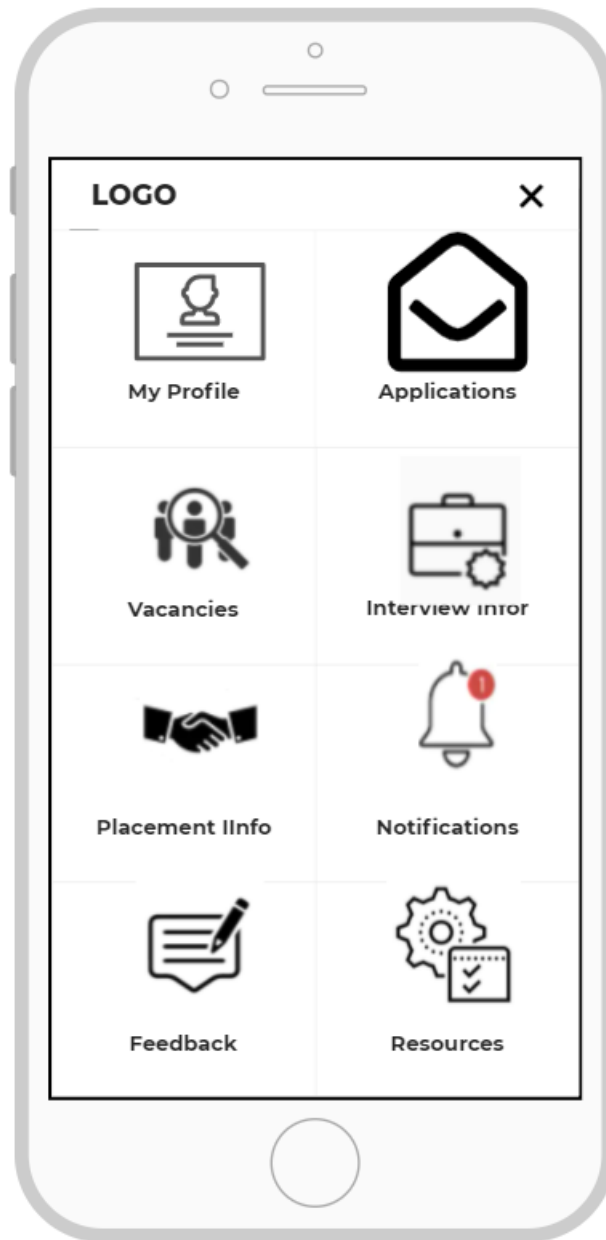
Welcome Screen



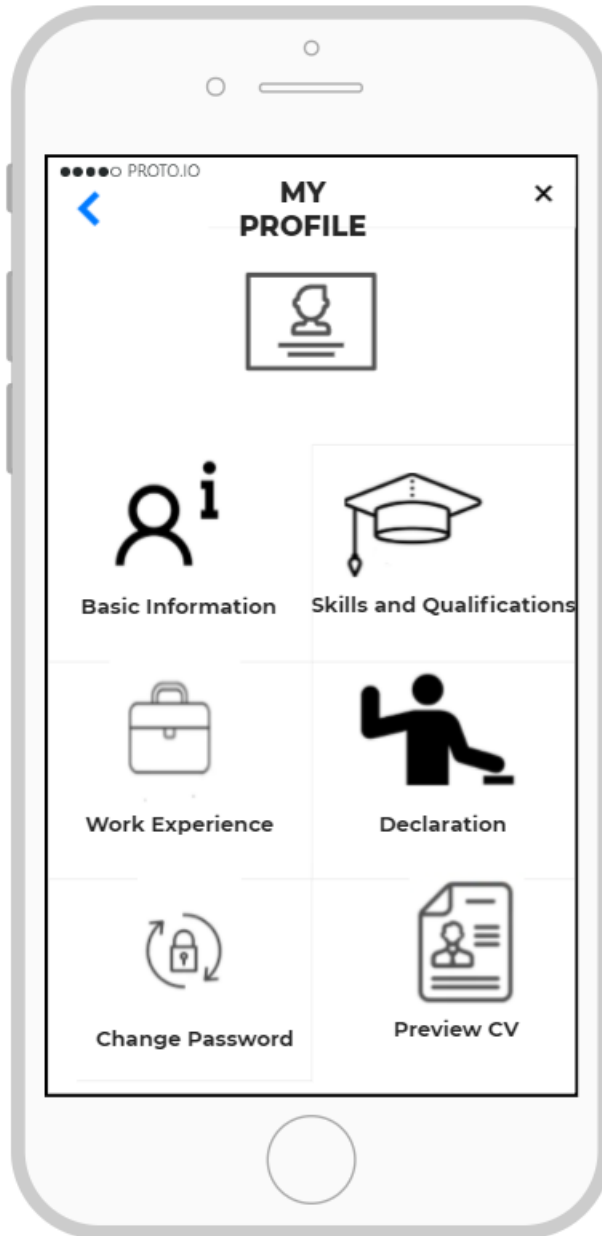
Login/Sign up screen



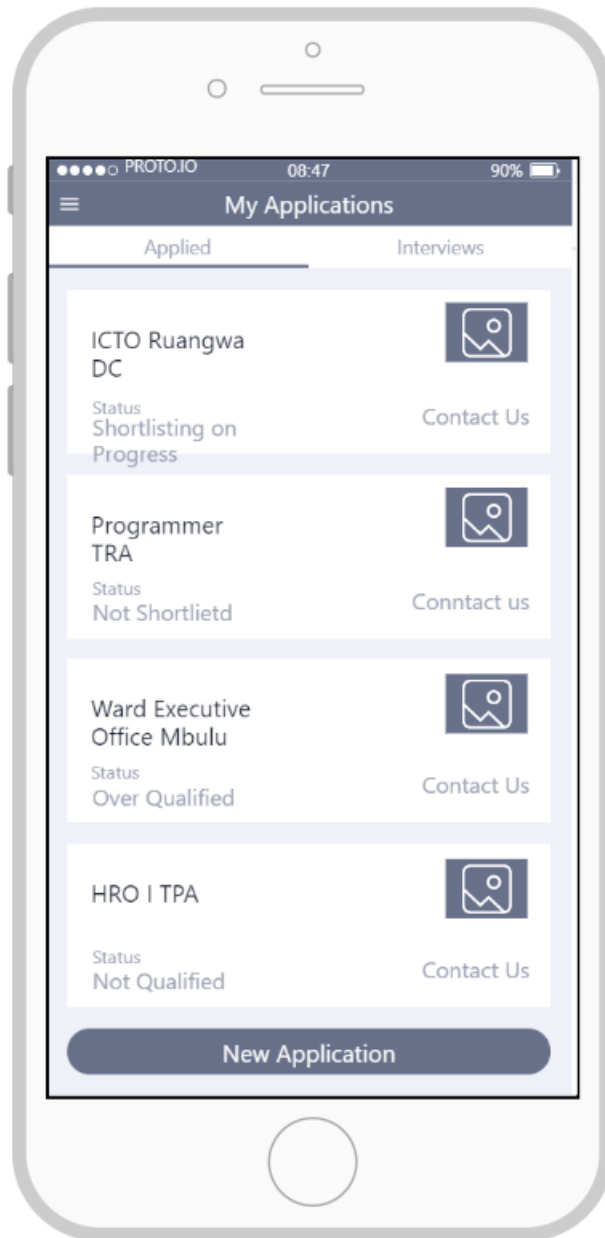
Home Screen



My Profile



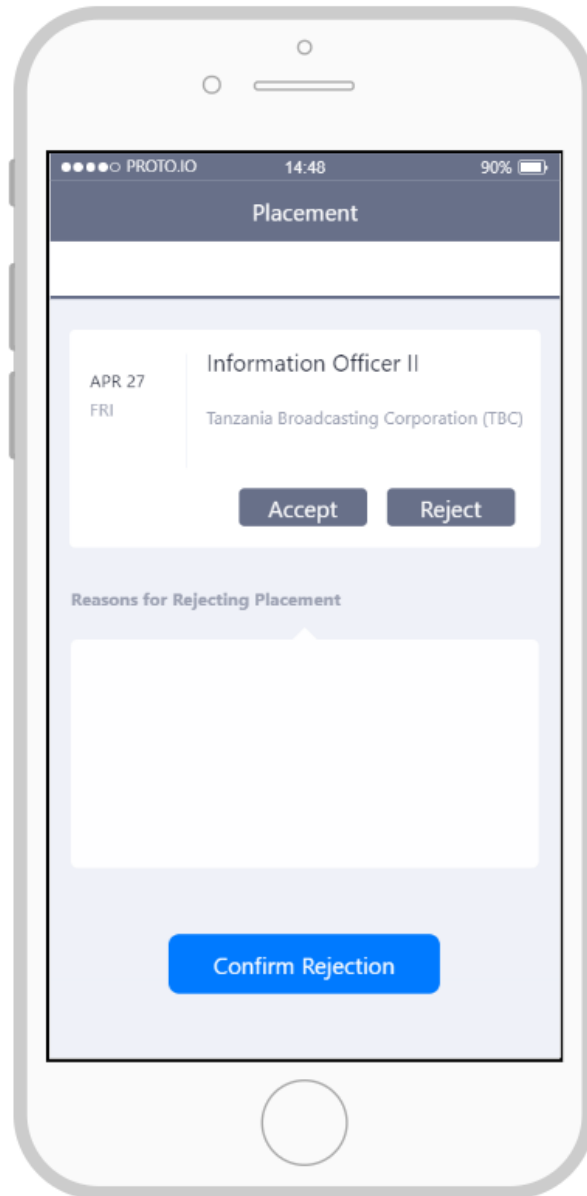
My Applications Screen

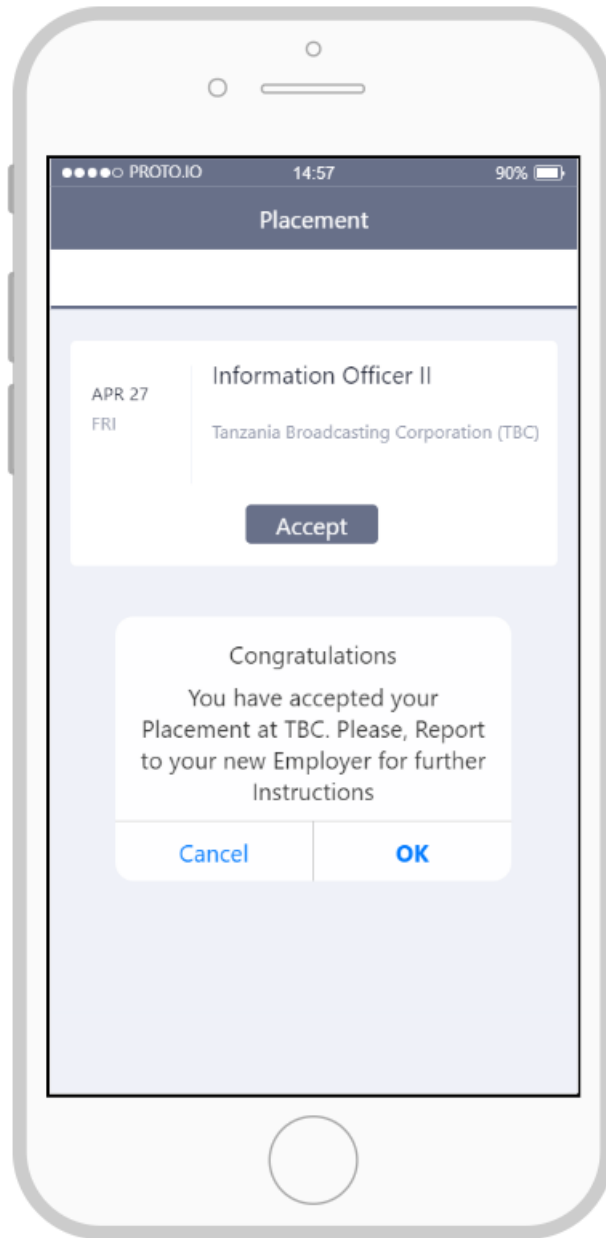


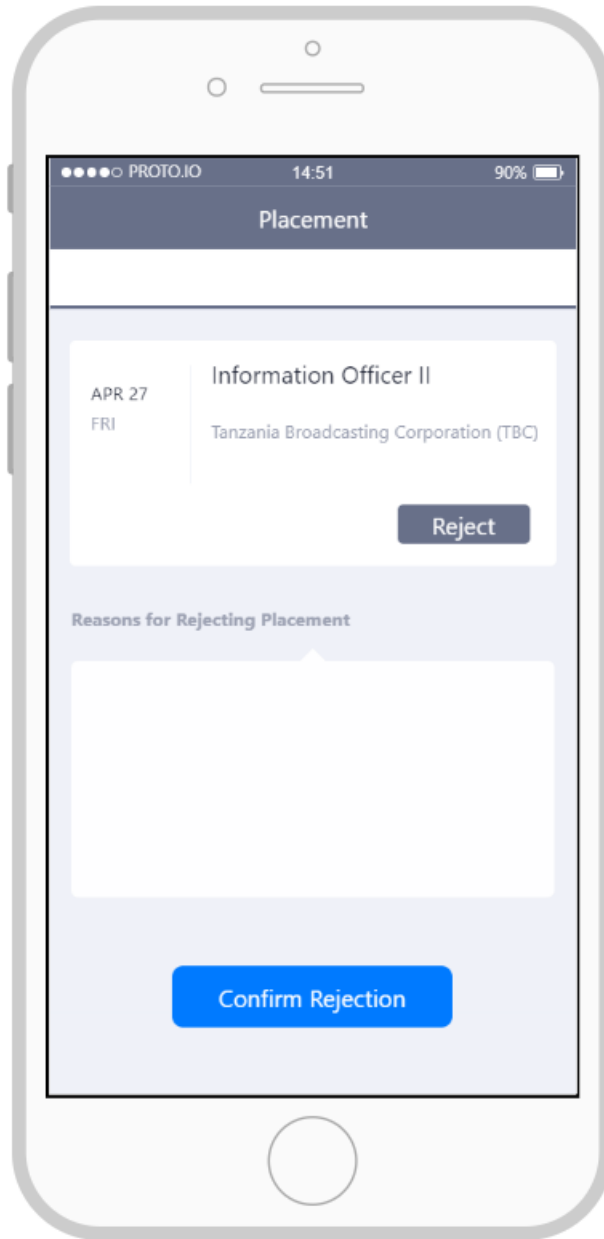
Vacancies Screen



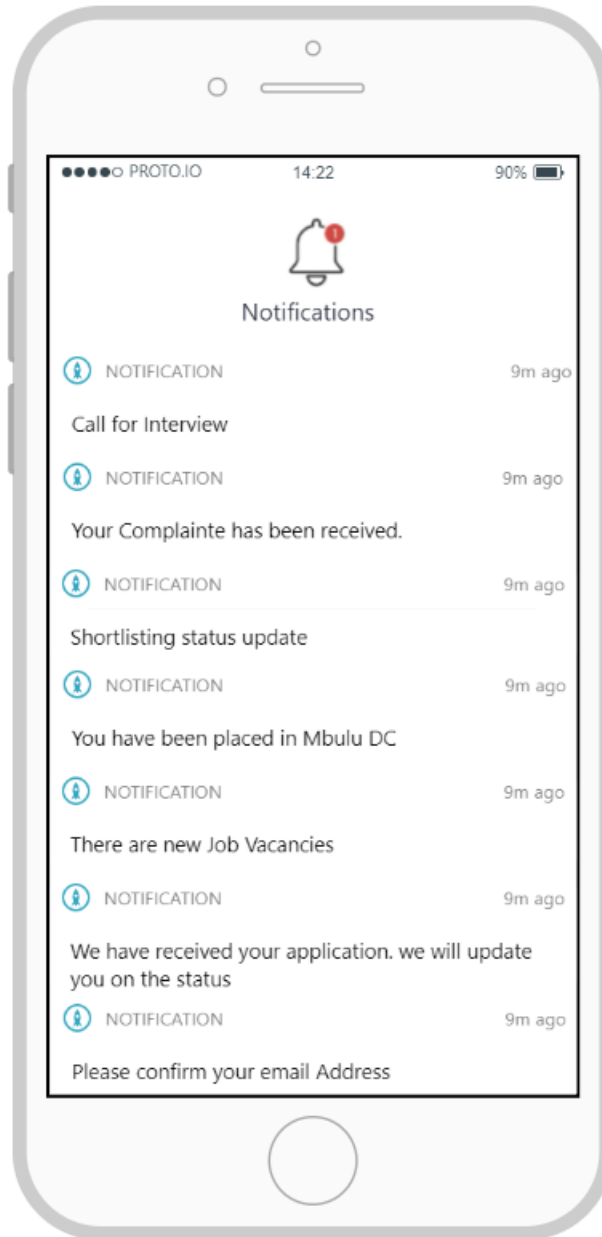
Placement Information



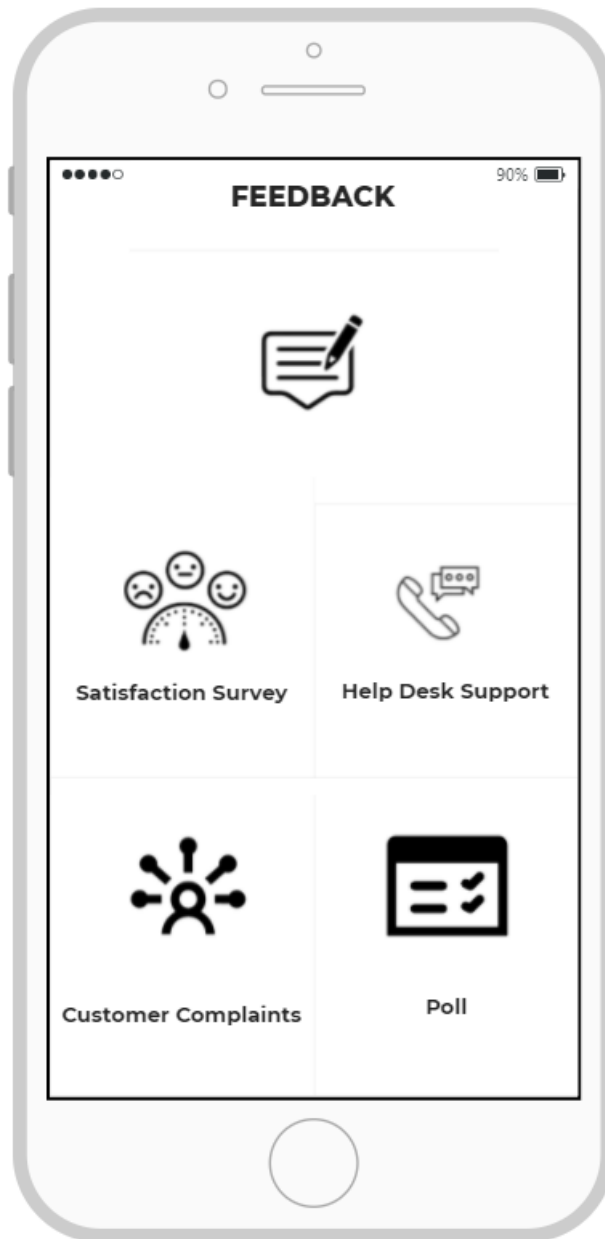




Notifications



Feedback Screen



This design focused on quality than quantity. The team originally started out with a much wider scope than was doable in the time that was available. Once we narrowed our scope, we were able to focus on making our designs top-notch and as robust as possible.

8.0 DATABASE

The improved AP will have one database which is the existing database of the application. This database was critically analyzed and reviewed to access its suitability and compatibility to cater for the required improvements to be implemented in the new AP application. The review was guided by the following metrics and criteria:

- Applicants can register as job seekers, build their profiles, and look for jobs matching their skill sets.
- Applicants can upload their existing resumes. If they do not have one, they should be able to fill out a form and have a resume built for them.
- Applicants can apply directly to posted jobs.
- Employers can register, post jobs, and search job seeker profiles.
- Employers' representatives should be able to register and post jobs.
- Employers can initiate the recruitment process, or perform some other action related to their post.
- Registered users (Applicants) should be able to search for jobs and filter the results based on location, required skills, salary, experience level, etc.

After considering the above criteria, the following three broad functional categories were also analyzed for suitability:

- x. **User Management:** How the portal manages users, i.e. job seekers, HR personnel, and employers.
- xi. **Profile Builder:** How the portal allows job seekers and employers to create profiles and resumes.
- xii. **Posting and Looking Up Jobs:** How the portal facilitates the process of posting, searching, and applying for jobs.

After a thorough review of the database design in relation to the improvements requirements, the design team identified the areas of database design improvements as shown in the table below:

S. No	Improvements	Remark
	Delegated Cadre	User Management, Business Logic
	Education and Health Sectors	

	User Management: User Roles and Permissions	To accommodate Delegated Cadres and Education and Health Sectors recruitment process and other employers not under PO-PSMGG.  roles and privileges.xlsx
	Interview – Panelists results uploads	Automation
	Applicant	Accommodates New requirements for Education and health Sectors
	Integration	New Integration mechanisms

The current Database Schema is shown below



The improved AP Database schema is shown below:

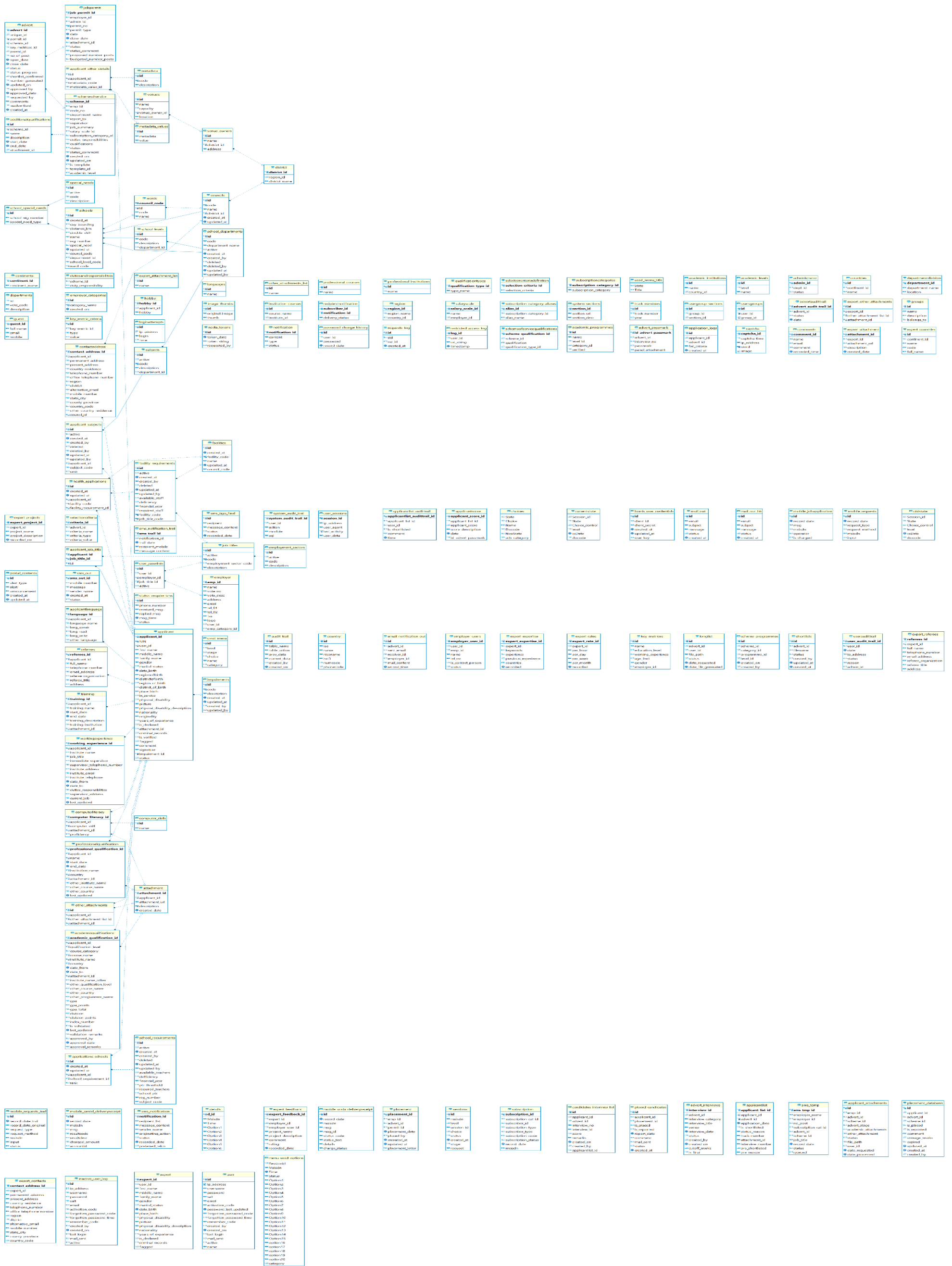


Figure 144: The improved AP Database schema

9.0 ANALYTICS AND REPORTS

Reporting and data analytics is an extremely important component of the improved AP system. Systems and users must be able to access the data in the system via standard



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and ad hoc reports. AP reports are detailed in the attached file:

Major Object Reports

- Applications
- Employers
- Interview
- Placement

Report Use case description

Theme	Need	Description	Acceptance Criteria	Notes
User Interface	Access the report module	User can add, edit, or review report related information	<given>a user with rights to report module needs to launch report module<when>the user selects a report tab/button/section <then>report module is displayed	UI design for module accessibility will be important. Accessing information very quickly is very important
User Interface	Search for reports	User can easily find reports	<given>a user needs to quickly search for a single or multiple data elements <when>the user provides report parameters or wild card <then>the system	Fast and easy search functions are important

			filters all data elements that meet criteria	
User Interface	Access reports	User can easily run reports that I have permissions to access	<given>a user needs to run a report<when> the user searches or selects a report <then> the report is run and displayed	Administration must provide ability to set permissions at the report level
User Interface	Run reports with parameters	User can easily select different parameters for the report	<given> the user wants to run a report with valid permissions<when> user selects report <then>a parameter form is presented that allows user to enter various report parameters and pass into report	Common Parameters: Date Range, Group By, Sort By, Filter By, Sum, Average
User Interface	View Reports in Folders	User can easily organize reports by functional area	<given>user has permissions to access report module <when> user selects NEW FOLDER function <then> system allows user to create a folder under PERSONAL REPORTS	Standard Report Objects: Applicants, Employer, Operations, Productivity, Financial, Exceptions, Dashboards
User Interface	Create custom reports	User can easily create their own reports and save them to public or private	<given>user has permissions to create ad hoc reports <when> user selects NEW REPORT <then>NEW REPORT FORM is displayed that allows user to create	UX: Major differentiator opportunity.

		folders	custom report with desired fields, grouping, sorting, filters, graphs, pivots, and logic	
User Interface	Export reports	User can easily email or export to other formats	<given> user has permission to run reports<when>user runs selected report<then>user has options to export or email to standard file formats	CSV, PDF are two most common
User Interface	Standard Reports	User can easily view common and standard reports	<given> user has permission to run reports<when>user can easily find and select reports<then>user can run desired standard reports with various parameters	Users cannot SAVE standard reports. Only SAVE AS to Personal Workspace

10.0 SECURITY CONSIDERATIONS

This section outlines security controls review of the existing system as an input to the design of improved AP portal that need to be taken into consideration during AP portal improvements to meet the new and improvements requirements during the development phase to implement the approved improvements. The aim of the system design review was to ensure that the improved AP portal will continue to effectively secure the systems, networks, and software as a security-first approach to data protection that allows PSRS to not only meet compliance requirements but defend themselves from theft, unauthorized access and modifications, and accidental or unintentional damage to data and or system.

The table below shows the results of security design review for the existing and their suitability for accommodating new improvements.

Security Control	INPUT VALIDATION
Description	This is the property of testing any input supplied by a source (an end-user, another application, a malicious user, or any other sources). It prevents improperly formed data from entering an information system, the application checks and validates any input supplied by a user entered into a system.
Scope	Application control
Security Goal	Integrity
Risk	SQL Injection, XSS
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUTHENTICATION AND AUTHORIZATION
Description	These are mechanisms to ensure that only users who are authenticated and authorized are granted privileges to

	access the system.
Scope	Application control
Security Goal	Data confidentiality and Integrity
Risk	Unauthorized access, Elevation of privilege
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	PASSWORD MANAGEMENT
Description	This section describes the proper way of managing passwords used within the system
Scope	Application control
Security Goal	confidentiality
Risk	Weak passwords are susceptible to attacks
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	SESSION MANAGEMENT
Description	Session management refers to the process of securely handling multiple requests to a web-based application or service from a single user or entity. Websites and browsers use HTTP to communicate, and a session is a series of HTTP requests and transactions initiated by the same user.

Scope	Application control
Security Goal	Confidentiality and integrity
Risk	repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	ERROR HANDLING
Description	This is the process of handling all errors, logs, and exceptions raised during the system operations. System should provide the best way to handle error and logs to avoid exposing system operation issues when error occurs e.g. system data and passwords.
Scope	Application control
Security Goal	Confidentiality and Availability
Risk	Disclosure of how the system works and leak of sensitive information about the system
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DATABASE SECURITY
Description	This is to ensure that the database is secured such that only authorized users can access. Database should provide the means for keeping the integrity of data by providing encryption and hashing of data. Sensitive data such as personnel detail and password should be

	encrypted.
Scope	Database control
Security Goal	Confidentiality, Integrity and Availability
Risk	Unauthorized access and modification of data
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	FILE MANAGEMENT
Description	This is the proper testing of all uploaded file if they meet system requirement, this is done by validating fields and source of the file. System should also control the access such that only authorized can access the file. System should provide means to encrypt files
Scope	System control
Security Goal	Confidentiality and Integrity
Risk	Disclosing files information
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	AUDIT TRAIL
Description	Audit trails maintain a record of system activity both by system and application processes and by user activity of systems and applications. In conjunction with appropriate tools and procedures, audit trails can assist in detecting security violations, performance problems,

	and flaws in applications
Scope	System control
Security Goal	Confidentiality, Integrity and Availability
Risk	Repudiation
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP
Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.
Security Control	DISASTER RECOVERY AND BACKUP

Description	This describes the process of creating and storing copies of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data. Backup copies allow data to be restored from an earlier point in time to help the business recover from an unplanned event.
Scope	Database control
Security Goal	Availability
Risk	Preventing system availability in a time of disaster
Control	The controls were found to be adequate and capable to accommodate the improved AP.

System Integrity Controls

The following are security integrity controls designed for the improved AP

- Internal security to restrict access of critical data items to only those access types required by users/operators
- The current system is roles and permission based. Form and field level security will be available in the improved AP system. Based on user roles and permissions, system administrators can control data access by user and provider.
- Audit procedures to meet control, reporting, and retention period requirements for operational and management reports
- Audit logs and audit trail is proposed in the current use cases. All changes to data must be recorded by date, time, and user. Data will be managed indefinitely or until a system admin purges the data.
- Application audit trails to dynamically audit retrieval access to designated critical data.

- Ability to identify all audit information by user identification, network terminal identification, date, time, and data accessed or changed.
- Data audit trails and logging will provide detailed audit of all data. Network and application logs identify network terminations, user terminations, bugs, and catastrophic failures. These allow system admin to improve the application and hosting environment.
- Standard tables to be used or requested for validating data fields
- Industry standard data validation rules, triggers, and processes have been identified.
- Verification processes for additions, deletions, or updates of critical data

Verification of additions, deletion, updates, etc... are controlled in the data validation functions described in another section.

