



Cube and ArcGIS

Northern California Model User Group

Wednesday, February 25, 2009

Citilabs Office

Alameda, California

Welcome and Introductions

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Overview

1. What does GIS mean to Transport Modeling
2. Where are we today?
3. Where are we headed tomorrow?
4. Demonstration: Network Editing
5. Introducing Web
6. New Assignment
7. Q & A; discussion

10 cool things about GIS

1. Google Earth and ArcGIS Explorer (Arc Online)
2. Lots of off-the-shelf data available (Navteq)
3. Lots of pretty maps
4. Search! addresses and getting directions
5. My neighbors property value
6. Google Maps, Google Transit, Google Street View (way cool!)
7. Yahoo and Microsoft attempting to keep up with Google
8. ArcGIS Desktop – range of tools set and functionality
9. Active user community and extensive info/help online
10. Potential to create high paying jobs in a crappy economy

What does GIS mean to transport modeling?

- Chance to reach a broader audience for GIS data and robust analytics
- Geospatial accuracy is valued more in transport data (elimination of stick networks)
- Key to the fight against outdated data
- Critical to viewing and presenting data
- Critical component of Cube's modeling framework and future development
- Critical to making data edits and maintaining topology of the network
- Enhances sharing and consumption of data (MXD and geodatabase)

What does GIS mean to transport modeling?

- New terminology to think about
 - Geodatabase
 - Object model diagrams vs data models
 - Relationship classes
 - Coded Domains (lookup tables)
 - Spatial Query
 - Network Topology Rules
 - Raster Catalog and Mosaics
 - Map Services
 - Imagery – oblique, ortho, true-ortho
 - SDE and version management
 - ESRI product line (Desktop, Server)
 - Service-Oriented Architecture

What does GIS mean to transport modeling?

- Enterprise DBMS – How can we use them?
 - Permit Management Systems (Acella, Hansen, Cartograph, etc)
 - CAMA Systems (Eagle, Colorado Customware, etc)
 - Asset Management Systems (Azteca CityWorks, Cartograph, Trapeze AssetWorks,

What does Transport Modeling mean to GIS industry?

- Fill a gap in the GIS market place
- Chance for engineering groups to capitalize on broader IT/GIS infrastructure
- Deliver a 'practical' Object Model Diagram for GIS transportation (UNETRANS)
- Tighter integration of transportation with other disciplines (air, land, etc)

Overview of Steps for GIS Integration

1. Cube All-In-One Capability – extended with for ArcGIS compatibility using ArcEngine
2. Cube Functionality peeled off as ArcGIS Extensions
3. Hosted Models Delivered over the Internet
4. Service-Oriented Architecture???
5. Web 2.0??

Cube 5 with ArcEngine

- ArcEngine Components
- GIS capabilities already in Cube
 - MXD Support
 - Geodatabase Support
 - Map Query and Display
 - Custom display tools (HCM, Select Node/Link, etc)
 - Online Map Services (MS Virtual Earth, etc)
- Future Releases
 - Support for the Enterprise Geodatabase
 - Connections to Oracle, SQL Server, etc
 - Versioning

New Assignment

- **Conjugate Frank-Wolf algorithm**
- **Bi-Conjugate Frank-Wolfe algorithm**
- **Gradient Projection algorithm.**

New traffic assignment methods

- We are actively working with our customers, David Boyce, and other researchers to explore and test the OBA, Algorithm B, and TAPAS methodologies.
- **Stochastic Methods** – although a popular alternative methodology in uncongested networks for customers using TRIPS and Tranplan, a new stochastic methodology is being built for Voyager 5.1.
- **Route Choice** – As an advance from the basic stochastic methods, we are building discrete route choice algorithms giving users the freedom of using any variables in their custom utility functions.

New Capabilities

- Cube Base Enhancements
 - Auto-Centroid
 - Accessibility Contouring
 - Animations
 - MS Virtual Earth and Map Services
 - Direct Link (Navteq)

- Cube Voyager Library Enhancements
 - PT Timetabling
 - New Assignment
 - New Junction
 - Freeze/Start
 - GIS Functions In Script

Sugar

for ArcGIS



Transportation Planning and
Operations Suite for ArcGIS



Sugar Signal

traffic operations and optimization for ArcGIS



Sugar Network Editor

transportation network editor for ArcGIS



Sugar Impact

traffic impact analysis for ArcGIS



Sugar Graphics

transportation mapping for ArcGIS



Sugar Works

work zone traffic simulation for ArcGIS



Sugar Access

transportation accessibility analysis for ArcGIS



Sugar Air

transportation air quality and energy consumption for ArcGIS

Mint: web-based modeling

Mint
Modeling on the Internet

Run Manager Scenario Manager **File Manager** Application Manager

User: Karim Maguid
Access: Admin Logout

Files

Mark - Public

Filename	Upload Date	Download
cubetown123.mbd	2/11/2009 - 19:00	File
forecasttruck.MAT	2/10/2009 - 17:00	File

Ira

Filename	Upload Date	Download
cubetown1234.mbd	2/11/2009 - 1:00	File
forecasttruck1.MAT	2/09/2009 - 12:00	File

Upload New File

Mint
Modeling on the Internet

Run Manager Scenario Manager File Manager Application Manager

User: Karim Maguid
Access: Admin Logout

Run Queue

Scenario	User	Priority	Status
Scenario 10	Karim Maguid	1	Currently Running
Scenario 25	Jason Warriner	2	Scheduled to Run
Scenario 14	Michael Clarke	3	Scheduled to Run
Scenario 41	Matthew Martim	4	Scheduled to Run

Completed Runs

Scenario	User	Time Completed	Results
Scenario 08	Karim Maguid	06:32	View
Scenario 18	Jason Warriner	07:14	View
Scenario 17	Michael Clarke	08:25	View
Scenario 27	Matthew Martim	23:12	View

Mint
Modeling on the Internet

Run Manager **Scenario Manager** File Manager Application Manager

User: Karim Maguid
Access: Admin Logout

Scenarios

Save Scenario Run Scenario Add Child Scenario

Scenario - Build Road

Title 1

Prompt 1

Prompt 2

Option 1
Option 2

Title 2

Prompt 1

Application 1

Prompt 2

Option 1
Option 2
Option 3

Mint
Modeling on the Internet

Run Manager Scenario Manager File Manager **Application Manager**

User: Karim Maguid
Access: Admin Logout

Select Application to work on: Application 1

Model Name	Upload Date	Description
Cubetown 1	2/11/2009	First Model w/o transit
Cubetown 2	2/11/2009	Second Model w/o transit
Cubetown 3	2/11/2009	First Model w/ transit
Cubetown 4	2/11/2009	Second Model w/ transit

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