Discover Cube 5

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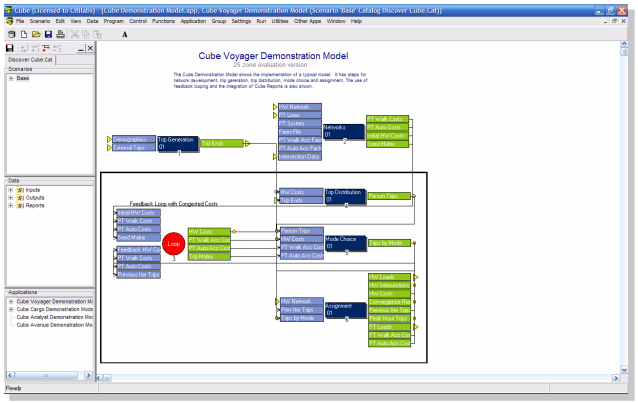
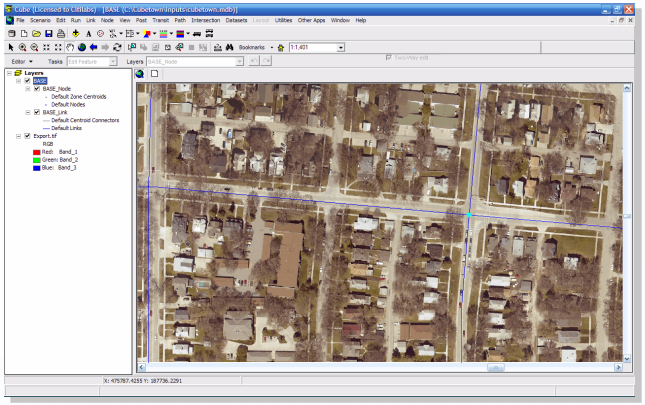
Agenda

- Overview of Cube
- The Cube Family
  - Cube Base
    - Cube Reports
    - Cube Cluster
  - Cube Voyager
    - Cube Avenue
  - Cube Dynasim
  - Cube Cargo
  - Cube Analyst
- Key Technologies in the ‘Labs
  - Cube Land
  - Cube Web



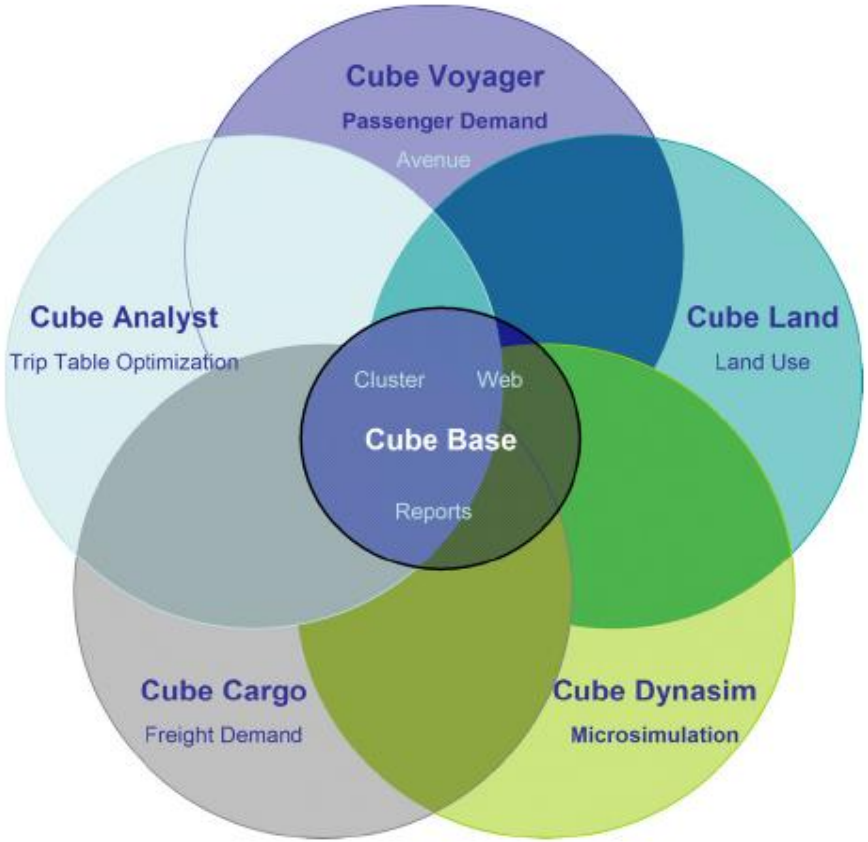
Cube Base



Cube Base

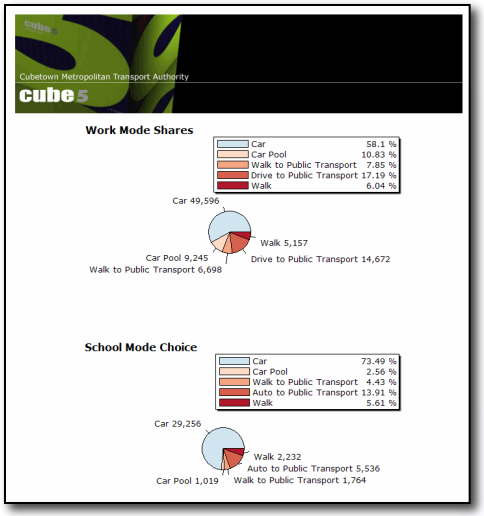
Overview of Cube

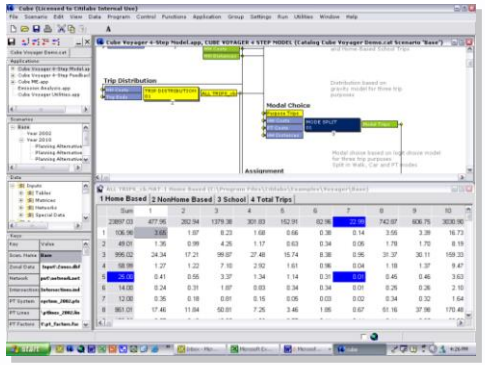
A Comprehensive Transportation Planning System



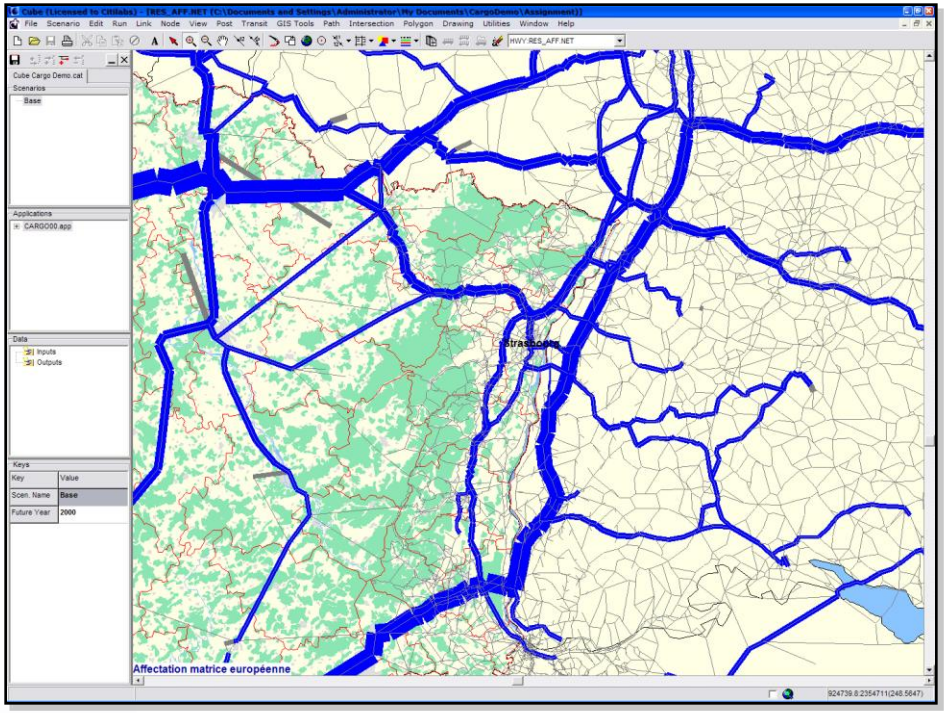
Key Qualities of Cube: Integrated Transportation Planning

- A series of Cube Products and Extensions working within:
  - One integrated software environment
  - Leveraging a common framework of integrated resources (i.e. scenarios - data, applications, results
  - Specialized to the needs of the consumer
- Modeling platform incorporates extensions provide capabilities for:
  - Passenger forecasting
  - Freight forecasting
  - Traffic microsimulation
  - Trip matrix optimization

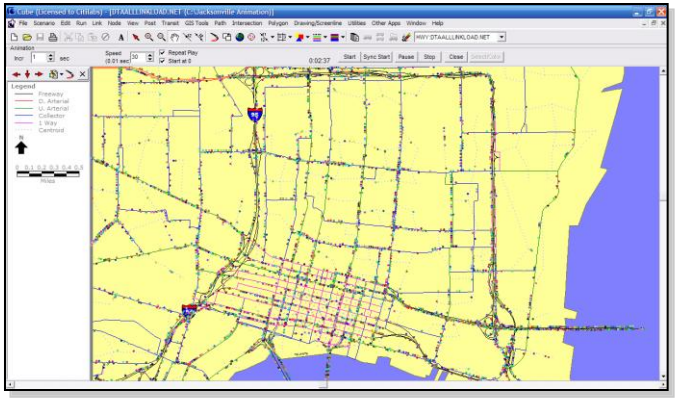




Key Qualities of Cube: Integrated Transportation Planning



Cube Voyager for regional flows

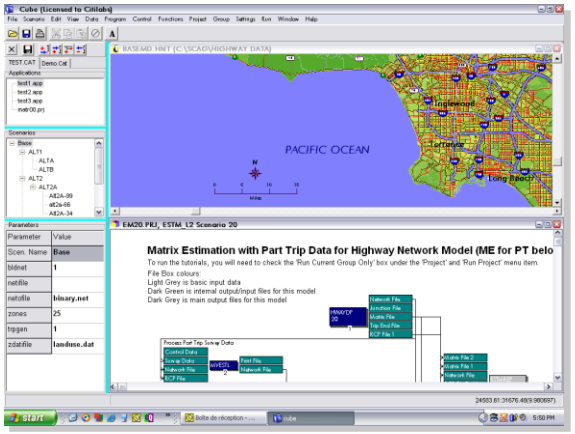


Cube Avenue for region-wide traffic flow and movement – queues/ delays

Cube Dynasim for corridor operations

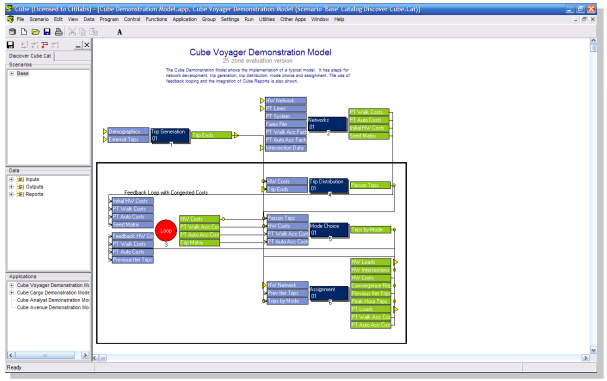
Key Qualities of Cube: Intuitive Design & Data Sharing

- Cube has an intuitive model design and model application workspace with easy-to-use data manipulation features.
- Cube provides direct access to and from ArcGIS, the industry standard for GIS systems.
- Cube has tools for the development and sharing of high quality 2D and 3D animations.

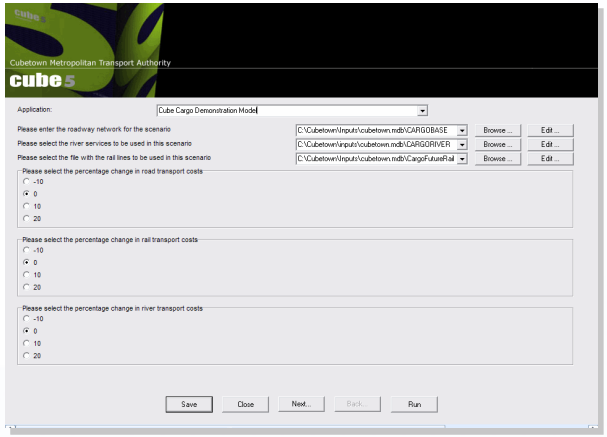


Key Qualities of Cube: Recognition of Developers, Appliers and Consumers

- Cube provides two explicit working environments:
  - Developer Environment: providing advanced methods and techniques for the design and development of the transport models.
  - Application Environment: for quick and easy application of the models to build, test and evaluate scenarios.
- Cube provides interactive, animated graphics; “camera-ready” reports, and cross-platform functionality
- Designed for the enterprise



Cube Base: Developer Environment

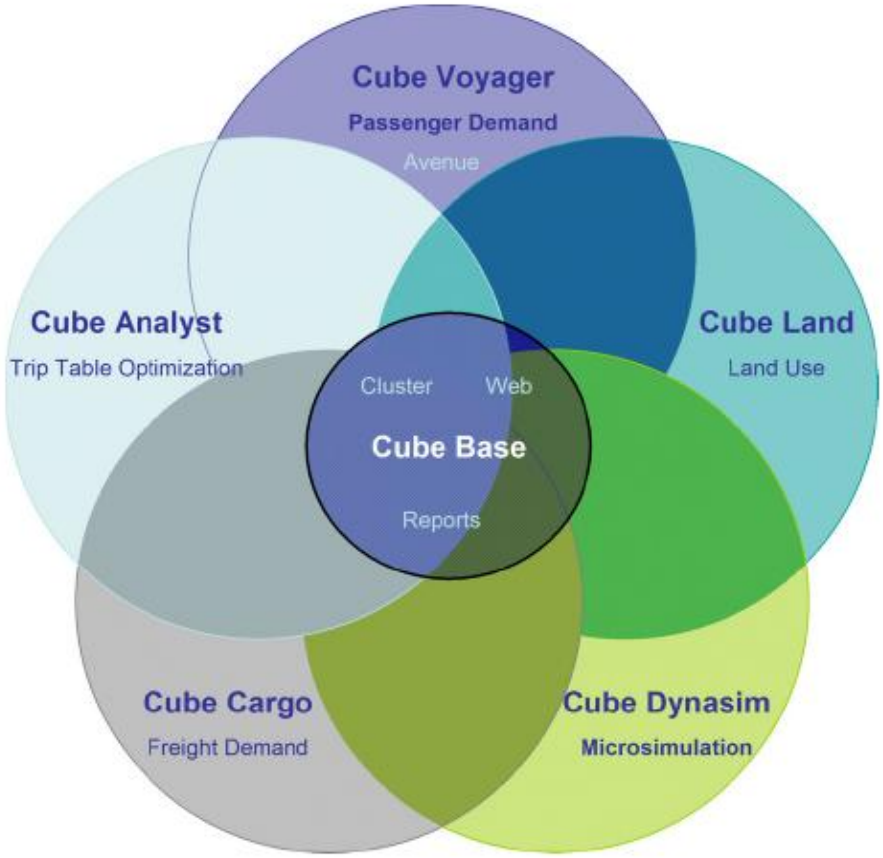


Cube Base: Application Environment

The Cube Family

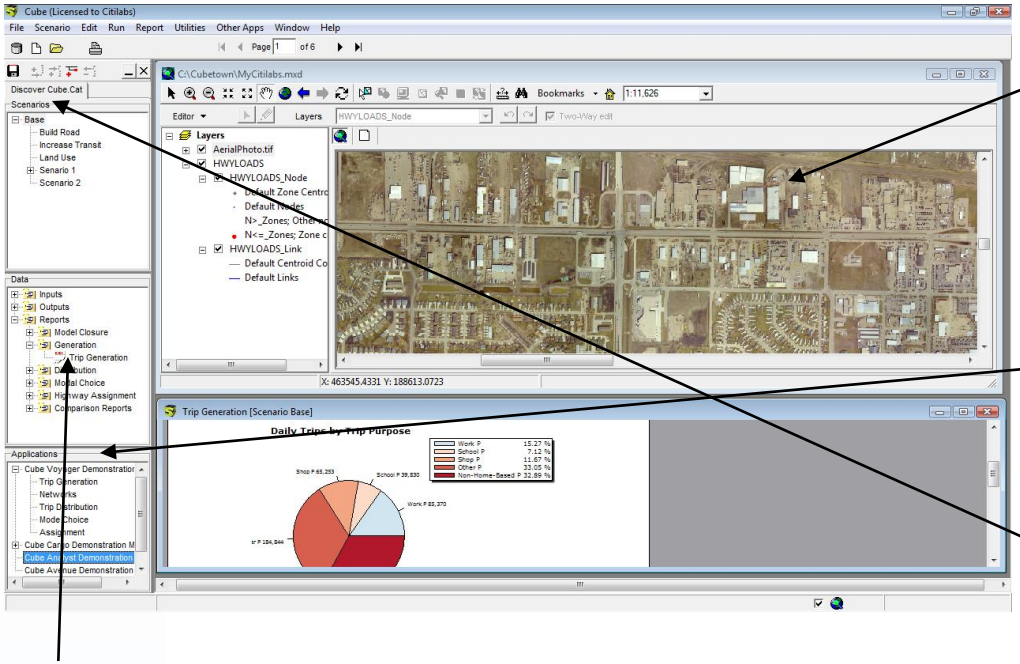
Cube Base:
Comprehensive Transportation Planning System

- Cube Base
  - Application Manager : flow-chart style tool for building model systems
  - Scenario Manager: tool for applying the model to multiple scenarios
  - Cube GIS Window: editing of all data in text, tabular and graphical form



Cube Base: Build, Test, Present

Common user interface for all Cube family products. Learn this once and you can use all existing and future libraries.



GIS Window: provides unlimited layering, signing, intersection coding and analysis, unmatched network editing and analysis, charting, links to digital media

Application Manager: provides extremely easy to use model interface for building, running and documentation

Scenario Manager makes creating, managing and running scenarios very easy to do

Reports: provides integrated report interface that is designed to deliver “camera ready” reports or allow on-the-fly custom reporting

Cube Base: Key Features

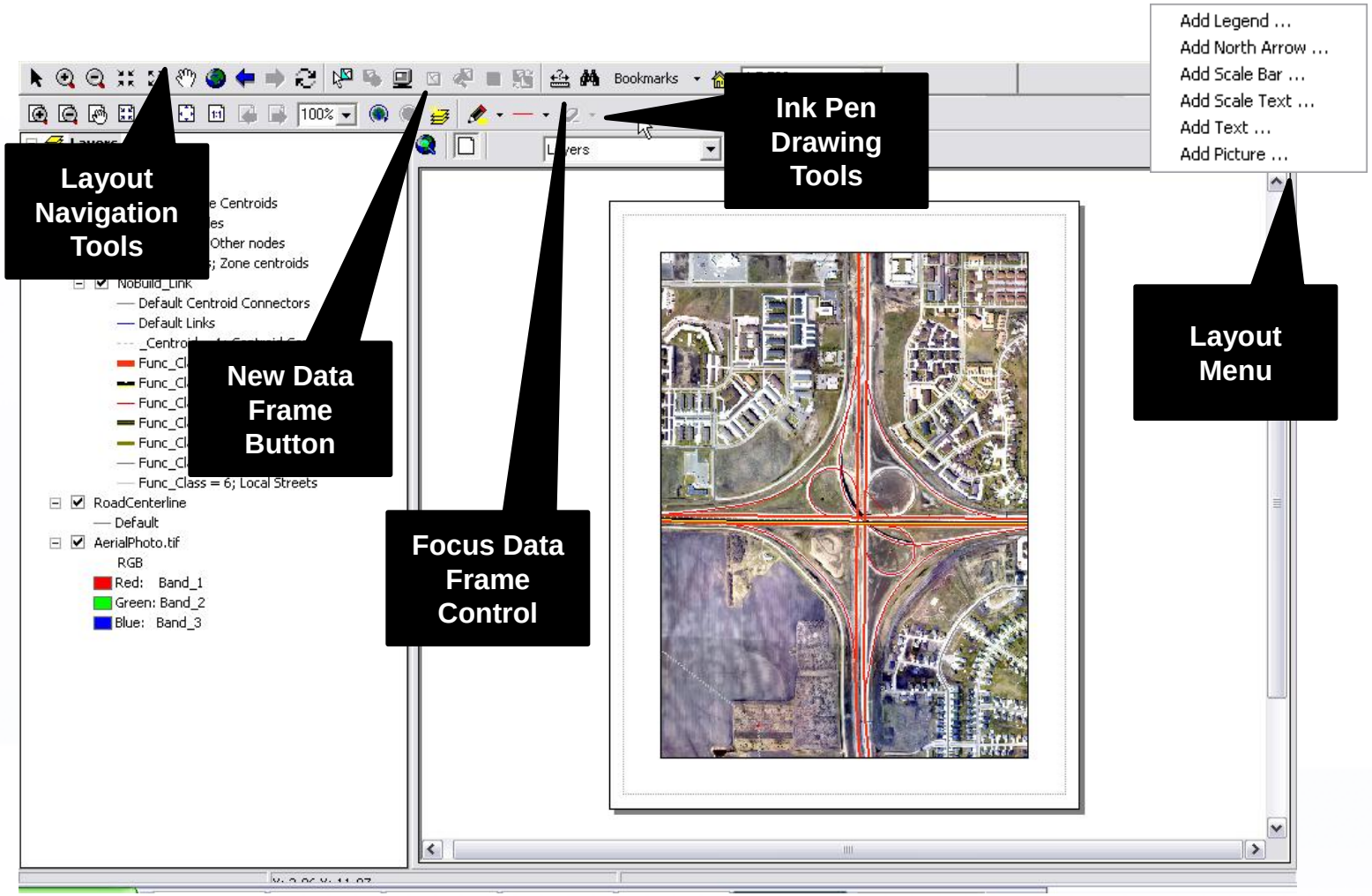
- Built with ArcObjects using ESRI's ArcEngine product library
- Provides built-in geo-processing functions
- Extensible with custom programs
- Supports multiple model applier types

Cube Base: Key Features (cont.)

- ArcGIS Engine capability for MXD, MDB, etc.
- Geodatabase Manager
- Full support of ESRI-supported data formats including major raster, CADD, etc.
- Supports defined permissions for multiple “applier” types

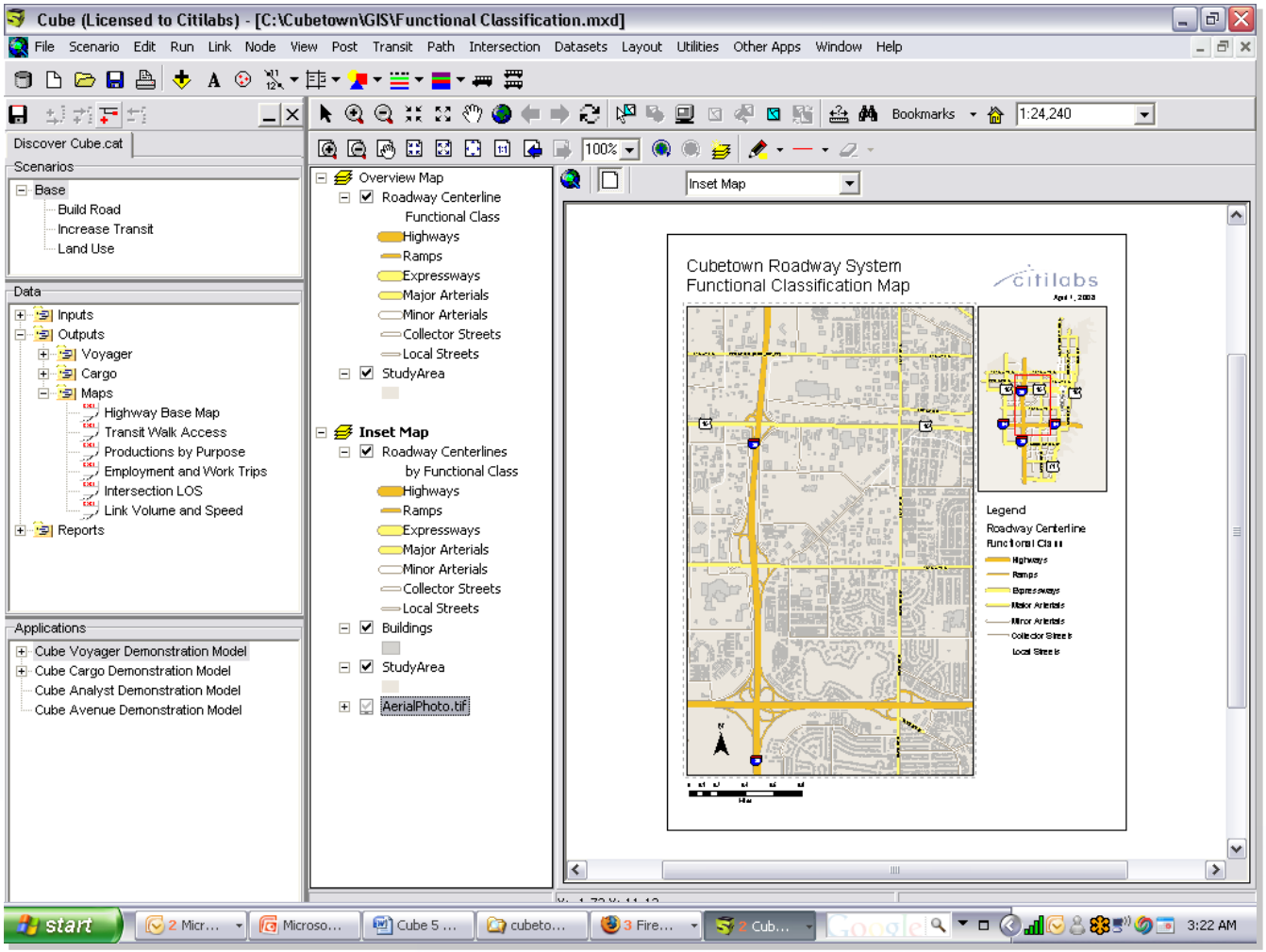
Cube GIS Window

Map Production Tools



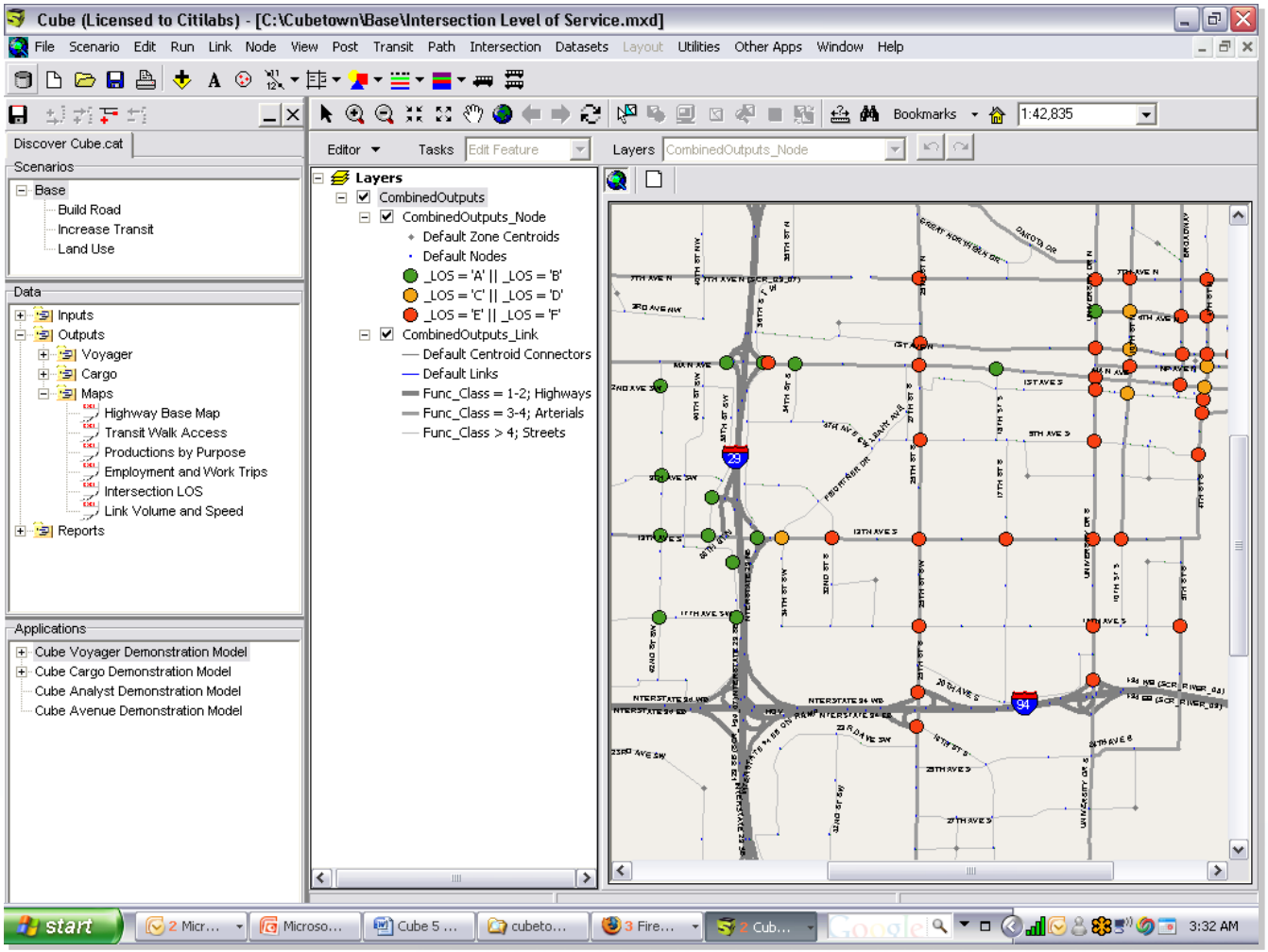
Cube GIS Window:

High-quality Mapping with GIS Window



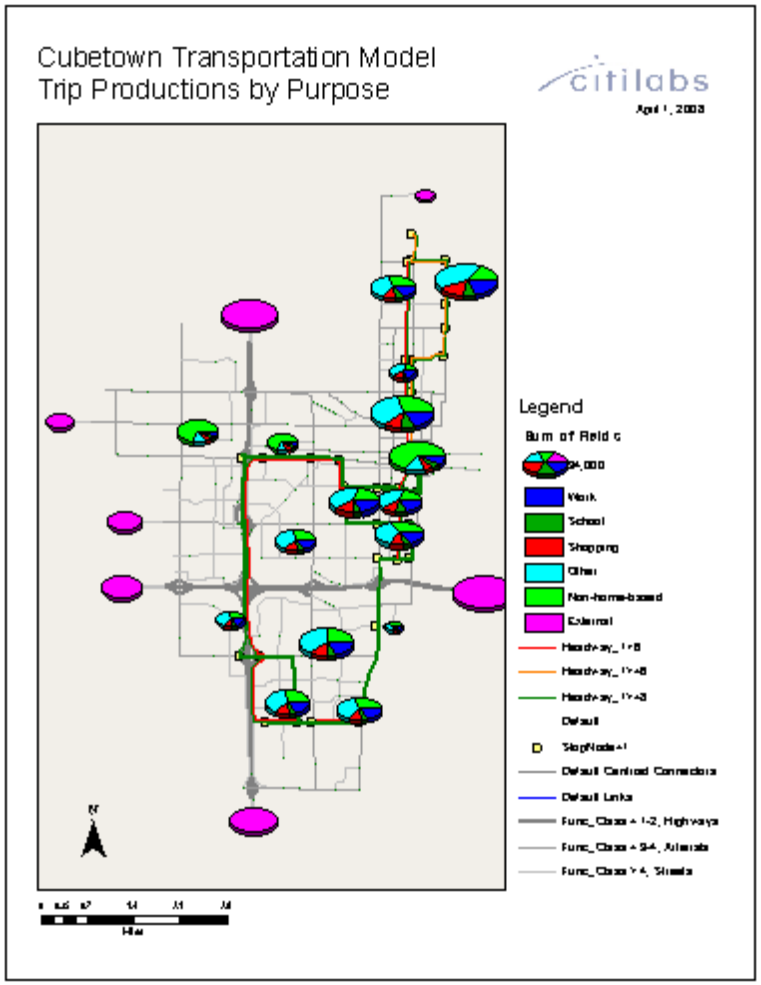
Cube GIS Window:

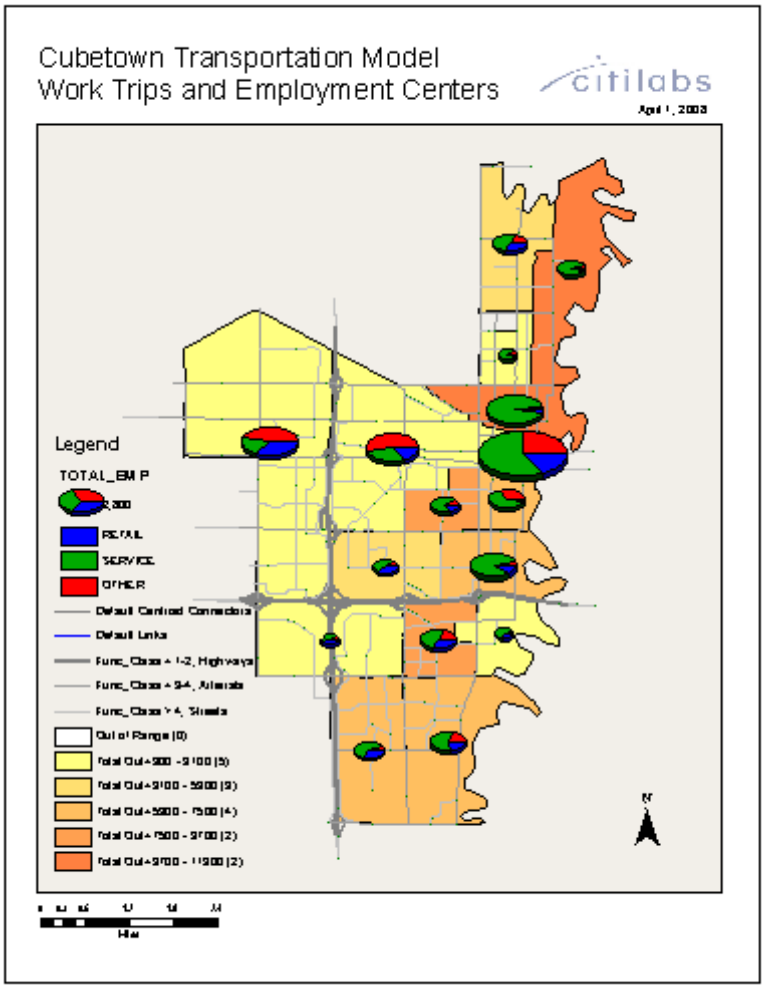
HCM Level-of-Service Mapping



Cube GIS Window:

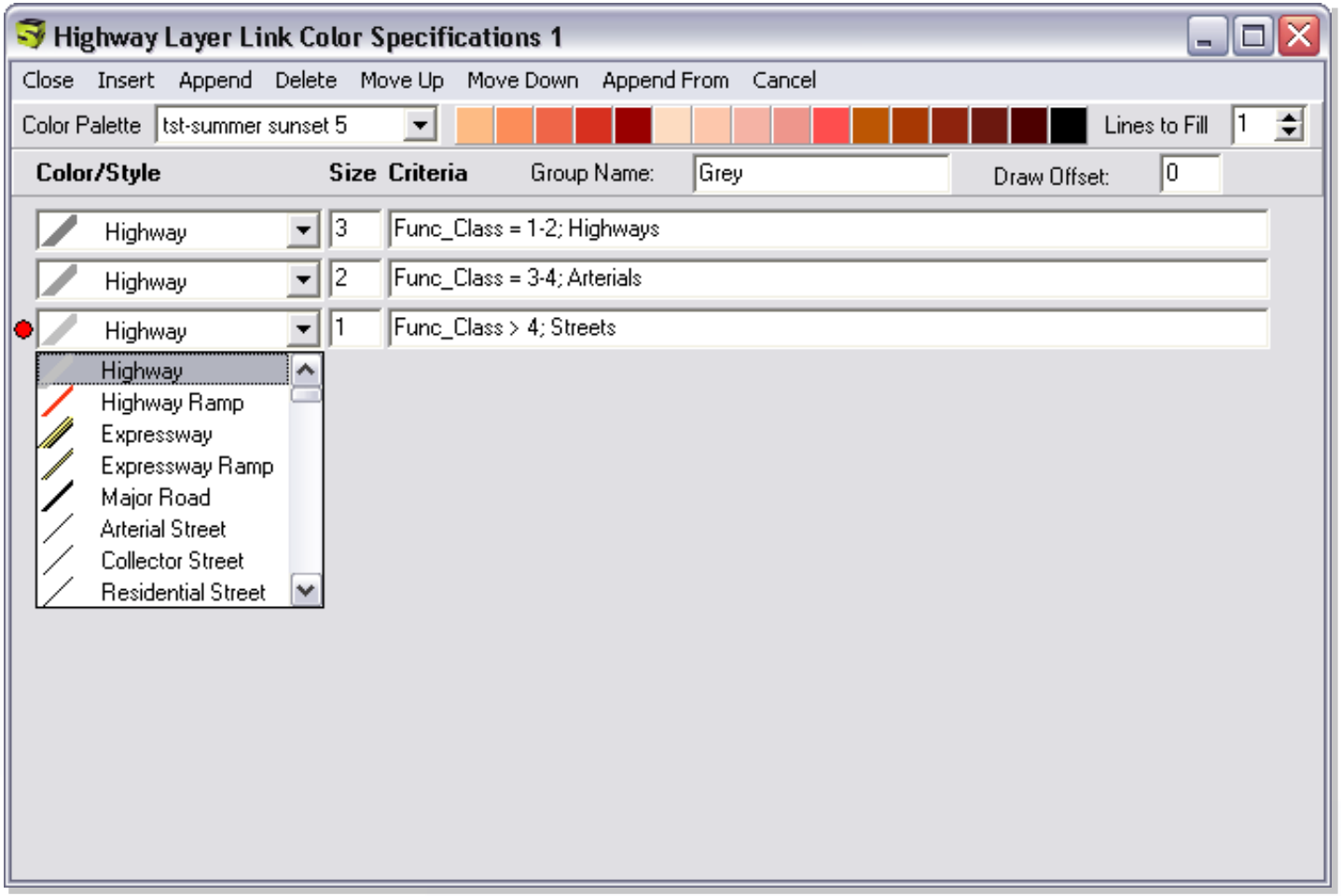
Node/Point Chart Graphics





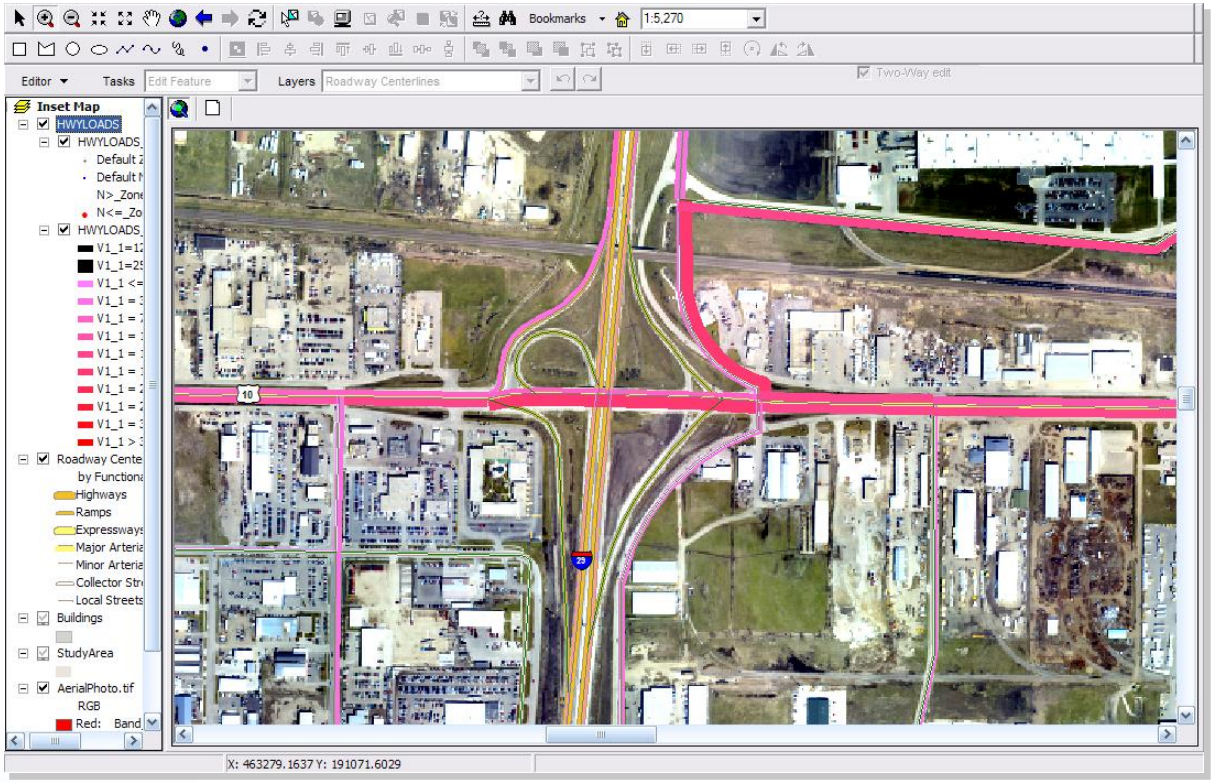
Cube GIS Window:

Integrated ESRI Symbology Library

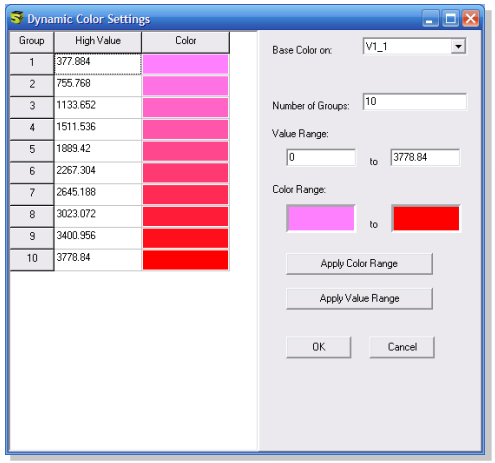


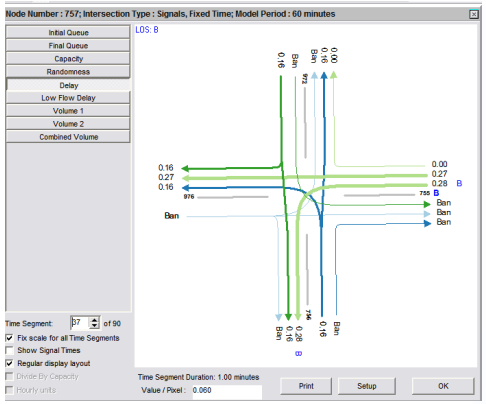
Cube GIS Window:

Dynamic (Avenue) Bandwidth, Colors..



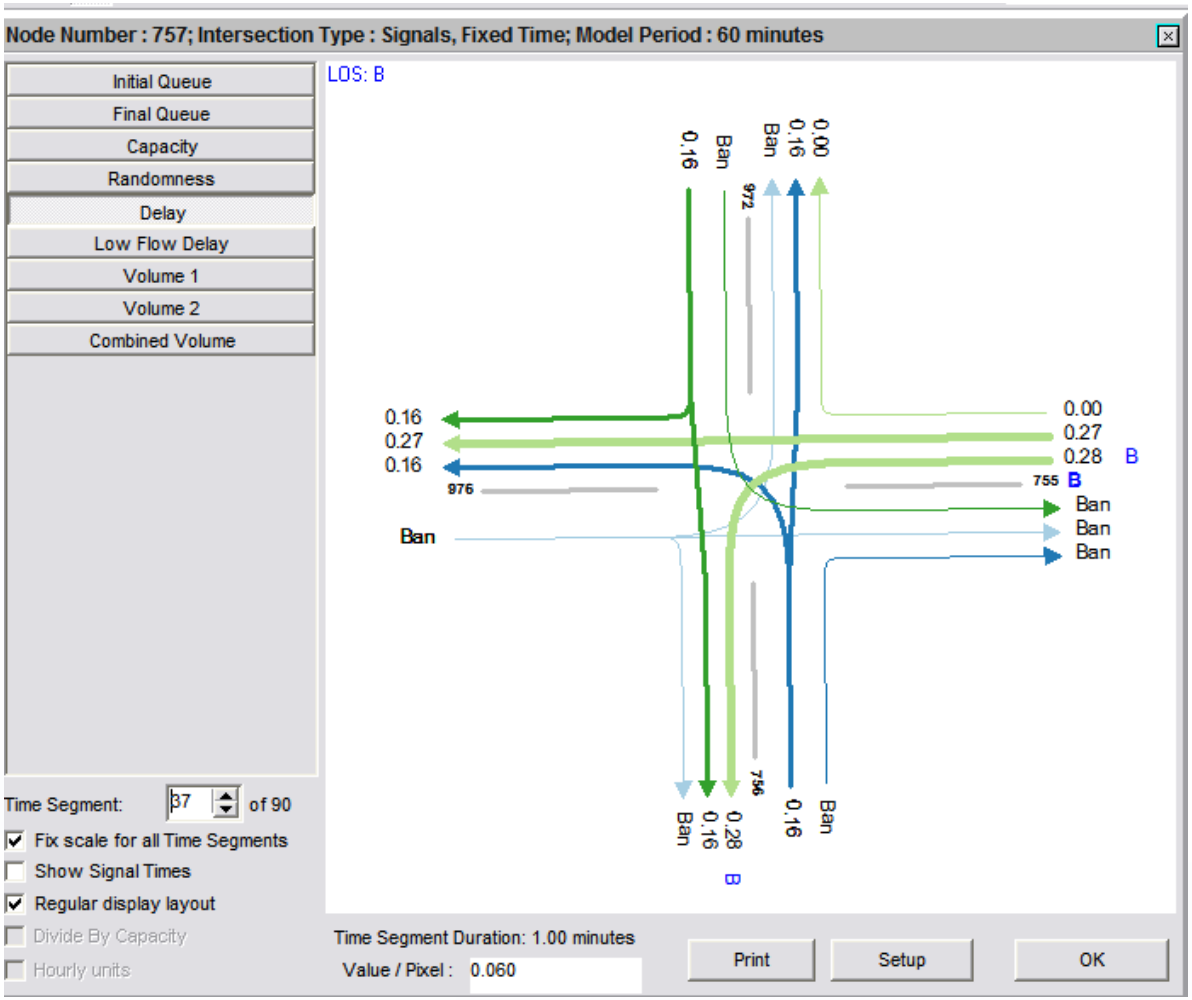
Display ‘keyed’ network attributes using bandwidth and color





Cube GIS Window

Dynamic (Avenue) Intersection Displays

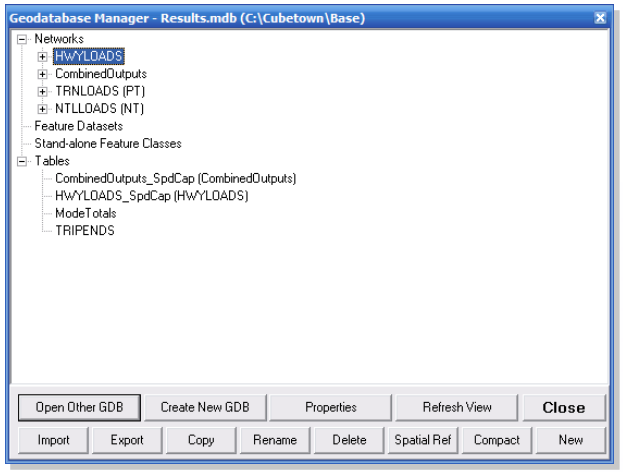


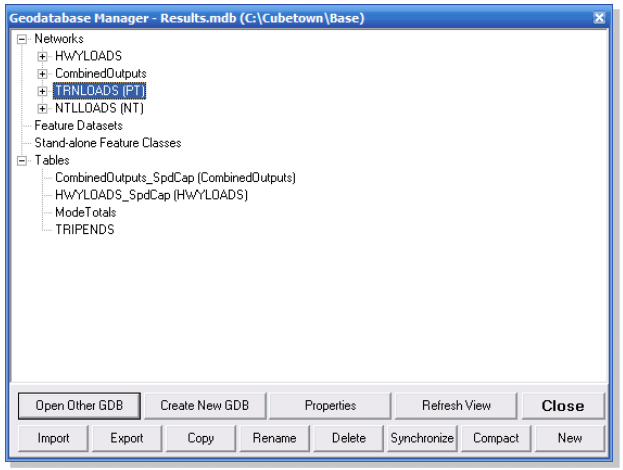
Display:

- Queue
- Capacity
- Delay
- Volume by time period

Cube Base:
Geodatabase Manager

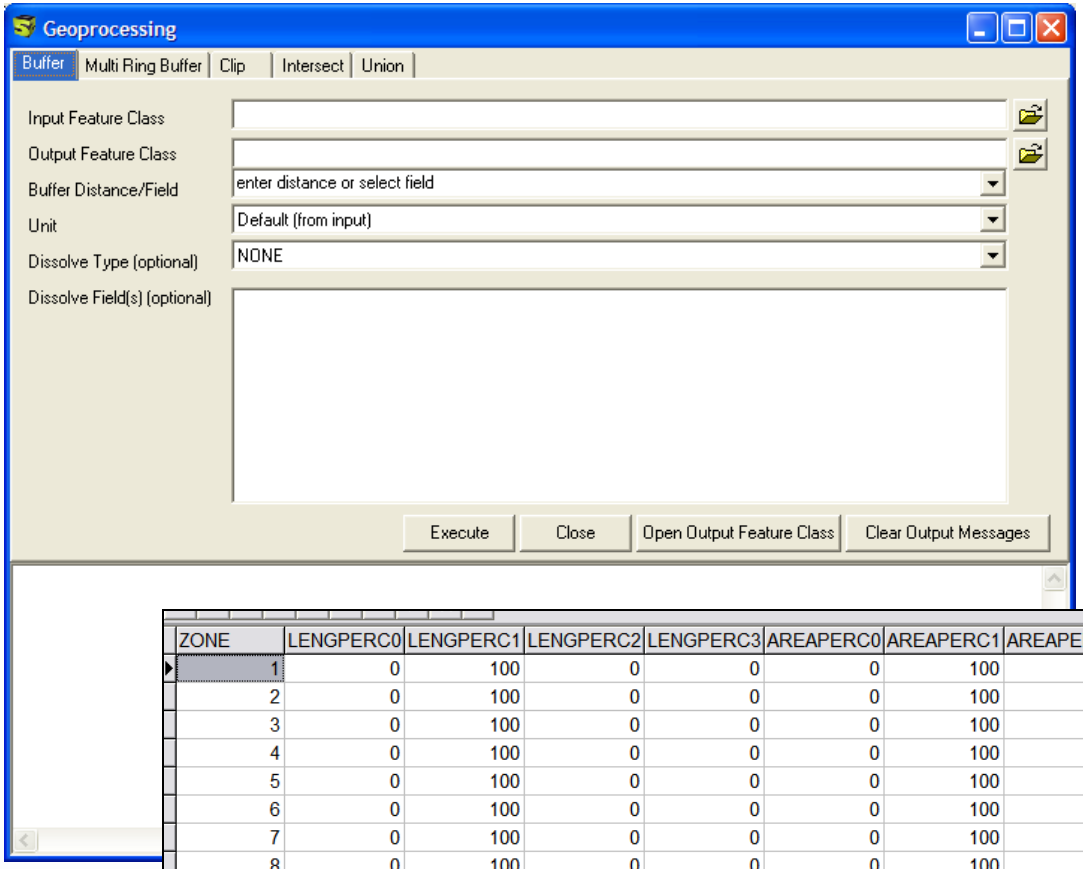
- Provides Database Management Tools
  - Creates “Cube” Geodatabase
  - Provides Import/Export Capabilities
  - Provides Scenario Management
  - Allows Updates/Changes to Projections
  - Provides Property Information about Cube Networks
  - Allows Transit Networks to “Sync” with Other Infrastructure Networks
  - Provides Database Compaction Tool





Cube Base:

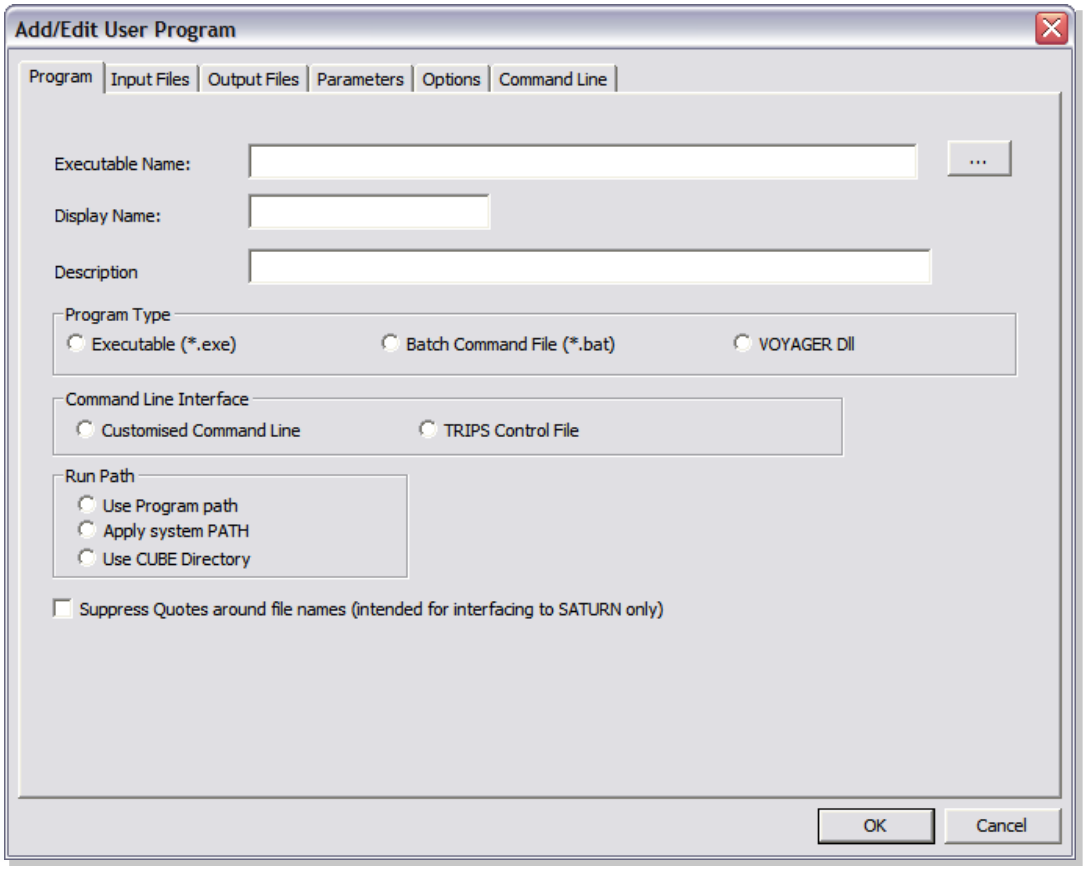
Geoprocessing Tools



ZONE	LENGPERC0	LENGPERC1	LENGPERC2	LENGPERC3	AREAPERC0	AREAPERC1	AREAPERC2	AREAPERC3
1	0	100	0	0	0	100	0	0
2	0	100	0	0	0	100	0	0
3	0	100	0	0	0	100	0	0
4	0	100	0	0	0	100	0	0
5	0	100	0	0	0	100	0	0
6	0	100	0	0	0	100	0	0
7	0	100	0	0	0	100	0	0
8	0	100	0	0	0	100	0	0
9	0	100	0	0	0	100	0	0
10	0	100	0	0	0	100	0	0
11	0	100	0	0	0	100	0	0
12	0	100	0	0	0	100	0	0
13	0	65.81	34.19	0	0	86.82	13.18	0
14	0	100	0	0	0	100	0	0
15	0	100	0	0	0	100	0	0
16	0	100	0	0	0	100	0	0

- Calculate and save zone-level access to transit stops
- Uses ArcGIS Buffering
- Supports PYTHON Scripting

Cube Base:
External Program Wizard

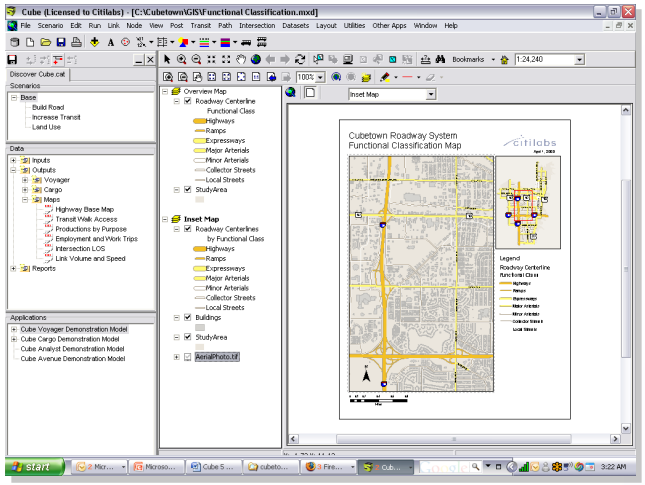


- Enables users to more easily add external programs to the Cube Base program menu
- Works with All Types of Programs

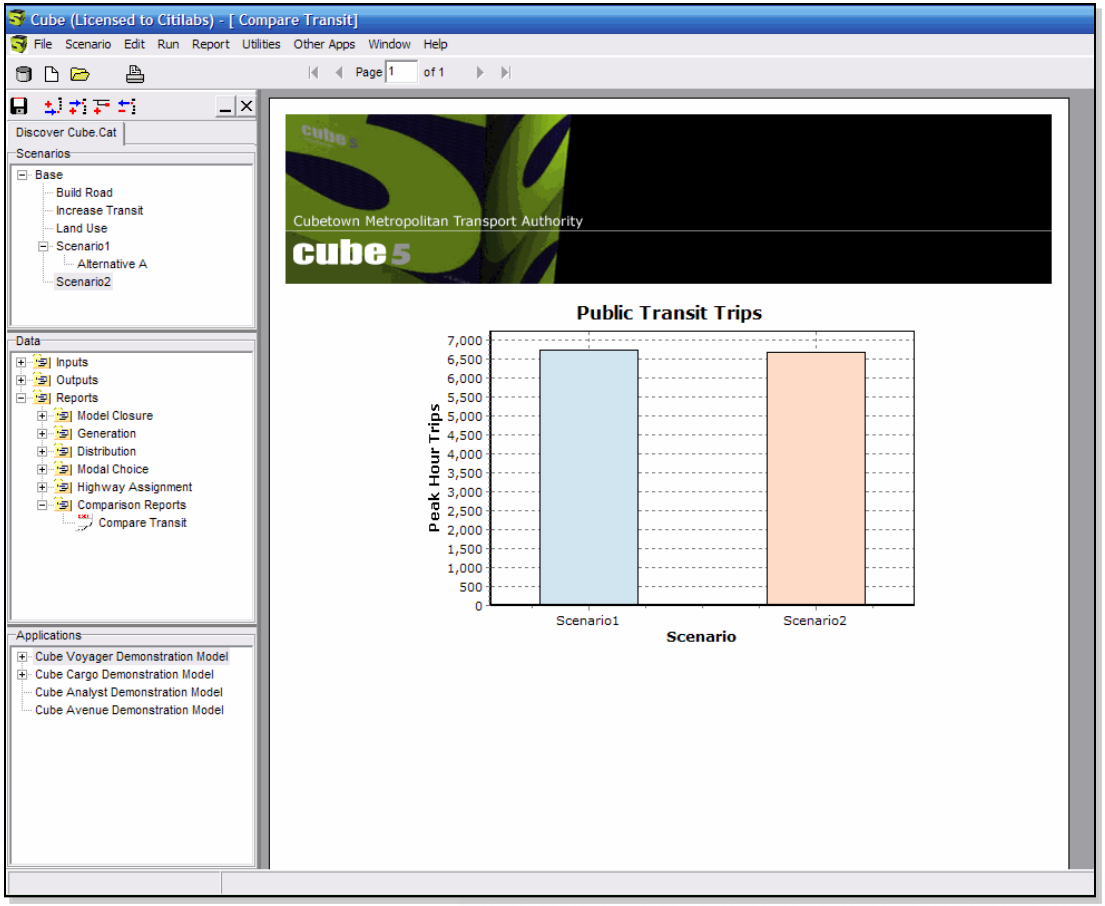
Cube Base:

Enterprise Mapping Using ESRI MXD Files

- Map View
  - Typical Working Environment
- Layout View
  - Working Print Preview
- MXD Support
  - Cube Creates
  - Cube Writes
  - Cube Reads



Cube Reports



- Direct reading of binary files saves steps to export to DBF
- Create reports directly from geodatabases

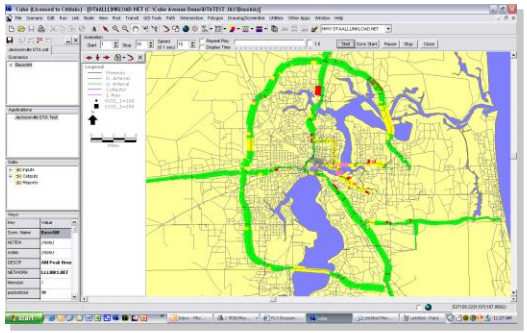
Cube Voyager:
Major New Features

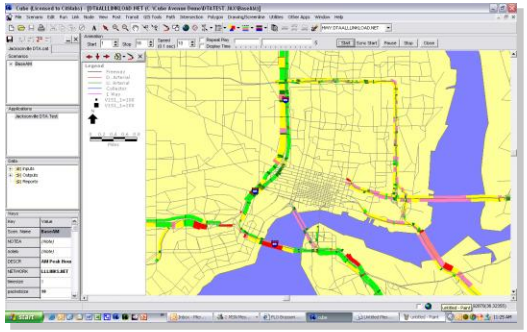
- Cube Voyager
  - Geodatabase Read/Write
  - PT select link
  - PT ‘mustusemode’ and ‘bestpathonly’ for FTA “New Starts” Analysis
  - Two recent extensions
    - Cube Avenue – extension to Cube Voyager providing mesoscopic dynamic traffic assignment
    - Cube Cluster – extension to Cube Base bringing distributed processing to Cube

Cube Avenue:

New Extension to Cube Voyager

- Mesoscopic assignment (dynamic traffic assignment)
  - representing vehicles as discrete packets or individual vehicles
  - assigning a specific time of departure
  - routing the vehicles along multiple paths in response to dynamic traffic conditions
  - representing queues and bottlenecks including ‘blocking back’
  - providing the ability to represent intersection geometrics and traffic control systems in detail.
  - Region-wide, corridor-level
  - Evacuation modeling, greater analysis of geometrics, traffic control and ITS strategies





Cube Cluster:

New Extension to Cube Voyager

- Brings very large time reductions in model runs

- Provides 2 types of savings:
  - Multi: take a three time period run and run the mode choice models on three PCs simultaneously
  - Intra: run one mode choice model over multiple PCs.

- Time savings can be substantial
  - Take a 10 hour run model and put across 10 pcs. Reduced to 1 hour and 10 minutes

- Architecture: 1 desktop license plus multiple, low cost ‘node’ licenses

Cube Cluster:

New Extension to Cube Voyager (cont.)

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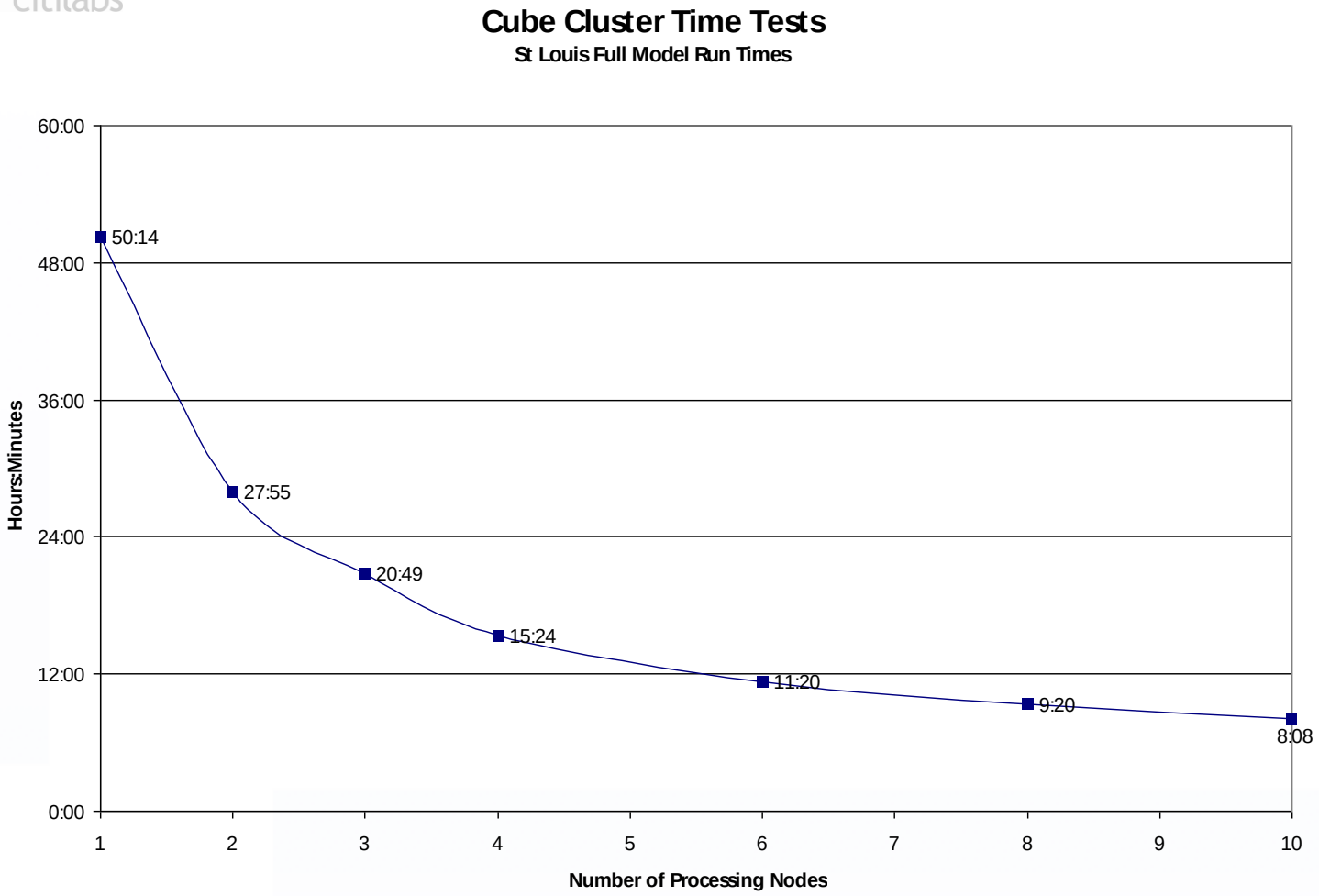
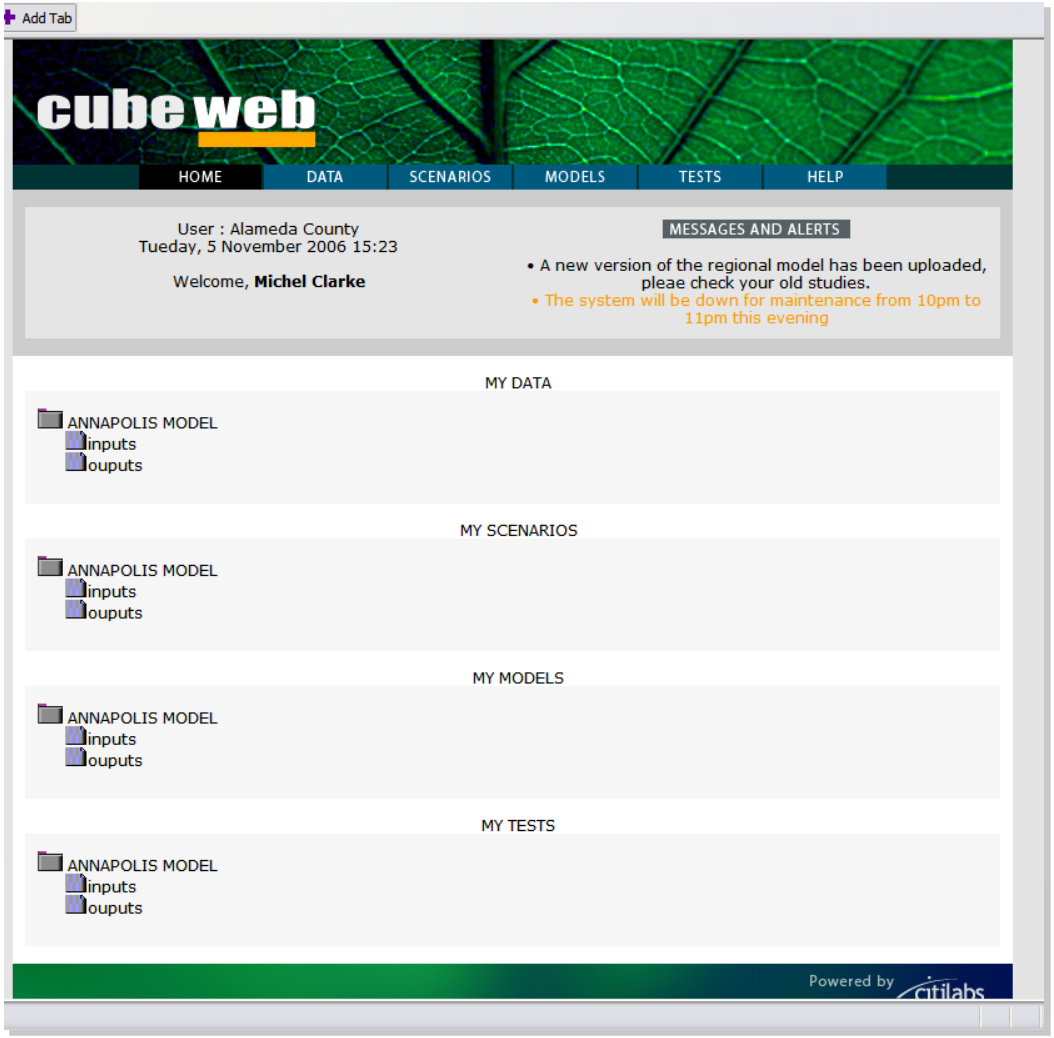


Key Technologies in the ‘Labs

General

- ARCGIS Extension of Cube Editor
- Origin-based Assignment
- Compiled Scripting
- 64 Bit Cube Voyager
- Enhanced Junction Modeling
- PT Enhancements
- Continued Additions to Cube 5 GIS Functionality

Cube Web: Accessing the Model via the Internet



- Upload scenario data from remote site (locality) to central server
- Log in and access model via internet
- Eliminates the need to have local versions of the model
- Vastly improves management and access to the model system across a region and to consultants

Cube Land

- Innovation in land use pricing—via auction/bidding theory
- Econometric-based model
- Integrates Cube Voyager's transport accessibility measures and ESRI's spatial mapping/analysis capabilities
- Works directly with zone-based land use information
- Forecasts land rent/prices to better evaluate development pressures