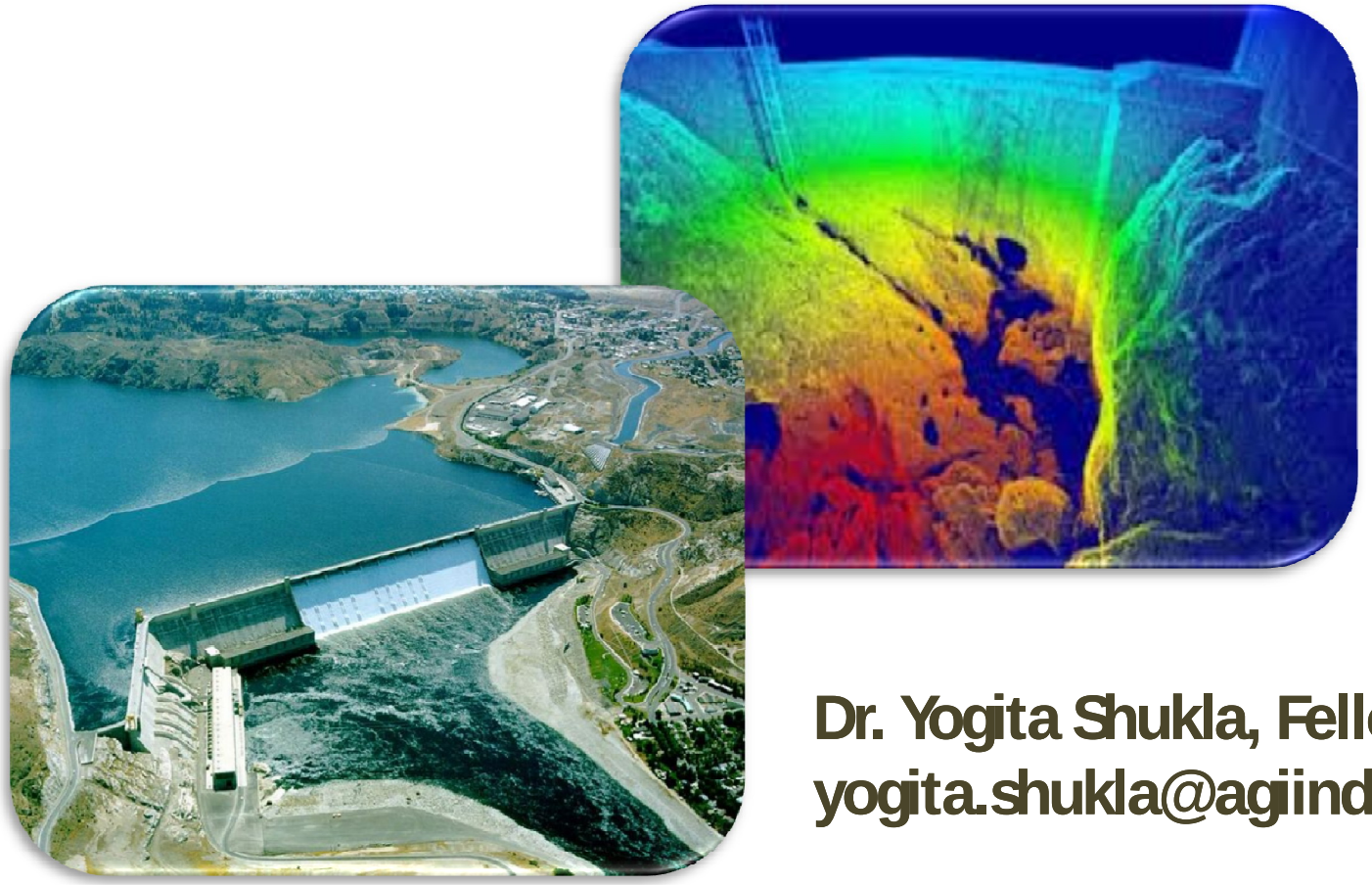
ASSOCIATION OF GEOSPATIAL INDUSTRIES

POWER OF GEO FOR EFFECTIVE HYDRO ELECTRIC POWER GENERATION



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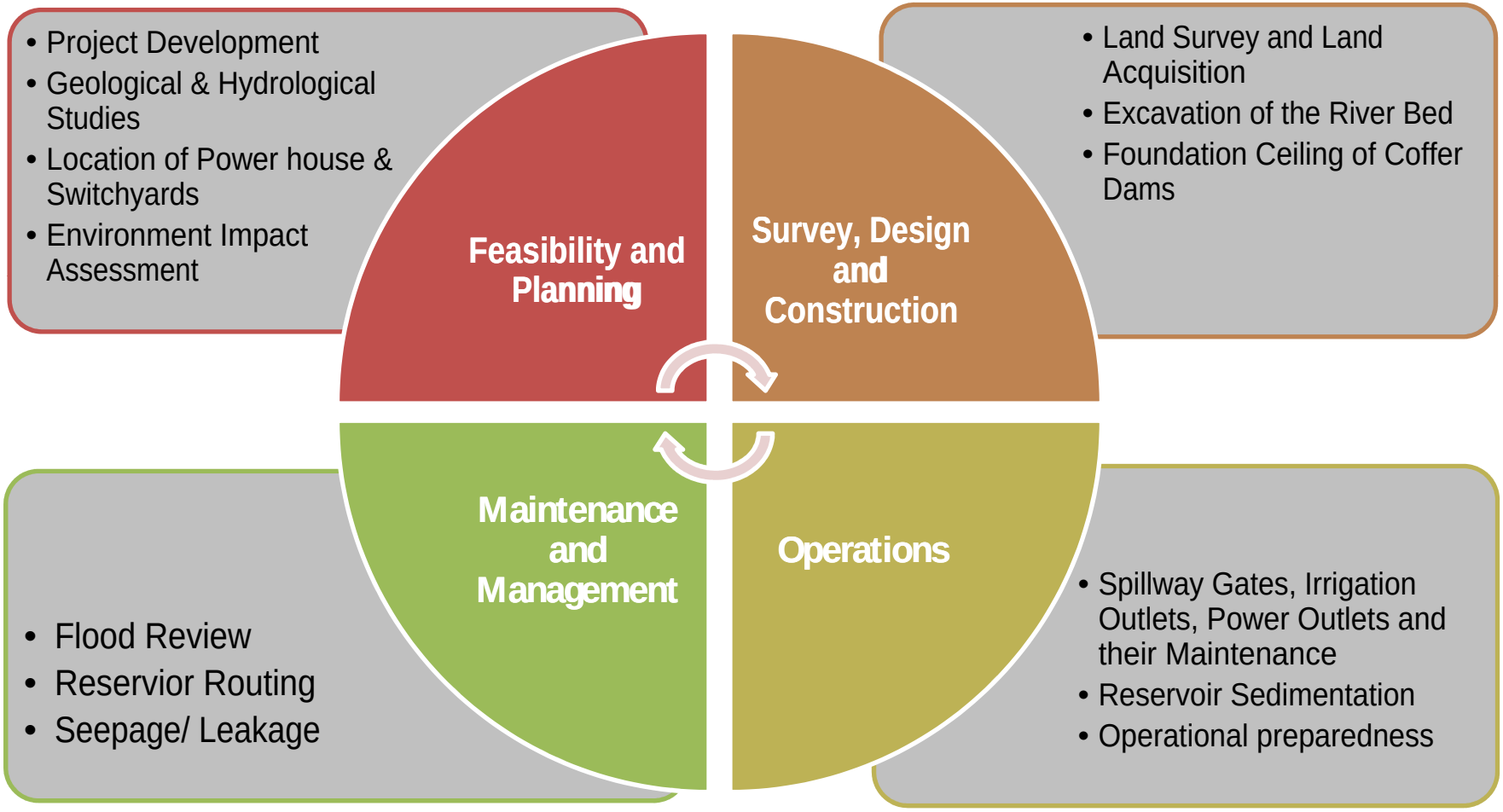
Agenda

- Hydro Electric Power Generation Life Cycle
- Geospatial Workflow
- Geospatial vis-à-vis Hydro Power Generation Life Cycle
- Geospatial to Plan and Design, Construct, Operate and Maintain a Hydro Electric Dam

Hydroelectric Generation Life Cycle



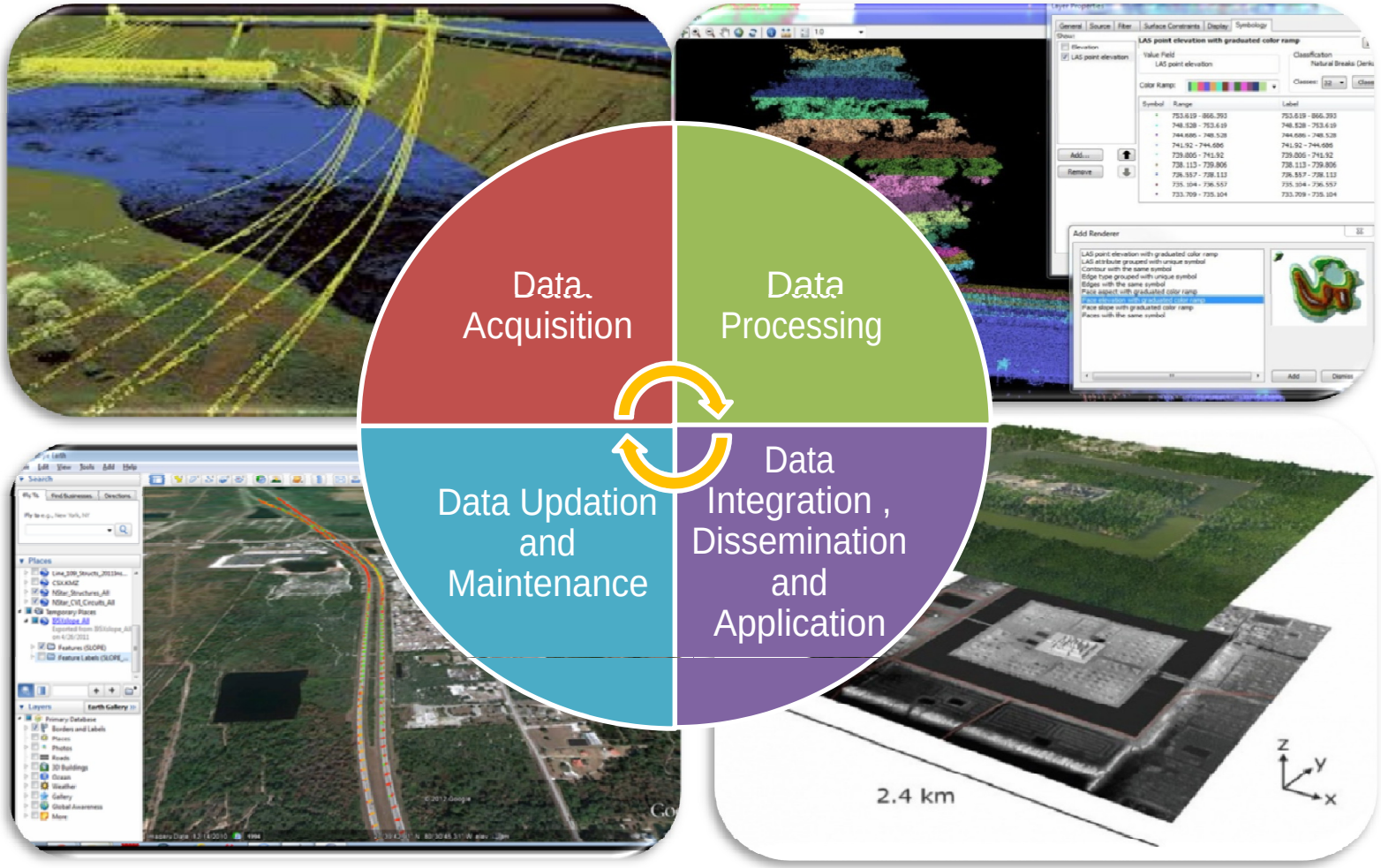
Hydroelectric Power Generation

- Hydroelectric Power Generation in India
  - Key resource of power generation in India
  - 18.77% (39,291.40 MW) of the total power generated
  - Second only to Thermal Power generation
- Challenges
  - Availability of Suitable sites
  - Environment Impact
  - Resettlement and Rehabilitation

GT for Hydroelectric Power Generation

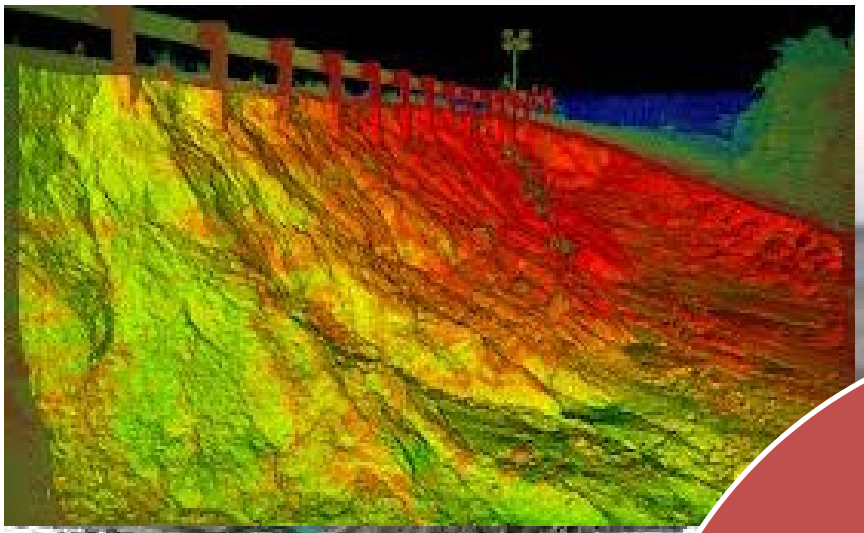
- **How Geospatial Can Help**
  - Integrated with related technologies
    - Intelligent (connected) Dams
    - Central Role in Improving Efficiency
    - Improved process for collaboration
      - Surveyors
      - Designers and engineers
      - Construction contractors
      - Operators and Maintenance Managers
    - Accuracy within a millimeter range

Geospatial Workflow

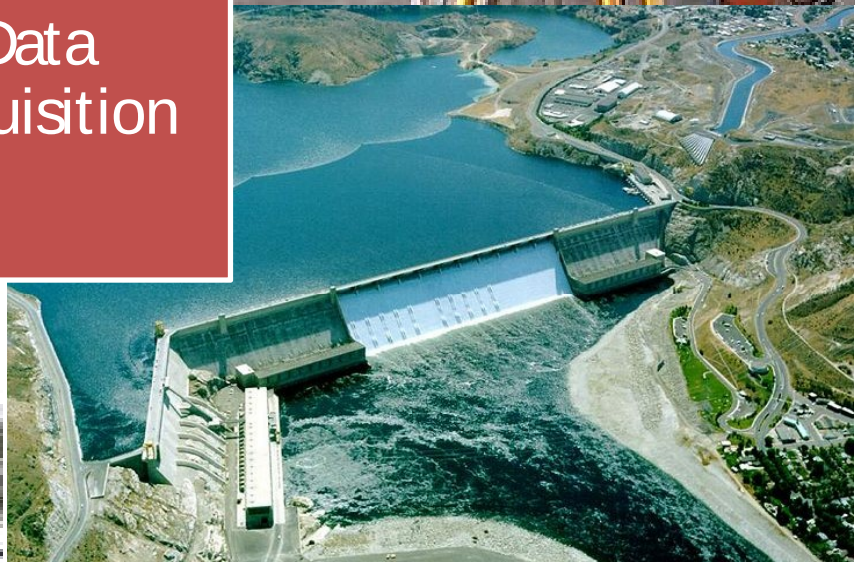


LIDAR and Terrestrial Scanning

Modern Survey (GNSS)



Data Acquisition

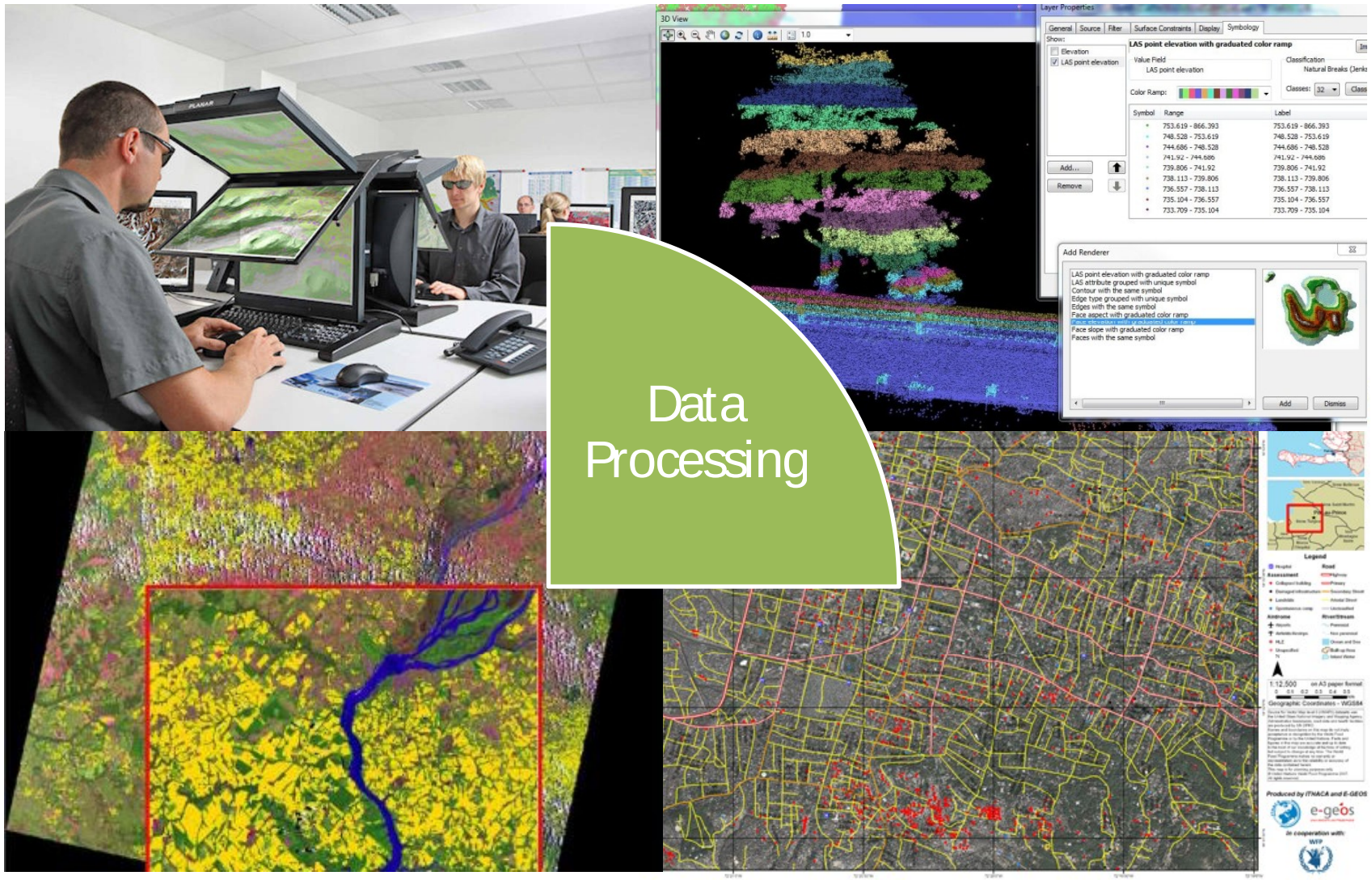


Satellite Imaging

Aerial Photography

Photogrammetry

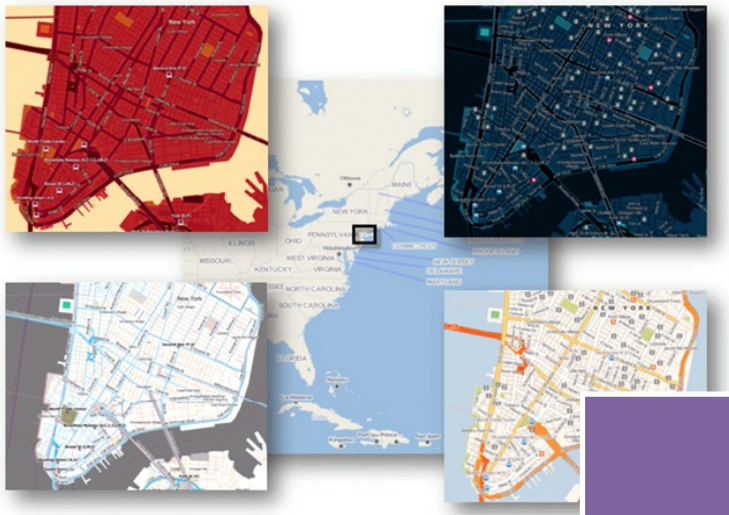
LIDAR Processing



Digital Image Processing

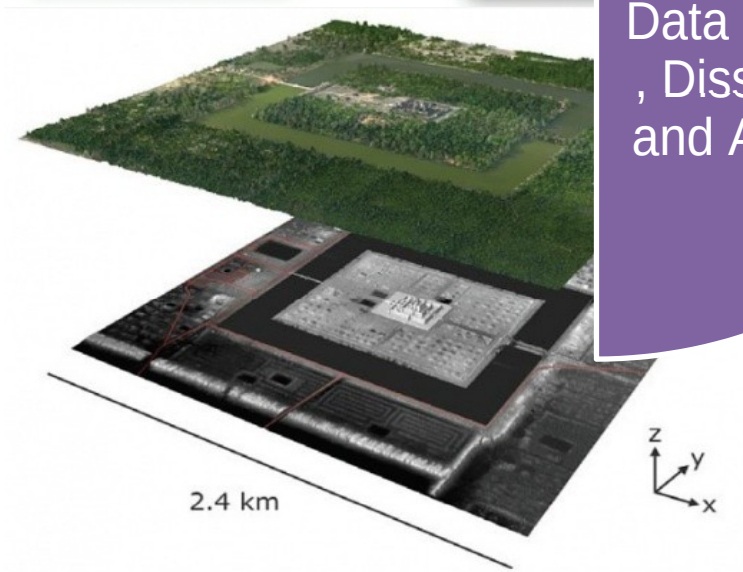
Image Interpretation

Convergence, Conversion and Integration



Enterprise GIS Systems

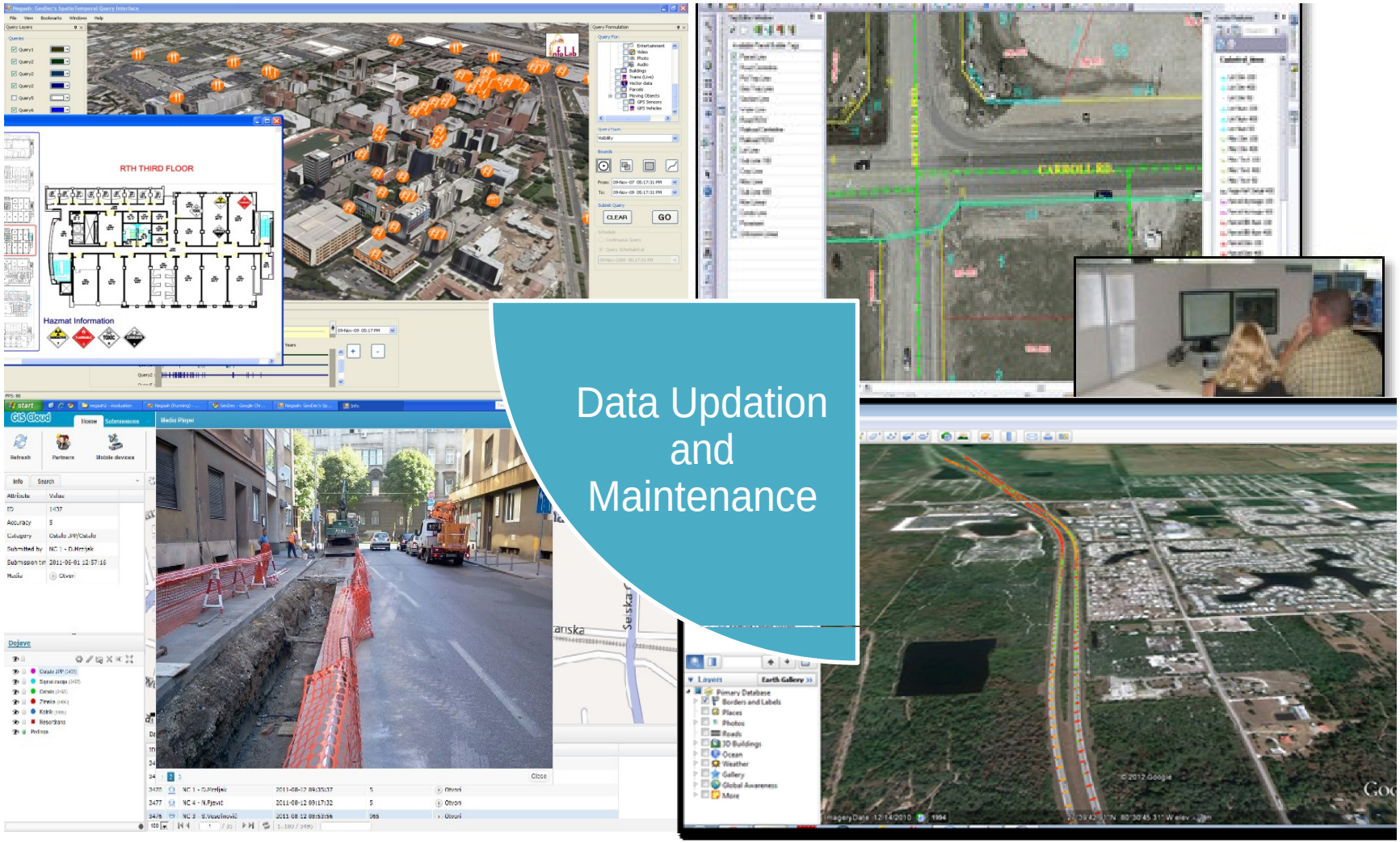
Data Integration , Dissemination and Application



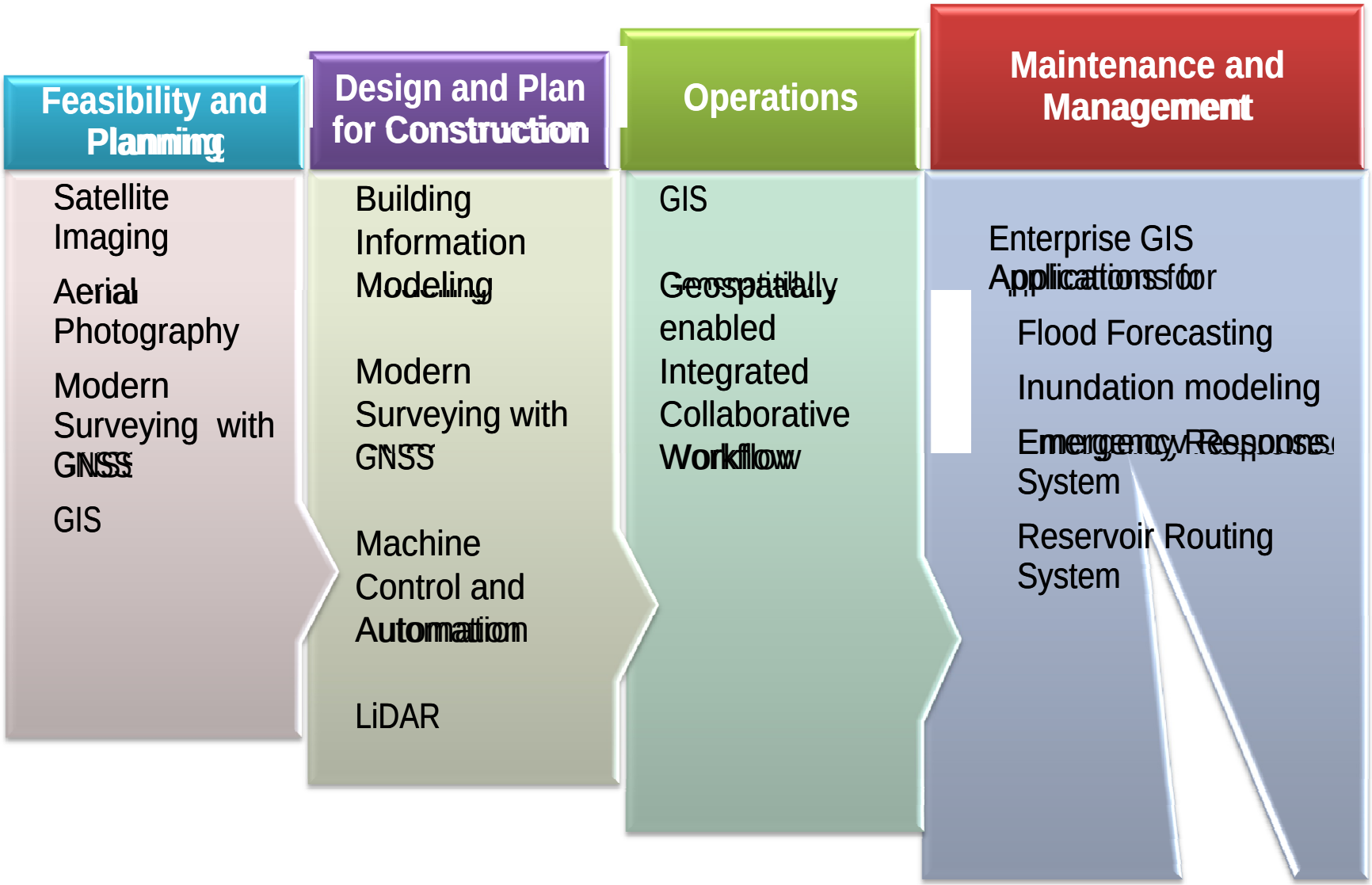
Integration Strategy

IT and Middleware Tools & Platforms

Involve continued use of Technologies



Geospatial vis-à-vis Hydro Power Life Cycle



Geospatial to Plan and Design

Model Based Design

BIM and Geospatial

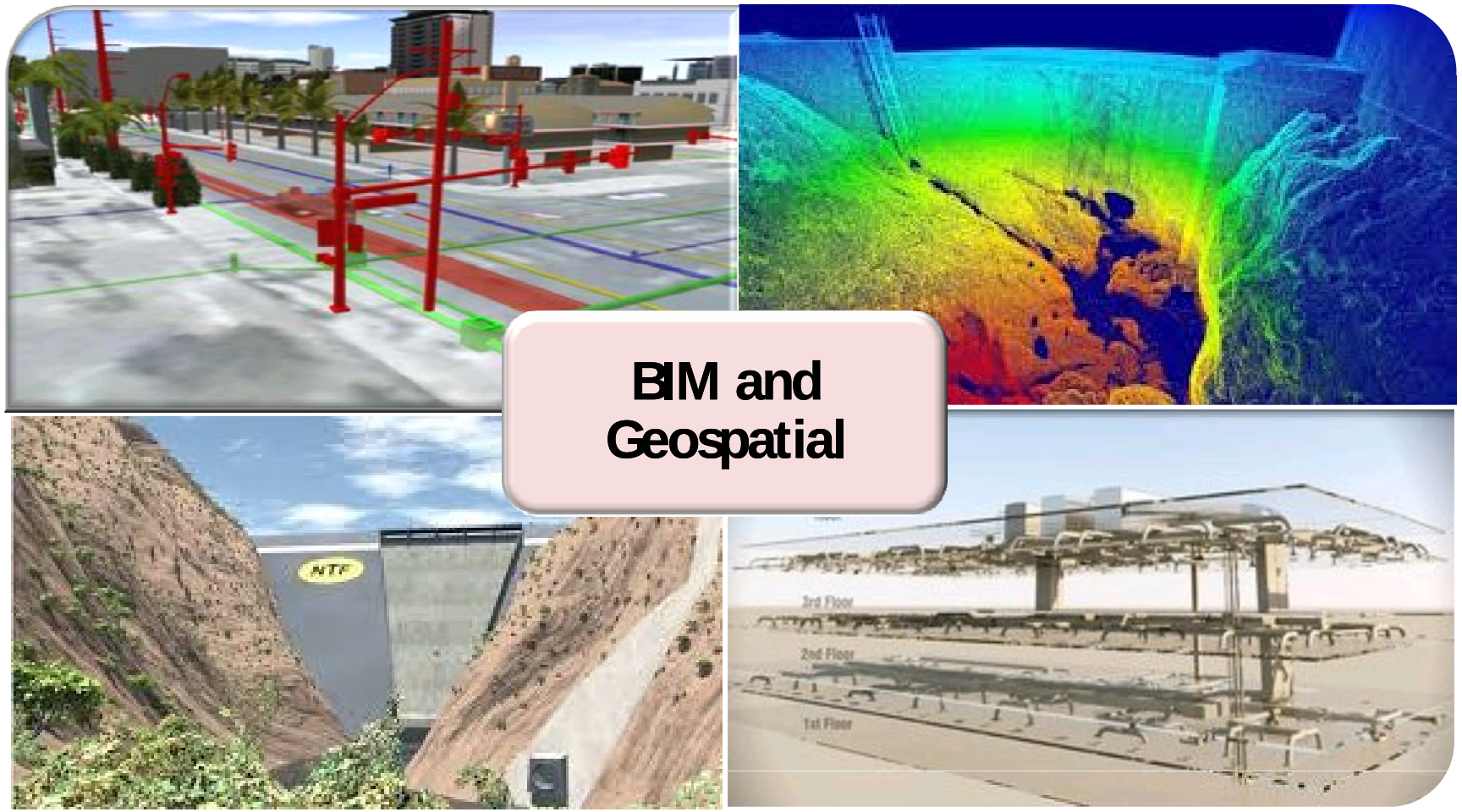
- Put into effect business and engineering rules
- Automated clash detection
- Automated change propagation
- Reduction in data redundancy

- Improves collaboration among design teams
- Automates bill of materials and job costing
- 3D visualization involves non-technical stakeholders in design process

Benefits

- Increases productivity
- Reduces risk
- Reduces costs
- Improves design quality

Geospatial to Plan and Design



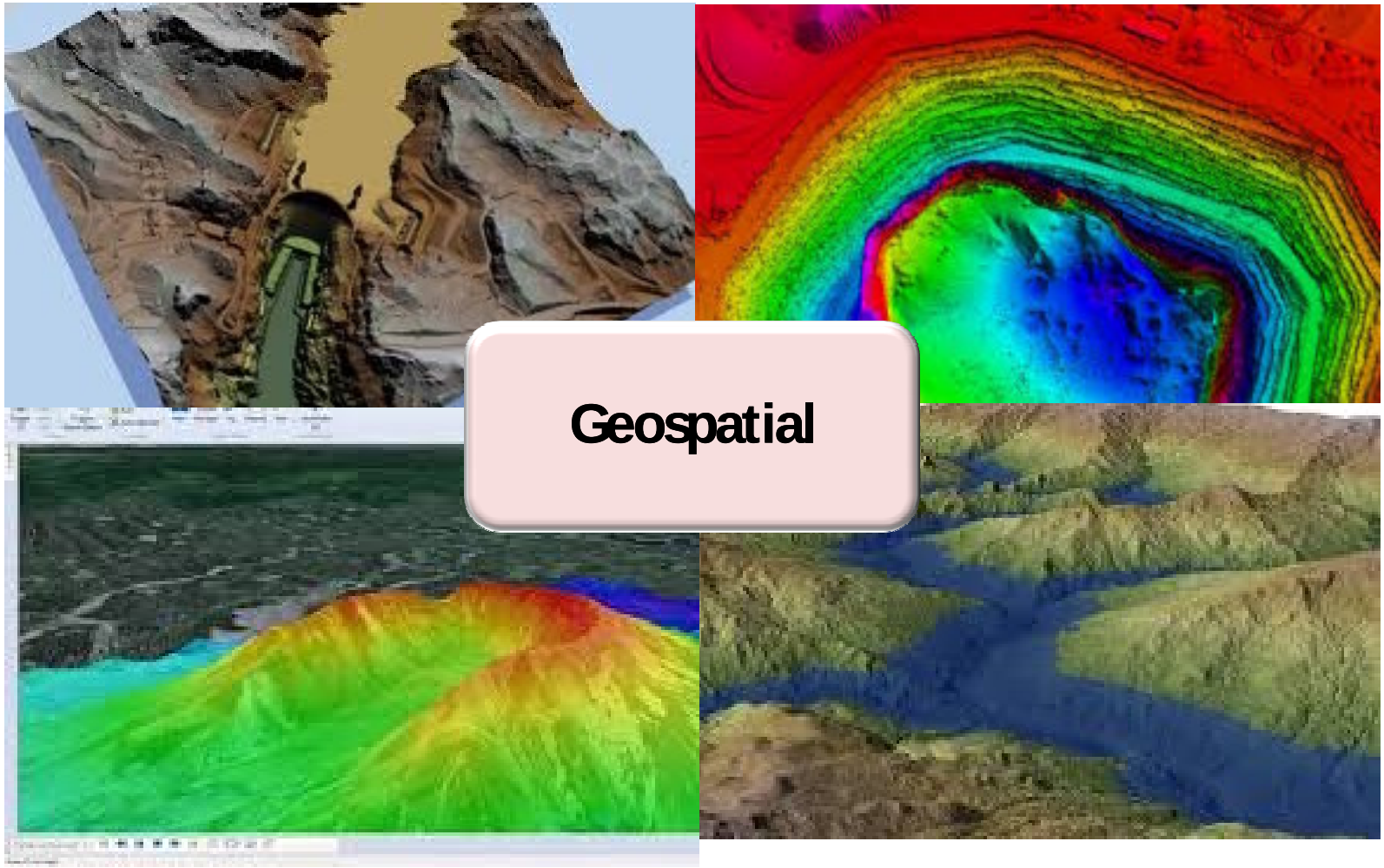
Geospatial to Plan and Design

- Geospatial brings transformation lifecycle especially during planning and design
  - Land Acquisition
  - Precise Information on existing underground structure
  - Detect interferences between various structures
  - Enabling contractors and engineers in project scheduling
  - Reduce time and cost

Geospatial to Plan and Design

- Global challenges
- Effective and Intelligent Designing and Building of Dams will Drive the Economy and the Environment
- Convergence of Geospatial and BIM builds intelligent models of infrastructure

Geospatial to Construct Dams



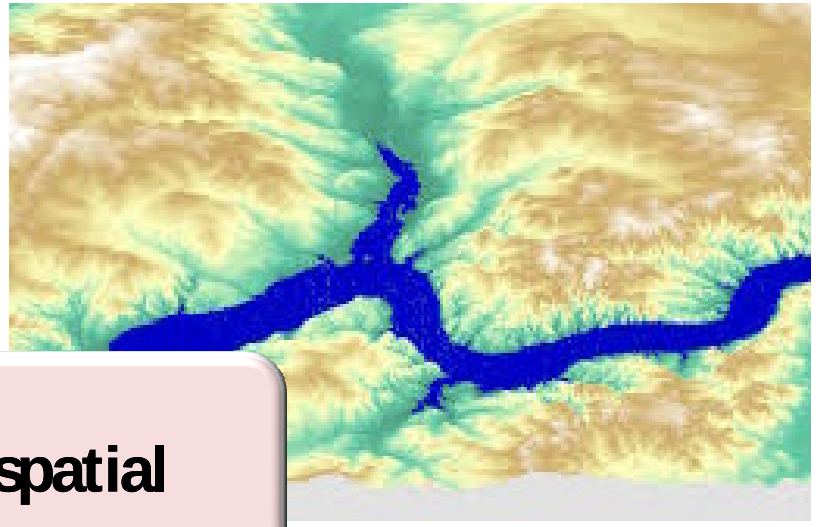
Geospatial to Construct Dams

- Geospatial brings transformation lifecycle especially during construction
  - Land Survey
  - Land Acquisition
  - Excavation of the River Bed
  - Excavation of Surface Slopes
  - Construction Planning

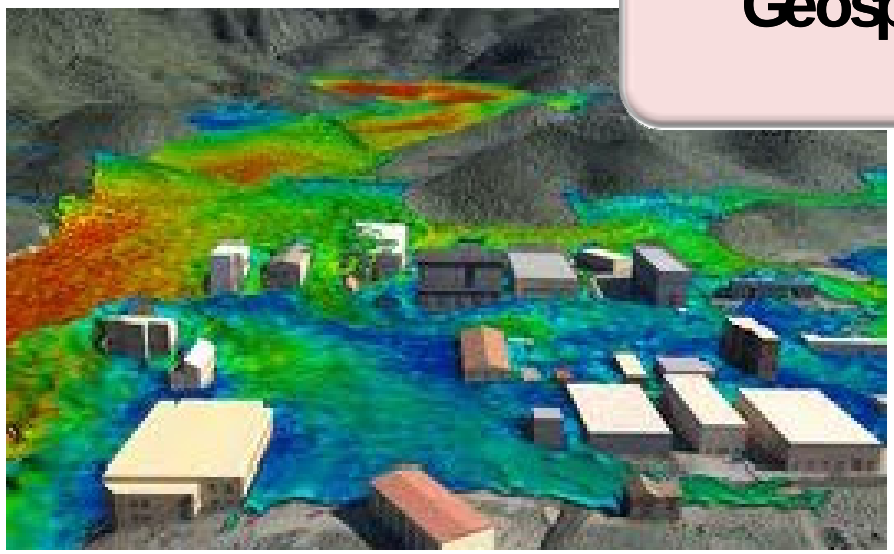
Geospatial to Construct Dams

- Ecological Stability
- Structural Stability
- Resource Use Optimization

Geospatial to Operate, Maintain and Manage Dams



Geospatial



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Geospatial to Operate, Maintain and Manage Dams

- Geospatial brings transformation lifecycle especially during operations, maintenance and management
  - Flood Review and Reservoir Routing
  - Seepage/ Leakage
  - Assessment of Geology and Foundation Condition
  - Performance of Spillway and Energy Dissipation Arrangements
  - Seismological Dam Status and Structural Stability Analysis
  - Spillway Gates, Irrigation Outlets, Power Outlets and their Maintenance
  - Reservoir Sedimentation and Reservoir Rim Slope Stability
  - Operational preparedness
  - Emergency Action Plans

Geospatial to Operate, Maintain and Manage Dams

- Not about Development versus Environment
- About Intelligent and Sustainable Development through better Operations, Maintenance and Management

In Conclusion

About AGI

- Premier body of geospatial industries in India
- Promote the usage of geospatial technologies across sectors
- Advise and collaborate with policy formulators and geospatial decision makers for “right” geospatial technology adoption
- Build a vibrant geospatial community

About AGI

- Create forums to bring together all stakeholders for effective geospatial usage
- Research and inform through whitepapers, newsletters and workshops
- Work towards making geospatial ubiquitous and integral for effective management

Thanks