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Office of the President
Electronic Government Division

PUBLIC SERVICE INFORMATION COMMUNICATION
TECHNOLOGY STANDARDS

E-Government Interoperability Standard

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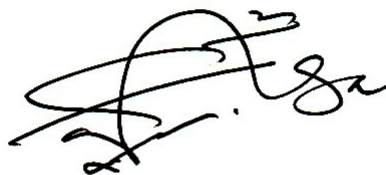
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Foreword

The Electronic Government Division is responsible for formulating and enforcing standards in **Information and Communication Technology (ICT)** across all **Ministries, Provinces and Spending Agencies (MPSAs)** to facilitate the transition into a Digital Society. In view of its mandate, the e-Government Division has developed the Public Service ICT **Electronic Government Interoperability Standard** to provide guidelines when implementing ICT related systems to guarantee efficiency and cost effectiveness.

The **Electronic Government Interoperability Standard** is intended to facilitate seamless interconnection and exchange of data/information between various Government Information Systems and Applications owned by different public service institutions. The Standard takes into account International Standards, Government and, Stakeholders requirements. It is hoped that the interoperability of Government Systems and Applications will eliminate unnecessary duplication and lower the cost of service delivery through efficiency. The Electronic Government Division, being the primary systems integrator of Government processes, is required to ensure that Information Systems and Applications in the public service are compliant to set standards in order to be considered for integration into the Government ICT Infrastructure. This standard is aimed at providing the basic guidelines for achieving interoperability in the public service and will facilitate data sharing and reuse.

The implementation of the Standard will be monitored by the National ICT Standards Review Committee while the e-Government Division will undertake enforcement of this standard. Annual audits shall be carried out in all the MPSAs to determine their compliance to this standard. The Division will issue a certificate of compliance to an MPSA upon completion of a successful audit assessment. For non-compliant MPSAs, a report detailing the extent of the deviation and the prevailing circumstances shall be tabled before the National ICT Standards Review Committee who will advise on the appropriate action to be taken.



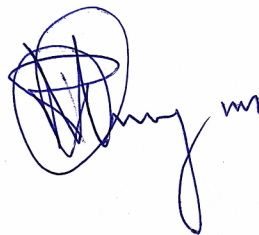
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Acknowledgement

The development of the Public Service ICT **Electronic Government Interoperability Standard** marks an achievement of a key milestone towards cost effective and efficient implementation of ICT systems in the public service. The standard will assist Government to ensure a coordinated and collaborative approach to implementation of several initiatives under the e-Government programme.

It is for this reason that I wish to commend the e-Government Standards Task Team, Heads of ICT in Ministries, Provinces and other Spending Agencies (MPSAs) and various stakeholders for their unwavering efforts in the development of the ICT Electronic Government Interoperability Standard. The document will ensure that ICT systems are implemented in an effective and standardised manner.



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Abbreviations

eGIF	Electronic Government Interoperability Framework
FRAND	Fair Reasonable and Non-Discriminatory
GRZ	Government of the Republic of Zambia
G2B	Government to Business
G2C	Government to Citizen
G2E	Government to Employee
G2G	Government to Government
ICT	Information Communication Technology
IT	Information Technology
ISA	International Society of Automation
MoU	Memorandum of Understanding
MPSA	Ministry Province or Spending Agency
NIFs	National Interoperability Frameworks
SLAs	Service Level Agreements
SZI	SMART Zambia Institute

1 Introduction

The Government has issued the eGovernment Interoperability Standard to ensure that ICT systems are developed and maintained in an effective and standardized manner.

Interoperability, within the context of Zambian public service delivery, is the “ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between organisations, through the business processes they support, by means of the exchange of data between their respective ICT systems.”

The Standard’s intention is to guide the public sector in maximising the benefits and reducing the cost burden derived from all technology investments by introducing ICT resources that are flexible, reusable and interoperable.

Efforts to digitise the public sector should be well coordinated at national level to avoid digital fragmentation of services and data and help the seamless digital Government.

2 Expected Outcomes of Interoperability

The Standard is driven by the following detailed desired state of play of interoperability in the Public Service:

- a) Shared and reusable ICT assets owned by the Public Sector are discoverable and can be used by public services with minimal effort;
- b) Public services are deployed on a flexible architecture centered on business needs and provided through standardised approaches and capabilities to reduce dependencies on specific vendors, technologies and practices. In turn this promotes:
 - i. A level playing field so that multiple vendors can fairly compete on the feature set and performance levels of their products;
 - ii. A wider selection during the acquisition process which may allow for improved business continuity and exit strategy scenarios whilst keeping in mind the required performance levels and functional capabilities; and
 - iii. The ability to take advantage of pre-established international best practices that have already been applied by other Government MPSAs;
- c) Public services mediate business processes by offering user-centric and one-stop shop services;

- d) Inter-connectivity and information sharing between solution elements, public services and implementations are transparent, secure and trustworthy; and
- e) Citizens can, at any point in time, request and make use of public information as per set permissions.

3 Scope of Application

The Standard provides procedures for formulation of five (5) distinct guidelines which include:

- a. Data Interoperability;
- b. Technical Interoperability;
- c. Institutional Interoperability;
- d. Human Interoperability; and
- e. Legal Interoperability.

The Standard covers the following:

- a) G2G - Government to Government services which refers to interactions among public institutions;
- b) G2B – Government to Business services which refers to interactions among public institutions and various business entities;
- c) G2C – Government to Citizens services which refers to interactions among public institutions and Citizens; and
- d) G2E – Government to Employees services which refers to interactions among public institutions and employees.

4 Application

The purpose of the Standard is to:

- a) Inspire public institutions in their efforts to design and deliver seamless Government public services to other public administrations, citizens and businesses, by providing services and data preferably via digital channels;
- b) Make public services accessible by all citizens;

- c) Provide guidance to public administrations on the design and update of national interoperability frameworks (NIFs), or national policies, strategies and guidelines promoting interoperability; and
- d) Contribute to the establishment of the digital single market by fostering cross border and cross-sectoral interoperability for the delivery of public services.

5 Underlying Principles

The interoperability principles are fundamental behavioral aspects to drive interoperability actions. The Standard sets out general interoperability principles which are relevant to the process of establishing interoperable Government public services. They describe the context in which Government public services are designed and implemented.

The twelve underlying principles of the electronic Government Interoperability Framework (eGIF) are:

5.1 Subsidiarity and Proportionality

The subsidiarity principle requires Government decisions to be taken as closely as possible to the citizen. In other words, the Government does not take action unless this is more effective than the same action taken at institution level.

The proportionality principle limits MPSA actions to what is necessary to achieve the objectives of the Government.

Concerning interoperability, an eGovernment Standard is justified to overcome differences in policies that result in heterogeneity and lack of interoperability.

The eGIF is envisaged as the ‘common denominator’ of interoperability policies in MPSAs. MPSAs should be at liberty to enjoy enough freedom to develop their Sector specific Interoperability Guidelines with respect to eGIF recommendations. Sector specific Interoperability Guidelines are expected to be tailored and extended in such a way that the sector specificities are properly addressed.

5.1.1 Requirement 1:

Ensure that sector interoperability guidelines and interoperability strategies are aligned with the eGIF and, if needed, tailor and extend them to address the sector context and needs.

5.2 Openness

In the context of interoperable public services, the concept of openness mainly relates to data, specifications and software. Open government data (here simply referred to as ‘open

data’) refers to the idea that all public data should be freely available for use and reuse by others, unless restrictions apply e.g. for protection of personal data, confidentiality, or intellectual property rights.

MPSAs collect and generate huge amounts of data required to make public information available for access and reuse as open data. The Open Data Policy requires, in addition, sharing of spatial data sets and services between MPSAs with no restrictions or practical obstacles to its reuse. This data should be published with few restrictions as possible and clear licences for its use to allow better scrutiny of **MPSAs** decision-making processes and realise transparency in practice.

5.2.1 Requirement 1:

All MPSAs are required to publish the data they own as open data unless certain restrictions apply. The use of open source software technologies and products can help save development cost, avoid a lock-in effect and allow fast adaptation to specific business needs because the developer communities that support them are constantly adapting them. MPSAs should not only use open source software but whenever possible contribute to the pertinent developer communities. Open source is an enabler of the underlying eGIF principle on reusability.

5.2.2 Requirement 2:

The Government shall ensure a level playing field for open source software and demonstrate active and fair consideration of using open source software, considering the total cost of ownership of the solution. The level of openness of a specification/standard is pivotal for the reuse of software components implementing that specification. This also applies when such components are used to introduce new eGovernment public services. If the openness principle applies in full:

- a) All stakeholders can contribute to the development of the specification and a public review shall be part of the decision-making process;
- b) The specification shall be available for everyone to study; and
- c) Intellectual property rights to the specification are licensed on Fair Reasonable and Non-Discriminatory (FRAND) terms, in a way that allows implementation in both proprietary and open source software, and preferably on a royalty-free basis.

Due to their positive effect on interoperability, the use of open specifications shall be promoted and encouraged for eGovernment public service delivery. The positive effect of open specifications shall be demonstrated by the internet ecosystem. However, MPSAs may decide to use fewer open specifications if open ones do not exist or do not meet functional

needs. In all cases, specifications should be mature and sufficiently supported by the market, unless they are being used to create innovative solutions.

5.2.3 Requirement 3:

All MPSAs shall give preference to open specifications, taking due account of the coverage of functional needs, maturity and market support and innovation. Lastly, openness also means empowering citizens and businesses to get involved in the design of new services, to contribute to service improvement and to give feedback about the quality of the existing public services.

5.3 Transparency

The principle of Transparency in the eGIF context shall refer to:

- a) Enabling visibility inside the administrative environment of an MPSA. This is about allowing MPSAs, citizens and businesses to view and understand administrative rules, processes, data, services and decision-making;
- b) Ensuring availability of interfaces with internal information systems. Often MPSAs operate many heterogeneous and disparate information systems in support of their internal processes. Interoperability depends on ensuring the availability of interfaces to these systems and the data they handle. In turn, interoperability facilitates reuse of systems and data, and enables these to be integrated into larger systems; and
- c) Securing the right to the protection of personal data, by respecting the applicable legal Standard for the large volumes of personal data of citizens, held and managed by MPSAs.

5.3.1 Requirement 1:

All MPSAs shall ensure internal visibility and provide external interfaces for electronic government services.

5.4 Re-usability

Reuse means that MPSAs confronted with a specific problem seek to benefit from the work of others by looking at what is available, assessing its usefulness or relevance to the problem at hand, and where appropriate, adopting solutions that have proven their value elsewhere. This requires the MPSA to be open to sharing its interoperability solutions, concepts, Standards, specifications, tools and components with others.

Reusability of IT solutions (e.g. Software components, Application Programming Interfaces, standards), information and data, is an enabler of interoperability and improves quality because it extends operational use, as well as saving money and time. This makes it a major

contributor to the development of a Smart Government. Some standards and specifications that exist in the MPSAs should be applied more widely. These existing standards and specifications can and should be used more widely beyond the domain for which they were originally developed.

MPSAs should promote sharing and reuse of ICT solutions by adopting new business models, promoting the use of open source software for key ICT services and when deploying digital service infrastructure. There are some key challenges that limit the sharing and reuse of ICT solutions, at technical, organisational, legal and communication levels. This Standard is meant to encourage the sharing and reuse of ICT solutions and provides recommendations for MPSAs to help them overcome these challenges and share/ reuse common ICT solutions. Reuse and sharing can be effectively supported by collaborative platforms.

5.4.1 Requirement 1:

All MPSAs shall reuse and share solutions and cooperate in the development of joint solutions when implementing eGovernment public services.

5.4.2 Requirement 2:

All MPSAs shall reuse and share information and data when implementing eGovernment public services, unless certain privacy or confidentiality restrictions apply.

5.5 Technological Neutrality and Data Portability

When establishing e-Government public services, MPSAs should focus on functional needs and defer decisions on technology for as long as is possible. This will allow for minimised technological dependencies, to avoid imposing specific technical implementations or products on their constituents and be able to adapt to the rapidly evolving technological environment. MPSAs should provide for access and reuse of their public services and data irrespective of specific technologies or products.

5.5.1 Requirement 1:

The Government shall not impose any technological solutions on citizens, businesses and other organisations. Such solutions shall not be technology-specific and shall be proportionate to their real needs. The functioning of the Smart Government requires data to be easily transferable among different systems to avoid lock-in and support the free movement of data in relation to data portability.

All MPSAs shall ensure data portability which is the ability to move and reuse data easily among different applications and systems, which becomes even more challenging in cross sector scenarios.

5.5.2 Requirement 2:

Specifically, all MPSAs should ensure that data is easily transferable between systems and applications supporting the implementation and evolution of public services without unjustified restrictions, if legally possible.

5.6 User-Centricity

Users of e-Government public services are any MPSA, citizen or business accessing and/or benefiting from the use of these services. Users' needs should be considered when determining the public services to be provided and how they should be delivered. Therefore, as far as possible, user needs and requirements should guide the design and development of public services, in accordance with the following:

- a) A multi-channel service delivery approach, meaning the availability of alternative channels, physical and digital, to access a service, is an important part of public service design, as users may prefer different channels depending on the circumstances and their needs;
- b) A single point of contact should be made available to users, to hide internal administrative complexity and facilitate access to public services, e.g. when multiple institutions must work together to provide a public service;
- c) Users' feedback should be systematically collected, assessed and used to design new public services and to further improve existing ones;
- d) As far as possible, under the legislation in force, users should be able to provide data once only, and administrations should be able to retrieve and share this data to serve the user, in accordance with data protection rules;
- e) Users should be asked to provide only the information that is necessary to obtain a given public service.

5.6.1 Requirement 1:

All MPSAs must, as far as possible, use multiple channels to provide the e-Government public service, to ensure that users can select the channel that best suits their needs.

5.6.2 Requirement 2:

All MPSAs shall endeavor to provide a single point of contact in order to hide internal administrative complexity and facilitate users' access to common e-Government public services.

5.6.3 Requirement 3:

All MPSAs shall put in place mechanisms to involve users in analysis, design, assessment and further development of e-Government public services.

5.6.4 Requirement 4:

As far as possible all MPSAs should ask users of e-Government public services once-off and relevant-only information.

5.7 Inclusion and Accessibility

Inclusion is about enabling everyone to take full advantage of the opportunities offered by new technologies to access and make use of e-Government public services, overcome social and economic divides and avoid exclusion. Accessibility ensures that differently abled persons, the elderly and other disadvantaged groups use public services at levels comparable to those provided to other citizens.

5.7.1 Requirement 1:

All MPSAs shall ensure that all e-Government public services are accessible to all citizens, including persons who are differently abled, the elderly and other disadvantaged groups. For digital public services, MPSAs should comply with e-accessibility specifications that are widely recognised at National or International level.

5.7.2 Requirement 2:

As far as possible, all MPSAs must endeavor to provide e-Government Services in official local languages as promulgated by Government from time to time.

5.8 Security and Privacy

Citizens and businesses must be confident that when they interact with public authorities, they are doing so in a secure and trustworthy environment and in full compliance with relevant regulations such as the laws on Data Protection and Privacy. MPSAs must guarantee the citizens' privacy, confidentiality, authenticity, integrity and non-repudiation of information provided by citizens and businesses.

5.8.1 Requirement 1:

MPSAs shall comply with the Information Security Standard and establish processes for public services to ensure secure and trustworthy data exchange among MPSAs and within their interactions with citizens and businesses.

5.9 Administrative Simplification

Where possible, MPSAs should seek to streamline and simplify their administrative processes by improving them or eliminating any that do not provide public value. Administrative simplification can help businesses and citizens to reduce the administrative burden of complying with Government legislation or national obligations. Likewise, MPSAs should introduce public services supported by electronic means, including their interactions with other MPSAs, citizens and businesses.

Digitisation of public services should take place in accordance with the following concepts:

- a) Digital-by-default, whenever appropriate, so that there is at least one digital channel available for accessing and using a given eGovernment public service; and
- b) Digital-first which means that priority is given to using public services via digital channels while applying the multi-channel delivery concept and the no-wrong-door policy, i.e. physical and digital channels co-exist.

5.9.1 Requirement 1:

All MPSAs are required to simplify processes and use digital channels whenever appropriate, for the delivery of e-Government public services, to respond promptly with high quality to users' requests and reduce the administrative burden on MPSAs, businesses and citizens.

5.10 Data Retention

Legislation requires that decisions and data are stored and can be accessed for a specified time. This means that electronic records and information held by MPSAs for the purpose of documenting procedures and decisions must be preserved and be converted, where necessary, to new media when old media becomes obsolete. The goal is to ensure that records and other forms of information keep their legibility, reliability and integrity and can be accessed when required subject to security and privacy provisions.

To guarantee the long-term preservation of electronic records and other kinds of information, acceptable standard formats should be chosen to ensure long-term accessibility, including preservation of associated electronic signatures or seals. In this regard, the use of qualified preservation services, in line with e-Government regulation, can ensure the long-term preservation of information.

For information sources owned and managed by national administrations, preservation is a purely national matter. For information that is not strictly national, preservation becomes an e-Government issue. In that case, an appropriate 'preservation policy' should be applied by the MPSAs concerned, to cope with any difficulties that may arise when relevant information is used under different jurisdictions.

5.10.1 Requirement 1:

Under the guidance of the National Archives, all MPSAs shall formulate a long-term preservation policy for information related to e-Government public services and other information that is exchanged across sectors.

5.10.2 Requirement 2:

Under the guidance of the responsible institution, policies and procedures for data warehousing shall be formulated for all MPSAs.

5.11 Assessment of effectiveness and efficiency

There are many ways to take stock of the value of interoperable e-Government public services, including considerations such as return on investment, total cost of ownership, level of flexibility and adaptability, reduced administrative burden, efficiency, reduced risk, transparency, simplification, improved working methods, and level of user satisfaction. Various technological solutions should be evaluated to ensure the effectiveness and efficiency of an eGovernment public service.

5.11.1 Requirement 1:

All MPSAs shall evaluate the effectiveness and efficiency of different interoperability solutions and technological options taking into consideration the user needs, proportionality and balance between costs and benefits.

6 Interoperability Layers

This describes an interoperability model which is applicable to all e-Government public services and may also be considered as an integral element of the interoperability-by-design paradigm. It includes:

- a) Four layers of interoperability: legal, organisational, semantic and technical;
- b) A cross-cutting component of the four layers, 'integrated public service governance'; and
- c) A background layer, 'interoperability governance'.

Figure. 1 - Interoperability Governance

7 Interoperability Governance

Interoperability governance refers to decisions on interoperability Standards, institutional arrangements, organisational structures, roles and responsibilities, policies, agreements and other aspects of ensuring and monitoring interoperability at national level.

7.1 Identifying and selecting standards and specifications

All MPSAs shall follow the six steps to managing Standards and specifications as listed below:

- a) Identify candidate standards and specifications based upon specific needs and requirements;
- b) Assess candidate standards and specifications using standardised, transparent, fair and non-discriminatory methods;
- c) Implement the standards and specifications according to plans and practical guidelines;
- d) Monitor compliance with the standards and specifications;
- e) Manage change with appropriate procedures; and

- f) Document standards and specifications, in open catalogues, using a standardized description.

7.1.1 Requirement 1:

All MPSAs must put in place processes to select relevant standards and specifications, evaluate them, monitor their implementation, check compliance and test their interoperability.

7.1.2 Requirement 2:

All MPSAs must use a structured, transparent, objective and common approach in assessing and selecting standards and specifications taking into account relevant guidelines.

7.1.3 Requirement 3:

All MPSAs must endeavor to consult the electronic Government Division when procuring and developing ICT solutions. In some cases, MPSAs may find that no suitable standards/specifications are available for a specific need in a specific domain. Active participation in the standardisation process mitigates concerns about delays, improves the alignment of standards and specifications with public sector needs and can help governments keep pace with technological innovation.

7.1.4 Requirement 4:

All MPSAs shall actively participate in the standardisation processes relevant to their needs to ensure their requirements are met.

8 Integrated Public Service Governance

Public service provision often requires different public institutions to work together to meet end users' needs and provide public services in an integrated way. When multiple institutions are involved there is a need for coordination and governance by the authorities with a mandate for planning, implementing and operating public services. Services should be governed to ensure integration, seamless execution, reuse of services and data, as well as development of new services and 'building-blocks'.

8.1.1 Requirement 1:

All MPSAs shall ensure interoperability and coordination over time when operating and delivering integrated public services by putting in place the necessary governance structure.

9 Interoperability Agreements

Organisations involved in e-Government public service provision should make formal arrangements for cooperation through interoperability agreements. Setting up and managing

these agreements is part of public service governance. Agreements should be detailed enough to achieve their aim, i.e. to provide e-Government public services within the set guidelines.

At semantic and technical levels, but also in some cases at organisational level, interoperability agreements usually include standards and specifications. At legal level, interoperability agreements are made specific and binding via legislation.

Other types of agreements can complement interoperability agreements, addressing operational matters. For example, Memoranda of Understanding (MoUs), Service Level Agreements (SLAs), support/escalation procedures and contact details, referring, if necessary, to underlying agreements at semantic and technical levels. Since delivering an eGovernment public service is the result of collective work with parties that produce or consume parts of the service, it is critical to include appropriate change management processes in the interoperability agreements to ensure the accuracy, reliability, continuity and evolution of the service delivered to other public administrations, businesses and citizens.

9.1.1 Requirement 1:

All MPSAs shall establish interoperability agreements, complemented by operational agreements and change management procedures.

10 Legal interoperability

Any MPSA contributing to the provision of an e-Government public service must operate within its own sector legal Standard. Legal interoperability is about ensuring that organisations operating under different legal Standards, policies and strategies can work together. This might require that legislation does not block the establishment of public services within and among MPSAs and that there are clear agreements about how to deal with differences in legislation across sectors, including the option of putting in place new legislation.

The first step towards addressing legal interoperability, is to perform ‘interoperability checks’ by screening existing legislation to identify interoperability barriers:- sectoral or geographical restrictions in the use and storage of data, different and vague data license models, over-restrictive obligations to use specific digital technologies or delivery modes to provide public services, contradictory requirements for the same or similar business processes, outdated security and data protection needs, etc.

Coherence between legislation, in view of ensuring interoperability, should be assessed before adoption and through evaluating their performance regularly once they are put into application. Bearing in mind that public services are clearly meant to be provided - amongst others - from digital channels, ICT must be considered as early as possible in the law-making process. Proposed legislation should undergo a ‘digital check’:

- a) To ensure that it suits not only the physical but also the digital world e.g. the internet;
- b) To identify any barriers to digital exchange; and

- c) To identify and assess its ICT impact on stakeholders.

This will facilitate interoperability between public services at lower levels (semantic and technical) and increase the potential for reusing existing ICT solutions, so reducing cost and implementation time. The legal value of any information exchanged between MPSAs should be maintained across sectors, and data protection legislation in both originating and receiving sectors complied with. This might require additional agreements to overcome potential differences in the implementation of the applicable legislation.

10.1.1 Requirement 1:

All MPSAs shall ensure that legislation is screened by means of ‘interoperability checks’, to identify any barriers to interoperability. When drafting legislation to establish an eGovernment public service, sectors must seek to make it consistent with relevant legislation, perform a ‘digital check’ and consider data protection requirements.

11 Institutional Interoperability

This refers to the way in which MPSAs align their business processes, responsibilities and expectations to achieve commonly agreed and mutually beneficial goals. In practice, organisational interoperability means documenting and integrating or aligning business processes and relevant information exchanged. Institutional interoperability also aims to meet the requirements of the user community by making services available, easily identifiable, accessible and user focused.

12 Business process alignment

In order for different MPSAs to be able to work together efficiently and effectively to provide eGovernment public services, they may need to align their existing business processes or define and establish new ones. Aligning business processes implies documenting them in an agreed way and with commonly accepted modelling techniques, including the associated information exchanged, so that all MPSAs contributing to the delivery of eGovernment public services can understand the overall (end-to-end) business process and their role in it.

12.1.1 Requirement 1:

All MPSAs must document their business processes using commonly accepted modelling techniques and agree on how these processes should be aligned to deliver an eGovernment public service.

13 Institutional Relationships

Service orientation, upon which the conceptual model for public services is conceived, means that the relationship between service providers and service consumers must be clearly defined. This involves finding instruments to formalise mutual assistance, joint action and

interconnected business processes as part of service provision e.g. MoUs and SLAs between participating MPSAs.

For cross-sector actions, these should preferably be sectoral or domain eGovernment agreements.

13.1.1 Requirement 1:

All MPSAs shall clarify and formalise institutional relationships for establishing and operating eGovernment public services.

14 Data Interoperability

Data interoperability ensures that the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between parties, in other words ‘what is sent is what is understood’. In the eGIF, data interoperability covers both semantic and syntactic aspects:

- a) The semantic aspect refers to the meaning of data elements and the relationship between them. It includes developing vocabularies and schemata to describe data exchanges, and ensures that data elements are understood in the same way by all communicating parties; and
- b) The syntactic aspect refers to describing the exact format of the information to be exchanged in terms of grammar and format.

A starting point for improving data interoperability is to perceive data and information as a valuable public asset.

14.1.1 Requirement 1:

All MPSAs must perceive data and information as a public asset that should be appropriately generated, collected, managed, shared, protected and preserved.

An information management strategy should be drafted and coordinated at the highest possible level (corporate or enterprise) to avoid fragmentation and set priorities. For example, agreements on reference data, in the form of taxonomies, controlled vocabularies, thesauri, code lists and reusable data structures/models are key prerequisites for achieving data interoperability. Approaches like data-driven-design, coupled with linked data technologies, are innovative ways of substantially improving data interoperability.

14.1.2 Requirement 2:

All MPSAs must put in place an information management strategy at the highest possible level to avoid fragmentation and duplication. Management of metadata, master data and reference data should be prioritised.

Similarly, to the way technical standards have fostered technical interoperability (e.g. network connectivity) for decades now, robust, coherent and universally applicable information standards and specifications are needed to enable meaningful information exchange among MPSAs.

Given the different linguistic, cultural, legal, and administrative environments in the MPSAs, this interoperability layer poses significant challenges. However, unless standardisation efforts mature in the semantic interoperability layer, it is difficult to ensure seamless information exchange, free movement of data, and data portability among MPSAs to support the Smart Government initiative.

14.1.3 Requirement 3:

All MPSAs must support the establishment of sector-specific and cross-sectoral groupings that aim to create open information specifications and encourage them to share results on institutional platforms.

15 Technical Interoperability

This covers the applications and infrastructures linking systems and services. Aspects of technical interoperability include interface specifications, interconnection services, data integration services, data presentation and exchange, and secure communication protocols.

A major obstacle to interoperability arises from legacy systems. Historically, applications and information systems in MPSAs were developed in a bottom-up fashion, trying to solve domain-specific and local problems. This resulted in fragmented ICT silos which are difficult to interoperate.

Due to the size of MPSAs and the fragmentation of ICT solutions, the surplus of legacy systems creates an additional interoperability barrier in the technical layer. Technical interoperability should be ensured, whenever possible, via the use of formal technical specifications.

15.1.1 Requirement 1:

All MPSAs shall use published open specifications, where available, to ensure technical interoperability when establishing eGovernment public services.

