Concept of Land Information System

Geographic Information System (GIS) is defined as collection of data, storage and analysis with relation to their spatial distribution at various stages of information handling. LIS is a bifurcation of GIS. When data in the GIS is related to various quantitative and qualitative aspects of land resource, it is termed as Land Information System (LIS). LIS is most often based on the ownership, management, and analysis of portion of the earth most frequently of interest to human.

LIS is further subdivided into parcel and non-parcel based. Non-parcel based LIS include natural resources information system. Activities within the non-parcel based LIS could include habitat, evaluation, conservation easement procurement, wildlife evaluation, earthquake and landslide prediction, flood hazard abatement, chemical contamination evaluation, forest and range management, and scientific investigation. Parcel-based LIS application is generally focused on land ownership and other cadastral investigations

Fundamental Elements of Land Information System

Fundamental elements for a LIS-based cadastral mapping system are as follows:
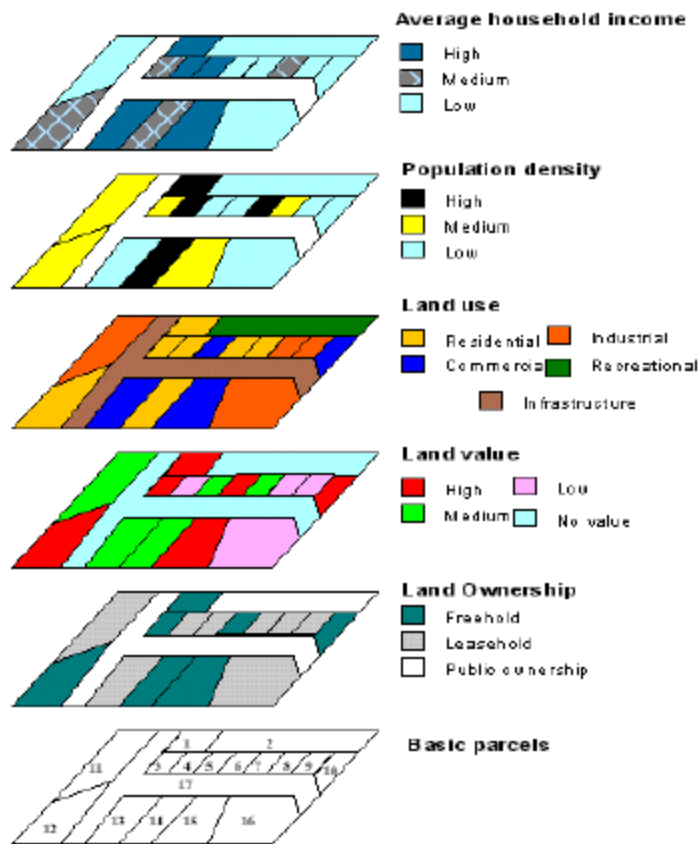
Geographic Control Data
Geographic control data describes the coordinate system of all data in the GIS that is used to reference where things are located. Major road intersections or property subdivision boundary corners could be used for spatial reference.

Cadastral Data
Cadastral data are the spatial information describing each plot containing area, use, plot number, plot boundaries together with location expressed in terms of mauza, upazila and district. These delineate all cadastral parcels and display a unique Identification Number (IN) for each of them and relate the parcel to attribute information.

Attribute Data
Attribute data are additional information about geographic control base map data, cadastral information, and other mapped features. For example, Ownership Rights expressed in terms of name and address of the owners, share of the plot, other interests in a plot that include appurtenances, mortgages and leases against the plot along with Identification Number (IN). Attribute data are stored in a database.

Average household income
- High
- Medium
- Low

Population density
- High
- Medium
- Low

Land use
- Residential
- Industrial
- Commercial
- Recreational
- Infrastructure

Land value
- High
- Low
- Medium
- No value

Land Ownership
- Freehold
- Leasehold
- Public ownership

Basic parcels

Source: Dale and McLaughlin, 1988.
Figure 01: The concept of LIS

Preparation of Land Information System

Component /Action	Actors and function tool
Satellite images and the conventional land record	Ministry of Land: Lease contract with Satellite Companies
Establishment of geodetic survey control network	Upazila Settlement Office: Collaboration with AC (Land) office and private companies
Extensive GPS Survey	Survey Team (ST) comprising Upazila Settlement Office and private survey companies: Joint venture
Investigation and Recording ownership	Record Preparation Team (RPT): Comprising the ST, Settlement officer, AC (Land) and Local Government representatives
Preparation of draft land record	Private companies: Under the supervision of Upazila Settlement officer and AC (Land)
Displaying draft land record, hearing & appeal	RPT: Regular hearing and recording
Finalization of Land ownership records	
Preserving and maintaining of Land ownership records	Private companies: Use of LIS A monitoring cell in Upazila Land office comprising the officials from Upazila Settlement Office and AC (Land) office