

Land Administration capacity building in support of sustainable development and economic growth

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Land Administration in the World

- Only one quarter of the countries in the world maintain a complete land administration system
- Conventional land titling programs incapable of bridging the gap; they fail to support the provision of a minimum form of land tenure security for
 - For all the citizens
 - Including vulnerable ones



Land Administration Mission

- In order to align this with the UN Sustainable Development Goal 1.4: ‘all men and women, in particular the poor and the vulnerable, have equal rights to and ownership and control over land and other forms of property’ by 2030
- Land Administration Mission is: to provide education, research, and capacity development in [responsible land administration](#)
- to develop [land administration capacity](#) rooted in [cadastral intelligence](#), and to [create change agents](#) capable of designing and applying both [responsible](#) and [fit-for-purpose land administration solutions](#)



- Land is at the basis of all societies
- Land administration: a critical success factor for economic growth, food security, nature conservation and poverty reduction
- ‘the process of determining, recording and dissemination information about tenure, value and use of land when implementing land management policies’ (UN/ECE, 1996)
- A well-functioning [land administration information system](#), is one of the main instruments for governments to implement their land policies



Database and geo-information modeling for Land Administration

- Information management principles
- Principles of spatial database design
- Fundamentals of the relational data model
- Object-relational modelling
- Unified Modelling Language (UML): use case diagrams and class diagrams
- Spatial data modelling techniques
- Data manipulation and access using SQL

Creating Land Information Systems

- Concepts: modelling, design and architectures, transactions and processes, users and contexts
- User needs (e.g. user, architectural, functional, performance)
- Transactions - with land information (allocate; transfer; subdivide; consolidate; certify, etc.)
- Land Administration Domain Model (ISO LADM)
- Systems Analysis and Design - tools and methodologies e.g. UML, use case
- Enterprise Architectures: business layer, data layer, application layer, technology layer)
- Spatial Databases and SQL
- Prototype Land Information System Development - and transaction designs using database and geo-ICT (i.e. ArcSDE, ArcGIS and Postgres)



Cadastral data Acquisition and 3D Cadasters

- Technical aspects of societal challenges e.g.'land grabbing', food security, climate change, and rapid urbanization
- Models of earth, datum's, coordinate systems, projects, conversion, transformation, and control networks
- Cadastral surveying including fit-for-purpose approaches, boundary options, monuments and identifiers, 3D options, establishment, maintenance, and renewal
- Global navigation satellite systems (GNSS) for land administration, GPS signals, segments, satellites, mobile mapping, receiver types, quality, errors, and positioning infrastructure
- Imagery for land administration: aerial imagery, orthophotos, satellite imagery, terrestrial imagery, UAV imagery, LiDAR and Laser Scanning and oblique imagery
- Cadastral data rejuvenation: scanning, digitizing, georeferencing sketches, and legal documents
- Integrated technologies for land adjudication, surveying, demarcation, and recording



Securing Land Tenure

- Land tenure (individual, communal and state)
- Land rights (including housing rights; women and land rights; pro-poor)
- New institutional economics
- Legislative framework for land administration processes
- Land registration and cadastral systems
- Land adjudication
- Land administration institutions
- Slums and informal settlements
- Fit-for-purpose land administration and land tools



Land Policy and Land Management

- **Land policy:** concept, development, implementation
- Role in the governance of private, state, and common lands
- Rapid urbanization, slum formation, informal systems, and land conflicts
- Good governance, land markets, credit markets, food security, climate change and natural disaster management
- Land administration functions: land valuation, land-use, and land development
- **Land management:** land taxation, land expropriation and compensation, land readjustment and restitution, and land consolidation
- Information modelling tools for land policies for system design and implementation including UML
- Case studies local, regional and country context from all around the world



Organizing Land Administration

- The (changing) position of land administration agencies in the field of land governance
- Organizing: the formal and informal character of organizations
- Enacting technology: organizational aspects of implementing (geo-) ICT
- Contemporary challenges and implications of these challenges for land administration organizations (e.g. land policy change, public sector reform, adoption of (geo)ICT, budget constraints, commercialization, price setting for information services, uptake of social media, changing work force)
- Practical experiences in organizing land information
- Tools and methods to adapt and re-organize (taking stock, creating visions and strategies, and implementing change)
- Taking stock through SWOT analysis
- Vision and strategy development
- Implementing change: work flow analysis, design and management



Innovative Approaches for Land Administration

- Hands-on on Free and Open Source software/tools for land tenure documentation
- Web platforms that facilitate open and transparent land administration
- Crowd Sourced Cadasters
- Web architectures, web services; open systems; static and dynamic geo-services; client/server components for web service implementation
- Case studies from the professional experiences of students

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Thank you for your Attention

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