

REQUEST FOR PROPOSALS



PSET CLOUD

Innovation through collaboration

**The development of a Minimum Viable Product
(MVP) of the PSET CLOUD**



JET EDUCATION SERVICES
THINK EDUCATION. THINK JET.



merSETA
MANUFACTURING, ENGINEERING
AND RELATED SERVICES SETA

RESEARCH • IMPLEMENTATION • MONITORING & EVALUATION

Acronyms and abbreviations

AI	Artificial Intelligence
API	Application Programming Interface
CD/CI	Continuous Development/Continuous Integration
DevOps	Development & Operations
ESSA	Employment Services of South Africa
JET	JET Education Services
merSETA	Manufacturing, Engineering and Related Services Sector Education and Training Authority
MVP	Minimum Viable Product
NLRD	National Learners' Records Database
POPIA	Protection of Personal Information Act
PSET	Post-School Education and Training
PSET CLOUD	Post-School Education and Training Collaboration and Learning Opportunities for the Utilisation of Data
SAQA	South African Qualifications Authority
SSI	Self Sovereign Identity
UI	User Interface
UX	User Experience
VAT	Value Added Tax

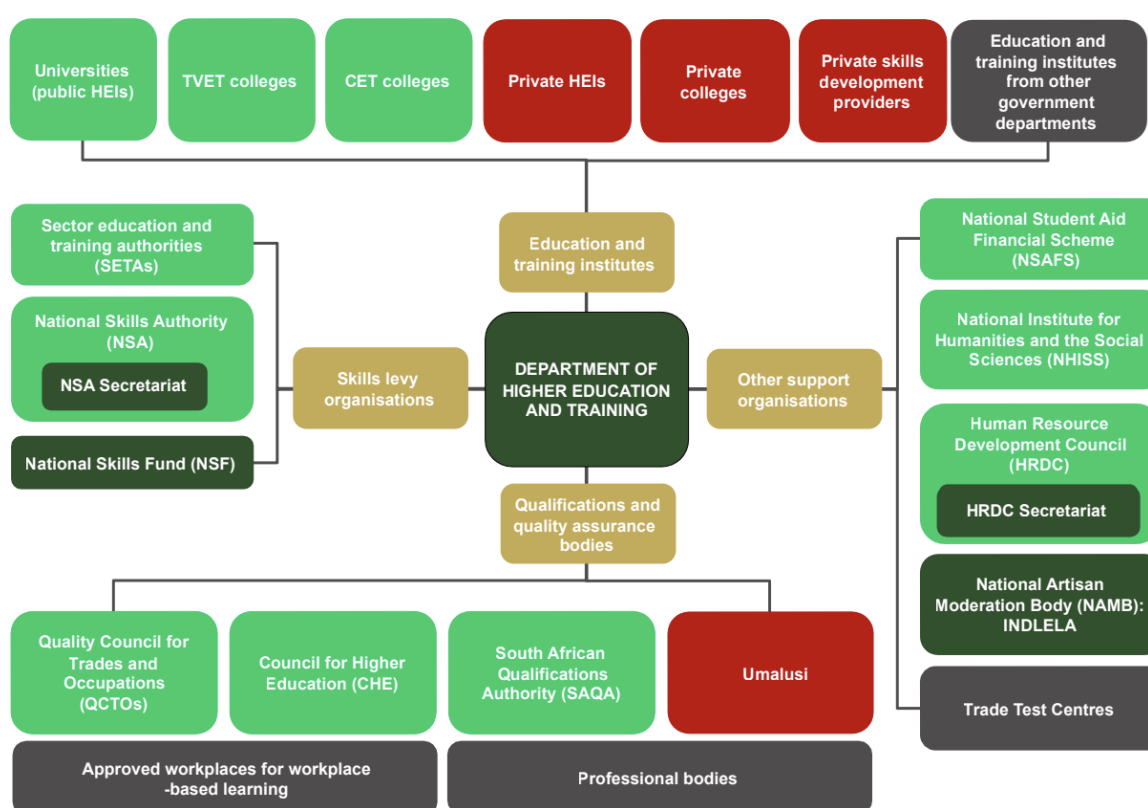


1. Background

JET Education Services (JET) and the Manufacturing, Engineering and Related Services Sector Education and Training Authority (merSETA) have initiated the Post School Education and Training Collaboration and Learning Opportunities and Utilisation of Data (PSET CLOUD) programme that seeks to develop an integrated national digital ecosystem which is interoperable, can be used for effective skills planning and provisioning, and puts information in the hands of citizens and other stakeholders so they can make informed decisions about education, training and career opportunities.

The purpose of the programme is to enable the government and citizens to make informed decisions relating to education, training and work. The programme seeks to ensure that data sets are interoperable, well synchronised and used effectively as sources of information for planning and improving efficiency in the PSET system as well as for individual decisions. In pursuit of this goal, the programme will establish a digital ecosystem that will strengthen, integrate, coordinate, improve efficiencies and solve challenges in the governance and management of the PSET system.

The PSET CLOUD programme has six workstreams that include governance, partnership, advocacy, monitoring and evaluation, and the development of an interactive platform, all of which support the achievement of the PSET CLOUD goals. This terms of reference pertains to the development of an interactive platform which will serve as a main point of contact between learners, jobseekers, citizens, employers, education & training entities, and other stakeholders in the value chain. Stakeholders from the education sectors are depicted in the image below:



Phase 1 of the programme has been completed and involved a situational analysis of the PSET sector, a mapping study, an international review of similar initiatives and a feasibility report. These research reports have been condensed and included in a publication titled [Unlocking the Power of Data: A](#)



[review of the state of readiness of the Post-School Education and Training sector in South Africa for enhanced data interoperability](#), released in November 2020 and available on the PSET CLOUD website, www.psetcloud.org.za. The international review, [Interoperable Data Ecosystems: An international review to inform a South African innovation](#) is also available to download.

Phase 2 of the programme commenced in 2020 with two focus areas:

- [Stakeholder engagement and scenario planning](#);
- Development of a business case for the PSET CLOUD platform for piloting/testing as the programme transitioned into Phase 3 (report available upon request); and

Phase 3 of the programme commenced in 2021 with four focus areas:

- To develop a branding, communication and advocacy strategy as well as a website to update stakeholders on an ongoing basis as the platform is developed;
- Design a suitable governance model for the PSET CLOUD;
- Develop a minimum viable product(MVP1) and Self Sovereign Identity (SSI) Solution for the PSET CLOUD;
- Ready merSETA as the early adopter of the PSET CLOUD.
- Development of a foundational taxonomy for the PSET CLOUD.

This Terms of Reference seeks to outline the development and testing work that needs to be completed by a service provider with a proven track record and significant experience working in the post school education and training space or with post school education training entities.

At the same time as the development of the PSET CLOUD, merSETA is undertaking a review of its systems and particularly data use. This is important as merSETA is positioned as the ‘early adopter’, or first test case of the PSET CLOUD. Therefore, there will need to be close alignment between the work undertaken within merSETA and the product(s) produced by the PSET CLOUD.

Furthermore, pilots external to the merSETA will be introduced to the MVP so it is important to ensure that functions needed to seamlessly interoperate with 3rd party systems are in place.

1. Scope of work

The service provider will be furnished with high level functional requirements along with a prototype of 3 user journeys namely the learner, employer and the education and training provider. The service provider is expected to use both the prototype and functional requirements to produce a backlog which will inform the first set of sprints to be developed. With the functional requirements being high level, the service provider must elicit further requirements which will cover all the 5 focus areas of the PSET CLOUD and add those to the backlog and sprints.

Furthermore the service provider will be furnished with an admin portal that is meant to manage these 3 user interfaces along with the overall management of the system. This admin portal is blockchain based and uses Self Sovereign Identity (SSI) to manage the system. So it’s mandatory that the service provider has experience working with the technology stack used to develop the admin portal as they will have to integrate the admin portal with the 3 user interfaces along with the other features to be developed on the system. Specifics of the technology stack can be seen in Section 2, titled Self-Sovereign Identity Integration.

The proposed PSET CLOUD platform has a number of key focus areas:



- 1) Mapping and visualisations of demand-side trends
- 2) Opportunity matching
- 3) Credential Verification & Recognition - Using the SSI technology
- 4) The development of recommended learning pathways and
- 5) The recognition of prior learning (RPL)

The SSI project is working with some aspects of credential recognition and with the development of recommended learning pathways, and a long-term vision for the platform is also to provide solutions for the recognition of informal and non-formal learning. The MVP service provider is expected to leverage these efforts as well as develop advanced solutions for these components to create a full solution in these areas.

The MVP service provider should provide a fully functional MVP which leverages *ideal as well as actual* solutions, for example, what can be achieved once interoperability of systems and integration is complete. This MVP will include elements such as direct access to trusted third-party data; the verification of credentials (see the SSI component) as well as the storage, retrieval and sharing of verified credentials; detailed trends mapping (for an example of the kinds of trends and insights we are looking to demonstrate see [the skills OVATE portal in Europe](#)); and recommended education and work opportunities based on both user profiles and current industry trends (for example, we would ideally want to be able to inform PSET CLOUD members working in or training to be in the automotive sector that there is a trend towards demand for hybrid vehicles and recommend courses that can train them on this). It would also be beneficial if the MVP could demonstrate how RPL would be factored into stored credentials, but note this aspect is not expected to appear in the current scope of the MVP and is envisioned as a longer-term development. In short, the MVP should demonstrate what is possible, with those aspects which will then be built out for the MVP clearly indicated. Due to the complexity of the project, the development of the MVP will be an iterative process using agile methodology; thus it is important for the service provider to be familiar with this methodology.

The MVP development process itself will work towards the MVP within the limitations of what we can currently achieve. For example, we do not currently have real-time data or direct data access, so the MVP will leverage the available data of partner organisations such as merSETA, which includes skills requirements data collected annually and data on learnerships, to build the supply and demand insights. Where necessary, dummy data can be used to test various functionalities (for example, opportunities matching); in this case sufficient quantities of dummy data should be used to demonstrate the system. Currently, data is ingested into the system manually and this needs to be expanded. The system should have multiple ways of ingesting data into it, such as:

1. APIs
2. Enterprise Serial Bus (ESB)
3. Message brokers
4. Bulk uploads
5. Web scraping

A first priority is that the MVP must be launch-ready, with desirable functionalities (Real-time trends analysis; Opportunity matching; Recognition/verification/storage and retrieval of credentials including informal learning credentials; Development of learning pathways) that will encourage citizens, higher education institutions and employers to join and contribute their own data to the system. This contributed data must then feed back into the insights we are able to provide on the system. The incumbent service provider is expected to build AI-based algorithms for the different components (Real-time trends analysis; Opportunity matching; Recognition/verification/storage and



retrieval of credentials including informal learning credentials; Development of learning pathways) of the MVP. We are looking for a full, launchable solution that includes all aspects necessary to interact with the platform, including UX/UI. To get an overview of the proposed MVP platform, please click this link to watch the short video. (<https://psetcloud.org.za>)

The full scope of work is as follows:

Stage 1: Inception

The service provider will be furnished with material which they are expected to become thoroughly acquainted with in order to commence with the development of the PSET CLOUD MVP.

The following material will be provided to the service provider, but not limited to:

- Research outcomes from phase 1, 2 and 3
- User journey outcomes
- Specification document
- User and Admin manual of the MVP1 & SSI Admin Portal
- Bitbucket repositories from previous development
- Swagger documentation
- SSI Prototype (3 user interfaces)
- SSI Admin Portal

As part of the inception phase and throughout the duration of the project the service provider will be required to join some meetings or workshops which JET-merSETA deem necessary. It's important that the service provider prepares for this and factors adequate touch points with both JET and the larger project into their budget. Short weekly meetings with the project team, sprint review meetings, periodic alignment meetings with other developers, and contributions to the broader team meetings held monthly by at least one developer and the project manager can be expected. At the conclusion of the project, close-out meetings with both JET and merSETA should be factored into the project budget.

Key deliverables

1. A short inception report with a detailed work plan that spells out the approach, timelines, deliverables, risks and mitigation strategies, budget and key resources.
2. A revised/agreed functional specification document which outlines the work to be completed during the contract.

Stage 2: Functional Requirements Specification

There are requirements already drafted for the MVP which you can access [here](#), though these are not complete and final. The service provider will be required to elicit and document the requirements for the rest of the critical components to be developed for the MVP.



A significant amount of ground has been covered on capturing requirements for the opportunity matching component, so the focus will be on 1) mapping and visualisations of demand-side trends; 2) credential recognition & verification; 3) the development of recommended learning pathways; and 4) The recognition of prior learning (RPL). The functional requirements must then be demonstrated through the development of a MVP which will showcase how these requirements translate into functioning MVP for the project team to engage with. Once the JET project team has reviewed and are satisfied with the requirements, then the requirements can be signed off.

Key deliverable

Signed off Functional Requirements document.

Stage 3: MVP Prototype Design Review & Report

Upon the completion of the development of the functional requirements the service provider might need to improve the current design of the prototype by including the new identified functionalities from the functional requirements that are not covered in the current prototype. During the inception phase, the service provider, together with the JET and the merSETA team will flash out all possibilities for prototyping these additional requirements in line with project deliverables and timelines.

An important consideration at this stage is that feedback from the JET-merSETA team as well as end users is taken into account and revisions to the platform reflect the inputs received during sprint sessions. Under no circumstance is the service provider meant to develop features or functions without the approval of the JET-merSETA team.

Key deliverable

A development delivery roadmap for all signed-off specifications which translates the reviewed requirements into a delivery sprint schedule (work breakdown structure) document that is agreed to and signed off by the JET-merSETA team.

Taxonomy

The PSET CLOUD team is currently researching taxonomies best suited for the MVP to allow for (1) Demand-Supply side opportunity matching, and (2) Development of recommended learning pathways. A service provider has already been appointed for the development of this taxonomy work and touchpoint engagements are expected for alignment & implementation purposes. The outcomes of the research will have a bearing on the underlying opportunity matching logic of the PSET CLOUD language used for distilling skills, competencies, knowledge and attributes that can be mapped towards qualifications. The service provider will need to seamlessly incorporate these taxonomies into the MVP. The full scope of work can be found [here](#).

Key deliverable

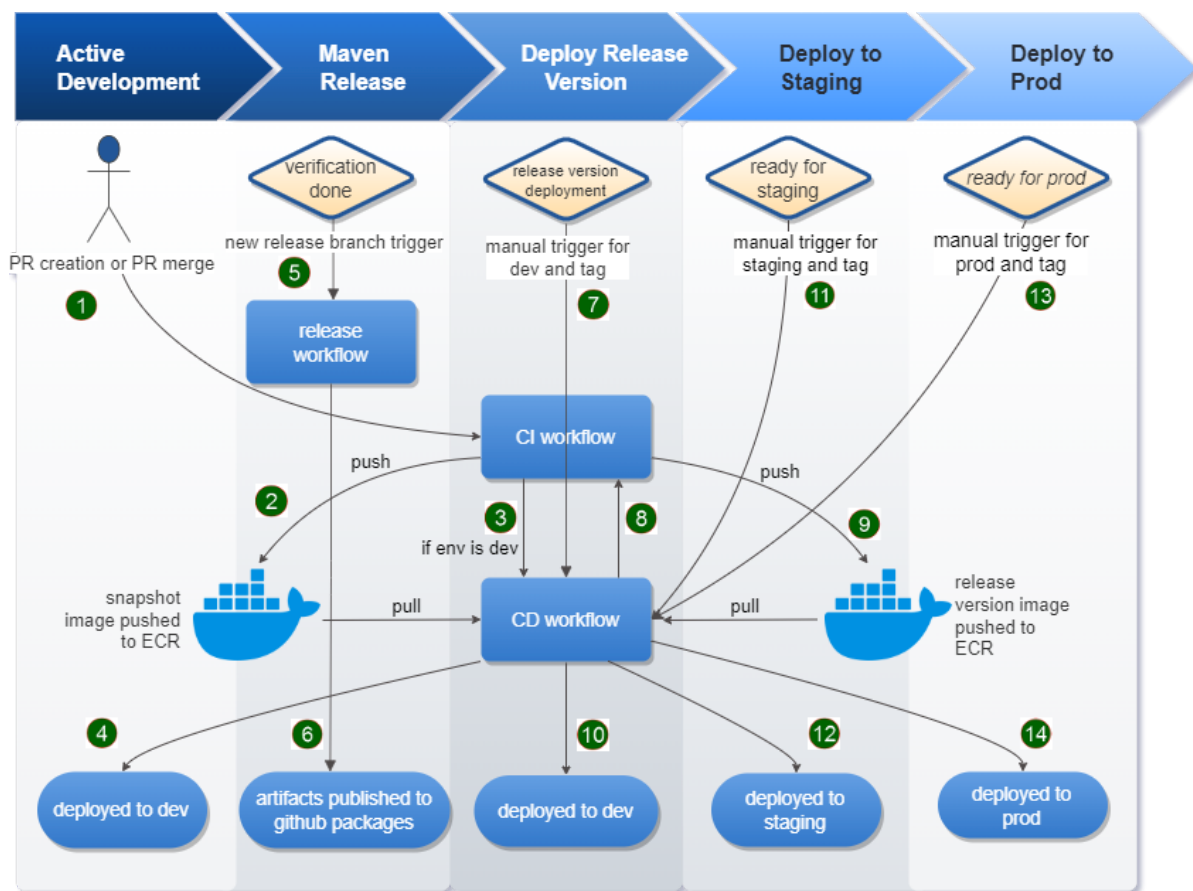
Implement the foundational taxonomy based on the framework and guidelines produced by DPRU. The first draft will be made available before the 22nd of March 2023.



Stage 4: DevOps & Agile: Clientele - Development - Operations

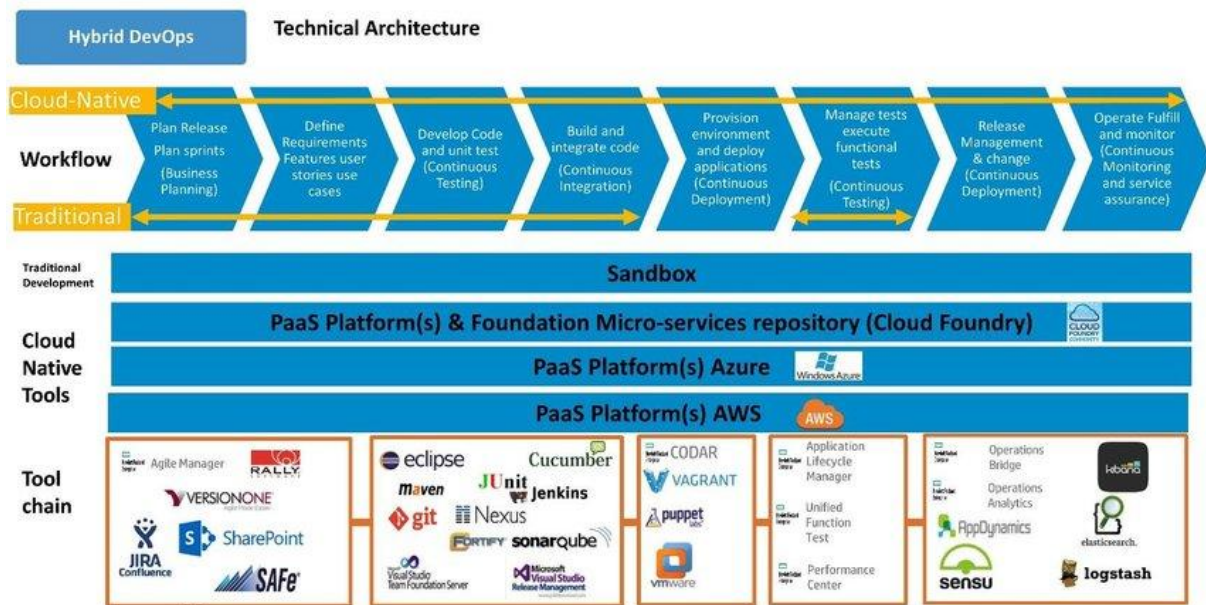
DevOps Pipeline

At the foundation of the development is the laying out of a DevOps pipeline, which will allow for a Continuous Development & Continuous Integration (CD/CI) of the developed code end-to-end, from the planning phase to the maintenance phase, post deployment. This pipeline setup will automate and streamline most of the SDLC and operational processes, from setting up of infrastructure, committing of code, testing of code, and to deployment of code. This automation of processes will ensure a quick code deployment turnaround, quick patch up and update of code, and ensure limited requirement as far as maintenance and support labour of the MVP platform, post-deployment. At the core of the DevOps approach is to ensure alignment between the development and operation's processes. Below is a high-level overview of the DevOps pipeline:



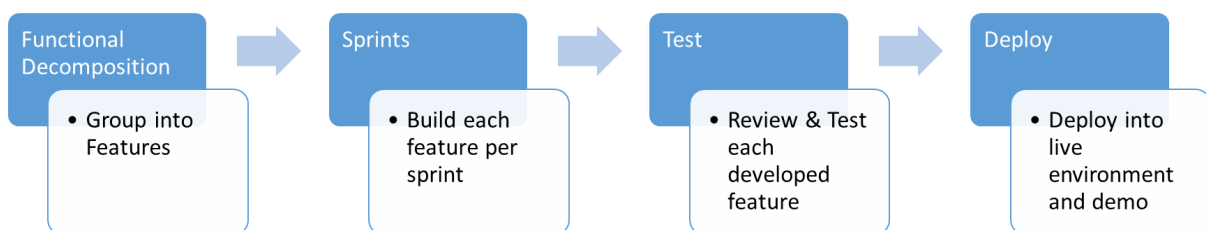
Below is the tech stack involved in the development of the pipeline.





Agile Approach

Agile approach is meant to make the development process customer-centric, ensure quick feedback between client and development team. Below is the high-level outline of the agile approach. While the DevOps approach aligns the development & operations teams, the agile approach aligns development & client teams.



The above agile development approach will assist in not only streamlining the development process, but also speed-up the develop-to-market of the MVP platform. Each sprint will ensure that there is a ready-to-test-and-demo feature. It is understood that the development process will commence with the laying out of the development foundation and infrastructure, in this case, an estimate of this foundation work, as well as the progress report thereof will be required from the service provider.

The development of the MVP should be carried out in sprints with sprint reviews taking place in order to showcase progress made regarding the development of new features on the system. Agile (Scrum) should follow a standard iterative pattern, with sprint planning, execution, review, and retrospective stages. Tentative sprint review dates have been specified in section 7 of this document, however these dates are subject to review by the service provider in agreement with the JET tech lead. Final dates are to be included in the inception report that the service provider is to produce as their 1st deliverable.



Team Responsibilities

Scrum Master	Product Owner	Business Analyst	Testers	Developers	Project Management
<ul style="list-style-type: none">• Oversees the development process• Provides team with required resources.• Ensures product development aligns with business requirements.	<ul style="list-style-type: none">• Takes authority and decisions on product-related tech issues.• Approves & signs-off each Sprint and final product.	<ul style="list-style-type: none">• Documents user stories to be developed• Documents progress of Sprints.• Creates test cases for Sprint sessions, and the report thereof.	<ul style="list-style-type: none">• Tests product after every sprint.• Provides feedback, through surveys, interviews and workshops.	<ul style="list-style-type: none">• Develops the solution according to the user stories provided.	<ul style="list-style-type: none">• Oversee service provider contract.• Report project progress to program.• Feedback from governance structures.

Key deliverables

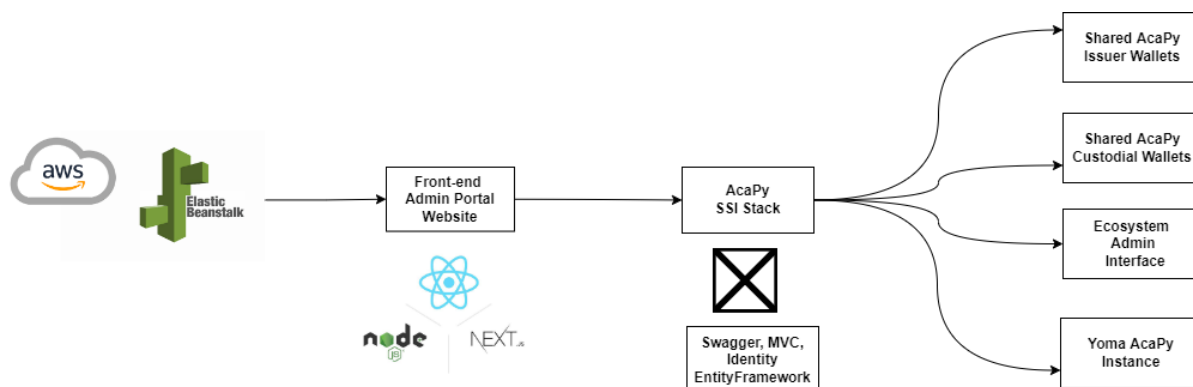
1. Proposed team composition & responsibilities
2. Proposed DevOps pipeline, with login credentials to the complete repository
3. Proposed dev, test & deployment plan
4. Detailed test plan (System, Integration, UAT) with test cases per released features and functions.
5. An approved MVP ready for deployment - Complete and consolidated list of developed features built during each sprint, during the agile/iterative process

Stage 5: Self Sovereign Identity (SSI) Integration

In parallel with the development of the PSET CLOUD MVP2, the development of an SSI solution aimed at integrating seamlessly with the MVP2 is taking place. The incoming service provider is expected to work closely with the service provider (DiDx) responsible for the development of the SSI solution to ensure alignment without overlaps between the SSI component and the MVP2. Below is an outline of the SSI and Admin Portal, to get an extended view of the technology follow this [link](#).



DIDx SSI Stack Super Admin Portal



SSI Stack Super Admin Portal (DIDx SAP)

Overview

This admin portal will provide trusted SSI Stack maintainers the ability to manage their SSI ecosystem. The super admin portal allows SSI ecosystem maintainer to perform the following functions:

1. Manage Trust Ecosystem Schemas
2. Manage Tenants (Custodial Wallets)
3. View Trust Registry Participants
4. Make Connections between Tenants
5. Messaging Between Tenants
6. Issue Credentials
7. Request Credential Proofs
8. Verify Credentials

SAP Authentication

The credential service uses Next-Auth technology for NextJS which helps the session manager at Server Side rendering (SSR) level which makes it safer and more secure.

SAP Technology stack

- Next.js (React) Typescript
- Server Side Rendering (SSR) & Client Side Rendering (CSR)
- Typescript
- Material UI version 5 (MUI)
- Docker
- MongoDB



Key deliverable

Demonstrated and Documented Integration of the PSET CLOUD MVP2 with the SSI Component.

Stage 6: Deployment and hosting infrastructure

Locally deploy the MVP2 through a JET-merSETA designated internet service/cloud provider. The MVP platform is envisaged to be hosted on the current JET-merSETA AWS account, hence the incumbent service provider is expected to have a thorough understanding of the AWS platform. Hosting of the MVP2 will be payable by the service provider.

The service provider is expected to follow standard software development server environment partitioning process, by creating separate and interlinked environments for Code Development, Quality Assurance and a Live environment. The code should be moved into the relevant environment, as and when required (programming, testing, and demonstrating). At each stage of the code migration process, a reputable and secure version control tool should be used to commit and backup each version of the code.

Furthermore, in the event that more stakeholders are onboarded to the PSET CLOUD, the service provider is expected to help with adding those stakeholders on to the MVP2 and to also test the MVP2 with newly-added stakeholders as well pre-existing stakeholders on the MVP2. Should there be bugs found during testing, the service provider is expected to address them in a timely manner or within a time period acceptable to the JET-merSETA team. Lastly, in preparation for the handover, the service provider must work closely with the merSETA team to make sure handover is gradual and engagement/use/outcomes are well-understood. Upon deployment the service provider should conduct relevant unit testing, integration testing and include notes in the coding in line with development best practices.

Key deliverables

1. A detailed outline of the different server environments created, and the code migration process to be followed. Part of this deliverable will come from the DevOps strategy from Stage 4 - DevOps & Agile.
2. Successful deployment of the MVP2 from a sandbox environment to a live environment.
3. Draft user manual & administrator manual

Stage 7: Handover

Handover of the documented source code, user manuals, access details and account details related to the development of the MVP2 must be given to the PSET CLOUD MVP2 technical team. All documents must be delivered electronically in a format specified by the MVP2 lead. JET-merSETA will retain the ownership of the copyrights of all documentation delivered under the contract.



Key deliverables

1. Technical documentation (Documented source code, Swagger Documentation, Testing and Testing Results, Architecture & Maintenance documentation)
2. User Manual & Administrator Manual
3. Hosting Platform Credentials
4. Administrator Access Details to the MVP2
5. Data dictionary
6. Consolidated Sprints Reviews Report
7. Consolidated Sprints Testing Report

Stage 8: Change Management Plan and Support

The service provider is expected to hold workshops for demoing the MVP platform to the whole PSET team as well as train select members from the project team (approx. four to five persons) on administering and using the system. The user manual should be made available by the service provider as a help file through an online application or knowledge-base, so that the users can refer to the manual as and when needed, potentially as part of the PSET CLOUD website or as part of the MVP2. Furthermore, the service provider is expected to provide system support for at least three months after handing over the software. The support should be in person, telephonic and via email, as and when necessary. Support might include additional development work for improvement to the system.

Key deliverables

1. High-level Support Service Level Plan
2. Change Management Plan
3. Conduct orientation training for select members of the project team.

Stage 9: Onboarding Stakeholders

From the success of the [DigiTrans 2022](#) conference and the strategic partnerships engagements that have been taking place, interest from external stakeholders to join the PSET CLOUD as early adopters has increased. Together with merSETA as the first early adopter, the PSET CLOUD seeks to onboard new stakeholders to expand the pool of early adopters.

In the lessons learned and processes followed to integrate merSETA NSDMS as the early adopter of the PSET CLOUD, there's a need for future looking. For this reason, an onboarding document together with lessons learnt and an [Integrations Requirements](#) document is expected to be developed by the service provider to help streamline the onboarding and Integration of stakeholders into the PSET CLOUD and can be accessed [here](#).

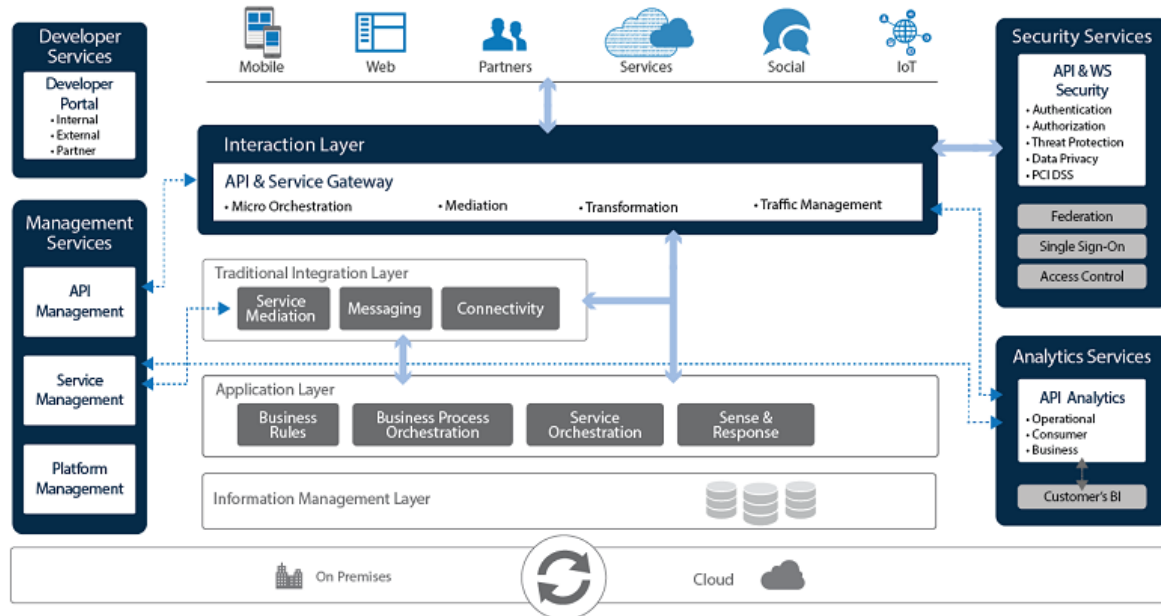
Key deliverables

An early adopter document that outlines requirements for integration with each type of stakeholder; (1) Training provider, (2) Employer, and (3) Quality Assurer.

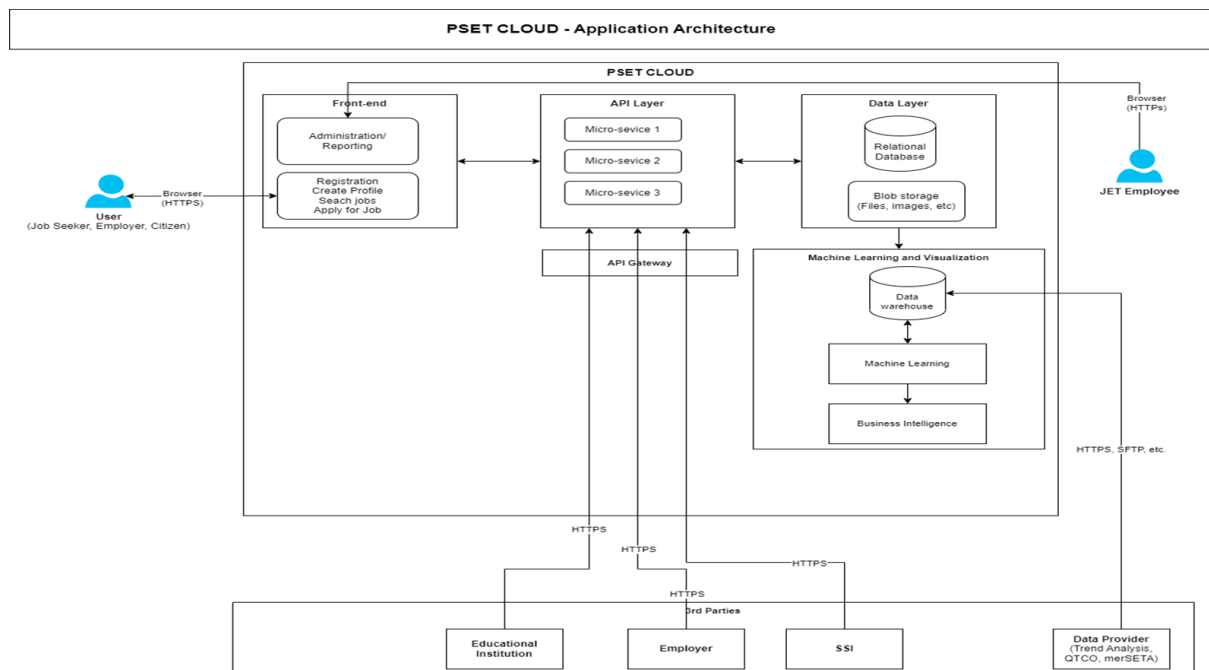


2. Proposed Architecture and Technology

Application Architecture



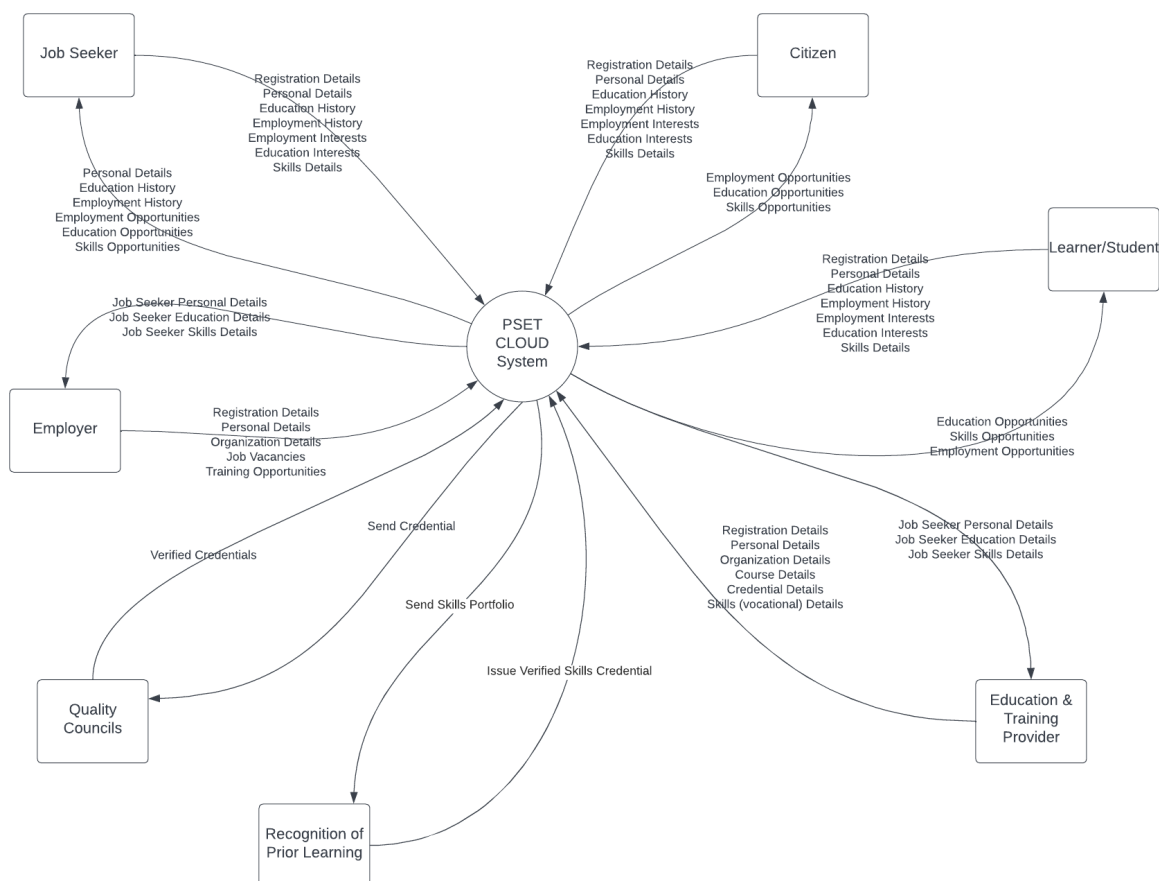
Microservice Architecture View



Business Context Diagram

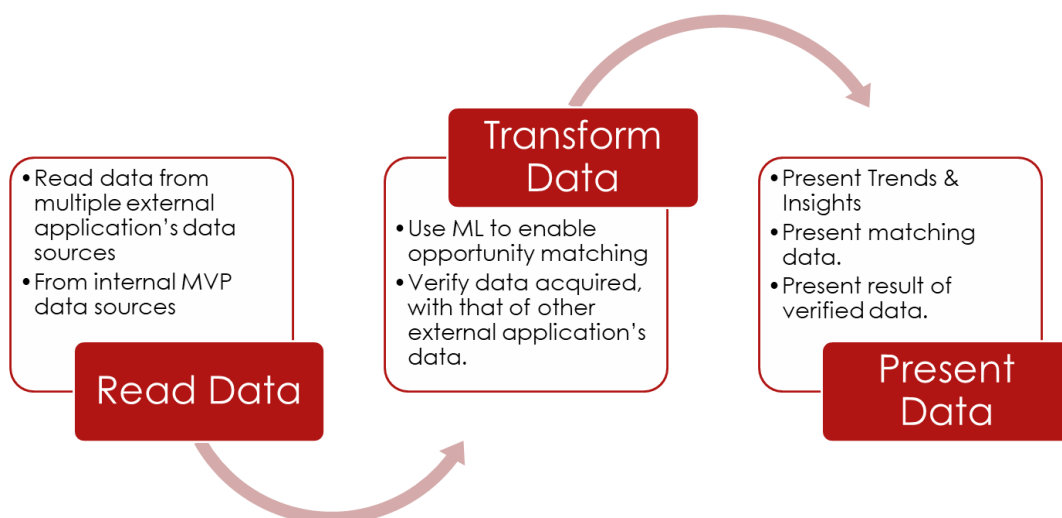
The diagram below outlines the context within which the MVP will be deployed, relevant entities (Jobseeker, Learner, Employer etc.) and their interaction with the platform are used to provide this context and understanding.





Data Architecture

The MVP platform is data intensive, since a larger amount of data will be sourced from various sources, and then manipulated to provide feedback for analysis and insights. Below is a conceptual view of how the journey of this data is envisaged to be:



[illegible]

The diagram illustrates the following use cases and their relationships:

- Use Cases (Circles):**
 - Learner:** The primary actor for the learner's side.
 - Employer:** The primary actor for the employer's side.
 - Job Seeker:** The primary actor for the job seeker's side.
 - Verify Skills:** For verifying skill details.
 - Confirm Education & Training Interests:** For confirming educational and training interests.
 - Match Employment Opportunity:** For matching employment opportunities.
 - Alert Edu & Training/ Employer of your Interest:** For alerting employers of learner interests.
 - Alert Learner of your Interest:** For alerting learners of employer interests.
 - Update Vacancy & Employment status:** For updating job opportunities.
- Entities (Cylinders):**
 - Learner (DB):** Stores learner-related data.
 - Employer (DB):** Stores employer-related data.
 - Employment Opportunities (DB):** Stores available job openings.
 - Education & Training (DB):** Stores educational and training records.
 - Job Seeker (DB):** Stores job seeker-related data.
 - RPL (DB):** Resume Portfolio Library.
- Key Interactions:**
 - Learner** interacts with **Learner (DB)** for **Log-in Details** and **Confirm**.
 - Learner** interacts with **Verify Skills** to **Verify Skills Details** and **Verified**.
 - Learner** interacts with **Confirm Education & Training Interests** to **Match Edu & Training Interests**.
 - Learner** interacts with **Match Employment Opportunity** to **Send Matched Opportunities**.
 - Learner** interacts with **Alert Edu & Training/ Employer of your Interest** to **Send communication request**.
 - Employer** interacts with **Employer (DB)** for **Log-in Details** and **Confirm**.
 - Employer** interacts with **Employment Opportunities (DB)** for **Log-in Details** and **Confirm**.
 - Employer** interacts with **Match Employment Opportunity** to **Send Matched Opportunities**.
 - Employer** interacts with **Alert Learner of your Interest** to **Send communication request**.
 - Job Seeker** interacts with **Job Seeker (DB)** for **Log-in Details** and **Confirm**.
 - Job Seeker** interacts with **Match Employment Opportunity** to **Send Matched Opportunities**.
 - Job Seeker** interacts with **Alert Edu & Training/ Employer of your Interest** to **Send communication request**.

Variations

- If a learner captures specific interests on the system, the system needs to chart a learning pathway for that student so that they can reach their desired goal.
- A learner should must be able to capture their education and training interests.
- If a learner is seeking in-service training, they should be connected with employers & training providers that are offering training.
- A learner needs to capture his/her CV on the system in order to be matched for opportunities on the platform.



```
graph TD
    subgraph Actors
        Employer[Employer]
        JobSeeker[Job Seeker]
    end

    subgraph UseCases
        UC1((Login Into Account))
        UC2((Upload Employment Opportunities))
        UC3((Read Employment Interest))
        UC4((Match Employment Opportunity with Employment Interest))
        UC5((Create Matched Profiles Document/Email))
        UC6((Matched Employment opportunities & verified credentials))
        UC7((Request View Access to CV))
        UC8((Grant View Access to CV))
        UC9((Invite Job Seeker for Interview))
        UC10((Update Vacancy & Employment status))
        UC11((Send Match Alert))
    end

    subgraph DataStores
        DS1[(Employer)]
        DS2[(Job Seeker)]
        DS3[(Employment Opportunities)]
    end

    subgraph ExternalSystems
        ES1[Email]
        ES2[CV]
    end

    Employer -- Verify --> UC1
    Employer -- Confirm --> UC1
    Employer -- Log-in Details --> UC1
    UC1 --> DS1
    UC1 --> UC2
    UC2 --> DS2
    UC2 --> UC3
    UC3 --> UC4
    UC3 --> DS2
    UC4 --> UC5
    UC4 --> DS3
    UC5 --> UC6
    UC6 --> UC7
    UC6 --> UC8
    UC6 --> UC9
    UC6 --> UC10
    UC6 --> UC11
    UC7 --> UC8
    UC8 --> UC9
    UC9 --> UC10
    UC10 --> DS3
    UC11 --> ES1
    UC11 --> ES2
    UC11 --> UC7
    UC11 --> UC8
    UC11 --> UC9
    UC11 --> UC10
```

At the core of the MVP value proposition, is the interoperability with various external applications to source data to be transformed into valuable insights for the different stakeholders of the platform. The prospective service providers to develop the MVP platform, should ensure that the MVP platform can not only interoperate with early adopter applications, but also is ready to plug into future applications to enable this interoperability.

Technology Stack



Component	Tech Stack	Rationale
Frontend Framework (libraries)	React (Node.JS) [MERN]	
Programming Languages	Javascript (Node.JS)	
Services	Analytics, ML, Big Data, Web Scaping	Tech services used by MVP
Backend Framework	Django (Python)	Allows for building ML modules.
Middleware & Web Server	APIs, message brokers - Apache	Open-Source & Ubiquitous
Database	MongoDB, mySQL, Neo4J (noSQL)	Open-source & AWS subscription
Machine Learning	Python Machine Learning Libraries	Python Libraries (Open-Source)
Messaging/Communication	RabbitMQ, Apache Kafka (streaming), AmazonMQ	Open-source & AWS subscription
Version Control	Github, Beanstalk	Open-source & AWS subscription
Infrastructure & OS	AWS - Linux	AWS subscription
Development methodology	Agile (with DevOps Pipeline)	Dev-to deployment approach

3. Important Considerations

1. Sprint grooming needs to take place with the JET-merSETA team before work on the sprints commences as there are items in the backlog that the JET-merSETA team and the service provider need to align on.
2. Sprint reviews are to take place as per agreed schedule between the service provider and JET-merSETA. Under no circumstances are sprint reviews to be missed. Missed reviews resulting in delays in the project will not be the responsibility of JET-merSETA and will be at the cost of the service provider. Delays must be recorded on a log sheet with reasons provided.
3. System architecture must follow an architecture that will allow for a prolonged system uptime, scalability, security, maintainability and efficiency of the overall MVP.
4. Open source applications are preferred.
5. The less subscriptions the better.
6. Fees for any software, subscriptions or licences will be payable by the service provider and must be communicated in writing to the MVP2 team.
7. The POPIA Act must be adhered to by ensuring that the MVP2 is hosted locally as it will hold private national data.
8. Development of the MVP2 must make use of agile methodology, the service provider must develop and test using an iterative manner or process.
9. The prospective service providers should adhere to various local and international standards to ensure that the project management, software development life cycle and ultimately the MVP platform is not only of a high quality, but follows local and international governance, regulatory and compliance requirements. The list below is a set of some of the standards that the incumbent service providers should adhere to, and are to be considered as part of the MVP development process:
 - a. ISO 27001:2013 - Information Security, Cybersecurity
 - b. ISO 22301:2019 - Business Continuity Management Systems
 - c. ISO 31000 – Risk Management
 - d. ISO 12207 - Software life cycle processes
 - e. ISO 29119: Software Testing
 - f. ISO 9001:2015 - Quality Management Systems



4. Key competencies & team compositions

The service provider must have a balanced team that has key competencies to cater for the various components of the project. A good ratio of senior to junior developers is important. The team must have demonstrable prior experience in executing a project of this size and technical complexity and must comprise, at minimum, members with the following competencies:

- Front end (UI/UX) and Backend Development
- Artificial Intelligence (Machine Learning)
- Data Integration & Enterprise Application Integration
- Quality Assurance Automation Engineering
- DevOps Engineering
- Cloud Infrastructure Engineering (AWS)
- Agile Project Management
- Data Analytics & Visualisation
- Knowledge of the following key technologies: Blockchain, Self Sovereign Identity (SSI)

We are cognisant that one company may not have all these competencies; in such a case, should the service provider opt to enter into a joint venture or similar arrangement, compliance documents must be furnished for every company proposed to be involved in said arrangement. To expand on the availability of expertise, we are opening the development of the MVP to international service providers that have the requisite competencies.

5. Finance

The service provider's financial proposal should provide an explicit budget with a detailed breakdown by level of cost and must contain itemised costs for the following broader deliverables: System analysis and requirements gathering; software development and testing; orientation training; and post-handover troubleshooting support cost for three months. Proposals must provide an explicit budget with a detailed breakdown by level of effort and daily rates. Payments will be made upon satisfactory completion and acceptance of deliverables by the JET-merSETA team. Work is considered complete when functionality is demonstrated. As a result, payments will be based on deliverables and not the completion of sprints. All functions within a sprint or set of sprints need to be functional before invoices for payments are submitted.

All costs associated with the development, preparation, production and/or delivery of goods and/or services incurred without an executed contract copy signed by all parties will be for the account of the bidding company or organisation. Neither JET nor the merSETA will pay for any costs associated with the development, preparation, production and/or delivery of goods and/or services connected to these terms of reference.



6. Evaluation Criteria

Evaluation Criteria	Scoring	Weight
Capacity	<p>Project team at a minimum must be composed of the following resources:</p> <p>1 x Project Manager with minimum 4 - 6 years experience: 4 - 5 years = 3 points 6 years or more = 5 points</p> <p>1 x Solutions Architect experience with minimum 4 - 6 years: 4 - 5 years = 3 points 6 years or more = 5 points</p> <p>1 x Analyst with minimum 3 - 5 years experience: 3-4 years = 3 points 5 years or more = 5 points</p> <p>4 x Software Developers with minimum 3-5 years experience: 3-4 years = 3 points 5 years or more = 5 points</p>	30%
Previous experience	<p>Years of software development experience as a company (based on company portfolio):</p> <p>1- 2 years = 5 3-4 years = 10 5-6 years = 15 7 and more years = 20</p>	15%
References	<p>No letter = 0 1 letter = 5 2 letters = 10 3 letters = 15 4 letters = 20</p>	10%
B-BBEE	<p>Determined by BBBEE level certificate (includes sworn affidavit):</p> <p>Level 1 = 20 Level 2 = 18 Level 3 = 16 Level 4 = 14 Level 5 = 12 Level 6 = 10 Level 7 = 8 Level 8 = 6</p>	15%



	Non compliant = 0	
Proposal and Methodology	<p>Detailed project and risk plan clarifying the implementation approach based on the agile methodology. The Methodology entails:</p> <ul style="list-style-type: none"> • <i>Proposed Methodology Approach</i> • <i>Proposed Technical Solution Outline (with application integration plan)</i> • <i>Proposed Project Management Approach</i> • <i>Risk and Mitigation Plan</i> <p>Measured by the below, on a 1-5 Likert scale (1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Excellent)</p> <p>Agile Development Approach: methodological steps to the development = 5 points</p> <p>Proposed technical solution design and application integration plan with detailed steps = 5 points</p> <p>Project Phases : different stages in project = 5 points</p> <p>Work Breakdown Structure : full detail of each project phase = 5 points</p> <p>Milestones with Risk Management Strategies: marking the expected significant stage of progress, risk identification and key deliverables for deployment and sign off = 5 points</p> <p>Duration: estimate time frames = 5 points</p> <p>Resource Allocation to Tasks: team members = 5 points</p>	30%
Total		100%



7. Estimated time frames

Activity	Date
Clarification questions deadline	24 March 2023
Submission of proposals deadline	14 April 2023
Evaluation of submissions	17 April - 21 April 2023
Shortlisted service provider presentation date	26 April 2023
Appointment of Service Provider	8 May 2023
Inception Meeting	15 May 2023
Inception Report	22 May 2023
MVP Development Commences	24 May 2023
Deploy	30 November 2023
Handover	8 December 2023
Completion	15 December 2023
Support	3 Jan - 30 March 2024

8. Contact details

All queries should be directed to Boitumelo Mancu and must be submitted via email to boitumelo@jet.org.za.

Responses will be provided via email. Proposals should be submitted to tenders@jet.org.za. Technical and financial proposals may be combined.



9. Annexure A: PSET CLOUD Theory of change



Theory of Change

IMPACT: South African citizens make informed labour market decisions that lead to increased employment in line with NDP targets



GOAL: Use of data from the PSET CLOUD system facilitates improved alignment between supply and demand in the labour market

