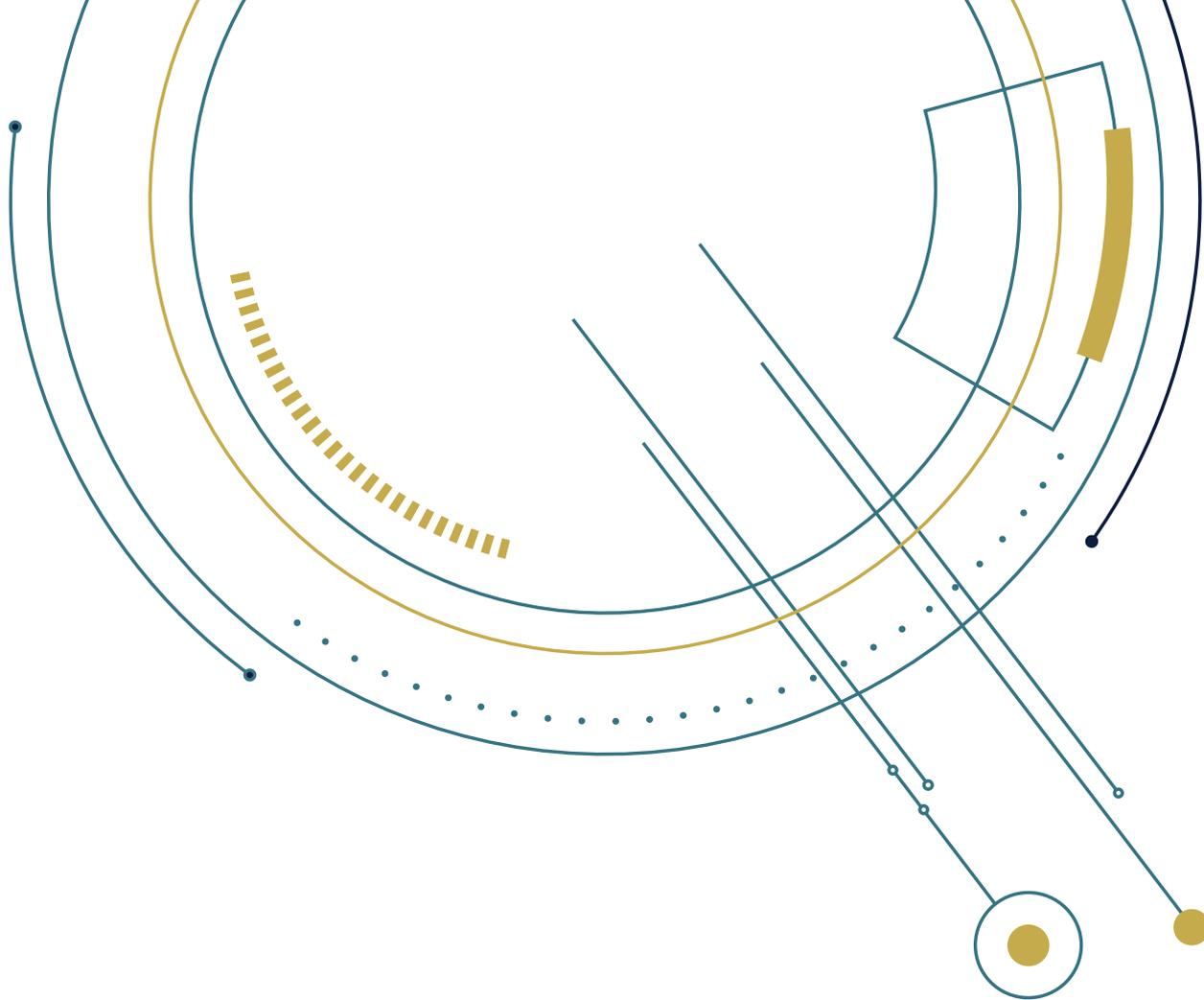# Digital Governance Advisory Note

PSET CLOUD

Innovation through collaboration

Digital Governance
Advisory Note

PSET CLOUD

Innovation through collaboration

JET Education Services

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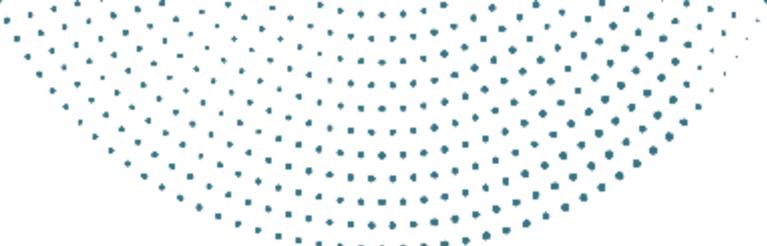**www.merseta.org.za**

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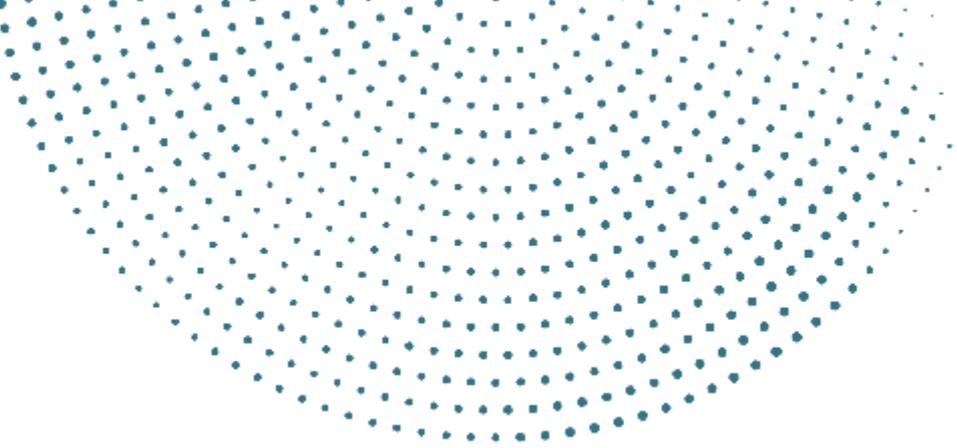
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Abbreviations

AAU	Association of African Universities
ADEA	Association for the Development of Education in Africa
AGM	annual general meeting
AI	artificial intelligence
AU	African Union
AVU	African Virtual University
BRRR	Budgetary Review and Recommendation Report
CC-PPP	citizen-civil–public-private partnership
CDS	Career Development Services
CEDEFOP	European Centre for the Development of Vocational Training
COGTA	Department of Cooperative Governance and Traditional Affairs
CV	curriculum vitae
DBE	Department of Basic Education
DCDT	Department of Communications and Digital Technologies
DEL	Department of Employment and Labour
DHA	Department of Home Affairs
DHET	Department of Higher Education and Training
DTIC	Department of Trade, Industry and Competition
GCIS	Government Communication and Information System
GVM	governance viability matrix
HPCDPC	High-Performance Computing and Data Processing Centre
HRDC	Human Resources Development Council
ICT	information and communications technology
JET	JET Education Services
MER	manufacturing, engineering and related
merSETA	Manufacturing, Engineering and Related Services Sector Education and Training Authority
MIOS	Minimum Interoperability Standards Framework
MOI	memorandum of incorporation
MVP	minimum viable product
NCAP	National Career Advice Portal
NQF	National Qualifications Framework
NSDP	National Skills Development Plan
NSF	National Skills Fund
NT	National Treasury
PBO	public benefit organisation
PFMA	Public Finances Management Act
POPI Act	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
RSA	Republic of South Africa
SADC	Southern African Development Community
SAQA	South African Qualifications Authority
SARS	South African Revenue Service
SDSC	State Digital Services Company
SEDA	Small Enterprise Development Agency
SETA	Sector Education and Training Authority
SITA	State Information Technology Agency
SMME	small, medium and micro enterprises
SSI	self-sovereign identity

Preamble

The idea of a more interoperable data ecosystem for post-school education and training (PSET) has its origin in the early discussions between JET Education Services (JET) and the Manufacturing and Engineering and Related Services Sector Education and Training Authority (merSETA) in 2018. This was a time when both organisations, albeit from different trajectories, were contemplating how best new thinking in the digital arena could be harnessed to leapfrog South African developments.

JET, a non-profit with well-established research and intermediary capacities, and merSETA, a statutory body known as one of the leading SETAs in South Africa, with strong governance systems and a reputation as an early adopter, found a good fit through collaboration on this project. The shared vision and co-creation of this project were strengthened through the support of Raymond Patel (merSETA CEO at the time), resulting in the early components of a theory of change (ToC) for what soon became known as the Post-School Education and Training Collaboration and Learning Opportunities and Utilisation of Data (PSET CLOUD) project.

A key driver for this futuristic collaboration, clearly articulated in the first iteration of the ToC, is a focus on the end-user. The JET–merSETA team has been, from the outset, committed to a process that would enable South African citizens to make informed labour market decisions leading to increased employment opportunities in line with the South African National Development Plan targets. The initial ToC evolved in 2020 to outline a more refined set of activities, outputs and outcomes, while the focus remains firmly on the long-term goal to be of benefit to the end-user. The assumptions and risks which are clearly outlined continue to be carefully managed. The project also remains firmly aligned to the strategic intent of the Department of Higher Education and Training (DHET) and other key state actors and has expanded since its inception to a programme covering the entire PSET landscape.

As we look towards the realisation of the PSET CLOUD vision by 2024, we present this governance note which discusses and offers recommendations on the institutional form and governance considerations for the establishment of the PSET CLOUD as an entity.

We remain committed to a PSET system that will position South Africa incredibly well internationally and, more importantly, has the potential to unlock deeply embedded systemic flaws that to date have been largely intractable – flaws that existed before COVID-19 but have become more accentuated as a result of the pandemic. We also look forward to new partners coming on board as the PSET CLOUD has the potential to become a mainstay of the post-schooling system in South Africa.

About JET Education Services

JET Education Services is an independent non-governmental organisation in South Africa that works with government, the private sector, international development agencies and education institutions to improve the quality of education and the relationship between education, skills development and the world of work.

About merSETA

The merSETA is one of 21 sector education and training authorities (SETAs) established to facilitate skills development in terms of the Skills Development Act of 1998 (as amended). The 21 SETAs broadly reflect different sectors of the South African economy. The merSETA encompasses manufacturing, engineering and related services.

Introduction and background

The post-secondary education and training (PSET) sector is complex and involves a diverse range of role-players and stakeholders from financial institutions, qualifications bodies, education service providers, oversight organisations, employers and organised labour. Currently, there is significant variance in how data is managed within and between stakeholders. PSET data is governed by extensive legislation and many of the stakeholders are sceptical about sharing their data pools, due to, amongst other reasons, perceived loss of autonomy. While there is currently a high level of scepticism, many of the stakeholders have expressed interest in collaborating but require clarity on how the service will operate, be governed and 'owned'. The 'true' owners of the data must be recognised as the individual members of the public whose data is being stored (RSA, 2013).

The challenge in this context is that the supply-side cannot adequately leverage data so that members of the public transition smoothly from PSET into the labour market. From the demand-side, industry cannot leverage PSET big data to fill gaps in the labour market. In response to this situation, 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 for the Utilisation of Data programme[1]. The purpose of this PSET CLOUD programme is to develop an interoperable digital ecosystem that ensures that PSET data is integrated to optimise the harnessing of data for the benefit of the public.

Real-time data should be readily available to the public, students and those in the employment market to inform decision-making about study and career options. Other data users are the private sector who need to fulfil their staffing needs, people seeking employment and entrepreneurs seeking opportunities. A key of the PSET CLOUD would be to ensure interoperability across a wide range of varying datasets from a technical perspective. Now in Phase 3 of the programme, a minimum viable product (MVP) is being developed to test interoperability.

One other key focus of Phase 3 is designing a suitable governance model for the PSET CLOUD. Public trust is identified as a critical element for driving the use of the system. It is noted that stakeholders such as the private sector may reject a solution devoid of sound governance. To address these risks, the supply- and demand-side of the economy need to participate as active partners in the process.

There is evidence of several government-driven, centralised authoritative systems not being fully utilised in South Africa. Stakeholders should remain cognisant of this reality when considering the various governance model options. As a response, this Advisory Note provides an alternate model so that stakeholders can leverage data optimally and instil a culture of trust through co-ownership.

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1   In earlier publications, the term PSET CLOUD project was used. The project has expanded since its inception and covers the whole PSET landscape. Current work is seen as the start of a long-term national initiative; hence we now prefer the term programme.

2 Identifying the issues

The motivation for developing a PSET CLOUD and an accompanying governance structure has its roots in the prevailing circumstances of the labour market and economy. Reasons raised for reviewing the performance of the PSET system include issues such as:

1

High levels of unemployment, including unemployed graduates

2

Increased numbers of unfilled positions due to the unavailability of appropriately skilled applicants
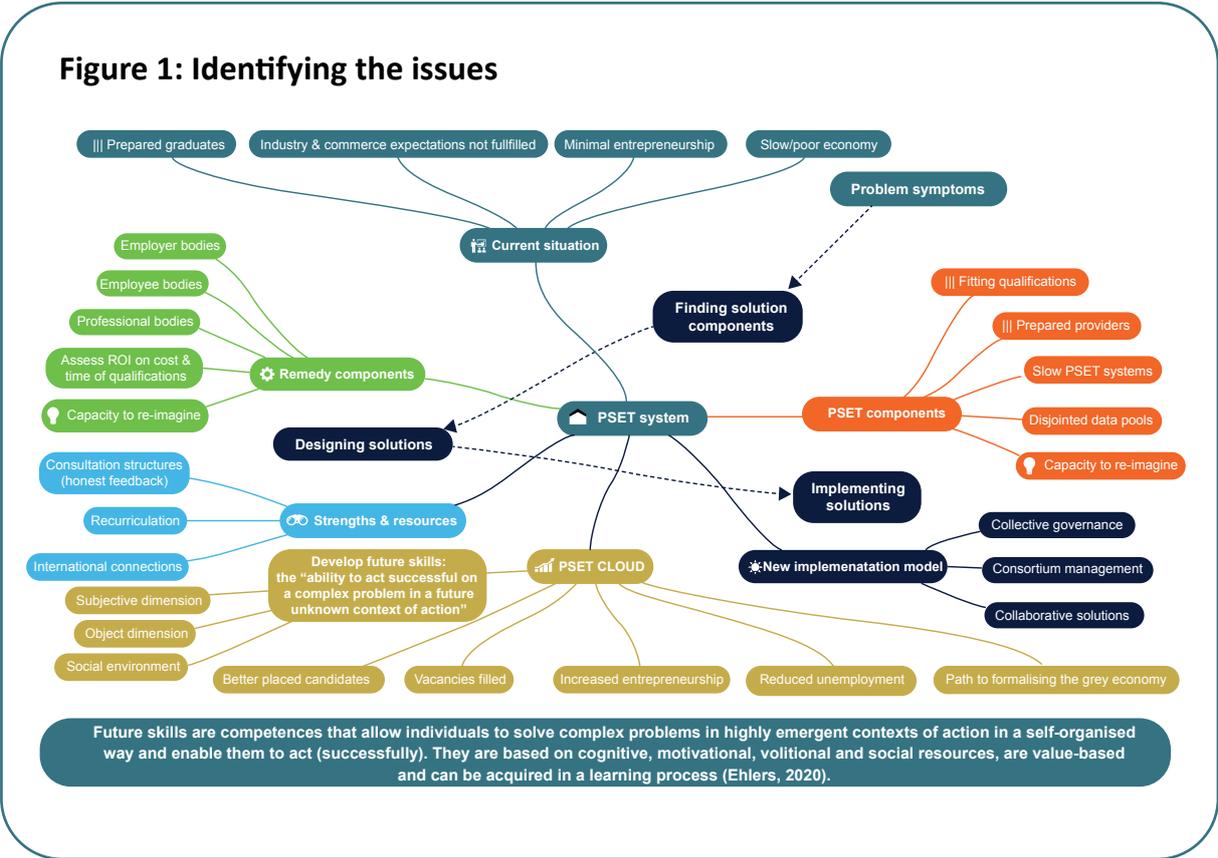
3

Low levels of entrepreneurship and lack of preparedness for self-employment

4

A sluggish economy, which, with a concomitant informal economy, supports neither the need for a government tax base nor the entrepreneur due to the lack of capital and ability to secure business financing

(COOi Studios, 2020; Ehlers, 2020)

In seeking solutions, one may look amongst role-players in the economy where there is a need to source skills and find employment. Employers, employees and professional bodies have access to knowledge of the skills needed for a productive economy (see Figure 1). They understand fully what is working and what is not working in the current PSET system. These groups can help shape an improved PSET system that meets all requirements of the system's users.

Figure 1: Identifying the issues

Future skills are competences that allow individuals to solve complex problems in highly emergent contexts of action in a self-organised way and enable them to act (successfully). They are based on cognitive, motivational, volitional and social resources, are value-based and can be acquired in a learning process (Ehlers, 2020).

Prospective students believe they will embark on a lucrative career once they have invested significantly in the PSET system. Stakeholders who exit the PSET system expect that their investment in qualifications would enable them to find meaningful work; should a student who has fulfilled all the PSET and the national qualifications authority's registered qualification requirements remain unemployable, they may have reason to question the validity and value of the PSET system.

The components of the PSET system that feed into the economy require skilled teachers and learning facilitators. These components include: 1) people who possess the qualifications; 2) experience; and 3) data systems that inform graduates. If qualifications do not adequately match the economy's needs, it becomes necessary to understand these gaps, and an appropriate mechanism such as an improved PSET system may provide answers.

Learning providers that train people for the employment market or a future in entrepreneurship need to ensure that they produce graduates who are sufficiently skilled and who can create their paths to self-employment. A graduate may find that after many years of investment in time and funds, the knowledge and skills gained during their qualification have become dated. Such an outcome may bring into question the validity of the qualification offered and even the validity and value of the current registration of that qualification on the National Qualifications Framework (NQF).

Multiple data sources exist in government departments, branches, directorates, colleges and universities, leading to potential duplications and gaps in data. The problem is compounded by each database being hosted differently, which increases the risk of data corruption by error or mischief. Students and graduates who are the rightful 'owners' of personal data might have to wait years to be 'allowed' access to their data and may, therefore, not have the opportunity to correct or update their records.

The solution's design should include systems that build consensus (Miller, 2019) around the needs of the economy. Understanding the actual, current and future needs for skills must be the starting point for reimagining, recurriculating and recreating a future that overcomes the issues mentioned above, including unemployment and unemployability. An emphasis on international networks and an understanding of global interconnectedness will be essential to develop and implement future skills in the South African context that align with the rest of the world.

Graduates who are well grounded in their subject, object dimensions and social environment (Ehlers, 2020), while having the digital fluency to engage online comfortably, will be more likely to cope with the accelerating and sudden changes around them. An effective PSET system governance model that overcomes the issues mentioned above will deliver graduates (and diplomates) with well-matched skills to the informal and formal economies' needs.

If there are improvements in the quality of services provided by the PSET system, there could be a reduction in unemployment. Practical pathways to the formal economy would be provided for those trapped in the informal economy through access to capital and business contracts. Possible governance models to drive effective, transformational delivery require bold actions that cross traditional boundaries and personal responsibility and power areas in multiple departments (Barber, 2015).

The Sector Education and Training Authorities (SETAs), who are responsible for skills development in their respective sectors, are funded through a payroll levy paid to the South African Revenue Service (SARS) by employers. SARS directs the funds to the National Skills Fund (20%) and SETAs (80%) (Red and Yellow, n.d.). Although SETAs are governed by their boards, they are managed by the Department of Higher Education and Training (DHET) under the Skills Branch[2]. The SETAs have long had a challenge of poor reputations (Nkosi, 2014), and the South African Parliament has noted the poor audit reports of the DHET and its entities (Parliamentary Monitoring Group, 2020a).

Figure 2: Map of delivery
Adapted from Barber (2015)
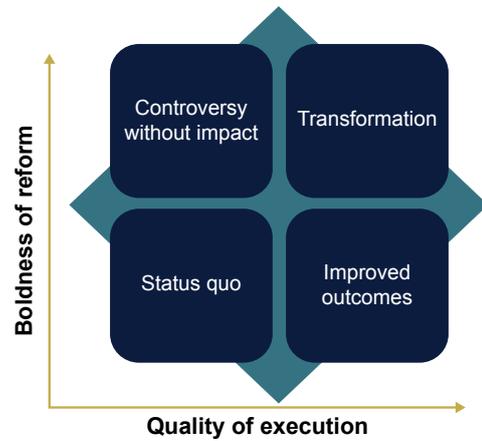
Funding for the PSET CLOUD may be allocated from SETA Discretionary Grants, which means that the PSET CLOUD initiative would be under the control of the DHET and a SETA, with direct reporting lines to the department. As a result, the PSET CLOUD programme is at risk of being donor-driven and unduly influenced and controlled by one government department at the expense of other departments and stakeholders, including the business sector, employers and the public who would suffer the consequences of the misalignment of education and training. The challenges associated with a donor-driven initiative such as the PSET CLOUD need to be fully appreciated, especially against the visible results of unemployment (Statistics South Africa, 2021), mismatched skills (Mncayi, 2021) and issues resulting in irregular expenditure (Parliamentary Monitoring Group, 2020a). Departments such as the Department of Trade and Industry and Competition (DTIC) and the Department of Employment and Labour (DEL) need to be fully engaged during the lifelong cycle of employment that follows an individual's relatively brief encounter with the basic education and post-secondary education systems.

Implementing the PSET CLOUD could be viewed as a potential challenge; however, this advisory note intends to recommend solutions without *fear or favour*. The perception that the programme's title, PSET CLOUD, has been selected to favour one department over others may raise questions about the lack of collaborative and consensus-building approaches needed with all stakeholders in the lifelong cycle.

2   See https://www.dhet.gov.za/SitePages/SkillsDevelopmentNew.aspx

3 Challenges with making progress

Once the recommended guiding model suggested in this advisory note is adopted, there will be a need for a "relentless implementation" leading to the "embedding" of change (see Figure 3) (Barber, 2015). If each government department continues to function independently and without transparent consultation with other departments and the public, progress may continue to be slow.

Figure 3: Four stages of implementation
Adapted from the 'Map of delivery' (Barber, 2015)
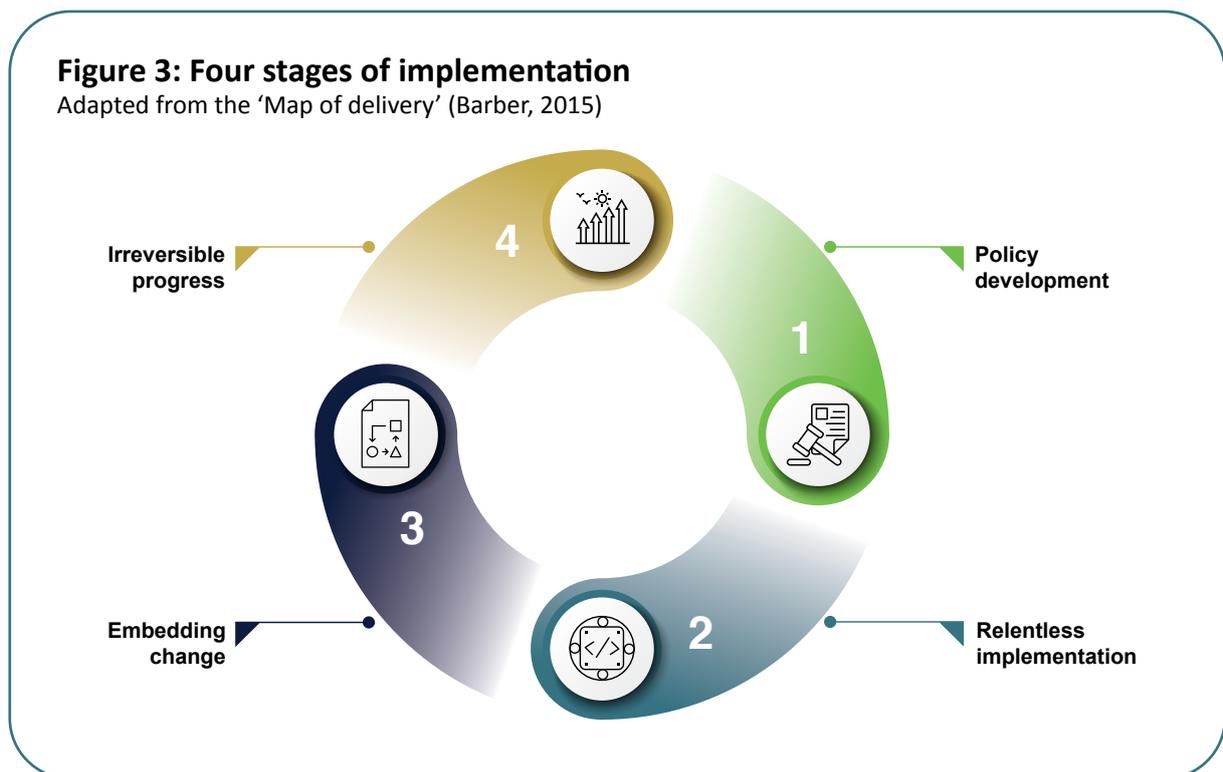
Organisations and departments must avoid choosing simple solutions simply to satisfy arriving at quick and easy presentations and approvals. One of the consequences of living in a rapidly changing environment is that complex situations are, by their nature, unclear, and it may not be possible to reduce them to quick and simple solutions (see Figure 4).

The PSET CLOUD governance body must build consensus across core partners to benefit all stakeholders, most especially the civilians and residents of South Africa. Those serving in the body must feel comfortable working with a lack of clarity while making decisions of significant importance that impact on the lives of millions of people. The principles of Batho Pele (People First)[3] cannot be overstated.

2   See https://www.dsd.gov.za/index.php/about/batho-pele

Figure 4: Levels of intensity
Adapted from the 'Map of delivery' (Barber, 2015)

Unclear

Level 4

Level 3

Level 2

Level 1

Clear

Clarity of solution

Large

Problem size

Small
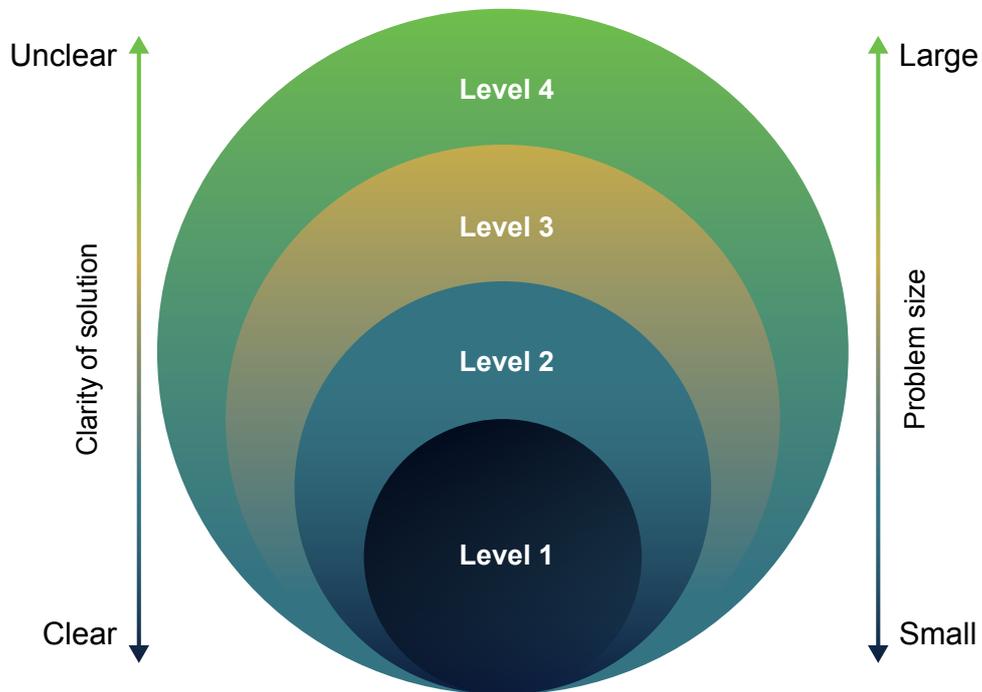
Understanding the pivotal issues is of particular importance in setting a course so that focused attention can be given to the technical and transversal requirements of the PSET CLOUD. It is critical that:

1

One department should not hold court over others, but instead, all those involved should meet as equal service providers and civil servants to find solutions and deliver competent services to citizens and others in the spirit of Batho Pele (People First).

2

Consensus-building approaches, methods and technologies should be used to ensure that relevant issues are raised and debated both within the governance structures and amongst the public.

3

Transparency is required to build trust in the public sector's ability to deliver in an ethical, competent and cost-effective manner and to avoid preferential and unethical behaviour.

Purpose of the PSET CLOUD Advisory Note

4

The PSET CLOUD programme aims to establish an interoperable digital ecosystem that will strengthen, coordinate and improve efficiencies in the governance and management of the PSET system. The main objective of the PSET CLOUD is to ensure datasets are interoperable, well synchronised and used effectively as sources of information for planning and improving efficiency in the PSET system. The PSET CLOUD must positively impact the long-term outcome of realigning the PSET system to the demand and supply needs of the labour market and economy.

The following intermediate outcomes are listed for the PSET CLOUD:

1

South African citizens/learners use real-time data to make learning and career decisions.

2

South African PSET stakeholders use real-time data for planning and programming.

3

Organisations utilise real-time data to locate and place suitably skilled workers.

5 Legislation and policy context

The PSET CLOUD is to operate within an existing legislative and policy environment. An overview of these frameworks has been provided in the report *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* (Rajab, Nomvete, Manda & Keevy, 2019) and the *Business case for the establishment of the PSET CLOUD and its governance and/or institutional mechanisms* (COOi Studios, 2020, hereafter referred to as the Business Case). In this advisory note, however, we provide an overview of policy frameworks relating to the institutional structure options for the PSET CLOUD.

5.1 Draft White Paper on e-Education, 2004: Transforming Learning and Teaching through Information and Communication Technologies

The goal of the government's e-Education policy set out in the *Draft White Paper on e-Education: Transforming Learning and Teaching through Information and Communication Technologies* (ICTs) (RSA, 2004) is for every South African manager, teacher and learner in education to be information and communications technology (ICT) capable by 2013. ICT capable is defined in the White Paper as the ability to "use ICTs confidently and creatively to help develop the skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community" (RSA, 2004, 17). While this goal has not been fully realised, its purpose is essential to the PSET CLOUD.

5.2 National Skills Development Plan, 2019

The National Skills Development Plan, promulgated in 2019 in terms of the Skills Development Act, No. 97 of 1998, states that the SETAs and the National Skills Fund (NSF) must seek to build career guidance initiatives in their sectors as a critical component of the National Skills Development Plan (NSDP).

The NSDP identifies the need for shared services between SETAs and includes the NSF as a vital role-player (RSA, 2019a).

The promulgation of the NSDP alludes to the potential for transitional arrangement costs and subscription fees for the PSET CLOUD from a shared services agreement between SETAs and funding directly from the NSF.

5.3 Public Service Act, 1994

The Public Service Act, 1994, mandates the Minister of Public Service and Administration to establish norms and standards for information management in the Public Service and e-Government, respectively (RSA, 1994).

The Minister of Public Service and Administration is the executive authority for transversal data services in the Public Service and e-Government.

5.4 State Information Technology Agency Act, 1998, sections 7(1)(2)

The State Information Technology Agency Act, No. 88 of 1998, mandates the State Information Technology Agency (SITA) to maintain a comprehensive information systems security environment according to approved policy and standards (RSA, 1998b). Such standards include

interoperability of information systems between departments and comprehensive information systems security as per State Information Agency General Regulations, 2005 (R. 50 of 2005) sections 4.2 (RSA, 2005).

SITA is mandated to set interoperability protocols and standards for government information systems.

5.5 Public Service Regulations, 2016

The Public Service Regulations 2016 (RSA, 2016b):

1. Obligate heads of departments to comply with the Minimum Interoperability Standards Framework (MIOS) for Government Information Systems;
2. Mandate the Minister to issue the MIOS.

The regulations further mandate government departments to comply with the MIOS.

5.6 State Information Technology Agency Amendment Act, 2002

The State Information Technology Agency Amendment Act, No. 38 of 2002, inserts section 3A into the State Information Technology Agency Act, No. 88 of 1998.

The amendment states:

1. *For purposes of achieving its objectives, the Agency may establish one or more subsidiary companies in terms of the Companies Act.*

2. *A subsidiary company may, on behalf of the Agency, perform such functions as the Agency may delegate to it subject to such conditions as the Agency may impose.*

3. *(a) The Agency may, with the approval of the Cabinet, transfer to any person the shares of the Agency in a subsidiary company in accordance with the Companies Act.*

   (b) The Cabinet must approve the number of shares to be transferred, the transferees and the manner and terms of the transfer. (RSA, 2002b, 5)

The amendment enables SITA to register a private or non-profit company in terms of the Companies Act. It also allows for the potential to delegate the management of specific data interoperability protocols and standards to the PSET CLOUD.

5.7 Public Finance Management Act, 1999, section 14(2)(a)

The Public Finance Management Act, No. 1 of 1999, states that the National Treasury (NT) may withdraw, from a date determined by it, any exclusion granted to a national department, a constitutional institution or a national public entity in terms of section 13(1). This may be with regard to all money of a specific kind received by that department, constitutional institution or public entity where the state is not the sole shareholder. Section 23(2) states that the exclusion in terms of section 22(1) of a provincial government business enterprise, which is a company and in which the relevant province is not the sole shareholder, may not be withdrawn, provided the NT has given its prior written approval to the province to participate in a company that is not wholly owned by the province (RSA, 1999a).

The Act indicates that the NT may, in an exception, fund a company of which the government is not the sole shareholder. In a profit-driven private company governed by the Companies Act, there are shareholders. However, in a non-profit company there are no shareholders, only fiduciaries of the company beneficiaries.

5.8 Protection of Personal Information Act, 2013

The Protection of Personal Information Act, No. 4 of 2013 (POPI Act), sets some conditions for all people and organisations who capture, hold and use personal information (including that of juristic persons). The POPI Act is intended to protect people from harm such as theft and discrimination. The risks of non-compliance include reputational damage, fines, imprisonment and paying damages claims.

The POPI Act has a significant impact on organisations that process large amounts of personal information including children's information and account numbers. The most affected industries are financial services, healthcare and marketing.

All departments and organisations that control databases or data pools must ensure compliance with the POPI Act and collect and store data in a manner that protects the interests of all the people whose data they hold. According to the POPI Act, citizens are the ultimate owners of their personal information and, according to the self-sovereign identity (SSI) concept (Wikipedia contributors, 2021c), can choose which information can be shared.

5.9 National Integrated ICT Policy White Paper, 2016

The National Integrated ICT Policy White Paper (RSA, 2016a) introduces a range of interventions to ensure that all South African citizens can improve their lives by drawing on the benefits of the digital society. Informed citizenship can be achieved through ICTs and convergence, particularly computing and information technology, telecommunications technology, audio and audio-visual content, the internet, and traditional means of communication such as postal deliveries. These technologies do not operate in isolation from each other and are, in many instances, becoming more mobile and widespread. The policy takes a flexible, rights-based, holistic, whole-of-government, multi-stakeholder approach. The PSET CLOUD would be best approached in collaboration with the Department of Communications and Digital Technologies (DCDT).

5.10 National Digital and Future Skills Strategy, 2020

The *National Digital and Future Skills Strategy* (RSA, 2020) sets out the layers at which digital skills should be given attention and provides mechanisms for advancing digital skills. The strategy is not specific to particular skills but considers the need for: a diversity of digital skills; priority skills areas; and convergence of digital skills with subject matter knowledge.

The National Digital and Future Skills Strategy has implications for :

1. The economy, society and education: The strategy calls on the education sectors, including SETAs, to build a strong focus on and invest in digital skills as well as in the development of digital innovation skills, including in agriculture, mining, manufacturing, postal services and health services, to mention a few.

2. Cybersecurity: The strategy emphasises paying the same attention to developing cybersecurity skills as to developing any other digital skills. Programming for cybersecurity should be encouraged as learning programmes at various levels throughout the schooling and post-schooling years, using mechanisms ranging from self-learning to short courses to degree programmes.

3. Monitoring and evaluation: The strategy emphasises monitoring and evaluation as a mechanism to build strong resilience for successful implementation.

Furthermore, the strategy emphasises the role of the Department of Basic Education (DBE) as a critical role-player in the development of digital skills in schools and in adult basic education, the role of the DHET in encouraging digital skills advancement in universities, and the role of the Department of Science and Innovation (DSI) in determining policies and strategies for the digital skills required for the National System of Innovation (NSI). The DEL must address digital skills matters related to the labour sector, while the DTIC must encourage digital skills for Economy 4.0. At the same time, the Department of Public Service and Administration (DPSA) and the Government Information Technology Officers Council (GITOC) must ensure that skills-building for digital government is prioritised in their activities. Other government departments that have a direct interest in digital skills for citizen services include the Departments of Home Affairs (DHA) and Social Development (DSD) and the South African Police Service (SAPS).

The strategy calls for effective coordination across the complex ecosystem of government departments, with engagement across national, provincial and local government, to facilitate the achievement of basic, intermediate and advanced digital skills. All governmental stakeholders must operate in collaborative networks and partnerships (RSA, 2020).

5.11 National e-Strategy, 2017

The *Digital Society South Africa: South Africa's National e-Strategy towards a thriving and inclusive digital future* published in terms of the Electronic Communications and Transaction Act, No. 25 of 2002, the National Development Plan 2030 and the National Integrated ICT Policy White Paper of 2016, "aims to position South Africa as a significant player in the development of ICTs throughout the value chain and to accelerate the uptake and usage of ICTs in other social and economic sectors" (RSA, 2017a, 7).

The strategy influences the transformation of South Africa into a competent digital society with broad uptake and use of ICTs.

The DEL, DHET and DBE are expected to form part of the Digital Transformation Committee to undertake the following functions and report to Cabinet:

1. Oversee the transformation of South Africa into a digital society and knowledge economy by 2030, in line with the targets of the National Development Plan;

2. Lead and oversee the implementation of the e-Government strategy and related plans;

3. Lead and oversee the work of the Digital Industrial Revolution Working Group.

5.12 National e-Government Strategy and Roadmap, 2017

The *National e-Government Strategy and Roadmap* (RSA, 2017b) aims to digitise government services while transforming South Africa into a thriving digital society and economy. In the Strategy, e-Government refers to the innovative use of all ICT, the internet, computer programs and other ICT services and platforms to link the public sector and facilitate collaborative and efficient governance.

A digitalised government that uses ICTs and digital technologies effectively for its government processes will be more efficient, strengthen public service delivery and enhance participation by citizens in governance matters. The DBE and DHET are critical stakeholders in the process to ensure that all citizens have the necessary digital fluency and literacy to be able to engage productively with all online government services.

5.13 Electronic Communications Act, 2005

The Electronic Communications Act, No. 36 of 2005, intends to:

1. *Promote convergence in the broadcasting and telecommunications sectors and provide the legal framework for convergence of these sectors;*

2. *Make new provisions for the regulation of electronic communications services, electronic communications network services and broadcasting services;*

3. *Provide for the granting of new licences and new social obligations;*

4. *Provide for the control of the radio frequency spectrum;*

5. *Provide for the continued existence of the Universal Service Agency and the Universal Service Fund.* (RSA, 2006, 2)

The mainstreaming of education and career services by the DEL, DBE and DHET using digital technologies is dependent on the provision of services as intended in the Act.

5.14 White Paper on Science, Technology and Innovation, 2019

The White Paper on Science, Technology and Innovation (RSA, 2019b) has as its objectives:

1. *Improved coherence and coordination;*
2. *Increased national system of innovation partnering between business, academia, government and civil society;*
3. *Strengthened and transformed national system of innovation institutions;*
4. *Increased human capabilities;*
5. *Expanded research enterprise;*
6. *Enhanced enabling environment for innovation;*
7. *Improved funding across the national system of innovation.* (RSA, 2019b, 11)

These aspects may be strengthened through a fully collaborative approach, learning opportunities and utilisation of data systems. This applies especially in the area of big data, which the policy refers to as extremely large and/or complex datasets that can be analysed computationally to reveal patterns, trends and associations, particularly in relation to human behaviour and interactions.

5.15 The African Union's Digital Transformation Strategy, 2020

The African Union's *Digital Transformation Strategy* (2020–2030) (African Union, 2020) envisions an integrated and inclusive digital society and economy in Africa that improves the quality of life of Africa's citizens, strengthens the existing economic sector, enables its diversification and development and ensures continental ownership, with Africa as a producer and not only a consumer in the global economy.

By fully participating in the African Union's Strategy, South Africa may be in an improved position to collaboratively harness digital technologies and innovation to transform African societies and economies to promote Africa's integration, generate inclusive economic growth, stimulate job creation, break the digital divide and eradicate poverty for the continent's socio-economic development, and ensure Africa's ownership of modern tools of digital management (African Union, 2020).

Building partner trust

6

Trustworthy artificial intelligence (AI) must start with good engineering practices mandated by laws and industry standards, both of which are largely absent (The Economist, 2019). Trust is a social issue and cannot be replaced by algorithms and protocols. It is hard enough to get enterprises that compete to work together as a team, but it is especially challenging when one of those rivals owns the team (Allison, 2018). For example, a deal between Maersk and IBM failed when the two giants developed a platform and expected competitors to join in even before their buy-in had been obtained. This meant that smaller companies, who would perhaps have wanted to dive in and get a piece of the market, would have had to use the solution owned and controlled by their most significant competitor.

In the case of the PSET CLOUD, the DHET engages with a relatively small proportion of the population for only one to four years of their lives (mainly from NQF level 5 to 8 qualifications), while the DBE engages with learners for up to 13 years (up to NQF level 4). In contrast, the DTIC and DEL can engage with people for more than 40 years of their working life and beyond. However, the education system's successes and failures can have a long-term impact on people exiting this comparatively short part of their lives. Given that the economy is impacted significantly by the education system, the economic and employment sectors have a large stake in the education system's output across the pipeline.

6.1 Examples of building trust

Instead of allowing parties to use their existing systems, IBM reportedly obliges its clients to use software and tools developed by IBM, thereby increasing the adoption costs and making the entry barrier even higher (Allison, 2018). In contrast, Apple and Google decided to cooperate in creating contact-tracing technology in response to the COVID-19 pandemic. By sharing user location data across platforms through application programming interfaces (APIs), the two companies enabled governments and others to create helpful notification apps. The circumstances here are exceptional, but it is not unusual for rivals to team up to set standards and create interoperability protocols and thereby create a bigger pie (Brandenburger, Nalebuff & Gearon, 2021).

6.2 Trust in the PSET CLOUD

The PSET CLOUD concept offers the promise of an opportunity but also the potential of a threat. From the supply-side, the opportunity of true data interoperability is the ability of citizens to make real-time informed decisions on PSET opportunities and work. From the demand-side, the opportunity is the ability of PSET institutions and organisations to provide access to a larger pool of competent and prepared potential employees. The threat from the supply- and demand-side is the ownership of the PSET CLOUD and whose interests will ultimately be best served. The PSET CLOUD must be end user and citizen centred.

6.3 Competitive nature of the PSET system

The PSET system and the sectors it supplies are competitive. Public institutions in the PSET system compete in a 'war for grades' due to throughput incentives and professional pride. Private institutions in the PSET system compete in a 'war for seats' due to the lack of government subsidy and the need to generate profit for shareholders. From an industry perspective, organisations are engaged in a 'war for skills' to gain competitive advantage, shareholder satisfaction and survival in the current turbulent economy. The unemployed who have exited the education systems may be left to wonder about how well they were prepared for the years or decades ahead.

6.4 Ways to build trust

The need for a governance structure that builds trust is central to the success of the PSET CLOUD. Schneier (2012) argues that trust is built through four central societal pressures.

Firstly, trust is built through moral pressure. We do not steal because it is unethical; we need to follow the rules and good moral ethics. This level of good ethics needs to come from within each person and stakeholder and should not require being imposed on us. Good morals need to be built.

The second pressure relates to how we perceive others will respond to our actions. Reputational pressure can be compelling; both individuals and organisations may feel pressure to follow the group norms because they do not want a bad reputation.

The third form of pressure is institutional pressure, where institutions operate within the boundaries of rules and laws. Institutional pressure induces people to behave according to the group norm by imposing sanctions on those who do not and occasionally rewarding those who do.

The fourth form of societal pressure is security systems designed to induce cooperation, prevent defection, induce trust and compel compliance. It includes mechanisms that work to avoid defectors, such as door locks and tall fences; mechanisms that interdict defectors, such as alarm systems and guards; mechanisms that work after the fact, such as forensic and audit systems; and mitigation systems that help the victim recover faster.

6.5 Trust is needed to sustain the PSET CLOUD

Bogacz-Wojtanowska, Góral and Bugdol (2019) assert that trust depends on risk. If the results of the actions undertaken were known, then trust would be unnecessary. Trust is a critical factor for each system, built on community, cooperation and competition. Trust fosters economic development and is essential for maintaining positive relations with groups that work together. Trust in the PSET CLOUD will be imperative due to the competitive nature and responsibilities of the PSET system. Two issues are particularly challenging when a prospective partner is also a competitor; these are the scope of the deal and how the costs and benefits will be divided.

6.6 The need for absolute clarity of the PSET CLOUD's scope

There is a need for more clarity about the offerings of the PSET CLOUD. From a governance perspective, issues relating to cost need to be considered, as those funding the service may have more control over its outcomes. The governance structure should be clear on the benefits for each of the core stakeholders and work towards co-creation instead of top-down interventions. It is essential to achieve consensus around which stakeholders should become core partners and how power is distributed hierarchically to best benefit users and citizens.

7 Institutional structure options

The Business Case (COOi Studios, 2020) identifies four possible institutional structures for the PSET CLOUD:

A. Public entity | B. Private company | C. Non-profit company | D. Hybrid.

A

Option A is a **government entity**, owned by the government, where citizens and private and civil sectors participate through a board and committee representation.

B

Option B is a **private company** established through the Companies Act and owned by shareholders, where citizens and public and civil society sectors may be shareholders or participate through a board and committee representation.

C

Option C is a **non-profit company** established through the Companies Act, where ownership is decentralised to its beneficiaries with public, private and civil sectors as fiduciaries.

D

Option D is a Section 3 **public entity** established through the Companies Act, where public, private and civil sectors are either shareholders or collective fiduciaries through a non-profit entity.
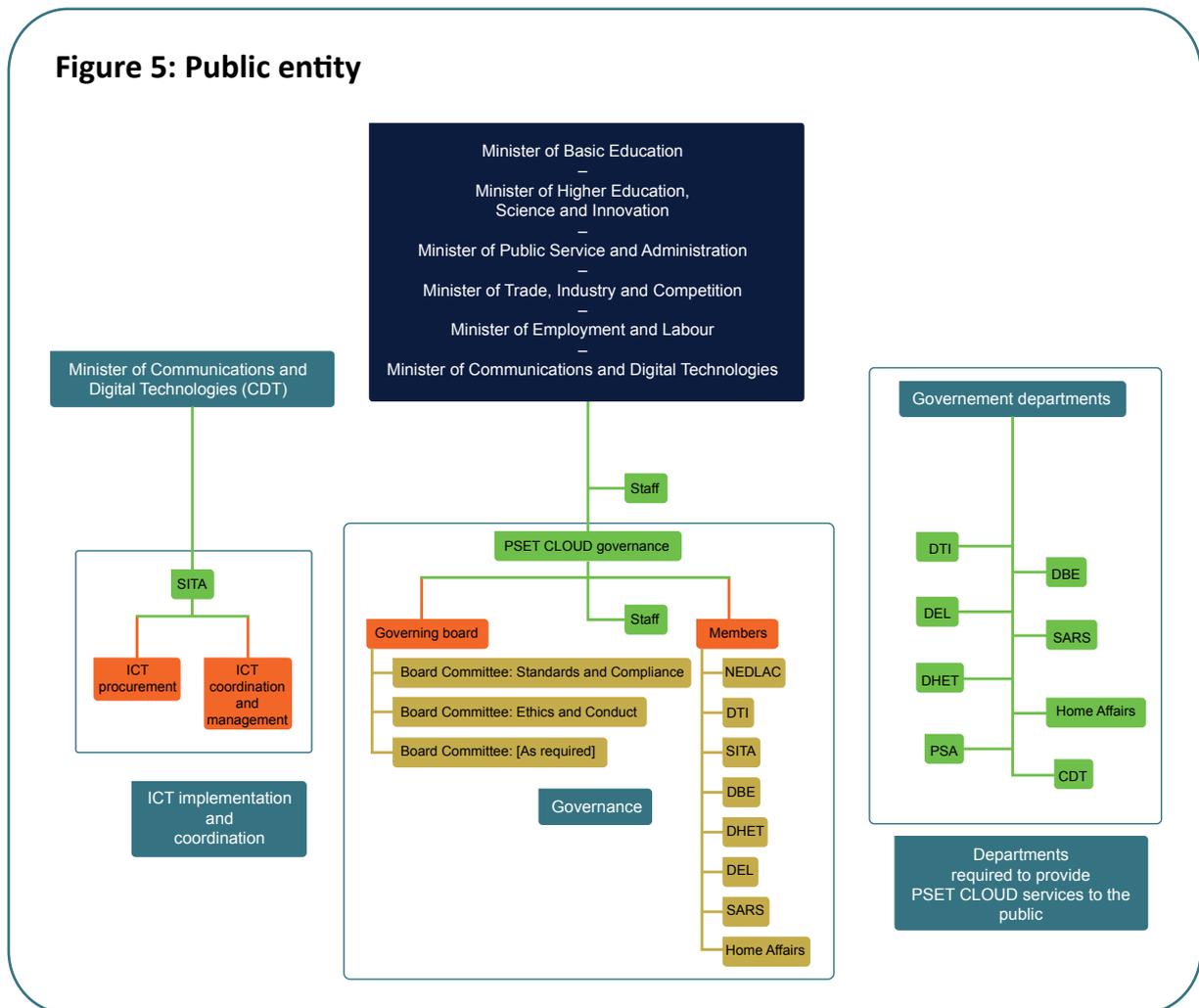
7.1 Option A: Public entity

The formal definition of a National Public Entity as set out in section 1 of the Public Finances Management Act (PFMA) is as follows (RSA, 1999a, 10):

A board, commission, company, corporation, fund or other entity which is established in terms of national legislation, fully or substantially funded from either national revenue fund or by way of tax, levy or other money imposed in terms of national legislation, and accountable to parliament.

The PSET CLOUD would be established as a public entity through specific legislation establishing a separate juristic person. The public entity could be autonomous from the DHET, with its mandate derived specifically from its enabling legislation. The board of the public entity would be the accounting authority, and the board may be accountable and responsible to the Minister of Higher Education, Science and Innovation or a minister of another government ministry (Figure 5). The public entity would establish its own policies and operating procedures according to legislative requirements such as the PFMA.

Figure 5: Public entity

The Business Case (COOi, 2020) identifies one of the pros of a public entity as representing public interest implicit in the Republic's Constitution. Government is responsible for national broadband infrastructure and can fund low-cost access to the PSET CLOUD through subsidisation from the fiscus. Other pros include protecting private data and providing comprehensive information through integration and interoperability with other databases within the PSET system.

As identified in the Business Case, potential cons of a public entity include risks of overlap with the mandates of government departments, agencies and entities, where silo operations are likely to continue within the PSET system. There is a negative perception of public entities associated with inefficiencies, corruption and lack of accountability. The challenges of collaboration between government departments and lack of communication at operational levels challenge this option's viability. Another identified con is the limitations in funding because of competing demands on the fiscus.

The table below is extracted from the Business Case (COOi Studios, 2020, 89-90) to provide an overview of the various types of public entities and the pros and cons of each option for the PSET CLOUD.

Table 1: Types of public entities

Categories	Examples	Pros	Cons
Schedule 1 Constitutional entities	• The Independent Communications Authority of South Africa (ICASA) • The Independent Electoral Commission (IEC) • The Financial and Fiscal Commission	• Accountable to Parliament • Funded from the government fiscus	• Limited autonomy
Schedule 2 Public entities	• Broadband Infrastructure Company (Pty) Ltd • Development Bank of Southern Africa (DBSA) • Eskom	• Accountable to Parliament • Funded from the government fiscus • Have borrowing powers through the accounting officer	• Operations mostly reflect government bureaucracy
Schedule 3A Trading entity	• Human Sciences Research Council (HSRC) • Manufacturing, Engineering and Related Services Education and Training Authority (merSETA) • State Information Technology Agency (SITA) • Brand SA • National Lotteries Commission	• Establishment subject to approval by the NT	• Operates within the administration of a department • Funded substantially from government sources
Schedule 3B Business enterprises	• Council for Scientific and Industrial Research (CSIR) • Public Investment Corporation (PIC) • SA Bureau of Standards (SABS) • Sentech Limited	• Autonomous operations • Funded substantially from sources independent of government, including borrowings	• Ownership control is by the national executive
Schedule 3C Business enterprises	• Gautrain Management Agency • Natal Sharks Board • McGregor Museum (Kimberley)	• Establishment subject to the approval of relevant provincial treasury	• Operates within the administration of a department • Funded substantially from government sources
Schedule 3D Trading entity	• Gateway Airport Authority Limited • Ithala Development Finance Corporation • Richards Bay Industrial Development Zone Company	• Autonomous operations • Funded substantially from sources independent of government, including borrowings	• Ownership control is by the provincial executive

7.2 Option B: Private company

Further to considering a public entity option, the Business Case includes an option for the PSET CLOUD to be privately owned. Some pros identified in the Business Case are that the private sector is generally agile and efficient. A private sector entity would be neutral compared to a government department and could support collaborative efforts with institutions across the PSET system, possibly encouraging public confidence in the entity. The Business Case suggests that more funding options from the private sector could potentially be available. A notable benefit identified is that operations could be kept independent of government bureaucracy. A potential con of a private company could be that it results in the PSET CLOUD prioritising market interests rather than the public good. Operations could be profit-driven and the cost of access potentially unaffordable for much of the population because of the commodification of data. Further cons identified in the case of a private company include the potential loss of control by the state, and data privacy and security could be a challenge.

7.3 Option C: Non-profit company

A non-profit company is a legal entity organised and operated for a collective public or social benefit, in contrast with an entity that functions as a business aiming to generate a profit for its owners (Wikipedia contributors, 2021b). The purpose of a non-profit company is generally to improve the quality of life for others at a community, local, national or even global level. These organisations are not dedicated to private or financial gain but to advancing public interest (Upcounsel, 2020). As identified in the Business Case, one of the pros relating to this option includes a decentralised approach, which enables sharing information amongst most of the population. This institutional structure option can enhance collaboration with both the private sector and government and represent socio-economic imperatives. A structure like this could be more easily trusted because of the association with community grassroots interests.

One of the cons identified in governing the PSET CLOUD through a non-profit company is that such organisations are sometimes under-funded because they rely on donor funding. Skills capacity could be limited because of funding constraints, potentially delaying quick turnaround. The Business Case assumes that the funding model of the PSET CLOUD, if established through a non-profit company, wold be based on the unviable option of donor funding. While the PSET CLOUD would be open to donor funding, its operating model could not efficiently function exclusively using this funding stream, even though international benchmarking that was conducted showed that similar services have operated in this manner. The non-profit option would enable the protection of private data as partners are fiduciaries and not shareholders.

7.4 Option D: Hybrid institutional structure

The Business Case proposes a hybrid option. The institutional structure would be a Schedule 3B entity registered by the Companies Act (RSA, 2008) that functions under a governance structure to ensure transparency and accountability. Impact and reach could be deepened and sustained as the structure would be derived from the customer base of each of the multiple stakeholders. One of the cons identified is the potential for lines of authority and responsibility to be blurred if not clearly defined from the outset (see Table 2).

7.5 Business case desktop research on similar services

The Business Case (COOi Studios, 2020, 100-103) reviews comparable services together with their institutional structures, funding sources and how they would fit into the South African context. As identified in the Business Case study, most services are driven through the private or public sector (see Table 3).

Table 2: Hybrid institutional structures

Type of entity	Pros	Cons
Public entity (new or existing)	• Represents the public interest implicit in the Republic's Constitution. • Responsible for national broadband infrastructure through the Department of Post and Telecommunications (DTPS) (now DCDT). • Potential for free or low-cost access to the PSET CLOUD through subsidy from the fiscus. • Capability to protect private data. • Ability to provide comprehensive information from integration and interoperability with other databases within the PSET system.	• Potential for some overlap with mandates of existing government departments, agencies and entities. • Silo operations are likely to continue, as is the norm within the PSET system. • The negative image and perception of public entities is associated with inefficiencies, corruption and lack of accountability. • Limitations in funding because of competing demands for the fiscus.
Private sector	• Agile and efficient. • Collaboration with institutions across the PSET system. • More funding options from the private sector. • Operations are independent of government bureaucracy.	• Represents market interests rather than the public good. • Operations are primarily profit driven. • The cost of access is potentially unaffordable for most of the population because of the commodification of data. • Potential loss of control by the state. • Privacy and security of data are a concern.
NPC/NPO	• Dedicated to the advancement of public interest. • Decentralised approach, which enables sharing information amongst most of the population. • Potential to enhance collaboration with the private sector and government. • Represents socio-economic imperatives. • More easily trusted because of association with community grassroots interests.	• Mostly under-funded because of reliance on donations. • Skills capacity is limited because of funding constraints. • Turnaround is potentially delayed because of capacity constraints. • Potential reach and impact are limited within resource constraints.
Hybrid/partnerships (new or existing)	• Transparency and accountability are easy to enforce with multiple stakeholders. • Broader impact and reach, as it is derived from the customer base of each of the multiple stakeholders. • A variety of income sources strengthens viability of the entity. • Possible to reach a funding agreement through representation from a diversity of stakeholders.	• Potential for lines of authority and responsibility to be blurred if not clearly defined from the outset.

Table 3: Institutional structures and funding sources

Company	Company breakdown	Institutional form	Funding	SA context
EDU-DEX[4] (Netherlands)	EDU-DEX is a non-profit organisation created to make all information about collective education and training freely available to all customers. EDU-DEX was established in 2014, and the organisation's chair is Cor Vink.	Non-profit organisation.	Training suppliers who access EDU-DEX training programmes.	There are many private research companies in South Africa selling information on industries, including economic research. Comparable public entities include the Technology Innovation Agency and the Council for Geoscience.
Kumu[5] (Unites States)	Kumu gives influencers the tools to track, visualise and leverage relationships to overcome their most challenging obstacles. Kumu was founded by Jeff and Ryan Mohr, to help people make sense of complicated relationships.	Private company.	Generates revenue through individuals that use the Kumu app and investors such as Kickstart Ventures and Core Capital, to name a few.	Private company established through the Companies Act with autonomous operations.
Working Nation[6] (Unites States)	Working Nation is a non-profit campaign founded in 2016 by venture capitalist Art Bilger to expose the hard truths about the emerging unemployment crisis and bring America together to create and amplify solutions for a changing economy.	Non-profit organisation.	Tax-deductible donations from fiscal sponsors.	Non-profit established as a private company through the Companies Act with autonomous operations.
Groningen Declaration Network[7] (Netherlands)	The Groningen Declaration Network seeks common ground in best serving citizens' academic and professional mobility needs worldwide by bringing together key stakeholders in the Digital Student Data Ecosystem at its annual meeting. The Executive Director of this network is Herman de Leeuw.	The Groningen Declaration Network is a public benefit foundation.	Sponsorships and donations fund the network.	Sponsorships and donations fund the network.
e-Estonia[8] (Estonia)	e-Estonia refers to the Estonian government's ecosystem where 99% of governmental services are online. e-Estonia aims to facilitate state and citizen interactions using electronic solutions. E-services that were created under this initiative include e-Voting, e-Business, e-Banking, e-Ticket, e-School, e-University via the internet, the e-Governance Academy and the release of several mobile applications.	The E-Estonia Briefing Centre was established as a non-governmental organisation, but now falls under Enterprise Estonia, a government agency whose role is to develop the economy of Estonia; e-Estonia itself is a governmental electronic platform.	Funded by the state.	State-funded.

4   See http://edudex.eu
5   See https://www.kumu.io/about
6   See https://workingnation.com/

7   See https://www.groningendeclaration.org/
8   See https://e-estonia.com/

Table 3: Institutional structures and funding sources (continued)

Company	Company breakdown	Institutional form	Funding	SA context
e-Health Group[9] (South Africa)	eHealth (also written e-health) is a relatively recent electronic process and communication support healthcare practice founded by Elliot Sack. Its focus is enabling healthcare providers to provide high-quality care to any patient, at all times, at low costs. e-Health Group makes audio-visual communication devices, which can bring any specialist or doctor virtually to any ward.	Private company.	Revenue is generated through hospitals and healthcare centres that make use of the e-Health services.	Such initiatives are common in medical insurance companies, and South Africa is no exception. They are, however, private initiatives operating independently from the government.
Handshake[10] (Unites States)	Handshake is a leading career networking platform that ensures that all college students have equal access to meaningful careers. It was founded by Garrett Lord, Ben Christensen and Scott Ringwelski in Michigan.	Private company.	Handshake receives funding from various investors such as Kleiner Perkins, Spark Capital and True Ventures.	Comparable to the envisaged PSET CLOUD, with autonomous operations independent of government influence and guidance.
Riipen[11] (Unites States)	Riipen is an experiential learning platform that helps schools connect students to industry and enables companies to pick top talent. Riipen was founded by Dana Stephenson .	Private company.	Generates revenue through individuals who use the platform and funding from investors such as Atrium Capital and Reach Capital.	The focus is similar to the role of SETAs – connecting graduates and learners to work opportunities. Riipen provides best practices for the envisaged PSET CLOUD.
Portfolium[12] (Unites States)	Portfolium, Inc. is an American social networking platform that allows university students and recent graduates to connect with businesses and employers and present their previous academic work and projects to supplement their curriculum vitae (CVs). The company was founded in 2014 by Adam Markowitz, Royce Rowan and Daniel Marashlian.	Private company.	Portfolium is funded by SJF Ventures, USA Funds and University Ventures.	Similar to what is envisaged for the PSET CLOUD; however, Portfolium does not assist school leavers or the unemployed.

9   See https://ehealthgroup.co.za/
10   See https://joinhandshake.com/about/
11   See https://www.riipen.com/
12   See https://portfolium.com/

7.6 Business case recommendations

The Business Case (COOi Studios, 2020, 130-131) states that the strategic objectives of the PSET CLOUD as set out below represent the criteria to be used in recommending an appropriate institutional framework:

- Provide real-time integrated and interoperable data.

- Achieve transparency and accountability within the PSET system.

- Optimise affordable access and inclusive participation by users.

- Offer maximum security and privacy of data.

- Provide a monitoring and evaluation tool for the PSET national targets using the theory of change methodology.

Based on these strategic objectives, the Business Case recommends the institutional structure options of a Schedule 3B public entity, private company or non-profit company. The Business Case further states that a newly established hybrid institutional framework, comprising a formalised collaboration with government, private sector and social partners, is the most viable option because it is consistent with the strategic objectives of the PSET CLOUD. Each of the stakeholders brings valuable contributions that are critical for the sustainability and viability of the entity.

Government represents the regulatory framework and enabling infrastructure, the private sector offers technical skills and competencies, while social partners bring credibility to the entity

through an oversight function. The Business Case concludes that a hybrid institutional structure with multiple shareholders is feasible in theory but not in practice considering existing restrictions imposed by the PFMA. The legality of having the three key stakeholders (through nominated representatives) as equal shareholders is not workable in practice.

The Business Case also refers to an existing hybrid option as seen in the Human Resources Development Council (HRDC) of South Africa. This option is a national, multiple-stakeholder advisory body chaired by the Deputy President of South Africa and managed by the Minister of Higher Education and Training, with representation from organised labour, academia, business and civil society.

The aims and objectives of the HRDC include:

1. To increase productivity and the human resource development needed to transform South Africa into a knowledge economy; and

2. To substantially improve national economic growth and development through the improved competitiveness of the South African economy (COOi Studios, 2020, 96).

The Business Case points out that the HRDC is not a juristic person or legal entity but an initiative within the Office of the Deputy President, with representation for five years. It does not have legal standing and independence as an entity. This means that there is no legislation informing its existence. The HRDC falls under the administration of the

DHET even though it is housed within the Office of the Deputy President of South Africa. Its operations are limited by the inefficient processes associated with public entities that lack representation across society (COOi Studios, 2020, 96-97). There is no evidence of broad consultation and consensus-building amongst stakeholders.

8 Advisory Note recommendations

Establishing the PSET CLOUD as a public entity is necessary if the service is to be centralised, authoritative and substantially funded through the fiscus. Should the PSET CLOUD be decentralised, collaborative and self-funded, the institutional structure could be something other than a public entity, given the call for equal partnership. The Business Case does not consider the hybrid institutional structure of a non-profit company, registered through the Companies Act, with partners. Furthermore, the citizen as a direct partner is not explicitly included as in a citizen-civil–public-private partnership (CC-PPP). This Advisory Note therefore expands on the non-profit company option with the inclusion of the citizen as a core partner in the PSET CLOUD.

8.1 Build trust through good principles

Further to the strategic objectives and principles already identified in the programme documents, this Advisory Note recommends adopting the Batho Pele (People First) framework to add value. The Batho Pele principles should be used as performance indicators to gauge programme progress.

These principles include:

- Consultation – determine the needs of the people.
- Service standards – quality of services citizens should be receiving.
- Access – easy access to services.
- Courtesy – a polite and friendly disposition.
- Information – people should be given accurate information.
- Transparency and openness – transparency about daily activities.
- Redress – a means for clients to express dissatisfaction with services.
- Value for money – avoid wasting money and resources.
- Encourage innovation and excellence – reward employees for excellence.
- Leadership and strategic direction – encourage efforts to plan and set goals (RSA, 1997).

8.2 Build trust through consultation

It is recommended that a comprehensive consultation process on the governance options be conducted with all stakeholders in the PSET CLOUD skills pipeline. A basic governance viability matrix (GVM) could be constructed and put to the vote to simplify the matter. This public consultation process could take place in the testing phase of the MVP and act as a public litmus test. A deep rural community could be selected and traced through a manufacturing, engineering and related (MER) skills pipeline as an early adopter of the MVP. The MER skills pipeline includes informal, non-formal and formal learning. It works with five chambers, namely auto, metal, motor, new tyre and plastics, guided by their respective value chains. The diagram (Figure 6) is an illustration of the plastics chamber value chain. Taking on a rural focus from the outset could add value in ensuring rural barriers and opportunities are explored.

Figure 6: Plastics chamber value chain

PLASTICS CHAMBER ——————————— merSETA

Supply of raw material suppliers

Conversion

Assembling

Polymer compounding/ blending

Finishing

Recycling follows more or less the same process
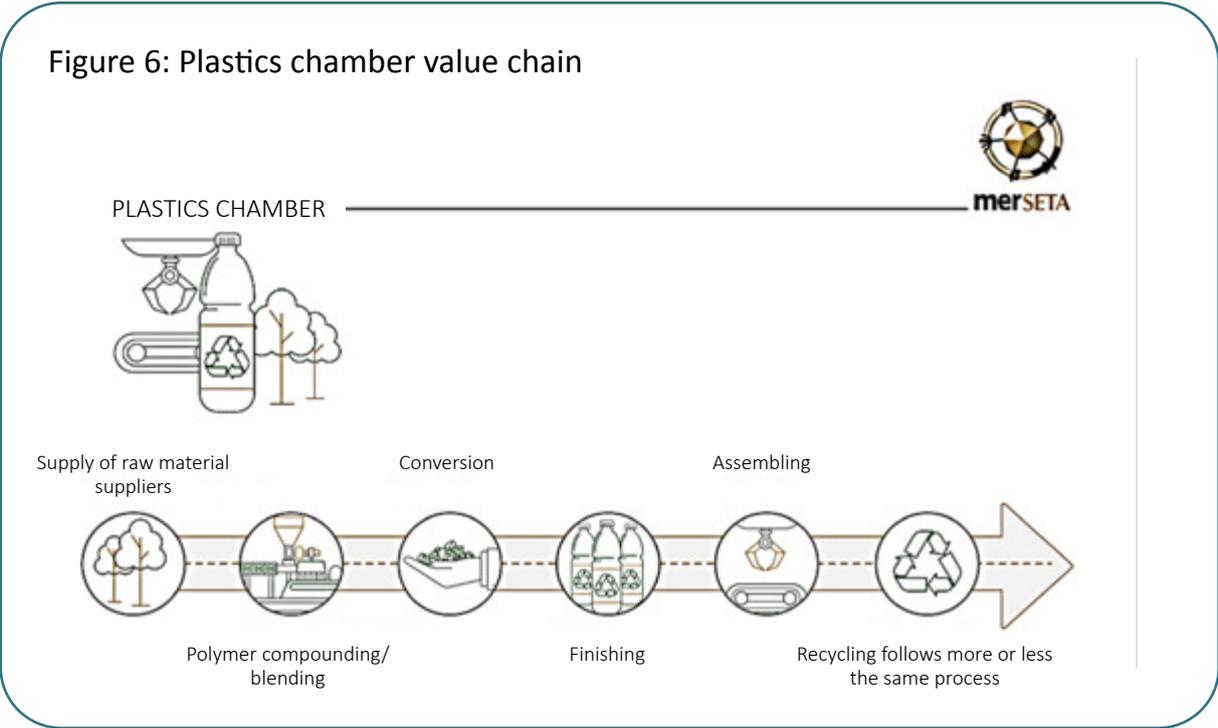
8.2.1 Governance viability matrix

It is recommended that the objectives and principles of the PSET CLOUD are used for the GVM for the rating of each of the institutional structure options, as shown in Table 4 below.

Table 4: Governance viability matrix

Governance viability matrix	Trust	Batho Pele	Agility	Equity	Accountability
Public entity: Partners as board members	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5
Private company: Partners as shareholders	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5
Non-profit company: Partners as fiduciaries	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5
Trust: Partners as trustees	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5	1/2/3/4/5

8.2.2 Start with rural communities

In keeping with the principle of equity, there should be a substantial focus on addressing deep rural barriers and opportunities. This pertains to the PSET CLOUD MVP and the need for genuine co-governance of the service. When attempting to engage rural communities, all available structures must be engaged. For this reason, the Mbangwane Thusong Centre in the Nkomazi Local Municipality, Ehlanzeni District, Mpumalanga, is recommended as the first consultation point for the GVM. The centre is in a rural area bordering two other countries and is believed to provide an optimal pilot site for this service (Figure 7).

Figure 7: Location of the Mbangwane Thusong Centre

Source: Google Maps https://goo.gl/maps/FkgoU2tz9L5rkCiT8
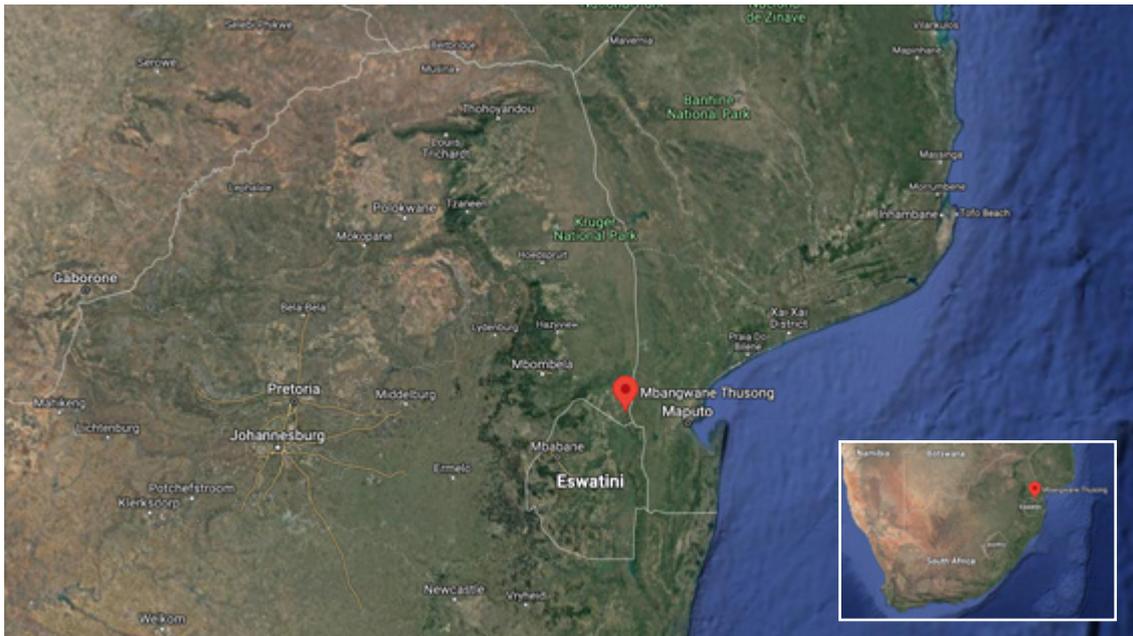
The Thusong Programme, of which the Thusong Centre is part, aims to ensure equitable and effective access to government services and information through strategic partnerships and engagements with the three spheres of government and relevant stakeholders. This offers rural communities access to services close to home. The Thusong Centre houses the following departments and agencies: DHA, South African Social Security Agency (SASSA), NT, DEL, Department of Cooperative Governance and Traditional Affairs (COGTA), SEDA, and the Government Communication and Information System (GCIS). Other services offered include computer classes, a sewing group and printing facilities. The Thusong Centre manager is Mr Mike Mabuza, and the regional communications coordinator is Ms Joy Themba.

The merSETA previously commissioned a feasibility study into indigenous career management interventions for employees in the MER sector (Taylor & Beukes, 2019). The study was extended to unemployed youth in the rural village of Mbangwane, and a digital career development workshop was held at the Thusong Centre. Through this intervention, trust was created with the leadership in the area, which includes the centre manager as a representative of COGTA, the provincial career guidance coordinator from the Mpumalanga Department of Education, the regional communications coordinator, and others. The inclusion of the village as part of the GVM and MVP could further confirm merSETA's commitment to sustained support at all levels. The needs expressed in Mbangwane have the potential to usefully inform the programme of actual challenges.

The recommended GVM and MVP consultation process would include:

- Induna, Chief, Counsellor, Community Forum;
- Ehlanzeni District Municipality, Nkomazi Local Municipality;
- COGTA, Mpumalanga Department of Education, DHET, DEL, GCIS;
- Mbangwane Thusong Centre, Mbangwane Primary School, Lubombo Secondary School, Phumula Secondary School, Ehlanzeni College Mlumati Campus;
- Community Education and Training College, Tshwane University of Technology, University of Mpumalanga;
- Local MER sector employers as early adopters of the MVP.

The intended purpose of this recommendation is to ensure a bottom-up approach to identifying and addressing transformation blockages in the skills pipeline. An action research approach could be adopted, including filmed discussions, to provide a rich record of each stakeholder's contributions to the process.

8.3 Establish equal partnership in PSET CLOUD governance

A partnership may be defined as "a relationship resembling a legal partnership and usually involves close cooperation between parties having specified and joint rights and responsibilities" or as a "relationship between two or more entities contractually associated as joint principals in a business"[13]. Further to a citizen-civil–public-private partnership recommended in the Business Case, this Advisory Note suggests the inclusion of the citizen as a direct partner, thus making the PSET CLOUD a CC-PPP, in which the citizen is first, as per the Batho Pele principles (Figure 8).

8.3.1 Citizen-civil–public-private partnership for PSET CLOUD governance

The recommended CC-PPP structure could take the form of a rhombus[14] or equilateral quadrilateral[15]. This structure has relevance for the PSET CLOUD as it includes the principles of equity in its equal lengths and partnership in the idea of spinning in unison. The rhombus governance model could potentially create synergy through co-creation with the partners spinning in unison when dealing with turbulence in South Africa and abroad. It also satisfies the need for an equal partnership where citizens provide direct input, the public sector provides authority, the private sector provides specialised skills, and the civil society sector brings quality assurance and oversight.

8.3.1.1 The citizen as an equal partner in PSET CLOUD governance

Citizens should be included when considering the composition of the core partners of the PSET CLOUD. While the civil society sector represents primarily rights-based and social justice initiatives, citizens are the primary beneficiaries of PSET services. The Batho Pele principle of putting citizens first by keeping them at the centre is the golden thread running through all programme reports and research findings.

Consultation with citizens must ensure a reliable measure of public sentiment. Citizens throughout the skills pipeline should be actively engaged in a system that is for them. Citizens can be engaged through multiple platforms such as meetings, surveys, focus groups and more, through an opt-in process at a community level. Most importantly, a consensus-building approach is needed for citizens to raise issues, refine them, reach consensus and translate them into actions (Miller, 2019).

Consensus-building or collaborative problem-solving should recognise complex, multiparty differences between stakeholders (Burgess & Spangler, 2003) and allow multiple parties in a challenging area to work together to develop a mutually acceptable solution.

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13   See https://www.merriam-webster.com/dictionary/partnership

14   The word 'rhombus' comes from the Greek word rhombos, meaning something that spins, which derives from the verb rhembō, meaning 'to turn round and round'. https://en.wikipedia.org/wiki/Rhombus

15   "[A] rhombus … is a quadrilateral whose four sides all have the same length. Another name is equilateral quadrilateral, since equilateral means that all of its sides are equal in length. The rhombus is often called a diamond, after the diamonds suit in playing cards which resembles the projection of an octahedral diamond, or a lozenge, though the former sometimes refers specifically to a rhombus with a 60° angle" https://en.wikipedia.org/wiki/Rhombus

Figure 8: Citizen-civil–public-private partnership
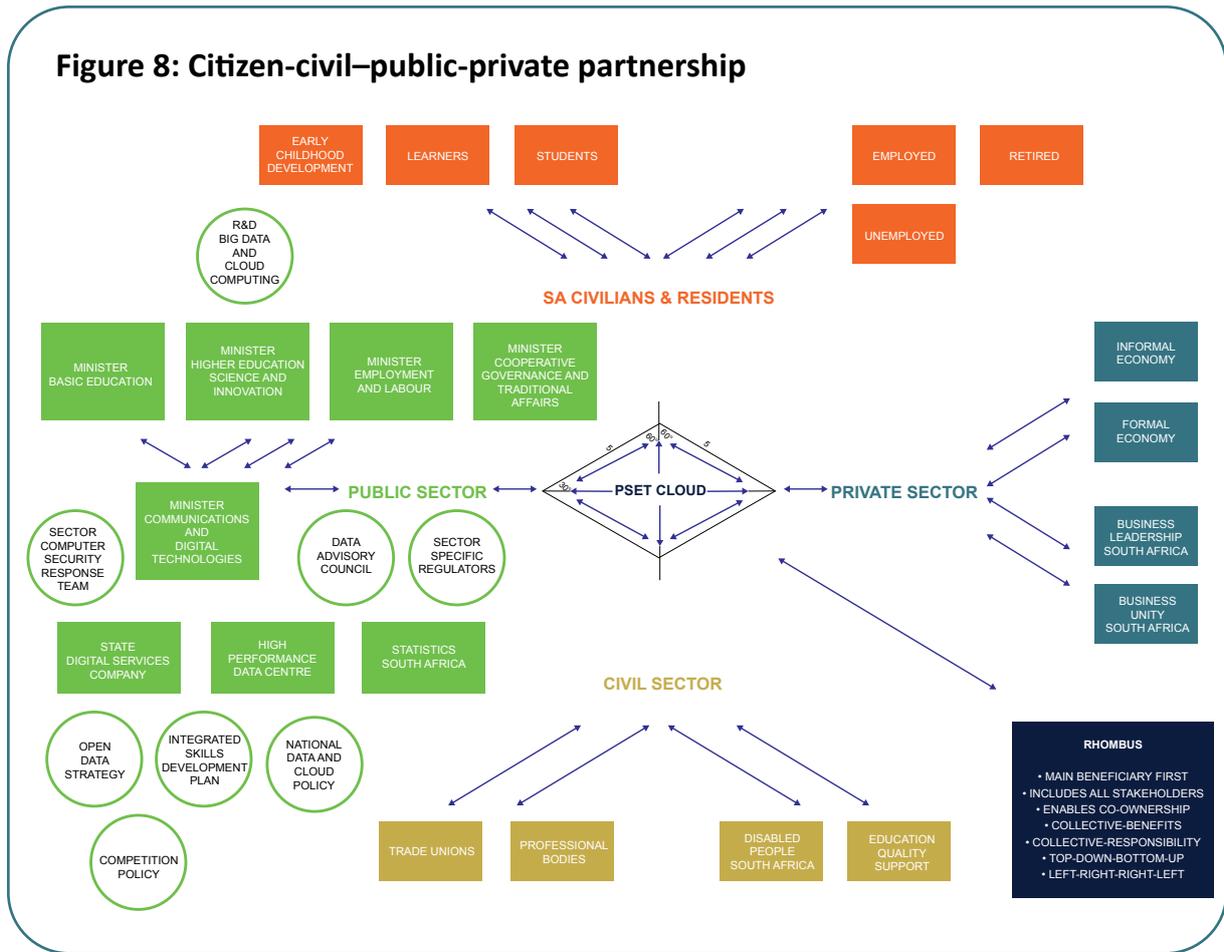
The systems method of consensus building includes brainstorming with participants, generating statements or ideas, clustering these and then converging the ideas. The strategies used are:

1. Brainstorming to identify issues and priority areas;

2. Developing a priority matrix;

3. Creating causal loop diagrams representing 'systems of priorities' (Maani, 2002, 87).

They may be used for purposes such as:

1. Resolving differences of meaning;

2. Resolving mutually exclusive individual goals;

3. Resolving differences of mental models;

4. Resolving conflicts of information;

5. Resolving differences of taste (Briggs, Kolfschoten & de Vreede, 2005, 106-107).

Online systems, such as vTaiwan[16], are emerging to support the potential of participatory governance (Horton, 2018). The system provides a way for the public to express their views and reach a consensus. The developers describe it as "an online-offline consultation process to bring together government ministries, elected representatives, academics, experts, business leaders, civil society organisations and citizens" . Citizens go to the online website, propose solutions and vote on them. The process increases the degree of legitimacy of outcomes taken through formal political processes.

8.3.1.2   The civil society sector as an equal partner in PSET CLOUD governance

Civil society, also known as the 'third sector', is distinct from government and business (Wikipedia contributors, 2021a). Civil society organisations play multiple roles and are an essential source of information for both citizens and government. Civil society organisations

> monitor government policies and actions and hold government [and the private sector] accountable. They engage in advocacy and offer alternative approaches to government, the private sector and other institutions. They deliver services, especially to marginalised communities and groups. They defend civic rights and work to change and uphold social norms and behaviours.
> (Ingram, 2020)

8.3.1.3   The public sector as an equal partner in PSET CLOUD governance

On 1 April 2020, the Department of Communications and Telecommunications and the Department of Postal Services merged to form the Department of Communications and Digital Technologies (DCDT). On 1 April 2021, the DCDT gazetted the *Draft National Policy on Data and Cloud* (RSA, 2021) for public comment. The policy seeks to enable South Africans to realise the socio-economic value of data through aligning existing policies, legislation and regulations. The policy further seeks to create a conducive and enabling environment for the data ecosystem to thrive.

As per the policy, SITA will be repurposed into the State Digital Services Company (SDSC). The SDSC will be responsible for connectivity to the High-Performance Computing and Data Processing Centre (HPCDPC) and its interconnection to all other public data centres. The HPCDPC will be the primary data regulator for South Africa to enable interoperability, integration and harmonisation of data standards.

One of the *Draft National Policy on Data and Cloud Policy's* proposed interventions is that "strategies and interventions for Small, Medium and Micro

Enterprises (SMMEs) in the digital economy, such as digital hubs and digital transformation centres, supported by open compute[sic] and open software, shall be adopted by SITA" (RSA, 2021, 23). The purpose would be to enable applications to be developed locally through collaboration between relevant government departments, agencies, academia and SMMEs.

The policy includes amendments to the Statistics Act, Act No. 6 of 1999, to broaden the scope of Statistics South Africa to oversee the central collection, storage, digitisation and analytics of all government data in South Africa. It also calls for the Minister of DCDT to

> establish an Advisory Council, consisting of private and public representatives and academia, to advise amongst others on:
>
> • Data management standards, guidelines, best practices and the use of data for innovation and economic activities.
> • Development of a regulatory framework for the management of data and cloud services.
> • Strategic data sets that can stimulate innovation and the economy and support service delivery.
> • An interoperability framework between government and business.
> • Policy considerations on an AI code of ethics.
> (RSA, 2021, 34)

The Competition Commission South Africa (2020) published a paper titled *Competition in the digital economy* for public comment. The paper argues that "the arrival and the rapid rise of the digital economy present the country with an opportunity to reverse the pervasive, triple scourge of unemployment, inequality and poverty" (Competition Commission, 2020, 4). The paper calls for sector-specific regulators, supported by policy from relevant departments, to develop regulatory frameworks that will facilitate disruption to foster inclusion and reduce market concentration.

To harness the benefits of digitalisation, a commercial and regulatory environment needs to be created that is "designed to extract those benefits and distribute them in a way that ensures inclusive economic growth, that leads to (1) increased and meaningful employment; (2) equality; and (3) shared prosperity (Competition Commission, 2020, 4). For this reason, continuous monitoring and evaluation to inform research-based policies and procedures will be implemented. As per the *White Paper on Science, Technology and Innovation* (2019b), the DHET, in collaboration with the DCDT, shall be responsible for the research and development of big data and cloud computing.

16   See https://info.vtaiwan.tw/

The private sector includes employers and, as per the MVP, employers from the merSETA chambers. In addition, sector representatives such as Business Leadership South Africa, Business Unity South Africa and employers in the informal sector would also be represented. It is essential to keep employers in the informal sector engaged in and part of the more extensive system.

As prospective employers of people who exit the PSET system, the private sector provides the most credible reference point for the success of the PSET system. The private sector's input on and 'grading' of the quality of school leavers and graduates are critical to understanding how successfully the pipeline is performing.

8.4 Engage the Minister of Communications and Digital Technologies

The Minister of Communications and Digital Technologies should be included as the DCDT is mandated to harness South Africa's digital transformation to achieve digital inclusion and economic growth by creating an enabling policy and regulatory environment and implementing the National Integrated ICT Policy White Paper (RSA, 2016a) The policy provides a roadmap for inclusive digital transformation, interventions to reinforce competition and facilitate innovation across the value chain, measures to address issues raised by ICT and convergence, and establishing a new national postal policy framework. It also provides strategies to address the digital divide, affordable access, infrastructure rollout, and to facilitate inclusivity (National Treasury, 2020, 1).

8.5 Establish a subsidiary non-profit company through SITA

As stated previously, the purpose of a non-profit company is to improve the quality of life for others at a community, local, national and global level. These organisations are not primarily interested in private or financial gain but in advancing the public interest. A non-profit company could be established as a subsidiary through the Companies Act, in accordance with the SITA Amendment Act 38 (RSA, 2002b).

The SITA, as the Prime Systems Integrator (PSI) for government, sets the required technical standards. The objective of the SITA is to "act as an agent of the government to provide information technology, information systems and related services in a securely maintained information systems environment" (RSA, 1998b, 8).

To achieve its objective, the SITA may:

1. Provide data processing services;

2. Provide information technology and information systems training;

3. Provide application software development and maintenance services;

4. Promote the effective utilisation of information technology to enhance efficiency at all levels of the Public Service;

5. Provide technical, functional and business support regarding information technology;

6. Provide information technology and information systems management services;

7. Act as procurement agency in respect of information technology requirements concerning any of the functions mentioned above, following the government procurement policy and perform any other function that the Minister may, from time to time, determine to give effect to the agency's objective (RSA, 1998b, 8).

8.5.1 The SITA funding model

As per the SITA Act, No. 88 of 1998, Chapter 5(16):

16. (1) The Agency is funded from monies received for services rendered that are stipulated in the service level agreements entered into with participating departments and organs of state.

(2) The rates used for determining the cost of service will be reasonably market related and periodically approved by the Department of State Expenditure.

(3) The Agency will focus on generating maximum efficiency and cost-effectiveness for the State and the Board will recommend to the Minister on the basis of a strategic plan what excess funds will be retained by the Agency and for which purpose.

(4) Funding and capital to start operating the Agency must be obtained from funds agreed to between the Minister and the Minister of Finance, after consultation with the participating departments.

(5) Payment for services provided by the Agency to a department or an organ of state will be made according to the stipulations of the business agreement between the parties.

(6) (a) Any special funding required or other special financial arrangement, including any government grants, may be negotiated by the Agency with the Minister, the Minister of Finance and any other interested party.

(b) The subsequent agreement will include all conditions to be met relating to such an arrangement.

(7) (a) The Agency may, with the approval of the Minister, accept donations and bequests.

(b) Particulars of each donation or bequest accepted by the Agency must be given in the annual report of the Agency.

(8) The Department of Public Service and Administration will be responsible for all transfer payments to the Agency approved by the Department of State Expenditure.

(9) The books and records of accounts and financial statements of the Agency will be audited annually by the Auditor-General. (RSA, 1998b, 14)

It is noted that the SITA reports to the Parliamentary Portfolio Committee on Communications (Parliament of the Republic of South Africa, 2020) and was included in the Budgetary Review and Recommendation Report (BRRR) of the Portfolio Committee on Communications on 1 December 2020 (Parliamentary Monitoring Group, 2020b).

8.6 SITA to delegate responsibility for PSET interoperability protocols and standards

The SITA is mandated to oversee interoperability standards in the public sector and e-Government (RSA, 2005). The SITA can also establish subsidiary companies and can delegate responsibilities to such subsidiaries (RSA, 2002b). The SITA may thus consolidate the enforcement of interoperability standards and security of public data for all transversal systems through a subsidiary organisation created to govern and implement the PSET CLOUD. The legislative framework makes provision for the SITA to establish the PSET CLOUD as a subsidiary and to ensure compliance for its transversal systems.

8.7 Register the PSET CLOUD as a public benefit organisation

The Exceed Group provides information on its website as a part of its professional services.

A Public Benefit Organisation (PBO) can be a trust, a not-for-profit company, a professional body, small business funding agency or foreign organisation in terms of the new Companies Act, or an association registered with the South African Revenue Service (SARS) in terms of Section 30(1) of the Income Tax Act, No 58 of 1962. All non-profit organisations are encouraged to register as public benefit organisations. Section 10 (1) (cN) of the Income Tax Act and Paragraph 5.3.2.3 of the Tax Exemption Guide for public benefit organisations assume that all income derived by such organisations will be exempt from regular income tax provided that the income is not distributed (directly or indirectly) to its members. (Exceed, 2021)

Further, the South African Institute of Chartered Accountants explains:

The benefits do not exclusively relate to an exemption from income tax but may be extended to donor deductibility in certain instances. Provided specific additional requirements are complied with, namely that the Non-Profit Company (NPC) conducts any of the particular public benefit activities listed in Part II of the Ninth Schedule, such an NPC will also qualify for section 18A donor deductibility status. In other words, where donors donate funds to a PBO having section 18A approval, the donors will be permitted to deduct the value of their donation from their taxable income, limited to 10% of the donor's taxable income. Such a benefit could significantly assist a non-profit organisation in attracting grants and funding in general. (South African Institute of Chartered Accountants, n.d.)

In line with the SITA funding policy, donations may be accepted through an accounting authority and reported on in its annual report.

8.7.1 What is a Non-Profit Company?

Barnard Inc. Attorneys, a full-service law firm, provides a useful comparison between an NPC and a trust on its website (Barnard Inc. Attorneys, 2017).

Definition of a Non-Profit Company (NPC)

A company incorporated for a public benefit object, or an object relating to one or more cultural or social activities, or communal group interests.

The income and property of an NPC may not be distributable to its members or directors or its incorporators, officers or related persons.

An NPC is administered and managed by its Board of Directors that receive their powers from the Memorandum of Incorporation (MOI) and the Companies Act, No 71 of 2008 and specifically Schedule 1 of the Act. The MOI forms the constitution of the NPC, and the NPC may not act in as far as its MOI prohibits any action. The MOI will determine how the NPC's business should be conducted, how the Board of Directors are appointed, how meetings of directors or members are convened, what constitutes a quorate for meetings of the Board or members, what percentage is required for specific decisions of the directors or the members and what happens in the event of a conflict between directors or members.

An NPC has a legal personality separate from its members and directors. This means that the NPC can sue and be sued in its name and own immovable property.

An NPC must be registered with the Companies Intellectual Properties Commission (CIPC) after the necessary Certificate of Registration (CoR) documentation, and Memorandum of Incorporation (MOI) has been completed.

Formalities of an NPC

- The company must appoint auditors and inform the Commission of any change in auditors in certain circumstances.

- The company must appoint a registered address and inform the Commission of any change of address.

- The company must keep an updated register of members and directors.

- The company must keep accurate and complete accounting records.

- The directors must ensure that proper minutes and attendance registers are kept.

- The company must hold an Annual General Meeting (AGM).

- The company must prepare annual financial statements within six months of the end of its financial year and must present the statements at the AGM.

- The object of an NPC must be contained in its MOI and be either a public benefit object or an object relating to one or more cultural or social activities or collective or group interests.

- Although the income and property of an NPC may not be distributable to directors or members, it does not preclude the NPC from paying reasonable remuneration to its directors, including fair reimbursement for expenses.

- Distribution to members or directors in the event of winding-up of the NPC is prohibited, and there must be a directive in a company's MOI containing such a clause.

Advantages and disadvantages of an NPC

1. The provisions of the Act are complex and detailed and are subject to public disclosure obligations and statutory control.

2. There is freedom in the management of the day to day affairs of the company subject to the MOI and the Act.

3. The company has a separate legal personality from its members.

4. The reporting requirements for a company are complex and extensive and not always suitable for smaller organisations.

5. A NPC continues to exist if the members or directors pass away.

6. The provisions of section 77(3) of the Act apply to NPCs. A Director will be liable for any loss, damage or costs sustained by the company if he/she:

   1. Was acting in the name of the company knowing that he/she lacked the authority to do so;

   2. Agreed to carry on the company's business knowing that it is being conducted in a reckless manner;

   3. Is a party to an act or omission by the company despite knowing that the act or omission was calculated to defraud a creditor, employee or member of the company, or, had another fraudulent purpose;

   4. Signed, consented to, or authorized the publication of any financial statements that were false or misleading in a material respect.

   5. Where more than one director was party to any of the above, all such persons will be held liable provided it is for the same contravention.

   6. Provided there was no wilful misconduct, or, a wilful breach of trust, a court may on any terms relieve a director from these liabilities if he/she:

      1. Acted honest and reasonably; or

      2. It would be fair to excuse the director given the circumstances.

7. A further advantage of a NPC is that it may register as a ring fenced company that will have the letters 'RF' appear after its name. The effect hereof would be that the public would be aware of inherent limitation of directors that will allow the NPC to legally repudiate actions performed by Directors without the necessary authority.

8.7.2   What is a Trust?

Barnard Inc. Attorneys (Barnard, 2017) provide the following explanation.

Definition of a Trust

A trust is a legal arrangement between persons (the founder, trustees and beneficiaries) intending to form a trust governed in terms of a Deed of Trust for the benefit of the beneficiaries. Trusts can be used to conduct business for profit or promote causes not aimed at a profit.

Administration of a Trust

A trust is administered and managed by its Board of Trustees that receive their powers from the Deed of Trust. The Trust acquires all its powers from the Deed of Trust, and the Trustees may not perform functions not allowed in terms of the Deed of Trust. The Deed of Trust will determine how the Trust's business should be conducted, how the Board of Trustees is appointed, how meetings of Trustees are convened, what constitutes a quorate for a meeting of the Trust, what percentage is required for specific decisions of the Trustees and what happens in the event of a conflict between Trustees.

Does a Trust have an independent legal entity?

A Trust does not have its own legal personality and cannot sue or be sued in its own name and must be sued in the name of its Trustee in their capacities as Trustees of the Trust. A Trust cannot hold immovable property in its name, and it must be registered in the names of the Trustees that hold the property in their capacities as Trustees of the Trust on behalf of the beneficiaries. However, a Trust will be regarded as having a separate legal personality if the Trust is registered as a non-profit organisation in terms of the Non-Profit Organisations Act, No 71 of 1997.

How to form a Trust

A Trust must be registered with the Master of the High Court, which requires a Deed of Trust and supporting documentation.

Formalities undertaken to form part of Trust

1. The Master of the High Court registers the trust and oversees and controls the appointment of trustees.

2. The Master must be informed of changes of any trustees.

3. The Master exercises a high degree of supervision over the appointment of trustees.

4. Even though the Master may call trustees to account for the administration of trust property, this supervision is limited in practice. In most cases, the Master will only comply with oversight when a complaint is lodged. However, in these cases, the Master may request the trust's financial statements or any other information needed from the trustees and may even remove a trustee from the Board.

5. Trustees must ensure that proper minutes of meetings are kept.

6. The object and the purpose of a Trust must be captured in the Deed of Trust.

7. A trust must be administered to the benefit of the beneficiaries, including the trustees. However, if a trust registers as a PBO, the trust may not include a purpose where the trustees benefit from the trust.

8. On termination of the trust, the trust's property must be distributed to the beneficiaries.

9. Trustees are entitled to reasonable remuneration (Barnard, 2017).

> **Advantages and disadvantages of a Trust**
>
> 1. The requirements for disclosure of trusts are limited, and there need not be an auditor or audited financial statements unless otherwise required by the Deed of Trust.
>
> 2. A trust is very flexible and can suit many forms of NPOs.
>
> 3. A trust does not have its own legal personality and cannot sue or be sued in its own name and must be sued in the name of its trustees in their capacities as trustees of the trust. A trust cannot hold immovable property in its name, and it must be registered in the names of the trustees that hold the property in their capacities as trustees of the trust on behalf of the beneficiaries. However, a trust will have a separate legal personality if the trust is registered as a non-profit organisation in terms of the Non-Profit Organisations Act, No 71 of 1997.
>
> 4. The reporting structure for trusts can be as formal or as informal as the founder of the trust wishes when a Deed of Trust is drafted.
>
> 5. A trust continues to exist if the trustees pass away.
>
>   1. Trustees can be personally held liable if they did not act with skill and diligence according to Section 9 of the Trust Property Control Act. The term 'skill' is more than just acting in good faith. Trustees might be proven negligent not only if they invested in risky investments but also if they invested too conservatively, causing the capital not to grow sufficiently.
>
>   2. Trustees can be held personally liable in the event of gross negligence.

8.8 Register the PSET CLOUD as an intergovernmental agency

The baseline PSET CLOUD documentation alludes to the potential for the PSET CLOUD to serve more countries than just South Africa. Advantages of establishing the PSET CLOUD as an intergovernmental agency include the potential for pan-African collaboration in terms of data interoperability and digital fluency across the continent. Such an approach could boost trade opportunities, build stronger relationships between partner countries and even potentially provide smaller countries with an opportunity for greater economic power. Some disadvantages could include challenges such as language and cultural barriers.

One option, similar to how the Europass[17] is being governed in the European Union (EU), could be that the PSET CLOUD is governed in cooperation with the African Union (AU). In April 2018, the revised Europass Decision (European Parliament, 2018) was adopted by the Council and European Parliament. The Decision sets out the goal of Europass to offer intuitive, modern tools that reflect people's needs in the context of today's labour market, education and training systems. The Europass platform, launched on 1 July 2020, represents the first phase of implementation of the Europass Decision. The Commission cooperates with member states, participating countries, labour market and education and training stakeholders to implement the Europass Decision.

Another option could be cooperation with the Southern African Development Community (SADC)[18].

An institutional structure that allows for the eventual establishment of such an agency would need to be considered from the outset.

If the PSET CLOUD is to take on a pan-African presence, it will need to follow the route of becoming an intergovernmental agency firstly within South Africa and then in other countries. Establishing an intergovernmental agency would therefore begin with registering the organisation in South Africa as a host country, followed by appeals to other African countries to host the organisation via the African Union Commission and in cooperation with existing intergovernmental agencies operating across the continent. This option

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17   See https://europa.eu/europass/en
18   See https://www.sadc.int/themes/social-human-development/education-skills-development/

may provide greater credibility if successful and requires a fully collaborative approach, considering the requirements and expectations of all other African countries and the mandates of existing agencies in the region.

A few examples of existing intergovernmental agencies in the education sector in Africa are described below.

8.8.1 The Association for the Development of Education in Africa

According to its website, the Association for the Development of Education in Africa (ADEA)[19] is a forum for policy dialogue. It was founded in 1988 at the instigation of the World Bank and has evolved into a pan-African organisation based within the African Development Bank (AfDB). The website describes ADEA as a

> catalyst for reforms and promising policies and practices through the pooling of ideas, experience, lessons learned and knowledge. One of its major objectives is to encourage exchanges between ministries of education and between them and development agencies.

It is governed by a Steering Committee composed of African ministers of education and representatives of multilateral and bilateral development organisations that support education in Africa. The ministers of education on the ADEA Steering Committee constitute the ADEA Bureau of Ministers who represent the regions of Africa.

8.8.2 The Association of African Universities

The Association of African Universities (AAU) website[20] reflects that the organisation received its mandate from the African Union Commission and is recognised as the technical implementing arm for African higher education under an memorandum of understanding. The Government of Ghana offered to host the AAU, which resulted in a governmental hosting agreement to support the

AAU as the leading advocate for higher education in Africa, operating under its own constitution[21] and byelaws[22]. The association can provide support for its member institutions in meeting national, continental and global needs[23]. The AAU's mission is to "enhance the quality and relevance of higher education in Africa and strengthen its contribution to Africa's development". The Association has a legal and juridical personality in the country of its headquarters, while regional offices across the continent are based at member universities. The website reports that the Governing Board comprises the President of the Association, three Vice-Presidents, 11 other executive heads of member institutions elected at the General Conference to represent the five sub-regions of Africa, and the Secretary-General. The Governance Board implements the decisions of the General Conference and meets annually[24].

8.8.3 The African Virtual University

The African Virtual University (AVU)[25] is a pan-African intergovernmental organisation established by charter to significantly increase access to quality higher education and training through communication technologies. The AVU website describes how the AVU was initially launched in Washington in 1997 as a World Bank project and was later transferred to Kenya in 2002. The AVU became an intergovernmental organisation in 2003.

Nineteen African governments, namely Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Democratic Republic of Congo, Ghana, Guinea, Guinea Bissau, Kenya, Mali, Mauritania, Mozambique, Niger, Nigeria, Senegal, South Sudan, Sudan, Tanzania and The Gambia, have signed the Charter establishing the AVU as an Intergovernmental Organisation.

The AVU has its headquarters in Nairobi, Kenya, and maintains a regional office in Dakar, Senegal. The AVU has host country agreements with the governments of Kenya and Senegal and has diplomatic status in these countries.

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19   See https://www.adeanet.org/
20   See https://aau.org/
21   https://www.aau.org/wp-content/uploads/sites/9/2016/10/AAU-Constitution-in-English-1.pdf?_ga=2.111294403.639739862.1628455119-1329815503.1579697423
22   https://www.aau.org/wp-content/uploads/sites/9/2016/10/AAU-Bye-Laws-in-English-1.pdf?_ga=2.111294403.639739862.1628455119-1329815503.1579697423
23   https://aau.org/wp-content/uploads/2020/11/AAU-STRATEGIC-PLAN-SUMMARY.pdf
24   https://aau.org/governance/
25   https://www.oerafrica.org/content/african-virtual-university-releases-hundreds-new-open-educational-resources

8.9 Institute the PSET CLOUD as a formal, informal and non-formal credential validation platform

As explained by Eric Korb of TrueCred, "Industry leaders, institutions and employers need a way to ensure that the high-stake credentials they review and issue are authentic and trustworthy" (Korb, 2016). The purpose of the PSET CLOUD on a macro level is to ensure that valid supply- and demand-side data is centrally available for effective decisions for citizens, the PSET system and industry in order to maximise the economic development of South Africa. The PSET CLOUD can facilitate the validation of credentials, allowing employers to make hiring decisions confidently and industries to securely exchange credentials.

On a micro level, each resident or citizen would have access to valid information to make PSET and employment-related decisions. Public or private organisations could also access valid information on which to base selection decisions. Both informal and formal data should be made available to equitably address the full spectrum of the supply- and demand-side. This is an ever-changing dataset that has many data providers. The idea of the PSET CLOUD is to create an enabling environment for all potential datasets to continually be included in a manner that ensures quality through validity.

An example in the informal sector is a poultry farmer in the Mbangwane village needing a person to feed their chickens to grow their business. Such a poultry farmer may also need a specialist to assist on a short-term basis when their chickens are sick. An example in the formal sector is a financial firm needing a risk manager to grow its business. Such a firm may also need a specialist on a short-term basis to assist with its online marketing strategy.

What is evident in these examples is the significant number of valid datasets needed to facilitate effective decision-making. The PSET CLOUD is intended to validate such datasets and work with them transversally rather than be the creator of datasets. This would empower the ecosystem supporting each dataset to flourish on its own by providing interoperable protocols and standards for both the informal and formal economy. Such transversal protocols and standards may pertain to more than information systems and may include procedures and requirements for the manual entry of data.

The European Centre for the Development of Vocational Training (CEDEFOP)[26], as part of its vocational education and training toolkit for tackling early leaving (CEDEFOP, n,d.) explains that "Validation is about making individuals' diverse and rich learning visible, irrespective of where this learning took place."

CEDEFOP goes on to say:

Validation is a process that different stakeholders can carry out within the education and training sector, labour market and the third sector. There are four different stages to validation: identification, documentation, assessment and certification. These stages can be mixed and balanced in different ways. For example, when working towards a formal qualification, the assessment stage is crucial. In voluntary work, the identification and documentation stage may be more relevant.

CEDEFOP points out important factors to be considered by an organisation that conducts validation. The validation process should entail:

1. Recognising skills and competences acquired in a variety of settings;

2. Providing guidance to help young people make good choices and increase their chances for success;

3. Selecting the right tools to carry out the process;

4. Placing the learner at the centre of the process;

5. Following up after validation;

6. Meeting the needs of different learners;

7. Ensuring the credibility of validation by education providers and employers;

8. Involving relevant stakeholders in validation processes to promote buy-in and raise awareness;

9. Training practitioners involved in validation processes (CEDEFOP, n.d.).

26 https://www.cedefop.europa.eu/en/toolkits/vet-toolkit-tackling-early-leaving/intervention-approaches/validation-non-formal-and-informal-learning

CEDEFOP elaborates on how to address these considerations on its website.

1. Recognise skills and competencies acquired in a variety of settings

There is an increasing desire to recognise all learning that happens in one's personal life. Although some citizens may not have acquired a formal education, many have gained valuable skills at home, in the workplace or through hobbies. For some citizens who have little or no access to extra-curricular opportunities (including sports or volunteering), practitioners can use formative approaches that concentrate on identifying skills and competencies gained in day-to-day activities. This can help to motivate and empower individuals.

2. Provide guidance to help young people to make good choices and increase their chances for success

Guidance can take the form of a range of different activities and services and plays a vital role in supporting people through a validation process. Career guidance includes career information, career counselling, mentoring and career education. These activities support career management skills that enable people to plan, lead and manage their learning and career choices. Guidance and counselling are essential for reaching disadvantaged groups and supporting them through the validation process. Young people need guidance before, during and upon completion of the validation procedure to realise their inherent potential. Existing guidance methods and tools devised to respond to the needs of different target groups can be used in validation initiatives to assist in defining validation purposes.

Since guidance can originate from various services and stakeholders, coordination between sectors and organisations is essential to link guidance services with validation. Providing guidance and counselling during the different stages of the validation procedure is important, with particular attention to identification and documentation. Guidance professionals should be aware and up to date on the full range of learning opportunities available to individuals upon completion of the validation process. Depending on the individual, guidance activities or services may work better if offered on a one-to-one basis or as part of a group session with a guidance practitioner, career advisor or mentor.

3. Select the right tools

Practitioners should select validation tools that are fit for purpose and provide the opportunity for self-exploration and reflection. In some cases, more than one tool or a combination of tools may be needed to capture the characteristics of the learning outcomes and reflect the needs of the individual. For some people, the idea of working towards a formal learning outcome, such as a qualification, is simply not an option at first. These young people may just need an opportunity to re-assess their current situation and identify a way forward. It is important to select the most suitable tool to extract evidence. For some learners, conversation methods or observations are more suitable, while a test or examination may be more appropriate for others. Practitioners need to select the most appropriate tools to document and present the evidence that has been extracted. For some learners, a portfolio may be used, while for others, third party reports or CVs or a combination of these tools may be used. A portfolio can be used to help an individual understand the skills and competencies they have acquired. It provides the audience with comprehensive insights into the achievements of their learning. Building a portfolio takes time. Some learners will need time for self-reflection and help identify undocumented skills and produce a portfolio that shows their skills and competencies transparently and authentically).

4. Placing the learner at the centre of the validation process

Validation procedures should refer young people to learning opportunities that are the most appropriate for each individual. Validation is usually voluntary, and learners must be supported to make decisions about going through the different stages of validation. Learners should receive information and guidance to help them understand the process and the options for validation. For example, some people are more attracted to learning offered in an informal environment and have their skills validated through non-formal mechanisms. This approach can help increase self-esteem and motivate individuals to take on further learning, perhaps igniting an interest in achieving a formal qualification in the longer term.

5. Follow-up after validation

Depending on the needs of the individual, validation can be used as a steppingstone back into education, a pathway to training or work, or simply to help them understand their skills and competencies. Practitioners involved in the process must be aware of progression opportunities for the individual, such as access to or progression within qualifications or access to the labour market. Systematic data collection and monitoring arrangements (for example, unique reference numbers, registers) can be used to track the progress and mobility of individuals following completion of a validation procedure, for instance, into further education and training or employment. This information can be

used to ensure a young person is not lost in their transition into education or the labour market, whereby appropriate follow-up measures should be in place.

6. Meeting the needs of different learners

Validation activities can be used by different sub-groups and age ranges of early leavers. As such, validation systems should be flexible and adaptable to the needs of target groups. Validation practitioners should be trained to understand the diversity of early leavers, their specific problems and barriers that keep them from participating in formal learning. Validation materials need to be adapted to ensure they are helpful to different subgroups. It includes the use of accessible language (vital for non-native language users or those with low literacy levels) and multi-channel visuals such as images and pictograms. Some validation procedures can be created for specific target groups, but systems should ideally be responsive to different needs.

7. Ensure the credibility of validation by education providers and employers

The credibility and awareness of any validation process and its outcome are essential issues for early leavers. If education providers or employers do not recognise the outcome resulting from the validation process or they do not consider it to be the same value as those acquired through formal learning, the outcome will be less beneficial for the individual's employability and educational advancement. Awarding a certificate based on non-formal and informal education requires an agreed reference point, for example, in the form of a qualification standard or occupational standard. Whilst the identification and documentation phase of validation may be carried out without a formalised standard, assessment and certification aiming towards a qualification

need to be carried out to an agreed and approved standard based on learning outcomes. The use of standards that are the same as or equivalent to the standards for qualifications obtained through formal education programmes is essential to ensure consistency in the validation system. This is one way to ensure the credibility of the outcomes.

8. Involve relevant stakeholders in validation processes to promote buy-in and raise awareness

Validation processes often require different stakeholders (e.g., national stakeholders, education and training institutions, enterprises and NGOs) with different responsibilities and functions. Their involvement and contribution in the validation process at an early stage can help ensure the quality and coherence of the validation experience for the individual. Coordination between stakeholders can also raise awareness of validation opportunities and trust in their outcomes.

9. Train practitioners involved in validation processes

There can be a wide range of professionals involved in validation procedures for people at different stages of the process. These practitioners include those engaged in offering information, advice and guidance, and those carrying out and managing the assessment process. These staff members should have access to training, practical guidelines and a range of validation tools and methods. They should be suitably qualified to work with candidates to appraise the breadth and depth of their learning and ensure appropriate methods are selected at the relevant stages to best suit the individual. They should also be equipped with soft skills such as the intercultural skills to ensure the diverse needs of the early leavers are met.

The value of validation is that it provides "enormous potential to support further education, employment achievement and broader well-being". It has benefits at the individual, institutional and systemic levels:

INDIVIDUAL	INSTITUTIONAL	SYSTEM
• Increased self-esteem /self-awarness • Empowerment • Tailor made learning opportunities • Stimulus to engage in further learning • Access to higher level of study • Gain evidence to apply for employment/promotion	• Reduce drop-out rates • Learning opportunities better meet the needs of individual learners	• Better matching skills and labour demand • Promoting transferability of skills between companies and sectors • Supporting mobility across the labour market • Contribure to fighting social exclusion

8.9.1 Services that validate formal, informal or non-formal learning

Additional desktop research was conducted to identify similar services that validate formal, informal or non-formal learning.

Table 5: Organisations that validate formal, informal or non-formal learning

Company	Company breakdown	Institutional form	Funding	SA context
Credly[27] (United States)	American-based Credly's digital badging platform offers comprehensive features to design and issue badges, enterprise-class functionality with scaling and managing programs and enhanced analytics to measure success. Credly can create, manage and monitor all aspects of a credentialing, certificate or badge program. Credly's best-in-class security and privacy features make the product and data secure.	Private	Venture capital funding.	An example of setting interoperability protocols and standards through a platform that allows a limitless number of issuers and users to create, manage and monitor all aspects of a credentialing, certification or badge program.
Accredible[28] (United States)	Accredible provides a digital badge and certificate platform. It is designed for creating, issuing and managing secure digital certificates and badges. It is one of the only platforms available that is a full-service digital credentialing solution: certificates, diplomas, badges, blockchain credentials and wallet cards – all in one place.	Private.	Venture capital funding.	An example of a full-service digital credentialing system. The platform integrates certificates, diplomas, badges and credentials to create a portable portfolio for residents.
TrueCred (United States)	TrueCred provides a unique software-as-a-service technology solution for creating tamper-proof, verifiable, interoperable digital badges (also known as open badges or digital credentials) that lead the industry in trust, efficiency and security.	Private.	Venture capital funding.	An example of establishing the PSET CLOUD as a provider of tamper-proof, verifiable and interoperable badges that the industry trusts.
Leaving Certificate Applied[29] (Ireland)	The Leaving Certificate Applied is a distinct, self-contained two-year Leaving Certificate programme to prepare students for adult and working life. Students following the Irish Learning Certificate Applied accumulate credits via three different routes (satisfactory completion of modules, the student tasks and the final examinations) over two years. Certification is based on the total number of credits accumulated.	Government department.	Government.	Provides insight into how credits can be awarded through several verification processes, including modules, task assessment and final examinations.

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27   https://info.credly.com/how-credly-works
28   https://www.accredible.com
29   https://www.citizensinformation.ie/en/education/state_examinations/leaving_certificate_applied.html

Table 5: Organisations that validate formal, informal or non-formal learning (continued)

Company	Company breakdown	Institutional form	Funding	SA context
Certificate of Practice[30] (Norway)	The Norwegian Certificate of Practice is a two-year programme with an emphasis on practical training. After obtaining a certificate of practice, the learner can continue training towards a trade or journeyman's certificate. The most crucial difference between the scheme and ordinary vocational education is practical work and training in an enterprise.	Government department.		Provides an example of bridging programmes that focus on practical training within organisations as another form of credentialing.
National Employability Certificate[31] (South Africa)	The National Employability Certificate is a personal and professional development platform that enables interested persons to earn digital skill badges and credentials. Its purpose is to assist people in taking control of and developing their informal and non-formal skills. The platform includes a validated skills assessment, development modules, digital logbook, digital skill badges and dynamic certificate. The platform has been validated in predominantly deep rural areas in South Africa. Students are assessed by three different routes, namely knowledge of, passion for and experience gained in a skill.	Individual.	Self-funded.	Provides an opportunity to include an indigenous employability framework for informal and non-formal skill badges and credentials in the MVP. The certificate has been developed and validated in South Africa with a focus on the most marginalised.

8.10 Adopt a participatory subscription-based funding model for the PSET CLOUD

It is recommended that the PSET CLOUD become self-funded. While requiring start-up funding, the PSET CLOUD could operate through a participatory subscription base that would not require hardware or software changes for suppliers and customers but the implementation of protocols and standards to ensure the maximisation of data interoperability for the PSET CLOUD. This again alludes to the PSET CLOUD being a transversal data bridge between all stakeholders. One may bear in mind that all data is 'born digital' and so should be made easily transferable between data hosts. Subscription clients could include government departments, SETAs, public institutions, private institutions, professional bodies, employers and employees.

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30   https://www.udir.no/in-english/certificates-and-grading-scales/
31   https://www.employability.co.za

Recommended implementation plan

9

The recommended implementation plan is based on the findings elaborated upon in this Advisory Note. A suggested timeline has not been included due to several factors that will first need consideration by the programme team.

#	Activities	Action	Responsibility
1.	Consider recommended additional performance indicators	Decision	Steercom*
2.	Consider CC-PPP governance model for the PSET CLOUD	Decision	Steercom
3.	Identify initial stakeholder partners based on a CC-PPP	Research	Project team
4.	Agree on initial stakeholder partners for the MVP	Decision	Steercom
5.	Develop advocacy concept note on the MVP that includes a GVM	Develop	Project team
6.	Circulate the draft concept note for stakeholder comment	Distribute	Project team
7.	Refine the draft concept note to include new considerations	Develop	Project team
8.	Adopt the MVP concept note to use for introductions and advocacy	Decision	Steercom
9.	Invite stakeholders to the MVP committee and host an initial meeting	Meeting	Steercom
10.	Consider the plastics value chain as an initial skills pipeline for the MVP	Decision	MVPcom**
11.	Consider the National Employability Certificate as part of the MVP	Decision	MVPcom
12.	Consider Mbangwane Thusong Centre as a rural pilot partner	Decision	MVPcom
13.	Identify and agree on an urban centre as a pilot partner	Research	MVPcom
14.	Map an MER skills pipeline in a rural and urban community	Research	Project team
15.	Consult a skills pipeline of an MER value chain in a rural and urban setting	Consult	Project team
16.	Identify a pilot model for the MVP in a deep rural and an urban setting	Research	Project team
17.	Adopt pilot model for the MVP in a deep rural and an urban setting	Decision	Steercom
18.	Pilot an MVP in a deep rural and an urban setting	Implement	MVPcom
19.	Clarify the scope of the PSET CLOUD based on pilot findings	Research	MVPcom
20.	Consider the complete scope of the PSET CLOUD and the requirement for it to be transversal and entirely digitalised	Decision	All
21.	Determine full governance structure based on CC-PPP	Research	Project team
22.	Consult full governance structure stakeholders on the scope	Consult	Steercom
23.	Determine an institutional structure to serve the scope best	Decision	All
24.	Choose the most suitable name for the service based on its transversal scope	Decision	All
25.	Establish an institutional structure to best support a fully transversal and digitalised service to all residents and citizens (Batho Pele)	Proposals	Steercom
	IMPLEMENT		

*Steering Committee **MVP committee

10 Limitations and risks

The Advisory Note on the governance model options for the PSET CLOUD follows a substantial volume of research, consultation and reflection by various teams. The consultants who worked on this Advisory Note were required to read and synthesise what the teams had discovered, formulated and described. The consultants were expected to understand what the teams had concluded and to take into account the various layers of legislation, ethics, practicalities, powerplays and politics that exist within the structures of government and the private sector. Existing reports and anecdotes show that progress toward developing the PSET CLOUD has been slow and impeded by the many stakeholders, each with its own IT systems and objectives, and not necessarily willing to collaborate and share with each other. The reality of the PSET CLOUD needing to be a fully digitalised transversal system may not have received the attention it demands.

It will be a challenge to get stakeholders to constructively collaborate and share data and systems for the future PSET CLOUD, its governing structure and the residents and citizens of South Africa and beyond. There are requirements that collaborating departments will need to follow such as the PFMA of 1999, the SITA Act of 1998 and the Batho Pele (People First) principles. These and other legislation, white papers and policy documents set out the expectation that stakeholders in the public sector will collaborate in the interests of the broader population of people who live in South Africa while rooting out inefficiencies and corruption.

A firm obligation needs to be placed on individuals within the stakeholder departments and organisations to constructively cooperate in the interests of the public and not in individual personal, departmental or branch interests. Transparency and visibility of actions need to be cornerstones of governance, and officials should be motivated to ensure the efficient functioning of the PSET CLOUD for the benefit of the public. The PSET CLOUD spans many government departments (Figures 1 and 5), and critical to its success is that governance and management structures operate without 'fear or favour'. Furthermore, the PSET CLOUD initiative is currently funded and led by just one of many of the government departments involved in delivering the proposed result.

A fully digitalised and transversal solution is required that is equally applicable and supportive to all government departments and service providers needing to deliver on the outcomes for:

A

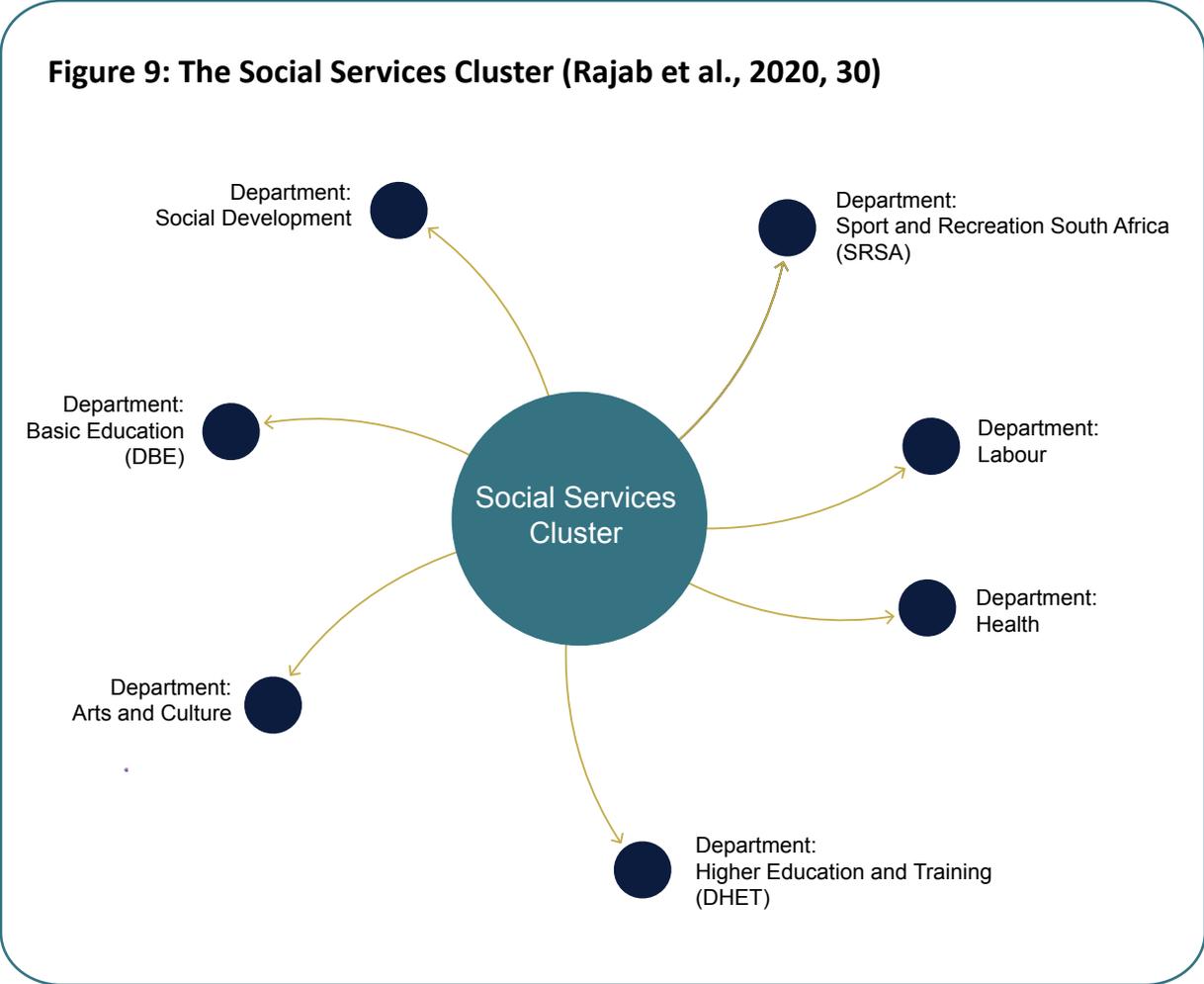South African residents/citizens/learners to utilise real-time data to make lifelong learning and career decisions.

B

South African PSET stakeholders to utilise real-time data to develop their plans and programmes.

As stated in the JET-merSETA publication, *Unlocking the power of data* (Rajab, et al., 2020, 28):

The success of any new intervention depends on individuals being able to suspend their positions and self-interest long enough to develop the trust required to develop a mutual understanding and shared worldview.

Figure 9: The Social Services Cluster (Rajab et al., 2020, 30)

Department: Social Development

Department: Sport and Recreation South Africa (SRSA)

Department: Basic Education (DBE)

Department: Labour

Social Services Cluster

Department: Health

Department: Arts and Culture

Department: Higher Education and Training (DHET)

The solution to the governance challenge will be for the PSET CLOUD to not be subsumed or subjected to just one government department but to be allowed to operate across 'all borders' of the social cluster (Figure 9), that is, transversally. Rajab et al. (2020, 30) draw attention to the complexity of accounting and ethics, highlighting the issue of entities whose boards report to the Minister of Higher Education and Training while reports from those entities are controlled by DHET officials who are known to also sit on the boards. Communication between entities and departments may be further complicated by officials being denied the right to communicate directly with their counterparts in other departments and entities. The large numbers of directors in a department such as the DHET who interact with the same entities, for example, Technical and Vocational Education and Training (TVET) colleges, raises the risk of competing and conflicting directions and requirements. The transfer of the Career Development Services (CDS) from SAQA to the Planning Branch of the DHET has been complicated by the establishment of the Central Applications Service (CAS) in a different branch, the Universities Branch of the DHET, which is reported to also have a career guidance mandate. Career services and the necessary transversal data from the economy, education and elsewhere should be managed in a way that they serve all residents and citizens who require it.

The CDS project's National Career Advice Portal (NCAP)[32] includes data captured from sources such as career descriptions and videos, and secondary data such as courses and institutions captured from the National Learners' Records Database (NLRD)[33] at SAQA. The NCAP system is housed at the SITA, which provides the transversal management of data and systems. In contrast, certain other systems hosted directly by departments and entities may not have been designed with input from the SITA or with the secure hosting, standards and management and transversal mandates in mind. Sources of potentially valuable data such as edited versions of audio, video and transcripts of radio and television

career development programmes, which could strengthen the availability of information on career choices across departments, have not found their way into the NCAP or other government systems.

Departments, entities and institutions appear at times to have been in the practice of designing, owning and hosting their databases, seemingly with little regard to interoperability, national standards or legislation. Although open standards are government policy, proprietary software is possibly more the norm than Free Open-Source Software (FOSS). Advances in technology, such as the advent of the distributed ledger (also called 'blockchain'), including the potential for user-owned data, cloud computing and distributed processing, provide opportunities that might not have been available at the time when many of the databases were conceived. A future PSET CLOUD will have to include notions of self-sovereign identity (SSI), which recognise that individuals own and control their own identity (Sovrin, 2018) without the control and potential for misadministration by authorities. Blended with employment, education and training data, SSI would allow people to interact in the online and digital world without the barriers and blockages typically raised by inefficient and belligerent bureaucracies.

Owners or hosts of systems may prefer to cling to technologies and methodologies of the past. This kind of nostalgia could cause a material reticence in advancing to new systems such as a transversal PSET CLOUD. Technical hosting systems will need to be found within high-security government approved venues with multiple power and internet sources in tier 4 data centres. This would help overcome the weaknesses of systems that have multiple single points of failure that might be found in some government departments, entities and institutions. Highlighting the high risk of single points of failure that impact negatively on residents and citizens may help to reduce the risk of "belligerent stakeholders" and their "misunderstanding of stakeholder roles" (Rajab, et al., 2020, 63).

32   http://ncap.careerhelp.org.za/
33   https://www.saqa.org.za/faq/what-national-learners-records-database?language_content_entity=en

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PSET CLOUD

Innovation through collaboration