



Business Case for the:  
Center for Integrated Social  
Security Information  
Master Registry

October 2011



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## 1. INTRODUCTION

The purpose of this document is to present the Business Case for the proposed Center for an Integrated Social Security Information System and its Master Registry (MSSR) for the Department of Social Development.

This document also provides a clear focus and details of the intended activities and outputs for the Center for Integrated Social Security Information System (CSSI) and its Master Social Security Registry (MSSR).

The creation of the Business Case for and Integrated Social Security Information System and its Master Registry follows fundamental principles used in the development of any ICT related solution.

The Integrated Social Security Information System that is articulated in Section 2, 'The Business Case' is primarily 'the' compelling, business led IT initiative. This initiative is an action oriented deliverable which is the IT response to the business strategy to create a 'Comprehensive Social Security System in South Africa and is described in Section 2, the 'Conceptual Architecture'.

The Business Case and the Conceptual IT Architecture is informed by a review of international developments in Social Security Information Systems and the lessons learnt (Section 3). The lessons learnt have been incorporated into the Conceptual Architecture.

The Business Case and the Conceptual Information Architecture provides the overall vision and key principles by which the Integrated Social Security Information System should be developed and delivered. It demonstrates a direct linkage between IT plans and aspirations and those of the business it supports.

The Business Case and the Conceptual Information Architecture provides:

- A Vision: a comprehensive and concise statement of the DSD business requirements that constitutes a reference horizon;
- IT Functionality: the functions (applications, major systems) that support the desired business capabilities and structure;
- IT Architecture: a comprehensive picture of the IT system, in the form of interrelated building blocks, that allows the building of the required IT System;
- IT Governance: the management system of a company's IT system, in terms of 'what is to be done', 'who should do it' and 'how is it to be done';
- IT Capability Sourcing Matrix: the recommendations for sourcing the components of the To-Be IT infrastructure, architecture, the governance responsibilities, and the roles to execute the IT.

All of the above will provide the Department of Social Security with a **single view of citizens** applying for, and receiving social security benefits and is discussed in detail in Section 2.

## 1.1 Scope of the Project

This document responds to the problem statement articulated by the Department of Social Development (DSD) and its' motivation for the study as contained in documentation provided by the Department with respect to the background to the project.<sup>1</sup>

Furthermore, this report builds on the original Terms of Reference for the Project, the Project Charter and interviews and discussions with senior officials in the Comprehensive Social Security Branch of the Department.<sup>2</sup>

The Scope of the Project included the following:

- The business case should be informed by the Inter Departmental Task Team's (IDTT's) proposal for Social Security and Retirement Reform;<sup>3</sup>
- Provide an Analysis of the current registry systems and outline the challenges.
- Investigate and outline international best practice of social security registry systems;<sup>4</sup>
- Investigate different options for governance for the Center and MSSR.
- Investigate the functions of the Integrated Social Security Information Center and MSSR.
- Outline how the envisaged Center and MSSR is going to work together with social security institutions in collecting and processing social security information and the maintenance of the register.
- Investigate the different options for governance of the Center and the MSSR.
- Investigate the different funding options for the Center and the MSSR.
- Investigate a cost benefit analysis for the current and future arrangement of the Center and the MSSR.
- Provide a detailed Implementation Plan for the Center and the MSSR.

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<sup>1</sup>Literature review included the following:

1. Report 2, Strategic Reform of the Institutional Framework Underpinning Social Security in South Africa: A Discussion Document Forming Part of the Review of Comprehensive Social Security, Department of Social Development. 2010
2. Strategic Reform of Retirement, Survivor, and Disability Benefits :A Discussion Document, forming part of the Review of Comprehensive Social Security, Department of Social Development.
3. Department of Social Development Strategic Plan Update 2009/10 – 2011/12
4. Comprehensive Social Protection Overview: A Consultation Document. Inter-Ministerial Committee on Social Security, Retirement Reform and National Health Insurance.
5. Business Case for the Establishment of a Department Of Social Security. A Response Framework for the Implementation of a Comprehensive Social Security System. 2009
6. Creating Our Shared Future. Strategic Considerations for a Comprehensive System for Social Security. Discussion Paper, Department of Social Development.
7. Reform of Retirement Provisions. Discussion Document, Department of Social Development. 2006.

<sup>2</sup>Interviews were held with various senior officials in the comprehensive Social Security Branch of the Department of social Development in May and June 2011.

<sup>3</sup>From the literature survey – see footnote 1.2 above

<sup>4</sup>Despite repeated attempts during June and July 2011 by both the consultants as well as officials from the Department of Social Development the respective Department and their Agencies refused to cooperate with the Project. It was therefore agreed that the Project would continue without a Situational Analysis. See minutes of Steercom Meetings on 29<sup>th</sup> June, 15<sup>th</sup> July and 3<sup>rd</sup> August 2011.

- It should be noted that an analysis of the current registry systems and the challenges they face was not possible as the Department of Social Development was not able to secure the cooperation of the Agencies that administer the current registry systems.<sup>5</sup>

## 1.2 Objectives of the Project

The objective of the Project was to develop a Business case for an Integrated Social Security Information Center/Registry.

This entailed:

- Conducting international benchmarking research for the master registry and how it has been achieved in other countries. This was carried out on a high-level (level 1 detail) only.
- Developing a business case for an Integrated Social Security Information Center and Master Registry for all social security institutions. Meaning a single Master Registry which will serve all social security functions irrespective of whether these functions are consolidated into one Ministry or continue to operate as they are at present.

As noted above a situational analysis of the registry of social security systems in the Departments of Labour (Compensation for Occupational Injuries and Diseases Act - COIDA), and the Unemployment Insurance Fund - UIF); Transport - Road Accident Fund (RAF); Treasury – (Pensions); Social Development (South African Social Security Agency - SASSA) and Home Affairs (verification of identification status) was not possible.<sup>6</sup> However an overview of these Agencies and their respective roles, responsibilities is provided in Appendix A.

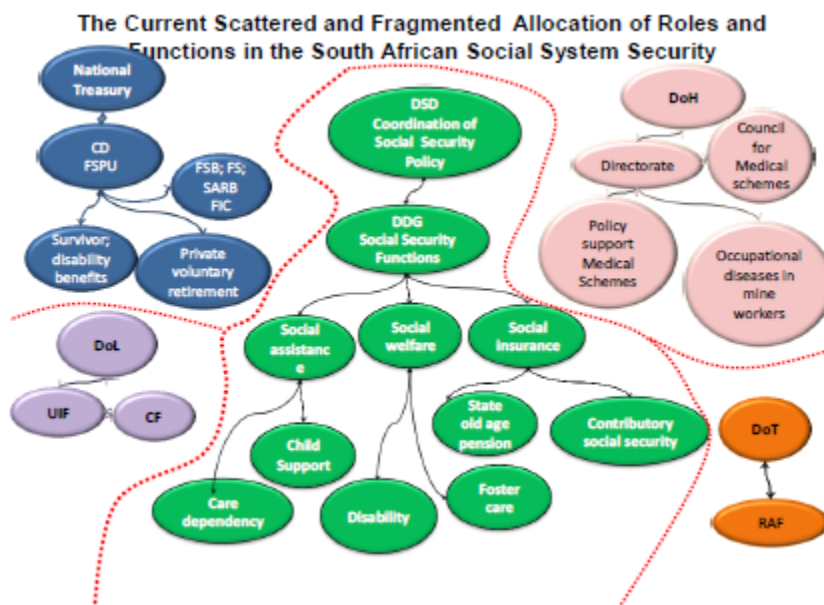
## 1.3 Problem Statement: Background and Context

As noted earlier the background and context for the Project is the national imperative for the creation of a system of comprehensive social protection for South Africans which would provide the basic means for all people living in the country to effectively participate and advance in social and economic life, and in turn contribute to social and economic development.

However the drive towards the development of a comprehensive social security system is hampered by the current scattered and fragmented social security system, particularly in the sphere of policy development where there is a lack of clarity or logic with respect to the allocation of responsibility.

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<sup>5</sup> Despite repeated attempts during June and July 2011 by both the consultants as well as officials from the Department of Social Development the respective Department and their Agencies refused to cooperate with the Project. It was therefore agreed that the Project would continue without a Situational Analysis. See minutes of Steercom Meetings on 29<sup>th</sup> June, 15<sup>th</sup> July and 3<sup>rd</sup> August 2011.  
<sup>6</sup> Ibid



**Figure 1 the Current Scatted and Fragmented Nature of Social Security in South Africa**

- In addition to the issues around policy development, the current fragmented nature of the social security system between various departments (Figure 1) also manifests itself in a plethora of problems which includes the following: <sup>7</sup>

### 1.3.1 Client Interfaces

- The interface with the public is weak, fragmented, and poorly coordinated as between different programmes and benefits.
- Access to information to validate a claim is not protected.
- Of the statutory funds, until recently only the UIF has had a local interface with claimants.
- The CF is in the process of developing a provincial interface.
- Only the larger registered fund has a local interface.
- The labour based registered funds in particular have developed extensive regional networks to gather information, train members and assist claimants.

### 1.3.2 Claims Administration and Procedures

- Claims procedures are cumbersome and complex, prejudicing lower income groups or child claimants.
- Information held by the employers, relating either to periods of service, dependents, payments of contributions, salary levels, the nature of the service, the reasons for termination of service or the circumstances of an accident or disease is often very difficult for claimants of benefits to access.

<sup>7</sup>Report 2, Strategic Reform of the Institutional Framework Underpinning Social Security in South Africa: A Discussion Document Forming Part of the Review of Comprehensive Social Security, Department of Social Development. 2010

- This results in claims being designated as defective even if there is sufficient information available for the Agency to obtain it.
- In the case of the UIF, the six-month delay before children can claim death benefits is confusing because it is conditional upon a fact that the guardian is not likely to be aware of.
- There is a 12-day time period for a child's claim is prohibitively short. There is no provision for the condoning of any resultant delay.
- Many funds fail to properly investigate claims despite this being a requirement for many claims. This despite the fact that there is a statutory duty to investigate claims. Problematic funds include:
  - The Compensation Fund (COIDA).
  - The Government Employees Pension Fund (GEPF); and the Mine Workers Compensation Fund (MWCF).
  - The hidden costs of claiming are significant where travel costs are significant (due to poor geographical access), the need for multiple visits due to inefficient claiming processes, the cost and risks associated with taking days off work.
  - The staffs of the MWCF speak of often doing an office collection to enable an impoverished claimant to return after a costly visit from a rural area to Johannesburg.
  - There is a failure to properly monitor unclaimed benefits.
  - The concerns of the Registrar of Pension Funds over the management of unclaimed monies held by registered funds all indicate that many members and potential beneficiaries do not know that benefits lie waiting for them to claim, and the funds are not disposed to take steps that will increase claims against them.
- The multiplicity of funds with overlapping benefit entitlements make it difficult for beneficiaries to judge which benefit to claim and when:
- Although most funds allow a pension benefit to continue to the child when a guardian dies, the continued pension is dependent upon the new guardian coming forward to claim it. It is also dependent on the new guardian knowing sufficient details of the benefit to be able to claim it. If the guardian is no longer the surviving spouse, the funds have no knowledge of him or her and a fresh claim will be required. There is, however, no duty on the fund at this point to investigate the claim. None of the funds interviewed actively establish who the child's new guardian is. The take-up of the benefit available to the new guardian is reported by the CF to be low, and this tendency probably applies to all funds.
- Inadequate oversight of monies managed by guardians. The funds have no control over the use of the benefits and it is not known to what extent children are denied the benefit of the funds intended to support them. But the manner of payment can either promote the child's interest and protect his or her assets, or invite abuse.
- When seen as a system, the administrative risks associated with accessing entitlements are substantially transferred onto beneficiaries who are poorly positioned to properly protect their rights. This problem can be found in the following instances:



- Claiming benefits involves processes which depend on levels of personal literacy and administrative competence which are beyond much of the country.
- Benefits relating to similar contingencies, such as the death or disability of a breadwinner, and similar forms of benefit entitlement are offered through a plethora of statutory and regulated private funds without any structural co-ordination in the formation of policy and administration.
- The duties of performance of the various funds and employers are inadequately defined.
- The multiplicity of funds reduces potential economies of scale for administrative activities all funds have in common:
  - Maintenance of personal information.
  - Investigative capacity.
  - Direct interfaces with employers and beneficiaries.
  - Inconsistencies in important definitions of eligible beneficiaries between different social security institutions.
  - Monitoring and evaluation supporting policy development.
  - Administrative processes are not uniform and operate according to different performance standards.

### **1.3.3 Benefit Management Systems**

- The systems required to manage the payment of benefits to foreign workers are inadequate or non-existent.
- Systems to pay compensation and other benefits to workers and their dependents in foreign countries are either non-existent (UIF, MWCF, GEPI and some of the registered retirement funds) or cumbersome, prone to fraud and bureaucratic delay (CF).
- The most efficient practices appeared to be those of the mining-based funds, acting through the TEBA (MWPF).
- Active benefit management systems are not in place to protect the continuity of a benefit where the life circumstances of the beneficiary change due to one or other contingency. Funds essentially place too great a burden on beneficiaries, with the risk that benefits are improperly discontinued.
- There is no system in place to co-ordinate benefit payments.

### **1.3.4 Adjudication:**

Access to independent adjudication is weak and fragmented. There is also no adequate system of rights enforcement.

- Only the UIF and the CF have an internal appeal or objection procedure. Only the High Court has jurisdiction to grant the necessary declaratory, review and interdict relief against an employer or a statutory insurance fund. Few such cases are ever taken to court by complainants. Litigation is expensive and free legal services or legal aid services are often of a poor quality.
- The cost of litigation is prohibitive for someone who is a dependent. Legal aid is of a poor quality and erratically provided, and is seldom extended to allow for an appeal against a powerful opponent



- Lodging and pursuing a complain demands some sophistication and, at least, literacy on the part of the complainant, but literacy rates in South Africa are notoriously low:
- Approximately 17.8% of adults (6 to 8 million adults) are not functionally literate;
- The rate is higher in the Eastern Cape, where 27.7% of people were functionally illiterate. While 65% of whites over 20 years old and 20% of Indians have a high-school or higher qualification – probably the minimum required to lodge a complaint – this figure is only 12% among Africans and 17% among the Coloured population;
- Investigative capacity and information is not co-ordinated throughout funds with important social security obligations.
- Investigative capacity is one of the larger costs in any fund administration. It requires skilled staff and an infrastructure that enables field investigation. Some of the registered retirement funds have accomplished this by using and expanding existing networks, such as TEBA or the Telkom installation network. The efficient dovetailing of employer and fund functions appears to be the best practice in investigative structuring, and is likely to result in a higher level of customer care than is the case where investigation is centralised at the fund's head office.
- In addition to verifying claims, the investigative functions of registered funds include tracing potential beneficiaries and, according to the funds interviewed, in practice extend to assisting beneficiaries to obtain information and collect documents, and following up on recipients of benefits whose payments have been prematurely terminated.
- Access to complaints and related adjudication mechanisms are poorly designed and vary depending upon the fund or the benefit type;
- There is an excessive reliance on weak retrospective adjudication mechanisms to protect beneficiaries (e.g. complaints), many of which are in any case barely functional and not designed to protect unsophisticated beneficiaries.

### **1.3.5 Management Information Systems**

- There is no co-ordinated system of monitoring and evaluation, which limits the ability of government to reflect on and revise administrative weaknesses in the system.
- The review demonstrates the lack of data on actual delivery of benefits to children.
- It is primarily the duty of the state to monitor and research the delivery of social security, and it should establish a legislative framework to enable it to do so.
- Funds should be obliged to report annually on the data necessary for the state to identify and redress obstacles to the delivery of benefits to children.
- This data should shows:
  - The extent of deaths that do not lead to claims by dependents.

- The extent to which funds are transferred to new caregivers after the death of a surviving spouse.
- The extent to which benefits for minors are unclaimed or unpaid.
- The extent to which payments to caregivers are prematurely terminated or suspended.
- The levels at which funds are placed in trust at the beneficiary's cost.
- The costs of such Trusts.

### **1.3.6 Governance**

- No single governance arrangement is applied consistently to any organization responsible for managing any part of the social security system.
- Apart from the RAF, independent oversight is limited, or subject to the significant discretion of a minister or departmental head (who is appointed by a minister).
- The wide variety of governance arrangements for public social security funds flows from the silo'd approach to policy determination. Different departments largely develop approaches in accordance with their own histories rather than any domestically determined benchmarks or policy determinations. The arrangements can be divided into the following typologies (see figure 2.5):
  - Full operational autonomy with strong oversight (RAF).
  - Significant operational autonomy with weak oversight (SASSA).
  - Partial operational autonomy, with the degree of operational autonomy at the discretion of the Minister (GEPF).
  - The civil service model, with departments responsible for operations and oversight (CF and UIF).
- Focusing exclusively on the configuration of operational autonomy.
- Only the RAF fully complies.
- The GEPF scores low on oversight due to its limited independence on operational matters and asset management.
- SASSA reflects a concerning combination of weak oversight and high operational autonomy exposing the organization to conduct weaknesses.
- The UIF and CP are far less exposed to conduct concerns (than SASSA), but the reduced autonomy is likely to structurally reduce efficiency and performance.

Furthermore the South African social security system does not make provision for any form of state earnings-related retirement system.

The voluntary (privately run) system is based on occupational and individual forms of cover. These contributions to retirement schemes while seemingly high are also fraught with problems. Some of the problems are:

Many income earners in private pension schemes retire with insufficient incomes relative to their employment earnings

- Administrations costs for these schemes are excessive.
- Government subsidises these benefits to the tune of R28 B per annum in the form of old age pensions.
- The private systems are fraught with governance failure and fraud.

Furthermore the South African social security system does not make provision for any form of state earnings-related retirement system.

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### **1.3.7 Retirement Schemes**

- Many income earners in private pension schemes retire with insufficient incomes relative to their employment earnings
- Administrations costs for these schemes are excessive.
- Government subsidies these benefits to the tune of R28 B per annum in the form of old age pensions.
- The private systems are fraught with governance failure and fraud.

## 2. THE BUSINESS CASE

The fundamental driver for the Business Case for an Integrated Social Security Information system is the national imperative for the creation of a system of comprehensive social protection for South Africans which would provide the basic means for all people living in the country to effectively participate and advance in social and economic life, and in turn contribute to social and economic development and fundamental to such as system is a Master Registry.

The move to reform the South African Social Security System is the rationale for business case for a center for integrated social security information system for a future Department of Social Security.

The social security system in South Africa will undergo profound changes when the reforms being discussed will be implemented. The challenges include:

- Supporting a large number of citizens in some way or another
- Providing benefits and services that will become more complex.
- Processing increasing volumes of transactions.
- Increasing demand for efficiency and effectiveness in the delivery of services.

All of the above will require:

- Policy developers to be able to continuously monitor the efficacy of their policies.
- Politicians to answer questions related to the implementation of policies.
- Impact of their policies not only on beneficiaries as individuals; but in relation to the larger role envisaged for a comprehensive social security system in a developmental and transformative state which seeks to alleviate and reduce poverty, vulnerability, social exclusion and inequality through the comprehensive social protection system.

Furthermore in an era of rapid change a system of monitoring of socio-economic, political, environmental and technological developments and inputting into policies is vital. Structural unemployment which is a feature the current economic paradigm has a direct and critical impact of social security systems.

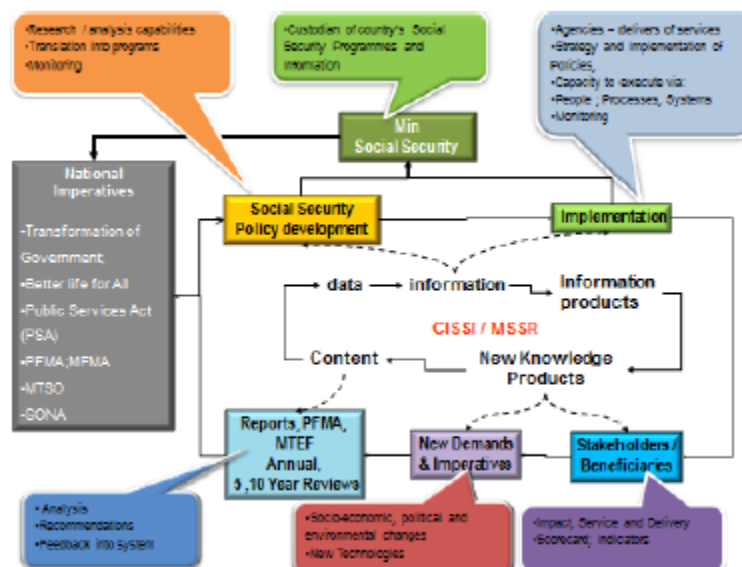
A 'systems' approach to illustrate the above is illustrated below (Figure 2).

Figure 2 illustrates the linkages between the 'strategic intent' of the State in its drive to create 'a better life for all' and what is required in terms of policy development, implementation, monitoring of the impact of policy and implementation and monitoring new social economic and political trends and impacts.

Critical to the running of a comprehensive social security system and service delivery is the availability of accurate and timeous information, and the ability to access, use and communicate that information. Figure 2 illustrates the political framework within which a Social Security Framework must operate and the critical role of a comprehensive and integrated social security information system. Furthermore such a system will provide the future Department of Social Security and its respective political and administrative heads a single view of beneficiaries of social security.

The concept of a 'single view of citizens and social security beneficiaries' is discussed in more detail in Section 2.5.

The Center for Integrated Social Security Information and the supporting Master Registry is directly related to and has clear benefits for the business needs, processes and for corporate governance.



**Figure 2: The Political Framework for the Business Case**

These challenges emphasize the need for a comprehensive and integrated social services information system and central to an integrated social services information system is a master social services registry.

Experiences in the development of ICT in social security organizations consistently demonstrate that the introduction of ICT should be an integral part of a strategic business imperative.

The move to reform the South African Social Security System is the rationale for business case for a center for integrated social security information system for a future Department of Social Security.

**However the drive towards the development of a comprehensive social security system is simply not feasible because of the current scattered and fragmented social security system.**

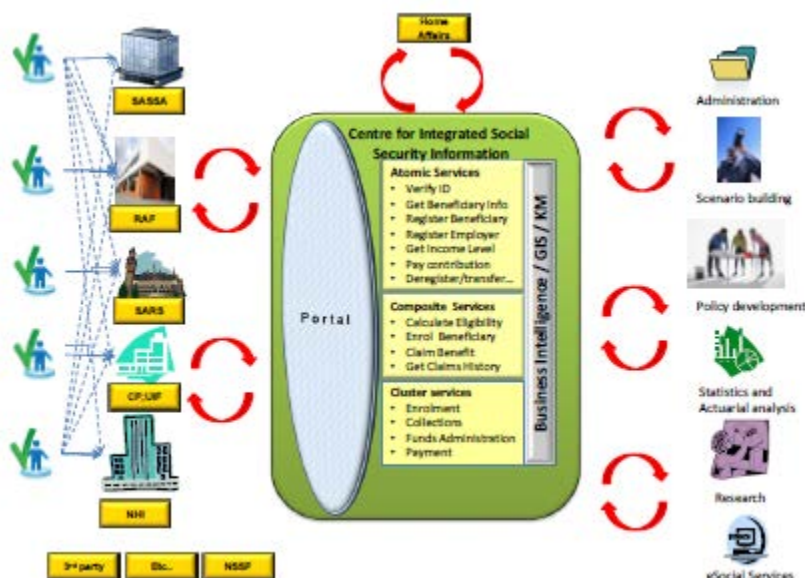
The rationale given above is bolstered by the case studies cited in the International Review.

The problems and challenges noted in the Introduction, namely:

- The inability to develop coherent policy.
- The weak and fragmented Client Interfaces:
  - Unprotected access to validate claims.
  - Cumbersome and complex claims procedures.
  - Lack of information prejudicing the poor and most vulnerable.
- When seen as a system, the administrative risks associated with accessing entitlements are:
- Lack of management information.

- Lack of a single Governance arrangement.
- The future requirement to develop a form of state earnings-related retirement system cannot be addressed without a centralised integrated social security information system and its master registry.

The Belgium and Brazilian case studies amply demonstrate that the issues noted above can be resolved. A conceptual solution for such a center and how it would function is provided in Figure 3 below



**Figure 3: Conceptual Framework for an Integrated Social Security Registry**

The initial services provided by the system above would include:

- Verifying ID's.
- Getting Beneficiary Information.
- Registering Beneficiaries.
- Registering Employers.
- Getting Income Levels.
- Paying contributions.
- Deregistering or transferring benefits.

As the system evolves other services will be added and information will become available to enable the benefits described below.

The business processes related to the above are explored in more detail in Section 2.5 Business Requirements Definition.



## 2.1 Information as the Driver

The primary purpose of an Integrated Social Security Information System and the Master Registry it depends on is to provide a documented record of social security beneficiaries, the services or benefits applied for, a record of the application, a record/s of adjudication processes, the benefits or services approved and delivered, and the duration of the benefits or services. The system will also provide a means of communication among social security agencies and where applicable contributing entities (e.g. employers).

With the current scattered and fragmented social security system in South Africa (with no master registry) social security statistics vary greatly in terms of their reliability and validity, usability and timeliness making it difficult to get the information in an understandable format to policy-makers, frontline social security workers, non-social security specialists or the public.

As a result there is a widely established perception that social security information is obscure, unclear and sometimes contradictory.

Public demands for accountability and evidence-based decision making is increasing, while the involvement of multiple stakeholders in the public social security sector has created a greater awareness of the need for good data to avoid misguided interventions that waste efforts and resources, and result in the loss of credibility.

In addition, social security information is produced and used by many different institutions (including ministries of social security, national statistics offices, the private sector, civil society organizations, donors and development agencies).

Social security information systems have been further fragmented by the demands of focused programmes, often caused by diverse Government or Agency requirements and initiatives directed to specific areas.

Another essential step in strengthening social security information systems is to link information production to use. Users of social security information include those delivering benefits (the primary users noted above) and secondary users, (those responsible for managing and planning social security programmes both within the Department of social Security as well as other stakeholders (donors, development banks and technical support agencies) and other stakeholders including civil society.

### 2.1.1 Benefits of an Integrated Social Security Information System and Master Registry

The benefits that will accrue from an Integrated Social Services Information System will in the first instance address all the issues that have been articulated in the Problem Statement, namely the inability to develop coherent policy, the weak and fragmented client Interfaces, the cumbersome and complex claims procedures, the lack of information prejudicing the poor and most vulnerable as well as the lack of management information.

The benefits can be thought of as having primary and secondary purposes and benefits and are discussed in the following Sections.

Beneficiaries would greatly benefit beneficiaries directly and indirectly because integrated 'back end' Social Security systems would provide improved services. A beneficiary would be able to go to any customer service center to apply for benefits. Furthermore integrated back end systems would mean not having to repeat basic



information, and have confidence in knowing that social security professionals have access to all relevant parts of a beneficiary's history.

If an integrated social security system is taken to its logical conclusion, the system would enable 'eSocial security' services which could also allow beneficiaries to access to their own social security records which would help beneficiaries to make informed decisions.

Such a system would also minimise duplicate, invasive, and/or expensive means tests.

In short beneficiaries would gain from a much more 'citizen centric' social security system which is effective and efficient.

Social Security professionals would be able to provide a much more effectiveness services to clients because they would have a 'single view' of beneficiary data by having access to other related and integrated beneficiary information through a portal to related social security services.

This would allow the delivery of seamless services through the coordination of multi-professional and multi-agency services supported by the development of decision-support systems.

Furthermore an Integrated system would provide the information to support programme monitoring, including reporting outcomes, financial planning and support for social security research

From a legal perspective an integrated social security information system would provide direct, empirical evidence of social security benefits provided the level of compliance with legislation and reflect the transparency and traceability of social services applied for and rendered.

The ability to monitor the delivery and utilization of series and the costs related to them would enable continuous quality- improvement studies, including performance monitoring, benchmarking and accreditation of Agencies in terms of efficacy and effectiveness.

As we have noted above, in an era of rapid change a system of monitoring of socio-economic, political, environmental and technological developments and inputting into policies is vital. Structural unemployment which is a feature the current economic paradigm has a direct and critical impact of social security systems. An integrated social security information system will allow for in depth development and evaluation of population social security analyses by providing access to timely, high-quality data for research, data aggregation, trend analysis, and the development of alternative social security options.

Researchers would in turn be able to provide policy makers with improved and more effective support for policy and administrative decision-making processes, for example in resource allocation and management, c resulting in improved long-term planning.

This would directly and indirectly enable the effective management of real and potential public social security risks and provide contributors to social security systems, Insurers, government agencies and other funding bodies with confidence in the system.

In short, all elements of the framework depicted in figure 5 above, from political intent, to the development of policies to the implementation of those policies and measuring the impact of the policies, would be possible.

Intrinsic to the above is the requirement for nationwide social security information linkages. Master Registries are an integral element of an integrated social security information system.

The creation of nationwide social security information networks involves many elements. These elements include:

- Creating policies, standards, and transport (of data) agreements.
- Identifying a set of minimum but inclusive functional requirements (master registries).
- This set must be the “minimum” insofar as it establishes basic requirements, but must be “inclusive” because it is possible that some of the requirements may be performed in multiple ways.

Integral to nationwide social security information networks and master registries is business intelligence and social security analytics. As progress is made in social security systems there will be challenges in handling volumes of beneficiary records and other information. Data warehousing and business intelligence tools can assist in meeting these challenges.

Some of the areas where Business Intelligence can be applied to social security delivery include:

- Benefits Data Analysis
- Beneficiary delivery and care Analysis
- Benefits claims Analysis
- Operational Performance and Cost Management
- Resource and Human Capital Management
- Financial Analysis
- Quality Performance and Analysis

## **2.2 Integrated Social Security Information and Master Registries**

Fundamental to all of the above is the need for ‘Integrated Social Security Information’ and at the core of such a system is a Master Registry of Social Security data. 2. The Business Case

Comprehensive beneficiary or client databases have always been important in social security administration. Even in the early years of many schemes, significant investments were made in the available technologies to manage, record and process large volumes of data relating to membership, contributions and earnings, claimants and their dependants and claims and benefits.<sup>8</sup> Good records have always been a prerequisite for effective collection of contributions, to ensure timeliness of service and for compliance and fraud control.

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<sup>8</sup>Brian Lee-Archer, Executive Consultant – Pensions, IBM Global Social Segment Asia Pacific Australia. Implementing Social Security

Until recently, the basic nature of the benefits provided by social security organizations remained relatively stable even as the volume of transactions generated by growing coverage increased substantially. The increases in volume alone and the accumulation of data over the lifetime of many citizens, mean that techniques that worked in the past will not support the basic but vital operations of many organizations in the years ahead. Hence the scattered and fragmented system currently prevailing in South Africa will not support the aspirations of the State of 'a better life for all'.

In addition, more modern social security concepts and needs are placing new demands for integrated and more proactive approaches.

Policymakers also need to understand complex trends in the nature of work and the incidence and duration of claiming. They need to assess the impact of social and demographic changes and to make more informed judgments of costs and social outcomes. The widespread adoption of defined contribution (including notional) schemes for social insurance demands more specific and voluminous record keeping over a person's entire working life.

## **2.3 Master Registry to Support a Future Department of Social Security**

All social security institutions rely on similar sets of personal information to identify and validate beneficiary status.

Also called reference data, master data is information that is considered to play a key role in the core operation of social security administrations. Master registries data is typically shared by multiple users and groups across social security systems.

Master Registries are characterised by:

- The existence of copies of the same or similar data objects used in contexts where a lack of synchronicity between copies leads to inconsistency across applications (read agencies) dependent on those copies;
- The need or desire to manage the Master Registries indicates a willingness of the stakeholders to collaborate on centralized governance over the master copies.
- Master Registry data objects are both the subject of transactions (as part of operational systems) and analysis (as part of analytical systems);
- The concept of "master" implies that all application uses are subsidiary to a single core repository;
- A master object can be assigned a unique identifier within the enterprise.

*The desired outcome may be described as a Center for Integrated Social Security Information wherein*

*A Master registry (MSSR) of personal details of all beneficiaries of social services would be housed in the NSSF which would interact with public and private entities that update personal details. This registry would contain personal details, including family relationships, upon which benefit entitlements can be based.*

The MSSR would ensure:

- That all of the data relevant to a beneficiary can be found in one place.
- Confidence that the beneficiary data is accurate and up to date.
- That the data is complete.
- That all of the significant relationships that a beneficiary has with other social security entities can be retrieved.
- That automated alerts can be sent when key beneficiary data changes.
- See/access data and relationships at any “point in time”.
- Reliability of the availability of the data (managed, high-availability platform).
- Create a view like this with a single call to the Centers data service.<sup>9</sup>

Given the above a definition for a Master registry of data is as follows:

*‘Master data sets are synchronized copies of core business entities used in traditional or analytical applications across the organization, and subjected to enterprise governance policies, along with their associated metadata, attributes, definitions, roles, connections and taxonomies’.*

Currently each social security agency or institution in the South African system relies on its own information collection process to maintain this data. In future, intended new social security institutions will require richer information which will require family relationships.

The challenges that arise from the fragmented nature of the current system include:

- There is no trusted “Single Version of the Truth”.
- There are ‘Multiple Systems of Entry’ (SOE).
- Inconsistent data—value may vary depending on the source.
- Poor quality - data may be incorrect, stale or missing.
- Data stovepipes - separate versions of data maintained in “local” applications.
- Lack of a full, accurate representation of global relationships between entities.
- No comprehensive 360 degree view of beneficiaries of social security entities.

The goals of an MSSR include:

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<sup>9</sup>MDM Strategy & Roadmap. A Strategic Business Imperative Cypress Management Group Corporation Victor Brown Managing Partner/Enterprise Architect 02/28/10 Managing Master Data © 2009 CMGC

- Consistent, Accurate and Timely social Security Enterprise Master Registry Data.
- Maximize benefits of accurate master data across the Social Security system.
- Improve operational integrity and agility.
- Define a roadmap to the optimal/target state.
- Protect current investments.
- Information as a Service (IaaS) implemented via MSSR data services.
- Define process for eliciting global (by all social security agencies) adoption of the CISSI and MSSR data services.

In terms of the definition given above a Center which would be responsible for developing and maintaining a master registry of personal information including names, contact details, identity numbers, employer(s), family relationships, marital status, and dependency relationships is vital.

In addition to the validation checks by stakeholder agencies against the Master in the Center, master data themselves are subjects of transactions or analysis and the transactions may be composed into workflows, which, in turn, are also subject to transactions and analysis. Therefore, transactions could be represented as master objects, allocated a unique system identifier, and then be subjected to various productivity and performance analyses.

## **2.4 Conceptual Information Model to Support the Center for Integrated Social Security Information and Master Registry**

A conceptual Information Model to enable the above has been described and is contained in Appendix A and describes the following:

- The Master Registry and Structured and Unstructured Information
- The Center for Integrated Social Security Information logical entities.
- Conceptual Information and Knowledge Exchange for the CISSI / MSSR.
- The Beneficiary Registry.
- The Master Registry content.
- The Provider Registry.
- The location registry.
- Business Intelligence Solution.

## 2.5 Conceptual Business Requirements Definition

The processes for the business requirements for the MSSR are portrayed using Business Analysis tools and techniques such as business process modeling and use case analysis. Full descriptions of the key high level processes are given in Appendix B.

The use cases are derived from decomposing the business processes to an activity level. Each activity or a group of activities is realised by a use case. Each use case can be executed by one or many defined Users of the MSSR. These users are defined in detail in the User Profiles document of the MSSR.

The Use Case Model is an illustration of which actors can execute which use cases and a detailed description of each of the use cases. The use cases represent the functional requirements of the MSSR.

### 2.6A Single View of Social Security Beneficiaries

The 'Business Case' described above and all the attendant benefits will enable a 'Single Beneficiary View' or 'Single Citizen View' (SCV) by the linking of beneficiary data to provide an accurate and holistic view of any one social security applicant across different channels and lines of business.

A single customer view will allow the DSD to get a better understanding of each individual and their relationship with the Department, which will help reduce costs, manage risk, and increase efficiency and effectiveness.

Achieving a single citizen view is critical within the public sector. Accurate data via the Master Registry will help towards achieving this single view. Achieving a single citizen view is imperative. The current situation whereby respective Agencies hold multiple records for one and the same contact is not tenable.

To summarise the Centre for Integrated Social Security Information will enable a single view of applicants and beneficiaries and will have the following benefits:

- Reduced costs for government with citizen self-service.
- Reduced costs for businesses of interacting with government and complying with legislation.
- Better customer service as processes take less citizen time and are better tailored to their needs.
- Improved quality of service as transactions are 'right first time' with associated qualitative benefits for government.
- Reduction in paper and improved data quality as more information is validated on line directly.
- Reduced costs of avoidable calls, error correction and rework.
- Ability to focus skilled resources on the harder to help and those for whom the e-channel is not accessible.
- Provide a trusted, 360 degree view of a citizen (person and organization).
- Provide authorized access to citizen master data as a service.
- Support security and privacy requirements for the access and control of data.
- Provide data quality management to establish a "enterprise "record for a party.

- 
- Perform as a synchronization point to control the distribution of citizen master data in a standardized way.
  - Increase service and accuracy, and decreases the cost of serving the public.
  - Flexible platform capable of supporting multiple data formats and allowing for new sources to be readily added as requirements change.
  - Provide analysis and discovery services to resolve identities and discover relationships.<sup>10</sup>

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<sup>10</sup> Jaskiran Bhatia, Technical Sales Leader –IM & BA, India South Asia.



### 3. INTERNATIONAL REVIEW AND LESSON LEARNT

The purpose of the International is to provide an overview of selected social security systems across the world, with particular reference to the requirements for Master Registries and the identification of the common issues and challenges that have been encountered.<sup>11</sup> The review is intended to provide context for the 'business case' for a future South African National Department of Social Security and its need for an Integrated Social Security Information System.

Integrated Social Security Information System initiatives globally form part of larger eSocial Security Strategies.

The driving force in all cases is the need for better and more cost-effective delivery of social security services.

Globally social security services in many countries have been pushed into a crisis, driven by the pressures of rapidly increasing populations (in the case of developing countries) and aging populations (in the case of developed countries). Other related issues are cost, quality and access to social security services. One major trend observed in developed countries is the growing significance of chronic unemployment and or underemployment.<sup>12</sup>

The World Bank asserts that systems providing financial security are under strain throughout the world due to rapid demographic transitions caused by rising life expectancy and declining fertility. The World Bank reports that traditional safety nets are weakening under the weight of this growing burden and that government backed pensions, have proven to be both unstable and difficult to reform, and are in peril. The result, as reported by the World Bank, is an impending old age crisis that threatens not only the old but also their children and grandchildren.

Programs of 'conditioned transference' social policies are currently employed in many places in the world to fight and reduce poverty. In the short term, they aim at mitigating the problems resulting from the situation of poverty, and, in the long term, investing in human capital, interrupting intergenerational cycle of poverty. The idea of programs of conditioned transference began to gain strength in 1997, when there were only three countries in the world with this experience: Bangladesh, Mexico and Brazil.

Conditioned transference or Conditional cash transfer (CCT) programs aim to reduce poverty by making the welfare programs conditional upon the receivers' actions. The government only transfers the money to persons who meet certain criteria. These criteria may include enrolling children into public schools, getting regular check-ups at the doctor's office, receiving vaccinations, or the like.

Integrated Social Security Information Systems and e-Social Security Strategies are seen to be an integral element of meeting this need and are part of nearly every nation or governments strategy for the adoption of a national 'eSocial security system and the trends are that Integrated Social Security Information Systems and e-Social Security Strategies will become standard in all developed and developing countries of the world.<sup>1314</sup>

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#### **<sup>11</sup>The case studies were biased by the availability of information in the public domain.**

<sup>12</sup>The World Bank; *Averting The Old Age Crisis: Policies To Protect The Old And Promote Growth*, Oxford University Press, New York, Sept 1992.

<sup>13</sup> ICT-Driven Public Service Transformation Of Social Security Systems In A Developing Country: The Brazilian Case Gabriel Cavalheiro (Nacional Da Propriedade Industrial) and FundaçãoGetulio Vargas, Luiz Antonio Joia, FundaçãoGetulio Vargas, Richard Welke Georgia State University USA, AjanthaDahanayake, Georgia College & State University USA. *The Electronic Journal of Information Systems in Developing Countries* (2011) 26, 3, 1-12.

### 3.1 International Review Belgium

The Belgium case study is perhaps the most relevant for the South African initiative in terms of a previously scattered and fragmented system.

Belgium has a long tradition of poverty alleviation and social programmes which have allowed it to mature and refine its approaches over time.

#### 3.1.1 Background

About 3,000 actors are responsible for the provision of social security in Belgium. More than 10,000,000 citizens and 230,000 employers have very frequent contacts with those actors to claim their entitlements, provide information and pay their contributions.

The range of benefits covers:

- Child benefits.
- Unemployment benefits.
- Benefits in case of incapacity for work.
- Benefits for the disabled.
- Re-imbursment of health care costs.
- Holiday pay.
- Old age pensions; guaranteed minimum income.
- The delivery of supplementary social benefits.

An in-depth analysis of the functioning of the Belgium social security system undertaken about 19 years ago showed that:

- The organization of social security offices' business processes was not very customer-oriented and was certainly not coordinated among the various offices.
- Each social security office had its own set of paper forms with accompanying instructions, on the basis of which information was requested that was specifically necessary to calculate the particular contributions or grant the entitlements in the light of the particular social risk; in total some 80 different paper forms are used for data exchange between citizens and employers on the one hand and social security offices on the other with a total of about 2,000 pages of instruction.
- No possibility existed for an interactive exchange of data between the citizens and employers on the one hand, and the social security offices on the other.

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<sup>14</sup>Architecting Information resources of Brazilian Social Security: approaches of Social Science and Computer Science working together. Claudio Jose Silva RIBEIRO, DATAPREV – Information Technology of Brazilian Social Security, Rua Prof. Alvaro Rodrigues, 260/303, Botafogo, Rio de Janeiro, RJ, CEP 22280-020, Brazil

- A direct exchange of electronic data was also not possible between the personnel administration software of an employer and the information systems of the social security offices, which led to an unnecessary and error-prone manual re-input of information.
- Social security offices very often asked the citizens and their employers to request information that was already available at another social security office in the form of a paper document, and to produce that document, rather than exchanging the information directly among themselves.
- Citizens and their employers thus had to inform many social security offices of a single event, following different legal concepts and administrative instructions each time.
- Since the exchange of data occurred on paper, processing was expensive and time-consuming.
- Citizens and their employers themselves had to claim their entitlements throughout the social security system and could not count on the automatic granting of all entitlements on the basis of a single declaration.
- Citizens and their employers did not have the necessary tools for checking the quality of the information before this was reported to the social security offices; this resulted in a relatively high percentage of errors and numerous subsequent contacts for the correction of errors, which could have been avoided.
- This all led to a very heavy administrative load and accompanying expenses for employers, which resulted in a brake on contributions.

### **3.1.2 Objectives of Crossroads Bank**

To improve the service delivery to the citizens and the companies, the Crossroads Bank for Social Security (CBSS) was created 19 years ago. The mission of the CBSS is to be the motor of e-government in the social sector, i.e.

- To grant effective and efficient services with a minimum of administrative formalities and costs for all the involved.
- To improve and reorganize radically the service delivery processes amongst the actors in the social sector, and between those actors on the other hand and the citizens and the employers on the other hand.
- To promote information security and privacy protection by the actors so that all the involved actors, citizens and employers can have justified confidence in the system.
- To deliver integrated statistical information to the politicians and the researchers in order to support the social policy.

More specific objectives entail:

- To ensure that information collection at the citizens and their employers occurs only once throughout all actors in the social sector.
- To promote a maximum of mutual data exchange between the actors in the social sector.
- To stream line the information exchange between the citizens and their employers, on the one hand, and the social security offices, according to five types of events.

- The change in the status (birth, decease ...) or life conditions (move ...) of a person.
  - The beginning of an employment relationship.
  - The requirement for three-monthly payments of social security contributions.
  - The occurrence of a social risk.
  - The end of an employment relationship.
- The maximization of the electronic data exchange between actors in the social sector on the one hand and citizens and companies on the other, preferably by way of a direct communication between the information systems of the citizens and the companies and those of the actors in the social sector, or otherwise by way of an integrated portal site.
  - The standardization of the basic legal concepts, the information components and the instructions with regard to all information exchanges throughout the social sector, so that the electronic data exchange is multifunctional to a maximum degree.
  - A reduction in the number of different forms required for the exchange of information, as the number of headings that occur on these forms.
  - An improvement in the quality of the information and a diminution of the number of contacts made between the citizens and the companies on the one hand and the actors in the social sector on the other for the purpose of correcting errors.
  - A maximal automatic granting of social rights to the citizens and of reductions of contributions to their employers.
  - An integrated and customer-oriented service delivery to citizens and companies.
  - The re-use of basic components, such as for instance the user and authorisation management system or the personal electronic mailbox, for the support of electronic service delivery by the government bodies to citizens and companies in other domains than social security.
  - The use of modern technologies in support of these goals.

### **3.1.3 Guiding Principles**

The e-government approach within the Belgian social security sector is based on a clear vision of the use of information as a strategic resource.

#### **3.1.3.1 Information Modelling**

Information is modelled in a coordinated way so that the model fits as closely as possible to the real world. By doing so, changes to the information model due to changing legal environments are avoided. This modelling takes into account as much as possible the expected use cases for the information. It can be extended and adapted flexibly when the real world or the use cases of information change.

#### **3.1.3.2 Unique collection and re-use of information**

Information is only collected by a social security institution for the well-defined purposes and in proportion to these purposes. All information is collected only once, as closely as possible to the authentic source. This way of proceeding avoids the frequently repeated identical questioning of the citizens or the companies by several actors in the social sector. The collection occurs via a channel selected by the person from whom the information is collected, but preferably in an electronic way, using uniform services such as single sign on, notification of receipt for each message, etc. Information is collected according to the information model and on the basis of uniform administrative instructions operating throughout all actors in the social sector. Ideally, the supplier of information has the possibility of controlling the quality of information before its transmission to an actor in the social sector. This requires the public availability of software to check this quality. The collected information is validated once in compliance with an established distribution of tasks, by the most entitled institution or by the institution that has most interest in a correct validation. Information is shared with and re-used by the authorised users after the validation process.

#### **3.1.3.3 Management of information**

A functional task sharing is established indicating which institution stores and manages which kind of information in authentic form and makes this available to all authorized users. Information is stored in compliance with the information model. Information can be flexibly assembled according to ever changing legal concepts, which have to refer to the information model. Each institution has to report probable improprieties of information to the institution that is designated to validate the information. Each institution that has to validate information according to the agreed task sharing, must examine the reported probable improprieties, correct them when necessary and communicate the correct information to every known interested actor in the social sector. Information is only retained and managed as long as there exists a business need, a legislative or policy requirement or as long as it has historical or archive value and then it is preferably presented in an anonymous or encoded way.

#### **3.1.3.4 Electronic exchange of information**

Once collected and validated, information is stored, managed and exchanged electronically to avoid transcribing and re-entering it manually. Electronic information exchange occurs using a functional and technical interoperability framework which evolves permanently but gradually according to open market standards, and is independent of the methods of information exchange. Electronic information exchange can be initiated by the institution that possesses information, by the institution that needs information or by the institution that manages the interoperability framework, in this instance the CBSS. The available information is used proactively for automatic granting of benefits, for prefilling when collecting information and for providing information to the persons concerned.

#### **3.1.3.5 Protection of information**

Security, integrity and confidentiality of information are ensured by integrating ICT measures with structural, organizational, physical, personnel screening and other security measures according to agreed policies. Personal data are used for purposes compatible with the purposes of the data collection and are only accessible to authorized institutions and users according to business needs, legislative or policy requirement. The access

authorization to personal data is granted by an independent committee, after having checked whether the access conditions are met. The access authorizations are public. Every concrete electronic exchange of personal data is previously tested for compliance with the applicable access authorizations by an independent institution managing the interoperability framework, in this instance the CBSS. Every concrete electronic exchange of personal data is logged, to be able to trace possible abuse afterwards. Each time the information is used for a decision, the information used is communicated to the person concerned together with the decision. Each person has the right to access and to correct his own personal data.

#### **3.1.3.6 Integrated approach**

The e-government program of the social sector is situated within the global e-government policy of the Belgian government. This policy tries to provide the users of governmental services with an integrated service offer that covers all governmental bodies and which is organised according to events during the life cycle/business episode of the customer. The provision of electronic services is therefore linked to a customer-oriented re-engineering of the service delivery processes. The co-operation between the various government levels and government bodies is promoted. A number of the above mentioned basic principles on the strategic use of information is cemented in law, and a legal framework was created for harmonizing basic concepts.

#### **3.1.3.7 Installation and use of consultation platforms**

The whole e-government program of the Belgian social sector was prepared, developed and implemented in close co-operation by all involved actors, and with the support of political decision makers at the highest level. Use was made of existing formal consultation organs within the social sector for this purpose, such as the National Labour Council, the highest consultation organ amongst social discussion partners, and the General Co-ordination Committee of the CBSS, in which all actors in the social sector are represented. Furthermore and specifically for some projects within the program, a number of ad hoc consultation platforms were established.

#### **3.1.3.8 Sustainability and transferability**

The CBSS actively shares its experiences with interested institutions in Belgium and abroad. The approach has been described in several public documents and has received a Good Practice Label within the e-government Good Practice Framework set up by the DG Information Society & Media of the European Commission.

In 2001, the general manager of the CBSS was asked by the Belgian federal government to elaborate an e-government plan for the federal public services, based on the successful experiences in the social sector. This plan, that is now being executed and permanently updated by FEDICT, has extended the above mentioned vision of the use of information as a strategic resource to the whole Belgian public sector and contained, amongst others, concrete projects such as the delivery of an electronic identity card to all citizens, and the creation of a Company Register, of a federal service bus and of an integrated portal environment.



In addition to that, a number of components developed within the social sector, are re-used in the Belgian public sector in general. The following examples may illustrate this.

### **3.1.3.9 Unique identification numbers**

Each citizen and each company has a unique identification number. This single identification number is generally used as a common identification key by all government bodies. The citizen's identification number can be read visually or electronically from the social identity card or the electronic identity card. The unique identification number is generally used for identification purposes at each direct or indirect (e.g. through his employer) contact of a citizen or a company with the public sector. The main identification data of citizens and companies can be consulted by the government bodies on the basis of the unique identification number within the National Register ((which includes name and Christian names, date and place of birth, sex, nationality, principal residence, date and place of death, profession, civil status, composition of the family) or the Company Register (which includes the VAT number).

### **3.1.3.10 User and authorization management**

The authentication of users and the administration of the access rights, for a system that provides electronic data exchange between tens of thousands of users, is an especially complex process.

During the design and the implementation of the e-government program of the Belgian social sector, special attention was continuously given to structural, organizational and technical measures related to information security and the protection of the privacy of the citizens. All actors have been developing a real information security and privacy protection culture.

An independent Social Sector Committee created within the Commission for the Protection of Privacy has been put in place. Its duties involve authorizing the exchange of personal data by actors in the social sector, formulating recommendations and advice concerning information security and the protection of privacy, processing complaints from people concerned and arranging external audits. All authorizations to exchange personal data are published on the website. An information security and protection of privacy consultant has been appointed at each actor in the social sector (for smaller actors, it is possible to have a shared information security and protection of privacy consultant), with a clear job description (including among other things the tasks of the data-protection official within the meaning of Directive 95/26/EC of the European Parliament and of the Council of 22 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data) and status. A specialist information security service has been set up to support information security and protection of privacy consultants in fulfilling their duties.

A Committee for Information Security has been set up, made up of information security and protection of privacy consultants from the various actors in the social sector. Each electronic exchange of personal data by an actor in the social sector is in principle (exceptions can be envisaged) preventively tested for compliance with their authorizations by means of the reference directory and logged by the CBSS.



Minimum security standards have been worked out by the Committee for Information Security and approved by the Social Sector Committee. Each general manager of an actor in the social sector must declare annually that his institution complies with the minimum security standards established by the Social Sector Committee; a false declaration is forgery, with sanctions as a possible consequence.

An integrated set of security policies has been elaborated through step-by-step refinement; directives, architecture, standards, procedures and techniques have been described to apply the integral set of security policies, in accordance with the priorities set by the Committee for Information Security. The policies are implemented by a set of concrete measures related to the several domains of the ISO standard 17799.

### **3.1.3.11 Public XML schemes, glossaries and common electronic dictionaries**

The exchange of all electronic information occurs on the basis of XML messages. There is a large number of accessories available for facilitating this development. For instance, an XML validator is available on the social security portal, with which the electronic messages can be checked before they are transmitted, which has substantially reduced the number of incorrect information exchanges.

The defined XML schemes are documented in public glossaries that describe the meaning and the format of the different data units, the integrity conditions and the control mechanisms that have been provided. These glossaries are administered in a coordinated manner on the basis of groupware.

All the information concerning the electronic data exchanges is standardized throughout the whole social sector. The use of the object oriented methodology, applied to the glossaries and the XML schemes, has led to the creation of original and innovative applications. Throughout the glossaries, each generic concept is defined in a unique way and is stored in a common electronic dictionary available on the social security portal. The documentation concerning the transactions is divided into different specific electronic dictionaries which inherit from the generic concept and can be enriched by specific information. According to the inheritance principle, each modification to one of the generic concepts is transferred to the entire documentation.

This system guarantees a coherent and homogeneous management of all the administrative processes of the social sector. The structured lists (postal codes, activity categories,) contained in the documentation are not only used in a documentary aim but also to test the declarations sent by the employers and saved in the database. The application was built according to the WOPM concept (Write Once, Publish Many) so that it becomes possible to generate automatically an identical structured table in different formats (XML, PDF, MS-Word). This methodology is gradually being implemented throughout the whole Belgian government.

### 3.1.3.12 Governance

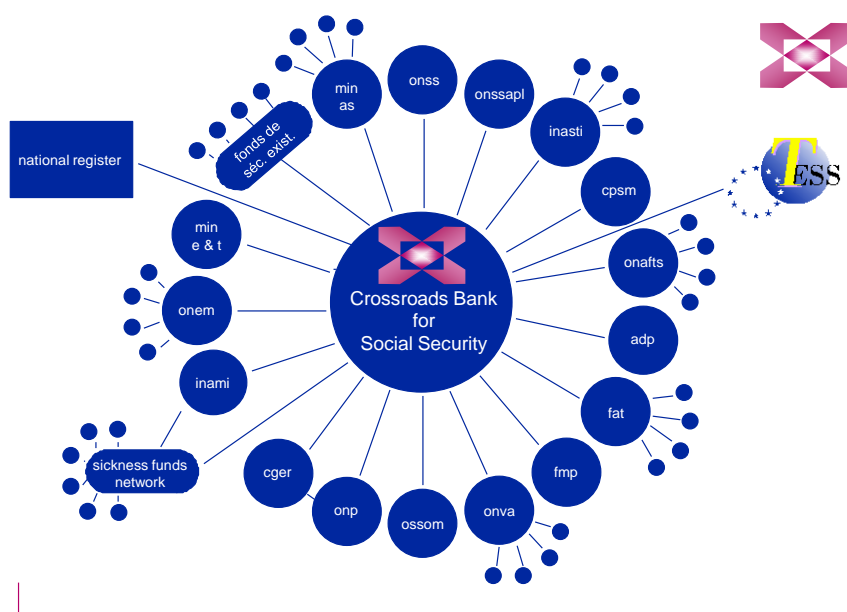
The Crossroads Social Bank is a strategic central intermediary in a federated network of institutions. Its role in information integration and security requires such a role. However, its governance model is strongly decentralised to include all the stakeholders in the value-chain.

There is Board of Directors which on which representatives of the stakeholders (employer associations, trade unions, and social security institutions) are represented. The Board oversees strategic, operational and financial plans. Then there is a General Coordination Committee (GCC) where users are represented and this Committee provides advice and feedback on existing and proposed eGovernment developments. The Committee can establish permanent or ad hoc working groups to focus on particular programmes and projects. The Chairs of the working groups then meet as a Steering Committee for the GCC. All users within the GCC debate and agree an annual priority plan.

The governance model means that all actors in the CBSS system can contribute to the planning of future developments, and they also can receive regular technical feedback on important trust related issues such as infrastructure and data security and privacy protection.

### 3.1.3.13 Organisational Principles of the Integrated network

Since 1991 a coordinated revision of the processes and relationships between the actors in the social sector is systematically being carried out. During this revision, the legal division of authority amongst all actors was respected. Information storage and management is not centralized, but executed in a coordinated way. A task sharing has been established indicating which actor stores which information as an authentic source, manages the information and maintains it at the disposal of the authorized users



**Figure 4:Starshapped Architecture Consisting of Different Levels**

A secured network was expanded amongst all social security offices, which is based on the TCP/IP protocol. All social security offices are connected onto the network, which is managed by the CBSS, and have a legal obligation to request all information available in the network from each other electronically. The CBSS manages a reference directory, showing:

- Which persons/companies have personal files in which social security offices for which periods of time, and in which capacity they are registered.
- Which information/services are available at any social security office depending on the capacity in which a person/company is registered at each social security office.
- Which kind of information/service can be accessed, in what situation and for what period of time depending on in which capacity the person/company is registered with the social security office that accesses the information/service.
- Which users/applications want to automatically receive what services in what situations for which persons/companies in which capacity?

The CBSS uses this reference directory:

- To ensure preventively that a social security office only gains access to data it is allowed to access, and on people who are known to it.
- To route data requests to the social security office that can supply the data in question.
- To transmit data reported automatically to the social security offices that can use the data in question to fulfil their duties.

The network access is progressively extended to other public and private bodies; amongst others the institutions of the regions and communities entrusted with social missions, the cities and the municipalities, and the private companies which offer services of general interest and which need information about the social security status of their customers.

The network is linked in a secure manner to the internet and other TCP/IP based networks, including the interbank network and the joint municipal networks, and has a high penetration level with the citizens, their employers and the local governments.

The network forms the basis for the exchange of structured electronic messages in an XML format, as for mutual workflow and groupware applications.

### **3.1.2 Benefits**

#### **3.1.2.1 Efficiency Gains**

The system described leads to efficiency gains for all concerned parties and this in several respects:

In terms of cost: services are delivered at a low total cost due to:

- A unique information collection using a common information model and administrative instructions.
- A lower need to re-encoding of information by stimulating electronic information exchange amongst actors in the social sector and between these actors and citizens and companies.
- A drastic reduction of the number of contacts between actors in the social sector and citizens or companies.
- A functional task sharing concerning information management, information validation and application development.

In terms of quantity: more services are delivered:

- All services and information are available at any time, from anywhere and from several devices.
- Services are delivered in an integrated way according to the logic of the customer.
- In terms of speed: the services are delivered in less time.
- Social security benefits can be allocated much quicker because information is available much faster.
- Waiting and travel time is reduced.
- Citizens and companies can directly interact with the competent actors in the social sector with real time feedback.

### **3.1.2.2 Effectiveness gains**

Still more important than the efficiency gains are the gains of effectiveness. The use of ICT helps the social security system to enhance the realization of its objectives.

- The implemented system makes it possible to deliver services according to a higher quality standard.
  - The service delivery is more correct, because of the implementation of validation procedures on information and the automatic communication of changes of data to all interested actors in the social sector.
  - The service is delivered in a more personalized and participative way.
  - The service delivery is more transparent to the customer, who has the possibility of executing a control on the service delivery process by accessing his own files.
  - Security and privacy protection is more guaranteed by the implementation of adequate organizational, technical and legal measures.
- A number of new services can be delivered.
  - Social security benefits are granted automatically and information concerning social security contributions and benefits is being sent automatically to companies and citizens taking into account their specific situation.
  - Active search of non-take up of social benefits using data warehousing techniques is being started.
  - Personalized simulation environments are being developed.

- Thirdly, social policy is better supported by integrated, cross-sectoral statistical information and simulation models.

### 3.1.2.3 Concrete results

More concretely, the introduction of this system led to the following:

- About 210 types of paper documents which citizens or their employers had to request from one social security office to pass to another social security office have been abolished and replaced by direct electronic data exchanges between the actors in the social sector; in 2007 656 million electronic messages were exchanged.
- About 50 types of social security declaration forms have been abolished.
- In the remaining 30 social security declaration forms the number of headings has been reduced on average to a third of the previous number.
- Many declarations are made directly and electronically from employers' staff administration software packs and accountancy software packs.
- Citizens and their employers can make all social security declarations on the basis of standardized concepts and standardized instructions, and need to report data to the social sector as a whole only once.
- The number of contacts between the citizens and their employers on the one hand and the social sector on the other, has been drastically reduced, with a significant time gain as the result personal services to citizens and companies are offered.
- A huge number of social benefits and subsidiary rights are automatically granted without citizens or their employers having to make declarations anymore.
- Hospitals and pharmacists are freed from encoding about 100 million paper certificates a year concerning the insurance status in the **health**care sector; they now can read it electronically on the social identity card.
- According to a study executed by the Belgian Federal Planning Bureau, the rationalization of the data exchange processes between the employers and the social security offices implies an annual saving of administrative costs of more than 1 billion euros a year for the employers.

In addition, the Crossroads Bank project in Belgium has received several awards including:

- A European Public Service Award was delivered to the Crossroads Bank for Social Security (CBSS) in November 2007.
- The 2006 United Nations Public Service Award in the category of "Application of information and communication technology (ICT) in Government: e-government".
- The re-engineering of the processes between employers and social security offices was awarded the first Belgian E-government Award in 2002 by the employer's federation Agoria, which is an association of

approximately 1,300 Belgian enterprises in the technology sector. This award is an important recognition by the companies themselves of an improved service delivery to the employers.

- The Agoria federation also granted the first E-government Champion Award in 2002 to the CBSS for the overall e-government achievements in the social sector.
- The e-government program in the Belgian social sector was nominated as one of the 5 best practices (out of 500 projects) in the category “European, central and local public e-cooperation” at the second European conference on e-government which took place in Como in 2003.
- In the fifth “Web based Survey on Electronic Public services - October 2002” ordered by the European Commission, the CBSS was presented as an important initiative which can increase the quality of services.

### 3.2 International Review: United States

The United States Social Security Administration (SSA) is an independent agency of the United States federal government that administers social security, a social insurance program consisting of retirement, disability, and survivors' benefits. To qualify for these benefits, most American workers pay Social Security taxes on their earnings; future benefits are based on the employees' contributions.

#### 3.2.1 Categories of Individuals Covered by the System

This system contains a record of each person who has applied for and to whom the SSA has assigned a Social Security number (SSN). This system also contains records of each person who applied for an SSN, but to whom the SSA did not assign one because:

- The application was supported by documents that the SSA suspect to be fraudulent and the SSA is verifying the documents with the issuing agency.
- The SSA has determined the person submitted fraudulent documents.
- The SSA has not suspected fraud but needs to further verify information that the person submitted or SSA needs additional supporting documents.
- The SSA has not yet completed processing the application.

#### 3.2.2 Categories of Records in the System

This system contains all of the information received on applications for SSN's (e.g., name, date and place of birth, sex, both parents' names, and race/ethnic data). In the case of an application for an SSN for an individual who has not yet attained the age of 18, the SSA also maintains the SSN's of the parents. The SSA also collects:

- Changes in the information on the applications the SSN holders submit.
- Information from applications supported by evidence the SSA suspect or determine to be fraudulent, along with the mailing addresses of the persons who filed such applications and descriptions of the documentation they submitted.
- Cross-references when multiple numbers have been issued to the same individual.

- A form code that identifies the form SS-5 (application for a social security number) as the application the person used for the initial issuance of an SSN, or for changing the identifying information (e.g., a code indicating original issuance of the SSN, or that the SSA assigned the person's SSN through our enumeration at birth program).
- A citizenship code that identifies the number holder status as a U.S. citizen or the work authorization of a non-citizen.
- A special indicator code that identifies type or questionable data or special circumstance concerning an application for an SSN (e.g., false identity; illegal alien; scrambled earnings.
- An SSN assigned based on harassment, abuse, or life endangerment).
- An indication that a person has filed a benefit claim under a particular SSN.

### **3.2.3 Purpose**

The SSA uses information in this system to assign SSN's and for a number of administrative purposes:

- For various Old Age, Survivors, and Disability Insurance, Supplemental Security Income, and Medicare/Medicaid claims purposes including using the SSN itself as a case control number, as a secondary beneficiary cross-reference control number for enforcement purposes, for verification of claimant identity factors, and for other claims purposes related to establishing benefit entitlement.
- As a basic control for retained earnings information.
- As a basic control and data source to prevent us from issuing multiple SSNs.
- As the means to identify reported names or SSNs on earnings reports.
- For resolution of earnings discrepancy cases.
- For statistical studies.

### **3.2.4 Other Stakeholders**

- The Office of the Inspector General, Office of Audit, for auditing benefit payments under Social Security programs.
- The Department of Health and Human Services (DHHS), Office of Child Support Enforcement for locating parents who provide SSA child support.
- By the National Institute of Occupational Safety and Health for epidemiological research studies required by the Occupational Safety and Health Act of 1972.
- By the DHHS Office of Refugee Resettlement for administering Cuban refugee assistance payments.
- By the DHHS Centers for Medicare and Medicaid Services (CMS) for administering Titles XVIII and XIX claims.



- By the Secretary of the Treasury for use in administering those sections of the Internal Revenue Code of 1986 that grant tax benefits based on support or residence of children. These provisions apply specifically to SSNs parents provide on applications for persons who are not yet age 18).
- To prevent the processing of an SSN card application for a person whose application the SSA identified was supported by evidence that either:
  - Is suspected may be fraudulent and the SSA are verifying it, or,
  - Is determined that the person submitted fraudulent information.

The SSA alerts its offices when an applicant who attempts to obtain an SSN card visits other offices to find one that might unwittingly accept fraudulent documentation.

### **3.2.5 Storage**

The SSA maintains records in this system in paper form (Forms SS-5 (Application for a Social Security Card), and system generated forms); magnetic media (magnetic tape and disc with on-line access); in microfilm and microfiche form, and on electronic files (NUMIDENT and Alpha-Index).

### **3.2.6 Retrievability**

The SSA will retrieve records by both SSN and name. If the SSA denies an application because the applicant submitted fraudulent evidence, or if the SSA is verifying evidence it suspects to be fraudulent, it will retrieve records either by the applicant's name plus month and year of birth, or by the applicant's name plus the eleven-digit reference number of the disallowed application.

### **3.2.7 Safegaurds**

The SSA has established safeguards for automated records in accordance with its Systems Security Handbook. These safeguards include maintaining the magnetic tapes and discs within a secured enclosure attended by security guards. Anyone entering or leaving this enclosure must have a special badge issued only to authorized personnel.

For computerized records the SSA transmits electronically between the Central Office and Field Office locations, including organizations administering SSA programs under contractual agreements, safeguards include a lock/unlock password system, exclusive use of leased telephone lines, a terminal-oriented transaction matrix, and an audit trail. Only authorized personnel who have a need for the records in the performance of their official duties may access microfilm, microfiche, and paper files.

The SSA annually provide appropriate security guidance and training to all its employees and contractors that include reminders about the need to protect personally identifiable information and the criminal penalties that apply to unauthorized access to, or disclosure of, personally identifiable information.

Furthermore, employees and contractors with access to databases maintaining personally identifiable information must annually sign a sanction document, acknowledging their accountability for inappropriately accessing or disclosing such information.

### 3.2.7 Retention and Disposal

The SSA retains most paper forms only until it can film and verify them for accuracy. The SSA then shreds the paper records. The SSA retains electronic, as well as all updated microfilm and microfiche records indefinitely.

The SSA updates all tape, discs, microfilm, and microfiche files periodically. Out-of-date magnetic tapes and discs are erased and out-of-date microfiches are shredded.

### 3.3. International Review Brazil

The Brazilian Bolsa Família is the social welfare program of the Brazilian government and forms part of the Fome Zero network of federal assistance programs. Bolsa Família provides financial aid to poor Brazilian families. If they have children, families must ensure that the infants attend school and are vaccinated. The program attempts to both reduce short-term poverty by direct cash transfers and fight long-term poverty by increasing human capital among the poor through conditional cash transfers.<sup>15</sup>

The master registry that supports the Bolsa Família, called Cadastro Único de Programas Sociais (CadÚnico), was aimed at identifying the socio-economic profile of the entire poor population of Brazil to inform central government on the effective demand for pro-poor policies.

The family registration is performed by municipalities through the collection of data from low-income families, in a specific form for this purpose. The main information of the registered families are:

- Characteristics of the home (address, number of rooms, type of construction, water treatment, sewage and garbage).
- Family composition (number of members, there are pregnant women, elderly, nursing mothers, people with disabilities).
- The educational qualifications of family members.
- The household expenses (rent, transportation, food and others).

CadÚnico is now the largest and most comprehensive database on poor households and individuals, serving as a back-bone for Bolsa Família and other programs.<sup>16</sup> The registry is under the responsibility of The Ministry of Social Development and Fight against Hunger (Ministério do Desenvolvimento Social e Combate à Fome -MDS), created in 2003 with the authority and responsibility to plan and execute social assistance and food security policies within the central government.

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<sup>15</sup>CadÚnico: Brazil's Single Registry Experience: A Tool for Pro-poor Social Policies. Joana Mostafa\* Kátia Cristina da Silva. September 2007.

<sup>16</sup>Bolsa Família (*Family Allowance*) is a social the SSAlfare program of the Brazilian government, part of the Fome Zero network of federal assistance programs. Bolsa Família provides financial aid to poor Brazilian families; if they have children, families must ensure that the infants attend school and are vaccinated. The program attempts to both reduce short-term poverty by direct cash transfers and fight long-term poverty by increasing human capital among the poor through conditional cash transfers.

The Economist has described Bolsa Família as an "anti-poverty scheme invented in Latin America" (which) "is winning converts worldwide."<sup>17</sup>

CadÚnico registry system has the clear objective:

*“to register the characteristics of all the vulnerable populations on the whole of Brazil’s territory to inform the targeting processes of as many users as possible”*

This very broad objective, which potentially covers over 16 million families (60 million individuals), scattered across a regionally diverse and vast territory and serves a range of very different policy makers, required CadÚnico to have a simple but innovative approach.

The central idea was to:

- Have a single registry to identify the social and economic profile of the entire poor population of Brazil;<sup>17</sup>
- Self-reported income.
- Decentralized data collection and entry.
- Collect and keep updated, through a decentralized data entry, a concise number of variables with clear and standardized response options. The standardization of responses guarantee:
  - National coverage.
  - Utility for national policy makers’ usage.
- Centralized data processing.
  - The Federal Government consolidates the data collected in the Unified Register. A partir daí, possibilita ao poder público formular e implementar políticas específicas, que possam contribuir para a redução das vulnerabilidades sociais a que essas famílias estão expostas e desenvolver suas potencialidades.
  - Allows government to formulate specific policies that may contribute to reducing social vulnerabilities
  - Currently, the Single Registry has more than 19 million families enrolled.
- Harmonized with national statistical surveys.
- A relatively easy-to-use questionnaire format as the well as proximity to the data generating location ensured more precise or accurate data and enables faster updating processes.

As more stakeholders use the registry the more complete and updated the data becomes, since more effort and money is put into the identification of specific populations as well as into updating the information, either through deliberate government campaigns and/or population awareness. With time, CadÚnico has become the entry point to reach a wide variety of government services.

The most important users of CadÚnico are:

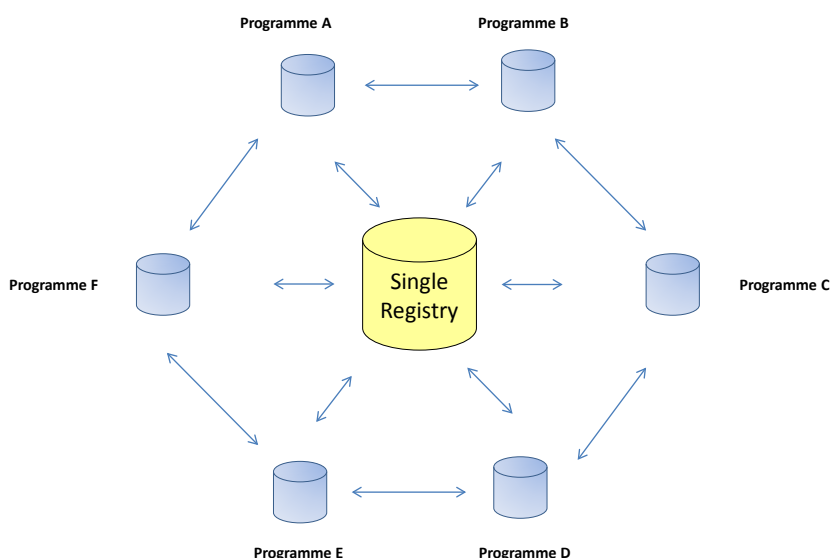
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<sup>17</sup>The single entry system (or Master Registry) is composed of an offline application for data entry and an online system application for transmission to the National database. MDS.gov.br  
Estão em vigência duas versões desse Sistema: a versão 6.05, composta por um aplicativo off-line para a digitação dos dados e um aplicativo on-line para sua transmissão à base nacional; ea versão 7, cujo funcionamento é integralmente on-line, não necessitando de aplicativo distinto para a transmissão dos dados à base nacional.

- The Bolsa Família Program, the world's largest CCT program, with over 11 million beneficiary families registered in CadÚnico.
- Eradication of Child Labour (PETI), a program that combines the supply of after-school activities with CCT, with over 800 thousand children registered in CadÚnico.
- The national power bill rebate program (Tarifa Social de Energia Elétrica) of the Ministry of Mines and Energy which is currently being integrated to CadÚnico and will represent over 13 million beneficiaries registered.

**CadÚnico: Separate Specific functionalities connected by the Single Registry  
– Fast and Integrated.**

Source: Joana Mostafa and Katia Cristina da Silva: Brazil's Single Registry Experience: a tool for pro poor social policies



**Figure 5: Model of Database and Program Management Systems**

Given the broad scope, the CadÚnico had to be clearly defined. The defined scope is encompassed by the two definitions below:

- “Family is defined as a group of one or more individuals, related or unrelated, living in the same household, that contributes to the group’s income or expenditures (“feed from the same pot”);
- A poor family is one that has a per capita income less than (or equal to) half the minimum salary per month or one that earns a monthly income of up to 3 minimum salaries.

Notwithstanding the above definition, there are other conditions to qualify for CadÚnico. These are built-in to the questionnaire and the data entry software. This ensures nationwide data quality, but at the same time limits its coverage. These conditions are data requirements, the most important being, the need to state a ‘more or less’ permanent address and at least one valid identification number for each member of the family.

Data requirements are useful, not only to ensure data quality, but also to stimulate demand for other services by conditioning entry upon fulfilment of a specific rule. When dealing with a nationwide registry system these are pertinent concerns. The setback is that, in so doing, CadÚnico fails to capture the demand for such services when it does not allow for 'incomplete' registries. In that sense, in as much as the most vulnerable populations are the ones most displaced, under-registered and therefore most probable to fail in fulfilling the data requirements, CadÚnico might lose coverage particularly where it is needed.

The solution to overcome this dilemma has been difficult to resolve. In the beginning of CadÚnico's lifecycle, there were few data requirements, which enhanced coverage potential. Since then, the evolution of the data entry software and the process of registry as a whole enabled a more strict set of data requirements. Still, CadÚnico has frequently allowed unconditioned registry for specifically vulnerable populations like the homeless and traditional populations (indigenous and quilombolas). But once the data entry software has been configured to reject these cases, registering these populations required a parallel process, entailing some inefficiency to the whole system.

Bearing the above characteristics in mind, CadÚnico has gradually evolved to cover millions of poor families in Brazil. In December 2003, it already counted 7,992,190 families and 33,053,372 people. Over a 3 year period, it would almost double to reach 15,270,937 families and 62,026,310 people in December 2006. To assess the registry's coverage, the Ministry uses an estimation of 16.7 million families, based on the total households under the ½ m.s.thresholds on the national annual survey of 2002 (IBGE - PNAD). Taking into account that poverty has presented a tendency of absolute decrease in the last two years; the SSA can securely say that CadÚnico has reached over 92% coverage.

### 3.3.1 Categories of Records in the System

The database contains 20 variables of household characteristics, and over 100 variables concerning every individual within the household. The main blocks of data are as follows:

<b>Household Characteristics</b>	<ul style="list-style-type: none"> <li>• Complete Address</li> <li>• Number of Rooms</li> <li>• Household Type</li> <li>• Household Property Status</li> <li>• Construction Material</li> <li>• Sanitation Conditions</li> <li>• Access to Lighting</li> <li>• Access to Water</li> <li>• Water Treatment</li> <li>• Garbage Collection</li> </ul>
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<b>Family Composition</b>	<ul style="list-style-type: none"> <li>• Number of Members</li> <li>• Number of Lactating Women</li> <li>• Number of Pregnant Women</li> <li>• Number of Elders</li> <li>• Number of PWD</li> </ul>
<b>Identification</b>	<ul style="list-style-type: none"> <li>• Complete Name</li> <li>• Complete Mother's Name</li> <li>• Date of Birth</li> <li>• Municipality of Birth</li> <li>• Identification Certificates and Numbers</li> </ul>
<b>Individual Characteristics</b>	<ul style="list-style-type: none"> <li>• Schooling</li> <li>• Labour Market Position and Activity</li> <li>• Incomes</li> <li>• Expenditures</li> <li>• Relationship to Household Members</li> <li>• Social Programs Benefits</li> </ul>

### 3.3.2 Institutional Design

A great deal of the current success of the policies based on CadÚnico is due to its decentralized and institutional structure. Both promote legitimacy and in many ways have helped 'depersonalize' these policies away from the president's image. Together with the assumption of greater endurance of government structures, as opposed to civil society organizations and foreign development partners, the wide spread legitimacy of CadÚnico and Bolsa Família Program confers greater sustainability to the Brazilian social policies for the poor.

- Municipal Level - Plan and execute registry, targeting on the most vulnerable families.
- Federal Level (Operating Agent) - Data entry software development, processing of data on a national level and unique social number attribution (NIS).
- Federal Level (Ministry) - Set goals, coordinates implementation, monitor development and evaluate performance of registry.

- Caixa18

### 3.3.3 Data Quality and Incentive Structures

From a general standpoint, data quality is usually measured by the attributes of:

- Data completeness, which renders actual information, as opposed to nulls.
- Data accuracy, revealing the assertive, reliable and updated aspect of the information.
- No data ambiguity, meaning no duplicity or doubt about the information.
- Standardized content and format, mainly for aggregated analysis.
- Functionality, which basically gives the information a purpose.

### 3.3.4 Critical Issues for the Single Registry Design

In the case of CadÚnico, the interaction between the type of the questionnaire, the decentralized institutional structure and the data-requirements and checks built in the entry software are crucial to attain a high level of data quality.

Basically, the three main components of the single registry are made of:

- The questionnaire.
- The institutional design.
- The technological architecture.

These are not separate components, but rather interactive, and should be designed concomitantly.

## 3.4 International Review Portugal

The social security (*segurança social* or *caixa*) system in Portugal is administered by the state and, in principle, applies to all individuals working in Portugal, either as employees or self-employed.

The Directorate General of Social Security (DGSS) is part of the Ministry of Labour and Social Security (MTSS). The Ministry has the task of the design, coordination and support in the areas of social security schemes including protection against occupational hazards, social action as well as studies, technical negotiations and coordination and implementation of international instruments relating to social; security legislation and social; action.

### 3.4.1 Problem Statement

One of the problems faced by social security system in Portugal was the lack of consistency in information provided to citizens. Different face-to-face service desks could provide quite different information regarding the same issue, product, or service.<sup>19</sup>

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<sup>19</sup>Caixa Econômica Federal (*Federal Savings Bank*), also referred to as Caixa or CEF, is a Brazilian Bank. It is the largest government-owned financial institution in Latin America. Caixa is present in thousands of Brazilian towns (ranked the third financial institution in Brazil in number of branches). Caixa has more than 32 million accounts. Together with government pension funds and other governmental resources, Caixa controls more than R\$ 386 billion (roughly about US\$ 200bn). Caixa is seen as a tool for public investment and expansion of access to financial services to the Brazilian public.



This caused dissatisfaction and mistrust, on the way citizens perceived the quality of service provided by the Institute for Social Security.

This problem was mainly due to:

- The non-existence of a comprehensive, up-to-date, easy-to-use, understand and shared, service-orientated, citizen-relationship focused knowledge base.

The Ministry of Work and Social Solidarity (Ministério do Trabalho e da Solidariedade Social) defined a set of initiatives designed to simplify and to improve all services related to citizen care, within the social security areas. The implementation of the Social Security Contact Centre (VIA) was an initiative launched by the Institute for Social Security (Instituto da Segurança Social, IP), in line with those policies, with the main objective of creating an alternative, and easy to access, relationship channel to improve citizen care, with very reduced waiting times and costs, especially focused on providing a high quality information service to citizens and thus avoid unnecessary trips to a face to face attendance desk.<sup>20</sup>

The project started in 2007, and was based on a study which identified all the tangible and intangible benefits and costs that were identified.

### **3.4.2 Technology Solution**

- The development of a technology architecture for the Social Security Contact Centre (VIA) was based on the following principles:
- Independent architecture of platforms, operating systems, database and communication systems.
- Scalable architecture, able to evolve in terms of number of agents, services and number of communication channels.
- Multi-channel Architecture with management of channels of communication unified and centralized.
- Ability to manage a network of heterogeneous telephony.
- Ability to manage multiple e-mail accounts on scattered mail servers.
- Ability to manage Web applications in various formats.
- Ability to have different interfaces of operating services.
- Providing a unique tool for the management and monitoring platform.
- Respect for market standards.

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<sup>19</sup>The comparison with the issues confronted by the South African system is obvious.

<sup>20</sup>The Portuguese Social Security Contact Centre - VIA SEGURANÇA SOCIAL is part of the Portuguese eGovernment initiatives (i2010eGovernment Action Plan), designed to make public services more efficient and more modern and to target the needs of the general population.

The Institute for Social Security already possessed other relationship channels with citizens and business entities, such as face-to-face, with more than 200 service centres, distributed throughout all districts and regions, in Portugal, and the web service "SSD Segurança Social Directa".

A prerequisite for the solution was to ensure interoperability between the new channel (VIA) and the existing channels. Therefore, the following features were developed:

- Interoperability with the Information System of Social Security (SISS) in order to enable sharing via web services by each working position in the Contact Centre of all the information available, in real-time, and in an aggregate form.<sup>21</sup>
- The features that were developed allow the support of a knowledge database that enables the Contact Centre's relationship with citizens and business entities, and can also be shared by face-to-face services.
- The solution was also endowed with a relationship historical recording system that can also be integrated by the other relationship channels, i.e. face-to-face and Web service, ensuring that any contact from citizens or business entities, made with any of the channels can always be treated and analysed in a uniform and consistent way.
- Another important aspect to address was the need for VIA operators to quickly, easily, and securely, consult specific data registered in the process file of a citizen, or a business company, during a call, and after proper authentication.<sup>22</sup>
- The approach and solution to this involved the identification, by experienced internal staff, of all relevant data fields to be displayed, in order to achieve an 80%, or plus, first-call answer rate, and an average talk time of 2 minutes, per call.
- The next step was taken by IT Institute experts by specifically developing a technical layer of data, and information tabs, to enable VIA operators to consult real-time data, and easily navigate through each different file, via web service, i.e. interoperability.

The cost of Implementation was €1,000,000-5,000,000 and the annual cost of maintaining the system is €1,000,000-5,000,000

### 3.4.3 Results and Benefits

The followings benefits have been documented:

- User satisfaction inquiries are performed weekly by an independent company specialized in market research and customer satisfaction inquiries.
- The sample is random, and more than 20 questions are answered in order to evaluate 2 main satisfaction drivers, i.e. level of satisfaction with the service regarding each contact, waiting time until call is answered by an

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<sup>21</sup>Although not explicitly stated, interoperability requires master registries.

<sup>22</sup>The explicit message is that citizen or business data registered has to be 'properly' authenticated. The requirement for a master registry is inescapable.

operator, the kindness and availability of the operator, and the knowledge demonstrated regarding the subject of each call. These inquiries have consistently obtained a global score above 2 points, in a scale that ranges from 1 to 5 (maximum).

- The average volume of contacts per month already exceeds 120.000, and is growing. The plan is to achieve a cruise volume of 15.000 contacts per day, adding up to 3,7 million contacts per year.
- This will mainly derive from shifting contacts away from face to face services, but will also contain some new demand, captured due to the existence of a new and easy to access channel. The expected savings on travel and waiting hours, by shifting demand to VIA, add up to 3,8 million per year, thus representing a cost saving of 12 million EUR per year, on GNP.

#### **3.4.4 Track Record of Sharing**

Sharing knowledge base information:

- The scripts that support contact centre knowledge base are being shared with face to face attendance, and are also available to the entire organization via the intranet.
- The above allows leveraging the quality and the consistency of the information that is given to users ( citizens and business entities), regardless of the contact channel they use.

### **3.5 Lessons Learnt**

In analyzing various global efforts to create integrated social security information systems, there are several critical success factors which need to be highlighted if future endeavors are to be successful. These are discussed below.

#### **3.5.1 Interoperability and the Political and Legal Factors**

Sharing a common vision of interoperability and the development of a single version of the truth (the master registry) is the first step towards improved social services delivery as the Belgian and Brazil examples illustrate.

Interoperability fosters Public Services delivery through:

- Appropriate governance organisation and processes in line with Government policies and objectives.
- Trusted information exchange enabled by commonly agreed, cohesive and coordinated interoperability initiatives, including:
  - The completion of the potential legal issues that may arise.
  - The elaboration of interoperability frameworks and agreements on interoperability standards and rules;
  - Political consensus at sector level among all stakeholders in order to improve interoperability.
  - Identification of and focus on major business needs and drivers in order to implement an interoperability strategy.
  - As a driving force to trigger innovative applications and products and is seen as a motor for growth and development, enables users to make choices (economic and technological) which will ultimately not only improve service delivery but create new jobs.

### **3.5.2 Organisational and Process Factors**

Governance structures must constitute a strong collaborative approach (i.e. binding collaborative fora) and yet be flexible in terms of operational governance to carry out the dynamic changes and the synchronicity involved in the design and management of relevant processes.

This requires the promotion of cooperation, openness and sharing. Establishing a list of guiding principles, best practices and recommendations which include:

- Cooperation, sharing and participating on common terms in a business community where openness and experiences.
- The participants involved have to understand the added value of interoperability. This cannot be achieved via mandatory actions, but should be based on voluntary attendance and participation and includes:
  - Agreement on enterprise and service oriented architectures.
  - A network strategy.

### **3.5.3 Performance Management**

- A Portal as a single entry point to public information and services as SEMIC offers a collaborative and participatory platform and constitutes an excellent tool for cooperation with existing partners and for the acquisition of new partner projects. This portal would be at the “front end”, aggregating all information and services in one place.
- An Interoperability Secure Gateway, through which interoperability of the various Government Information Systems would be achieved, is regarded as a critical success factor. The Secure Gateway would be a “middleware” providing the tier that enables interoperability, security and authentication, with web-based workflow for interconnection of back-end systems.
- A generally agreed enterprise architecture (EA), and also service-oriented architecture (SOA), to refer to is a prerequisite. The people concerned have to work more closely together to reach a common understanding and an agreement on EA and SOA, covering all levels, from business to infrastructure.
- To meet citizens' and businesses' needs means a radical change for government information networks. In order to deliver the best services, the processes and information used need to cross traditional boundaries, and support remote and mobile working. To allow a person to access the systems and tools they need, from wherever they are, decisions have to be based upon who that person is what roles they are authorised to perform and the security of their access device. The public sector network needs to be a platform on which IT and other services can be built and shared amongst users throughout the public sector.
- Any progress made towards fulfilling a strategy must be properly assessed in the light of pre-established and agreed key performance indicators (KPIs). Performance management is important for managing projects within a strategic programme and for external communication with stakeholders.

### **3.5.4 Information Exchange Factors**

Information exchange is the desired outcome of interoperability and the building blocks for information exchange are:

- Semantic building blocks are fundamental for achieving success across the various Agencies involved in the delivery of social services.
- Agreement on technical standards and semantic interoperability.
- A repository of common concepts used within sectors together with a common lexicon of concepts, i.e. the vocabulary used in interoperability must be compliant with a binding central repository of concepts. This allows the harmonisation of understandings and of machines:
  - XML tags must be the same.
  - A common data model should set what information is important for exchange at Department/Agency level.
- Trust and privacy which are essential preconditions for interoperability.
- Transparency and traceability of exchanged information.

Based on the above, at an Agency level, the MSSR should establish a minimum set of data and reach an agreement on the format those data should take (i.e. Semic1).

Governance structures must constitute a strong collaborative approach (i.e. binding collaborative fora) and yet be flexible in terms of operational governance to carry out the dynamic changes and the synchronicity involved in the design and management of relevant processes.

This requires the promotion of cooperation, openness and sharing. Establishing a list of guiding principles, best practices and recommendations which include:

- Cooperation, sharing and participating on common terms in a business community where openness and experiences.

The participants involved have to understand the added value of interoperability. This cannot be achieved via mandatory actions, but should be based on voluntary attendance and participation and includes:

- Agreement on enterprise and service oriented architectures.
- A network strategy
- Performance management
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Secure Gateway would be a “middleware” providing the tier that enables interoperability, security and authentication, with web-based workflow for interconnection of back-end systems.

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- Any progress made towards fulfilling a strategy must be properly assessed in the light of pre-established and agreed key performance indicators (KPIs). Performance management is important for managing projects within a strategic programme and for external communication with stakeholders.

### **3.5.5 Service Offering Factors**

The defining of clear guidelines and architecture for interoperability standards should include:

- Electronic identity.
- Security and privacy.
- Multilingualism and accessibility.
- Syntactic and semantic standardisation.
- Open technologies.
- Multi-channel services.
- Carry out large scale pilots. The results lessons learnt can be shared and used as building blocks towards the realisation of an internal market. Such projects should reflect a bottom-up approach, driven by widely agreed common specifications. Large-scale pilots promote best practices which have been developed in a specific sector. The emphasis should be on concrete use cases, proceeding with an iterative approach. It is about getting the granularity correct. Sector-related committees are the right means of ensuring everything is working well. Building the necessary interoperability building blocks should occur through iterations, and not via a 'big-bang', top-down approach. Best practices could be derived from the good results reached in the establishment of Early Warning and Response Systems (EWRS):
  - Cross-border cooperation in the field of Early Warning and Response is valuable in the development of standard operating procedures and decision-making processes.
  - Interoperability of cross-border alerts, early warning and response systems.

- Secure and resilient Networks - The availability of services 22/7 and delivery of public services via multiple channels (and nevertheless synchronised).
- Interoperability of an effective DSD Interoperability Platform with effective governance.

### **3.5.6 Best Practice Factors**

- Integration enablers and enabling mechanisms - The Internal Market Information system (IMI), which supplies the MS with a cross-border eGovernment applications to support Internal Market legislation, is a good example of best practice at EU level. It provides MS administrations with a multilingual, open and flexible tool to support the mutual assistance and information exchange required to implement Internal Market legislation efficiently. The IMI overcomes many of the barriers to cooperation created by different administrative cultures, structures and languages, and provides identified partners and procedures.
- Process and data modelling are two important best practices as well as success factors that are widely present in Member States' Interoperability Frameworks.
- SOA describes families of design approaches providing policies, practices and frameworks enabling application functionality to be provided and consumed as sets of services



## 4. HIGH LEVEL CONCEPTUAL ARCHITECTURE AND SOLUTION OVERVIEW

As noted in the Introduction the creation of the Business Case for an Integrated Social Security Information System and its Master Registry follows fundamental principles used in the development of any ICT related solution.

The high level conceptual data management model and architecture presented in this section is the IT response to the compelling, business requirements for a Center for Integrated Social Security Information. .

The data management model, the information model and high level business process flows (articulated in Appendices B and C) and the conceptual architecture initiative is an action oriented deliverable which is the IT response to the business strategy.

The Business Case and the Conceptual IT Architecture is also informed by a review of international developments in Social Security Information Systems and the lessons learnt (Section 3). The lessons learnt have been incorporated into the Conceptual Architecture.

The Business Case and the Conceptual Information Architecture provides:

- A Vision: a comprehensive and concise statement of the DSD business requirements that constitutes a reference horizon.
- IT Functionality: the functions (applications, major systems) that support the desired business capabilities and structure.
- IT Architecture: a comprehensive picture of the IT system, in the form of interrelated building blocks, that allows the building of the required IT System.
- IT Governance: the management system of a company's IT system, in terms of 'what is to be done', 'who should do it' and 'how is it to be done'.
- IT Capability Sourcing Matrix: the recommendations for sourcing the components of the To-Be IT infrastructure, architecture, the governance responsibilities, and the roles to execute the IT.

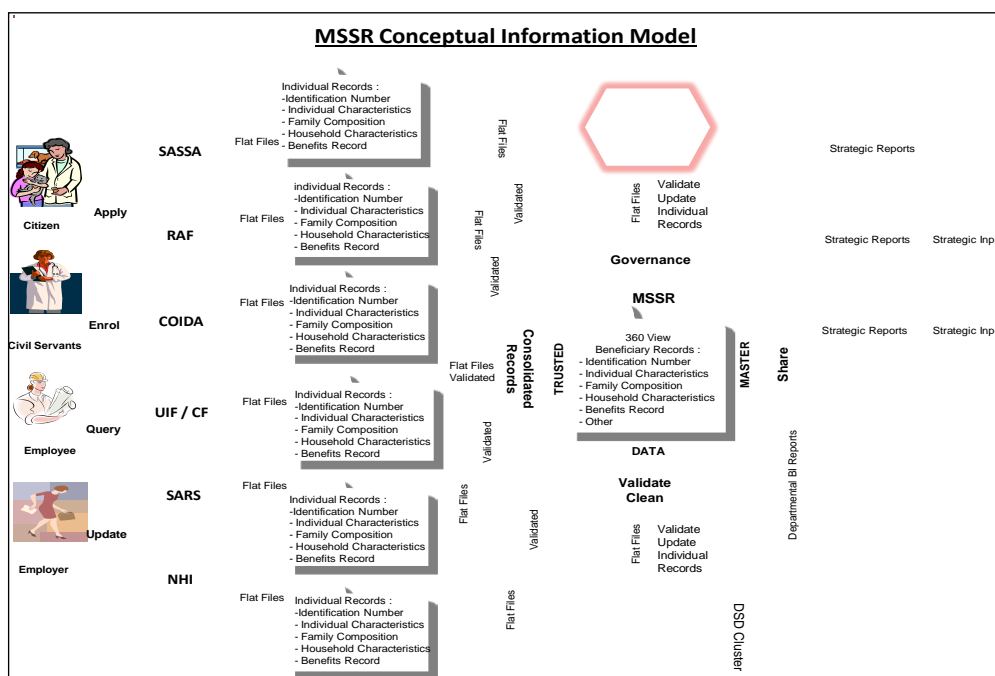
All of the above will provide the Department of Social Security with a **single view of citizens** applying for, and receiving social security benefits discussed in Section 2.

### 4.1 MSSR – High Level Data Management Model and Process

Within a MSSR, there are 5 key data and process flows which are described in the following sections.

- **Profiling** the master data, i.e. understanding all possible sources and the current state of data quality in each source.
- **Consolidating** the master data into a central repository and linking it to all participating applications.
- **Governing** the master data. This would entail:
  - Cleaning up the data.

- De-duplicating it.
- Enriching it with information from 3rd party systems.
- Managing the data according to business rules.
- **Sharing the master data.** This means synchronizing the central master data with enterprise business processes and the connected applications and ensuring that the data stays in sync across the IT landscape.
- **Leveraging** the fact that a single version of the truth exists for all master data objects by supporting business intelligence systems and reporting.



**Figure 6: Conceptual Information Model**

#### 4.1.1. Profiling Data

The first step in any MDM implementation is to profile the data. This means that for each master data business entity to be managed centrally in a master data repository, all existing systems that create or update the master data must be assessed as to their data quality. Deviations from a desired data quality goal must be analysed. Examples include: the completeness of the data; the distribution of occurrence of values; the acceptable range of values; etc.

Once implemented, the MDM solution will provide the on-going data quality assurance, however, a thorough understanding of overall data quality in each contributing source system before deploying MDM will focus resources and efforts on the highest value data quality issues in the subsequent steps of the MDM implementation.

The Data Profiling and Correction option provides a systematic analysis of data sources chosen by the user for the purpose of gaining an understanding of and confidence in the data. It is a critical first step in the data integration process to ensure that the best possible set of baseline data quality rules are included in the initial MDM Hub.

#### **4.1.2 Consolidate**

Citizen records are distributed across the various agencies. It is typically fragmented and duplicated across operational silos, resulting in an inability to provide a single, trusted citizen profile to business consumers. It is often impossible to determine which version of the Citizen record (in which system) is the most accurate and complete. The “Consolidate” pillar resolves this issue by delivering a rich set of interfaces, standards compliant services and processes necessary to consolidate citizen information from across the enterprise. This allows the deploying organization to implement a single consolidation point that spans multiple languages, data formats, integration modes, technologies and standards. Some of the key features in the “Consolidate” pillar include:

#### **4.1.3 List Import Workbench**

The List import workbench empowers business users to load data into the hub through metadata and template driven approaches including support for flat files, XML files and excel files. The import workbench also includes user interfaces to resolve error conditions. In addition to providing a high performance, high volume batch import, the list import functionality is also available as a web service for real time integration.

#### **4.1.4 Identification and Cross-Reference**

In order to capture the best version citizen profile, the MSSR should provide a prebuilt and extensible citizen lifecycle management process. This process manages the steps necessary to build the trusted “best version” citizen profile: identification; registration; cleansing; matching; enrichment; and linking. The best version citizen record also leverages Universal Unique ID (UUID) to uniquely identify the record across the entire enterprise. The citizen record is also tracked across the enterprise by using one-to-many cross referencing mechanism between the MSSR Citizen Id and other applications’ citizen records.

#### **4.1.5 Source Data History**

This pillar also maintains a history of the changes that have been made to the citizen profile over time. This history allows the Data Steward to not only see the lineage associated with a Citizen record, but also provides the ability to optimize the source and attribute survivorship rules which contribute to building the “best version” record. The history also enables the Data Steward to roll back the system to a prior point in time to undo events such as a citizen merge.

#### **4.1.6 Survivorship**

The data stewardship and survivorship capability consists of a set of features and processes to analyse the quality of incoming citizen data to determine the best version master record. This pillar should include rules based survivorship that not only includes pre-seeded rules through its integration with a powerful Business Rules Engine (Haley) but also allows users to define any new rule in addition to allowing users to integrate with any other rules engine. It should also include support for new rule types like Master and Slave that would determine survivor and victim records. Finally this pillar also supports configuring household survivorship rules.

#### **4.1.7 Cleanse**

Centralizing the management of citizen data quality has always been a goal of Citizen Hub solutions. The “Cleanse” pillar provides an end-to-end integrated data quality management functionality to analyse/profile the data, standardize and cleanse the data, match and de-duplicate the data and finally enrich the data to create the best version master record. The powerful end-to-end data quality capabilities around profiling, matching, standardization, and address validation should be available for the MSSR. Additional Cleanse pillar capabilities include:

##### **4.1.8 Data Decay**

Data decay refers to the way in which managed information becomes degraded or obsolete or stale over time. This pillar provides data decay dashboards to monitor and fix the data decay of Citizen and Beneficiary records. These dashboards are accessed through administration screens. Data Decay management consists of the following key components:

- Decay Detection: Captures updates on the monitored attributes / relationships of a record and sets the decay metrics at the attribute level granularity or relationship level granularity.
- Decay Metrics Re-Calculation - Process to retrieve Decay Metrics for the monitored attributes/relationships of a record, use a set of predefined rules to calculate the new metrics value and update the metrics.
- Decay Correctness - Identifies stale data based on certain criteria and triggers a pre-defined action;
- Decay Report - generates Decay Metrics charts on a periodic basis

##### **4.1.9 Guided Merge & Un-Merge**

Guided Merge allows end-user to review duplicate records and propose merge by presenting three versions (Victim, Survivor and Suggested) of the duplicate records and allows end users to decide how the record in the MSSR should look like after the merge task is approved and committed. Similarly the Un-Merge feature rolls back a previously committed merge request.

##### **4.1.10 Enrichment**

This provides an out of the box integration with enriched content from external providers such as Acxiom and Dun & Bradstreet.

##### **4.1.11 High Performance**

A data quality solution has a proven track record in terms of scalability and performance, handling large volume, highly-scalable, critical applications. It is a highly-scalable solution with proven performance on systems with billions index entries on one database and millions real-time transactions in an hour.

## **4.2 Governance**

Data governance is a framework that specifies decision rights and accountability on the data and all data-related processes. In other words, this framework determines who can do what with which data fields, at what stage and under what circumstances. The “Govern” pillar enables users to “govern” master data across the enterprise using key capabilities including:

#### **4.2.1 Data Governance Manager**

Data Governance Manager (DGM) is an intuitive graphical user interface that acts as a centralized management destination for data stewards and business users to manage citizen data throughout the citizen data lifecycle. DGM enables users to:

- Define and view enterprise master data and policies.
- Monitor data sources, data loads, data transactions and data quality metrics.
- Fix data issues and refine data quality rules.
- Operate – Consolidate, cleanse, share and govern – the hub.

#### **4.2.2 Advanced Hierarchy Management**

Advanced Citizen Hierarchy Management is enabled through integration with Data Relationship Manager (DRM). This expands hierarchy management capabilities with DRM's features made available for citizens, citizen hierarchies and Dun & Bradstreet (D&B) hierarchies. In this advanced option, data stewards can create new hierarchies; drag and drop new account nodes into and out of a hierarchy; and compare, blend, merge, and delete hierarchies.

#### **4.2.3 Policy & Privacy Management**

The Privacy Management Policy Hub enables an enterprise to centralize the enforcement of Privacy policies within an MSSR deployment. This module extends the standard citizen master, making it a central policy hub and enables stakeholders to comply with privacy rules and regulations by deriving or capturing a citizen's privacy elections. The policy's rules are enforced based on corporate or legislative regulations, periodic events, or changes in privacy elections. Integration with external systems enables changes made to a citizen's privacy status to be published or consumed.

#### **4.2.4 Advanced Stewardship**

Data stewardship capability delivers a rich set of features and a superior user experience to accomplish the Consolidate and Cleanse functions. The stewardship capabilities include advanced survivorship, advanced merge function guidance and advanced suspect match functionality.

#### **4.2.5 MDM Analytics**

MDM Analytics dashboards enable data steward to quickly and proactively assess the quality of citizen and contact dimensional data entering the MSSR. Through its ease of use, the dashboards like Master Record Completeness and Master Record Accuracy accelerate the data's time-to-value and helps to drive better business results by:

- Pinpointing where data quality improvement is needed.
- Enabling the data stewards to take corrective action to improve the quality and completeness of the Citizen and Contact data.
- Helping to improve organizational confidence in the information.

## 4.5 Share

Cleaning augmented quality master data in its own silo does not bring the potential advantages to the organization. For MDM to be most effective, a modern SOA layer is needed to propagate the master data to the applications and expose the master data to the business processes. The share pillar provides capabilities to share the best version master data to the operational and analytical applications. The key capabilities in this pillar include:

### 4.5.1 Web Services Library

Contains more than 20 composite and granular web services. These services provide a handle to expose day to day operational and analytical functionality that citizen's operational and analytical applications can consume to expose this functionality. These services include:

- *Sync Services*: Sync Services enables MSSR to create and update Individual Characteristics, Family Composition, Household Characteristics, Benefits records.
- *Match Services*: Match Service enables other consuming applications to perform a match for Individual Characteristics, Family Composition, Household Characteristics, Benefits records.
- *Cross-reference Services*: X-Ref services implements cross-referencing functionality by associating master records with corresponding records residing in other operational applications.
- *Merge Services*: Merge Service performs merge of more than 1 citizen master records.

### 4.5.2 Pre-Built Integration with Operational Applications

This pillar includes pre-built connectors that connect MSSR with other participating applications. These connectors are built leveraging the Application Integration Architecture (AIA) framework using Middleware.

### 4.5.3 Pre-Built Integration with Analytical MDM

Prebuilt ETL processes extract information from MSSR and load it into the Data Warehouse. This pillar also provides a number of Information Dashboards for the Data Steward to monitor the quality of Citizen Information. These dashboards ensure the Data Steward has all the information necessary to optimize and improve data quality.

## 4.6 Leverage

MDM creates a single version of the truth about every master data entity. This data feeds all operational and analytical systems across the enterprise. But more than this, key insights can be gleaned from the master data store itself. 360o views can be made available for the first time since operational and analytical systems split in the 1980s. Alternate hierarchies and what-if analysis can be performed directly on the master data.

## 4.7 Master Record – 360 degree View of Beneficiary Record

The MSSR will consolidate individual records from various systems across all social security agencies and produce a Master Record, allowing a 360 degree view. Below is an outline of the type of individuals covered in the MSSR and the categories of information per person:

### 4.7.1 Individuals covered by the MSSR

This system should contain records of:

- Persons who have applied for and to whom the Department of Home Affairs have assigned a SA Identification Number or Passport Number.
- This system also contains records of each person who applied for an ID or Passport number, but to whom Department of Home Affairs is still considering the application.
- Civil Servants that contribute to the Government Employee Pension Fund.
- All employees and employers who contribute to the UIF/CF.
- Citizens who have made application or have received a benefit from RA.
- Citizens who receive a grant from SASSA.
- All Citizens registered with SARS.

### 4.7.2 Categories of individual records in the system

A master record should contain variables of identification number, individual characteristics, household characteristics, family composition and social security benefits received. The main blocks of data are as follows:

<b>Identification Number</b>	<ul style="list-style-type: none"> <li>• Name and Surname</li> <li>• South African ID Number or Passport Number</li> <li>• Nationality</li> </ul>
<b>Individual Characteristics</b>	<ul style="list-style-type: none"> <li>• Gender</li> <li>• Marital status</li> <li>• Race</li> <li>• Ethnicity</li> <li>• Religion</li> <li>• Education</li> <li>• Language Spoken</li> </ul>



	<ul style="list-style-type: none"> <li>• Disability</li> <li>• Contact details</li> <li>• Employment Status</li> <li>• Occupation</li> <li>• Employer</li> <li>• Employer address and contact details</li> <li>• Salary</li> <li>• Banking Details</li> <li>• Tax Number</li> <li>• Next of Kin</li> </ul>
<b>Household Characteristics</b>	<ul style="list-style-type: none"> <li>• Physical Address</li> <li>• Postal Address</li> <li>• Owned or renting</li> </ul>
<b>Family Composition</b>	<ul style="list-style-type: none"> <li>• Number of Members</li> <li>• Number of Children</li> <li>• Number of Elders</li> <li>• Number of People with disabilities</li> <li>• Number of Members unemployed</li> <li>• Number of Members receiving grants</li> </ul>
<b>Social Security Benefits</b>	<ul style="list-style-type: none"> <li>• Social Security Agency Grant, value, term</li> <li>• UIF, value, term</li> <li>• Pension, value, term</li> <li>• COIDA, reasons, value</li> <li>• RAF, reasons, value</li> <li>• Place of issue</li> <li>• Other</li> </ul>

## 4.8 MSSR Conceptual SOA IT Architecture

One of the key drivers for the design of the MSSR Architecture is that it should be a scalable, highly available, adaptive and capable of supporting high performance. In developing the MDM solution for the MSSR, the MDM Reference Architecture was used as reference for input.

### 4.8.1 MDM Reference Architecture

In developing the MDM solution for the MSSR, the MDM Reference Architecture was used as reference for input.

The MDM RA is designed to support the evolution of an MDM Solution to implement one or more MDM methods-of-use and accommodate multiple master data domains.

Designing architecture evolves through multiple stages of elaboration and specification, taking into account:

- System distribution.
- Non-functional requirements such as performance, reliability, and high availability.
- The use of specific products.
- The choice of middleware; and other technologies.

One of the key drivers for the design of the MDM Reference Architecture is that it should be a scalable, highly available, adaptive and capable of supporting high performance.

The implementation of an MDM Solution will always need to consider the existing IT environment, IT standards, enterprise architecture policies, and choice of software for the MDM System and for implementing Information Integration Services such as Information Integrity, ETL, and EII.

Reference architectures are also an abstraction of multiple solution architectures that have been designed and successfully deployed to address the same types of business problems.

Reference architectures incorporate the knowledge, patterns, and best practices gained from those implementations into the reference architecture.

Reference architectures provide detailed architectural information in a common format such that solutions can be repeatedly designed and deployed in a consistent, high-quality, supportable fashion.

Reference architectures describe the major foundational components such as architecture building blocks for an end-to-end solution architecture. Early in the analysis and design stage of a solution, it is common for IT architects to search for reference architectures that can be used as input to design the solution architecture. They provide a framework for scope identification, gap assessment, and risk assessment to develop a roadmap to design and implement a solution.

### 4.8.2 Benefits of using a Reference Architecture

- **Separation of concerns:** Good reference architecture uses components which are built with the separation of concern principle. This separation of concerns means you can change one component with zero to minimal impact on other components. As a result, you have a flexible and extensible infrastructure.

- **Risk mitigation:** Many implementations and deployments are done without the availability of reference architecture for guidance. Thus, if a new project in the same domain needs to be done and a reference architecture can be used as guidance to codify the key concepts and capabilities, risks are mitigated because a proven architectural foundation can be re-used and adopted to the current project needs.
- **Cost reduction:** Since the development of the solution architecture doesn't need to start from scratch, solution development costs are reduced. Usually, critical architectural decisions require time, several rounds of requirement discussion, alternative consideration, and the like. A lot of this time can be saved by using reference architecture as guidance thus reducing costs.
- **Simplify decision making:** The business view on a reference architecture outlines what benefits could be derived by selecting a solution based upon the reference architecture.
- **Improved deployment speed:** The description of reference architecture also outlines key principles, architecture decisions, deployment scenarios and guidance for developing a solution. It provides examples of architecture building blocks and components that can assist in the selection of software products and interoperability requirements between products or applications. This improves the overall speed for the deployment of a solution.

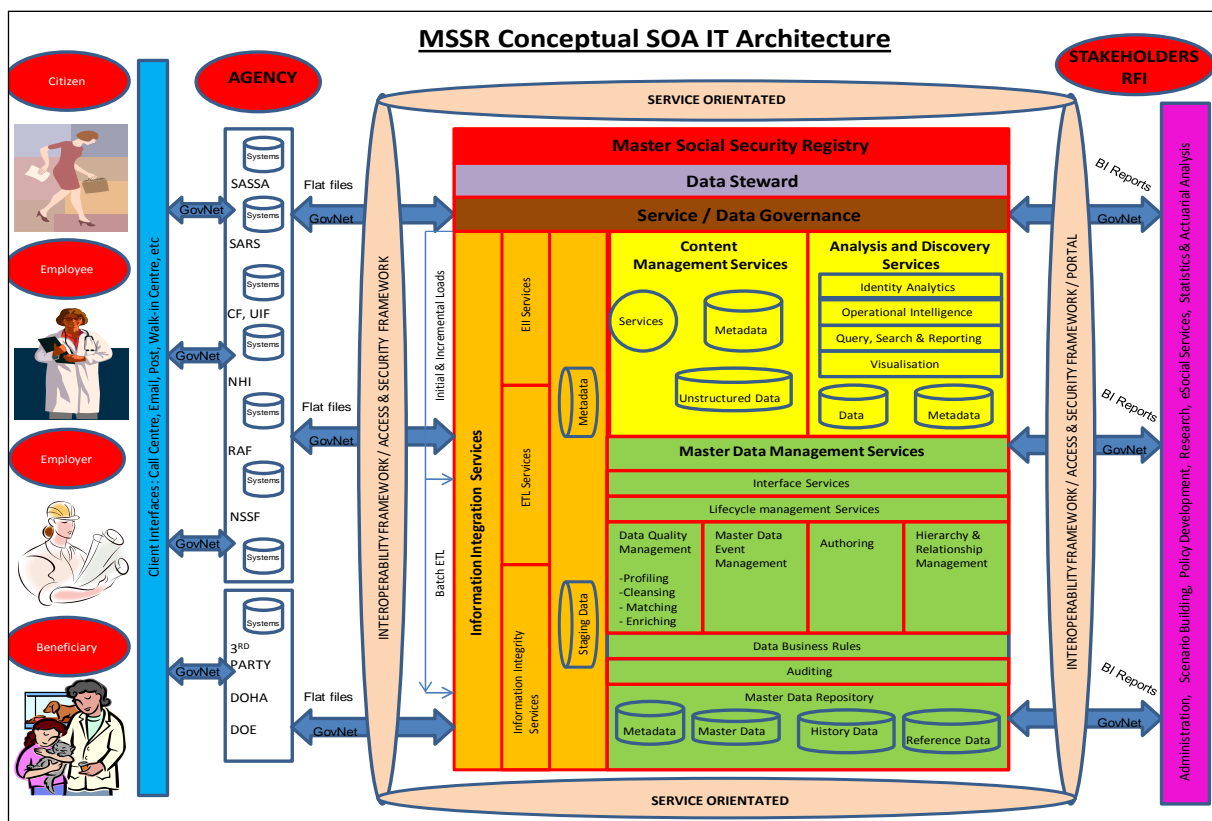
#### 4.8.3 Architecture Principles

Architecture principles are a comprehensive and fundamental law, doctrine, or assumption that provides overarching guidance for the development of a solution. The following principles are core architecture principles that should be considered for guiding the development of an MSSR solution. The principles are:

- The solution should provide the ability to decouple information from enterprise applications and processes to make it available as a strategic asset for use by the enterprise. This is a fundamental concept of Information on Demand founded upon Service Oriented Principles to deliver information at the right time in the right context to the right application or user.
- The solution should provide the enterprise with an authoritative source for master data that manages information integrity and controls the distribution of master data across the enterprise in a standardized way that enables reuse. The primary motivation for this principle is to centralize the management of master data to reduce data management costs and improve the accuracy and completeness of that data.
- The solution should provide the flexibility to accommodate changes to master data schema, business requirements and regulations, and support the addition of new master data. This improves the ability of a business to quickly respond to business changes that may require the addition of new master data elements or changes to existing master data.
- The solution should be designed with the highest regard to preserve the ownership of data, integrity and security of the data from the time it is entered into the system until retention of the data is no longer required. The objective of this principle is to ensure that core business data that is critical to the success of the enterprise will be secure and to comply with privacy laws and regulations.

- The solution should be based upon industry-accepted open computing standards to support the use of multiple technologies and techniques for interoperability with external systems and systems within the enterprise. This will guide development of the architecture to remain open and flexible so it can easily integrate with a variety of vendor software that may already exist within the enterprise and any future unknown technologies.
- The solution should be based upon an architectural framework and reusable services that can leverage existing technologies within the enterprise. This principle guides the architectural decisions to leverage existing investments in technologies such as those that facilitate connectivity and interoperability or information integration where it makes sense in order to implement a MDM Solution.
- The solution should provide the ability to incrementally implement an MDM solution so that a MDM solution can demonstrate immediate value.

#### 4.8.4 Architecture Solution Breakdown



**Figure 7: Conceptual Solution Architecture**

#### 4.8.5 Connectivity and Interoperability Layer

The connectivity and interoperability layer facilitates business-to-business communications with social security agencies and other government departments, system-to-system communications within the enterprise, and communications to external data providers. Many organizations have realized the need to reduce the number of point-to-point interfaces between systems in order to reduce complexity and improve maintainability of the

enterprise. They have implemented this layer using application integration techniques such as Enterprise Application Integration Hubs that support communications through the use of messaging, or have adopted the use of an enterprise service bus.

Master Data Management and Information Integration Services provide information services that can be invoked and choreographed through this layer. The connectivity and interoperability layer represents the enterprise service bus architectural construct or it can simply be thought of as a layer that provides choreography services, and synchronous and asynchronous integration capabilities such as message mediation and routing, publish and subscribe, FTP, and service-oriented integration through the use of Web services. Service integration represents that MDM and Information Integration Services can be requested directly from any social security agency system without going through the connectivity and interoperability layer.

#### 4.8.6 Information Integration Layer

The Information Integration layer provides Information Integrity Services, ETL services, and EII services for federated query access to structured and unstructured data distributed over disparate data sources.

Information Integrity Services include data profiling, analysis, cleansing, data standardization, and matching services. Data profiling and analysis services are critical for understanding the quality of master data across enterprise systems, and for defining data validation, data cleansing, matching, and standardization logic required to improve master data quality and consistency. MDM Data Quality Management Services can request Information Integrity Services to standardize, cleanse, and match master data updates received by the MDM System from a business system.

ETL services support the initial and incremental extract, transform, and load of data from one or more source systems to meet the needs of one or more targets, such as a Data Warehouse and MDM System. The initial and incremental ETL processing to load large volumes of data is represented in the MDM Conceptual SOA IT Architecture Diagram above.

Synchronous and asynchronous communication techniques to support the transporting of low volumes of changed data could occur within the Connectivity and Interoperability Layer.

#### 4.8.7 Master Data Management Layer

The following sections identify the various components that support the Master Data Management layer:

- **Interface Services** support a consistent entry point to request MDM Services through techniques such as messaging, method calls, Web services, and batch processing. The same MDM service should be invoked during batch processing that may be requested as part of a transaction in order to maintain and apply consistent business logic.
- **Lifecycle Management Services** manage the lifecycle of master data, provide CRUD (create, read, update, and delete) support for master data managed by the MDM System, and apply business logic based upon the context of that data. Data Quality Management Services are called by Lifecycle Management Services to enforce data quality rules and perform data cleansing, standardization, and reconciliation. MDM Event

Management Services are called to detect any actions that should be triggered based upon business rules or data governance policies.

- **Hierarchy and Relationship Management Services** manage master data hierarchies, groupings, and relationships that have been defined for master data. These services may also request Identity Analytics Services to discover relationships, such as those between people that are not obvious, and then store that information in the MDM System.
- 
- **MDM Event Management Services** are used to make information actionable and trigger operations based upon events detected within the data. Events can be defined to support data governance policies, such as managing changes to critical data, based upon business rules or time and date scheduled.
- **Authoring Services** provide services to author, approve, manage, customize, and extend the definition of master data as well as the ability to add or modify instance master data, such as product, vendor, and supplier. These services support the MDM collaborative style of use and may be invoked as part of a collaborative workflow to complete the creation, updating, and approval of the information for definition or instance master data.
- **Data Quality Management Services** validate and enforce data quality rules, perform data standardization for both data values and structures, and perform data reconciliation. These services may request Information Integrity Services that are available from the Information Integration Services architecture building block.
- **Base services** are available to support security and privacy, search, audit logging, and workflow. Base services can be implemented to integrate with common enterprise components that support workflow, security, and audit logging.
- **The Master Data Repository** consists of master data, both instance and definition master data, metadata for the MDM System, and history data that records changes to master data. MDM Services can also be used to maintain and control the distribution of reference data that should be maintained at the global level for an organization.

#### 4.8.8 Content Management Layer

The Content Management Services architecture building block provides services to capture, aggregate, and manage unstructured content in a variety of formats such as images, text documents, Web pages, spreadsheets, presentations, graphics, e-mail, video, and other multimedia. Content Management Services provide the ability to search, catalogue, secure, manage, and store unstructured content and workflow services to support the creation, revision, approval, and publishing of content.

Classification Services are used to identify new categories of content and create taxonomies for classifying enterprise content. Records Management Services manage the retention, access control and security, auditing and reporting, and ultimate disposition of business records. Storage Management Services provide for the policy-driven



movement of content throughout the storage lifecycle and the ability to map content to the storage media type based on the overall value of the content and context of the business content.

MDM layer would refer to content managed by Content Management Services and request these services to access unstructured content associated with master data, such as a citizen, family composition, or social security benefits. For example, an application could request an MDM Service to get product master data from the MDM Data Repository, and then use the reference data returned from the MDM System to request a content management service to retrieve image data about the product.

#### **4.8.9 Analysis and Discovery Layer**

The Analysis and Discovery layer of the architecture building block contains an Identity Analytics component that has analytical services that can determine the true identity of a person that might be trying to hide his or her identity. These services can also be used to discover non-obvious relationships between people, such as those that are part of the same household but have different names and address information, and between people and organizations.

MDM Hierarchy and Relationship Management Services can request these services and then store the results in the MDM Data Repository. In order for Identity Analytics Services to effectively discover relationships and a person's true identity, it may be necessary to load and analyse data from external data sources along with data from within the enterprise. Information Integration Services can be used to load data into the Identity Analytics component.

The Analysis and Discovery Services architecture building block also contains additional components that enable organisations to adapt to changing market dynamics and everyday operational disruptions.

- The Operational Intelligence component consists of services that provide event-based analytic functionality, the ability to perform scenario analysis, and sense and respond capability. It may utilize information and process models as input to implement the analytics capabilities for these services.
- The Query, Search, and Reporting component provides services that support ad hoc queries, reporting services, and online analytical processing (OLAP) capabilities for the reporting, analysis, and multidimensional modelling of business data.
- The Visualization component provides charting and graphing functionality, spatial dashboard reporting services such as for scorecard reporting, spatial analysis services, and rendering services for interaction with components that provide user presentation services.

#### **4.8.10 Data Governance Layer**

The shared metadata repository described above enables data Governance in 4 aspects:

- Promote improved management and re-use across integration projects.
- Simplify the integration process by eliminating manual steps and maintenance of metadata.
- Increase organization confidence by providing insight into where information came from and what it means.



- Ensure organizations meet and exceed governance requirements including compliance and regulatory mandates.

#### 4.8.11 Data Stewardship Layer

The Data Stewardship is used to search for parties that are suspected to be duplicates based on user-defined parameters, including entity and attribute values, suspect-relationship, creation date, location and priority. Data Stewardship contains all necessary functionality to maintain master data entities as required. All services available in a MDM Server Foundation are also available for use through the data stewardship user interface to perform full maintenance of all objects while business rules and security are enforced

Through the use of the Data Stewardship user interface, organizations can maintain hierarchy information. Hierarchy nodes can be added or removed, parent-child hierarchy relationships can be created and managed, and even roles within a hierarchy can be defined

#### 4.8.12 SOA and MDM Orchestration Layer

At its heart, the MDM Server is a SOA application, providing a combination of coarse and fine grained business services. Every single element in the out-of-the-box or configured data model can be queried, retrieved and updated using both high level business services, and atomic fine grained services. The 800+ business services provided out of the box typically cover over 90% of requirements in a public sector focused MDM implementation.

The diagram below outlines the broad areas of services provided:



## 4.9 Resourcing

### 4.9.1 MDM Specialised Resources

Role	Skills and Experience	Capabilities
Principal	<p>7+ years of experience leading large projects with 10+ team members</p> <p>Previous experience with SI partners</p> <p>Previous MDM Server implementation experience</p>	<p>Maintain overall responsibility for the Client from a Professional Services perspective.</p> <p>Advise Sponsors and Program Manager on MDM solution best practices from a value realization, release strategy, communications and organizational perspective</p> <p>Work with Client executives on high-level planning: release strategy, critical success factors, communication strategies</p> <p>Be the central point of management communication for Vendor. Provide liaison between Senior Management of Vendor Enterprise Data Management Solutions and the Client</p> <p>Participate in Steering Committee meetings. Support Sponsors and Program Manager's internal communication needs and issue escalation</p> <p>Provide project-independent quality control</p>
Solution Implementation Manager (SIM)	<p>7+ years of experience leading large projects with 10+ team members</p> <p>Previous experience with SI partners</p> <p>Previous MDM Server implementation experience</p>	<p>Interface with Client and System Integrator project managers on status of deliverables.</p> <p>Support the preparation and maintenance of the master project plan, which defines the activity, task, responsibilities, milestones and estimated schedule.</p> <p>Support the measurement and evaluation of the progress against the master project plan, including resolution of deviations.</p> <p>Support project status meetings.</p> <p>Support the timeliness and quality of deliverables.</p> <p>Coordinate resources.</p> <p>On-going implementation support</p> <p>Provide the other teams with MDM Server expertise, along with the best practice experience that MDM Server Lab Services has garnered from our various implementations.</p>

Technical Architect	<p>3+ years of experience in Java J2EE development</p> <p>5+ years previous OOD software development experience</p> <p>Previous MDM Server implementation experience</p>	<p>Maintain overall responsibility for the Client from an On-going support and mentorship</p> <p>Provide the other teams with MDM Server expertise, along with the best practice experience that MDM Server Lab Services has garnered from our various implementations.</p> <p>Support technical requirements and design of solution</p> <p>Support Configuration of MDM Server Components</p> <p>Support Test Cycle (including Integration, System and User Acceptance Testing)</p>
Technical Specialist (TS)	<p>2+ years of experience in Java J2EE development</p> <p>3+ years previous OOD software development experience</p> <p>MDM Server implementation experience</p>	<p>Provide the other teams with MDM Server expertise, along with the best practice experience that MDM Server Lab Services has garnered from our various implementations.</p> <p>Configuration of MDM Server Components:</p> <p>Enable MDM Server batch framework for Initial and Delta load, and Support the Data Migration Process</p> <p>Includes support for the initial load of the records into MDM Server.</p> <p>Support Test Cycle (including Integration, System and User Acceptance Testing)</p> <p>MDM Server Technical Specialist will support Integration, System and User Acceptance Testing.</p>
Product Consultant	<p>Trained extensively on MDM Server.</p> <p>5+ years' experience as a Product Consultant.</p> <p>Previous MDM Server implementations.</p>	<p>On-going Product Consultant support</p> <p>Provide the other teams with MDM Server expertise, along with the best practice experience that MDM Server has garnered from our various implementations.</p> <p>Define Functional Requirements and Use Cases</p> <p>Data and Transaction mapping</p> <p>Work with the Data Migration team on a data mapping document to support the ETL process. and</p> <p>Provide mentorship for a Customer Business Analyst that works with the Product Consultant during data mapping.</p> <p>Support the Testers and associated Test activities</p> <p>Provide the System Integrator / Client testers with MDM Server expertise and mentorship, along with the best practice experience that MDM Server has garnered from our various implementations.</p> <p>Support Test Strategy and Test Script preparation along with execution in System and User Acceptance Testing.</p>

Infrastructure Specialist	Previous MDM Server installation experience.	<p>Installation of the development, system testing, and user acceptance testing instances of MDM Server along with the configuration of the JMS adapter and Event Notification.</p> <p>Provide infrastructure expertise including hardware / software design, configuration, and installation</p> <p>Support for performance and load testing (if required).</p>
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#### General Project Roles:

- In addition to the MDM solution specialised roles listed above, the overall implementation of the solution will also require more general project roles.
- Project Manager: overall project responsibility, project plan maintenance, risk & issue tracking, resource scheduling, project change control, etc.
- Solution Architect: coordination and management of the technical design, scope, infrastructure, etc.
- Data Migration Specialists: understanding and communication of existing systems and information assist with mapping into to-be systems, etc.
- Integration Specialists / Developers: assist with mapping into to-be systems; develop necessary ESB mediations or ETL jobs, test mediations / jobs, etc.

#### 4.9.2 Estimated Effort

Project Role	Total		FTE	Local	WW	CoE	Client
	Hours	Days		Hours	Hours	Hours	
SIM	620	78	0.65	500	0	120	x
Principal	100	13	0.10	0	0	100	
Technical Architect	520	65	0.54	120	0	400	x
Infrastructure Specialist	200	25	0.21	120	80	0	x
Business Architect	720	90	0.75	220	0	500	x
Quality Stage Specialist	200	25	0.21	80	120	0	
Developer Lead	600	75	0.63	400	200	0	
Developer	720	90	0.75	720	0	0	x

Developer/ Technical Specialist	480	60	0.50	480	0	0	x
Product Consultant	920	115	0.96	920	0	0	x
DBA	80	10	0.08	80	0	0	x
Performance Specialist	60	8	0.06	0	60	0	
Solution Quality Assurance	80	10	0.08	0	80	0	
<b>Total Hours</b>	<b>5,300</b>		<b>5.52</b>	<b>3,640</b>	<b>540</b>	<b>1,120</b>	

The indicative pricing for the resources, both International and Local is as follows:

Local Resources – Range between R 1,350-00 - R 1,750-00

International Resources – Range between R 2,250-00 – R 2,950-00

Disclaimer: - This is a rough estimate price for reference only. It is based on similar type and size projects, which vendors delivered to similar customers across the world. It is merely an approximate estimate without detailed data to be used by you as part of the initial evaluation of a vendor's capability. It does not represent an offer open to acceptance. A final price in a separate Statement of Work (SoW) should be requested from vendors.

## 4.10 Costing

### 4.10.1 Technology

Product Description	Metric	Qty	Unit Price	List Price	Discount	Net Price	Licence	Net Support
Oracle Database Enterprise Edition	Processor	4	R364,230.00	R1,456,920.00	60%	R582,768.00		R128,208.00
Real Application Clusters	Processor	4	R176,364.00	R705,456.00	60%	R282,182.00		R62,080.00
Partitioning	Processor	4	R88,182.00	R352,728.00	60%	R141,091.00		R31,040.00
Diagnostics Pack	Processor	4	R38,340.00	R153,360.00	60%	R61,344.00		R13,495.00
Tuning Pack	Processor	4	R38,340.00	R153,360.00	60%	R61,344.00		R13,495.00
Configuration Management Pack for	Processor	4	R38,340.00	R153,360.00	60%	R61,344.00		R13,495.00

Oracle DB							
Audit Vault Server	Processor	4	R440,910.00	R1,763,640.00	60%	R705,456.00	R155,200.00
Audit Vault Collection Agent	Processor	4	R26,838.00	R107,352.00	60%	R42,940.00	R9,446.00
WebLogic Suite	Processor	4	R345,060.00	R1,380,240.00	60%	R552,096.00	R121,461.00
SOA Suite for Oracle Middleware	Processor	4	R440,910.00	R1,763,640.00	60%	R705,456.00	R155,200.00
SOA Management Pack Enterprise Edition	Processor	4	R191,700.00	R766,800.00	60%	R306,720.00	R67,478.00
Oracle Business Intelligence Suite Enterprise Edition Plus	Named User	300	R15,336.00	R4,600,800.00	60%	R1,840,320.00	R404,870.00
Oracle Business Intelligence Management Pack	Named User	300	R1,764.00	R529,200.00	60%	R211,680.00	R46,560.00
Enterprise Content Management Pack	Processor	4	R1,322,730.00	R5,290,920.00	60%	R2,116,368.00	R465,600.00
WebCenter Suite	Processor	4	R958,500.00	R3,834,000.00	60%	R1,533,600.00	R337,392.00
WebLogic Portal	Processor	4	R460,080.00	R1,840,320.00	60%	R736,128.00	R161,948.00
Management pack for WebCenter Suite	Processor	4	R92,016.00	R368,064.00	60%	R147,225.00	R32,389.00
Management pack for WebCenter Suite	Processor	4	R92,016.00	R368,064.00	60%	R147,225.00	R32,389.00
Identity and Access Management Suite	Employee User	3000	R843.00	R2,529,000.00	60%	R1,011,600.00	R222,684.00

Plus							
Management Pack Plus for Identity Management	Employee User	3000	R61.00	R183,000.00	60%	R73,200.00	R16,200.00
Data Integrator Enterprise Edition	Processor	4	R176,364.00	R705,456.00	60%	R282,182.00	R62,080.00
<b>Total Cost</b>				<b>R29,005,680.00</b>		<b>R11,602,272.00</b>	<b>R2,552,718.00</b>

#### 4.10.2 Applications

Product Description	Metric	Qty	Unit Price	List Price	Discount	Net Licence Price	Net Support
Oracle Data Quality Matching Server	Processor	2	R958,500.00	R1,917,000.00	50%	R958,500.00	R88,872.00
Oracle Enterprise Data Quality Profile and Audit	Processor	2	R1,150,200.00	R2,300,400.00	50%	R1,150,200.00	R253,044.00
Oracle Customer Hub Data Steward	Application User	4	R44,436.00	R177,744.00	50%	R88,872.00	R19,551.00
Oracle Data Quality Profiling Server	Processor	2	R1,150,200.00	R2,300,400.00	50%	R1,150,200.00	R253,044.00
<b>Total Cost</b>				<b>R6,695,544.00</b>		<b>R3,347,772.00</b>	<b>R736,509.00</b>

#### 4.10.3 Hardware

Server Type	Servers Required	Unit Cost	Total Cost	Yearly Maintenance Cost
SPARC Enterprise M5000 Server	1	R963,687.00	R963,687.00	R115,642.00
SUN Storage 6180 Array	1	R789,156.00	R789,156.00	R94,698.00



Brocade 300 Switch with 8 activated shortwave	1	R47,227.00	R47,227.00	R5,667.00
SUN-RACK-II 1042/1042e	1	R37,934.00	R37,934.00	R4,552.00
SPARC T3-1 Server	2	R255,046.00	R510,092.00	R61,211.00
<b>Total Cost</b>			<b>R2,629,867.00</b>	<b>R315,584.00</b>

#### 4.10.4 Consulting Services

<b>Estimated Effort</b>	<b>5,300 hours</b>
<b>Estimated Local Rate Range</b>	<b>R 1,350-00 - R 1,750-00</b>
<b>Estimated Total Cost based on local resources</b>	<b>R 7,155,000-00 - R 9,275,000-00</b>

#### Notes and Assumptions:

Budgetary Costing above has been provided by Oracle. This pricing example is provided for evaluation purposes. This quote is intended to further our discussions; it is not eligible for acceptance by you and is not a part of a binding contract between us for the products and/or services specified. User minimums and licensing rules may apply to the products specified. If you would like to purchase the products and/or services specified in this draft quotation, please ask Oracle to issue you with a formal Quote (which may include an Oracle License and Services Agreement if you do not already have a license agreement with Oracle) for your acceptance and execution and return to oracle. Your order will be effective only upon Oracle's acceptance of the formal Quote (and the Oracle License and Services Agreement, if required).

## 5. GOVERNANCE

The Integrated Social Security Information system and Master Registry project will be complex with a number of role players. It will therefore be imperative to have clear structures and measures in place to set appropriate standards but also to enforce and sustain policy and regulations.

As noted in the preceding sections the Business Case for an Integrated Social Security Information System and its Master Registry follows fundamental principles used in the development of any ICT related solution.

In addition to defining the business needs and the conceptual information model and architecture to meet the business requirements, Governance, both institutional as well as IT Governance is required in terms of 'what is to be done', 'who should do it' and 'how is it to be done'.

Governance for the project will embody the rules within which this project will need to operate.

Aside from the number of stakeholders, all the respective social security agencies have legacy systems which have been developed in isolation of one another so there is no integration between them. The result is that there is no accessible single view of beneficiaries, applications for benefits, benefits granted and so on.

Governance for the project will require balancing the Center for Integrated Social Security Information (CISSI) system and the Master Registry's (MSSR) portfolio of initiatives in terms of benefits, priorities and resource demands with those of the current Agencies.

This requirement follows the principles laid down in the Introduction, i.e. that the Business Case provides the overall vision and key principles by which the and the technology solution for the Center for Integrated Social Security Information System should be developed and delivered. It demonstrates a direct linkage between IT plans and aspirations and those of the business it supports. The governance frameworks described below follows these principles and will ensure that the strategic intent of the State and its business requirements drive the development of the technical solution.

A Governance strategy will have to be devised that involves all respective stakeholders and is adaptable to future changes in mission, vision of the CSSI. The success of the future Governance framework will depend on close collaboration, effective communication and comprehensive information exchange between the parties involved.

Hence an effective Governance Framework must, besides the definition of boards, roles, responsibilities, reporting and escalation paths provide appropriate, institutionalised and formalised management of the relationship between all the respective stakeholders over a long period.

### 5.1 Defining a Governance Framework

A Governance Framework is comprised of three levels:

- Strategic Governance requires executive sponsorship from respective Agencies and their home Ministries and is responsible for ensuring the vision and strategy align with the Department of Social Security's objectives as realizing the business benefits of the CISSI and MSSR.

- Operational Governance requires a customer facing programme management organization that is responsible for developing and operating the programme in a manner that meets the business and technical requirements.
- Tactical Governance requires involvement from technical and business groups and seeks to identify business requirements, capabilities and then manage the deployment and transformation across all levels of social security services.

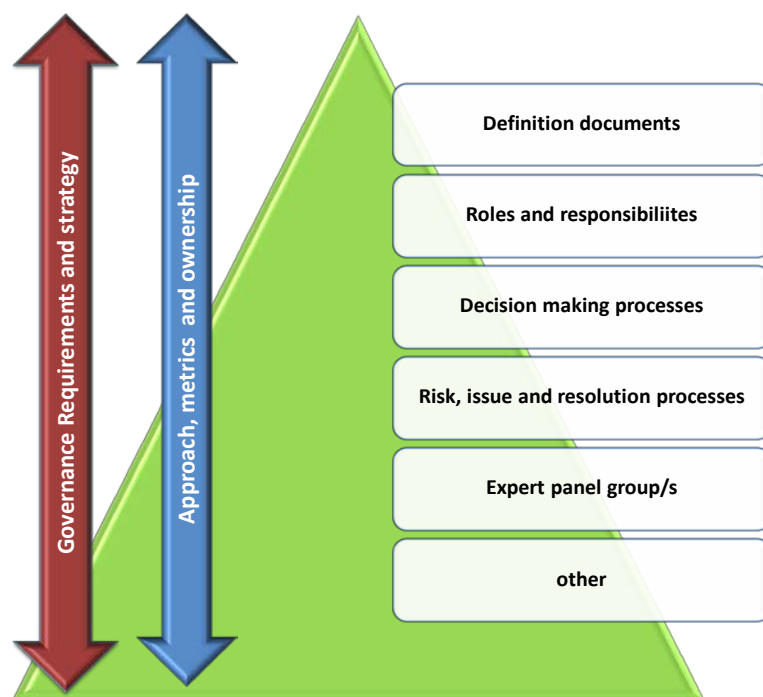
A CISSI and MSSR Governance Framework is the vital interface between (the future DSS) Department of Social Security's (DSS) business, IT, and its partners.

The framework will establish:

- Chains of responsibility to empower people.
- Measurement to gauge effectiveness.
- Policies to guide the organization to meet its goals.
- Control mechanisms to ensure compliance.
- Communication to keep all required parties informed.

The Governance Framework will also ensure the continued alignment of the delivered services with the Department of Social Security's business strategies and goals. It will deliver increased business value and minimizes risk to the business. The design of a Governance Framework is crucial to establish an effective, functioning partnership between business, IT and external parties. Key to success will be a clear, direct and open communication between all involved parties as well as effective decision making to handle all issues at all levels.

The Governance of the project will address the Governance lifecycle of the Integrated Social Security Information system and Master Registry solution from the definition of the project as well as the roadmap to implement the new Governance framework in future phases.



**Figure 8: Governance Framework Component Overview**

The governance framework will give a full breakdown of the organisational structures necessary to identify, enforce, implement, monitor, support and sustain the Integrated Social Security Information system and Master Registry program. The diagram above depicts the various components making up the framework.

## 5.2 Recommended Governance Structures

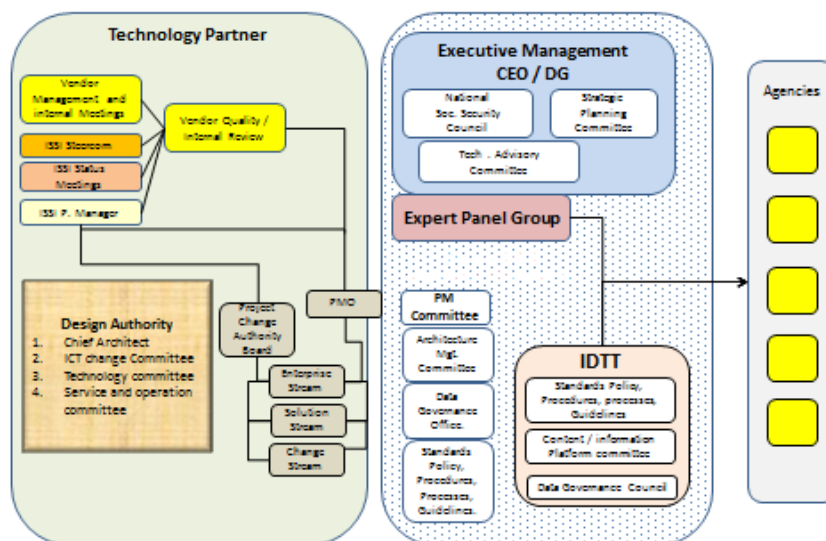
The Governance model illustrated in Figure is Option 1: A Central Business and IT Management Model and is described in detail in Section 6.3.1.

This model is a combination of organizational structure, joint processes, and relationships based on the strategic direction and accepted ground rules called *governance principles*.

This approach is based on IBM's experience in large and complex engagements.<sup>23</sup>

<sup>23</sup>Ian Thomas, *System Engineering and Complex Integration*. IBM Global Business Services,. © Copyright IBM Corporation 2008

## Governance Structure



**Figure 9: Governance Model for Option 1**

The heart of the governance framework involves assembling a trusted Advisory team, reporting to the Executive Management. The Advisory Team will participate in the periodic evaluation of business strategic positioning, the strength of its management team, and the quality of its operating results and the management of the CISSI development team. It also involves periodic evaluation of business risks or opportunities as well as successions management plans. Governance requires action therefore the Advisory team will suggest behaviours to guide relationships between and among businesses and their constituent parts.

The Expert Panel Groups should be made up of subject matter expert (SME) individuals who represent the range of stakeholder perspectives within the CISSI. It will provide strategic direction for the overall effort, as well as oversight for the workgroups. In addition, these panels bring expertise in quality measurement, performance measurement in social security information systems and Information Exchanges.

The Programme management committee will define and oversee the execution of all policies, procedures, processes, standards and guidelines (e.g. management, operational, support). In the case of governance processes, management defines processes needed to ensure governance decisions are implemented. Management will also define how compliance will be monitored, reported, and enforced. Ultimately, the quality and effectiveness of governance will be determined by the enterprise's stakeholders.

In complex project and program environments it is essential to have clear technical, as well as, project management ownership of the solution.

Therefore a Design Authority (DA) and ICT project management is an organisational model which is used by projects, programs and enterprises in order to exercise this control, and allow effective execution of technical delivery.

The following attributes are required for the Design Authority:

- **Credible Authority:** The DA must have the authority to make key decisions.
- **Clear Accountability:** The DA must have clear and defined responsibilities and deliverables.
- **Defined Scope:** The DA must operate across the full breadth and scope with exceptions clearly defined.
- **Right Attendees:** The DA must have the key requirement and design 'decision makers', from each business area forming the quorum.
- **Targeted and Timely Decisions:** The DA needs to be focused and informed on the 'significant' decisions.
- **Pro-active and Responsive:** The DA must be forward looking, predicting up-coming 'hotspots' but remain responsive to the unforeseen.
- **Open and Communicative:** The DA must be understood by everybody involved and it's decisions communicated to all parties.
- **Integrated Processes:** The DA must be integrated with programme/enterprise processes to ensure decisions are applied efficiently.
- **Clear guidance and standards:** The DA needs to maintain an asset base to govern against.

The relationship between the business drivers, technology drivers and the key stakeholders is summarised in in Table 1.

**Table 1**

	National Department of Social Services	Agency	Sourcing
<b>Business</b>	Planning and Architecture Management Committee (both business and IT)	Agency Program Management Meetings	Data Capturing
	Standards, Policy, Procedures, Process, Guidelines (SPPPG) Board (both business and IT)	Agency Service Management Meetings	SPPPG Centre of Excellence
	Expert Panel Groups - Forum		Content/Information Platform Office
	Service Management Committee		Data Governance Office
	Agency Branch Forum		
	Processing Centre Management Board		
<b>IT</b>	Design Authority <ul style="list-style-type: none"> <li>• ICT SPPPG Forum</li> <li>• Technology Community Forum</li> <li>• Technical Review Board</li> <li>• Information Security</li> </ul>		ICT SPPPG Forum

	National Department of Social Services	Agency	Sourcing
	Management Forum		
	Extended Design Authority <ul style="list-style-type: none"> <li>Usually made up of Subject Matter Experts</li> </ul>		Content/Information Platform Committee
			Data Governance Council

### 5.3 Governance and Operating Model Options

As Governance covers Business and IT, it is essential to develop framework models supporting both. Traditionally, these two worked independently but it is imperative that they work together and in synergy to make the Center for Integrated social Security Information System work.

The following models are options:

#### 5.3.1 Business Operating Models

##### Option 1: Central Business and IT Management Model (see Figure 7).

This model assumes the current distributed nature of delivering of services where the DSD and Agencies operate independently because of historical reasons.

Therefore existing structures to support the CISSIS programme, e.g. the Inter-departmental Task Team (IDTT) could be used to own their respective businesses and technical components of the project and ensure that the necessary frameworks and processes are put in place. This however will require that the IDTT be scaled up by suitable resources i.e. technical architects, an enterprise architecture sub-committee, and so on.

The CISSIS will be deployed, controlled, owned and managed from within a single IT Management organisation and CISSIS services are contracted and service performance feedback given directly to Agency Service managers as well as other interested parties.

A single CISSIS central Service management practice should be established under the auspices of the DSD which is responsible for delivery and sustainability of the overall programme.

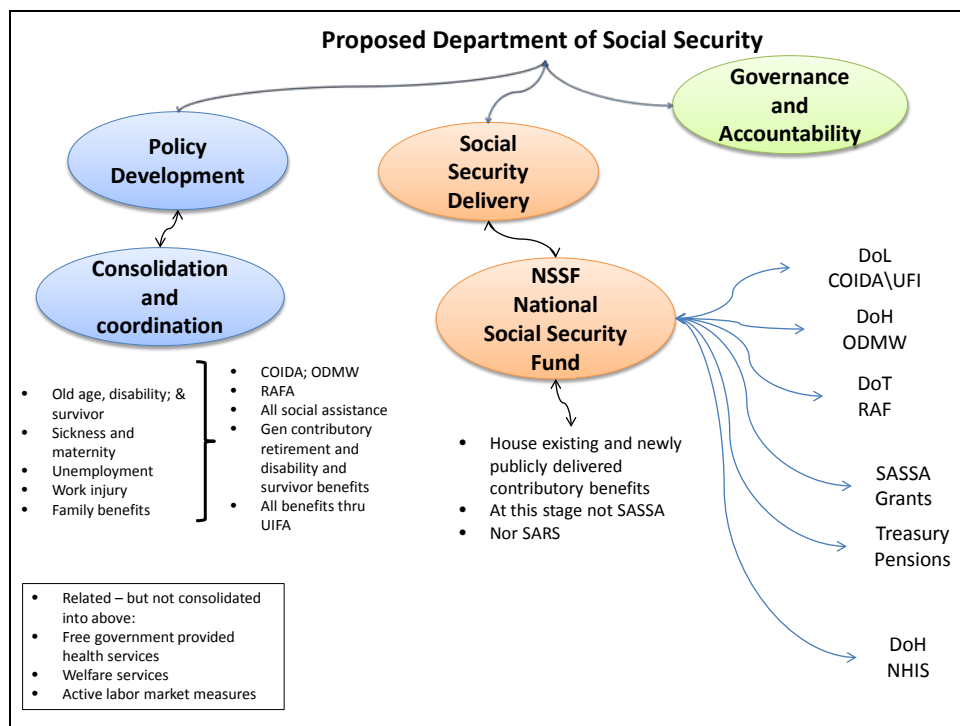
This model fits the recommendations for the business case developed for the proposed new Department of Social Security illustrated in Figure 7.<sup>24</sup>

In terms of this model the CISSIS will be 'housed' within the National Social Security Fund (which could be an independent Agency or part of the new DSD). In either case the Agencies will continue to deliver services but in terms of governance, accountability and delivery of services report to the NSSF. The functions the Agencies will perform will have to align with this new institutional design, including its IT operations.

<sup>24</sup>Report 2, Strategic Reform of the Institutional Framework Underpinning Social Security In South Africa. A discussion document forming part of the review of comprehensive social security, Department Of Social Development, Draft Version 7, June 2010



This is the recommended model and will ensure that not only issues noted in the Problem Statement will be resolved but will lead toward the single view of the citizen or beneficiary.



**Figure 10: Proposed Institutional Arrangement for the Future DSS**

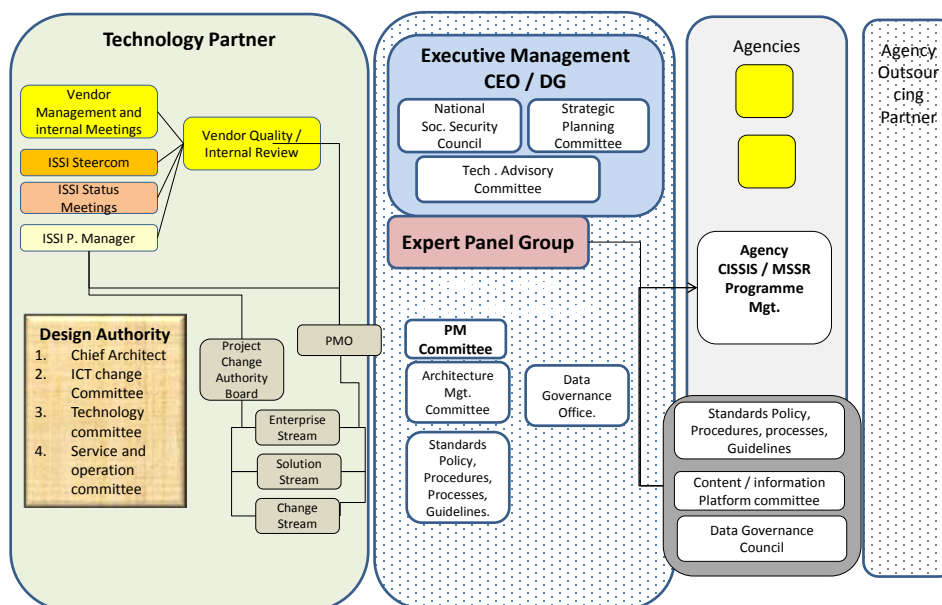
### Option 2: Federated with Common Business Services Model

This model is a variation of Option 1 and introduces the concept of delivery entities across all layers facilitating the common use of scarce skills and to implement cost effective delivery mechanisms.

In this option the National Department of Social Security (DSD) will provide strategic direction to the Agencies and their associated facilities. DSD will set the CISSIS standards, policies, procedures, processes and guidelines for data, content, architecture, ICT management, service management and vendor management. It will also provide the necessary support to the Agencies on the management of technology and other service providers i.e. user registrations, technology support and maintenance through Agency IT support functions. Both DSD and Agencies will manage all vendors based on the federated functions they perform. If the DSD decides to conduct any of the services being managed by the vendor manager in-house, the current governance structures will have to be adjusted.

This model is illustrated in Figure 11.

## Governance Structure: Option 2



**Figure 11: Governance Model for Option 2**

The DSD will utilise the information captured by the Agencies in support for planning, budgeting, management and surveillance. It is also responsible for convening the required governance meetings related to the CISSSIS program. Structures within the DSD will be leveraged to enforce governance standards, policies, principles and guidelines, throughout the value chain, to operational levels in the Agencies. New governance meetings will be established between DSD and the Agencies.

Although Option 1 is the recommended option, Option 2 may prove to be a compromise in the short to medium term to assuage the fears in respective Agencies of losing control. It would also provide the DSD time and experience to build the requisite capacity to undertake the kind of central control discussed in Option 1

## 6. APPENDIX A

As was noted in the Introduction to the Business Case a situational analysis of the registry of social security systems in the Departments of Labour (Compensation for Occupational Injuries and Diseases Act - COIDA), and the Unemployment Insurance Fund -UIF); Transport - Road Accident Fund (RAF); Treasury – (Pensions); Social Development (South African Social Security Agency - SASSA) and Home Affairs (verification of identification status) was not possible.<sup>25</sup>

Therefore, the overview below is purely intended to provide a brief overview of these Agencies and their respective roles, responsibilities.

### 6.1 Unemployment Insurance Fund

The Unemployment Insurance Fund (UIF) was established in terms of section 4(1) of the Unemployment Insurance Act, 2001 (Act 63 of 2001). The Act empowers the UIF to register all employers and employees in South Africa.

In terms of the Act the Unemployment Contributions Act, 2002 (Act 4 of 2002) empowers the SARS Commissioner to collect monthly contributions from both employers and workers. Section 9 of the Unemployment Contributions Act, empowers the Unemployment Insurance Commissioner to collect contributions from all those employers who are not required to register as employers in terms of the fourth schedule to the Income Tax Act and who are not liable for the payment of the skills development levy in terms of the Skills Development Act, 1999 (Act 9 of 1999.) These contributions are utilised to pay benefits and any other expenditure reasonably incurred relating to the application of this Act.

The Vision of the Unemployment Insurance Fund is to contribute to the alleviation of poverty in South Africa by providing effective short-term unemployment insurance to all workers who qualify for unemployment and related benefits.

The core UIF application portfolio is apparently a bespoke, customised solution with features which could be enhanced through custom development in the future. The solution maintains a benefit & transaction record for each participating citizen, is apparently effectively operated and scalable, however it may not be effective as a way of expanding the functionality of the platform to provide a cost effective retirement administration platform.

The cost and functional effectiveness of the UIF platform to the specific needs of a future retirement administration platform needs to be assessed in more detail once the full requirement of the NSSF is determined.

### 6.2 Road Accident Fund

The Road Accident Funds (RAF) mandate is to provide appropriate cover to all road users within the borders of South Africa for incidents arising from the use of motor vehicles and, in a timely and caring manner, compensate persons injured or their families in the event of fatal accidents, rehabilitate the injured, indemnify the wrongdoers, and actively promote the safe use of the roads.

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<sup>25</sup> Ibid

The RAF's mission is to provide appropriate cover to all road users within the borders of South Africa for incidents arising from the use of motor vehicles and, in a timely and caring manner, compensate persons injured or their families in the event of fatal accidents, rehabilitate the injured, indemnify the wrongdoers, and actively promote the safe use of the roads.

### 6.3 Workers Compensation Fund

In terms of the Compensation for Occupational Injuries and Diseases Act compensation is provided for disablement caused by occupational injuries or diseases sustained or contracted by employees in the course of their employment, or for death resulting from such injuries or diseases; and to provide for matters connected therewith.

The Compensation for Occupational Injuries and Diseases Act applies to:

- All employers; and casual and full-time workers who, as a result of a workplace accident or work-related disease:
  - Are injured, disabled, or killed; or
  - Become ill.

This excludes -

- Workers who are totally or partially disabled for less than 3 days.
- Domestic workers.
- Anyone receiving military training.
- Members of –
  - The South African National Defence Force, or
  - The South African Police Service;
- Any worker guilty of wilful misconduct, unless they are seriously disabled or killed.
- Anyone employed outside the RSA for 12 or more continuous months.
- Workers working mainly outside the RSA and only temporarily employed in the RSA.

### 6.4 South African Social Security Agency

The South African Social Security Agency (SASSA) mandate Agency is to ensure the provision of comprehensive social security services against vulnerability and poverty within its constitutional and legislative framework:

- Social Assistance Act, 2004: The Act provides a national legislative framework for the provision of different types of social grants, social relief of distress, and the delivery of social assistance grants by a national Agency and the establishment of an Inspectorate for Social Security.

South African Social Security Agency Act, 2004. The Act provides for the establishment of the South African Social Security Agency as a schedule 3A public entity in terms of the PFMA. The principle aim of the Act is to make

provision for the effective management, administration and payment of social assistance and service through the establishment of the South African Social Security Agency. The President signed the Act on the 28th May 2004.

SASSA provides the following services: Our Service:

- Grant for older persons.
- Disability grant.
- War veterans grant.
- Care dependency grant.
- Foster child grant.
- Child support grant.
- Grant-in-aid.
- Social relief of distress.

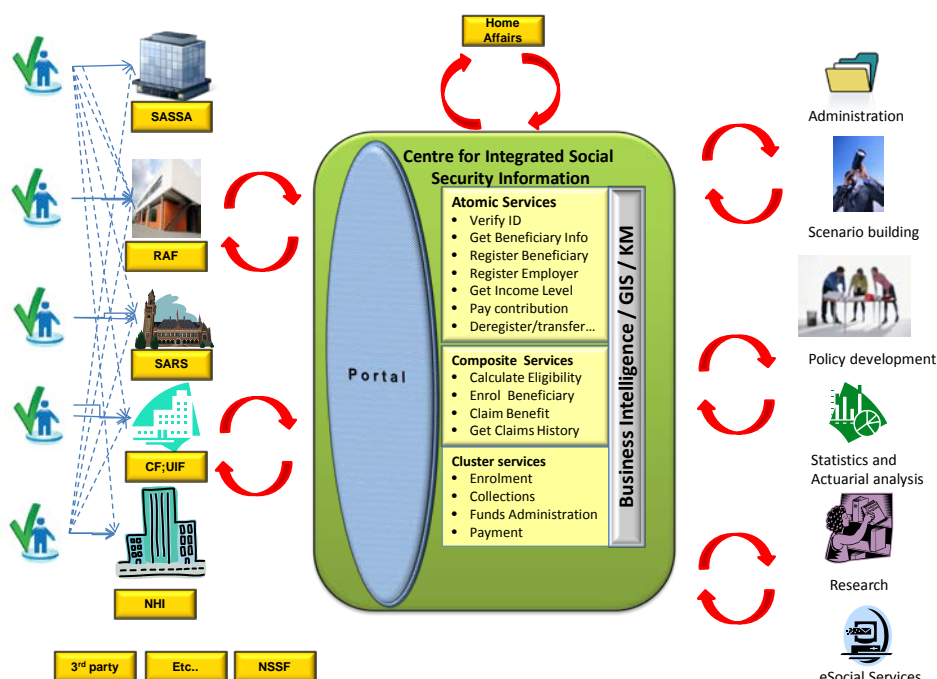
## 7. APPENDIX B

The conceptual information model for the Center for Integrated Social Security Information (CISSI) and Master Social Security Register (MSSR) defines the major business entities, generalizations of those entities, and relationships between the entities.

For the purposes of defining a high level information and knowledge model for the CISSI / MSSR this model mainly defines the scope and not a comprehensive or complete attribute definition.

The information model for the CISSI / MSSR expresses the CISSI / MSSR's information exchange requirements and relationships across three basic entities (social security beneficiary – the applicant, the 'agency' and the CISSI / MSSR business nodes and their elements, and information flow), and focuses on characteristics of the information exchange, such as who exchanges what information with whom and why the information is necessary.

Figure 12 illustrates an information and knowledge management scenario in which the three actors (the applicant, the agency and the CISSI produce functional and operational information.



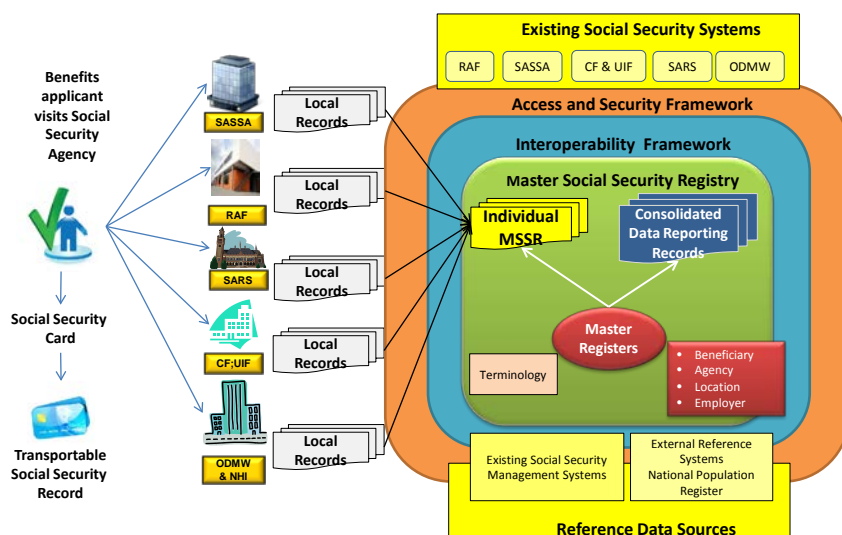
**Figure 12: Conceptual Information and Knowledge Exchange for the CISSI / MSSR**

## 7.1 Conceptual Information Model

This document is focused on establishing a conceptual information model for the Center for Integrated Social Security Information (CISSI) and the Master Social Security Registry (MSSR).

The information model must also be seen in the context of the vision for a CISSI and its solution components (the MSSR) illustrated in Figure 1

The conceptual information model solution scenario is illustrated in the Figure 13.



**Figure 13: Information Solution Scenario**

The information model addresses the CISSI and the MSSR as well as Reports (BI) for a future DSS.

The information model has been developed in accordance with the following definition of a conceptual data model as stated by Byrne et al. (2008)

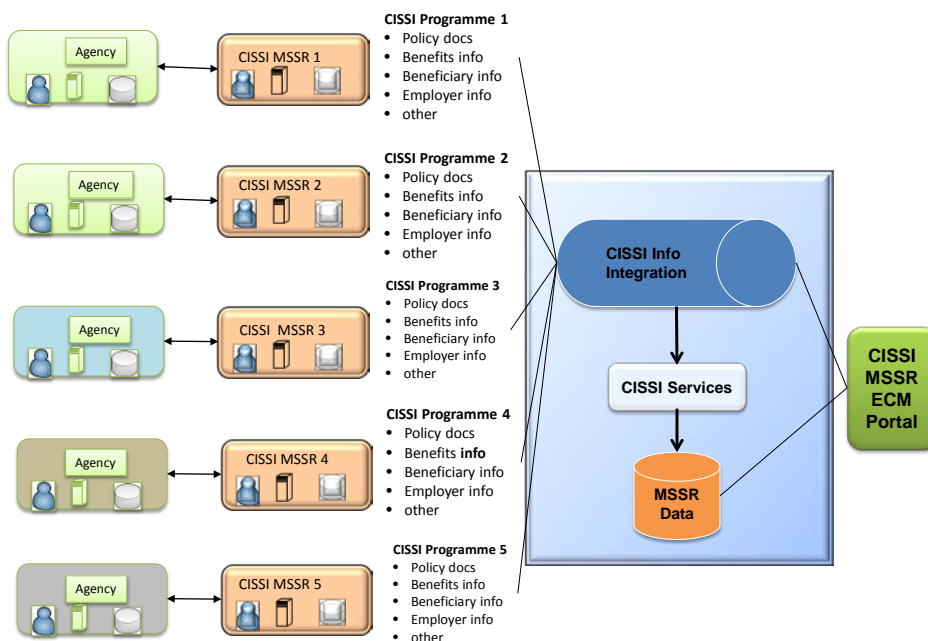
*“The conceptual data model defines the major business entities, generalizations of those entities, and relationships between the entities. It may include the specification of some attributes of the entities but it mainly defines the scope and not a comprehensive or complete attribute definition. A logical data model (LDM) contains representations of entities and attributes, relationships, unique identifiers, sub-types and super-types, and constraints between relationships, while remaining independent of the physical representation of those data structures.”*

The approach to developing the information model is illustrated in Figure 14, with the following design considerations:

- Source of Information



- The CISSI MSSR correlates information that is sourced from external systems. Once correlated this information can be consumed by other systems. The following diagram depicts the basic principles of an MSSR



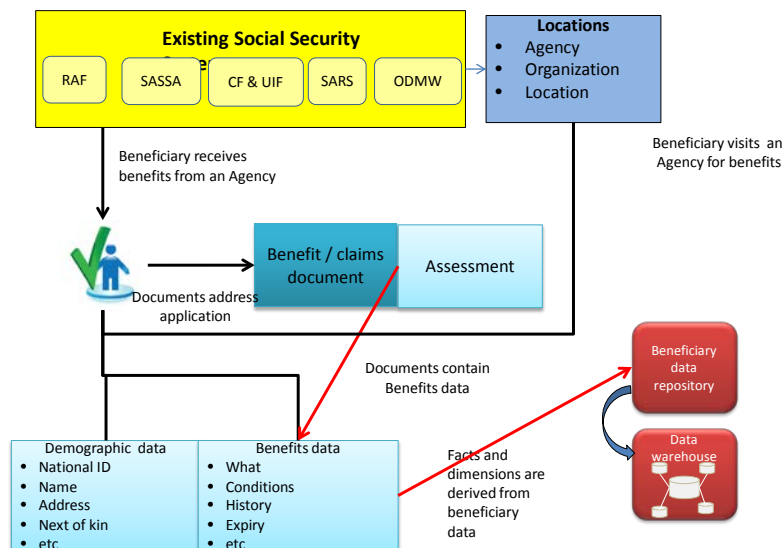
**Figure 14: CISSI MSSR Information Model**

## 7.2 MSSR and Structured and Unstructured Information

In the context of CISSI MSSR the primary function is to create a Master Registry record for a beneficiary that is sharable. In order to be sharable the record must be able to be understood by other computers. This in turn implies that the record is in a consistent format with a predefined structure in the form of data fields and related data characteristics, in other words the record is structured, and a large portion of information will exist in paper documents. When paper documents are scanned the information contained in the document is largely unstructured.

The nature of the type and scope of paper documents, variations in format and quality of handwriting does not make it practical to use image and character recognition software to extract the data fields and related data for an MSSR record from the paper documents. Therefore within the context of the MSSR provision should be made to supplement an electronic beneficiary record by capturing and storing the associated document image.

Information in the CISSI MSSR information model can be represented at a high level with the following (Figure 15):



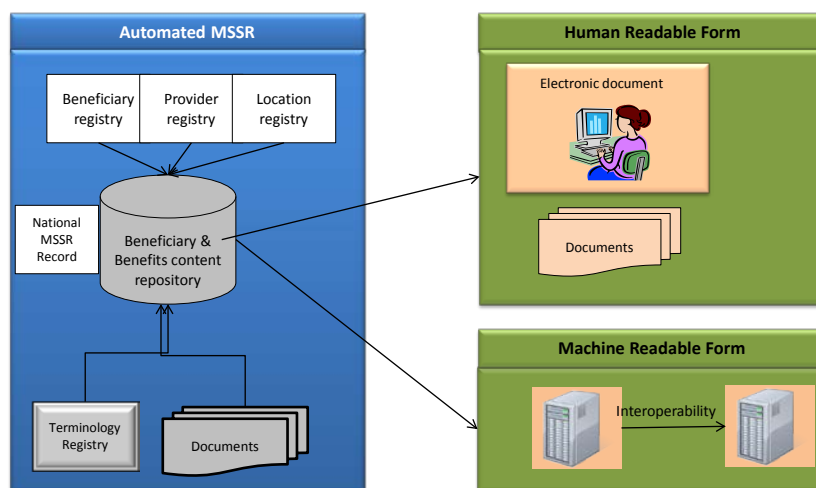
**Figure 15: CISSI MSSR High-Level Conceptual Information Model**

- A beneficiary visits any Social Security Agency facility for a benefit.
- A beneficiary has demographic and possibly benefits data associated with him/her.
- A Social Security Agency Provider delivers a service at a location.
- The Beneficiary is assessed by a Social Security Agency Provider.
- The Social Security Agency Provider issues a Benefits summary or the Agency system sends a message on the Social Security Agency provider's behalf.
- Benefits Data is contained in the Beneficiary Documents or messages.
- The Benefits Data is stored in a Repository – this is the Primary Purpose.
- The Benefits Data is manipulated and transformed for analysis through a Data Warehouse – this is the Secondary Purpose.

Beneficiaries are characterized by their demographics and their benefits data. The definition of the structure and content of Demographics and Benefits data will be governed by open standards.

The Demographics data for Beneficiary will be persisted in the Client Registry. Other Registries are needed to provide unique data about Providers and Service Locations across the Department of Social Security. Once this context information is established, the actual benefits content can be described.

Benefits Data will be persisted in the MSSR from which the same data, facts and dimensions will be extracted for secondary use, for analysis purposes.



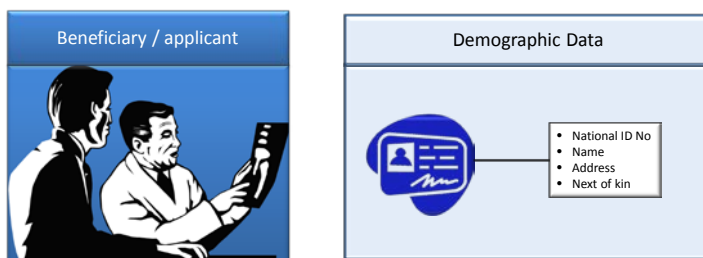
**Figure 16: Conceptual Architecture**

### 7.3 The CISSI MSSR Conceptual or Logical Entities

The following are the CISSI MSSR conceptual/logical entities:

- Beneficiary and Demographics Data.
- Locations.
- Social Security Agency Providers.
- Benefits Data.
- Primary Information Entities.

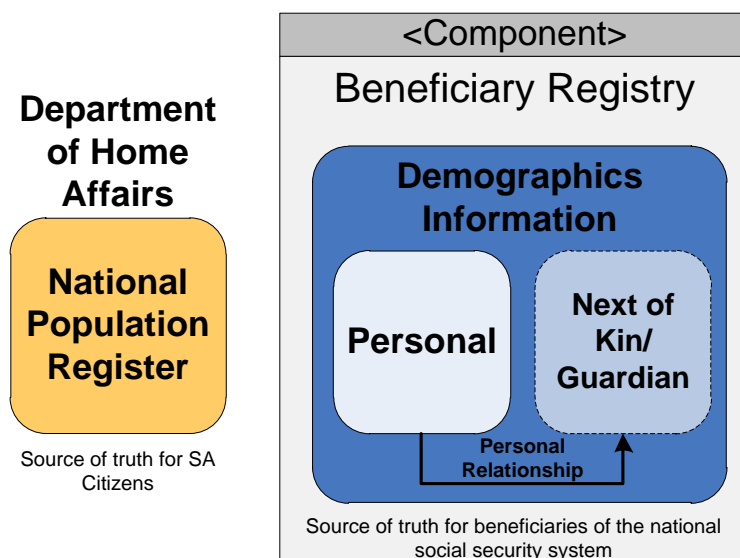
The relationship “A Beneficiary has demographic data” implies that demographic details about the beneficiary are maintained somewhere so as to ensure a unique source of truth.



**Figure 17: Beneficiary Demographics**

## 7.4 Beneficiary Registry

Demographic Data for a Beneficiary is maintained and reconciled in the Beneficiary Registry which acts as the reference source for the CISSI MSSR solution. The information in the Beneficiary Registry will be validated through the National Population Register. The conceptual information model represents the Demographic Information category as containing a “Personal” and a “Next of Kin” sub-category.



**Figure 18: Beneficiary Registry**

## 7.5 Master Registry Content

The Master Information Content Table shows proposed elements to populate the sub-categories.

**Table 2: Master Information Content – Demographic Information**

Category	Subcategory	Proposed Data Elements
Demographic Information	Personal	<ul style="list-style-type: none"> <li>Beneficiary name</li> <li>Individual identifier/benefits record number</li> <li>Unique beneficiary Social Security number</li> <li>Gender</li> <li>Marital Status</li> <li>Race</li> <li>Ethnicity</li> <li>Religion</li> <li>Nationality</li> <li>Address</li> <li>Telephone numbers</li> <li>Date of birth</li> <li>Disability Status</li> <li>Occupation</li> <li>Education Level</li> <li>Language Spoken</li> <li>Employment status</li> <li>Employer</li> <li>Employer address and contact details</li> <li>other</li> </ul>
	Next of Kin	<ul style="list-style-type: none"> <li>Relationship Type</li> <li>Name</li> <li>Gender</li> </ul>

Category	Subcategory	Proposed Data Elements
		<ul style="list-style-type: none"> <li>Address</li> <li>Telephone</li> </ul>

In some cases the BI secondary use and the Smart Card memory footprint limitations may require the elements to be modified with the context of their usage. The table below shows the specific notes as they apply to each situation.

**Table 3: Smart Card and BI use of Demographic Information**

Category	Subcategory	Smart Card	BI
<b>Demographic Information</b>	Personal	The smartcard will carry a sub-set of the personal data elements as well as the unique identifiers that are located in the client register.	The information contained in this category will serve as the foundation for establishing demographic reports. In this regard the mastery of beneficiary, provider and location will be critical. Secondly it is essential that address be associated to a common geographical reference so as to enable geographic integrity in reports. It must be further noted that beneficiary anonymity will have to be assured by not recording beneficiary name, identity references or health number and replacing it with an unassociated reference that will only be used within the BI framework.
	Next of Kin	The smartcard will carry all of these attributes	This category not used in BI reporting so as to ensure beneficiary anonymity

A key success factor for the implementation of an MSSR in South Africa lies in the creation of a master beneficiary register in which each beneficiary is uniquely identified. In addition to being a key success factor the master beneficiary register provides the following benefits:

- Improved reporting as duplicate entries will be removed.
- Improved service and benefits control as ghost and duplicate beneficiaries will be removed.

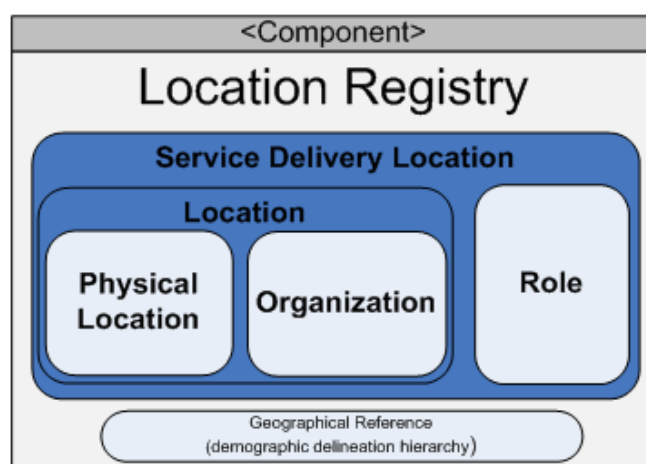
- Enabling of an environment in which a national social security model can be implemented by the removal of ghost and duplicate beneficiary entries.

## 7.6 Provider Registry

At a minimum, an association between an Agency and a Person must be maintained in a Provider Registry. The component should be understood as a service for resolving the Provider unique identities and is used for reference and not administrative purposes. The intent of the register is to create a single source of truth in regards to providers.

The register is focused on uniquely identifying the provider and the associated location. From the CISSI MSSR perspective, every encounter has participations from various Providers that occurred in a specific service delivery location at a certain time. The MSSR Provider register will draw its data from the authoritative systems.

The conceptual information model for this component is shown below in its simplest form. Only the usage context is shown.



**Figure 19: Location Registry**

**Table 4: Provider Registry Content**

Category	Subcategory	Proposed Data Elements
Locations	Place	<ul style="list-style-type: none"> <li>• Place ID</li> <li>• Place Type</li> <li>• Place Name</li> <li>• Description</li> <li>• Active Status</li> </ul>

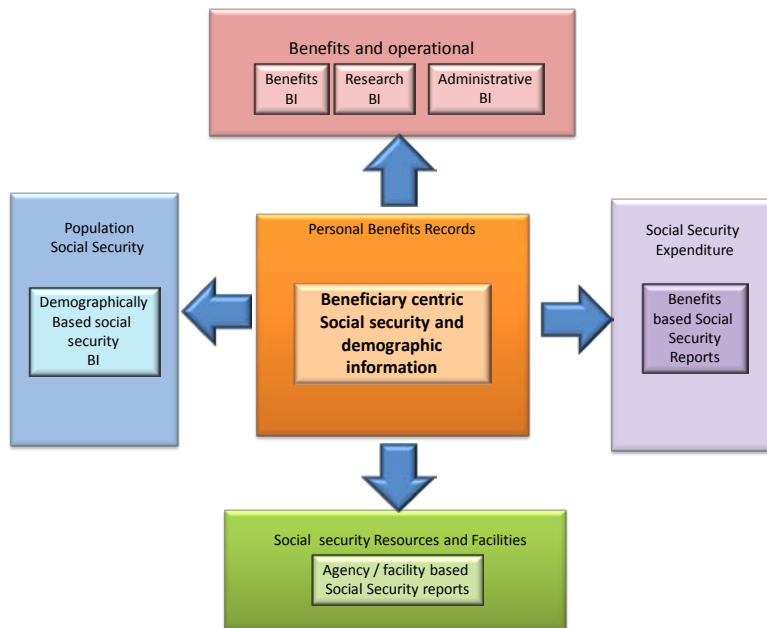


Category	Subcategory	Proposed Data Elements
		<ul style="list-style-type: none"> <li>• Telecom</li> <li>• Mobile Indicator</li> <li>• Addresses</li> <li>• Directions Text</li> <li>• Position text</li> <li>• GPS Text</li> </ul>
	Organization	<ul style="list-style-type: none"> <li>• OrgID</li> <li>• Org Type</li> <li>• Org Name</li> <li>• Description</li> <li>• Active Status</li> <li>• Existence Time</li> <li>• Telecom</li> <li>• Addresses</li> </ul>

## 7.7 Business Intelligence

Business intelligence deals with the leveraging of the data contained in the e-health records so as to produce accurate and relevant health management reports.

The following diagram shows in red that the information collected from the personal clinical record for patients feed the Clinical and Operational data model.



**Figure 20: BI Solution Contribution**

## 8. APPENDIX C

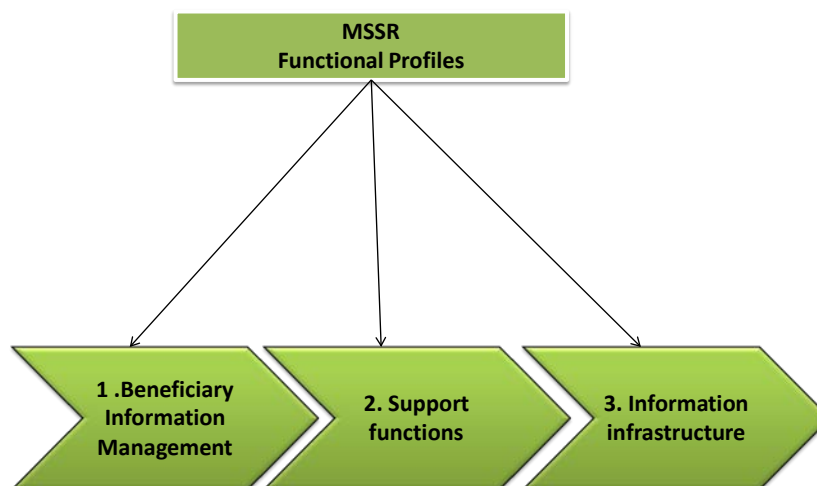
The purpose of this document is to present the business requirements for the MSSR. These requirements are portrayed using Business Analysis tools and techniques such as business process modelling and use case analysis. A Business Process is a series of related cross-functional process steps or activities that takes an input, adds value to it, and produces an outcome. Business Processes may be used to define and describe current (also known as As-Is) or future (also known as To-Be) processes. In the case of MSSR and this document, only future state processes have been defined, thus the to-be processes for the MSSR are documented here.

The use cases are derived from decomposing the business processes to an activity level. Each activity or a group of activities is realised by a use case. Each use case can be executed by one or many defined Users of the MSSR. These users are defined in detail in the User Profiles document of the MSSR.

The Use Case Model is an illustration of which actors can execute which use cases and a detailed description of each of the use cases. The use cases represent the functional requirements of the MSSR.

### 8.1 Document Package Overview

The business requirements of the MSSR have been grouped into three packages according to requirements that represent functionality, those that are administrative and those that are supportive in nature.



**Figure 21: Functional Packages for the MSSR**

As illustrated in Figure 21 above these packages are:

- Beneficiary Information Management.

- Support Functions.
- Information Infrastructure.

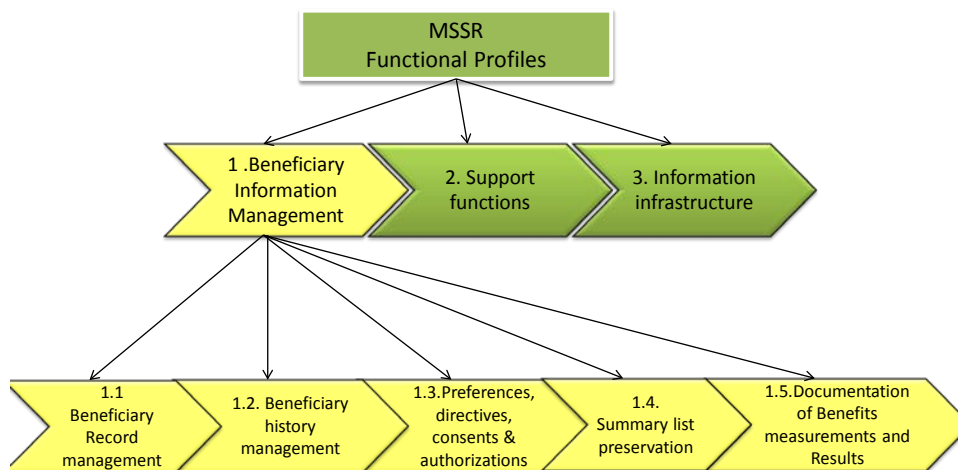
The Beneficiary Information Management package contains requirements related to the management of the beneficiary record and the management of information resulting from the delivery of social security benefits.

The Support Functions package holds requirements associated to the administrative functions that assist the management of beneficiary records and the management of information management resulting from the delivery of social security benefits.

The Information Infrastructure package contains requirements that are common across the benefits Information Management and Support Functions packages

## 8.2 Scope of this Document

The scope of this document is limited to presenting a high level beneficiary Information Management description. Beneficiary Information Management contains 5 sub-packages as illustrated below:



**Figure 22: Beneficiary Information Management Sub-Packages**

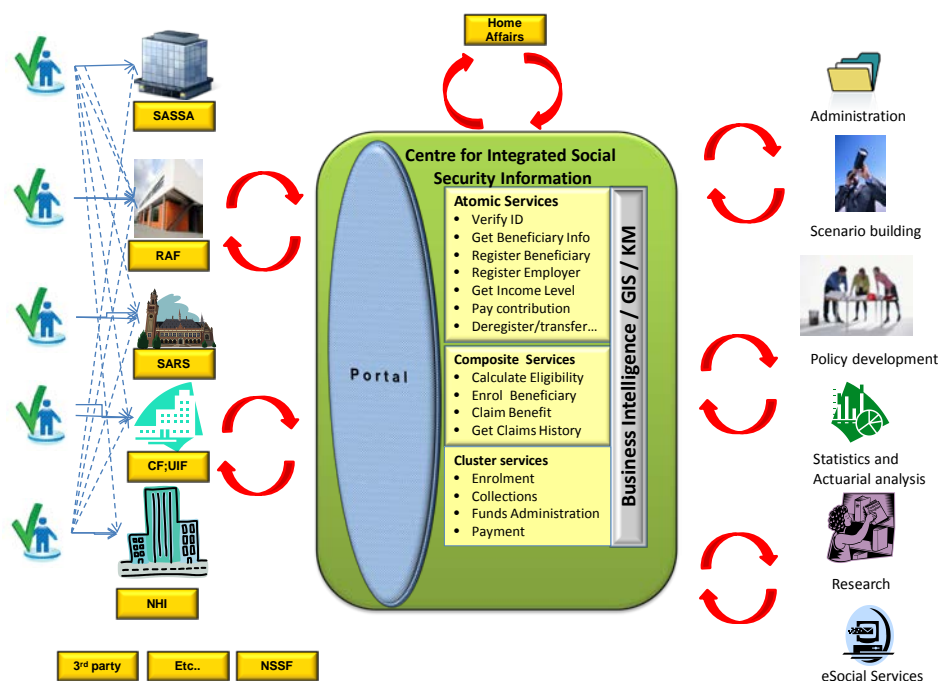
These sub-packages represent a functional area/grouping within which business processes and or use case models reside and are used as a means of structuring this document.

## 8.3 Assumptions and Dependencies

The following assumptions have been noted while formulating the business requirements presented in this document.

The business requirements are directly related to the vision and strategy for a Centre for Integrated Social Security Information and its' Master Social Security Registry (MSSR).

This vision and strategy is illustrated in Figure 23 below. The Center and its MSSR will form the basis for a citizen centric social security system as well as address the issues that beset the currently fragmented and scattered South African Social Security System.<sup>26</sup>



**Figure 23: Schematic of the Vision and Objectives of the Center for Integrated Social Security Information and the MSSR**

The fundamental building block of the vision illustrated above is the 'normalization' of beneficiary data in a Master Registry. The normalization process will require:

- Atomic Services which include:
  - Verifying Identities.
  - Getting Beneficiary Information.
  - Registering Beneficiary's.
  - Registering Employers.
  - Getting Income Levels.
  - Paying Contributions.
  - Deregister/transferring beneficiaries.

<sup>26</sup>These issues are articulated in the Context and Background in the Inception Report and will also be expanded upon in the Final Business Case Document.

- Composite Services which include:

- Calculating Eligibility
- Enrolling Beneficiaries
- Claiming Benefits
- Getting Claims History

- Cluster services which include:

- Enrolment
- Collections
- Funds Administration
- Payment

In terms of the current institutional arrangements this will require (amongst others):

- Agencies to validate beneficiary data with the Center.
- The validation process will be carried out by the Center (either at the National Population Register at the Department of Home Affairs).
- There will be a Social Security Smart Card.
- An Exception handling process for beneficiaries that were not positively validated (either at the National Population Register at the Department of Home Affairs) is articulated.

In scenarios where the MSSR is available but offline at the time, the process caters for registration of a beneficiary and updating of beneficiary demographics and information manually. It is thus assumed that when the system is online, the beneficiary information is captured onto the system so that this information can be transmitted to the MSSR.

## 8.4 Beneficiary Record Management

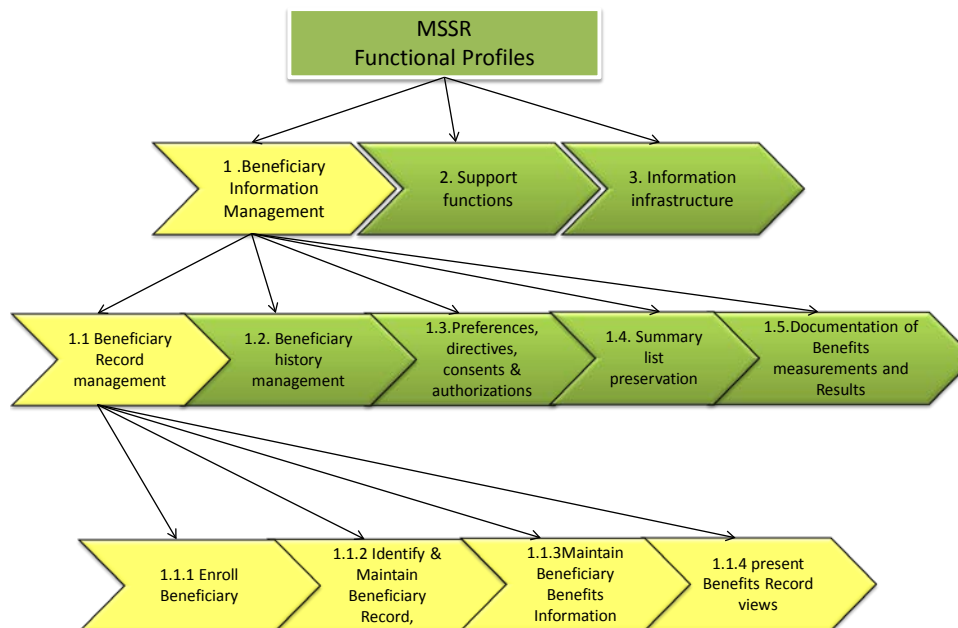
Beneficiary Record Management contains the requirements responsible for:

- Creating, updating and maintaining the beneficiary record on the MSSR (this includes the demographic data of the beneficiary).
- Enrolling a beneficiary i.e. providing the beneficiary with a smartcard;<sup>27</sup>
- Identifying the beneficiary with his/her smartcard.
- Receiving beneficiary benefits data for the beneficiary from the various external social security sources that interact with the MSSR.

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<sup>27</sup> This will happen at Agency level after validation and entry into the MSSR

- Presenting different views of the beneficiary's benefits record to different Users of the system (based on access control).



**Figure 24: Beneficiary Record Management – Functional Groups**

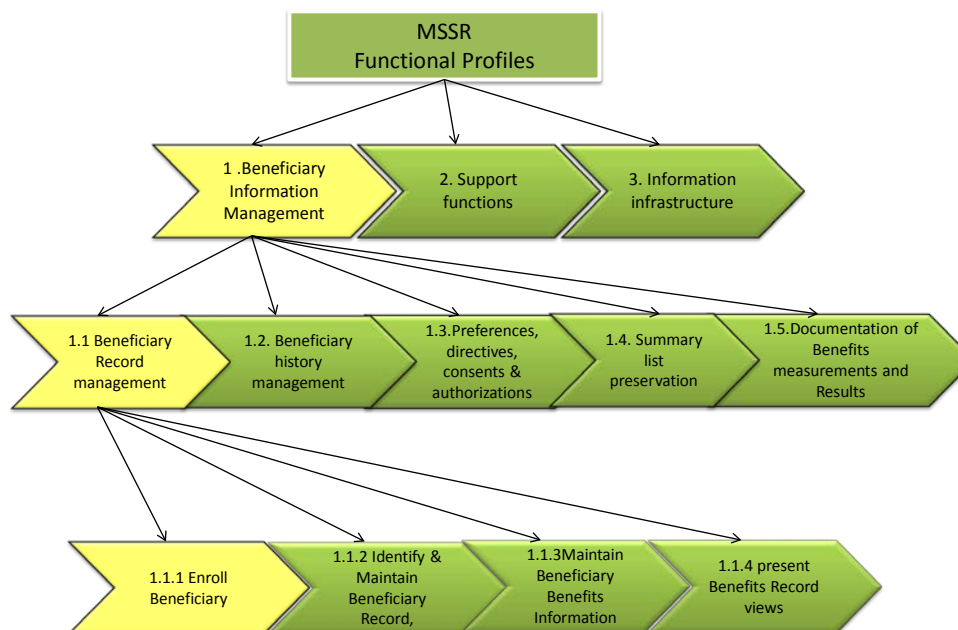
The next sections of this document contain high level definition of the functional groups of the Beneficiary Record Management sub-package. These are:

- Enrolling the Beneficiary
- Identifying & Maintaining the Beneficiary Record
- Managing Beneficiary Benefits Information
- Presenting Benefits Record Views.

#### **8.4.1 Enrolling the Beneficiary**

The Enrol Beneficiary component covers the enrolment of a beneficiary record on the MSSR and providing the beneficiary with a smartcard.





**Figure 25: Beneficiary Record Management – Enrol Beneficiary**

This section covers a description of the process model and then a further enumeration of each activity within the process.

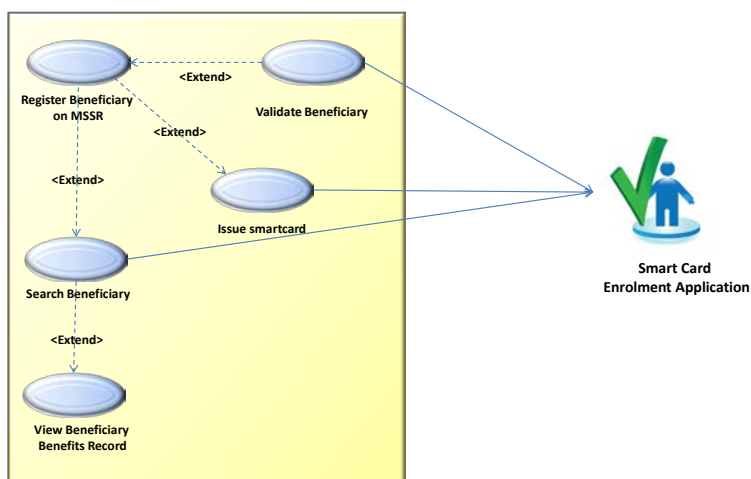
Three scenarios have been modelled for Enrol Beneficiary:

- Scenario 1 – At a facility that has a Social Security enrolment system.
- Scenario 2 – At a facility that has no Social Security enrolment system but does have data connectivity.
- Scenario 3 – At a facility that has neither a Social Security enrolment system nor data connectivity (paper-based environments).

#### **8.4.1.1. Enrol Beneficiary: Use Case Model**

This section illustrates the Use Case Model for the Enrol Beneficiary process.

## Use Case Diagram – Enroll Beneficiary



**Figure 26: Enrol Beneficiary Use Case Model**

### 8.4.1.2 Enrol Beneficiary: Use Case Descriptions

This section describes the use cases for the Enrol Beneficiary Use Case Model.

#### 8.4.1.3 Use Case: Search Beneficiary

**Table 5: Use Case Search Beneficiary**

Use Case Name	Search Beneficiary
Use Case #	UC001
Business Event	Enrol Beneficiary
Actor(s)	Portal User, MSSR
Use Case Description	This use case provides the ability to retrieve a beneficiary record using a primary identifier, secondary identifiers, or other information which are not identifiers but could be used to help identify the beneficiary.
Preconditions	The following preconditions must exist before this use case can be executed:  N/A

Trigger	<p>This use case is triggered as follows:</p> <p>When a Portal User selects the Search Beneficiary option</p> <p>When the MSSR receives a request to perform a search</p>
Use Case Associations	<p>This use case is associated to the following other use cases:</p> <p>Extended from UC003 Register Beneficiary of MSSR</p> <p>Extends to UC002 View Beneficiary Record</p>

#### 8.4.1.4 Use Case: View Beneficiary Record

**Table 6: Use Case: View Beneficiary Record**

Use Case Name	View Beneficiary Record
Use Case #	UC002
Business Event	Enrol Beneficiary
Actor(s)	Portal User
Use Case Description	This use case describes the function of viewing a beneficiary record by allowing Users to view the beneficiary's benefits Record (in the MSSR).
Preconditions	<p>The following preconditions must exist before this use case can be executed:</p> <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when a Portal User selects a beneficiary record to view from a list of records presented after a Search for a beneficiary record has been executed.
Use Case Associations	<p>This use case is associated to the following other use cases:</p> <ul style="list-style-type: none"> <li>• Extended from UC001 Search Beneficiary</li> </ul>

#### 8.4.1.5 Use Case: Register Beneficiary on MSSR

**Table 7: Use Case: Register Beneficiary on MSSR**

Use Case Name	Register Beneficiary on MSSR
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Use Case #	UC003
Business Event	Enrol Beneficiary
Actor(s)	MSSR
Use Case Description	This use case allows for the creation of single logical record for each beneficiary. Beneficiary Social Security information is received from various external sources and linked to the beneficiary record. The registration of the beneficiary record on MSSR will include the creation of the record as well as inclusion of the beneficiary's demographic data during the creation.
Preconditions	<p>The following preconditions must exist before this use case can be executed:</p> <ul style="list-style-type: none"> <li>• The beneficiary has been validated via the Validate Person use case</li> <li>• The beneficiary is registered on Social Security system at an agency facility or</li> <li>• The beneficiary is registered on the smartcard application at a facility where no social security system exists</li> </ul>
Trigger	This use case is triggered by the receipt of a new registration or an update beneficiary notification from the source system.
Use Case Associations	<p>This use case is associated to the following other use cases:</p> <ul style="list-style-type: none"> <li>• Extends to UC001 Search Beneficiary</li> <li>• Extends to UC004 Issue Smart Card</li> <li>• Extended from UC009 Validate Person</li> </ul>

#### 8.4.1.6 Use Case: Issue Smart Card

**Table 8: Use Case: Issue Smart Card**

Use Case Name	Issue Smart Card
Use Case #	UC004
Business Event	Enrol Beneficiary
Actor(s)	Smart Card (Enrolment) Application

Use Case Description	This use case describes the function of issuing a Smart Card to a person by uniquely associating the beneficiary identity (OID) on MSSR to an identity (e.g. Smart Card Number / unique identifier) on the Smart Card.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>The beneficiary must be registered via the Register Beneficiary on MSSR use case</li> </ul>
Trigger	This use case is triggered as and when a beneficiary visits a facility to be issued with a Smart Card.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>Extended from UC003 Register Beneficiary on MSSR</li> </ul>

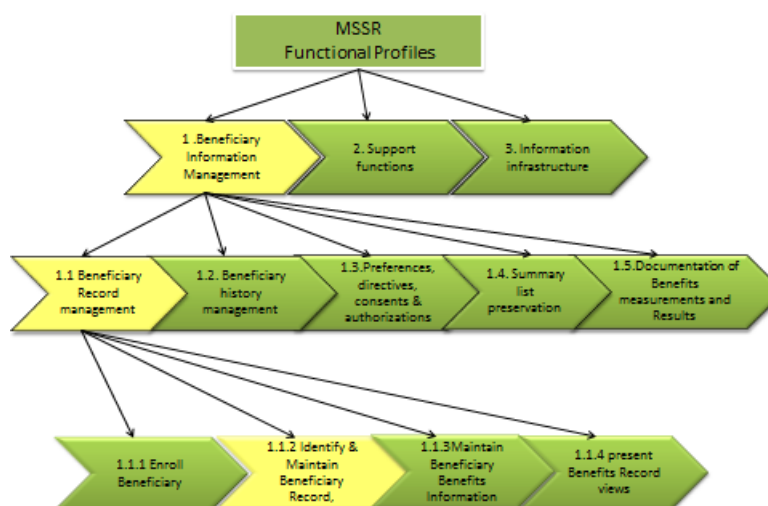
#### 8.4.1.7 Use Case: Validate Person

**Table 9: Use Case: Validate Person**

Use Case Name	Validate Person
Use Case #	UC009
Business Event	Enrol Beneficiary
Actor(s)	Smart Card (Enrolment) Application
Use Case Description	This use case describes the function of validating a person's identity by using both a person's biometric identity (i.e. fingerprints) coupled with his/her South African Identity Number.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>A person's biometric information is captured</li> <li>A person's identity information is captured</li> </ul>
Trigger	This use case is triggered when a person is enrolled onto the MSSR.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>Extends to UC003 Register Beneficiary on MSSR</li> </ul>

## 8.4.2 Identify and Maintain Beneficiary Record

The Identify & Maintain Beneficiary Record component covers the identification of a beneficiary using his/her Smartcard, updating his/her demographic information and links to the Enrol Beneficiary process in instances where the beneficiary has not been issued a Smartcard.



**Figure 27: Beneficiary Record Management - Identify & Maintain Beneficiary Record**

This section covers a description of the process model and a further enumeration of each activity within the process for Identify & Maintain Beneficiary Record.

Three scenarios have been modelled for Identify & Maintain Beneficiary Record:

- Scenario 1 – At a facility that have a Social Security Information System.
- Scenario 2 – At a facility that has no Social Security Information System but does have data connectivity.
- Scenario 3 – At a facility that has neither a Social Security Information System nor data connectivity (a paper-based environment).

### 8.4.2.1 Identify & Maintain Beneficiary Record: Process Description

This section describes the Identify & Maintain Beneficiary Record process in detail.

**Table 10: Identify & Maintain Beneficiary Process Description**

Process Name	Identify & Maintain Beneficiary Record
Description	This process illustrates the steps taken to identify an enrolled (i.e. beneficiary was issued a smartcard) beneficiary with under different circumstances and managing (updating) his/her demographic information.

Inputs	<p>The following inputs are required in order to initiate the process:</p> <p>The beneficiary's Smartcard</p>
Outputs	<p>The process produces the following outputs:</p> <ul style="list-style-type: none"> <li>- Beneficiary's updated demographic record</li> </ul>
Starts with (is triggered by)	<p>This process is triggered by:</p> <p>A beneficiary requiring social security benefits under any of the following circumstances:</p> <ul style="list-style-type: none"> <li>• The beneficiary is has no Smartcard at hand</li> <li>• The beneficiary is has a Smartcard at hand</li> <li>• The beneficiary has a Smartcard on him/her</li> <li>• The beneficiary has no Smartcard on him/her</li> </ul>
Ends with	<p>This process ends with:</p> <ul style="list-style-type: none"> <li>• The beneficiary having been positively identified</li> <li>• Or the beneficiary registered on the MSSR</li> </ul>
Includes	<p>This process triggers the following processes during its execution:</p> <p>Enrolment, if beneficiary hasn't been enrolled in the MSSR.</p> <p>Re-issuing of Smartcard in case it is faulty or beneficiary lost it.</p>
Exceptions	<p>If a beneficiary's fingerprint biometrics does not match the one stored on the Smartcard then an exception process (still to be defined) should handle this scenario.</p>
Customer of this process	<p>The beneficiary.</p>
Customers' expectations of this process	<p>To be registered at the facility where he/she will receive social security benefit attention.</p>



#### 8.4.2.2 Identify & Maintain Beneficiary Record: Process Activities Description

This section describes in detail the activities within the Identify & Maintain Beneficiary Record process.

Activity: Scan Smartcard

**Table 11: Scan Smartcard**

Activity Name	Scan Smartcard
Description	During this activity the Registration Clerk places the Smartcard on the Smartcard reader so that the Smartcard application can perform a validation of the smartcard
Inputs	Smartcard
Outputs	Beneficiary's information stored on the Smartcard
Role	Registration Clerk
Business Rule	None Identified

#### 8.4.2.3 Activity: Register Beneficiary as Unknown

**Table 12: Register Beneficiary as Unknown**

Activity Name	Record Beneficiary as Unknown
Description	<p>During this activity the Registration Clerk registers the beneficiary as an unknown. In the case where the facility has a social security system the beneficiary will be registered as unknown and in case where it is a paper based facility the beneficiary will be registered manually.</p> <p>The information of an unknown beneficiary will not be transferred to the MSSR. Only once the beneficiary is registered with the correct details will the record be transmitted to the MSSR.</p> <p><i>This activity is out of scope for the MSSR solution as it is an operational activity taking place at the facility</i></p>
Inputs	Beneficiary's overall physical description
Outputs	Updated Registration Form
Role	Registration Clerk

<b>Business Rule</b>	TBD
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Activity: Register Beneficiary on Paper

**Table 13: Register Beneficiary as Unknown (on Paper)**

<b>Activity Name</b>	Record Beneficiary on Paper
<b>Description</b>	<p>If the system is offline, the Registration Clerk registers the beneficiary using the paper form only. Only when the system is back online the information will be transferred to the MSSR (depending on scenario).</p> <p><i>This activity is out of scope for the MSSR solution as it is an operational activity taking place at the facility</i></p>
<b>Inputs</b>	Beneficiary's overall physical description
<b>Outputs</b>	Updated Registration Form
<b>Role</b>	Registration Clerk
<b>Business Rule</b>	BR012

Activity: Validate Beneficiary

**Table 14: Validate Beneficiary**

<b>Activity Name</b>	Validate Beneficiary
<b>Description</b>	<p>During this activity the Basic MSSR Application validates the beneficiary's fingerprint against the stored biometric data. This is a local validation and not a validation against the National Population Register database system at The Department Of Home Affairs.</p>
<b>Inputs</b>	<p>Beneficiary's ID number</p> <p>Beneficiary's biometric data</p>
<b>Outputs</b>	A validation result
<b>Role</b>	Basic MSSR Application
<b>Business Rule</b>	BR003

BR003a

Activity: Ascertain Smartcard Status

**Table 15: Re-issue Smartcard**

Activity Name	Ascertain Smartcard Status
Description	During this activity the Registration Clerk asks the beneficiary for his or her Smartcard in order to decide if the card needs to be re-issued or not.
Inputs	
Outputs	
Role	Registration Clerk
Business Rule	

Activity: Re-Issue Smartcard

**Table 16: Re-issue Smartcard**

Activity Name	Re-Issue Smartcard
Description	During this activity the Registration Clerk re-issues the beneficiary with a Smartcard that contains his/her demographic information and the biometric data. This smartcard is linked to the beneficiary's record on MSSR
Inputs	Person's Demographic Information Person's Biometric Data
Outputs	Smartcard
Role	Registration Clerk
Business Rule	BR011

Activity: Update Demographic Information

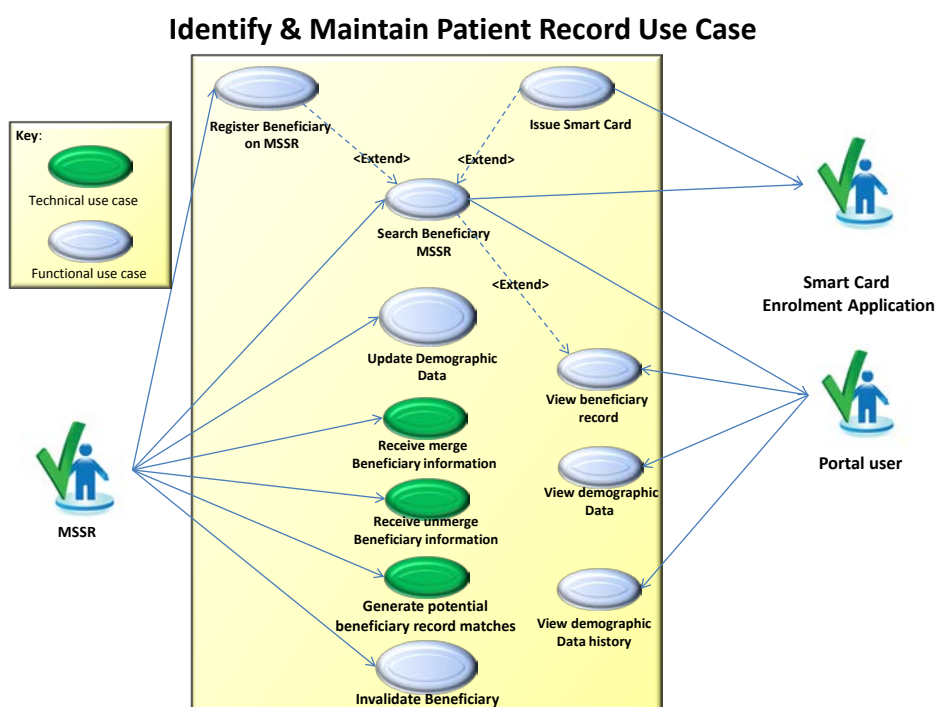
**Table 17: Update Demographic Information**

Activity Name	Update Demographic Information
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Description	During this activity the Registration Clerk updates any changes in the beneficiary's demographic information as provided by the beneficiary.
Inputs	Beneficiary's demographic data
Outputs	Updated beneficiary's demographic data record
Role	Registration Clerk
Business Rule	BR008

### 8.4.3 Identify & Maintain Beneficiary Record: Use Case Model

This section illustrates the Use Case Model for the Identify & Maintain Beneficiary Record process.



**Figure 28: Identify & Maintain Beneficiary Record Use Case**

#### 8.4.3.1 Identify & Maintain Beneficiary Record: Use Case Descriptions

This section describes the use cases for the Identify & Maintain Beneficiary Record Use Case Model.

#### 8.4.3.2 Use Case: Search Beneficiary MSSR

**Table 18: Use Case: Search Beneficiary MSSR**

Use Case Name	Search Beneficiary in the MSSR
Use Case #	UC001

Business Event	Identify and Maintain Beneficiary Record
Actor(s)	Portal User, MSSR
Use Case Description	This use case provides the ability to retrieve a beneficiary record using a primary identifier, secondary identifiers, or other information which are not identifiers but could be used to help identify the beneficiary.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• N/A</li> </ul>
Trigger	This use case is triggered as follows: <ul style="list-style-type: none"> <li>• When a Portal User selects the Search Beneficiary option</li> <li>• When the MSSR receives a request to perform a search</li> </ul>
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• Extended from UC003 Register Beneficiary of MSSR</li> <li>• Extended from UC062 Re-Issue Smart Card</li> <li>• Extends to UC002 View Beneficiary Record</li> </ul>

#### 8.4.3.3 Use Case: View Beneficiary Record

**Table 19: Use Case: View Beneficiary Record**

Use Case Name	View Beneficiary Record
Use Case #	UC002
Business Event	Identify and Maintain Beneficiary Record
Actor(s)	Portal User
Use Case Description	This use case describes the function of viewing a beneficiary record by allowing Users to view the beneficiary's social security benefits Record (MSSR).
Preconditions	The following preconditions must exist before this use case can be executed:  A beneficiary record must exist

Trigger	This use case is triggered when a Portal User selects a beneficiary record to view from a list of records presented after a Search for a beneficiary record has been executed.
Use Case Associations	This use case is associated to the following other use cases:  Extended from UC001 Search Beneficiary

#### 8.4.3.4 Use Case: Register Beneficiary on MSSR

**Table 20: Use Case: Register Beneficiary on MSSR**

Use Case Name	Register Beneficiary on MSSR
Use Case #	UC003
Business Event	Identify and Maintain Beneficiary Record
Actor(s)	MSSR
Use Case Description	This use case allows for the creation of single logical record for each beneficiary. Beneficiary Social Security information is received from various external sources and linked to the beneficiary record. The registration of the beneficiary record on MSSR will include the creation of the record as well as inclusion of the beneficiary's demographic data during the creation.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• The beneficiary has been validated via the Validate Person use case</li> <li>• The beneficiary is registered on a social security system at a facility or</li> <li>• The beneficiary is registered on the smartcard application at a facility where no social security system exists</li> </ul>
Trigger	This use case is triggered by the receipt of a new registration or an update beneficiary notification from the source system.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• Extends to UC001 Search Beneficiary</li> <li>• Extends to UC004 Issue Smart Card</li> </ul>

#### 8.4.3.5 Use Case: Invalidate Beneficiary

**Table 21: Use Case: Invalidate Beneficiary**

Use Case Name	Invalidate Beneficiary
Use Case #	UC007
Business Event	Identify and Maintain Beneficiary Record
Actor(s)	MSSR
Use Case Description	This use case describes how the MSSR will handle invalidation of a beneficiary record i.e. when a beneficiary is deceased. This use case provides the ability to obsolete, inactivate, nullify, destroy and archive a beneficiary's record in accordance with local policies and procedures, as well as applicable laws and regulations.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when a beneficiary record is required to be delimited, deleted, archived, inactivated etc.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

#### 8.4.3.6 Use Case: Update Demographic Data

**Table 22: Use Case: Update Demographic Data**

Use Case Name	Update Demographic Data
Use Case #	UC012
Business Event	Identify and Maintain Beneficiary Record
Actor(s)	MSSR



Use Case Description	This use case provides the ability to update a beneficiary's demographic data such as contact information, including addresses and phone numbers, as well as key demographic information such as date of birth, gender, and other information is stored and maintained for unique beneficiary identification, reporting purposes and for the provision of care. The system will track who updates demographic information, and when the demographic information is updated.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when a beneficiary demographic information needs to be changed
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

#### 8.4.3.7 Use Case: View Demographic Data

**Table 23: Use Case: View Demographic Data**

Use Case Name	View Demographic Data
Use Case #	UC014
Business Event	Identify and Maintain Beneficiary Record
Actor(s)	Portal User
Use Case Description	This use case provides the ability to allow Users to view demographic data (electronically) associated with the beneficiary record as well as to report (i.e. physical output) demographic data.
Preconditions	The following preconditions must exist before this use case can be executed:  A beneficiary record must exist with demographic data must be associated to a beneficiary record
Trigger	This use case is triggered when a User wants to view beneficiary's demographic data

Use Case Associations	This use case is associated to the following other use cases:  N/A
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#### 8.4.3.8 Use Case: View Demographic Data History

**Table 24: Use Case: View Demographic Data History**

Use Case Name	View Demographic Data History
Use Case #	UC015
Business Event	Identify and Maintain Beneficiary Record
Actor(s)	Portal User
Use Case Description	This use case provides the ability to for Users to view stored historical values of demographic data that have been captured over time.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>A beneficiary record must exist with demographic data must be associated to a beneficiary record</li> </ul>
Trigger	This use case is triggered when a User requires viewing changes in demographic data associated with a beneficiary over time.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>N/A</li> </ul>

#### 8.4.3.9 Use Case: Generate Potential Beneficiary Record Matches

**Table 25: Use Case: Generate Potential Beneficiary Record Matches**

Use Case Name	Generate Potential Beneficiary Record Matches
Use Case #	UC057
Business Event	Enrol, Identify and Maintain Beneficiary
Actor(s)	MSSR

Use Case Description	This use case describes how the MSSR generates a standard report of potential duplicate beneficiary information.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when the MSSR identifies potential duplicate information associated with a beneficiary record.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

#### 8.4.3.10 Use Case: Receive Merge Beneficiary Information

**Table 26: Receive Merge Beneficiary Information**

Use Case Name	Receive Merge Beneficiary Information
Use Case #	UC058
Business Event	Enrol, Identify and Maintain Beneficiary
Actor(s)	MSSR
Use Case Description	This use case provides the ability, through a controlled method, to merge or link dispersed information for an individual beneficiary upon recognising the identity of the beneficiary.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• UC057 must have identified dispersed / duplicate information</li> </ul>
Trigger	This use case is triggered when the System Administrator is notified of potential duplicate information associated with a beneficiary.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

#### 8.4.3.12 Use Case: Receive Unmerge Beneficiary Information

**Table 27: Use Case: Receive Unmerge Beneficiary Information**

Use Case Name	Receive Unmerge Beneficiary Information
Use Case #	UC059
Business Event	Enrol, Identify and Maintain Beneficiary
Actor(s)	MSSR
Use Case Description	This use case provides the ability to undo merge actions performed on a beneficiary record.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>UC058 must have been executed</li> </ul>
Trigger	This use case is triggered when the System Administrator requires undoing merge actions performed on a beneficiary record.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>N/A</li> </ul>

#### 8.4.3.13 Use Case: Re-issue Smart Card

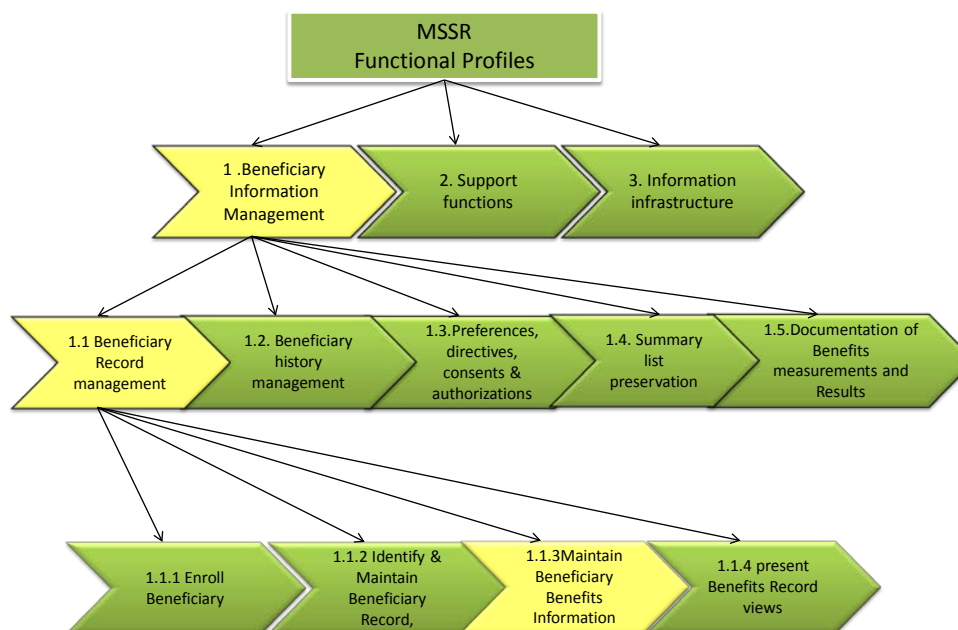
**Table 28: Use Case: Re-issue Smart Card**

Use Case Name	Re-issue Smart Card
Use Case #	UC062
Business Event	Enrol, Identify and Maintain Beneficiary
Actor(s)	Smart Card (Enrolment) Application
Use Case Description	This use case caters for the re-issue of lost, damaged or stolen Smart Cards.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>A person must have been issued a Smart Card previously</li> </ul>

Trigger	This use case is triggered when beneficiary requires a re-issue of a Smart Card (that has either been lost or is faulty)
Use Case Associations	<p>This use case is associated to the following other use cases:</p> <ul style="list-style-type: none"> <li>• Extends to UC001 Search Beneficiary</li> </ul>

#### 8.4.4 Maintain Beneficiary Social Security Information

The Maintain Beneficiary Social Security Information component covers the receiving of data and documents related to the delivery of social security benefits to the Beneficiary, from external sources.



**Figure 29: Beneficiary Record Management - Maintain Beneficiary Social Security Information**

This section covers a description of the process model and a further enumeration of each activity within the process for the Maintain Beneficiary Social Security Information Process.

Three scenarios have been modeled for Maintain Beneficiary Social Security Information:

- Scenario 1 – At a facility that has a Social Security Information System.
- Scenario 2 – At a facility that has no Social Security Information System but does have data connectivity.
- Scenario 3 – At a facility that has neither a Social Security Information System nor data connectivity (the current paper-based environments).

#### 8.4.4.1 Maintain Beneficiary Social Security Information: Process Description

This section describes the Maintain Beneficiary Social Security Information process in detail.

**Table 29: Maintain Beneficiary Social Security Information Process Description**

Process Name	Maintain Beneficiary Social Security Information
Description	<p>The goal of this process is to update the beneficiary's social security information on the MSSR after the beneficiary has been benefits from the social security facility</p> <p>3 scenarios have been depicted:</p> <ul style="list-style-type: none"> <li>• Scenario 1: Caters for a facility that has a Social Security Information System as well as data connectivity</li> <li>• Scenario 2: A facility that has no Social Security Information System but does have data connectivity</li> <li>• Scenario 3: At a facility that has neither a Social Security Information System nor data connectivity (the current paper-based environments)</li> </ul>
Inputs	A record identifier on the MSSR for the beneficiary receiving social security treatment.
Outputs	<p>The process produces the following outputs:</p> <ul style="list-style-type: none"> <li>• An updated record on the MSSR with the following information:</li> <li>• Benefits Summary</li> </ul>
Starts with (is triggered by)	<p>This process is triggered by:</p> <ul style="list-style-type: none"> <li>• A beneficiary seeking social security attention</li> <li>• A beneficiary being referred from another Social Security facility</li> <li>• A beneficiary being transferred from another Social Security facility</li> </ul>
Ends with	This process ends with:

	<p>The beneficiary being benefited from the Social Security facility</p> <p>An updated record on the MSSR with the beneficiary's benefits summary information</p>
Includes	<p>This process triggers the following processes during its execution:</p> <ul style="list-style-type: none"> <li>• Identify And Maintain Beneficiary Record</li> <li>• Enrolment</li> </ul>
Exceptions	No exceptions have been identified
Customer of this process	The beneficiary
Customers' expectations of this process	To have the benefits summary accurately recorded on the MSSR indicating the benefit received at the Social Security facility.

#### 8.4.4.2 Maintain Beneficiary Social Security Information: Process Activities Description

This section describes in detail the activities within the Maintain Beneficiary Social Security Information process.

Activity: Update Smartcard

**Table 30: Update Smartcard**

Activity Name	Update Smartcard
Description	During this activity the Social Security benefits Provider uses the Smartcard infrastructure (Smartcard scanner and the Smartcard itself) to update the beneficiary's social security information.
Inputs	Benefits information recorded on the Agency information system
Outputs	Benefits termination Summary stored on Smartcard
Role	Social Security benefits Provider
Business Rule	None Identified



**Table 31: Upload to MSSR**

Activity Name	Upload to MSSR
Description	During this activity the Social Security Information System at the Social Security facility sends the information captured on the benefits summary to the MSSR
Inputs	Benefits information recorded on the benefits summary
Outputs	Benefits Summary
Role	Social Security Information System
Business Rule	None Identified

Activity: Update Beneficiary Record with benefits Information

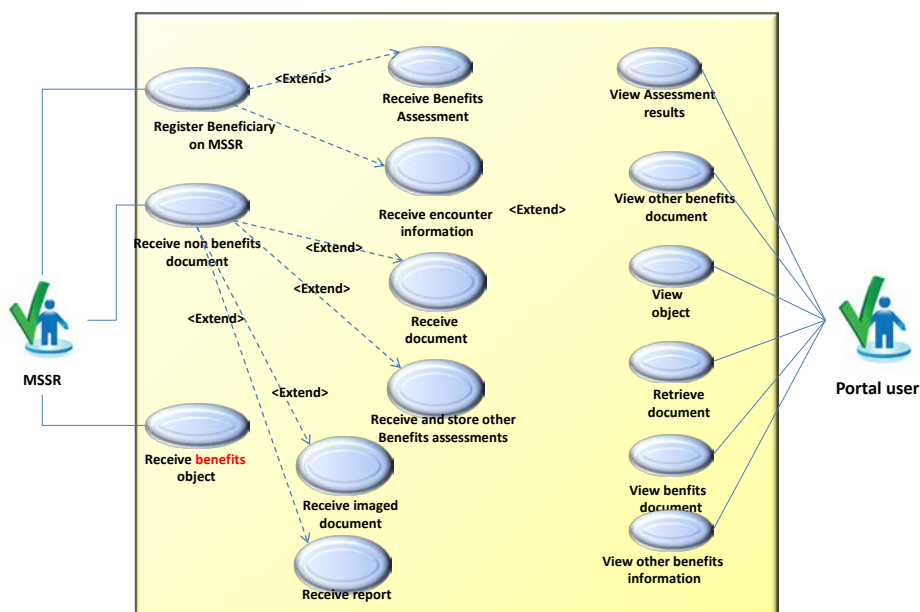
**Table 32: Update Beneficiary Record with benefits Information**

Activity Name	Update Beneficiary Record with benefits Information
Description	During this activity the MSSR receives the information sent by the Social Security Information System
Inputs	Benefits information recorded on the Social Security Information System
Outputs	Benefits termination Summary
Role	MSSR
Business Rule	None Identified

#### 8.4.4.3 Maintain Beneficiary Social Security Information: Use Case Model

This section illustrates the Use Case Model for the Maintain Beneficiary Social Security Information process.

Use Case Diagram – Receive Beneficiary Benefits Information



**Figure 30: Maintain Beneficiary Social Security Information Use Case Model**

**8.4.4.4 Maintain Beneficiary Social Security Information: Use Case Descriptions**

This section describes the use cases for the Maintain Beneficiary Social Security Information Use Case Model.

Use Case: Receive Benefits Assessment Results

**Table 33: Use Case: Receive Benefits Assessment Results**

Use Case Name	Receive Benefits Assessments Results
Use Case #	UC016
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	MSSR
Use Case Description	This use case describes how the MSSR will handle receiving benefits assessment results that come through an electronic interface as well storing the received data elements into the beneficiary record.
Preconditions	The following preconditions must exist before this use case can be executed: A beneficiary record must exist
Trigger	This use case is triggered when Benefits Assessments Results are published to the MSSR

## Use Case Associations

This use case is associated to the following other use cases:  
  
Extended from UC137 Receive Benefits Assessment Document

## Use Case: View Assessment Results

**Table 34: Use Case: View Lab Results**

Use Case Name	View Assessment Results
Use Case #	UC017
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	Portal User
Use Case Description	This use case provides the ability to display Assessment results them upon request.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> <li>• Assessment Results must have been received and stored</li> <li>• Assessment Results must be associated to a beneficiary record</li> </ul>
Trigger	This use case is triggered when the User requests to display Assessment Results received.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

## Use Case: Receive Document

**Table 35: Use Case: Receive Document**

Use Case Name	Receive Document
Use Case #	UC018
Business Event	Maintain Beneficiary Social Security Information

Actor(s)	MSSR
Use Case Description	This use case describes how the MSSR receives and stores unstructured documents.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when external data and documentation associated with a beneficiary is created or made available for assessment, i.e. received from an external source.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• Extended from UC138 Receive Non CDA Document</li> </ul>

Use Case: View CDA Document

**Table 36: Use Case: View Benefits Document**

Use Case Name	View Benefits Document
Use Case #	UC019
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	Portal User
Use Case Description	This use case provides the ability to display stored benefits documents to the User.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> <li>• Benefits documents are stored and associated to a beneficiary record</li> </ul>
Trigger	This use case is triggered when the User selects to view benefits documents.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

Use Case: Receive Imaged Documents

**Table 37: Use Case: Receive Imaged Documents**

Use Case Name	Receive Imaged Documents
Use Case #	UC020
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	MSSR
Use Case Description	This use case refers to the ability to store received imaged documentation, i.e. storing scanned documents as images and storing imaged documents or reference the imaged documents via links to imaging systems in cases when images are unable to be uploaded.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when external data and documentation associated with a beneficiary is created or made available, i.e. received from an external source.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• Extended from UC138 Receive Non benefits Document</li> </ul>

Use Case: Receive and Store Other benefits Results

**Table 38: Receive and Store other benefits Results**

Use Case Name	Receive and Store Other benefits Results
Use Case #	UC023
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	MSSR
Use Case Description	This use case provides the ability to receive other forms of benefits results such as wave files of ECG tracings or psychological assessment results) received from an external source.

Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when benefits results are received from an external source.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• Extended from UC138 Receive Non CDA Document</li> </ul>

Use Case: View Other benefits Information / Results

**Table 39: View Other benefits Information / Results**

Use Case Name	View Other benefits Information / Results
Use Case #	UC024
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	Portal User
Use Case Description	This use case provides the ability to display other forms of benefits results received from an external source.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when the User request to view benefits results associated with a beneficiary.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• N/A</li> </ul>

Use Case: Receive Report

**Table 40: Use Case: Receive Report**

Use Case Name	Receive Report
Use Case #	UC027
Business Event	Maintain Beneficiary Social Security Information
Actor(s)	MSSR
Use Case Description	This use case refers to the ability to store received documentation, i.e. storing text-based externally-sourced documents, forms of benefits results, structured text-based reports and standards-based structured, codified data.
Preconditions	The following preconditions must exist before this use case can be executed: <ul style="list-style-type: none"> <li>• A beneficiary record must exist</li> </ul>
Trigger	This use case is triggered when structured text-based reports are received from an external source.
Use Case Associations	This use case is associated to the following other use cases: <ul style="list-style-type: none"> <li>• Extended from UC138 Receive Non benefits Document</li> </ul>