Challenges of Providing Spatial Data to Developing Countries

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The Importance of Spatial Data to Support the Economic Needs of a Country

Land is the major source of wealth

Land Policies aiming to an economical growth:

- secure tenure - create incentives for investment
- facilitate the exchange and distribution of land market, non-market channels
  inheritance, award, expropriation
- promote and contribute to socially desirable land allocation and utilization demands
  decollectivization, land reform,
  post-conflict land policy

Land Policies aiming to an economical growth:

- Establish sustainable land use
  taxation, valuation, regulation,
  land use planning
- monitor the environment - tackle specific issues
  disease control,
  elimination of informal development,
  climate changes, defense systems
- improve country's infrastructure
  build utility & road planning

Much research focused on Land Administration & Spatial Information Management

Trust among citizens-business-government is the foundation of economic well-being

Confidence → Investments → Improvement
↓
Economic Growth

Systems that secure land tenure and serve land transfer are tools to make the realization of this wealth possible

Land Administration Systems

Mapping/Spatial Data provision

The integration of Mapping to LA

- Surveying & mapping technology changed into sophisticated systems
- demands for Multi-disciplinary services arose
- Geomatics, SDI, legal, administrative issues-LA

Provision of Spatial Data is more complex today
technical, legal, political, cultural, financial aspects
analysis
updating
distributing
sharing

Cadastral maps are the basic mapping framework

Funds and the imperative to control cost

Building or re-building a national cadastre
is considered to be a time & cost demanding process
government funds, grants and loans

- The priority in developing countries is to develop the land market
  Spatial data is in a Multi-disciplinary market with many other demands on the same funds
- Need to identify cost effective ways for the availability and accessibility of tools of land information

Funds and the imperative to control cost

Economic pressure-demands for cost-effective ways and tools:

Good Results on ***time*** and ***within budget***

Does cost control mean:

Cheap equipment and lower quality?

- *Expensive equipment may save overall costs*
- *Rapid technological developments*
  "technology refresh"
- *Definition of quality according to present and future needs of the project:*
  strategic plan, future integration, upgrading

Time required is the most costly factor

Less time = Low cost & More productivity

- ✓minimize labor
- ✓Quality Control / Quality Assurance mechanisms
  - efficiency
  - accountability
  - good quality of service-data and services that are fit for purpose and use
  - satisfying customers' needs

→ **Low cost in Implementation**

→ **Low operational cost / sustainability**

Problems related to funding mechanisms

Difficulties in cadastral projects make the sustainability of the development aid questionable

Three key-players involved:

– Donors (World Bank, EU governments, foundations)

– Recipients (ministries, agencies, the public)

– Practitioners (donor country mapping agencies, consulting companies, experts, project managers)

All 3 are responsible for the success of the project

Donors

- Multilevel experience
- Aware of new technologies and new trends
- Enthusiastic in suggesting guidelines
- *new ideas are not always applicable,*
- *new methods are not always appropriate*
  philanthropy + commercial interest
- *Competitive tender procedure*
  less colonial relationship
- *Financial aid should be determined by the recipient needs*
- *Donors activities should be coordinated by recipient government*

Recipients

- *More aware of local issues*
- *Lack of experience*
- *More optimistic than justified*
- *Adopt unrealistic visions*
- *Unwilling to compromise on pragmatic solutions*
- *Unwilling to proceed into the necessary legal or institutional changes*
- *Lack of updated technical and managerial skills*
- *Lack of professionalism*
- *Self-seeking politicians*
- *Interdepartmental jealousies*

Foreigner practitioners

- Not always aware of local situations
- Participate to the projects for relatively short periods
- When they devise critical solutions, they are not always effective recipients are skeptical

✓ *Systematic coordination of donors' activity*

✓ *Close supervision, careful selection of practitioners*

✓ *Continuous capacity building for the recipients*

Low cost in Implementation

Factors that influence the cost of establishing a LAS :

- **Design/plan-strategic plan**

  take into consideration:

  - ✓ existing system,
  - ✓ statutory law referring to land issues,
  - ✓ customary tenure,
  - ✓ ongoing relevant LA projects

  - ➢ identify clear and tangible economical benefits
  - ➢ identify customers' needs and set the priorities
  - ➢ justification of costs, necessary budgets

- **Technical approach**

  take into consideration:

  - ✓ size of the country,
  - ✓ accuracy of data,
  - ✓ involvement of private sector,
  - ✓ use of common & well established methods to secure good results,
  - ✓ focus on improving the land market

  - ➢ Flexibility should be given to the selection of equipment and method
  - ➢ "Quality", high accuracy should be sacrificed to reduce the costs and duration and ensure financing for full national coverage
  - ➢ Existing stock of spatial data should be used

- ➢ General boundaries are recommendable
- ➢ Appropriate scales for LAS between 1:10000 & 1:1000
- ➢ Data collection methods:
  - ❖ Field surveying
  - ❖ GPS measurements for the definition of control points or boundary points
  - ❖ Photogrammetry:
    - enlarged airphotos,
    - orthophotos / rectified photos,
    - high resolution satellite images IKONOS/Quick Bird,

      Satellite images with pixel size <0.5m will be available soon
    - DTM derived from airphotos or satellite images,
    - stereo-restitutions
  - ❖ Existing maps
  - ❖ Combination of the above methods

- ➢ Data processing and dissemination

  best results are achieved when
  - ❖ Land Registration/cadastre know-how and specialist computer expertise are brought together
  - ❖ IT in-house developments are costly and ineffective for large projects

- ➢ Development of e-land market

  to increase the efficiency and the public acceptance and reduce the operational costs:
  - ❖ Internet,
  - ❖ Electronic signatures,
  - ❖ SDIs,
  - ❖ New tools for data sharing like OpenGIS

- **Legal & Institutional approach**

  take into consideration:

  - ✓ collect only those data that you can maintain/update,
  - ✓ LA is a broad issue: mapping, registration of rights, valuation, taxation, physical planning,
  - ✓ many agencies are involved

- ➢ to limit the registration of objects to what is legally acceptable
- ➢ to handle disputes administratively outside regular courts

  67% of the cost in Greece
- ➢ break down large nation wide projects into smaller parts

  care for harmonization of data
- ➢ make all institutional and responsibility arrangements among involved agencies clear
- ➢ avoid big institutional and organizational changes to reduce conflicts
- ➢ avoid delays and extra costs for legislative and organizational arrangements

  Being joined-up does not mean being under the same agency ⟶ It rather means sharing data and having common goals
- ➢ encourage Public-Public coordination between relative on-going projects

  to avoid duplication of effort, costs & data collection

Low operational cost
Sustainability of the cadastral systems

Commercialization -introduce business culture into public sector. Reasons:

- increased need for funds/ need for continuous technological updating
- restricted governmental funds
- emerging local and international demands to serve customers

LA is a public good/state responsibility -"fees" should be affordable, some basic info for free (taxes)

Poor should have access

public servant & business approach:conflicting principles

Fee policies vary in different countries

Cost recoverability

- The users pay for the cost of making data available, but not for their collection & updating
- Partial cost recovery

  some of the income comes from central or local government - service agreements, data, services at certain price

  cartographic agencies-cadastres
- Full cost recovery

  transactions of land & legal rights bring revenue from the individuals
- Profit making

  sometimes the profit is reinvested into the same agency-new equipment, specific research

Cooperation & Information sharing

Business approach
"Sustainability"
"Cost-recoverability"
} means improving {
"Accountability"
&
"Efficiency"

Conclusions

Reducing costs is a complicated issue

Depends on:

- ✓ Tools and methods — *but also on:*
- ✓ Decision making — *and on:*
- Identification of the needs
- Supervision & progress assessment
- Political influence
- Culture
- Education
- Capacity building
- Experience

Proposals

More research in:

- Methods for surveying users' needs
- Methods in estimating users' satisfaction
- Methods in improving efficiency and proficiency
- Resolving legal issues more through by-laws, national standards & regulations
- Raising awareness at high political level
- Raising capacity building & education in LA
- Measuring the impact of the project-economic benefits-estimating costs
- Creating new forms of land tenure, integration of customary tenure

Collecting Spatial Data is not the problem

The challenge is balancing the :

- ✓**needs against resources**
- ✓**required knowledge against available skills**
- ✓**public will against competing societal demands**

Much remains to be accomplished in order to meet the need for applied spatial data systems both to established and to developing countries

in a { ***timely*** / ***practical*** / ***economical*** } ***manner***