Development toward International Standards of GIS industry in Thailand

GIS standard from Local Thai Government Perspective: a Case of Bangkok Metropolitan Administration

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BANGKOK
Capital City of Thailand
Local Authority: BMA
Approximate area: 1,580 KM²
Registered Population: 5.7 M
Age: 220 years old
About Bangkok (the city)

- **Bangkok has approximately 1,580 Sq. Kms. in area.**
- **The population by registration is 5,747,657 persons** (Administration and Registration Div., Mar 02)
- **Number of persons eligible for vote 3,901,108 persons** (Administration and Registration Div., Office of the Permanent Secretary for the BMA, Jan 29, 00)
- **Number of cars registered in BMA approximately 4 Millions** (Technical Div., Land Transport Dept., Dec 31, 00)
- **City’s Problems include traffic and transportation, flooding, pollution, quality of life, slums, drug, financial, etc.**
About BMA (the City Hall)

- BMA has general government service 18,520 positions and government school teacher 15,632 positions (a total of 34,152 positions). BMA also has permanent and temporary workers of 55,227 positions (Personal Div., Sep 01)
- Mainly, BMA has 14 Departments and 50 Districts. Other organizations under BMA are including Schools, Vocational Training Schools, BMA’s pawn shops, Hospitals, Public health centers, Community Markets, Public Parks, etc.
- BMA has net income of 24,714,293,989.22 Baht and net expense of 18,043,278,472.54 Baht (Account Div., Finance Dept., Dec 31, 99)
What Bangkok Metropolitan Administration (BMA) do?

- **Major of BMA projects dealing with physical environment of the city, such as:**
  - Design and revise Bangkok Master Plan,
  - Road construction and traffic control,
  - Create and maintain public parks,
  - Public cleansing,
  - Flood protection,
  - School mapping,
  - Tax mapping,
  - etc.

- **BMA’s basic tools for operating those mentioned projects are “MAP”**.
The beginning in 1988

- **Bangkok Metropolitan Administration (BMA)** and the other utility agencies within the city usually have communication problems. Some projects are redundant, inefficient, and consume a lot of budget.

- **To solve the problems, 5 agencies including BMA agreed to participate in the joint pilot Geographic Information project in 1988.**

- **The participating agencies were:**
  - Bangkok Metropolitan Administration (BMA),
  - Metropolitan Electricity Authority (MEA),
  - Metropolitan Water Authority (MWA),
  - Telephone Organization of Thailand (TOT), and
  - Department of Land (DOL).
Searching for standard

- The results from pilot Geographic Information project revealed the importance of having GIS standard as a medium for communicating and exchanging data among agencies.

- After the pilot project was ended successfully in 1992, the follow-up action was to create a common base map at the scale of 1:1,000 scale to use among agencies.
First step in standard

- In 2001, MEA successfully created 1:1,000 scale base map for entire Bangkok area.
- Former participants in pilot Geographic Information project were considering to accept MEA base map as a standard.
- BMA adopted MEA base map, and created 1:20,000 and 1:4,000 scale base map by generalized out of the original MEA 1:1,000 scale base map.
- Since BMA is a large organization, first step toward standardization among agencies is to set up a standard for organizations within BMA.
Standard in action

• In cooperation with Chulalongkorn University, BMA established GIS Master Plan and a standard set of spatial information called Fundamental Geographic Data Set (FGDS).

• BMA’s GIS Center was established according to GIS Master Plan in order to set up GIS standard and constructing FGDS. The center also acts as a technical support center for all organizations within BMA.

• The concept of FGDS is to define the most essential module of data set that are used by most of the organizations within BMA, and use this module as a medium to communicate with as much modules of data created by all users as possible.
Constructing FGDS

- **Some essential processes for defining FGDS are:**
  - Survey and define the common spatial information layers that are used by most organizations within BMA,
  - Study and define the required applications from all organizations within BMA, and
  - Study and analyze common spatial database structure that are best fit for all organizations to conveniently integrate or exchange data with others in order to create their own applications.

- **In final, FGDS was composed of only 4 essential layers, including:**
  - Administrative boundary layer
  - Road network layer
  - Water work network layer
  - Building and Landmark layer
Metadata Standard Design

- Other than FGDS, BMA develop a standard metadata to describe spatial data sources from different organizations within BMA.

- **Standard Metadata structure is defined under 4 categories, including:**
  - **General information of data set**
    - Citation, Description, Time period of content, Status, Spatial domain, Keywords, Usage conditions, and Native data set environment.
  - **Quality of data set**
    - Attribute accuracy, Logical consistency, Completeness, Position accuracy, and Lineage.
  - **Creation and distribution methodology of data set**
    - Spatial reference information, Entity and attribute information, and Distribution information.
  - **Bibliography of data set**
    - Metadata reference information.
Project status and obstacles

- GIS implementation in BMA has been progressing slowly after the economic crisis.
- FGDS was distributed to all organizations within BMA in the year 2000 to promote the standard. The follow up activities, such as GIS training, GIS workshop, GIS user group meeting, etc., are arranged from time to time.
- The survey found 83% of organizations within BMA have been tried to implement GIS, but only 38% had been succeeded so far.
- Most of organizations are adopting the standard and using FGDS as their base map, but few are still reluctant due to the differences in the standard that they already have.
Final words

- **BMA see the important of having a GIS standard and willingly to put high effort toward this objective.**

- **Parallel to establish a standard within organization, BMA also works in coordination with Thai National bodies to keep up with Thai National Standard on GIS.**

- **Although BMA is not up in a position to provide contribution to International Standard activities at the moment, we still want to be the part of the community, and we praise the efforts and the enthusiasm of all colleagues around the world to make ISO/TC211 happened.**
Please enjoy your stay in Bangkok
Please accept our sincere thank

From Bangkok Metropolitan Administration