Simple Architecture for a Living 3D Model of the Metropolis

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Metropolitan Scale 3D

Cambridge

Boston
Principles: Information Stewardship

• Integrate 3D with existing planimetric GIS.
• Routine management of updates and improvements to model.
• Exchange 3D models with design applications
• Maintain catalog of proposals & source documents.
• Remember past form of the city
• Keep it simple, easy to maintain and evolve.
Develop 3D as Part of Municipal GIS

- Build optimized data model
- Extract Design Sandbox Models
- Generate design Ideas
- Integrate updates, improvements and design schemes
Existing Planimetrics Optimized for City-Wide 3D Model

- Tree Heights from LIDAR
- Detailed Terrain and Ground Plan
- Benches and Street Furniture

Photogrammetry by InfoTech 2010
Inexpensive 3D Building Models from Existing Stereo Imagery

Photogrammetry by Cybercities3D
Context for Design Studies

Tower Scheme
By pbcGIS
Metropolitan-Scale Visual Studies
Manage Updates and Improvements
Manage Updates and Improvements

Boston City Hall By Parsons Brinckerhoff
Simple Schema for Managing Updates and Improvements

Never delete buildings from Snapshot!!!

Table for Updates and Alternative Models
Specification for Submitting Design Schemes

Traditional Submission (PDF)

Sandbox Models In SketchUp

ArcMap ↔ CityEngine

Design Tools

Open Space

Parking

Submit Simple Shell

Utility / Mechanical
Office / Lab
Industrial
Glass
Residential
Retail
Save History of City Including Design Proposals

Model Ingest Form

Data-Driven Model Views
Save History of City Including Design Proposals

Model Ingest Form

Data-Driven Model Views
Archive Source Documents for Updates and Schemes
Challenges

• Developers share information only when required
• Designers must be sold on new information sources and new tools.
• Learning Curve for GIS Staff:
  o Data management requirements are simple.
  o 3D model QA and transformations requires training.
Next Steps

• Reach out to municipal planners and authorities.
• Reach out to design community.
• Prepare & share sandbox models for master-plan areas. Olympics sites???
• Create bridge models & improve viaducts.
• Improve models of distinctive buildings.
• Model projects in approval pipeline.
Thank You

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