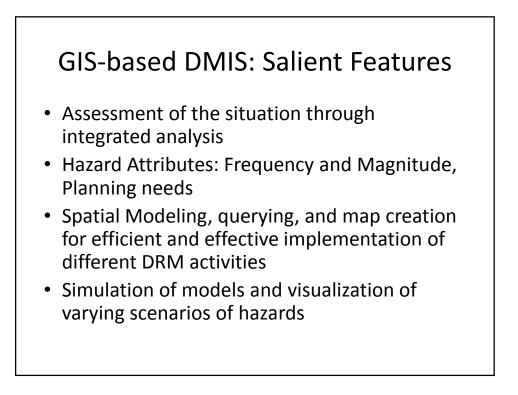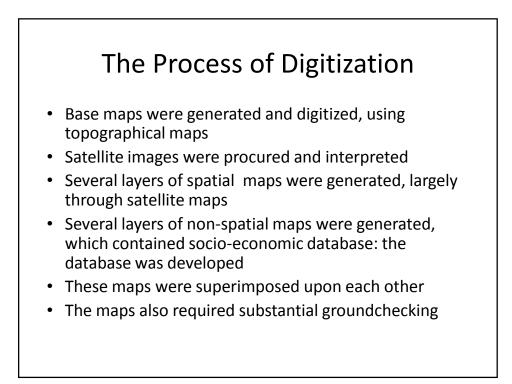# Development and Implementation of DMIS: Issues and Challenges

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GIS-based DMIS: Salient Features

- Assessment of the situation through integrated analysis
- Hazard Attributes: Frequency and Magnitude, Planning needs
- Spatial Modeling, querying, and map creation for efficient and effective implementation of different DRM activities
- Simulation of models and visualization of varying scenarios of hazards

DMIS in Maharashtra

- Started as part of the Disaster Management Program implemented through the MEERP
- Initiated with UNDP's support (1:250,000 scale).
- Expanded it with the World Bank's Support (1:50,000 scale)
- Sole Source Consultancy to Maharashtra Remote Sensing Applications Center (MRSAC), Nagpur
- Responsibility for technical support and training to the MRSAC
- Database would be updated and maintained by the MRSAC

The Process of Digitization

- Base maps were generated and digitized, using topographical maps
- Satellite images were procured and interpreted
- Several layers of spatial maps were generated, largely through satellite maps
- Several layers of non-spatial maps were generated, which contained socio-economic database: the database was developed
- These maps were superimposed upon each other
- The maps also required substantial groundchecking
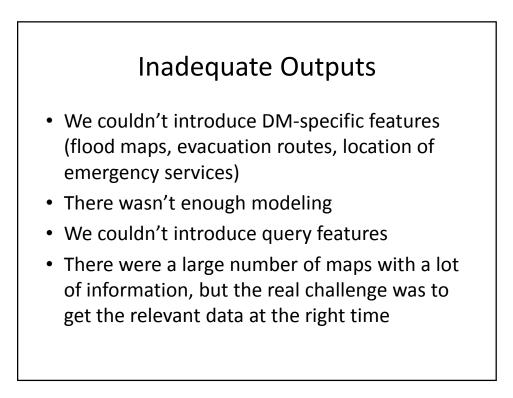
Primary Layers for DMIS

- Geology and geomorphology
- Soil
- Land Use / Land Cover
- Drainage / Watershed
- Slope, aspects, and altitude
- Rainfall and climate
- Transport networks / settlement location / administrative boundaries
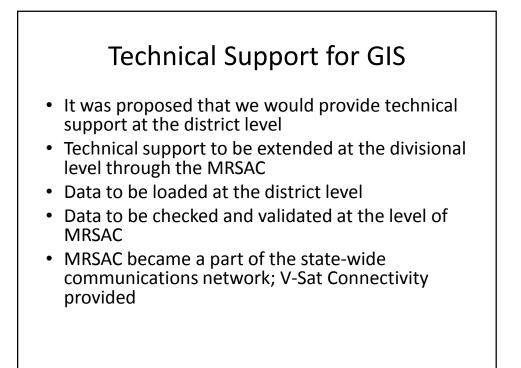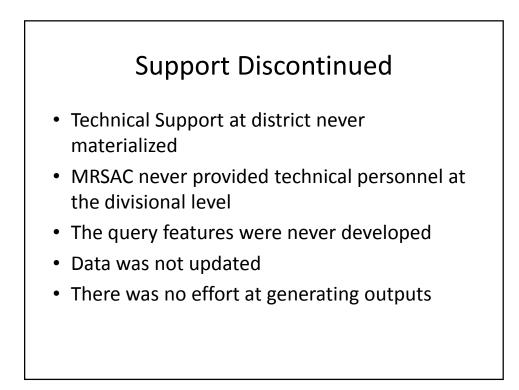- Socio-economic data

Computerization and Utilization of DMIS

- Creation of district-wise digital database
- Transfer of digital database to district authorities with necessary hardware and software
- Orientation and training
- Utilization of database

Procurement Issues

- Procurement of Work Stations and Computers
- Procurement of Printers and scanners
- Procurement of Software: ArcView and ArcInfo.
- Procurement of satellite data from NRSA
- A large amount of digitization-related work assigned to the vendors

Inadequate Outputs

- We couldn't introduce DM-specific features (flood maps, evacuation routes, location of emergency services)
- There wasn't enough modeling
- We couldn't introduce query features
- There were a large number of maps with a lot of information, but the real challenge was to get the relevant data at the right time

Technical Support for GIS

- It was proposed that we would provide technical support at the district level
- Technical support to be extended at the divisional level through the MRSAC
- Data to be loaded at the district level
- Data to be checked and validated at the level of MRSAC
- MRSAC became a part of the state-wide communications network; V-Sat Connectivity provided

Support Discontinued

- Technical Support at district never materialized
- MRSAC never provided technical personnel at the divisional level
- The query features were never developed
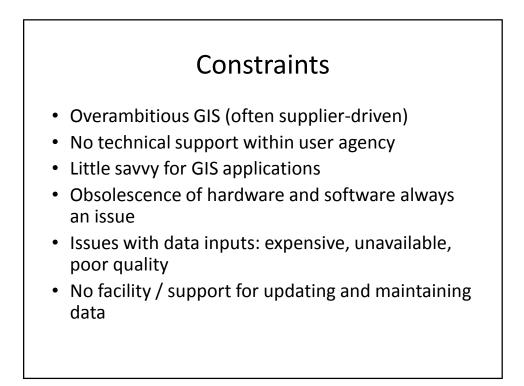- Data was not updated
- There was no effort at generating outputs

Spin-Offs

- Many departments got access to the data through the MRSAC
- These departments used the data for their own applications (GSDA for ground water; Irrigation for their projects; PWD for their roads)
- In course of time, the entire state got most of the basic data digitized
- Over a period of time, all the cadastral maps were digitized and helped the computerization of land records

Constraints

- Overambitious GIS (often supplier-driven)
- No technical support within user agency
- Little savvy for GIS applications
- Obsolescence of hardware and software always an issue
- Issues with data inputs: expensive, unavailable, poor quality
- No facility / support for updating and maintaining data

Lessons for Successful Digitization

- It is a tool, not a substitute for action
- Its structure needs to be simple and well-defined: layers of maps, data inputs, outputs
- The quality of data needs to be checked
- All the maps need substantial groundchecking and extensive use
- Adequate IT support for uploading data and generating outputs
- Adequate financial support for maintaining the database