

# Cube Update MTMUG 2012

## Cube 6



## Citilabs – the Company

- Develops software for the modeling of transportation systems
- Offices
  - USA : San Francisco, Tallahassee
  - Europe : Milan
  - Asia : Beijing, Mumbai
- 2,500 cities on 6 continents in more than 80 countries

## Who Uses Our Products

### North America:

- Los Angeles, Houston, Miami, Orlando, Washington. Atlanta, San Francisco, Minneapolis, St. Louis, Tampa, Baltimore, Pittsburgh, Cincinnati, Sacramento, Albuquerque

### Europe:

- Dublin, London, Manchester, Glasgow, Liverpool, Oslo, Paris, Lyon, Nice, Strasbourg, Valencia, Seville, Milan, Venice

### Asia-Pacific:

- Melbourne, Adelaide, Perth, Seoul, Beijing, Bangkok, Hong Kong, Singapore, Kuala Lumpur, Manila, Jakarta, Delhi

### Major engineering firms:

- AECOM, PB, CS, RSG, Jacobs, Wilbur Smith, URS, Atkins, Parsons

## Cube: Professional Transportation Modeling Suite

### System Interface

- Cube Base – comprehensive interface for data editing, mapping, reporting, model development and scenario creation and management

### Demand Modeling

- Cube Voyager: urban, regional and long distance demand forecasting and assignment
- Cube Land: land use model for combined transport-land use modeling
- Cube Cargo: commodity-based freight forecasting

### Simulation

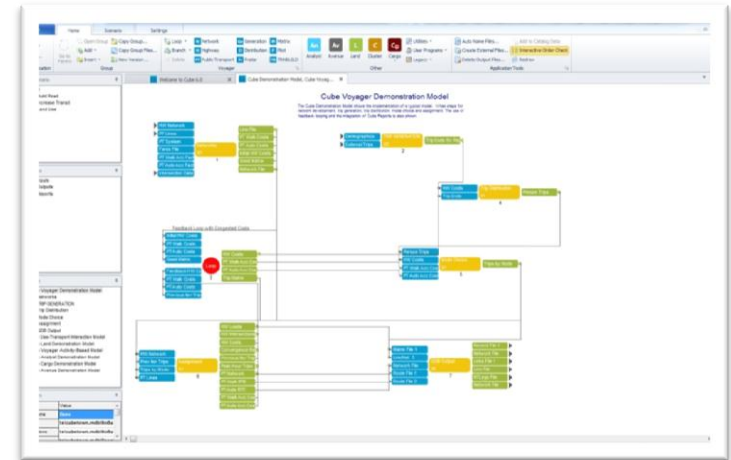
- Cube Avenue: meso-scopic traffic simulation (DTA)
- Cube Dynasim: multimodal micro-simulation

### Specialized

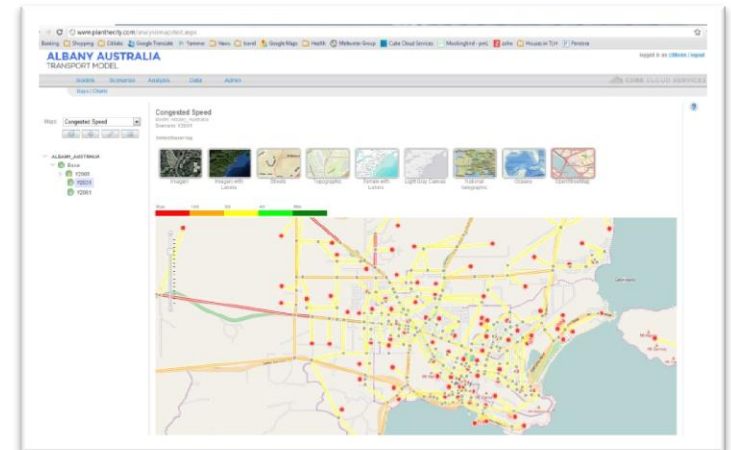
- Cube Cluster: reduces run-times by allocating calculations over multiple processors and machines
- Cube Analyst: advanced matrix estimation for all modes

### Cube Cloud Services

- Application and sharing framework for transportation planning



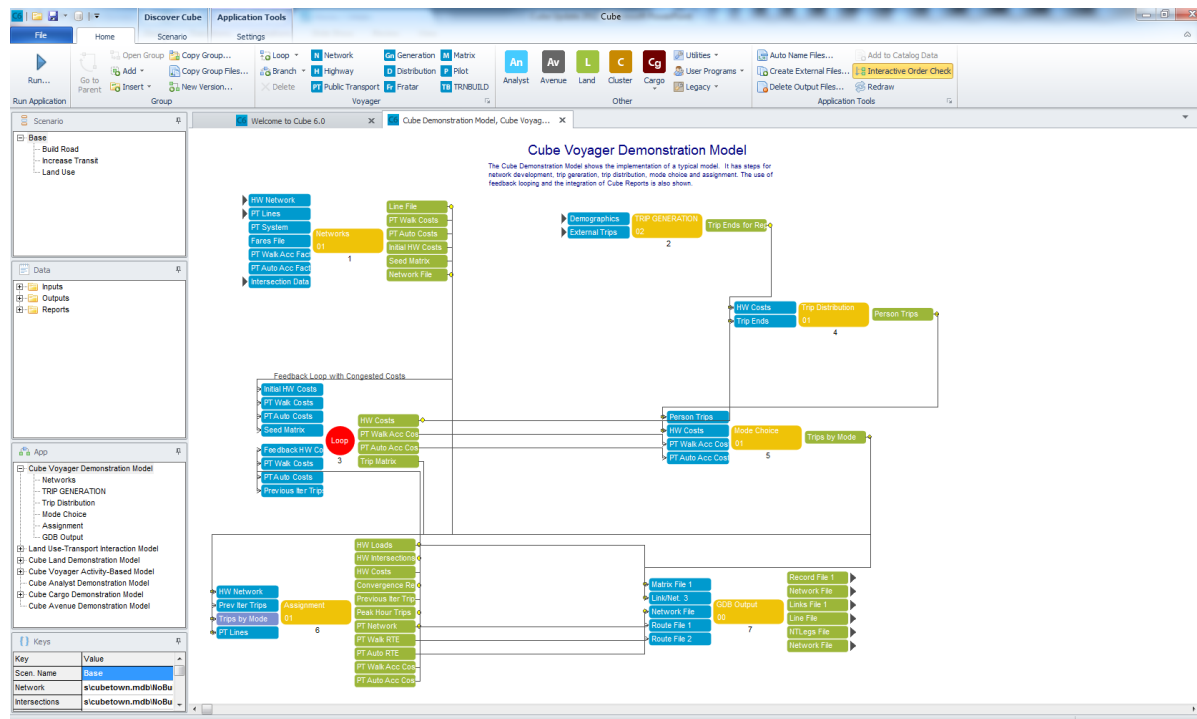
Cube Base



Cube Cloud Services

## January 2012: Formal Release of Cube 6

- Major update of Cube Base
- Incorporation of Cloud Computing in Cube



Download  
6.0.1 now  
on our web  
page

## New Ribbon Interface

### Ribbons

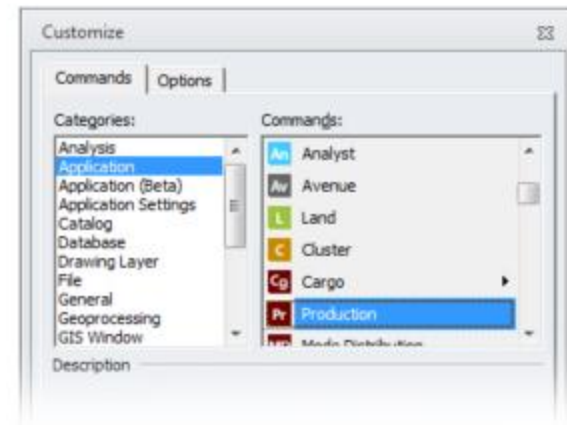
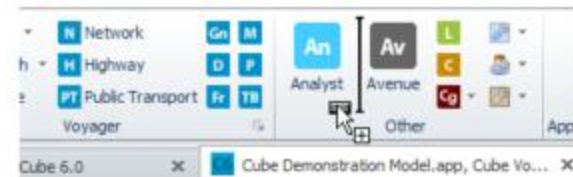


- The Ribbon is designed to help you quickly find the commands that you need.
- Commands organized in logical groups, collected together under tabs. Each tab is related to a type of activity such as:
  - Scenario
  - Intersections
  - Analysis
- Some tabs are shown only when needed.



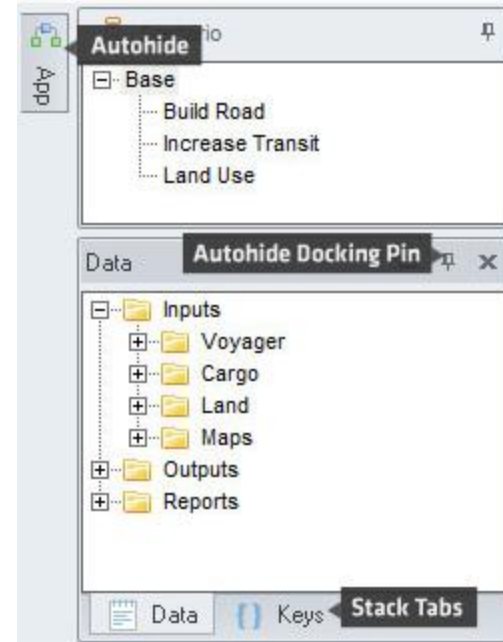
## Ribbons are Customizable

- Mirror the work that you do:
  - Drag commands on and off of ribbons, quick access bar...etc
  - Right click the ribbon and choose more commands



## Docking Windows

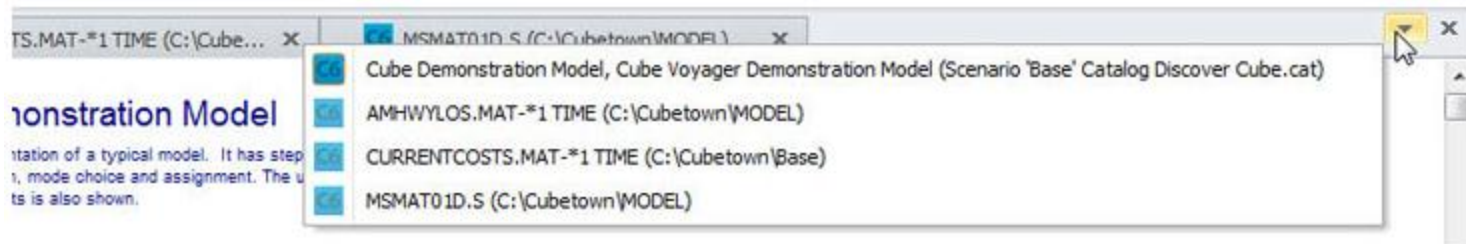
The 'side' windows from Scenario Manager (scenario, data, application, keys..) are now fully dockable, collapsible and have auto-hide functionality





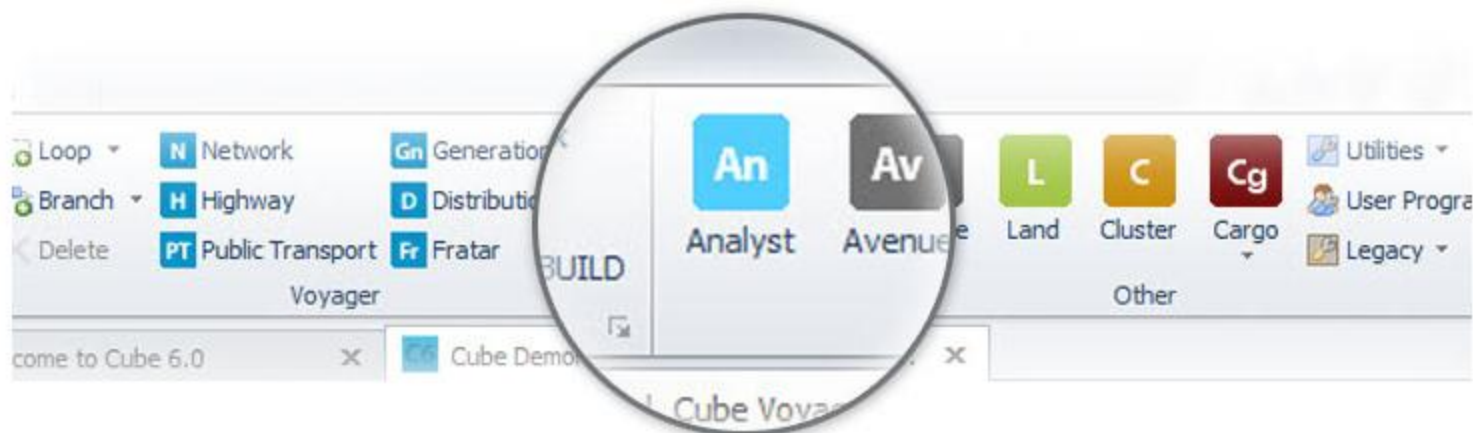
## Tabbed Windows

- Before Cube 6—use the ‘window’ command to move between windows—scripts, network, matrix..
- With Cube 6—now use a tabbed window interface



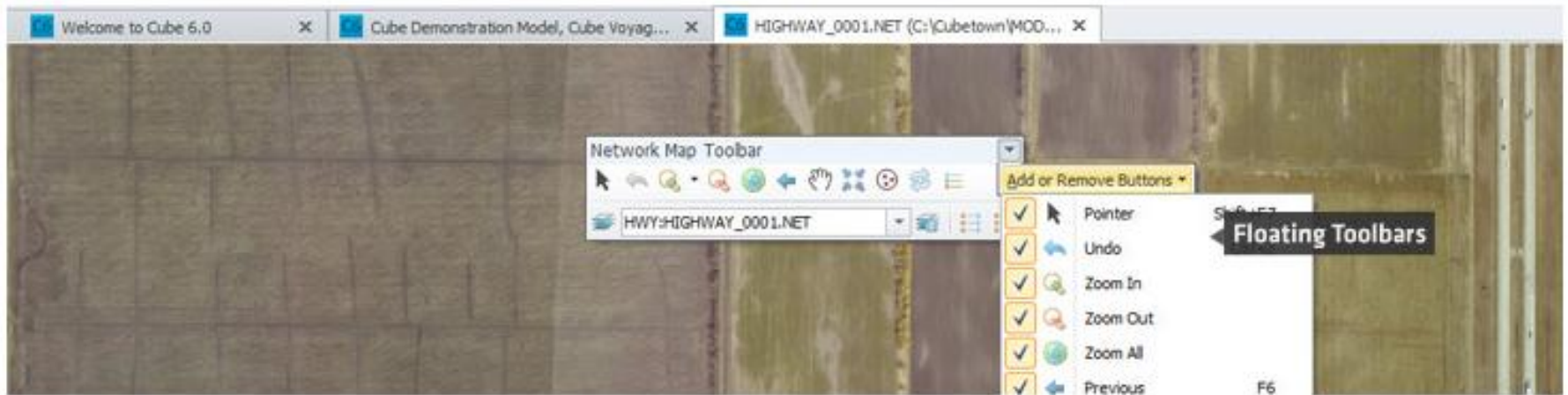
## Updates to Application Manager

- Now uses a ribbon making it faster and easier to add programs into the model.
- Process templates more easily accessed.
- Now auto-adjusts between screen resolutions



## Improvements to Network Editing

- Floating, customizable toolbars



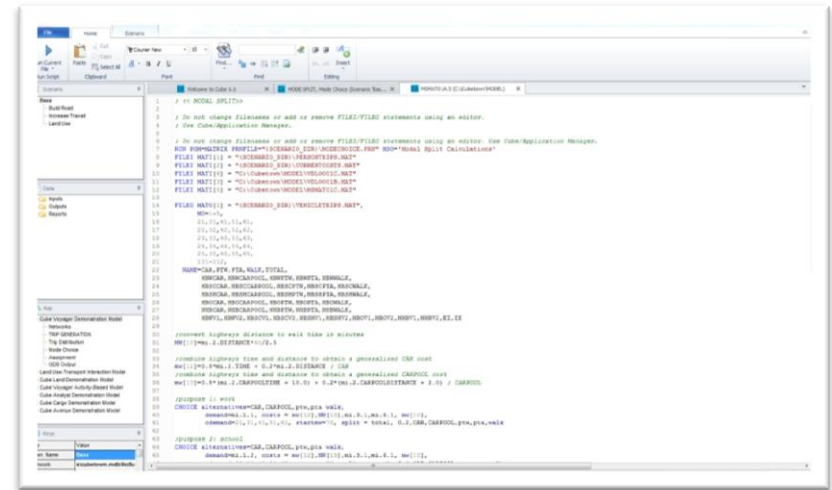
## Multi-Window Synchronization

- Synchronize multiple windows
- Network maps, GIS maps or matrices
- Making it easier to compare data between multiple scenarios

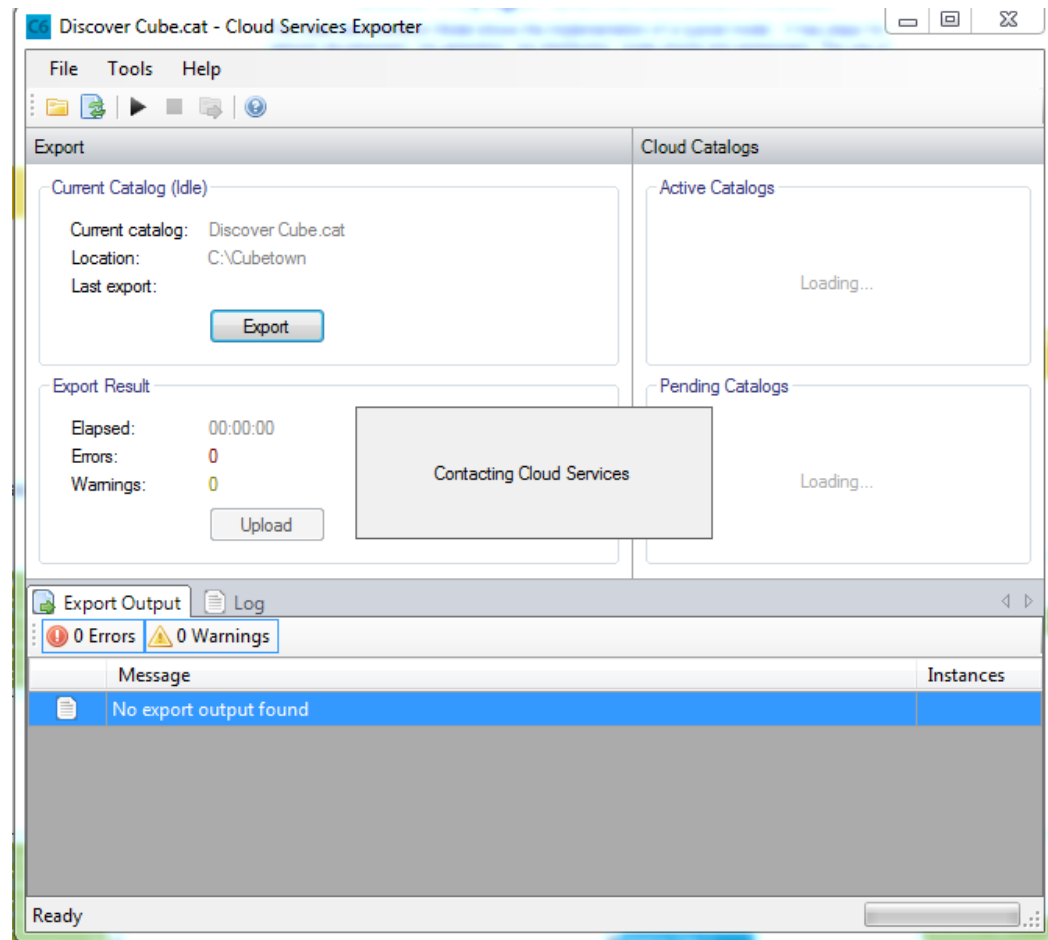
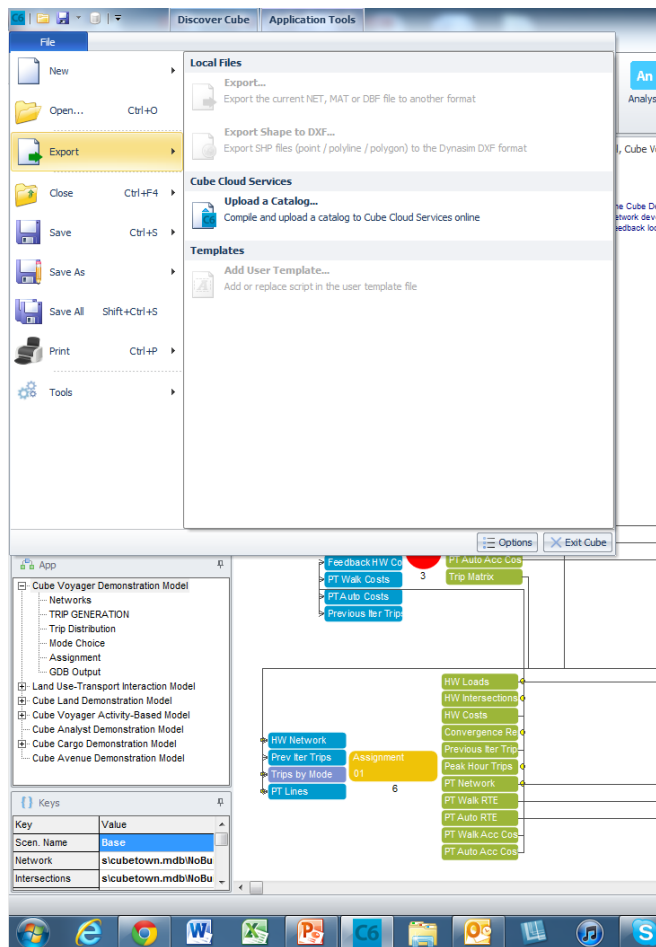


## New Text Editor

- Smart 'autocomplete' for commands and keys with new 'code assistant'
- Column mode editing
- Search and replace with bookmark support
- Line numbers
- Use of markers by clicking to the right of line number
- Collapsible comment 'groups'
- Zooming functionality
- Incorporation of 'tab'
- Color themes



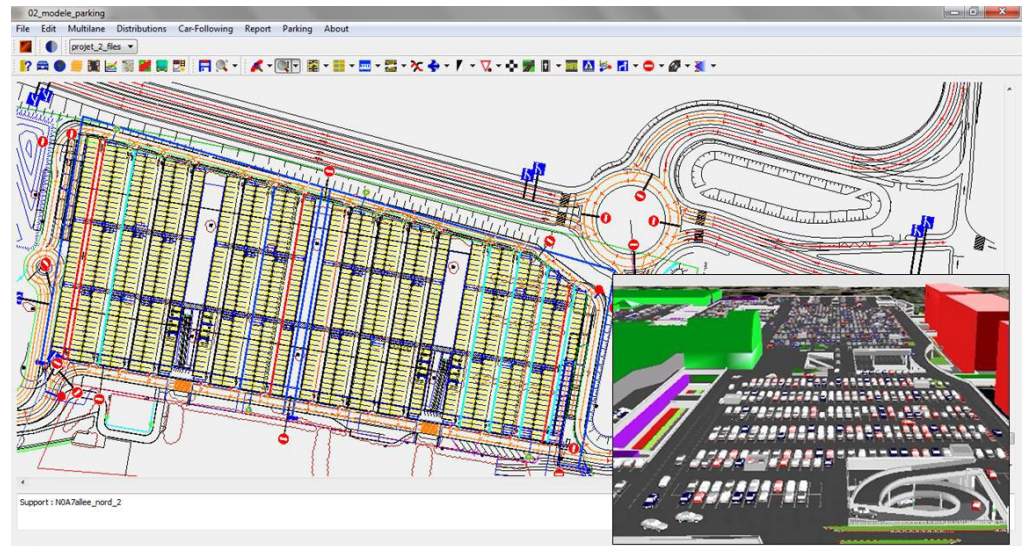
## Ability to 'publish' your model to Cube Cloud





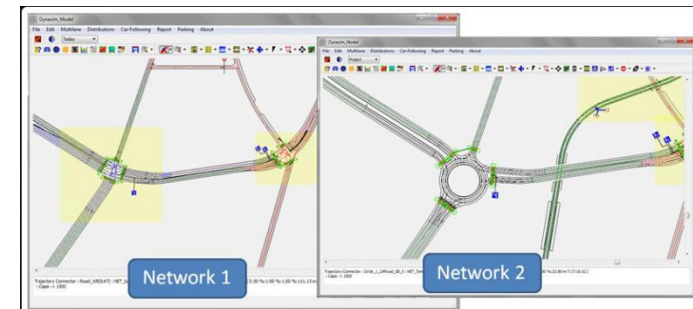
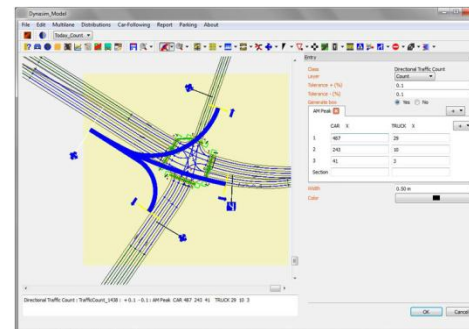
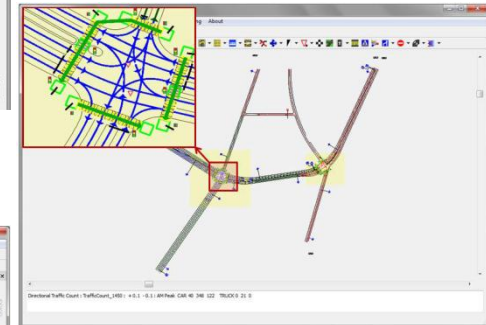
## February 2012: Release of Cube Dynasim 4

- One of the leading traffic microsimulation systems
- Simulate operational impacts of changes to the built environment and operating policy
- Simulates all modes



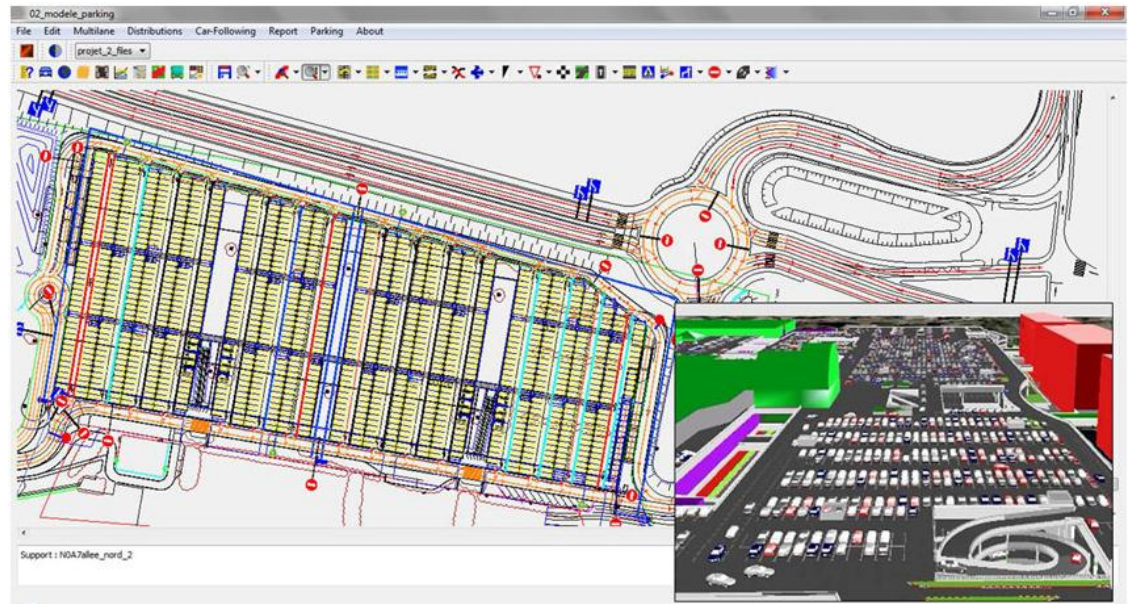
## New Methods

- 



## New in Dynasim 4 - Parking Simulation

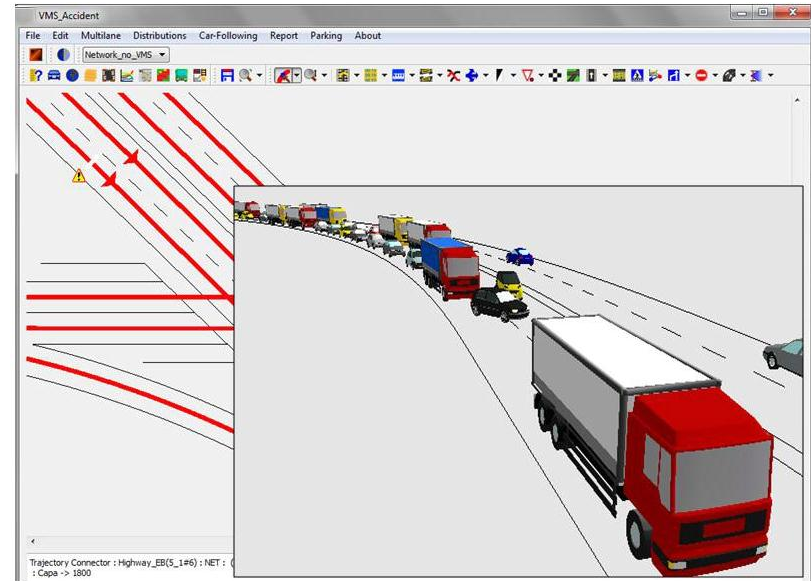
- Parking lots simulated in 'zones'
- Reaching a zone, vehicle finds a place
- Optimizes on parking 'attractors' and walking distance
- Full lot: continue search or move to a new zone
- Can specify 'visibility' of each alley
- Simulate impact of VMS (occupancy rate info)





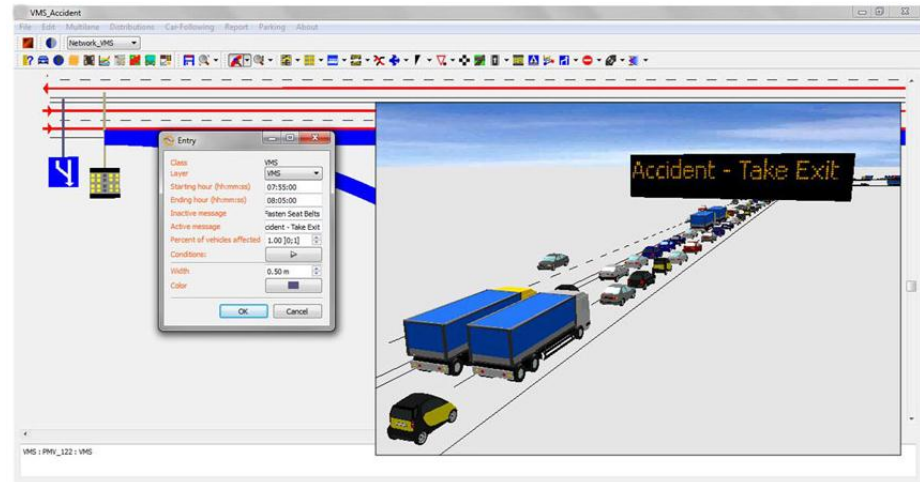
## New in Cube Dynasim 4 - Accident Simulation

- Specific tool to simulate accidents and network impacts
- Specify duration and affected vehicle types



## New in Cube Dynasim 4 - Variable Message Signs

- Specific tool to simulate VMS
- Specify different reactions to events
- Dynasim will reroute vehicles affected by information



## Updates to the PT Module

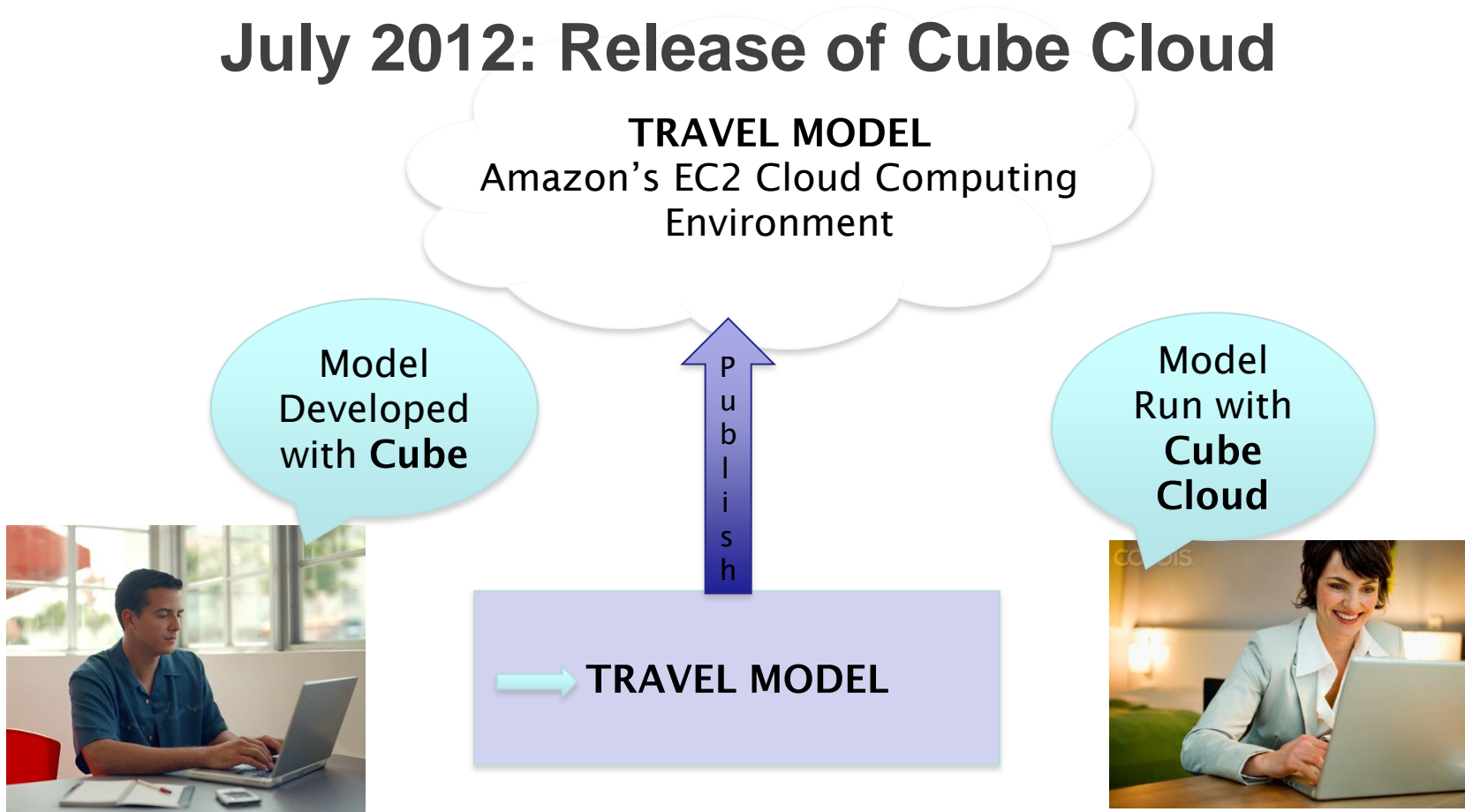
- PT Matrix Estimation is now supported with full features, before it wasn't possible to do if you had crowding or other advanced PT options
- PT Period-Based Keywords. Headway[p] used to be the only variable indexed by the HDWAYPERIOD parameter... now you can also index:
  - Node specific keywords:
    - DWELL[p]
    - DELAY[p]
  - Line specific keywords
    - DWELL\_DEFAULT[p]
    - DELAY\_DEFAULT[p]
    - TIMEFAC[p]



## Updates to the PT Module

- PT Fares During Enumeration.
  - Now allow some simplified fare evaluation (Flat, Distance based...) during enumeration as well. This gives the user another method of controlling enumeration when filtering realistic alternatives.
- PT Drive Access generation Enhancements... tons of new options...
- Some highlights:
  - Weighting drive access time versus in-vehicle and wait times associated with the PT trip.
  - Specific options for Park-n-Ride versus Kiss-n-Ride.
  - Considers weighting and allows specific limits on the directionality of the trip... controls 'backtracking'... i.e. driving 'away' from destination to access public transport even if better option.
  - More options on weighting of service types... premium services considerations.

## July 2012: Release of Cube Cloud



- Develop the Model with **Cube** in the Desktop Environment
- Publish the Model from **Cube** to the Cube Cloud
- Create, run and analyze scenarios from anywhere

## Benefits of CCS – Reduced Run Times

Run on 1 to 1024 processors using Cluster

### 4-step model

Cores	Run Time
1	20:41
4	11:05
8	7:33
16	5:48
32	4:42
64	4:02

### ABM Model

Cores	Run Time
8	175:13
16	139:03
32	53:40
64	25:57
128	12:41
256	9:58
512	7:17

### Highway Assignment

Cores	Run Time
1	1:59
4	0:46
8	0:29
16	0:18
32	0:15
64	0:13
128	0:08

## Benefits of CCS - Scalability

- Start 1, 10 or 100 scenarios simultaneously—the all start immediately
- Improve validation and forecasts by doing more tests



## Benefits of CCS: Sharing

- You own the model
- You invite others to use it
- No more physical copy of scripts and models
  - Eliminate onerous, mistake prone process
  - Eliminate problems with version control
  - Protect model integrity by not sharing scripts
  - Protect intellectual property by not showing scripts
- Users run the model through simple web-interface
- True solution for sharing and maintaining model(s) with multiple users and for delivering a turn-key solution
- **Sharing = Value Creation**



Happy people share

## Managing Access through Admin Control Panel

**METROPOLITAN WASHINGTON**  
COUNCIL OF GOVERNMENTS

logged in as **citiboss**

[Models](#) [Scenarios](#) [Analysis](#) [Data](#) [Store](#) **[Admin](#)**




 CUBE CLOUD

[Manage Model Access](#) | [Model Run Activity](#) | [Model Setup](#) | [Invite User](#)

### Manage Model Access

Model: MWCOG

#### List of Selected Users

Username	Email	Pay for User Runs	Is Model Admin?
citiboss 	mclarke@citilabs.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CitilabsAdmin 	amohideen@citilabs.com	<input type="checkbox"/>	<input checked="" type="checkbox"/>
colbybrown 	cbrown@citilabs.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Help - Manage Model Access

Manage users that have access to the selected model

#### Paying for Runs

Provides the user with an option to deduct their hourly usage from this model's contract; unchecking this option has the user pay for runs using their own contract

#### Model Administrators

Allows a user to manage model access, view run activity, manage the model setup and invite users



## Run Scenarios with a Simple Web Interface

The screenshot shows the Atlanta Regional Commission (ARC) CUBE CLOUD web interface. The top navigation bar includes links for Models, Scenarios, Analysis, Data, Store, and Admin. The user is logged in as 'citilabs'. The main content area is titled 'Scenario Manager' and displays a list of data files for the 'Base' scenario. The left sidebar shows the 'ATLANTA' model and the 'Base' scenario selected. The right sidebar contains a 'Help - Scenario Manager' section with instructions on scheduling, updating, creating child scenarios, viewing run status, and deleting scenarios. The main list of files includes:

- Base Highway Network (ARC05HWY1.net)
- Data for "major" park-and-ride lots (PNRCODE061.DAT)
- Data for "minor" park-and-ride lots (PNRCODE062.DAT)
- Rail data including distance and speed between stations (TRAINLNK05.TXT)
- Transit fare for each mode (tmfare05.txt)
- Transit line data for rail lines (TROUTE061.TXT)
- Transit line data for non-rail lines (troute062.txt)
- Toll rates by time-of-day for each toll link (TOLLS05.DBF)
- Transit station nodes used for reporting (stations.dbf)
- Household SE data stratified by income (hshld05g.dat)
- Population and Employment SE Data (nwlat05g.pm)
- Extra Zone Data File (ExtraZoneData05.pm)
- Pedestrian Environment Data (PedestrianEnvironment.DBF)
- Synthesized HH Population File (ForecastHHFile.csv)
- Synthesized Person Population File (ForecastPersonFile.csv)
- Delta Trip Matrix for AM (deltaAM.tlp)
- Delta Trip Matrix for MD (deltaMD.tlp)
- Delta Trip Matrix for NT (deltaNT.tlp)

The right sidebar also includes a 'Scenario States' section with a legend for the status of scenarios:

- 1. - no data available
- 2. - scheduled to run
- 3. - completed without warnings (return code: 0)
- 4. - completed with warnings (return code: 1)

## Make it Easy to Map Results

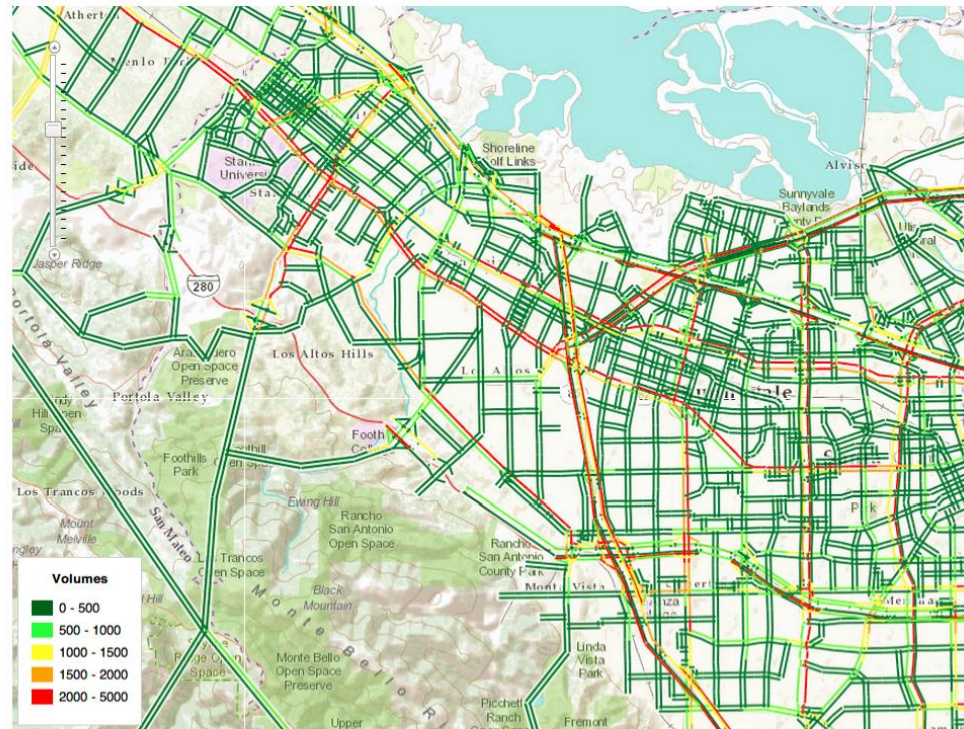
Maps: **AM Peak Volumes**

Select Basemap

VTA  
Base  
Year 2005

### AM Peak Volumes

Model: VTA  
Scenario: Base



## Make it Easy to Get Charts and Tables



logged in as **citiboss**



Charts: **AM Peak - Count Vs Volume**



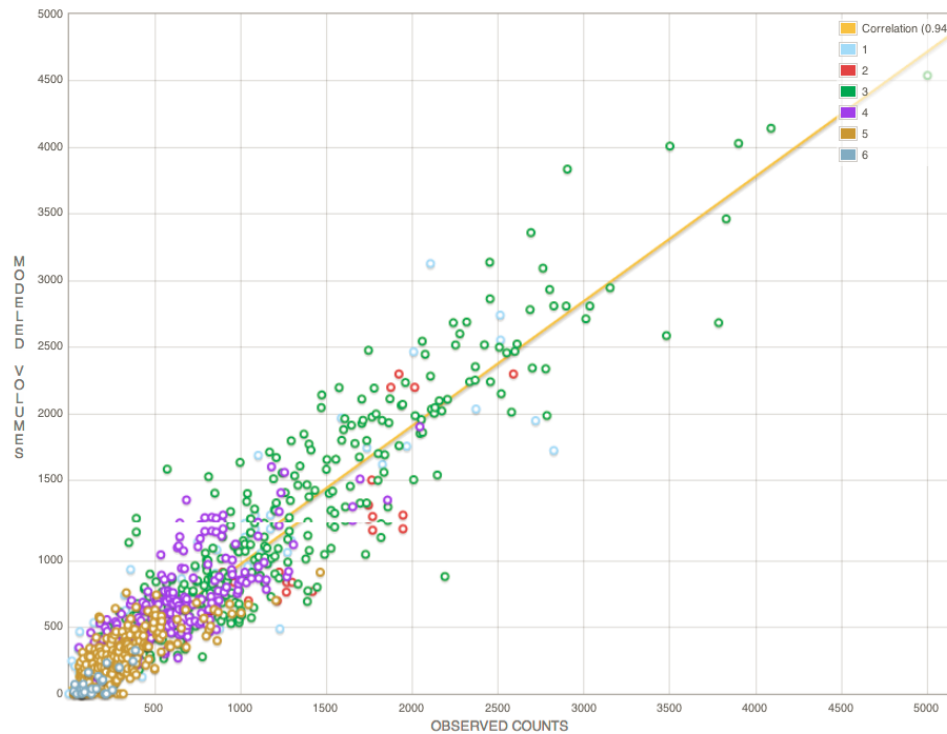
### BUDAPEST-HUNGARY

#### Base

- ☐ BASE\_2008
- ☐ BASE\_2010
- ☐ BASE\_2015
- ☐ BASE\_2020
- ☐ BASE\_2025

### Charts

Model: Budapest-Hungary  
Scenario: Base



## Improve Accessibility and Security

- Access the model through a common web browser
- Work from anywhere at anytime
- Work effectively as teams
- Protect the data and models with safe, off-site storage with redundant data backup





## It's Cheaper Than the Desktop

- Eliminate expensive hardware costs
- Spend your time on forecasting and not IT
- Cube software is included on the cloud
- Reduce costs to share and maintain the model through web-based control panels
- Reduce training costs—simple interface
- Reduce time to in analysis and communication through web maps, charts and tables



Thank you!

Cube 6

