

UNIVERSITY OF TWENTE.

CAPACITY BUILDING FOR LAND ADMINISTRATION
AND 3D GEO-INFORMATION
(ISSUES, EXPERIENCES AND WAY FORWARD)

ARBIND TULADHAR

FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION
(ITC), UNIVERSITY OF TWENTE. ENSCHEDE

SINO-DUTCH SPATIAL PLANNING AND LAND REGISTRATION EXPERT
MEETING PROGRAM ON 24 SEPTEMBER 2015 AT
MEETING ROOM NO. 2, 12TH FLOOR, SHANSHUI HOTEL, BEIJING, CHINA



FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION



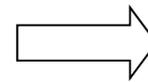
CONTENT

- General Information
- Land Governance
- International Initiatives
- 3D Geo-information
- Capacity building
- Way forward
- Q & A



GENERAL INFORMATION

- Agenda 21 Rio de Janeiro 1992
- Global Plan of Action Habitat 1996
- Delhi Declaration 1996
- UN/FIG Bathurst Declaration 1999
- Global Campaign for Secure Tenure 2000
- Johannesburg Summit 2002
- World Bank Land Policy
- Others



- **Desirable characteristics of land rights**
 - duration & predictability
 - transparent allocation and broad access
- **Institutions to enforce land rights**
 - comprehensive scope & flexibility
 - clear mandate/accessibility
 - fin/tech/social sustainability
- **Policies to strengthen land rights**
 - integrated nature and systematic
 - integration civil society and private sector
- **Role of land markets**
 - economic growth
 - productive efficiency and land use
- **Land rental markets**
 - policy issues



Land and house





GENERAL INTRODUCTION

THE ROLE OF LAND ADMINISTRATION

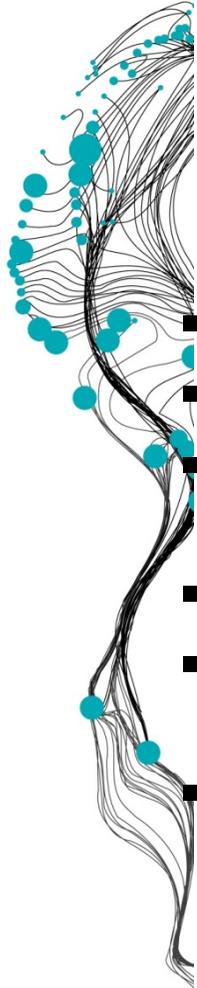
- Land administration is the process of determining, recording, and disseminating of information about ownership, value and use of land, when implementing land management policies (UN Land Administration Guidelines)
- Land administration is the process of regulating land and property development and the use and conservation of the land, the gathering of revenues from the land through sales, leasing and taxation, and the resolving of conflicts concerning the ownership and use of land (Dale & McLaughlin, 'Land Administration', 1999)



GENERAL INFORMATION

LAND REGISTRATION AND CADASTRE – CURRENT SITUATION

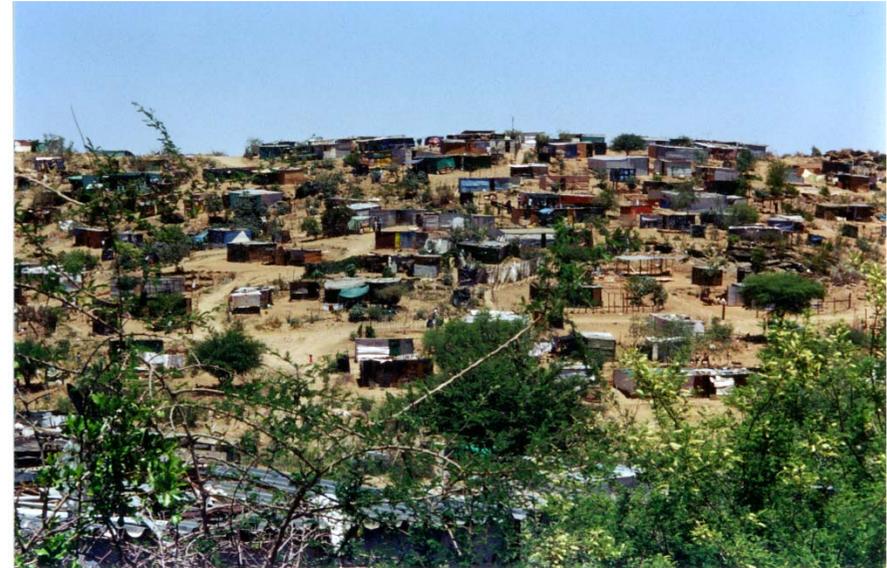
- Incomplete registration of land registration and incomplete spatial/map coverage
- Unreliable data, inconsistency and fragmented among many organisations
- Poor management of land registration and cadastre
- Slow in performing cadastral services including product delivery
- Inefficient and difficulties in maintaining integrity of information and updating
- Reliable timely access to information is very difficult
- Data duplication is too frequent and sharing is impossible
- Security and privacy of information are often violated



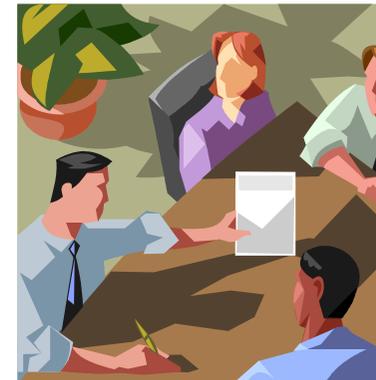
GENERAL INFORMATION

LAND REGISTRATION AND CADASTRE – CURRENT SITUATION

- Insecure Land tenure
- High land disputes
- Access to land and housing difficult
- No stimulation on land market
- No support to development of economy
- Difficulties to support programme such as land reforms, Land resettlement, land consolidation, land development, etc.
- Does not support good governance



Informal settlement in Namibia





GENERAL INFORMATION

LAND AND POVERTY

- Failure in appropriate land policies and management = source of inequity and poverty
- Land administration (land ownership, land use and land value) is a critical element in the development agenda
- Land administration as an emerging recognition is a critical governance issue.





LAND GOVERNANCE FAO DEFINITION

The process of governing.

It is the way in which society is managed and how the competing priorities and interest of different groups are reconciled.

It includes the formal institutions of government but also informal arrangements.

Governance is concerned with the processes by which citizens participate in decision making, how government is accountable to its citizens and how society obliges its members to observe its rules and laws.





LAND GOVERNANCE

CONCEPTS AND CHARACTERISTICS

- Concepts of 'governance'
 - Broader than 'government'
 - Emphasizes processes and institutions
 - Recognizes the importance of power and politics
 - Conceptually neutral
- Characteristics of land
 - Land is more than just asset
 - Multiple rights over land
 - Rights, restriction and responsibilities are expressed through a socially constructed system of land tenure
 - Land rights have different sources of legitimacy
 - Land tenure itself is an Institution



LAND GOVERNANCE WEAK AND GOOD GOVERNANCE

Weak governance leads to:	Good governance ...
1. Insecurity of tenure	1. Protects the poor from illegitimate evictions
2. Land conflicts	2. Allows for just resolution of land disputes
3. Social and political instability	3. Brings the rule of law within the reach of the poor
4. Erosion of ethics and standards of behavior	4. Reduces fraud and bribery
5. Inequitable land distribution	5. Allows for more equitable access to land
6. Reduced private sector investment	6. Provides incentives for investment
7. Limited local revenues	7. Allows the state to benefit from land taxation
8. Unsustainable natural resources management	8. Creates incentives for landowners to use their land in a sustainable manner



LAND GOVERNANCE

PRINCIPLES

- **Security** - Security of tenure for all; Eminent domain: prompt and adequate compensation; No forced evictions / negotiated process
- **Transparency** - Acting visibly, acting understandably, acting predictably
- **Accountability** - Culture of impunity
- **Civic Engagement : public participation** - Dialogue and consensus building orientation, facilitating active participation of all groups; participate actively
- **Effectiveness and Efficiency** - Simplified rules and procedures; Service orientation



LAND GOVERNANCE PRINCIPLES

- **Rule of Law** - Respect for legal pluralism; laws, rules and procedures consistently and impartially enforced; traditional and alternative dispute resolution included
- **Equity** - Pro-poor; gender, inter-generational, ethnic, etc.
- **Sustainability** - Land use balances social, economic and environmental needs; Land administration systems are affordable, accessible to all, and are maintained and updated over time
- **Subsidiarity** - Decentralization of decision-making and management



INTERNATIONAL INITIATIVES

VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

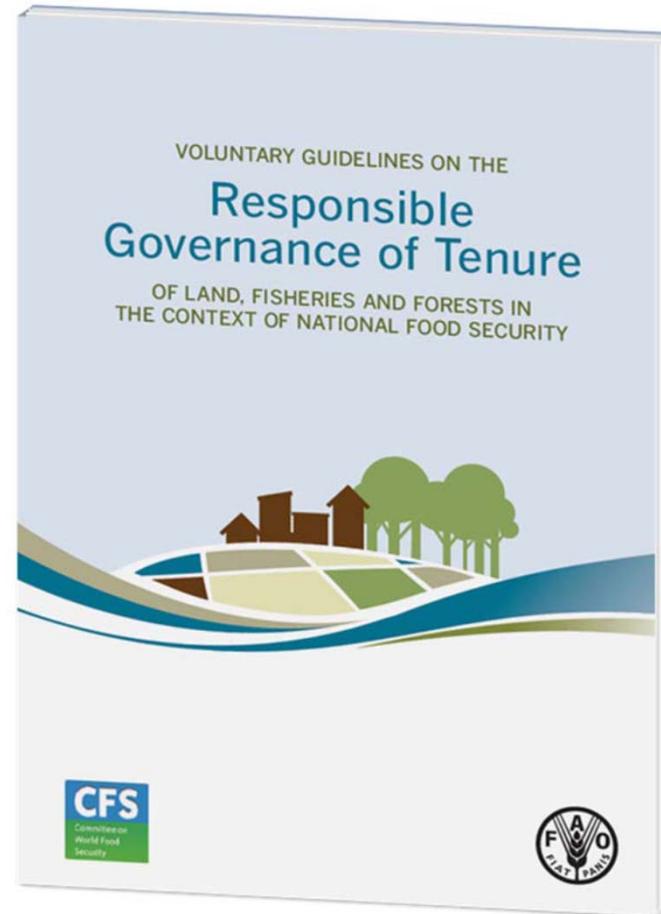
- The Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security is an internationally negotiated document by the Committee on World Food Security (CFS) under UN/FAO;
- The negotiations over a nine month period involved 96 member countries and over 30 civil society organizations. The document was adopted by the CFS in May 2012;
- a reference and provide the guidelines for countries to use in the establishment of laws and policies, strategies, and programs which clarify and secure tenure rights. It accommodates for many differing viewpoints on 'Best Practices' and introduces a broad range of structures that can be relevant in all parts of the world.



INTERNATIONAL INITIATIVES

VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

- Voluntary
- Set out principles and practices
- Do not replace laws and treaties
- Do not reduce existing obligations





INTERNATIONAL INITIATIVES

VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

- The livelihoods of many, particularly the rural poor, are dependent on secure and equitable access to land resources.
- They are the source of food and shelter; the basis for social, cultural and religious practices; and a central factor in economic growth.
- Inadequate and insecure tenure rights to natural resources often result in extreme poverty and hunger.
- Many tenure problems arise because of weak governance and the quality of governance affects the attempts to address tenure problems



VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

CONTENTS

1. General matters

- Rights and responsibilities related to tenure; policy, legal and organizational framework related to tenure; delivery of services.

2. Legal recognition and allocation of tenure rights and duties

- Safeguards; Public land, fisheries and forests; Indigenous people and other communities with customary tenure systems; Informal tenure

3. Transfers and other changes to tenure rights and duties

- Markets; Investments; Land consolidation and other readjustment approaches; Restitution; Redistributive reforms; Expropriation and compensation



VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

CONTENTS

4. Administration of tenure

- Records of tenure rights; Valuation; Taxation; Regulated spatial planning; Resolution of disputes over tenure rights; Transboundary matters

5. Responses to Climate change and emergencies

- Climate change; Natural disasters; Conflicts in respect to tenure of land, fisheries and forests

6. Promotion, implementation, monitoring and evaluation



INTERNATIONAL INITIATIVES

LAND GOVERNANCE ASSESSMENT FRAMEWORK (LGAF)

Why Land governance is often poor

- Overlapping institutional mandates
 - Long history of legislations, often contradictory; agriculture, urban, forest, environment all with part of the action; coordination mechanisms often weak
- Technical complexity & lack of participation
 - A complex subject (legal, spatial, IT) – often poorly understood; often used to restrict participation
- Long-term nature of improvements
 - Lack of coherent long-term approaches & continuity; projects often ad hoc, sporadic, and without focus or continuity; little piloting
 - Perceived as risky & complicated
- Lack of awareness of global good practice



INTERNATIONAL INITIATIVES

LAND GOVERNANCE ASSESSMENT FRAMEWORK (LGAF)

- Development in 2007 by World bank, FAO, IFAD, UN Habitat and African Union
- Comprehensive assessment tool
- To be driven by national experts and specialists
- To build consensus on what are strong points; what needs to improve and where to start (priority recommendations)
- Set a benchmark (country scorecard) to be used for tracking progress and identify opportunities for south-south exchange



INTERNATIONAL INITIATIVES

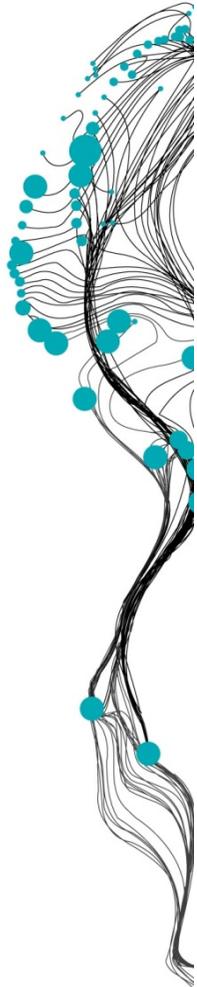
LAND GOVERNANCE ASSESSMENT FRAMEWORK (LGAF)

- **Assessment tool based on variety of indicators of six thematic areas**
 - Legal and institutional Framework
 - Land use Planning, Management and taxation
 - Management of Public Land
 - Public provision of land information
 - Dispute Resolution and conflict Management
 - Forestry, Large scale land acquisition, Tenure regularization



LAND GOVERNANCE ASSESSMENT FRAMEWORK

- Tool is flexible and can be used by the range of stakeholders
 - Facilitates recognition of common interests among stakeholders (in Gov't & beyond)
 - Provides information basis that can be used by stakeholders
 - Not only for low-income countries – also applied in Brazil, India, Peru, Philippines, Georgia
 - Process can be applied across cultures

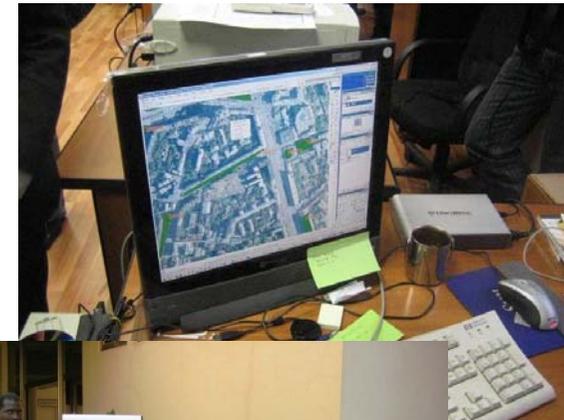


INTERNATIONAL INITIATIVES

UN-HABITAT /GLTN/ITC INITIATIVES - TRANSPARENCY TOOLS IN LAND ADMINISTRATION

Tools to improve transparency:

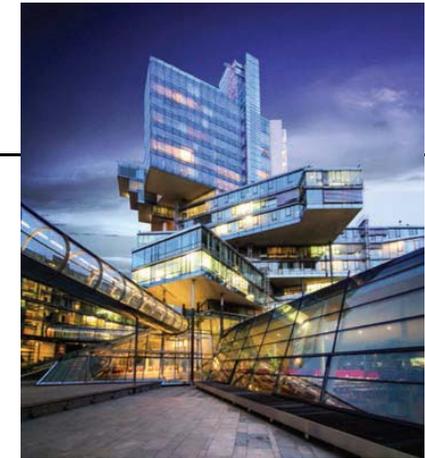
- Improving access to Geo-information and availability of data + clear and simple procedures
- Monitoring and assessment transparency
- Public Participation;
- Promotion of ethics, professionalism, integrity
- Increased transparency through institutional changes



3D GEO-INFORMATION

Nowadays, especially in the urban areas, it is important to manage the **land rights, restrictions and responsibilities** (RRRs) and in 3D this is very challenging.

The 2D approach is not so efficient in complex, modern structures and also it's hardly understandable.



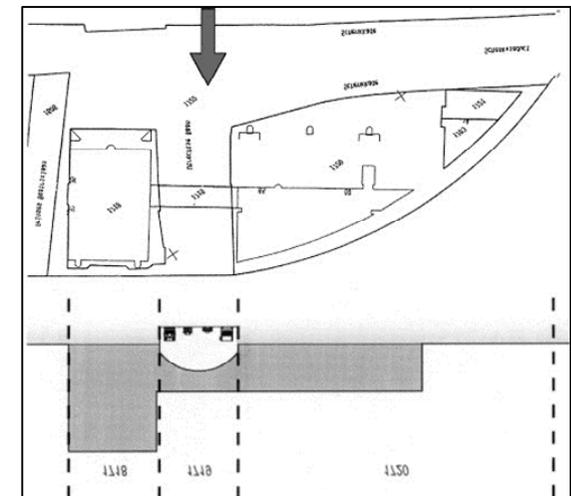
When do we need 3D?

- Buildings within other buildings
- Constructions above or below roads (tunnels, bridges)
- Telecommunication and electric utilities on land ownership
- Overlapping private properties



What is full 3D cadaster?

- Introduce concept of 3D property rights
- 3D space divided into volumes without overlaps or gaps
- Changes needed to legal basis and transaction protocols





3D GEO-INFORMATION

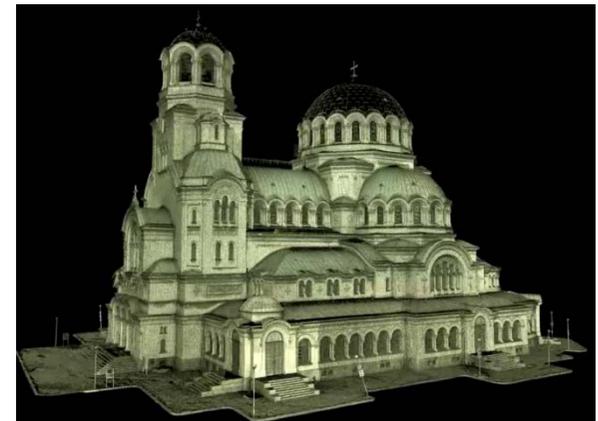
- No fully operating 3D Cadastre in the world
- 3D Cadastre is only possible when the **juridical framework** provides the possibility to establish **volume parcels and 3D properties**.
 - Norway and Sweden have passed the laws for proper registration of 3D parcels
 - Denmark, Israel, Greece and other European countries already has some systems for registration of 3D geo-objects and properties in Cadastre.



3D GEO-INFORMATION

3D Data acquisition techniques

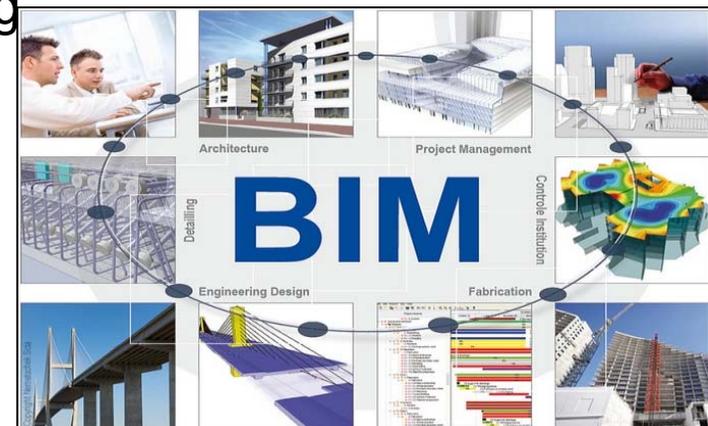
- Laser scanning (airborne and terrestrial)
- Digital imagery (aircraft, UAV and terrestrial)
- Mobile mapping systems





3D GEO-INFORMATION

- **3D spatial database**, management and storing (geometry and topology should be considered) (3DCityDB)
- **Different software products** for 3D visualization and modelling (Bentley, ESRI and Intergraph...)
- **Different formats** (DXF, SHP, VRML, X3D, KML, Collada, IFC, CityGML and 3D PDF)
- **BIM** – Intelligent model-based process for planning, designing and managing buildings and infrastructure





CAPACITY BUILDING MINIMIZING ISSUES IN LAND ADMINISTRATION

- Based on governance concepts and principle we need a huge range of capacity on:
 - Improvement of land tenure and legal security;
 - Reforming institutional and organization issues; involvement of civil society and private companies
 - Reforming land administration toward services (G2C, G2B and G2G) and access to Geo-information (including 3D geo-information)
 - Land use planning, urban and rural land development – bridging the gaps between urban and rural development and food security
 - Fiscal instruments
 - Conflict resolution
 - Land market regulations and credit mechanisms



CAPACITY BUILDING MINIMIZING WICKED PROBLEMS IN LAND ADMINISTRATION

- Converting from the complicated processes to simple registration procedures;
- Restructuring from multi-organizational structure to single;
- Bringing from paper-based systems to computer automated systems;
- Changing from Judicial to administrative registration processes;
- Skip time consuming consent procedures;
- Converting from parallel and redundant procedures to one stop;
- Bringing from profit-based to cost recovery fee structure;
- Converting from unmanaged time limits to process management.



WAYS FORWARD ON CAPACITY BUILDING RESEARCH CAPACITY

- Joint Scientific research in land issues together with professional organization is needed to match the societal needs and changing environment (including climate change) toward sustainable development;
- Some interesting research issues:
 - Land governance for effective land administration processes with focuses on economic growth, food security, environmental protection and gender sensitization;
 - GIS and space imaging for land management activities;
 - Land information infrastructure and open data policy;
 - E-government (G2G, G2C and G2B services) for land administration
- Research capacity at individual organizational level



WAYS FORWARD ON CAPACITY BUILDING EDUCATION IN LAND ADMINISTRATION

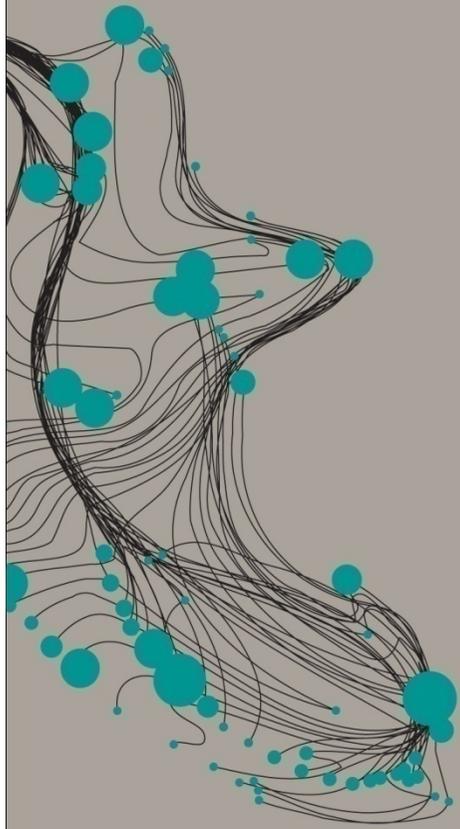
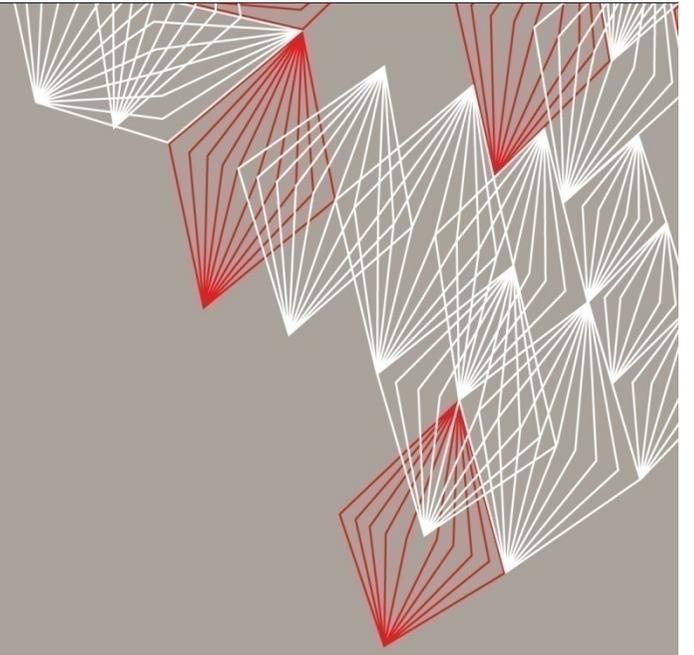
- Critical mass of capacity building
 - Land administration and land development
 - Geo-informatics
 - Geo-information Management and organizational management
- Education level
 - PhDs
 - Master of science
 - Professional education
 - Short courses
 - On-job training
 - Tailor made training



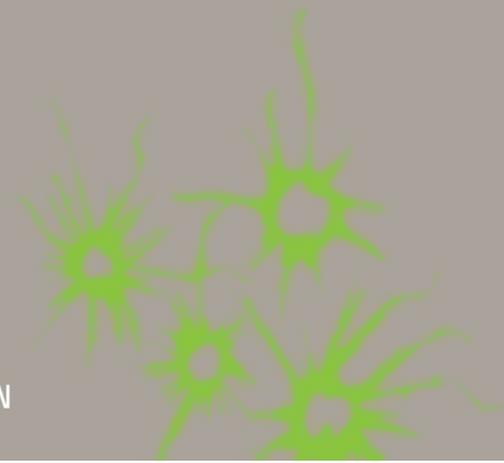
Questions and Answers



UNIVERSITY OF TWENTE.



THANK YOU FOR ATTENTION



FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION