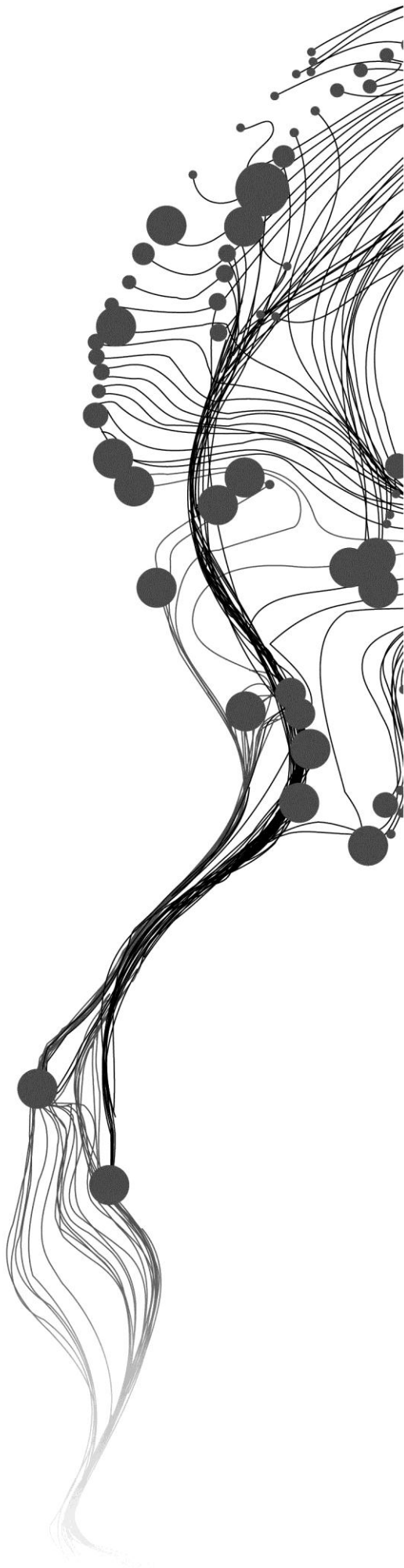


**MOBILE LAND SERVICES –
CHALLENGE OR SOLUTION FOR
THE LAND ADMINISTRATION
(A case of Larasita in Indonesia)**

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February, 2013

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DISCLAIMER

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ABSTRACT

Land services are related to one or more organizations/individuals as actors. The increasing number of land dispute indicates of weak governance and weak governance is caused by fragmented institutional arrangement between actors. Hence, intervention to the institutions could improve the quality of the land registration and strengthen the existing mobile land services at community level. The main objective of this research is to identify the requirements of institutional changes in the context of mobile land service by establishing the governance network.

This research uses three methods, the desk research together with case study method and modelling. Desk research is adopted to get information on policy issues in governance issues in existing land services. To gain insight and understandings of phenomena of mobile land service, single case is taken in Indonesia since this country is the country that innovates the mobile land service. The modelling approach in this research means to model the institution and actors and the relationships among their roles and responsibilities on land services based on governance requirement. Prototyping is conducted to demonstrate the feasibility of the proposal models.

An assessment framework is developed to measure the current situation in order to identify what intervention used for establishing the governance network. The questions of interview are designed based on the variables of indicators of the assessment framework. The assessment shows that the roles of actors are clear, but more likely for their own interest. The governance between actors is not clearly defined because the actors act independently. There is no mechanism of connecting land use from spatial plan to land ownership data. On the other hand, the improper record system of reference letter in the village office leads them to produce reference letter more than once for same parcel. Based on the interview, duplication of reference letter is one of the causes of land dispute. The evaluation results governance requirement of the collaboration of actors by establishing reference letter database, developing mobile land services LIS that connects to other actors, and the necessity to form regulation that support the collaboration.

A new LIS is designed to establish the network of actors using spatial hierarchy concept. This concept enhances connection of spatial components from different processes. The proposed LIS connects land use plan policy from district level into land ownership information in the parcel level. It also enables mobile land services to check the validity of reference letter submitted by the citizen to village office database. Hence, mobile land services is able to provide the informations of land parcel from other actors.

Finally, this research concludes that governance requirement of collaboration changes the institutional arrangement in mobile land services. By definition, governance network sets independent actors to interact through negotiations within rules and norms. In the proposed LIS, spatial hierarchy concept translates the roles of independent actors from different processes to collaborate within new rules of mobile land services.

Key words: Mobile land services, governance network, spatial hierarchy

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ABBREVIATION

BPN/NLA	: Badan Pertanahan Nasional/National Land Agency
HGU	: Hak Guna Usaha (Right to Cultivate)
ICT	: Information Communication Technologies
LIS	: Land Information System
LMPDP	: Land Management and Policy Development Program
KBHP	: Kawasan Budidaya Hutan Produksi (Production Forest Zone)
KBHPT	: Kawasan Budidaya Hutan Produksi Terbatas (Limited Production Forest Zone)
KBPLB	: Kawasan Budidaya Pertanian Lahan Basah (Wetlands Agriculture Zone)
KBPLK	: Kawasan Budidaya Pertanian Lahan Kering (Drylands agriculture zone)
KBTTP	: Kawasan Budidaya Tahunan Tanaman Perkebunan (Annual Crops Plantation)
KL	: Kawasan Lindung (Conservation Zone)
KKP	: Komputerisasi Kantor Pertanahan (Land Office Computerization)
MPLS	: Multiprotocol Label Switching
PRONA	: Program Agraria Nasional (Agrarian National Program)
PRODA	: Program Agraria Daerah (Agrarian Regional Program)
SKT	: Surat Keterangan Tanah (Reference Letter)
SPOPP	: Standar Prosedur Operasi Pengaturan dan Pelayanan (Standard Operating Procedure of Services)
THR	: Tanaman Hutan Rakyat (Community Forest)
UML	: Unified Modelling Language

1. INTRODUCTION

1.1. Background

The concept of ‘government’ from the Anglo-American political theory is shifting into the concept of ‘governance’ (Stoker, 2002). The responsibility of the government no longer lies on the formal and institutional processes to maintain public order and facilitate collective action, but also “coping with public issues and the contribution that other actors may make” (Graham et al., 2003). The acceptance of governance concept has progressed from scientific publications in the early 80s to widespread adopting in defining public management strategies in the 21st century (Graham et al., 2003). Stoker (2002), Graham et al.(2003), Palmer et al. (2009) and World Bank (2012) state that there are different actors and institutions or groups with different interests involved in the process of governing. Governing is therefore the activity of aligning interests at the interface (or political and societal arena) where actors and institutions meet each other.

The governing over land requires first of all reliable information about the actors and interests on land. Bennett et al. (2008) state that land information system which is primarily based on the description of either boundaries or legal rights of conflicting interests should achieve sustainable land governance objectives. One way to do is to establish the land object as a primary layer of similar characteristic in all land relations. This not only enhances to the description of spatial properties, but also allows the linkage, comparison and classification of all legal interests in land. In other words, the adoption of the land object layer can help to develop a shared understanding of property interests and the actors roles more effectively.

A central theme in the conceptualization of the land object is ‘spatial hierarchy’. This term was introduced by Molenaar (1998). It refers to connect the legislated hierarchies and interests over land of different levels of government and governance to spatial object classes, i.e. different classes in the class diagram and shows the hierarchy in every class where land parcels are in the lowest level. This conceptualization is useful, because it helps to understand the spatial complications of aggregating, up scaling and downscaling of data (such as local parcel maps to regional land use maps), and the institutional complications of shared and fragmented responsibilities and accountabilities simultaneously.

Land objects and services are related to one or more organizations/individuals as actors. A mandate assigned to a single organization is not sufficient to achieve the principles of good governance (such as transparency, public participation, accountability, effectiveness and efficient in public administration) for land administration services. Palmer et al. (2009) suggests that governance concept that emphasizes a set of institutions and actors that are beyond the government activities is needed for better effectiveness of land services. The effectiveness usually comes with the well-managed participation of a variety of actors and timely access to data needed and accountability in the processes of transparent land administration services.

For the case of Indonesia, the National Land Agency (BPN) of Republic of Indonesia is the national organization responsible for land governance in the entire country. As part of this mandate BPN recently launched a mobile land service program (so called Larasita) in 2006 to improve their land services and administration processes with local incentives. It acts as a front office of the land office. The objective of this mobile land office is to enhance land registration processes and to accelerate people access to register their land by bringing the land agency closer to the citizen. This innovation is changing paradigm in land administration (World Bank, 2010). The old paradigm of front office where citizen comes to land office to get land service is now changing into new paradigm where Larasita acts as a front office regularly visiting the citizen itself. Since it is of mobile nature, the program works well in remote areas provided there is a good wireless connection with land offices, and where the social-economic conditions of the citizens are low and community requests are available (Kepala Badan Pertanahan Nasional Republik Indonesia, 2009).

BPN indicates that improving land services enhances public trust to their system (Agrarini, 2011). It felt so because the process and the procedures in land offices are often complicated and time consuming, and people prefer to use brokerage system which makes costly and resulted the loss of people's trust to BPN. To overcome this issue, the land services have been improved by simplifying the procedures and limiting opportunities for brokerage system by launching mass legalization of private asset programs such as Larasita, PRONA (Agrarian National Program), PRODA (Agrarian Regional Program), and LMPDP (Land Management and Policy Development Program). PRONA, PRODA and LMPDP are systematic land adjudication programs based on different funding mechanisms. PRONA is funded by the state, while PRODA is funded by the local government and LMPDP is funded by the World Bank. These programs succeeded to accelerate the land registration program, because the number of published land certificates are sharply increased (World Bank, 2010).

However, the increasing number of parcel registered is followed by increased number of land disputes. Since 2007, the number of land disputes reaches 7.491 cases covering almost 608 thousand hectares of land (Basuki, 2010). Another publication in the local newspaper states that until June 2011, 13.000 cases of land disputes were not solved yet (Astria, 2011).

Research indicates that the causes of disputes over land are mainly administrative and largely related to land use aspects (Hutabarat, 2011). Administratively, the quality of the documents used as the base of the issuance of the land rights certificate is low and the validity of the documents is not guaranteed. The required documents to issue the land rights come from the local government in different levels. For example, to issue a freehold title (Hak Milik) the citizen needs to go to the *village* office and sub-district office in order to get a reference letter (SKT/Sporadik) which is signed by head of village and head of sub-district. To issue the Right of cultivation certificate (HGU), a citizen or a corporation needs to apply for site permits from the regent which is based on the local spatial plans. In land use aspect, the land disputes usually caused by the poor implementation of spatial plan, especially related to the process of land use conversion of forest area into agricultural land or agricultural land into peri-urban. The conversion process is not transparent and does not involving different actors and institutions particularly the local community.

In principle, the land registrar in the land office (and in the mobile land services) has to accept the complete documents submitted by the applicant, yet does not have the mandate to check the validity of the documents produced by the local government. This situation shows the large fragmentation of institutional arrangement in the land service. World Bank states that fragmented institutional arrangement

in land service between actors leads to weak governance and weak governance causes land disputes (FAO, 2007). The weak governance in the land service between actors (BPN and the local government) indicates condition of unsustainable of either practices, policy, institutional weakness or combination of them.

1.2. Research Problem

I posit in my research that currently in the land sector the actors operate autonomously. The actors include BPN and local government agencies (district, sub-district and village respectively). Administratively, these actors contribute in the land registration process by producing the documents needed as a base of the issuance of land rights. Land dispute are caused by low quality and unguaranteed documents. In land use aspect, the poor implementation of spatial plan also causes land disputes. The fragmented institutional arrangement between actors in land sector leads to weak land governance.

Considering the weak governance issue in the registration process, institutional change is needed. Intervention to the institutions by establishing *governance network* in Larasita could improve the quality of the land registration and strengthen the existing Larasita services at community level. *Governance network* is a set of independent actors in the central, regional and community level who interact through negotiations and take place within relatively institutionalized framework of plan interpreted by rules, norms, and knowledge (Sorensen et al., 2005). The governance network theory needs a tool to be implemented in order to make relation between actors and to connect them.

The tool which can be used to achieve simultaneous institutional complications of shared and fragmented responsibilities and accountabilities from the establishment of governance network is by using the concept of ‘spatial hierarchy’. This concept connects the legislated hierarchies and interests over land of different levels of government and governance to spatial object classes. An example of links between spatial objects at different levels in aggregation hierarchy in Figure 1:

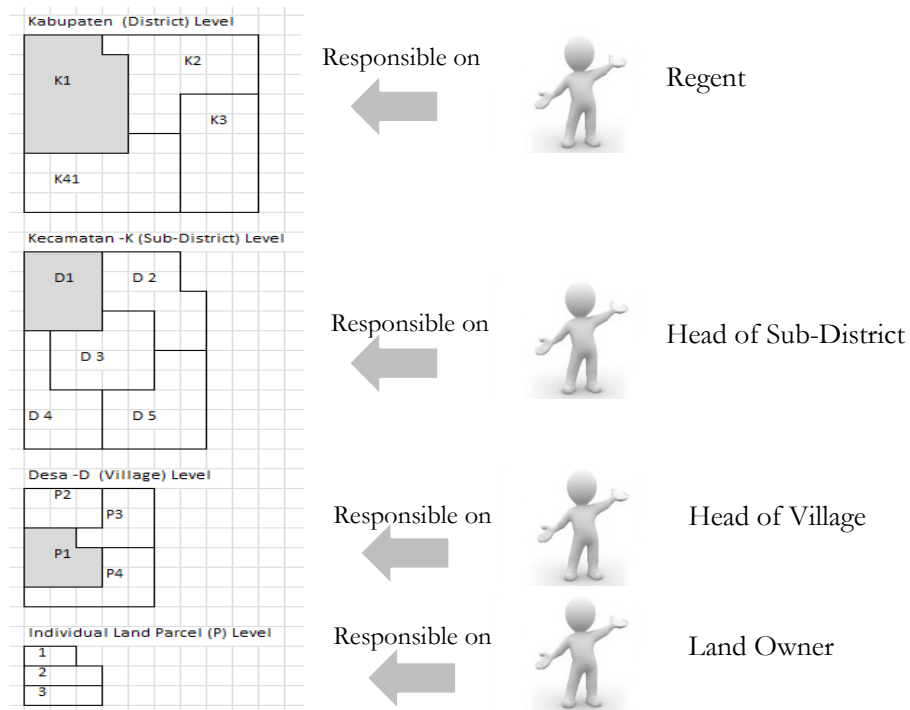


Figure 1. Hierarchy of links between spatial objects and administrators at different levels (Adapted from Molenaar (1998))

According to the Law on Local Government, the local government hierarchy consists of governor, regent, or mayor, head of sub-district and head of village (President of the Republic of Indonesia, 2004). These actors are spatially responsible for a province, a district, a sub-district, and a village, respectively.

In the land sector, the governor and regent are responsible to provide permits (company recommendation permits, site permits, and construction permits), to acquire land for public purposes (land acquisition), to give compensation, and responsible for the spatial plan (President of the Republic of Indonesia, 2007). In the lower level, head of village is responsible to provide statement letter on the status of the land, the subject, the location and the boundaries for land registration. This letter is strengthened by the head of sub-district confirming the contents of the information about the land (Hardianingsih, 2006).

Land owner are responsible for their land parcels. They hold a set of rights over their land in some form of entitlement provided by the land office (and mobile land service) and it is respected by another party. On the other hand, a mandate to control community's behaviour in relation to land is given to the local government. For example restriction to build more than two stories house in the area near the airport or higher than a coconut tree in a tourist area. These kinds of restrictions are regulated by the local government in the spatial plan but it is not described in the land certificate. The governance network in land sector is low managed and spatial data between them are not linked.

Up till now, there is no research on how to apply governance network on mobile land service, especially to strengthen the service using spatial hierarchy concept. The relationship between mobile land service, institutions, the spatial hierarchy, and the current gap between them is in Figure 2:

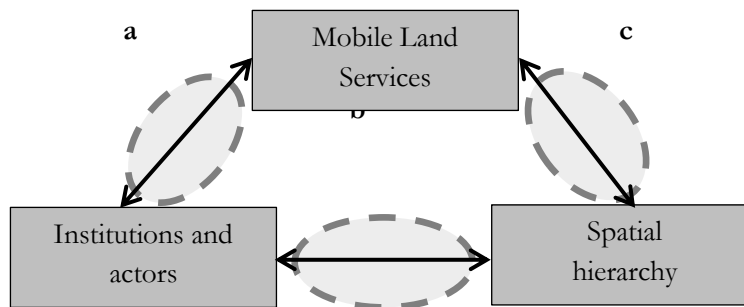


Figure 2. Research concept

Currently mobile land service, the institutions and actors, and the spatial hierarchy concept are standing alone. Their systems are fragmented and not linked each other. There are three issues can be brought to the concept of the research represented by the ellipses in the Figure 2 : a) the roles of institutions and actors in the mobile land service, b) the legislated hierarchies and interests over land of different levels of institution and actors to spatial hierarchy, and c) how the spatial hierarchy strengthen the mobile land service.

This research is necessary to filling the gap and adding the knowledge of institutional change into the area of mobile land service by establishing the governance network. The establishment of governance network is achieved by linking and connecting the mobile land services, the institutions and actors, and the spatial hierarchy concept.

1.3. Research Objectives

The main objective of this research is to identify the requirements of institutional changes in the context of mobile land service by establishing the governance network through spatial hierarchy.

The specific objectives are:

1. To describe an assessment framework on mobile land service;
2. To conduct an evaluation on a case study of mobile land service;
3. To redesign the spatial processes of mobile land service.

1.4. Research Questions

Based on the objectives, research questions are also carried out to achieve each objective.

Sub Objective 1: *to describe an assessment framework on mobile land service*

- What is a governance assessment framework?
- Which framework is appropriate to assess and evaluates mobile land services?
- What are the indicators to do assessment on the institutions and actors?

Sub Objective 2: *to conduct an evaluation on a case study of Larasita*

- How does the legal framework of Larasita specify the roles of actors?
- Who are the potential actors who could be involved in the land registration process of Larasita?
- What is the contribution of Larasita to minimize land disputes?

Sub Objective 3: *to redesign the spatial processes of mobile land service*

- Which new spatial process to be introduced?
- What are the requirements of the process?
- How to introduce the new spatial process?
- How to implement the new spatial process?

1.5. Research Method

For this research, the desk research together with case study method and modelling is used.

a) Desk research

Desk research is totally based on literature review. This method is adopted to get information on policy issues in governance issues in existing land services. This approach is elaborated in the step 1 of section 1.6.

b) Case Study Approach

(Yin, 2008) states the case study research is used to probe deeply and intensively to gain insight and understandings of phenomena that are new, not-understood, or unexamined. He also states that it can be used to test theory or build theory, incorporate random or purposive sampling, and include quantitative and qualitative data. For this thesis single case is taken in Indonesia since this country is the country that innovates the mobile land service. Step 2 of section 1.6 describes this method.

c) Modelling and prototyping

Modeling is typically consists of two parts: the representations of entities of interest, and the representations of relationships among the entities (Beraha et al., 1999). Modelling here in this research means to model the institution and actors in the Banjar and the relationships among their roles and

responsibilities on land services. To demonstrate the feasibility of the proposal, a prototype is developed by using a database system.

1.6. Research Design

The research is carried out through each step of process in Figure 3:

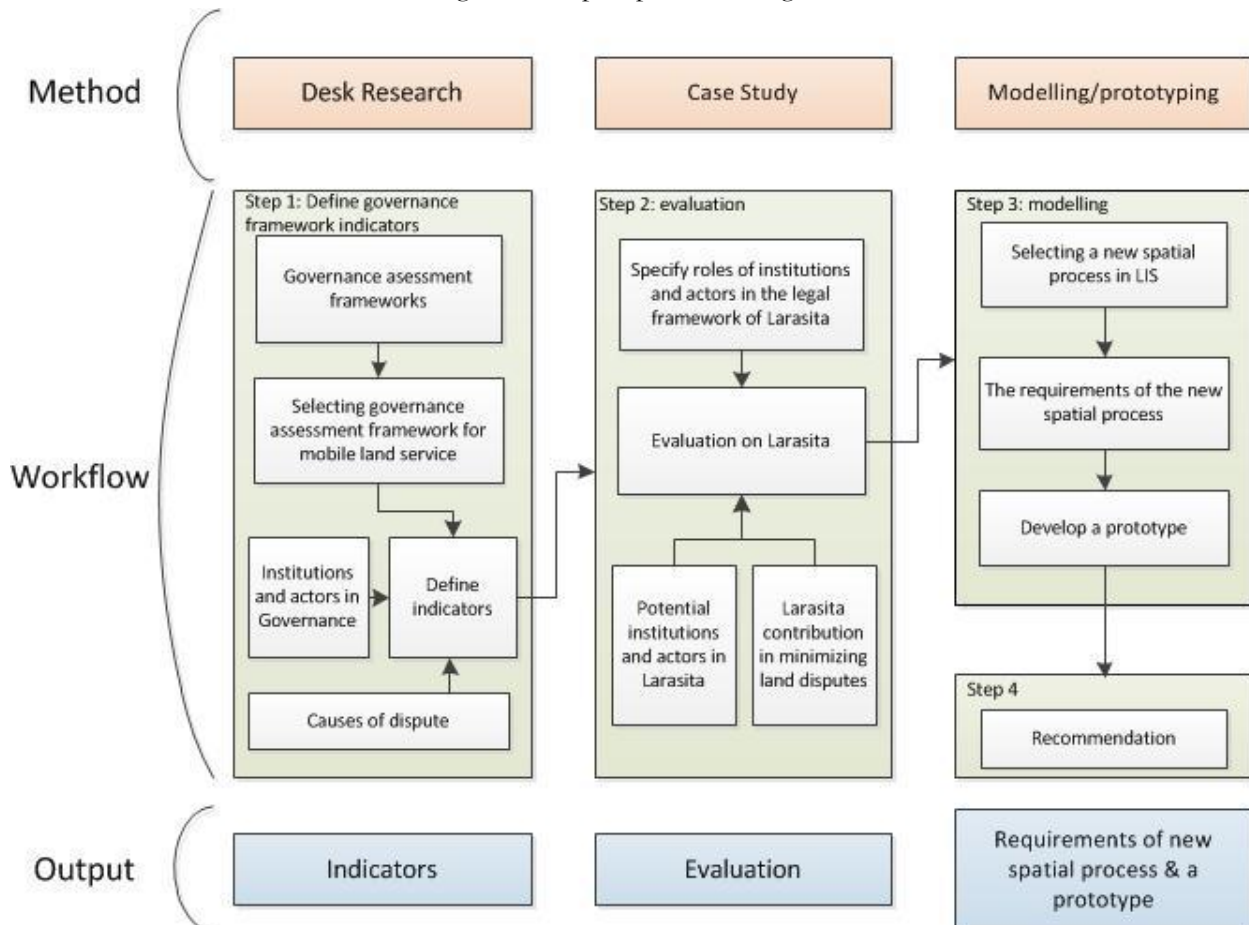


Figure 3. Research flowchart

Step 1. To find out the indicators of governance assessment framework to evaluate mobile land service. Literature review is carried out on relevant papers and publications related to governance and governance assessment framework. The review is started with the definition and the principles of good governance from various organization. Which principles are most important and relevant for this research. Afterwards, the governance assessment framework is discussed. What is the importance to do assessment on governance. Reviewing governance assessment frameworks by experiences is also done to learn the approaches of evaluation and to learn some lesson from the countries assessed by the framework, especially related to institution and actor and the causes of land dispute. By comparing and selecting the relevant principles of various organizations and lesson learned from the experiences of governance assessment frameworks, the framework for mobile land office with its indicators is developed. The result of step 1 is a set of indicators which will be used to do assessment for step 2.

Step 2. To apply the evaluation framework in the case of Larasita. A fieldwork is carried out with a case of Larasita in Indonesia to identify the current and the new potential institutions and actors, and the legal framework of Larasita. Data are collected by using structured

interviews to get information about the current situation of institutions, actors and legal framework of Larasita. Open discussion is done to get the input on what could be the contribution of Larasita to minimize land disputes.

In this step, the result is the evaluation of Larasita by using the indicators resulted from step 1. The evaluation will be used to define what intervention to the governance network in order to improve the quality of the system.

Step 3. To apply the result of empirical analysis of evaluation to redesign a new spatial process.

The spatial hierarchy concept is used in this step. The hierarchy of different actors which has responsibility in a certain area. The hierarchy is illustrated into a modelling language. Unified Modelling Language (UML) is used to represent the complexity of the system. Use case diagram is used to model the element of the land registration system, the actors, the use cases and the relationships such as associations and dependencies among these elements. From that, classes, objects and their relationship are defined by using class diagrams. The next stage is to conduct a prototyping of an initial land registration with the proposal of new processes and structures.

Step 4. To give recommendation.

Based on the prototyping result, suggestions and recommendation for the actors and institutions is given to improve the land services.

1.7. Resources needed

Software is used to redesign a model of spatial process, to create geo-database and visualize the result.

Some softwares which are used:

- ArcGIS, to produce map for visualization and interpretation
- UML by using Architecture Enterprise, to visualize and control the system's architecture

During the fieldwork and data collection, the resources needed to collect data are:

- Tape recorder
- Camera
- Computer
- GPS

1.8. Thesis Structure

Chapter 1: Introduction

This chapter captures the basis of this research. It presents the Introduction, Literature Review, Research Problem, Research Objectives, Research Questions, and Research Design.

Chapter 2: Developing Assessment Framework

This chapter describes the theoretical concepts of this research. The core areas of literature review are good governance principles, available governance assessment frameworks and developing the assessment framework for mobile land services.

Chapter 3: Research Methods and Data Collection

This chapter presents the case with which to evaluate the conceptual model of chapter 2. It elaborates the legal framework of Larasita, the technical framework, and the actors involved in the Larasita service.

Chapter 4: Evaluation and Discussion

This chapter provides the results of evaluation by using the assessment framework developed in the chapter 2. The result leads to the requirements for redesigning the spatial process.

Chapter 5: Redesign the Land Information System (LIS)

This chapter describe the modelling and prototyping of the new LIS based on the governance requirement. The spatial hierarchy concept is a constructive idea behind the designing process.

Chapter 6: Conclusion and Recommendation

This chapter contains the main findings, gives recommendation to the Larasita and further research work in the subject area.

2. DEVELOPING ASSESSMENT FRAMEWORK

2.1. Introduction

The previous chapter is an explanation of this research which includes justification, problem, objectives and questions. This chapter presents the theoretical background of the study by reviewing assessment frameworks on governance and develops an assessment. Basically, this chapter deals for the second sub-objective of the research “to describe an assessment framework on mobile land service” as laid down in section 1.3 of chapter 1.

The method to develop the assessment framework of mobile land services is by reviewing the governance principles to select the relevant element of assessment and reviewing the governance assessment framework experiences to come up with the approach of evaluation. The method to develop the assessment framework to evaluate Larasita is described in the figure 4.

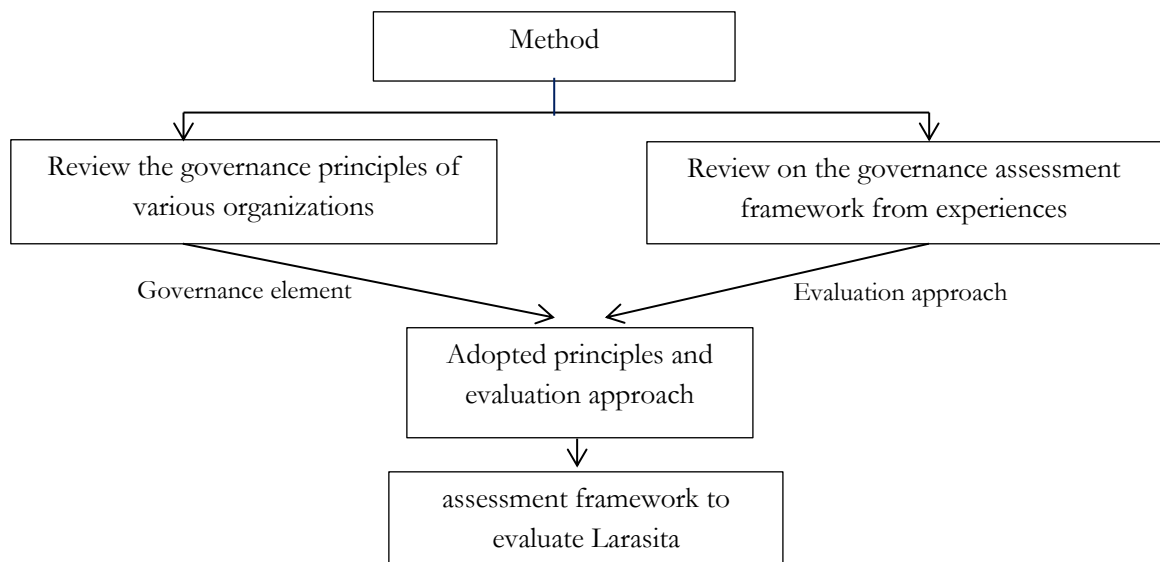


Figure 4. The method of developing assessment framework for mobile land services

Governance assessment framework is discussed to understand how to measure the quality of the system. This starts with elaborating the definition of governance and governance assessment framework in section 2.2 to answer research questions of “What is governance assessment frameworks?”.

The section 2.3 then provides the comparison of governance principles from various organizations. Section 2.4 discusses governance assessment frameworks by various international experiences to understand how evaluation on governance were done. Chapter 2.5 elaborates the adapted principles and evaluation level for this research. The framework for evaluating the mobile land service is discussed in the section 2.6. To answer research questions of “Which framework is appropriate to assess and evaluate mobile land services and what the indicators are for the assessment on the institutions and actors?”. Finally section 2.7 concludes with summary of the chapter.

2.2. Definition of Governance

When Kofi Annan, the previous UN Secretary-General stated that good governance is perhaps the single most important factor in eradicating poverty and promoting development (Graham et al., 2003; Siddiqi et al., 2009), the concept of governance became matter. Why it is matter? Because the presence of good governance practices clarifies the role of authority, simplifies decision-making, and ensures people and organizations are accountable for their actions and decisions (The Institute on Governance) and to understand the role of government in coping with public issues and the contribution that other players may make (Graham et al., 2003).

In land sector, good governance is important to sustainable development both in terms of operational longevity, equitable stakeholder participation and benefits, and consistency in law and policy implementation (Tony Burns et al., 2008). Burns (2008) also states that land sector often perceived as one of the most corrupt sectors in public administration and the deficient of land governance tends to be characterized by the high level of corruption, as evident around the world (Transparency International, 2011).

To improve the quality of a system, we need to measure it. If one cannot measure it, one cannot improve it as Lord Kelvin statement in Kaplan (2008). Kaplan (2008) also describes that measurement is fundamental to improve the management. Mechanism to evaluate, measure and monitor the progress towards governance today and in the future is governance assessments (Democratic Governance Group, 2011). From the definition and how the publications used the term of assessment, this research uses the term of assessment, evaluation and measurement interchangeably.

The evaluation result is used to decide what kind of intervention to establish the governance network from the existing situation. Whether the intervention to the actors in the different levels, or changing the rules, norms or knowledge.

2.3. Comparison on governance principles adopted by various organizations

Many organizations develop their own framework for assessment. Up to now there is no framework that internationally standardized nor accepted (Bandeira et al., 2010). Because the cultural and social context of the country in which they are operating, making them distinctly different are difficult to compare with each other (Stuedler et al., 2004). In this research I assume that governance principles as basis of assessment. Table 1 describes principles which are adopted by various international organizations.

FAO (FAO, 2007)	UNDP (IFAD, 2009)	WGI (Daniel Kaufmann et al.)	UN-Habitat (Christine Auclair et al., 2009)
<ul style="list-style-type: none"> • Accountability • Effectiveness and Efficient • Participation • Equitable • Security and Stability • Legitimate • Consistent, Predictable and Impartial • Transparent • Dedicated to integrity • Responsive • Sustainable 	<ul style="list-style-type: none"> • Accountability • Effectiveness and Efficient • Participatory • Equitable • Transparent • Responsive • Consensus orientation • Strategic Vision • Rule of law 	<ul style="list-style-type: none"> • Accountability • Effectiveness and Efficient • Political stability and absence of violence • Regulatory Quality • Control of corruption • Rule of law 	<ul style="list-style-type: none"> • Accountability • Effectiveness and Efficient • Equitable • Security and Stability • Transparent • Sustainable • Subsidiarity • Civic engagement

Table 1. different governance principles of various organizations

Table 1 shows how the four international organizations used the principles of good governance in adopting governance. It indicates that the principle of “participation” of FAO and UNDP overlaps with principles of “civic engagement” of UN-Habitat. These organizations use the same definition which are participation, contribution and empower to decision making. Another example is the principle of “Political stability and absence of violence” of WGI which has the similar definition with the principle of “Provides Security and Stability” of FAO and UN-Habitat. This perhaps because each organization develops their own perception upon these principles to fit their own specific objectives. For example governance principles of WGI of World Bank and UNDP are executed for their project countries or good governance principles UN-Habitat are geared towards the realization of improved human condition in the urban environment. On the other hand, governance principles of FAO are focused on the “best practise” of the land tenure aspect and administration to improve good governance by improving access to land and other natural resources and increasing tenure security.

The characteristics of principles described in Table 1 are interrelated, mutually reinforced and do not stand alone. Access to information to all means transparency, broader participation and effectiveness. Participation leads to exchange of information and contributes to effective decision making. Institutions and organizations should be transparent and function according to the rule of law to be equitable to all (Basnet, 2012).

The main objective of this research is focused on establishing the governance network. Due to that, the assessment framework for mobile land services is related to the institutions and actors, and the relations between them. Adapted principles for the assessment framework are equity, accountability, effectiveness and efficient, participation, and transparent. These principles are considered the most important and relevant to use to assess mobile land service.

2.4. Governance assessment frameworks by various experiences

The performance of land administration systems are currently being evaluated by different international organizations, national aid agencies as well as land administration agencies themselves in order to assess the systems for planning, sponsoring, or carrying out reform projects. There is, however, no internationally accepted or standardized method for evaluation and the evaluation depends very much on the organization itself that carries out the evaluation, its agenda, its aims, and the commissioned consultants with their professional backgrounds and experiences (Stuedler, 2005).

There are various types of indicators for land administration performance measurement. A framework to assesses the ability/capacity of land administration system is conducted by FAO and FIG (Stig Enemark et al., 2008). The ‘Land Governance Assessment Framework’ is one of the most comprehensive frameworks developed recently by prominent scholars (Klaus Deininger et al., 2012). From these assessment frameworks experiences, the approaches of evaluation can be adopted for the assessment framework of mobile land service.

2.4.1. Capacity Assessment in Land Administration

The FIG Guide of Capacity Assessment in Land Administration was initiated and funded by FAO in partnership with FIG. This assessment addresses the ability/capacity of land administration system at the societal and institutional level as well as the individual level in terms of professional competence and human resource development. It is developed to serve as a logical framework for addressing each step in

the process of building adequate land administration system - from land policy, policy instruments, and legal framework; over mandates, business objectives and work processes (Stig Enemark et al., 2008).

The methodology is based on a three approach by addressing firstly the national land policy framework (the societal level), secondly the institutional infrastructure (organizational level) and finally the human resources and competences (the individual level).

The assessment are divided into 3 logical frameworks which poses relevant questions that enable assessment of the capacity needs.

- **Land Policy Framework** (what does LA do), contains questions of what are political objectives relates to land, does it expressed in the land policy, which instruments are used to regulate, does the legal framework legitimate enough, does the legal framework provide transparency, does the planning, development and control of land use also land value well enforced.
- **Institutional Infrastructure** (how is LA organized), contains questions of whether mandates allocated, does the business objectives of the mandated organizations clear and specific, does the work processes of mandates well defined and manageable, does the ICT support the work processes and business objectives, and does the guiding principles of good management clear at all levels.
- **Human Resources and Professional Competence** (who carries out LA), contains questions of does the policy determine the required number of staff and competences, what are the educational and training available and needed to address the capacity needs.

2.4.2. Land Governance Assessment Framework

This Land Governance Assessment Framework (LGAF) is developed by the World Bank in partnership with the FAO and other UN institutions. It is an empirically based and comprehensive framework which provides an important technical input into land governance reform agenda (Klaus Deininger et al., 2010).

The framework has 5 (five) thematic areas as a base for 21 land governance indicators (LGIs). Each indicator relates to a basic principle of land governance and is then broken down into between 2 and 6 dimensions. With this arrangement the LGAF came to a total of about eighty (80) dimensions. The five thematic areas are as follows.

- **Legal and Institutional Framework:** The emphasis here is on recognition of existing rights, enforcement of such at minimal cost, and allows users to exercise them in manner that promotes development.
- **Land Use Planning, Management and Taxation:** The arrangement should be such that is conducive to prevent negative externalities and supports decentralisation.
- **Management of Public Land:** This thematic area emphasises the need for clear identification of state land and management of same in manners that provides public goods cost-effectively. It further discusses the need to use expropriation as the last resort, and in a transparent way.
- **Public Provision of Land Information:** Land information are to be made broadly accessible, comprehensive, reliable, current and at minimal cost.
- **Dispute Resolution and Conflict Management:** The mechanism to resolve all land related dispute must be clearly defined and made accessible to all at low cost.

Causes of Land Dispute in the assessed countries:

- The lack of spatial reference in land information system especially in the peri-urban area (Peru).
- Private conflicts regarding the location of borders, overlapping claims to the same plot (Kyrgyz Republic).
- No clear procedures and rules exist for updating records (Ethiopia).
- The organizations that dealing with land such as the National Land Agency, the National Coordinating Agency for Surveying and Mapping, the Ministry of Agriculture, Ministry of Forestry, tend to perform land registrations and mapping largely for their own interests. The regulations governing first-time registration and land transactions is complex. (Indonesia).

2.4.3. Comparison

To compare the assessment framework of two organizations as describe in the section 2.4.3, the table 2 illustrates the differences and similarities of them. Because this research focuses on the institutions and actors toward governance in the land service and the land dispute, the approaches of the assessment frameworks is also related to that matters.

Issue	LGAF (WB)	Capacity Assessment in LA (FIG and FAO)
Emphasis	All aspect in the LA system, from the legal framework, land use and taxation, public land, land information system and dispute resolution	professional competence and human resource to measure the ability of organizations and individuals to perform functions effectively, efficiently and sustainable
Method of assesment	using country coordinator from the local to lead the assessment, World Bank provides assistance and guidance.	Three stages approach by addressing land policy, policy instruments and legal framework; over mandates, business objectives and work processes; to needed HR and training programs.
Limitation	It needs an iterative process with ample participation by relevant stakeholders. It also requires guidance by an experienced and skilled country coordinator. In addition, provisions need to be made to ensure participation by representatives of public and private sectors, civil society, and academics for objective discussions to take place.	Individual countries has spesific problems that may not be address in the guidelines.
Countries assessed	Peru, Kyrgyz Republic, Tanzania, Ethiopia, Indonesia	No record

Table 2. The approach of assessment frameworks

The approach of each assessment framework is different. The assessments are also has own limitations. I draw the lesson from the countries assessed by LGAF and the method of Capacity Assessment in LA by FIG and FAO and combine them, there are 3 levels that are highlighted and can be adapted to assess mobile land service:

a. Policy level

- The presence of national policy guidelines or laws to clearly define the roles of various levels of government

b. Organizational level

- Clear responsibility of different institutions and actors
- Communication and coordination between institutions by sharing spatial information
- Transparent land information system to public to avoid dispute and conflict
- The process, fee, schedule of land registration are published
- Simple procedure and low cost registration will discourage ‘informal fee’ and encourage participation

c. Individual level

- Enough human resources in terms of quality and quantity

The 3 levels approach from the two assessment frameworks is used to assess mobile land service. The principles of governance such as strategic vision, transparency, participation, strategic vision, accountability, effective and efficient are included in the framework.

2.5. Adapted principles and approach

2.5.1. Aspects and Indicators

As three level of evaluation approach are determined in the earlier section. The aspects/element of evaluation adopted from the good governance principles such as strategic vision, accountability, effectiveness and efficient, participation, and transparency. The indicators are defined from a qualitative analysis of literature for each aspects of evaluation.

Policy Level

- **Strategic vision**

Presence of clear policy helps to improve efficiency and effectiveness and should be created within institutional and legal framework that help to increase welfare and productivity rather than the opposite (Deininger, 2003). Thus, the land registration process is important to be included in a national broader policy framework. Under this issues one tries to find out how the policy is formulated. From the experience, the policy formulated as a bottom-up approach rather than the top-down better incorporates the ground situation.

Organizational Level

The organizational level prepares for different organizational, resource and institutional arrangement. It is very important to evaluate this area because this is the area which defines strategies that finds the way forward to reach and satisfy the objectives and priorities. In this level, the scanning of the environment is done and the strategy is formulated and implemented to meet the overall objectives and this bridges the policy and the individual level.

- **Efficiency and Effectiveness**

Procedures that are taken into consideration during the land registration process of mobile land services is necessary to be simple and short. This is also about how economically the resource has been utilized optimal to get the positive result in order to fulfil the objectives. The fewer the steps, the less opportunity for the informal actions. Effectiveness is maintained if the resources in hand are sensibly utilized to meet the target and if the objectives are met. Effectiveness is achieved if results are made according to the objectives set. This depends on capacity building, financial provision and also on general socio-economic condition, rule of law and political stability (Wael Zakout et al., 2009).

- **Transparency**

The transparency here means there is access to information to promote effective participation by stakeholders and thus not only informs the citizen but develops a trust between the government and citizen. Moreover, transparent system which has clear procedure is empower citizen to participate in the decision making (Shresta, 2009).

- **Participation**

Participation is necessary to encourage within and between cross organizations. All the involved organizations should have clearly defined tasks and methods of co-operation and should communicate with each other. Cooperation and collaboration should be embedded in policies implementation. Public participation is seen in different levels: informative, consultative, co-operative and mobilisation (Shresta, 2009). The government is not individually capable of doing all necessary development work nor the private (Roll et al., 1998). This fosters participation and co-ordination of both sectors, which enhances better production and result. The expertise and capabilities of each other can be shared and utilized and also one can benefit from each other.

Individual Level

- **Accountability**

Accountability ensures that the implementing bodies are responsible and highly sensitive towards the processes. This can be achieved through maintaining uniform service standards that can monitor each and every procedure and the staffs. Integrity and good will is important to make sure that the actors carry out their roles and responsibilities as the mandates given. This aspect is necessary to prevent land dispute and conflict happens. Because mainly land disputes is caused by human. The actors have to think sustainably and not only concern of personal benefit.

- **Resources**

Larasita as a system is supported by technology and human resources. It is important that the supporting tools and personnels are adequate and optimally utilized.

2.6. Framework for assessing mobile land service

Evaluation Level	Aspects/Element	Indicator	Good Practice
Policy	<ul style="list-style-type: none"> Strategic vision 	<ul style="list-style-type: none"> Presence of national policy Modality (top-down/ bottom-up) 	<ul style="list-style-type: none"> The national policy is clear to be implemented by the lower level Bottom-up approach
Organizational	<ul style="list-style-type: none"> Efficiency and Effectiveness 	<ul style="list-style-type: none"> Simplicity and Timeliness Utilized resources 	<ul style="list-style-type: none"> Short and simple procedure Timely completion Best and optimal use of resource
	<ul style="list-style-type: none"> Transparency 	<ul style="list-style-type: none"> Access to information Clear procedure 	<ul style="list-style-type: none"> The citizen can get the information easily The information regarding to the process, fee and time related are clear and well informed
	<ul style="list-style-type: none"> Participation 	<ul style="list-style-type: none"> Participation of related stakeholders Cooperation and coordination 	<ul style="list-style-type: none"> Involved institutions and organizations have clearly defined tasks Involved institutions and organizations co-operate and communicate each other
Individual	<ul style="list-style-type: none"> Accountability 	<ul style="list-style-type: none"> Responsible actors and institution Existence of service standard 	<ul style="list-style-type: none"> Highly responsible staffs Uniform service standard
	<ul style="list-style-type: none"> Resources 	<ul style="list-style-type: none"> IT function Quantity and quality of the personnels 	<ul style="list-style-type: none"> The supporting tools works properly Adequate number of personnel Adequate personnel of different skills

Table 3. Indicators and good practice to assess land registration of mobile land service

2.7. Concluding remarks

This chapter is focused on designing an assessment framework and defines a method which will be used to evaluate land registration system of mobile land service. The assessment framework to evaluate mobile land services is developed by reviewing the good governance principles and two assessment frameworks of LGAF, and Capacity Assessment. The result of the reviews are the evaluation approach and the elements of governance. There are three level to evaluate mobile land services, policy level, organizational level and individual level. The adopted governance principles of transparency, participation, strategic vision, accountability and effective and efficient are the elements that is need to be measured.

Each of the governance elements is measured by using indicators. These indicators are used to evaluate the existing condition of mobile land service in the case study to find out which intervention is used to establish the governance network in the mobile land service.

Based on the indicators, questionnaires is developed and used for the data collection. The methodology of the research and data collection is part of the chapter 3.

3. RESEARCH METHODS AND DATA COLLECTION

3.1. Introduction

The previous chapter is about reviewing literature on the good governance principles and two assessment frameworks from two organizations. The result is a set of indicators to evaluate the mobile land services. This chapter emphasizes on the methodology of research and the methodology of data collection. The research methods are desk research, case study, modelling and prototyping approach. The desk research in section 3.2.1. is focus on reviewing literature to came up with the indicators. The case study research is elaborated in section 3.2.2. It emphasizes on the approaches to collect data for the evaluation. The fieldwork was carried out to get current situations of Larasita and the land services in a study area. Basically, how the data is collected is the focus of this section. The modelling and prototyping approach is described in the section 3.2.3.

3.2. Research Methods

This research uses three kind of methods, desk research, case study, modelling and prototyping. Desk research approach includes the literature review on governance principles and governance assessment frameworks. The case study approach includes study on the present status of Larasita and governance in land service in the study area (district of Banjar-Indonesia). The modelling and prototyping approach specifies the concept of spatial hierarchy in the land registration system.

3.2.1. Desk Research

The method is entirely based on the literature review on the principles of governance and governance assessment framework to develop an assessment framework for evaluating mobile land services.

Good Governance Principles and Governance Assessment Frameworks

The reviews are mainly to find the most important and relevant principles and elements of governance to evaluate mobile land services. The selected principles are defined by comparing on governance principles of various organizations. The issues related to the institution and actors, and the relation between institutions and actors. The approach to do evaluation is adapted from the review of governance assessment frameworks experiences.

Developing indicators

The assessment framework to evaluate mobile land services is developed by reviewing the good governance principles and two assessment frameworks of LGAF, and Capacity Assessment. The result of the reviews are the evaluation approach and the elements of governance. There are three level to evaluate mobile land services, policy level, organizational level and individual level.s. The selected principles are adopted as governance elements that need to be measured in the mobile land services. Based on the governance elements, indicators are developed.

3.2.2. Case Study Approach

Silva et al. (2002) state that in the cadastral reform, this methodology is the most frequently used. This methodology is important to develop of a nuanced view of a reality and where human behaviour can be a simply the rule-governed act at lowest level of learning process (Flyvbjerg, 2006).

In this research, the case is Larasita. Larasita is a system, it has procedures, human resources, technical requirements, inputs and outputs. The informations which are collected from the selected respondents give an insight views of the reality, to understand how the system works.

The services reach clients in remote areas and suitable for the specific geographical conditions of Indonesia. Larasita has received many awards, including from the President of Indonesia and the World Bank. The World Bank recognizes this program as “Indonesia-Pioneering mobile land information services”. Due to that facts, the case study is taken in Indonesia since the mobile land services is introduced in there. In this research, case study approach is used to find the existing institutional arrangements, organizational settings and technology supporting the information system of Larasita.

This approach is started with designing the questions for interview based on the variables of indicators. The respondents are identified and grouped. The data gathered from the fieldwork consist of primary data from the interview and secondary data like maps, regulations, and reports.

3.2.3. Modelling and Prototyping

The hierarchy of different actors which has responsibility in a certain area. The hierarchy is illustrated using spatial hierarchy concept. Next, UML models are developed to represent the structure of the new system. Use case diagram is used to model the element of the land registration system, the actors, the use cases and the relationships such as associations and dependencies among these elements. From that, classes, objects and their relationship are defined by using class diagrams. The prototyping is conducted of an initial land registration with the proposal of new processes and structures.

3.3. Data Collection Methodology

3.3.1. Choice of Study Area

The study site is Banjar district, in South of Kalimantan Province. This district is chosen because based on the concept of Larasita which is to give services to citizen in remote area that uncovered by the land office. Unlike in Java island which is a developed and geographically “reachable”, the area in Kalimantan is remote as in the other big islands. Several studies of Larasita in the country is already done in the Java, Sumatra and Sulawesi but not yet done in Kalimantan (Agrarini, 2011; Gusnadi, 2012; Rini, 2010). Because of this reason the study area was chosen.

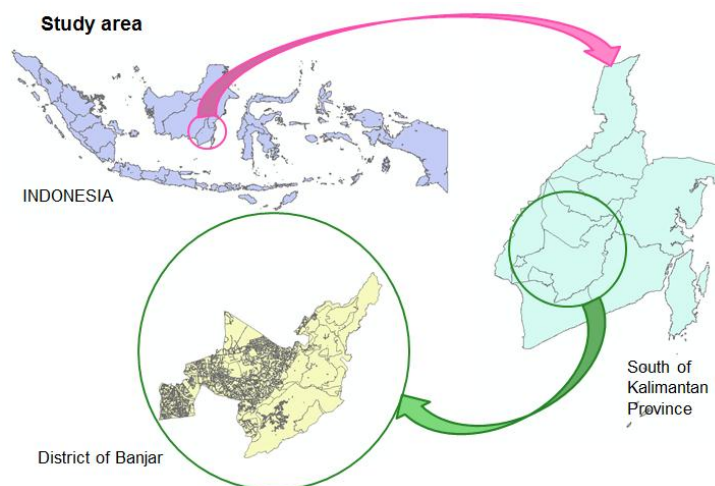


Figure 5. The Location of Banjar

3.3.2. Designing Questions

The indicators of the assessment framework is already defined. From the indicators, variables is identified. The question for interview is formulated based on those variables. For example indicator of access to information. The variables are the availability of the public notice and the response of counter information regarding to the land registration process and procedure. Next, the interview questions are developed base on that.

3.3.3. Preparation of field data collection

Before going to the field, lists of respondents were identified based on the organization who are related to land registration. Some of the respondents are contacted through e-mail, telephone and short message. The support letters were given to ITC student to make appointment with some respondents.

Choice of Respondents

The respondents are officials from Land Office of Banjar, Infrastructure Department of Planning and Development Agency, Forestry Department, local governments at community level which are sub-district (kecamatan) and village (kelurahan), banks, notaries and also citizen. All the interviews were recorded along with the notes. The secondary data which are collected are regulation, report , maps, and photos.

The list of respondents were grouped as shown in table 4.

Type	Respondent	Number of people
Land office of Banjar	Head of Land Office of Banjar	1
	Sub-Head of Land Office	5
	Surveyor	2
	Registrar	1
Related organization	Head of Infrastructure Department (Planning and Development Agency of Banjar)	2
	Sub-Head of Forestry	1
Local government	Head of Sub-District (camat)	1
	Head of village office (kepala desa)	2
bank		2
notary		2
Citizen		10

Table 4. List of respondents

3.3.4. Data Collection

The work was to talk and ask questions with the key respondents who are working in the land administration organizations and the organizations whose businesses are related with them. The questions covered from policy makers, decision makers, implementing agencies, business, and citizens. Thus, potential respondents were chosen on the basis of those categories. Primary data collection was based on the interview with the key respondents who were identified before and during the field work. During the field visit, secondary data like government documents, reports, acts, rules, regulations, maps and other publications were collected (Figure 6).

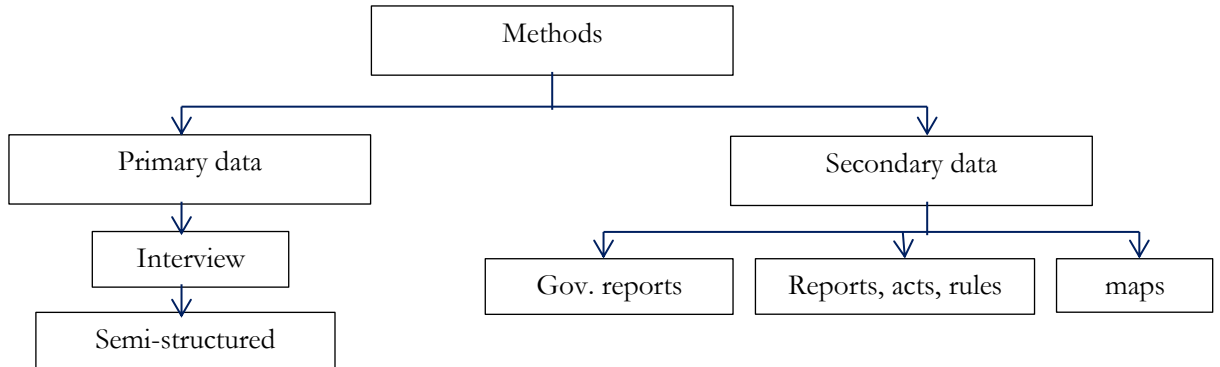


Figure 6. The method of data collection used during the fieldwork

3.3.4.1. Primary Data

Primary data is collected by interviews to selected respondents. The questions cover the opinion, experience of the respondents related to land services. The respondents are separated into groups and have different set of questions for each group. The separation is based on the organization they are working and their roles. The questionnaires are developed upon the indicators of the previous chapter. In general, the questions focused on their roles and responsibility related to land services. The respondents were chosen from different level in the government agencies, private sectors such as banks and notaries and also citizens.

Interview technique

The interviews use semi-structured questions to encourage the respondent to talk freely around each topic. The advantages are interview guide ensures all topics are discussed, more flexibility in asking questions and probing and responsive to new data presented by a respondent. In the other hand, the disadvantages are difficult to process outcome statistically, bias may play a heavier role and time consuming, eventhough addressing a smaller number of respondents.

The indicators of the assessment framework are more less related to opinions, perceptions, experiences, and perspectives of respondents. Compared to structured surveys by using questionnaires for instance, interviews is more appropriate tool to get in-depth information, or when little is known about an area or problem situation and less costly in time and resources. More over, interviewing seeks to engage subjects directly in a conversation with the researcher so as to get a first-person account of the participant's social reality. In addition, the interview needs to help research participants reach beyond the superficial layers of their experience in order to generate informative, novel accounts of the phenomenon of interest (Schultze et al., 2011). Hence, the interviews is selected as a method of data collection because it is considered as the appropriate tool to get insight information from the respondents.

3.3.4.2. Secondary Data

Secondary data like government documents, reports, acts, rules, regulations, maps and other publications were collected by visiting the government offices such as Spatial Land Agency, Forestry and land office. The secondary data collected during fieldwork is presented in table 5.

Data Source	Type of Data
BPN Central Office	<ul style="list-style-type: none"> Regulations number 18 in 2009 (Kepala Badan Pertanahan Nasional Republik Indonesia No.18 Tahun 2009) Evaluation Report by MarkPlus business consultant
Land Office of Banjar	<ul style="list-style-type: none"> Team of Larasita of Banjar 2012 Sample of Land Certificate Sample of reference letter Sample of Cadastral map of 2 villages The ownership data of 2 villages Photographs
Infrastructure Department of Planning and Development Agency	<ul style="list-style-type: none"> Spatial Plan Maps of Banjar 2011-2031 Draft of Spatial Plan Regulation of Banjar 2011-2031
Forestry Department	<ul style="list-style-type: none"> Forestry Map

Table 5. List of secondary data collected

3.3.5. Limitations

Some limitations occurred during the fieldwork:

Transportation : The means of transportation in district of Banjar is limited, it is only serviced on the main road in the region. Hence, I need accompany from the land office to do the interviews dan meeting with the respondents.

Focus Group Discussion (FGD): The fieldwork plan consists of a focus group discussion for Larasita team. But due of the nonavailability of the land office staffs and resources, this group discussion was not able to be conducted. However, the questions for FGD were incorporated during the personal interviews with them.

Interviews : Because of human error and lack of experience, there is a record of respondent which is not fully recorded. However, I made note during the interview process.

3.4. Concluding remarks

This chapter is focused on the methodology used for the research and data collection. The methodology of the research are desk research approach, case study approach, and modelling and prototyping approach. Primary data is collected by using interviews and documents such as reports, regulations are collected as secondary data. The respondents are officials from Land Office of Banjar, Infrastructure Department of Planning and Development Agency, Forestry Department, local governments at community level such as sub-district office (kecamatan) and village office (kelurahan), banks, notaries and also citizen. The data collected is used for evaluation in the next chapter.

4. EVALUATION AND DISCUSSION

4.1. Introduction

In previous chapter, methodology adopted in this research and how data was collected has been highlighted and in this chapter the results of collected data are described. The general overview of Larasita services in Indonesia is based on the secondary data from government regulation and reports in section 4.2. This section is important to know how the Larasita is set up in the all districts in Indonesia. Section 4.3. describes the current situation of land registration process of mobile land services in the study area. This section is based on interview with respondents of actors related with Larasita services and elaborates the implementation of Larasita in the views of the reality, to understand how the system works. Section 4.4. shows the result of the evaluation of mobile land services by using the assessment framework developed in the chapter 2. Section 4.5 elaborates the governance requirements based on the evaluation from previous section. Finally, section 4.6 summarizes the content of this chapter.

4.2. General overview of Larasita in Indonesia

4.2.1. Organization structure and supporting directives

Organization Structure

Larasita services is started in 2006, initiated by National Land Agency (BPN) and was supported by the World Bank. In the organizational structure in NLA, the implementation of Larasita in Indonesia is under the supervision of Data and Information Centre which is responsible directly to Head of National Land Agency. Figure 7 illustrates the organizational structure of NLA in Indonesia and the highlighted box is to show the position of Data and Information Center in the structure.

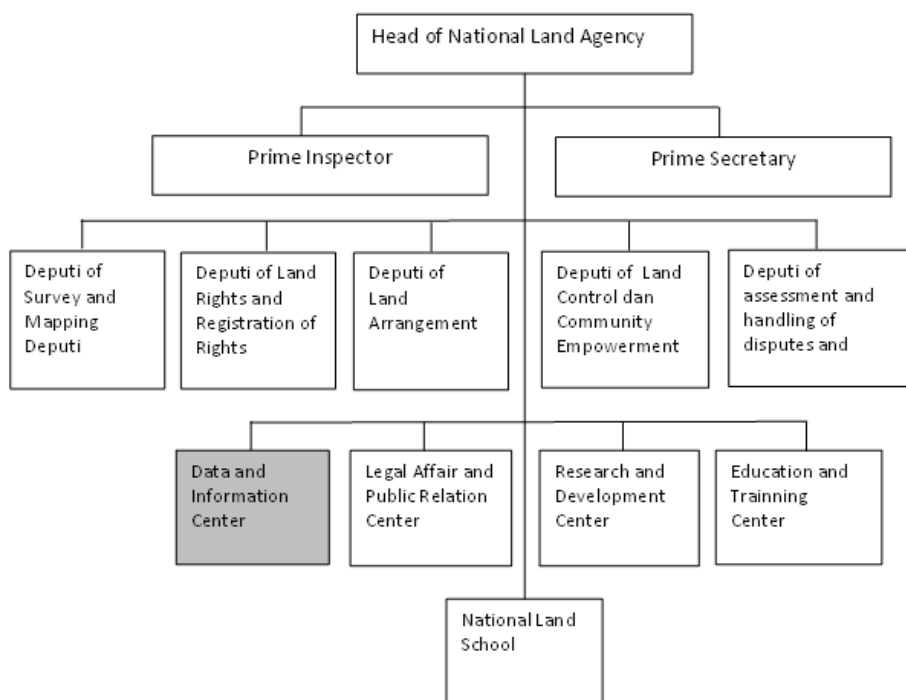


Figure 7. Overview of organization structure of NLA in Indonesia

Supporting Directive

To assist the program, the head of BPN issued Regulations number 18 in 2009 concerning Larasita. The regulation sets the organization, governance, delegation of authority, and the security mechanism.

Based on the regulation, related with the execution of Larasita tasks, BPN establishes 3 committees at different levels in the organization. The Trustees committee of Larasita is in central office which is led by the head of BPN, Implementation Larasita Control Team is in BPN Province Office, and Larasita Team is in the Land Office. In the implementation level in each district, the head of land office is responsible to issue the decree concerning Larasita team.

BPN established Regulation number 18 in 2009 as a technical guidance for land offices for conducting Larasita services. The fact is Larasita services is not standing alone. There are other actors who interact with Larasita services and have roles in it. From the governance network perspective, this regulation is not sufficient to cover the interaction between Larasita services and other actors.

4.2.2. Scheduling Larasita to local areas

In the Regulation number 18/2009, it is stated that the land office is responsible to decide the villages where Larasita serves the citizen, makes the service schedules and informs the sub-district and village offices. Next, the schedules are posted on the public announcement board of each village offices, sub-districts and land office itself.

The sample of Larasita schedule provided in the regulation is in the Table 6.

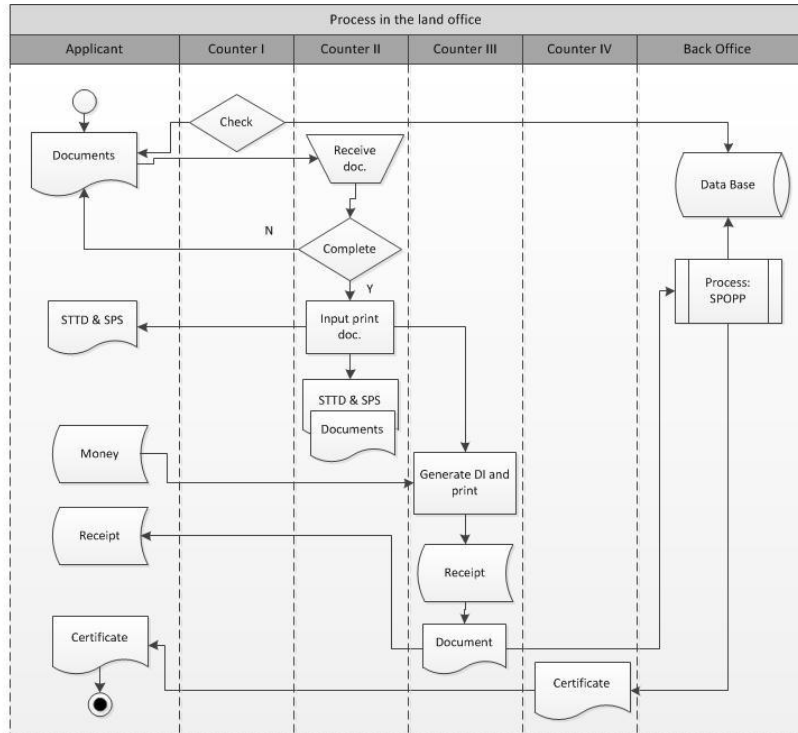
No.	Day/Date/Hours	Village	Sub-District	Coordinator
1	Monday/3.11.2008 09.00-12.00	Adikarti	Sidomukti	Bambang, SH
2	Tuesday/4.11.2008 10.00-13.00	Sambi	Baru	Drs. Sakdila
3	Wednesday/5.11.2008 10.00-13.00	Sura	Surnandi	Ir. Sunandar
4	And so on			

Table 6. The sample of time schedule of Larasita
(Kepala Badan Pertanahan Nasional Republik Indonesia, 2009)

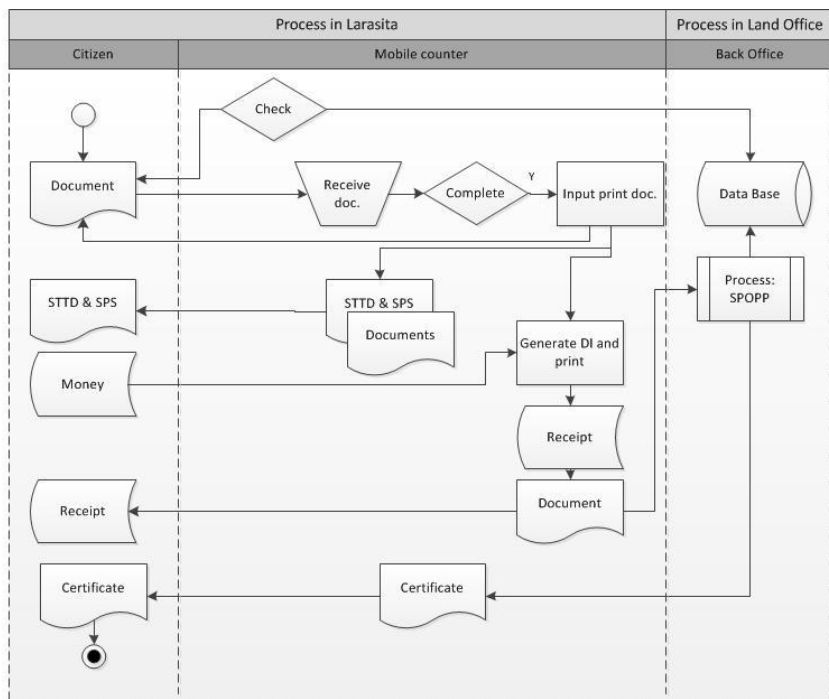
The schedule shows to the citizen the exact time and location Larasita operates in specific date. This information is important so the citizen in the nearby location where Larasita operates can get the optimal services. It also shows that the mobile land services is directly interact not only with the citizen but also with the village office.

4.2.3. Larasita – Land Registration Process

According to Regulation number 18/2009, the service mechanism and procedure of Larasita based on statutory provisions, same as land registration mechanism and procedure in the land office. The mechanism are : a) Counters activity acts as front office to perform consultations, examine the documents, receive the fee, make and deliver a receipt to the applicant, and b) Land office activity as back office to follow-up the application process. However, there exist difference in the procedure of land registration in land office and in Larasita. According to regulation number 18 in 2009 concerning Larasita. the difference between the processes is illustrated in figure 8 and 9.



NOTE:
 DI : list of books or Form used to record the existence of an activity services of land and land products. example DI.301, DI.302, DI.303, FI.401, FI.404 and so on.
 STTD : The letter given by the counter officer to the applicant in relation to document received by the officer concerned counters
 SPS : The letter given by officer Counter to applicants in relation to the application for land services and fees to be paid by the applicant (Pro forma invoice)
 SPOPP: Standard Operating Procedures



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 SPOPP: Standard Operating Procedures

Figure 8 and 9. Overview of the process of land registration in land office and in the mobile land services (Kepala Badan Pertanahan Nasional Republik Indonesia, 2009)

In the land registration process, there are 4 counters which have specific function such as counter I is the information counter, counter II is receiving and checking documents of application, Counter III is cashier and Counter IV is delivering the product. In the land office, these counters are separated and works as the front office (Figure 8). In Larasita services, the mobile counter does all the functions of the counters (Figure 9). The counter in Larasita services acts as the front office. Both land registration process in land office and Larasita services have back office in the land office. It shows that Larasita procedure is simpler than the land office. The citizen does not have to move from one counter to another.

Supporting ICT

To do its function, the Larasita services is equipped with mobile vehicle, information technology and communication network to enhance ICT part. The service is connected to the server in the land office. In case of technical failure, there is a provision for manual services. The application form is given temporary number in Larasita and will be synchronized in the land office after Larasita returns back to the office. As for example, Larasita temporary number is A.2/L/2010 (A means the name of Larasita team and L stands for Larasita). In the land office, this number is synchronized to the last number recorded in DI 301, for instance 84/2010.

The Larasita vehicle connected directly to the server in the land office by means of a network communications such as cable, satellite, and considered the most secure radio. According to regulation number 18 in 2009 concerning Larasita, there are two standards criteria of data communication. The standards are based on the availability of communications networks in the land office, they are:

- intranet BPNRI NET technology that uses MPLS (Multiprotocol Label Switching). MPLS is a network infrastructure built over the Internet. This infrastructure networks have a high level of security to transmit valuable data over public networks. This network provides a level of privacy and data security through tunneling mechanisms and randomization.
- For the land office that are not integrated with BPN network, the network communication use the internet lines of communication that has been equipped with a firewall (hardware network security).

4.2.4. Product and Services

The main product of Larasita services is land certificate, as the output of initial land registration. Other products are updates the land certificate for transfer of ownership, mortgage, change and correction of subject name, confiscation warranty and blockage. Larasita services also provides land information and consultation for citizen.

In the regulations number 18 in 2009 concerning Larasita, the Larasita services are described in the table 7.

No.	Services
1.	Inbox services
2.	Land information - Law and Rights to land
3.	Land information - Survey and Registration of Rights
4.	Land information - Land Tenure
5.	Land information - Land Use
6.	Land Affairs Control and Community Empowerment
7.	Public complaints against the indicated abandoned land
8.	Land Ownership Transfer
9.	Mortgage Removal
10.	Name Change
11.	Name Correction
12.	Recording confiscation Warranty
13.	Recording Blocking

Table 7. The services provided by Larasita

4.3. Current situation of Larasita of Banjar

4.3.1. Organizational Structure

The land office of Banjar is responsible to execute the Larasita services. Hence number of teams consisting of a coordinator, entry data staffs and surveyors are formed by head of Banjar Land office.

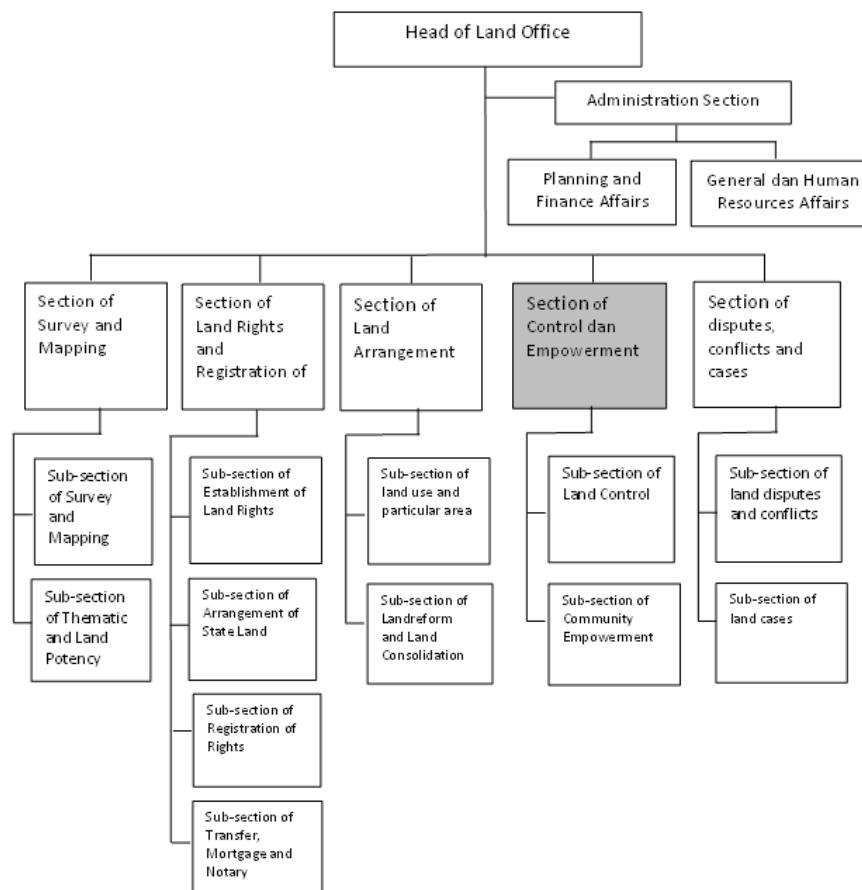


Figure 10. Overview of organization structure of land office of Banjar

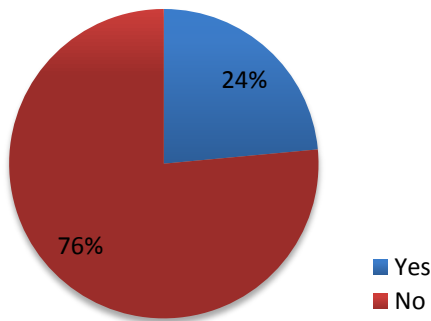
Currently there are five teams to executive Larasita services and these teams conduct their work alternatively . Each team consists of five people. In each team, the team coordinator is one of head of sections in the land office and responsible for reporting the land registration activity to the head of Control and Empowerment section. The organizational structure of land office and head of Control and Empowerment section is highlighted in figure 10.

4.3.2. Actors involved in conducting Larasita

Based on the interview to 6 respondents in the land office of Banjar, all of them agreed that the actors who involved in the land registration of Larasita of Banjar are citizen, village and sub-district office, notary, bank, Planning and Development Agency, and Forestry Department. The respondents do not think that the NGO relates to land registration of Larasita.

4.3.3. Current services of Larasita of Banjar

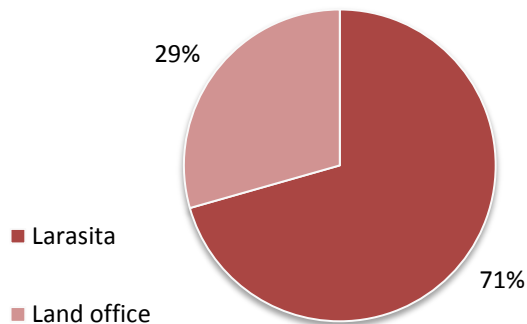
The pie chart shown in figure 11 highlights the percentage of respondents who are aware to Larasita services. It shows that 76% of the respondents never heard about Larasita services. 24% of the respondents know about Larasita from the TV commercials and the land office staffs of Banjar.



Awareness to Larasita services

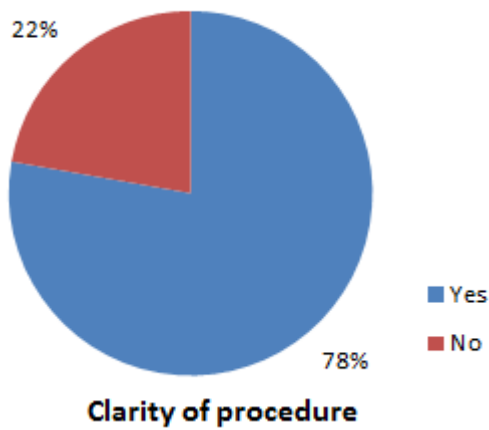
Figure 11. The response of interview on the awareness of Larasita services

Based on the interview to 14 respondents who are citizen, notary and banks, 71% of the respondents said that they prefer to use Larasita in their neighbourhood rather than go to the land office. They said that “it cost less than to go to land office in the city”. Another 29% of the respondents prefer to go to the land office to get direct services from the staffs as they are not bothering to travel to land office in the city. The percentage of respondent is shown in the Figure 12. This seems that, from economic point of view, mobile land service is beneficial to the community who cannot afford for travelling.



Preferences for mobile land services

Figure 12. The response of interview on the preferences to acquire land services



Related to the land registration procedure of Larasita services, out of 18 respondents, 78% of respondents stated that the procedure are clear. But 22% of them think that the procedure is not clear. This seems that they are not clear regarding the requirement of document for land registration which made them travel many times..The percentage of respondents ia shown is figure 13.

Figure 13. The response of interview on clarity of land registration procedure of Larasita services

Figure 14, shows the percentage of respondents regarding the simplicity of land registration procedure. Based on the interview with 18 respondents on how they perceive the simplicity of the procedure, 60% of respondents said that the procedure is simple. 39% of them think that the procedure is long. This is because land registration application have quite a long list of documents, and need to acquire from more than one organization. For example, tax department, village office, and notary. Thus, citizen has to visit many offices to get these documents.

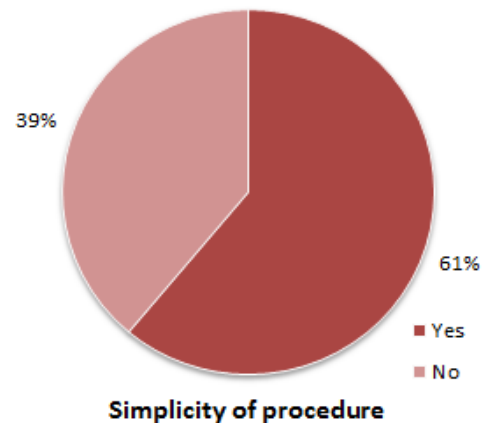
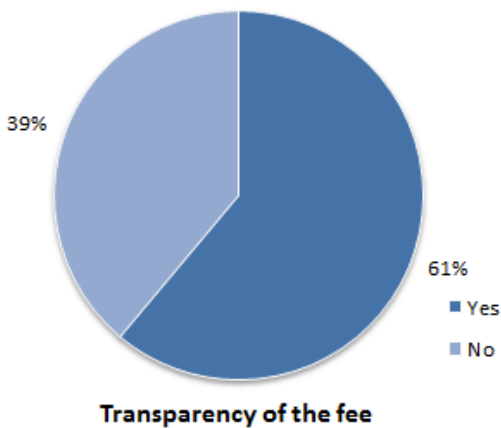


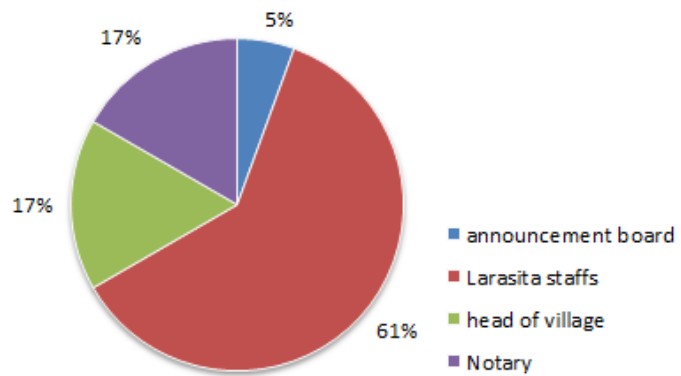
Figure 14. The response of interview on simplicity of land registration procedure of Larasita services



When 18 respondents were asked about the transparency of the land registration fee, 61% stated that the registration fee is transparent, the counter staff of Larasita services will specify them how much they have to pay and they received a receipt. 39% of respondents said that the fee is not transparent. The reason is because the fee for issuing reference letter in the village office is not standard. The amount of money that citizen have to pay is determined by head of village. The statistic of respondents regarding the transparency in the fee they are supposed to pay is shown in figure 15.

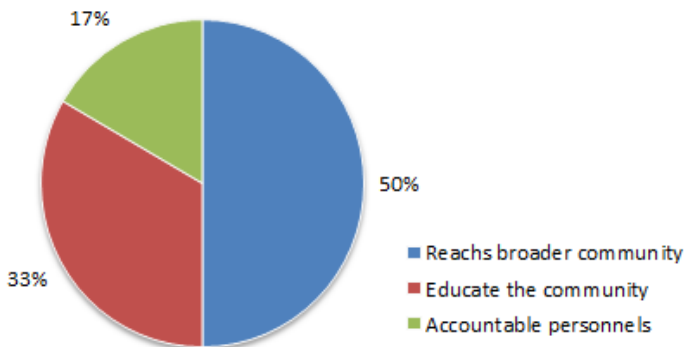
Figure 15. The response of interview on transparency of land registration fee of Larasita services

Regarding the source of information about the process, procedure and fee of land registration of Larasita, out of 18 respondents 61% told that they received the information from Larasita staff, 17% respondent from head of village, 17% from notary and 5% of them from the announcement board. This shows that Larasita services is transparent to citizen. The statistic illustration is shown in figure 16.



Source of process procedure and fee information

Figure 16. The response of interview on source of process, procedure and fee information of Larasita services



Expectation on Larasita services

Figure 17. The response of interview on the expectation towards Larasita services

Figure 18 shows the percentage of respondents opinion on the possible action that can be done to improve the performance of Larasita. The question is addressed to 7 respondents. 57% of them answered by improving human resources, this means adding new, young, well knowledged and traineded staffs.

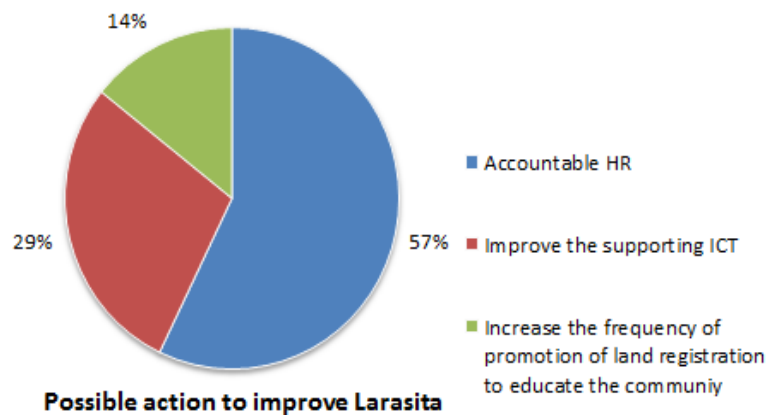
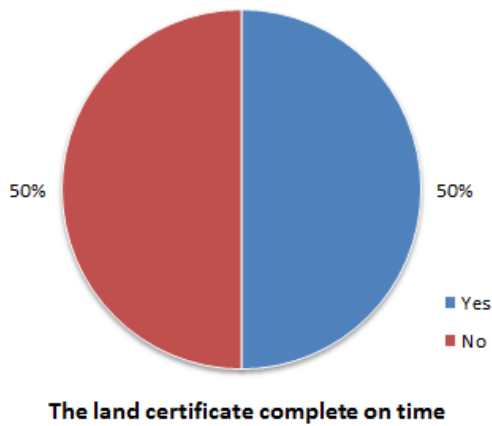


Figure 18. The response of interview on the possible action to improve Larasita services

One of the respondent believes that accountable human resources properly understand about technical, law and administrative procedure in Larasita. Accountable staffs in mobile land services are able to provide the correct information to the citizen and local government at community level. 14% of respondents suggested that by increasing the frequency of socialization about land registration and educating the community improves the Larasita performance. This is related to reluctance of the community especially local people of Banjar to register their land. Suggestion to improve the technical problem which is fixing the connection to land office server from Larasita also uttered by 29% of the respondents. This is related to the signal receiver in the land office that is not working properly. Based on the interview results on current situation of Larasita services in Banjar, it seems that the common problem faced by the Larasita services are the lack of skilled personnel to conduct mobile land services.



Out of 19 respondents, who were asked about the completion of land certificate, 50% stated that the process is very long and other 50% said that the process is smooth and the certificate is given right on time (figure 19). The standard procedure for initial land registration is 6 month. The procedure can be longer than that if there is something wrong during the process. The possibilities are incomplete documents, or during the land survey the poles are not yet fixed by the owner or there is refutation during public announcement by third party.

Figure 19. The response of interview on land certificate completion of Larasita services

Larasita services of Banjar is not a separate part from the land office of Banjar. The land office is responsible to conduct this mobile land services. The head of land office stated that the land office of Banjar is lacking technical personnel to operate Larasita. There are 46 personnels in the land office, and 26 people of them can not operate computer. The land office is now using computerization as part of Geo KKP program (land office computerization system). KKP is systems using computer applications where spatial and textual data at the land office is integrated in a single system to produce land database, so it can be monitored by central and provincial office of National land Agency.

Based on the information from the head of land office, the workload of Banjar land office in 2012 are estimated 10.412 applications where sporadic registration (self funded by customer) is approximately 7.512 applications and systematic registration (mass legalization program funded by the state and the agriculture agency) is 2.900 applications. Another issue that is faced by the land office of Banjar is the power source. Electricity is a big problem in South of Kalimantan province since it is off 2-3 times per week with varying duration of time. The electricity power for the province is come from the hydropower of Riamkanan (in Banjar) and only has 1 generator. Moreover, the hydropower needs to be shutted down for maintenance purpose every week.

With new computerization system in the land office and existing workload, the land office needs more human resources with technical skills. If the key personnel is leaving the office and conducting Larasita service, the land office can not work. The subhead of land office stated:

“If the personnel is taken to operate Larasita, the office can not run. Because the people we bring to the operation of the car is also key person who operates in the office”.

The human resources and coupled with the electricity issue, which makes the land office work less efficient.

4.4. Evaluation of land registration of mobile land services

The discussion is conducted in the 3 levels, policy, organizational and individual level.

4.4.1. Policy Level

In the national level, the organizations that are dealing with land such as the National Land Agency, the National Coordinating Agency for Surveying and Mapping, the Ministry of Agriculture, Ministry of Forestry, tend to perform land registrations and mapping largely for their own interests. It is unclear how the National Land Agency mandate to land office in district level to formulate land use policies and connects to regional spatial planning documents.

According to the interview with the land office staffs, the land registration process in Banjar is performed by using the spatial plan from the Infrastructure Department of Planning and Development Agency of Banjar as a guideline. The type of land ownership rights is given according to the land use in the spatial plan, not to the existing land use in the ground. Related to forestland, the land registration process can not be conducted if the boundary of the land parcel conflicts with forest boundary.

One of the sub-head in the land office stated:

“Land use of Banjar is planned in the Regional Spatial Plan of Banjar. Where is for agricultural and non-agricultural. For instance the road ahmad yani, the land use of either side of the road in the reality is agricultural land, but in the spatial plan of Banjar is non agricultural (residential). This affects the right to be provided. In connection with the forestry, could be happen a citizen occupies in either residential or an agricultural land, but the land parcel within spatial planning is designated as forestland. For this kind of situation, the ownership right can not be given to the land parcel”.

The land policy regulates that regional spatial plan is used as a guidance to determine the type of land right to be given in initial land registration. But there is no mechanism of updating the land ownership data if there are changes in regional spatial plan. The top down approach in formulating policy and implementation is not assisted with clear mechanism of policy application. Therefore, bottom up approach is better to formulate the policy with considering the problem and challenges in the regional level.

4.4.2. Organizational Level

The land registration procedure is actually not long and simple. As long as the required documents are completed and the land poles are in place when the surveyor comes to survey the land parcel. A land surveyor stated:

“First, the poles should be installed first. The second surveying form is signed by the neighboring owners. If the poles are not there, we go back. We, surveyors do not know the land boundaries, it is the owner of the land who knows”.

The standard operating procedure (SPOPP) for initial land registration is 6 months, including 2 months of public announcement in village office. If there is no problem during the process, it could be longer than that. The land registration also can not be continued if after measured and digitized, the land parcel is conflicted with forestland. The role of registrar is important to check the completeness of the documents before accepting the application and to do this, land information of the forest boundary in Larasita services is required.

One of the obstacles in performing Larasita services is that it can not send information to the server in land office. Due to this reason the services are carried out manually. The application form is given a temporary number in Larasita vehicle and will be synchronized in the land office after Larasita returns back to the office.

The information regarding the process, fee and time are clear and well informed. The citizen can get the information easily from the counter staff, village office or the notary. The counter staff informs the documents required for the registration and completion time. The citizen also receives receipt for land registration fee payment.

In the land registration process in Banjar, the stakeholders are the citizen, notary, banks, the local government in community level for instance village and subdistrict office and other government agencies such as forestry and Infrastructure Department of Planning and Development Agency. The forest area is in the authority of forestry. If survey and mapping section suspects a land parcel is conflicted with forestland, the head of land office will send a letter to the forestry department of Banjar for clarification. If it is truly inside the forest area, the land parcel cannot be registered. The land registration is also interrelated with the spatial plan in which areas designated for agricultural, residential or others are mentioned. The spatial plan is the base for the allocation of type land rights in the parcel.

Larasita needs to coordinate with the Infrastructure Department of Planning and Development Agency regarding spatial plan and the forest boundary from Forestry department. The organizations have clearly defined tasks and are communicating with each other. However, the problem exists in Larasita services is that there is no mechanism for updating the land use information in the land ownership database.

4.4.3. Individual Level

The main issues in Banjar land office is the human resources, in terms of quantity and quality. With the adequate and skilled personnel the land office can perform Larasita efficiently and effectively. The skilled staff provides the right information to the citizen. Moreover, the new application system of Geo-KKP demands the land office to have more technical and responsive staffs. Surveyors are demanded to have

high skill and big responsibility to do land survey to avoid the land dispute of the boundaries. The registry required competence and conscientious in checking the document from the applicants.

The accountable village and sub-district office are required in producing the reference letter and keeping the records in a good manner in order to prevent land dispute and conflict happens in the future. It is their responsibilities to give the correct information and services for their citizen.

4.5. Governance Requirements

Based on the evaluation, the roles of actors are clear, but for their own interest. The governance between actors is not clearly defined because the actors act independently. The updated information of the land use in the spatial plan and forestland are needed for the Larasita services to produce land certificate. The improper record system and the irresponsible personnel are the causes for producing the reference letter by village office more than once for same parcel. Hence, by establishing reference letter database in village office can improve the village office performance. The link between village office database and Larasita services ensures that there is only one reference letter produced for a single land parcel in order to prevent land dispute in future.

The land information system between mobile land services, Forestry Department, Infrastructure Department of Planning and Development Agency and village office is need to be linked to improve land registration system of Larasita services. Linking the organizations means establishing the governance network. The network is institutionalized with rules. The network is shown in the figure 20 below.

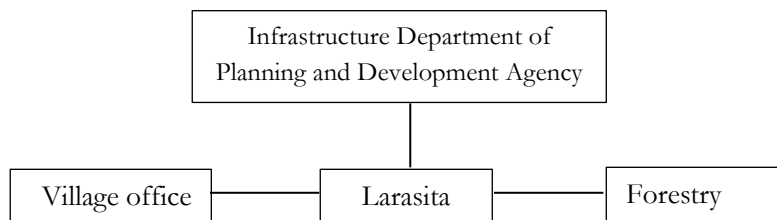


Figure 20. Governance network of land registration of mobile land services

Figure 19 shows that the link between mobile land services, Infrastructure Department of Planning and Development Agency and Forest Department is conducted by sharing the spatial data. The data such as zoning maps of Infrastructure Department of Planning and Development Agency and the forest boundary of the Forestry Department to mobile land services.

In general the governance requirement is the collaboration of actors in the land registration process of mobile land services, by:

1. Establishment of reference letter database to improve the data storing management in village office.
2. Developing of mobile land services land information system (LIS) that connects to Infrastructure Department of Planning and Development Agency, and village office database.

The Infrastructure Department of Planning and Development Agency and village office database are responsible to supply the information regarding zoning maps and reference letter database to Larasita services.

3. The development of new LIS has to be supported by regulation that sets up the collaboration of actors, at least in district level. Monthly meeting and discussion will also enhance the collaboration.

4.6. **Concluding remarks**

In general this chapter discusses the output of the data. Based on that, the evaluation of the indicators resulted in the chapter 2 is conducted. The result of this chapter are the establishment of governance network of land registration of mobile land services between actors and the governance requirement for collaboration. The governance requirement is collaboration of actors by establishing reference letter database, developing mobile land services LIS that connects to other actors, and the necessity to form regulation that support the collaboration of actors. The governance requirement is used to redesign of the new LIS in the next chapter.

5. REDESIGN THE LAND INFORMATION SYSTEM (LIS)

5.1. Introduction

The previous chapter elaborates an evaluation on mobile land services. This chapter answers the research objective 3 “*to redesign the spatial processes of mobile land service*”. To do that, this chapter translates the governance requirements of collaboration between actors by redesign the land information system of mobile land services that incorporated the roles of actors in land. The spatial hierarchy concept is used to construct the new LIS. Based on the spatial hierarchy concept, UML models are developed to map the actors, the activities and the relationships between the actors in the new LIS. Then, the prototyping is conducted to test the new system.

Finally, result of prototyping derives conclusion and recommendation.

5.2. Mapping Governance Requirement in a LIS

The governance requirements is the collaboration between actors in land services. The actors are Infrastructure Department of Planning and Development Agency , Forestry Department, sub-district office, village office, citizen and mobile land services. The collaboration here means that the actors share their land information to Larasita. The land informations are the zoning map from Infrastructure Department of Planning and Development Agency and reference letter tables from village office. Hence, mobile land services is able to provide the informations of land parcel from other actors.

5.2.1. Spatial Hierarchy Concept

Spatial hierarchy is an aggregation concept of spatial classes. In this concept, the classes are defined by the spatial properties that are characteristic for the members, i.e. the objects of class have spatial properties that distinguish them from objects that do not belong to this class. In other words, objects belonging to a class have a common spatial attribute structure.

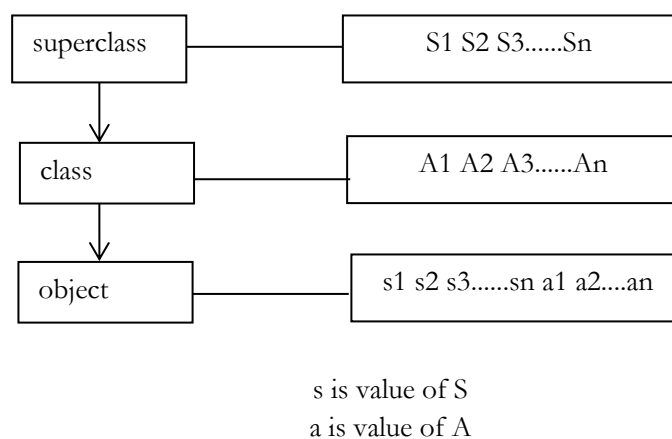


Figure 21. Basic principles of class hierarchy (Molenaar, 1998)

The description of Figure 21 is elaborated as the following ways. The hierarchy is drawn upside down so the highest generalisation class is at the top of hierarchy level and the most specialised classes are at the lowest level. All classes in the hierarchy are distinct because each of them has own unique attribute

structure. Within a line, these structure are handed down, i.e. the object is inherit not only the attribute of the class but also the attribute of superclass. The spatial hierarchy concept also used for classes derived from different thematic partition. In the hierarchy, thematic partition separates the classes which have thematic description. This concept is useful to construct the hierarchy of multiple processes.

5.2.2. Governance requirements

Requirements

In the current situation the actors have land information system for their own interests. At district level, Infrastructure Department of Planning and Development Agency and forestry department collaborate in conducting Spatial Plan. At sub-district level, the head of sub-district office is responsible to monitor for all land related matters in his territory. It is also responsibility of the head of village office, including providing reference letter to the citizen. Citizen is responsible for his own parcel. Mobile land services is responsible to the citizen by providing the land certificate with the correct information.

The governance requirement suggests that the actors collaborate by sharing their land informations to mobile land services. The Infrastructure Department of Planning and Development Agency is responsible to extend the information of zoning map to sub-district office and village office because they are responsible to monitor the development of space within their jurisdiction. The Infrastructure Department of Planning and Development Agency and village office are responsible to supply the information of reference letter and the land use information to mobile land services (as supplier). Mobile land service gather information from them, without make any changes to their data (as viewer).

Spatial hierarchy model

The spatial hierarchy concept is useful to redesign LIS of the spatial component from multiple actors and different processes. Figure 22 illustrates two processes of spatial planning process performed by the Infrastructure Department of Planning and Development Agency (Spatial Planning Agency), Forestry Department and Head of Sub-District office, and land registration process by mobile land services and head of village office.

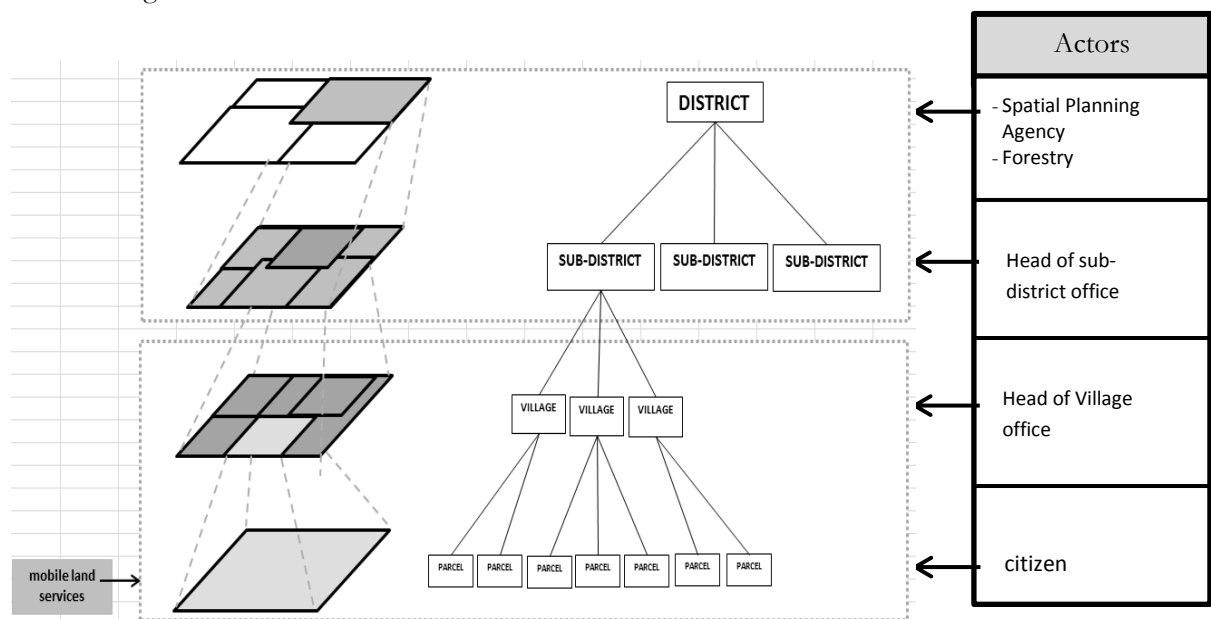


Figure 22. The tree structure of spatial hierarchy

Figure 21 illustrates the relationship between two thematic partitions that form one hierarchy of classes. District is in the superclass level and parcel is in the object level. District is in the top of hierarchy because it is in the highest level of generalisation. Parcels are in the lowest level because they are the most specialised classes. In the concept of spatial hierarchy, each of actor has responsibility for spesific area and classes in the lower level inherits characters of the higher level.

5.2.3. Mapping spatial hierarchy model

The spatial hierarchy model specifies the constructive idea of the new LIS. The model shows that spatial planning process is separated from the mobile land registration services but the attributes is handed down into parcel level. Hence, in the new system, mobile land service uses the informations of spatial planning for land registration. The figure 23 illustrate the relationship of these processes.

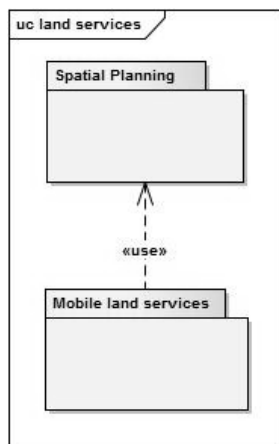


Figure 23 shows 2 packages, spatial planning and mobile land services. The spatial planning package contains the land information flows of zoning of Banjar district from Infrastructure Department of Planning and Development Agency to sub-district office and village office. The mobile land service process contains the land registration process that involved citizen, village office and mobile land service itself. In here, the subprocess of reference letter database of village office and the subprocess of mobile land registration are exist.

Figure 23. Relationship between spatial planning and mobile land services

The redesign of LIS is focused on connecting the land informations from other actors into mobile land services. To do that, UML models are developed to complete the new system.

Use case diagram showing actors and roles

Designing a system is based on the users viewpoints. How the actors perceive the spesific usage of the system should deliver is described by using the use case view. In the current situation, the land information of village office is not connected to mobile land services. For the proposed LIS, the figure 24 shows the roles of citizen, head of village office and mobile land services in initial land registration process. Citizen roles are to issue land reference letter to head of village and to issue land certificate to mobile land service. Head of village is preparing the reference letter to citizen and storing the reference letter into village office database. The village office gives mobile land office privilege to to access village office database, as viewer.

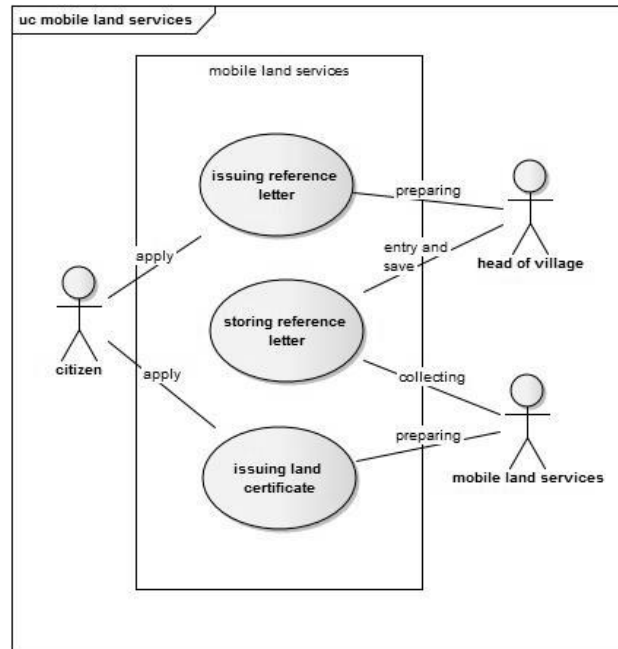


Figure 24. Overview of use case diagram of land registration of mobile land services

Governance network can be reached with interaction between actors. Hence, by connecting mobile land services to the village office database can improve the interaction between them. Moreover, it is not only to achieve governance requirement of collaboration, but also a preventive action to minimize land dispute in the future

Activity of each actors

In the new LIS, the activities start with the citizen applies reference letter to village office. The reference letter is used for land registration of mobile land services. After citizen submitted the documents required including reference letter, the mobile counter staff checks the validity of documents to the databases of village office and to the spatial plan. If the documents are checked and confirmed, the mobile counter staff register the application and brings it to the land office for the next procedures. When land certificate is issued, citizen collects in the mobile counter.

Class diagram for spatial model of the new LIS

Class diagram shows the relationship between classes. It helps to understand the connection of the new land information between actors and different processes.

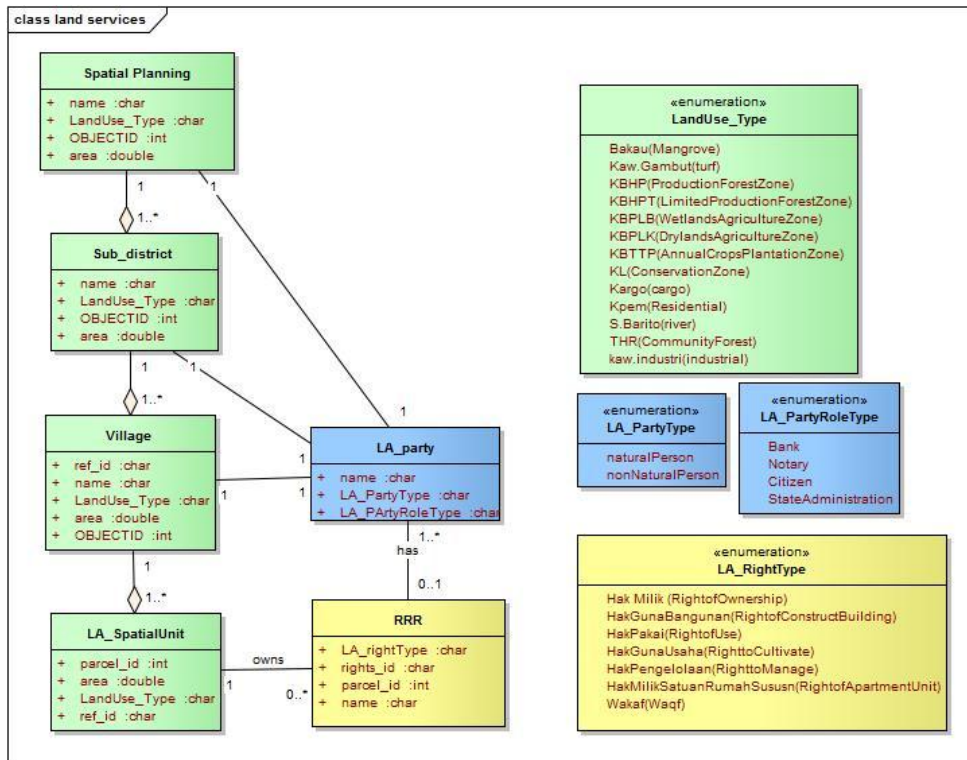


Figure 25. Overview of class diagram

Figure 25 illustrates the relationship between classes and each of classes has their own attributes. Aggregation relationship occurs between spatial planning class, sub-district class, village class and land parcel class. Other relationships are association relation.

5.3. Prototyping

The major goal of the system design is to improve the quality of land registration to the citizen by giving the land information in the land certificate. In current situation, it is not clear how to connect the updated spatial plan information into land ownership data. The prototyping is conducted to ensure that any changing of land use data from the Infrastructure Department of Planning and Development Agency is also change the land use data in the mobile land services. In addition, connecting the database of reference letter of village office to mobile land services enhances the mobile counter staffs to check the validity of reference letter. Hence, it is important to select the hardware and software to make sure that the new system is working. The land information is presented to portray the proposed system.

5.3.1. Hardware and software

The choices of the hardware and software are proposed to be cost effective, user friendly and interoperability. Therefore, the following hardware and software are considered in our choice;

- A high speed reliable workstation computer
- Standard network facilities which has high security connection

The software used for the prototyping are based on ESRI ArcGIS as GIS client. This software is the most popular and arguably the most powerful available today. Antiviruses and other security measures must be budgeted for as well to ensure safety of the database.

5.3.2. Data used for prototyping

Figure 26 represents the types of data for prototyping: spatial map, land ownership map and reference letter table.

- Spatial plan map of Banjar, describes the zoning of land use of Banjar. The land use types are: Bakau (Mangrove), KBTTP (Annual Crops Plantation), Kaw.Gambut (turf), KBHP (production forest zone), KBHPT (limited production forest zone), KBPLB (wetlands agriculture zone), KBPLK (Drylands agriculture zone), KL (conservation zone), Kargo (cargo), Kpem (residential), S.Barito (river), THR (community forest) and kaw.industri (industrial).

In general 13 types of land use above are representing 4 land use functions: agriculture, residential, industrial and conservation. Agriculture functions for KBTTP, KBPLB, KBPLK, THR, KBHP and KBHPT. Kpem is defined for residential function. Industrial is addressed by kaw.industri and kargo. Gambut (Turf), KL, S.Barito, Bakau (mangrove) are part of the conservation function. According to the Spatial Plan 2011-2031 of Banjar district, conservation area is restricted for the land registration.

- Sub-district Simpang Empat map, contains the boundary of sub-district
- Village Cintapuri map, contains the boundary of village
- land ownership map of village Cintapuri; contains informations of the parcel number , type of rights, rights number, parcel area, and geometry of parcels. These information are used by BPN in their land ownership database. For the new LIS, it is important to add information of reference letter number from village office database, in order to set the relationship between mobile land services and village office table.
- reference letter data of village Cintapuri. Currently, village office does not have this data. This data is developed for the proposed LIS. The table contains the reference letter number, the citizen name, parcel area and the point location of the parcel.

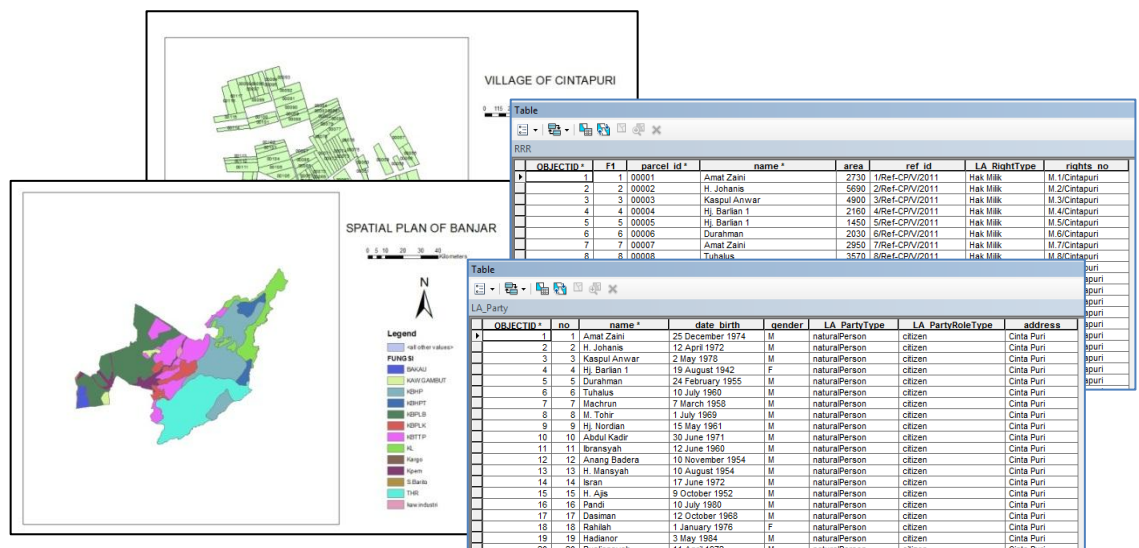


Figure 26. Overview of data used for prototyping

Data analysis

From the class diagram in figure 25, Infrastructure Department of Planning and Development Agency is required to extend the spatial information of land use zoning to sub-district level and village level. Hence, spatial data analysis is conducted by overlaying the spatial map with sub-district Simpang Empat map and village Cintapuri map. From that, the result map of zoning in Cintapuri village is used as a base map of the reference letter development. Thus, the reference letter of the village contains not only spatial information the point location of the parcel but also the land use information.

5.3.3. Prototyping in ArcGIS

In preparation of the data, the following procedures are;

1. Construct a personal geodatabase in the folder database connection in ArcCatalog;
2. Creating physical schema using class diagram in the personal geodatabase and creating relationships between classes (Figure 27);
3. Populating existing data into personal geodatabase for the process of land registration of mobile land services;

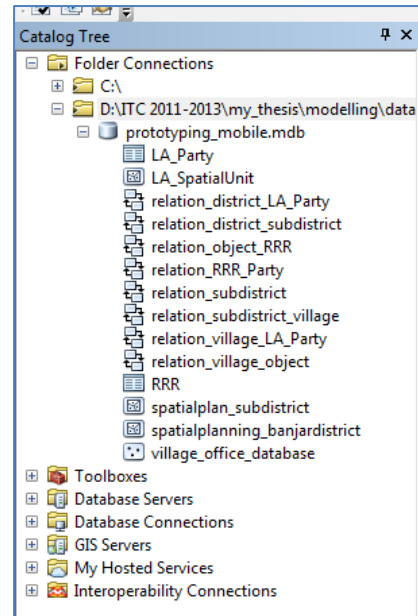


Figure 27. Overview of physical schema developed in personal geodatabase

4. Activity process of land registration of mobile land services

The land registration process is started with citizen applies land certificate to mobile land services counter. Mobile counter staff checks the validity of reference letter document by using SQL query in village office database.

Query :

```
SELECT *
FROM village_office_database
WHERE [ref_id]='125/Ref-CO/I/2013'
```

The result of of checking reference letter from village office database is shown in Figure 28.

OBJECTID *	Shape *	Id	ref_id *	name *	x coord	y coord	subDistrict *	village *	LandUse Type *
125	Point	125	125/Ref-CO/I/2013	Budyono	278928	9644466	Simpang Empat	Cinta Puri	KBTP

Figure 28. Overview of checking into village office database activity

After all the documents are checked and admitted, the next procedures are conducted in the land office. The procedures are:

- Survey, mapping and calculating area of land parcel
- Updating the attributes. in the LA_SpatialUnit layer, RRR layer and LA_Party layer by using Related table tab in the attribute table (Figure 29) .

The image shows three overlapping ArcGIS attribute tables. The top table is for the LA_SpatialUnit layer, the middle for the RRR layer, and the bottom for the LA_Party layer. Each table has a toolbar at the top with icons for zooming and other map functions.

OBJECTID*	Shape*	parcel id*	name	ref id*	Shape Area
107	Polygon	00125	Budyono	125/Ref-CP/2013	11047,044775

OBJECTID*	F1	parcel id*	name*	area	ref id	LA RightType	rights no
125	125	00125	Budyono	11000	125/Ref-CP/2013	Hak Milik	M.125/Cintapuri

OBJECTID*	no	name*	date birth	gender	LA PartyType	LA PartyRoleType	address
88	88	Budyono	12 July 1970	M	naturalPerson	citizen	Cinta Puri

Figure 29. Overview of the attribute layers update activity

- Preparing land certificate

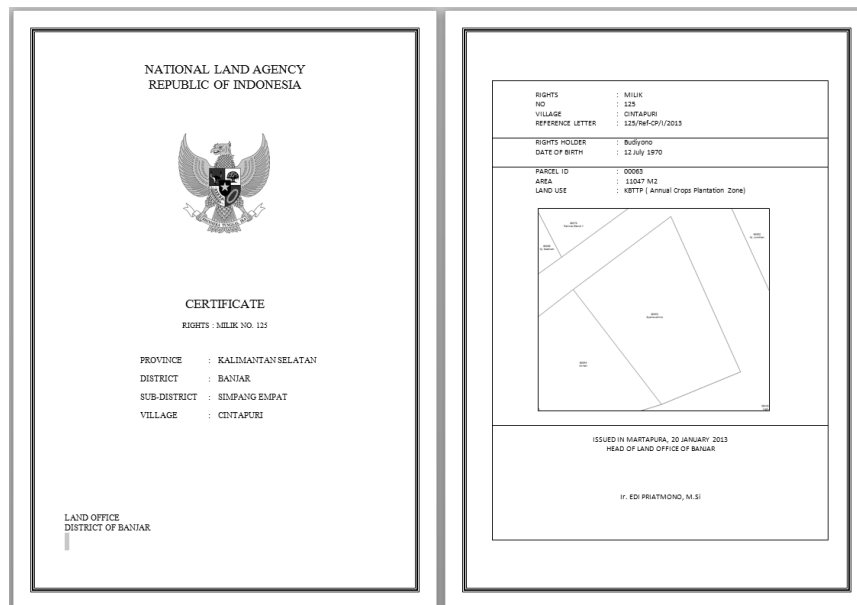


Figure 30. Overview of a land certificate sample in the new LIS

Technically, land certificate is not derived from the prototyping using ArcGIS. Figure 30 illustrates the sample of land certificate to show the output of the initial land registration process. The first page states the rights identification and the organization who produce it. The second page presents the informations of the rights, the rights holder, the parcel and the official who issues the land certificate.

5.4. Concluding remarks

This chapter elaborates the modelling and prototyping of the proposed system. The spatial hierarchy is the concept behind the new land information system. The roles of actors from different spatial processes in the land services can be translated by using this concept. Parcel is at the lowest level of the hierarchy and inherits the spatial planning attributes of village, subdistrict and district level.

Database of land information system in the village office is established and linked with the mobile land services. To do that, UML models are made to see the logical structure of the new LIS of mobile land services. Prototyping is done to see how new system is works.

The new LIS clarifies how to connect land use plan policy from district level into land ownership information in the parcel level. The new LIS also enhances mobile counter staff to check the validity of reference letter submitted by the citizen by accessing the village office database. In the current situation in Indonesia, the mechanism for updating land use policy to land ownership data is not yet made. Land office can not update the land use information in the land certificate that were already given to citizen. Hence, BPN needs to establish rules or regulations that sets up the mechanism to formulate land use policies to land offices at district level.

6. CONCLUSION AND RECOMMENDATION

6.1. Introduction

In this chapter, conclusion of this research is drawn followed by answers to each research questions which are posed to fulfil the objectives. In Section 6.2, the answers to research questions are given and in section 6.3 recommendations for future research are given.

6.2. Conclusion

The main objective of this research is to identify the requirements of institutional changes in the context of mobile land service by establishing the governance network through spatial hierarchy. The objectives is referred to the governance in land services process that is considered weak because of the the fragmented institutional arrangement. The current situation is need be measured to identify what intervention used for establishing the governance network.

The research question 1 was about the definition of governance assessment framework. Governance assessment framework is a mechanism to evaluate, measure and monitor the progress towards governance at present and in the future. The measurement of governance is important to improve the quality of the system and fundamental to improve the management.

The research question 2 searched for the appropriate framework to assess and evaluates mobile land services. The assessment framework to evaluate mobile land services is developed by reviewing the good governance principles and two assessment frameworks of LGAF and Capacity Assessment. The result of the reviews are the evaluation approach and the elements of governance. There are three level to evaluate mobile land services, policy level, organizational level and individual level. The adopted governance principles required to be measure are transparency, participation, strategic vision, accountability, effective and efficient.

The research question 3 was about the indicators for assessing the institutions and actors. Basically, the assessment framework for evaluating mobile land services is developed to assess the ability of the institution and actors in the land administration system to interact within a framework of rules and norms. The indicators for the assessment are the presence and modality of national policy, the simplicity, timeliness and completeness of the process, utilization of resources, access to information, clear procedure, participation, cooperation and coordination, the actors and institutions are responsible, existence of standard, functionality of IT and enough number of skilled personnel.

The research question 4 addressed the legal framework of Larasita and specifies the roles of actors. Based on the evaluation, it is found that actors are working independently. The Forestry department has its own interest regarding the forestland and there is no clear mechanism to connect the land registration of Larasita to the spatial plan. The head village office and the sub-district have no information of the implementation of spatial plan in their territories.

The research question 5 was about the potential actors who could be involved in the land registration process of Larasita. The potential actors are Forestry department, Infrastructure Department of Planning and Development Agency , Village office, Sub-District office and citizen. In the current situation, the village office and citizen have direct involvement in land registration of Larasita services. The Forestry department and Infrastructure Department of Planning and Development Agency are not directly involved with Larasita services, but they produce land informations that are related to land parcel.

The research question 6 searched for Larasita services contribution to minimize land disputes. One of the causes of land dispute is the duplication of reference letter which is a base data to issue land certificate, produced by village office. The duplication is the result of poor management of reference letter in the village office. The data storing system in the village is need to be improved by establishing reference letter database in the village office. The new database in village office is connected to Larasita LIS. Hence, the mobile counter staff of Larasita services is able to check the validity of reference letter submitted by the citizen to the village office database.

The research question 7 addressed the spatial process to be introduced. The new spatial process is the new LIS which is constructed using the concept of spatial hierarchy. This aggregation concept of spatial hierarchy is useful to redesign LIS of the spatial component from multiple actors and different processes. As shown in figure 19, district is on top level of hierarchy and parcels are in the lowest level. Based on this concept, parcel inherits the attributes of district level.

The research question 8 was about the requirements of the process. The governance requirement is the collaboration of actors in land services. The actors are Infrastructure Department of Planning and Development Agency, Forestry Department, sub-district office, village office, citizen and mobile land services. The collaboration here means that the actors share their land information to Larasita services. The new LIS connects land use plan policy from district level into land ownership information in the parcel level. The new LIS also enables mobile land services to check the validity of reference letter submitted by the citizen to village office database.

Hence, Larasita services is able to provide the informations of land parcel from other actors.

The research question 9 addressed of introducing the new spatial process. In order to introduce the new LIS, prototyping is conducted. The prototyping is conducted to ensure that any changing of land use data from the Infrastructure Department of Planning and Development Agency is also change the land use data in the mobile land services. In addition, connecting the database of reference letter of village office to mobile land services enhances the mobile counter staffs to check the validity of reference letter. The new LIS is presented in chapter 5 to portray how the proposed system works.

The research question 8 was about the implementation of the new spatial process. To implement the new LIS, the choices of the hardware and software are proposed to be cost effective, user friendly and interoperability. The choice of high-speed workstation computer is important to ensure that the new LIS is responsive to any update from other actors. The network connection are required to be highly secure. The implementation of the new LIS also need skilled personnels to operate it. Therefore, training is required inorder to build the capacity of staff to operate the new LIS. Most important think is that the establishment of rules and regulation from local government or higher level. It is important to support the implementation of the new LIS because multiple actors is interrelated in the new system.

6.3. Recommendation

1. In the current situation in Indonesia, the mechanism for updating land use policy to land ownership data is not yet made. Land office can not update the land use information in the land certificate that were already given to citizen. Hence, BPN needs to establish rules or regulations that sets up the mechanism to formulate land use policies to land offices at district level.

2. The redesigning part of this research is focus on establishment of the new LIS of Larasita which is connected to Infrastructure Department of Planning and Development Agency and village office. The establishment of reference letter database is not discussed in depth here. Thus, it is recommended to have further research on feasibility study of developing spatial information in the village level using point cadastre.
3. The redesigning of LIS of this research is only conducted considering small number of actors. There are many other actors performs LIS for their own purpose in the national level. Hence, it is recommended to have future research in the development of e-Government in Indonesia to increase the efficiency and effectiveness in service delivery.

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APPENDICE

APPENDIX I

FIELDWORK SCHEDULE AND RESPONDENTS

WEEK	DATE	TYPE OF DATA/INFORMATION	INSTITUTION	NAME OF RESPONDENTS	
I	26-Sep-12				
	27-Sep-12				
	28-Sep-12	Legislation/act concerning Larasita	BPN Central Office	Darman	
		Report progress of Larasita			
		LIS of Larasita			
		Guidelines technical			
		Rules and regulation			
29-Sep-12	Evaluation report				
30-Sep-12	Meet Pak Edi				
II	01-Okt-12	Arrived at Banjar	Local government		
		Apply for research permission			
	02-Okt-12	Introduction to research	Land office of Banjar	Ir. Edi Priatmono, M.Si Noor Efansyah, SH Agus Sugiono, SH Sirajuddin, BA Surianto, SH, MAP Idah Pujilestari	
		Land registration in Banjar (who are the stakeholders)			
		Larasita performance (service and relationship with other actors)			
		Roles and responsibility of Larasita and land office in the land			
	04-Okt-12	Observation	Larasita	Abdul Djuhri, Ingnawati, Fieter, M.Abduh, Srie Lani, Yulita, Randy Triyunius, M.Arsyad, H.Surian, Masliyana	
		Interview user of Larasita services			
		Coordinate of Larasita			
05-Okt-12	steps of registration process	Land office of Banjar	Staf of land office		
06-Okt-12					
07-Okt-12					
III	08-Okt-12	Introduction to research	Infrastructure Department of Planning and Development Agency of Banjar	M.Riza	
		Make an appointment			
	09-Okt-12	Roles and responsibility of Banjar spatial planning in land		M. Riza	
		Land use planning process (stakeholders involved)			
		Regulations, restrictions			
		Transparency of land use restrictions			
		Implementation of Banjar spatial planning			
		Development permit application			
		Land dispute in land use aspect			
		Banjar Spatial Planning Maps and datasets (Structure and zoning)			
	Legislation --> spatial act				
	10-Okt-12	Introduction to research		Notary	Wenny Herliyanti, SH., Tati Yulianti, SH
		Roles and responsibility in land registration			
Land dispute					
11-Okt-12	Introduction to research	BNI'46	Amin Nurhuda		

		Roles and responsibility in land registration	Bank Kalsel	Yan Pebri
		Land dispute		
	13-Okt-12			
	14-Okt-12			
IV	15-Okt-12	Introduction to research	Sub-district office of Simpang Empat	Suharyono
		Roles and responsibility in land		
		Land dispute		
		Larasita performance		
	16-Okt-12	Introduction to research	Head of Village Cintapuri	Rusliyansyah
		Roles and responsibility in land	Head of Village Cintapuri Keramat Mina	Darmansyah
		Larasita performance		
	17-Okt-12	Introduction to research	Land office of Banjar	Ambar Triwidiatmoko (Registrar) Norman, Johansyah (surveyor)
		Land registration process		
		Transparency in Land registration (fees and process)		
		Roles of surveyor		
		Land dispute		
	18-Okt-12	Introduction to research	Forestry Department of Banjar	Rahmat
		Roles of Forestry Department in Banjar		
Land dispute				
20-Okt-12				
21-Okt-12				
V	22-Okt-12	Banjar Land Ownership	Land office of Banjar	Iriansyah, S.SiT
		Banjar spatial datasets		
		Sample of land certificate		
	23-Okt-12	Completion of datasets	Land office of Banjar	Angga Islamanda
	24-Okt-12	Completion of datasets	Planning and Development Agency of Banjar	Ratu Fifi Sofia
	25-Okt-12	Completion of datasets	Forestry Department of Banjar	Rahmat
26-Okt-12	Return to Enschede			

The interviews protocol

Preparation	Making phone calls for brief introduction of interview content and making appointments
During the interview session	<ul style="list-style-type: none"> - Introducing interviewer identity - Introducing the aim of the research - Explaining briefly about the research - Informing that the interview will be recorded and asking for interviewee's consent - Explaining that the data from interview will only be used for the research and not for other purposes - Asking for relevant documents (regulation, maps) for Infrastructure Department of Planning and Development Agency of Banjar , Forestry Department and Land Office of Banjar.
Post-interview	<ul style="list-style-type: none"> - Transcribing the interview records

- Summarizing the points obtained from interview

List of Questions:

Land Office Head and head of sections

1. In land registration process, who are the stakeholders?
2. How do the stakeholders involved in the land registration process?
3. Does the users aware of the process, procedure and fee of land registration?
4. How does the user receive information about the land registration process, procedures and fees of the services?
5. What kind of complaint that usually users have related with land registration process, procedures and fees?
6. What are the causes of land dispute?
7. The fragmentation of the system in land administration between stakeholders is causing land dispute? What is your opinion about this statement?
8. What is the relation between spatial planning and land ownership?
9. Is there any regulation that set up relation between spatial planning and land ownership?
10. Linking land information system of spatial planning with land ownership could minimize land dispute in the future. What is your opinion about this statement?
11. If fully agree or partly agree, what do you think about links of land information system to other actors?
12. Who are the actors that involved with Larasita services??
13. Does the public aware of the process, procedure and fee of land registration of Larasita services?
14. How is the users receive information about the land registration process, procedures and fees in Larasita services?
15. How is the users opinion to the Larasita services?
16. What are the constraints in delivering Larasita's service?
17. What kind of complaint does the customer have to Larasita?
18. What can be expected from Larasita regarding to land dispute?
19. In your opinion, how does Larasita's service being delivered?
20. If it is less satisfy or unsatisfy, what are the alternative actions to improve this situation?

Registrar

1. Does the public aware of the process, procedure and fee of land registration?
2. How does the user receive information about the land registration process, procedures and fees of the services?
3. What kind of complaint that usually users have related with land registration process, procedures and fees?
4. Based on your opinion and your experience, what are the causes of land dispute?
5. The documents submitted by the applicant, which are in doubt of its authenticity, can cause land dispute. What is your opinion on that statement?
6. If fully agree or partly agree, what is your suggestion to regarding to that matter?
7. The fragmentation of the system in land administration between stakeholders is causing land dispute? What is your opinion about this statement?
8. If the land information system between stakeholders is linked each other, it will minimize the occurrence of land dispute. What is your opinion about this statement?

Surveyor

1. Who are the actors involve in land survey activities?
2. What are their roles?
3. Are they guaranteed to provide correct information?
4. If it is yes, who guarantee if they provide correct information?
5. If they do not provide correct information, it tends to create land dispute in the future. What do you think about this statement?
6. If fully agree or partly agree, what suggestions do you have so the information provided by the parties will not raise land dispute?

Infrastructure Department of Planning and Development Agency of Banjar

1. Who are involved in the planning and implementation of spatial plan (stakeholders)?
2. What is the role of the Infrastructure Department of Planning and Development Agency of Banjar in the land?
3. How do you implement the spatial plan and regulation?
4. What is the role of the head of sub-district and village in spatial planning?
5. What is the role of the land owners in spatial planning?
6. How do you involve/encourage the land owners to participate in the planning process of spatial plan?
7. In the practice, do the stakeholders play their role properly?
8. If no, what is the reason?
9. What kind of problem that is faced in the implementation of spatial plan and regulation?
10. How do you to deal with that problem?
11. Does the public aware of implementation of spatial plan and the regulation in their own neighbourhood?
12. If yes, how does the citizen get information related spatial plan?
13. Do you think that there is relation between spatial plan and land ownership?
14. If yes, do you think that giving information of spatial plan (including restrictions) in the land certificate could minimize land dispute in the future?
15. Is there any regulation that set up relation between spatial planning and land ownership?
16. In the practice, how does the relationship between spatial plan and land ownership currently?
17. If it is poor, very poor or not correlated, what is the alternative action to improve this situation?

Forestry Department of Banjar

1. What is Forestry Department roles in land?
2. What regulation that is governing forestland in Banjar?
3. Does the community aware about the regulation?
4. What is Forestry Department relation with land registration process?
5. What do you think the causes of land dispute towards forestland?
6. What solution that you suggest regarding to land dispute of forestland?
7. Does Forestry Department involve in spatial planning process of Banjar?
8. What is Forestry Department in the spatial planning process of Banjar?

Head of sub-district and village

1. What are your roles and responsibility regarding to land ownership to the citizen?
2. What kind of information and service that you provide for citizen related to land ownership?
3. Does the public aware of the process, procedure and fee?
4. If yes, how does the citizen get information related to process, procedure and fee?

1. Does the process and procedure simple?
2. Does the process finish on time?
3. What are your roles regarding to spatial planning and regulation to the citizen?
4. What kind of information and service that you provide for citizen related to spatial plan?
5. Does the public aware of implementation of spatial plan and the regulation in their own neighbourhood?
6. If yes, how does the citizen get information related spatial plan?
7. What is your relation with the spatial planning agency and the land office?
8. What is your opinion to the Larasita services?
9. Do you prefer to use Larasita services than land office?
10. What is your suggestion to improve this situation?

Notary

1. What kind of information and service related to land ownership that you provide for citizen?
2. How do you perceive the land service process, procedure and fee?
3. Does the public aware of the process, procedure and fee?
11. If yes, how does the citizen get information related to process, procedure and fee?
12. Does the process and procedure simple?
13. Does the process finish on time?
4. What is your relation with the spatial planning agency and the land office?
5. Does the public aware of implementation of spatial plan and the regulation that attached to their land parcel?
6. If yes, how does the citizen get information related spatial plan?
7. What is your opinion to the Larasita services?
8. Have you ever use Larasita services?
9. Do you prefer to use Larasita services than land office?
10. What is your suggestion to improve this situation?

Bank

1. What is you roles related to land services?
2. How often do you the land office services?
3. How do you perceive the land service process, procedure and fee?
4. Does the process and procedure simple?
5. Does the process finish on time?
6. Have you ever use Larasita services?
7. What is your opinion to the Larasita services?
8. Do you prefer to use Larasita services than land office?
9. What suggestion you can give to Larasita services?

Users

1. How many times you used the services of Larasita services?
2. Do you prefer to use Larasita services than land offices?
3. What is the reason?
4. Can you get information easily from Larasita's team?
5. Are you aware of the process, procedures and the fee of the registration in Larasita?
6. If yes, are you receiving the information quick and clear?
7. Does the process and procedure simple?
8. Does the process finish on time?

9. Which ways you receive the information about land registration of Larasita?
10. What problem that you are facing in the registration process?
11. Do you have difficulties to prepare the documents that are needed as a base to register?
12. If yes, how do you deal with this situation?
13. What is your suggestion to Larasita services?

APPENDIX II
SOME PHOTOS

