



**GUIDING PRINCIPLES FOR BUILDING FIT-FOR-PURPOSE LAND
ADMINISTRATION SYSTEMS IN LESS DEVELOPPED COUNTRIES:
PROVIDING SECURE TENURE FOR ALL**

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**Paper prepared for presentation at the
“2016 WORLD BANK CONFERENCE ON LAND AND POVERTY”
The World Bank - Washington DC, March 14-18, 2016**

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Abstract

New solutions in land administration are required that can deliver security of tenure for all, are affordable and can be quickly developed and incrementally improved over time. The Fit-For-Purpose (FFP) approach to land administration has emerged to meet these requirements.

This paper discusses the building of the FFP approach at country level: “how to make it work”. In the view of the authors the focus of a FFP implementation providing tenure security for all. A FFP implementation is strongly related to the recognition of the continuum of land rights. Implementation of the FFP approach means to recognise, record and review land rights.

The FFP approach, is flexible in terms of accuracy and also in relation to the variety of tenure types to be secured. A complete overview is required of the tenure systems and land rights related to the areas affected.

The Social Tenure Domain Model allows modelling and managing the complex social tenure relationships between people and land found within legitimate rights.

Implementation of a FFP approach requires an ICT approach based on a strategy. Guidelines for the development of an ICT infrastructure are presented.

Key Words:

Fit-For-Purpose, Land Administration, Continuum of land rights, Social Tenure Domain Model

1. INTRODUCTION

New solutions in land administration are required that can deliver security of tenure for all, are affordable and can be quickly developed and incrementally improved over time. The Fit-For-Purpose (FFP) approach to land administration has emerged to meet these simple, but challenging requirements. This FFP approach has been recognized and supported by FIG and the World Bank and is described in a joint FIG and World Bank publication (FIG/WB, 2014). UN- Habitat/Global Land Tool Network (GLTN) decided to elaborate this approach further by initiating a project in cooperation with Dutch Kadaster on developing a Guide for Fit-For-Purpose Land Administration in collaboration with key partners. This guide (Enemark et al., 2015) underpins the GLTN land tool development activities and enables implementation of sustainable land administration systems in less developed countries at scale.

Enemark et al. (2016) describe the key principles for building sustainable and Fit-For-Purpose (FFP) land administration systems. The FFP approach has three fundamental characteristics. Firstly, there is a focus on the purpose and then how to design the means for achieving it as well as possible; secondly, it requires flexibility in designing the means to meet the current constraints; and, thirdly, it emphasizes the perspective of incremental improvement to provide continuity. Enemark et al. further describe the three core components of the FFP concept: the spatial, the legal, and the institutional frameworks. Each of these components includes the relevant flexibility to meet the actual needs of today and can be incrementally improved over time in response to societal needs and available financial resources.

McLaren et al. (2016) describe the approaches and issues associated with implementing FFP land administration, including change management, capacity development and project delivery.

This paper discusses the building of the FFP approach at country level. The paper provides some guidelines on “how to make it work”. In the view of the authors the focus of implementation is in providing secure land rights for all. This strongly related to the recognition of the continuum of land rights. Implementation of the FFP approach means to ‘recognise’, ‘record’ and ‘review’ land rights. ‘Recognise’ involves a procedure for recognition, classification and development of a typology in land rights on the basis of an assessment of existing legitimate rights at the country level. ‘Record’ means collecting data on evidence of land rights based on FFP approaches in land administration following the FFP principles as introduced in Enemark et al. (2015) and Enemark et al. (2016) for building the spatial framework. ‘Review (Conversion)’ means assessing the evidence of rights and any possible outstanding claims and when conditions are met, the security of the rights will be increased.

The FFP approach, is flexible in terms of accuracy and also in relation to the variety of tenure types to be secured. Different authorities have different responsibilities in the process of recognition, recording, registering and managing the various tenure types within different areas such as urban and rural. Therefore, at national level coordination is suggested. Further it is recommended that a National Tenure Atlas be developed for providing an overview of the spatial distribution of legitimate tenure types across a country, e.g. areas of customary tenure, areas of informal tenure, areas of private ownership, state land, etc. This will help to define zoning for better manage natural resources, identify where a land market can exist and enable administration and coordination between state and customary authorities through co-management. The Social Tenure Domain Model is recommended (FIG/GLTN, 2010). The Social Tenure Domain Model allows modelling and managing the complex social tenure relationships between people and land found within legitimate rights. STDM provides a standard for representing the recorded people to land relationships independent of the level of formality, legality and technical accuracy. This means informal rights such as occupancy, adverse possession, tenancy, use rights (this can be formal as well), customary rights, indigenous tenure, etc. as well as the formal ones are recognised and supported (with regard to information management) in a STDM enabled land administration system. Such flexibility also relates to the recordation that should be organised at various levels rather than through one central register. If required the land administration system can be upgraded and incrementally improved over time in response to social and legal needs and merging economic opportunities. This should allow for security of tenure within various kinds of communities and thereby enabling secure land rights for all.

Adopting an effective, scalable supporting ICT infrastructure is considered to be crucial for the implementation of the FFP approach. Although the ultimate ICT solution will be sophisticated and support features such as e-signatures, e-conveyancing and cloud based services, for example, it should be emphasised that the initial ICT solutions will have to be rather simple to accommodate limitations in the telecommunications infrastructure and ICT skills in many less developed countries. However, over time, the ICT solution can be enhanced to embed new technology and create greater functionality when more effective ICT resources are available. This incremental approach is much more sustainable than more ambitious, faster implementations.

This paper further highlights the importance of the development of an ICT environment. The paper starts with the introduction of some characteristics of current legal and regulatory frame works in section 2. Current systems do not perform – tenure security is lacking in most cases, there is a need for change. A flexible approach is with the Social Tenure Domain Model as described in section 3. A number of pro-poor land recordation approaches and solutions have been developed and are active around the world. There are extensive initiatives for safeguarding the rights of indigenous communities and techniques to crowdsource

land rights are also emerging. This pro-poor land recordation approach is described in more detail in Section 4. ICT principles relevant for nationwide FFP implementation are introduced in section 5.

2. CHARACTERISTICS OF LEGAL AND REGULATORY FRAMEWORKS

In most developing countries the processes for land registration are complex, costly, time consuming and with high demands for accuracy of boundary surveys and often unnecessary legal interventions by notaries, lawyers and courts. The existing legal framework is therefore often a significant barrier for implementing a flexible approach to building land administration systems (FIG/WB, 2014). The legal and regulatory framework will normally include a comprehensive land law or real property law as well as legislation that govern the conduct of land registration, such as the regulations that control the operation of the land registry and cadastral management. In the majority of developing countries around 80 per cent of the land is held under some form of customary tenure (Enemark et al., 2016). This land is managed by traditional authorities and is generally outside the jurisdiction of formal land registration institutions. As a first step, the legitimate holding of land in customary areas of the country should be recognised in the formal system with the option of subsequently being recorded and eventually upgraded to a legal status. This process should be managed through co-management between the traditional authorities and the formal governmental institutions, wherever possible.

The legal and regulatory framework defines how rights, restrictions and responsibilities in land are established and managed, taking into account the actual (de jure and de facto) land tenure arrangements within the country. By adopting a FFP approach to building this framework, it should include the following: types of land (such as public, private, customary, etc.); types of tenure recognised (such as formal, legitimate, informal, social); procedures for recognition and recordation of the various forms of land rights; procedures for land transfers through sales, inheritance, divorce, marriage, etc.; and procedures for maintenance and updating.

The regulations on operationalisation of the land registry and cadastre include: principles of registration and the establishment of legal rights and legally recognised interests in land; the contents and maintenance of the registry and cadastre; the management changes in this legal situation such as land transfers; the definition of spatial units of land; in some jurisdictions the identification and survey of boundaries; and the roles of the involved professionals and other stakeholders. Some countries operate a deeds registration, while others operate a title registration. A deeds registration system is registration of deeds of transfer and is typically not evidence of its legality. A title registration is a registration of the legal consequence of a transaction and is evidence of the title. Many systems are a mix of the two systems. Some systems are

centralised, and others are decentralised. Some systems are based on a general or physical boundaries approach, others on fixed boundaries approach. Some systems are developed for fiscal purposes as an aid for taxation while others aim to record legal ownership. Some systems serve several purposes. (Zevenbergen, 2002).

Effective administration requires a flexible legal and regulatory framework supporting an adaptable tenure system with a compliant land recordation system. Conventional land administration systems in developing countries are technically unable to go to scale and the systems ignore types of social tenure common among their populations. Customary and communal areas have a long history of tenure security and well protected land rights for community members. Today this tenure is not providing sufficient security as demand for land in general and also for communal land has surged in response to increased investments. Land grabbing by private interests and expropriation without adequate compensation have been widely reported (Deininger et al., 2011). Globally over 30 per cent of urban areas are informal and in Africa over 60 per cent. Scaling up policies and investments in the registration of customary and communal lands helps to protect the rights of local communities while reducing investment risks. Informal settlement residents need to be brought into the formal system.

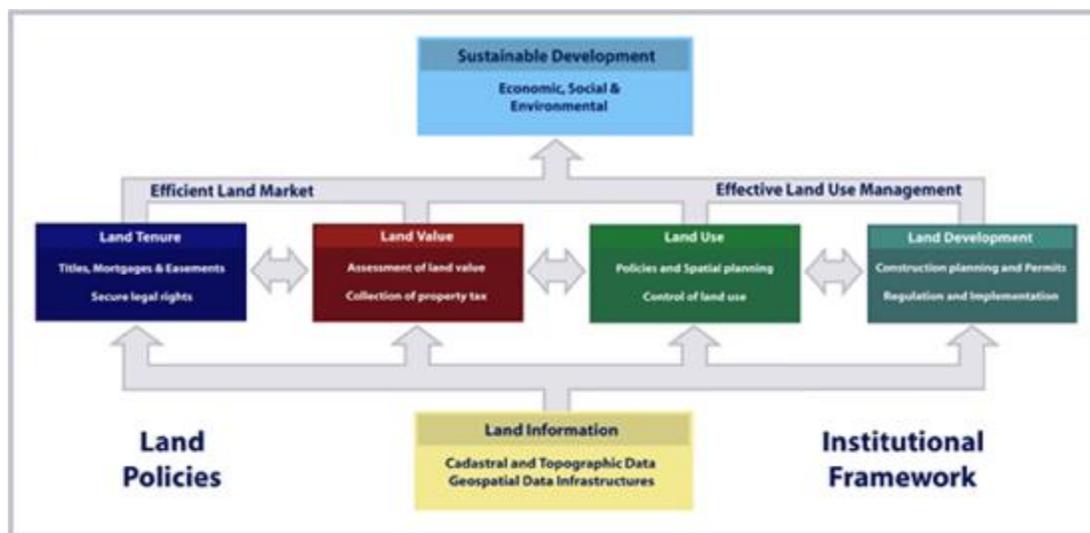


Figure 1. A global land management perspective (Enemark et al., 2005; Williamson et al., 2010).

While many tenure rights are defined in formal law, there are often other rights that are not similarly defined, but yet people use them every day because they are recognised by the local community and others. These rights have a social legitimacy even if they lack legal recognition, for example, customary rights that have not yet been given legal recognition by the state (UN-FAO, 2015). And the ‘Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of Food Security’

(VGGTs) (UN-FAO, 2012) state: “Based on an examination of tenure rights in line with national law, states should provide legal recognition for legitimate tenure rights not currently protected by law.” Enemark et al. (2015, 2016) recommend that countries should define the categories of rights that are considered legitimate within the FFP legal and regulatory framework. The country specific strategy for FFP land administration should support the legal recognition of these categories of legitimate rights. A country’s full legal and regulatory framework should cover all the land administration functions of land tenure, land value, land use and development as presented in Figure 1.

Many legal systems in developing countries just focus on specific types of rights, for example, (private) ownership or a strong land use right like leasehold. This is an impact of colonial history and legislation where land administration served mainly the elite. Global land policy and national trends now focus on recognition and protection of social, customary and more informal land tenures.

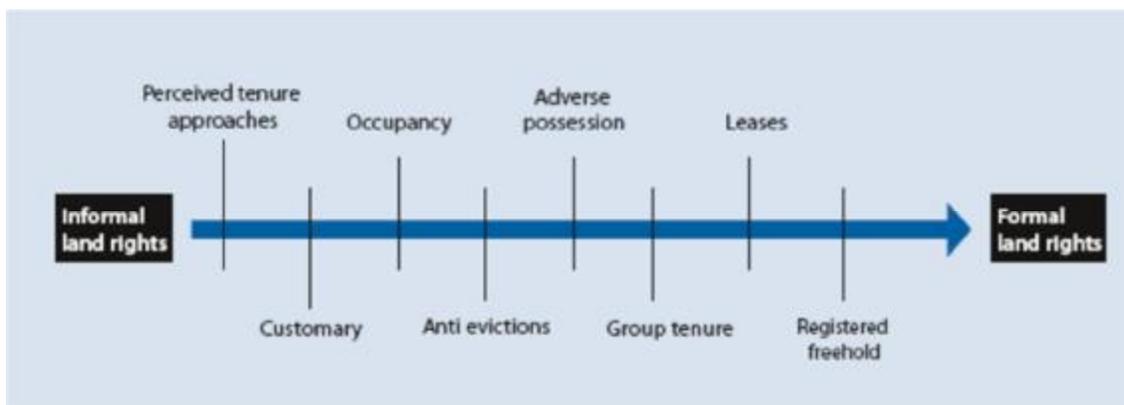


Figure 2. The Continuum of land rights (UN-Habitat/GLTN, 2008).

The continuum of land rights (Figure 2) refers to the diversity of tenure arrangements in practice, encompassing both de facto (in fact) and de jure (in law) rights. While the rights in this range may not all enjoy the benefits of a country’s formal administrative or legal recognition, social recognition might be high, providing the de facto rights local legitimacy. A continuum of land rights can function when a land administration system includes information that caters for the whole spectrum of formal, informal and customary rights. Each continuum provides different sets of rights and degrees of security and responsibility and enables different degrees of enforcement (UN-Habitat/GLTN, 2008; FIG/GLTN, 2010). The continuum of land rights does not imply that all societies will or should necessarily develop into tenure systems based on individual ownership (freehold). Importantly, the continuum of land rights indicates, that each step in the process can be formalised, with registered individual ownership (freehold) offering stronger protection, than at earlier stages.

3. THE SOCIAL TENURE DOMAIN MODEL

The Social Tenure Domain Model (STDM) introduces the social element into land administration systems (see Figure 3). It describes relationships between people and land in an unconventional manner in that it tackles land administration needs in hitherto neglected communities, such as people in informal settlements and customary areas. It supports development and maintenance of records in areas where regular or formal registration of land rights is not the norm. It focuses on land and land rights, which are neither registered nor registerable, as well as overlapping claims, that may have to be adjudicated both in terms of the ‘who’, the ‘where’ and the ‘what’ right. In other words, the emphasis is on social tenure relationships as embedded in the continuum of land rights. This means informal rights such as occupancy, adverse possession, tenancy, use rights (this can be formal as well), customary rights, indigenous tenure, etc. as well as the formal ones are recognised and supported (with regard to information management) in a STDM enabled land administration system. See FIG/GLTN (2010) and UN-Habitat/GLTN (2014).

The STDM accommodates a range of spatial units (‘where’, e.g. a piece of land that can be represented as one point – inside a polygon, a set of lines, a polygon with low/high accuracy coordinates, etc.). Similarly, the STDM records all types of right holders (‘who’, e.g. individuals, couples, households, groups with defined and non-defined membership, group of groups, religious organisations, companies, municipalities, government departments, etc.). In regard to evidence, STDM handles the imprecision and possible ambiguities that may arise in the description of land rights. The implementation of data collection (“as is” situation) and maintenance of those data can be based on administrative procedures (Augustinus and Lemmen, 2011; FIG/WB, 2014; Barry and Augustinus, 2015, Enemark et al., 2015). With STDM it is possible to bring the social element into land administration by:

- Recognising informal tenure arrangements based on the continuum of land rights;
- Unpacking existing social tenures, by means of classifications and coding of land rights and inclusion of those tenure types in data collection and maintenance;
- Opening options for innovative and incremental approaches to improving tenure security by means of conversions;
- Bridging the gap between informal systems and formal systems that emphasise titles by means of standardised approaches allowing legal and technical interoperability between basic land recordation and formal registrations;
- Giving a snap-shot of the ‘people-land’ relationships at any given time; and
- Informing the land administration activities about the actual situation on the ground.

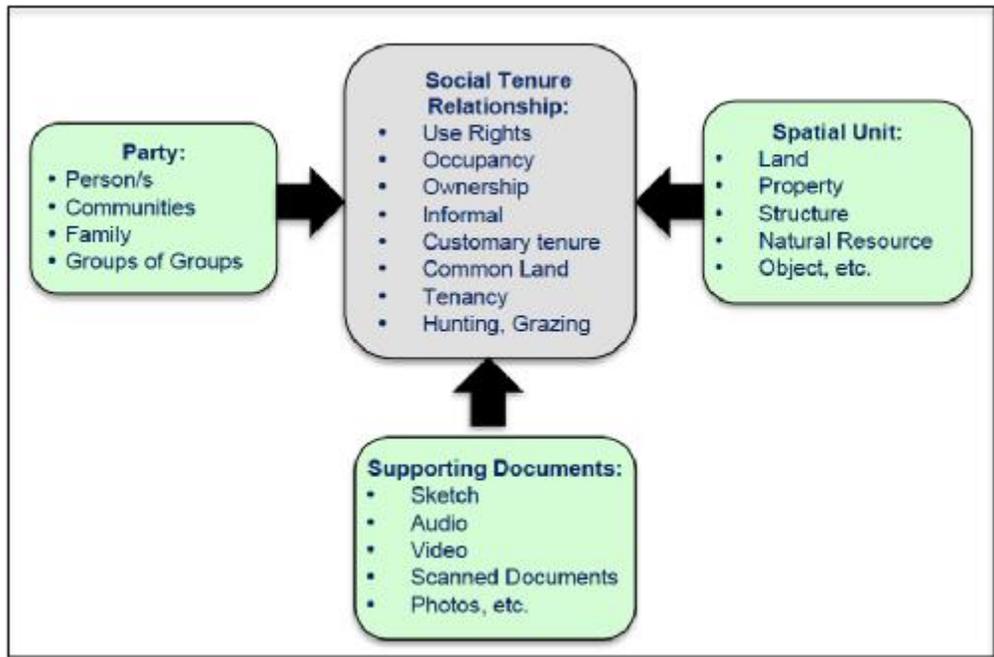


Figure 3. The STD M Conceptual Model explains the interrelationship between parties, social tenure, and the spatial units supported by relevant documents. (UN-Habitat/GLTN, 2014)

STD M is a pro-poor, participatory and affordable land tool for representing people to land relationships along the continuum of land rights. STD M can be implemented as a participatory enumeration. This is a survey method to gain better knowledge of the needs and priorities of a community, see (UN-Habitat/GLTN, 2010). This is about involving and engaging poor communities in one of the first steps of any participatory planning or upgrading initiative.

STD M Community Empowerment in Mashimoni, Nairobi

The Mashimoni informal settlement covers 9.5 ha and is located in the east of Nairobi. The site owned by the State was a former quarry and people have been squatting since 1975. The densely populated slum faced serious problems such as fire, inadequate infrastructure and health issues. People were also threatened by eviction due to close proximity to a business centre with high associated land values. The community formed a Resident-Association in 2010 with the main focus on solving the land issue.

A first enumeration was organised in 2010 to obtain information on the settlement and the residents. The community then negotiated with the Ministry of Lands for the national government to hand over the land to the residents. The land was subsequently safeguarded through a cabinet resolution. Community leaders

helped to introduce STDM in 2011 with support of the Pamoja Trust and community members were trained. The community is using STDM for mapping and enumerations towards tenure regularisation under the Kenya Informal Settlement Improvement Project (KISIP). Data on ‘structures’ (‘slum houses’) and ‘users’ was collected, linked, verified and digitised using STDM facilitated data access. STDM has gathered evidence on land tenure and on the legitimacy of people to land relations in litigation and negotiation and helped to avoid evictions. Conflicts in cases of double or triple selling of structures has been reduced. Data has also been collected on utilities, sanitation and facilities to demonstrate the scale of problems. This has led to the installation of 75 toilets across the slum and supported negotiations to remove an open sewer.

STDM has empowered and enabled the community to have a say in planning issues and participation and transparency is encouraged. Electricity is now available across the slum and the community have a five year improvement/development plan. This STDM project has been sustainable and has successfully built and empowered a slum community to significantly improve their environment and security of tenure. The Mashimoni experience has resulted in the broader usage of STDM under KISIP.

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Participatory enumerations can contribute to increased security of tenure, more inclusive community management, and more transparent land information systems.

The STDM website (UN-Habitat/GLTN, 2014) explains about the purpose and benefit of the STDM tool in more details. The website also provides access to the free Open Source software and guidance for using the system. A number of applications are presented from countries like Uganda, Kenya, Democratic Republic of Congo, Zambia, Colombia and Namibia, where GLTN is working with local communities and authorities to improve tenure security. Other STDM applications relate to post disaster and post conflict situations where inventories of people to land relationships are needed for management purposes.

Implementation of the continuum approach at a national level as presented above requires a detailed typology (a complete categorisation) of the various forms of tenures and their mapping.

Different authorities have different responsibilities in the process of recognition, recording, registering and managing the various tenure types within different areas such urban and rural. Therefore, at national level coordination is needed (Lemmen et al., 2015; Sears et al., 2015). For this purpose it is recommended that a National (digital) Tenure Atlas be developed for providing an overview of the spatial distribution of legitimate tenure types across a country, e.g. areas of customary tenure, areas of informal tenure, areas of private ownership, state land, etc. This will help to identify where land rights documentation needs to be undertaken, define zoning for better manage natural resources, identify where a land market can exist and enable administration and coordination between state and customary authorities through co-management. The boundaries of a territory of a tenure system can be labelled as fuzzy, visible or fixed. Those boundary labels should be included in the National Tenure Atlas. Figure 4 is an example of such a National Tenure Atlas. The legend is explained in more details below:



Resettlement Registry is an administration of farms acquired by the government for the purpose of resettling citizens that qualify.

AALS farms are farms acquired by a Namibian citizen with financial support of the Agribank under the Affirmative Action Loan Scheme (AALS)

FLTS areas are peri-urban informal settlements targeted by the government of Namibia using the new Flexible Land Tenure System (FLTS).

Surveyed Land in Communal Areas contains around 250.000 communal land parcels.

MAWF Farms are farms that are being operated under control of the Ministry of Water and Forests (MAWF).

Conservancies are farms operated under the Conservancies Scheme, with special extra attention to the purpose of nature conservation.

Restricted areas relate to diamond mining areas and thus closed to the general public.

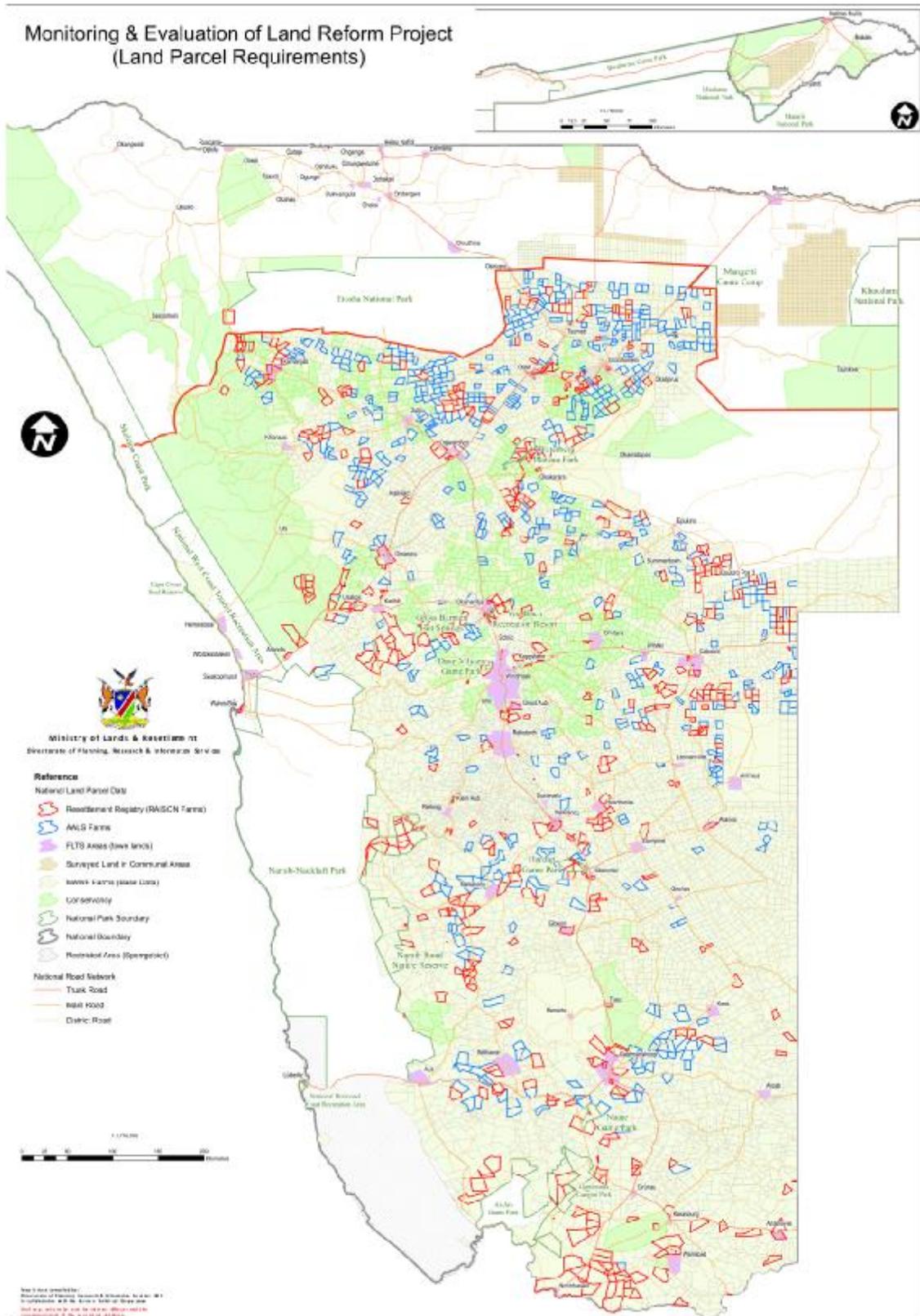


Figure 4. Example of a National Tenure Atlas. Source: Ministry of Lands and Resettlement, Namibia

4. FLEXIBLE RECORDATION

The objective of the FFP approach is to develop a nationwide land administration system with special emphasis on providing security of tenure for all. The FFP approach, however, is pro-poor and also supports the building of locally based land recordation systems that can run in parallel with the nationwide strategy or as separate activities in support of local needs. The resulting recorded rights will then be managed in a local solution, but normally with no national legal standing. However, these recorded legitimate rights can subsequently be reviewed and integrated into the National register as explained in Enemark et al. (2015) and Enemark et al. (2016). Land administration authorities should then provide guidance to stakeholders performing local recordation on what information and evidence is gathered during local recordation to ensure that the data can be easily reviewed and integrated into the national register.

Existing conventional land administration systems only take into account conventional legal forms of evidence and are parcel based. This means that they only cover a subset of all forms of land tenure. Globally there are many examples of informal settlement residents, slum dwellers, and families and groups living under customary tenure, indigenous people, pastoralists, refugees etc. whose land use rights are not capable of being integrated into a conventional land administration system. Therefore, a flexible approach is needed to include integration and interoperability of different kinds of land recordation in the design to support of conversion of rights from one step on the tenure ladder to another.

UN-Habitat, GLTN (2012a, 2012b) has provided guidance for designing such a flexible approach. Designing a Land Records System for the Poor is the first attempt to fill the gaps in development of new forms of land recordation to assist the implementation of a continuum of land rights approach at scale. The system should build on existing local approaches, where, in many situations, the social land tenure system includes elements that would form an integral part of a pro-poor system. Community rules in identifying leaders should be followed. Recognised leaders know the local rules and the various land interests in the community.

Land administration systems support tenure security, and deliver the information required to make land management work at scale. Without this land information then management of urban and rural development is simply not possible. This technical gap of information impacts access to safe water, sanitation, community facilities by the poor and contributes to unequal access to land, conflicts over land, land grabbing and the destruction of the environment. It also negatively affects quality of life and livelihoods. A land information system is essential to address these issues and contribute to increase security of tenure,

particularly for the poor, for overall land management, and to make it possible for the system of land administration to extend to scale and cover the majority of a country. Therefore, a pro poor land recordation system is needed. In this regard, the UN-Habitat/GLTN approach as presented above is further illustrated in Figure 5 (based on Zevenbergen et al., 2012 and Zevenbergen et al., 2013).

10 special design elements for a pro poor recordation system (Adapted from Zevenbergen et al., 2012)

1. Assessment of national and local conditions; this concerns ascertaining government buy-in to the idea of a pro-poor land recordation system; assessment and with regard to accommodating a pro-poor approach to tenure security.
2. Building on community social tenure practices. Community rules for identifying leaders should be followed; leaders have knowledge and can act as witness. Not all communities have stable leaders;
3. Introduction of a formalisation process and a land officer. The use of standardised forms should accommodate diversity and overlap in tenure arrangements and family relations. The land officer could also act as the land secretary to the communities' leaders.
4. Recordation. This is only possible if standardised forms are used by a land officer operating. The filled-in forms would be presented to the local records office at community level;
5. Land recording, indexing and assigning a record keeper. The record keeper will keep indexes of the forms and store them in an orderly fashion.
6. Inspection. The system should have buy-in from both the community and the state. The state should have regional or national inspection mobile units which travel to all the pro-poor systems to make inspections;
7. Use of multiple sources of evidence. Over time recorded information is perceived as more credible relative to verbal information, and if earlier recorded information has priority over information that is recorded later;
8. Dispute resolution. Dispute resolution mechanisms need to be put in place. Many communities have traditional, local or alternative dispute resolution mechanisms;

9. System ownership by state and local community. It is essential that the land recordation system be owned both by the local community and by the state through a co-management arrangement;

10. Emphasis on a continuum of land recording. There are links and overlaps between these elements – indeed many are sequential in implementation.

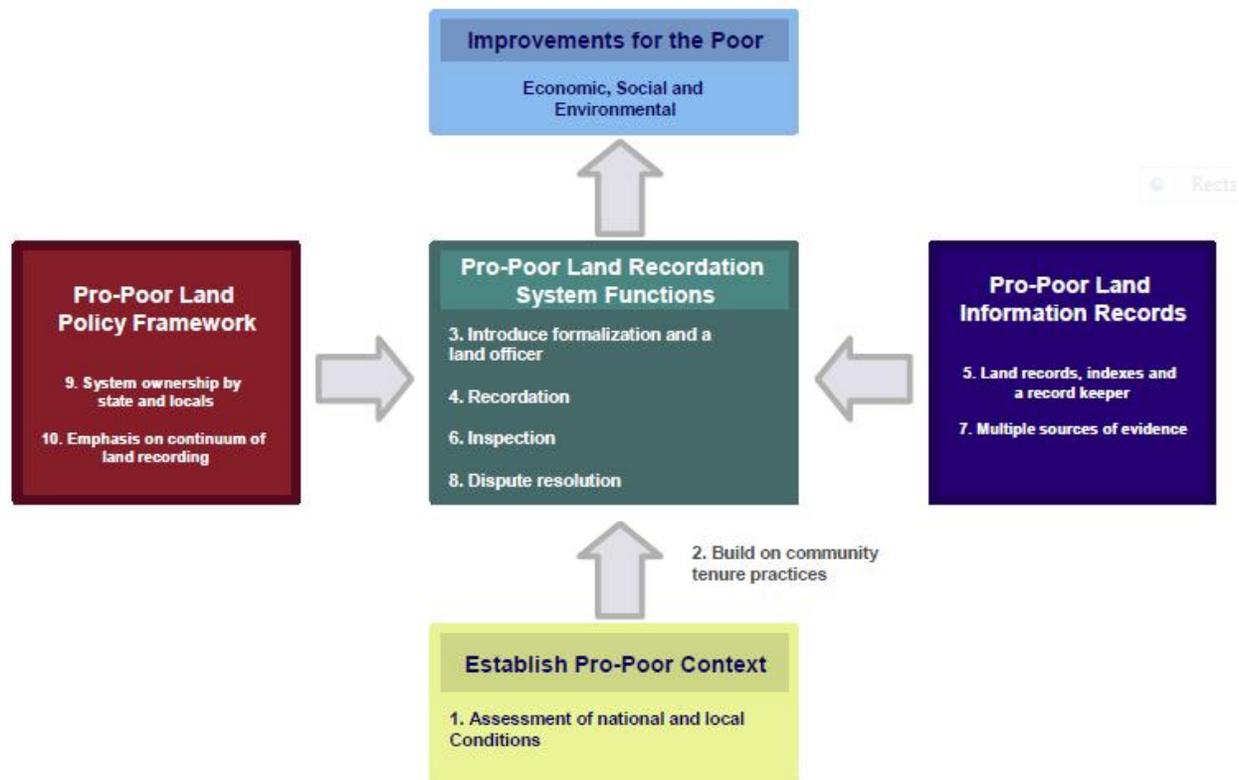


Figure 5. The ten design elements of the pro-poor land recordation system (Zevenbergen et al., 2012)

The pro-poor land recordation system can be seen as a subset of Williamson et al.’s (2010) more generic vision “The Land Management Paradigm” (see Figure 1). The same core elements are used as a basis for articulating the design elements of the pro-poor land recordation system. The paradigm reflects currently accepted global norms in land administration system design. Its generic nature provides a familiar, but flexible conceptual basis for developing a pro-poor design.

The paradigm suggests a country or community context should also be used to inform the design of an agreed land policy, subsequent land administration functions, and a supporting land information infrastructure. Strong relationships between these components should support the delivery of sustainability

within a jurisdiction. This is important to ensure that the pro-poor system design lays a foundation for movement along the continuum of land rights, without having to jump out of one system into another – a common problem in the design of new forms of land tenure. The ten special design elements or principles are considered necessary in the pro-poor recordation context. There are links and overlaps between these elements – indeed many are sequential in implementation.

The recordation system should be affordable for the state and its citizens particularly the poor to enable the country to scale up the system. It also needs to be transparent, accessible and equitable to ensure delivery to the poor. The system has to deal with complex, layered rights. Next to formal tenures, it needs to take care of customary and informal systems, as well as secondary rights. The system should build on social tenures rather than strict paper trails. It is important that the system is simple, quick and inexpensive and avoids costly experts and fees. The STDM conceptual model meets those criteria.

The land recordation system should be physically close to the people to improve record accuracy (updating, conversion), to ensure ease of access and to improve land management and planning. The pro-poor land records' office should not be a totally independent entity, but ideally should be embedded in the larger public administration structure. The system has to deliver preventative justice by having land records that contain objective information that clarifies the rights and contractual relations, and limits the need to go court. The system should build on co-management of pro-poor land records, including identifying witnesses, creating evidence, building the currency and legitimacy of land records. Strong checks and balances are needed to protect vulnerable groups.

New supporting roles can be introduced in order to organise participatory approaches. The community leader brings knowledge in the categorisation of rights and the area where those rights apply. The filling of standard forms for administrative attributes can be supported by trained local staff while maintaining a neutral position. It is important that mechanisms are in place to guarantee proper link between the non-spatial attributes (names, rights) and the spatial units where those attributes apply; this is a task for the trained local staff – also responsible for drawing the boundaries on the orthophoto or aerial imagery. An appointed local record keeper takes care for recordation and publication and a social authority should act as classifier and manager of the data collection process and maintenance of the records.

As mentioned above, the land administration authorities should provide guidance for undertaking the local recordation in order to facilitate easy integration into the national register at a later stage. This should also facilitate the use of locally collected data and other forms of geospatial information as means for reporting

on the progress in relation to achieving the Sustainable Development Goals, see (Enemark et al., 2015; Enemark et al., 2016).

Security of tenure can only be fully enjoyed when the land rights are protected and safeguarded by the state. This can be seen in the light of Article 17 in the Universal Declaration of Human Rights (UDHR) saying “Everyone has the right to own property alone as well as in association with others” and additionally “No one shall be arbitrarily deprived of his property”. With regard to immovable (land) property this global norm can be operationalized in various ways. In many countries throughout the world such safeguarding is protected in the constitution.

Safeguarding of property and land rights relates especially to situations of land acquisition whether carried out through voluntary agreements or through compulsory means (expropriation) to secure land delivery for development. In this regard there is a need for consistent, transparent and efficient legislation and procedures, and clear rules for inclusion of the parties involved and for determination of adequate compensation, which ensures that those displaced are able to re-establish their lives and livelihoods in a proper manner. Good governance principles should always be applied to undertaking the processes of land acquisition whether they are based on compulsory means or voluntary agreements. Processes must be efficient, fair and legitimate, and ensure that all rights are addressed including informal rights and especially the rights of the poor and vulnerable (FIG/GLTN, 2010).

5. ICT STRATEGY

Although the ultimate ICT solution will be sophisticated, nationally scalable and support features such as e-signatures, e-conveyancing and cloud based services, for example, it should be emphasised that the initial ICT solutions will have to be rather simple to accommodate limitations in the telecommunications infrastructure and ICT skills in many developing countries. However, over time, the ICT solution can be enhanced to embed new technology and create greater functionality when more effective ICT resources are available. This incremental approach is much more sustainable than more ambitious, faster implementations.

There is a tendency in national land administration system programs in developing countries to invest in expensive, sophisticated ICT solutions at the start of programs. This rarely proves successful. Instead the initial ICT solutions should model the overall Minimum Viable Product approach being advocated for FFP land administration. This will initially focus on a set of tools to capture the land rights. A simpler, lower cost ICT solution at the start of the program will provide flexibility to accommodate changes in business

processes, customer requirements and resource availability identified through assessing initial operations. However, incremental improvement does not mean fragmentation. The incremental ICT improvements need to be managed within an agreed ICT strategy that is directly informed by the business strategy defined in the country specific FFP land administration strategy.

An ICT strategy has to be formulated for the Land Administration organisation that provides support to the business for FFP land administration, delivers scalable solutions for national coverage and is sustainable. The following principles should underpin the ICT strategy:

- Policy and service delivery programs should use the most appropriate engagement channels. Conventional engagement channels to customers, including mobile offices, should be supported to avoid the digital divide caused by the limited telecommunications infrastructure in developing countries. However, as the telecommunications infrastructure matures, especially the mobile phone coverage then the strategy should make provision for information and services to be accessed and used through e-services and digital channels, wherever appropriate.
- Policy and service delivery programs should be increasingly co-designed and co-produced. Citizens and businesses should be consulted and involved in the design and production of policy and service delivery programs, where appropriate. This is critical to long-term success and solutions need to be sensitive to marginalised populations.
- Information should be shared, open and managed as an asset, within the constraints of security and privacy. Information and data should be shared across government and with citizens, within the constraints of privacy, to support integrated service delivery, better decision making and innovation. This interoperability should be enabled through the adoption of technical, data and business standards. Information sharing should be subject to privacy, security and other statutory obligations. Data should be made available in open, machine-readable formats. Information and data should be managed as an asset of the State with clear accountabilities.
- ICT-enabled projects should be staged and focused on managing risks and delivering business benefits earlier. FFP projects have significant ICT requirements and should be designed, delivered and measured based on clearly articulated business benefits with accountability, clearly defined and allocated at appropriate management levels. Large projects should be broken into smaller, more manageable stages to improve delivery timelines and reduce the risk of project failure. The starting point should be the Minimum Viable Product.
- Competition should be promoted to drive efficiency and innovation in ICT systems and services. Market mechanisms should be used to drive efficiency and innovation in ICT systems and services.

Shorter contract terms and open standards should be favoured to increase competition and guard against technology lock-in or single vendors securing a disproportionately high share of business.

- ICT services should take advantage of industry capabilities. The market's capability to deliver value for money and innovative solutions that improve the delivery of government services should be analysed. When outsourcing services then commercial off-the-shelf software (COTS) should be adopted where possible. Components should be re-used through open APIs. Stakeholders and industry should be engaged early, focusing on business outcomes and adapting processes to avoid customisation.
- ICT systems should be interoperable, modular and reusable. ICT systems should be designed and upgraded to encourage reuse and interoperability. Solutions should be re-used and shared, and joint procurement projects across government adopted where requirements are closely aligned. For example, FFP valuation and spatial planning.
- Technology should be trialled and adopted to promote better outcomes. Technology should be trialled to explore options and take advantage of new technologies at lower risk. Trials should use COTS or hybrid solutions, wherever possible. This will allow service design and delivery to be innovative.
- Build trust and confidence. Public trust and confidence should be built through maintaining the privacy and security of information. This will underpin the ability to use digital channels.
- Simplify by design. Complexity, fragmentation and duplication should be removed and business processes re-engineered end-to-end.
- Guided by the overall government policy in ICT. The ICT strategy for FFP land administration cannot be developed in isolation from the rest of government. The ICT strategy should be guided by the overall government policy in ICT. This will most likely be informed by the government's strategy for Digital Society, e-Governance and adopted principles of Open Government. The government may also have mandated ICT standards and ICT infrastructure, e.g. data centres with disaster recovery capabilities, for use across government to encourage use of shared resources.

The profile and governance of the ICT Department should be at the highest level within the land administration institution to ensure the maximum benefits of ICT to the business. Therefore, it is recommended that the Chief Information Officer (CIO) should sit on the board of the institution. There must be clear responsibilities for managing the ICT components across the organisation. The ICT Department should be responsible for the ICT systems and corresponding infrastructure, including the telecommunications infrastructure. The business must be responsible for the data and the associated

business processes. However, where e-government services involve intra-government co-operation then ownership of these business processes may well be with other parts of government.

The ICT Department needs to establish end user support with each of the ICT suppliers. The technical support procedures should be built into the Service Level Agreements with the ICT suppliers. A Help Desk will also need to be established to support external customers using information services. Maintenance of hardware, software and network services need to be established with the suppliers through Service Level Agreements with strict performance criteria that can be monitored.

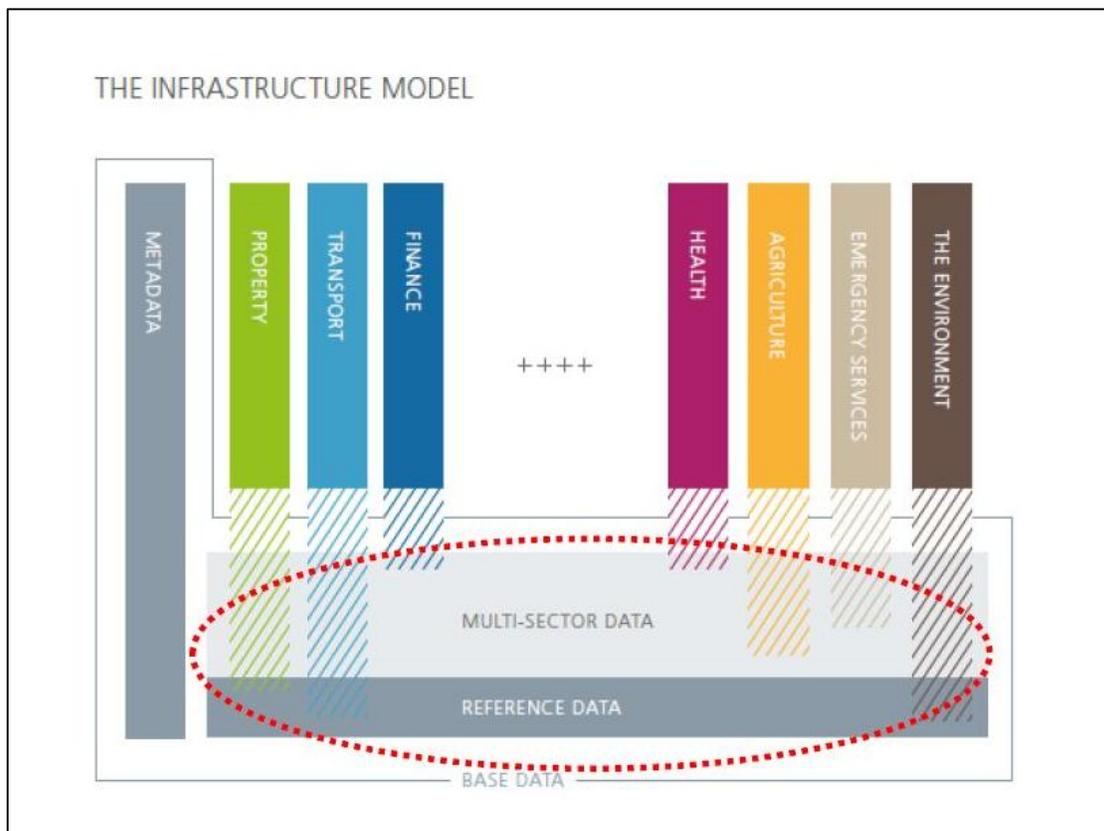


Figure 6. Illustration of a National Spatial Data Infrastructure (NSDI). Source: http://www.lmi.is/wp-content/uploads/2012/05/INSPIRE_Iceland_March2012.pdf

Too often, investments in ICT are isolated within projects and do not consider the possibility of the wider sharing and re-use of the resources. This narrow perspective has led, for example, to multiple purchases of the same remote sensing imagery by different agencies and the generation of multiple base maps with varying specifications. Apart from the simple collaboration approach, the adoption of interoperability standards and web services is promoting the implementation of shared services leading to the creation of National Spatial Data Infrastructures (NSDI) – see Figure 6. An NSDI connects people to geospatial

information services to make better-informed decisions. This approach allows different agencies to access and use the same geospatial information, reducing the initial and continuing maintenance costs.

When designing the organisational structure and capacity of the ICT Department, the government's operating model should be accessed. It is much better to access specialist ICT resources when needed rather than directly employing them, which is normally problematic due to salary differentials between the public and private sectors. This approach will reduce the problems of hiring and retaining ICT specialists that have high market value.

The implementation of ICT solutions to support FFP land administration will require extensions to the legal and regulatory framework to accommodate e-signatures, e-conveyancing, and information privacy, for example. Monitoring and Evaluation. The ICT Department's performance should be monitored and evaluated through a number of Key Performance Indicators (KPIs). These KPIs, e.g. percentage time availability of services, response times of support desks, and customer satisfaction, should be encapsulated into a Service Level Agreement between the ICT Department and the ICT business users.

The target enterprise architecture to be adopted should be the Service Oriented Architecture (SOA). SOA is a software design and software architecture design pattern based on distinct pieces of software providing application functionality as services to other applications. This is known as service-orientation. It is independent of any vendor, product or technology. A typical SOA is illustrated in Figure 7.

A service is a self-contained unit of functionality, such as retrieving a land transaction statement. Services can be combined by other software applications to provide the complete functionality of a large software application. SOA makes it easy for computers connected over a network to cooperate.

All existing paper (scanned) and electronic records should be archived using international standard on records management under a clear archiving strategy. It is recommended that new paper-based applications should be scanned upon receipt so that many users can access the applications simultaneously to speed up processing. The Open Archival Information System (or OAIS) reference model, ISO 14721:2003 for structuring and operating archives, is an International Standard and should be adopted (ISO, 2012a).

Data custodians should continuously monitor and assess data quality, to support the creation and implementation of a strategy for data quality improvement, where appropriate.

In order to assure an easy and adaptable interoperability layer with other stakeholders, the data model chosen for the FFP Land Administration system should be based on (ISO 19152:2012) – Land Administration Domain Model (ISO, 2012b).

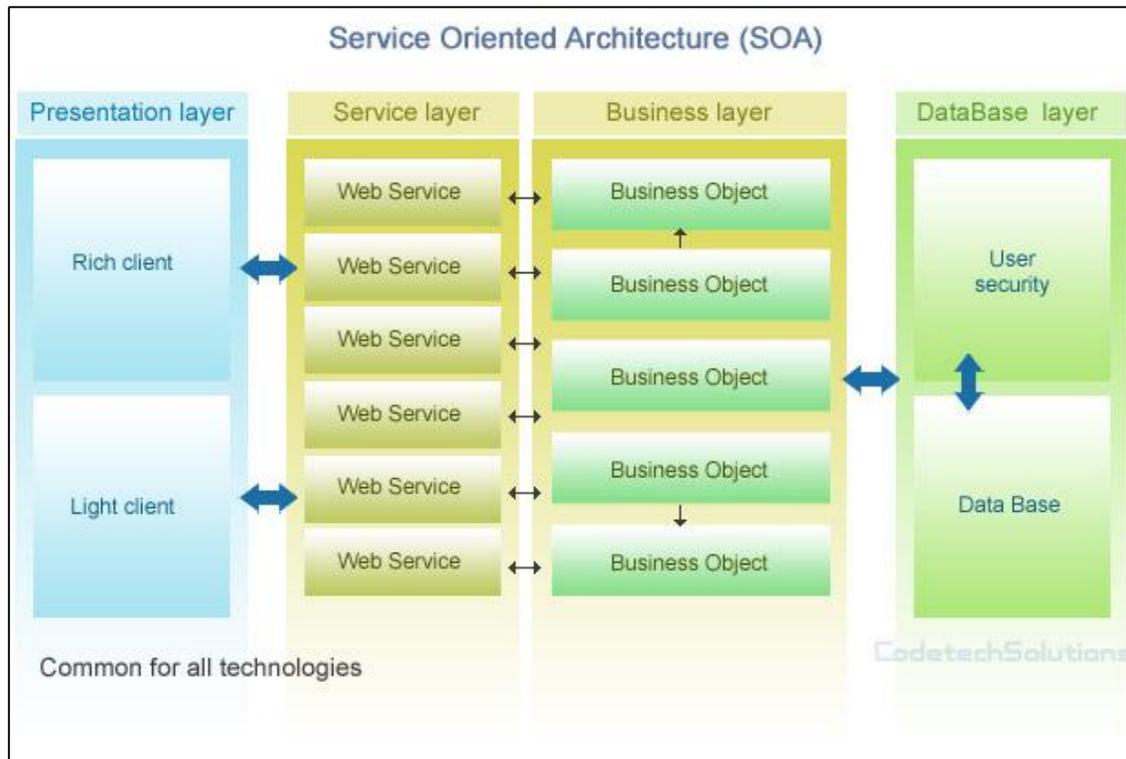


Figure 7. Typical Service oriented Architecture. Source: <http://www.codetechsolutions.com/SiteAssets/soa.jpg>

Business continuity and data resilience must be robustly supported. This will include the use of a business continuity centre and a disaster recovery centre that can be ideally shared across government.

Although transparency and ease of access to the evidence of land rights data is a key principle of the FFP approach, solutions need to be extremely sensitive to privacy needs of their users. Access to open land information prior to receiving security of tenure can potentially empower the wrong people, leading to land grabbing and corruption. The disclosure of natural resources associated with indigenous people, for example, may precipitate unwanted exploitation. Privacy and associated trust are key success factors and robust security management must be put in place.

Projects should increasingly consider the use of an “open” approach to technology-enabled international development, adopting and expanding existing open standards. Some software solution providers, although

providing proprietary solutions, are supporting more flexible and cost effective licensing agreements for large organisations. In addition, they are also supporting open platforms using technology standards and industry standards.

The decision to adopt a strategy to develop ICT solutions in-house, rather than outsource to the private sector, must consider the total cost of ownership and sustainability of the ICT solutions.

CONCLUDING REMARKS

This paper presented some guiding principles for building of the FFP approach at country level. Implementation of a FFP approach in land administration is strongly related to the recognition of the continuum of land rights. Implementation of the FFP approach means to recognise, record and review land rights.

The functionality of the Social Tenure Domain Model (a specialization of the Land Administration Domain Model) allows modelling and managing the complex social tenure relationships between people and land found within legitimate rights.

Implementation of a FFP approach at scale requires a ICT approach based on a strategy.

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