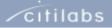


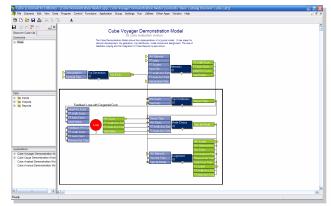
Discover Cube 5

Wade L. White, AICP Director Citilabs, Inc.

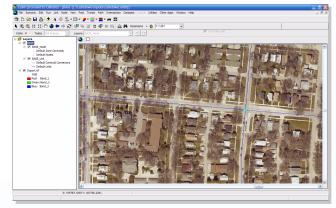


Agenda

- 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

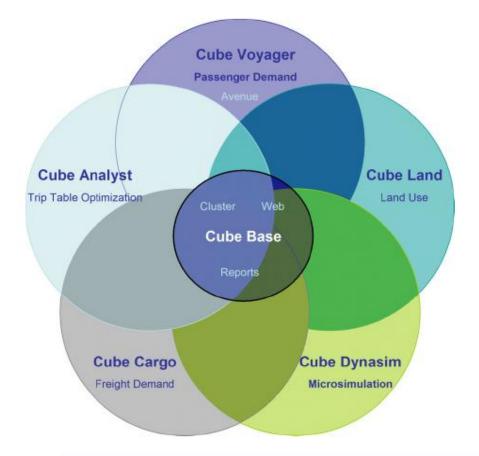




Overview of Cube



A Comprehensive Transportation Planning System

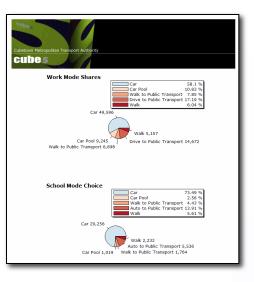


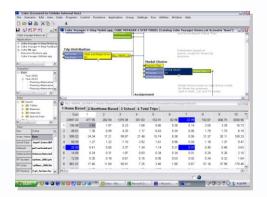


cube 🛯

Key Qualities of Cube: Integrated Transportation Planning

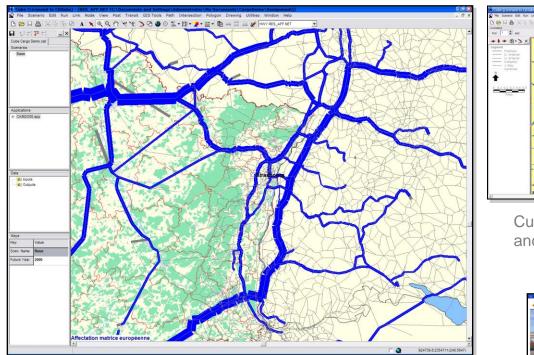
- A series of Cube Products and Extensions working within:
 - One integrated software environment
 - Leveraging a common framework of integrated resources (i.e. scenarios - data, applications, results
 - Specialized to the needs of the consumer
- Modeling platform incorporates extensions provide capabilities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



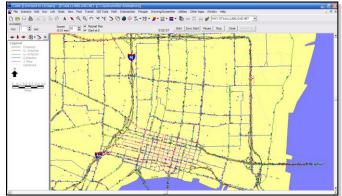


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Key Qualities of Cube: Integrated Transportation Planning



Cube Voyager for regional flows



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



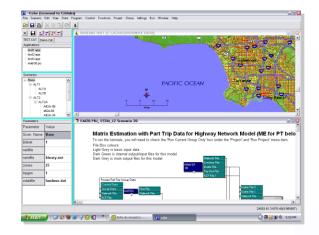
Cube Dynasim for corridor operations



Key Qualities of Cube: Intuitive Design & Data Sharing

cubes

- Cube has an intuitive model design and model application workspace with easyto-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.





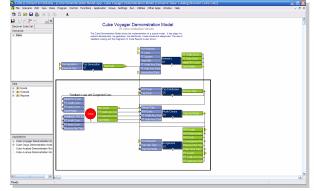


cube 🛯

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

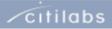
	Transport Authority	
ube 5	N/	
oplication:	Cube Cargo Demonstration Mode	
lease enter the roadway r	etwork for the scenario	C:\Cubetown\Inputs\cubetown.mdb\CARGOBASE v Browse Edit
lease select the river serv	ces to be used in this scenario	C:\Cubetown\inputs\cubetown.mdb\CARGORIVER + Browse Edit
lease select the file with th	e rail lines to be used in this scenario	C:\Cubetown\Inputs\cubetown.mdb\CargoFutureRail + Browse Edit
© 0 ○ 10 ○ 20		
Please select the percent C -10 C 10 C 10 C 20	ge change in rail transport costs	

Cube Base: Application Environment





The Cube Family

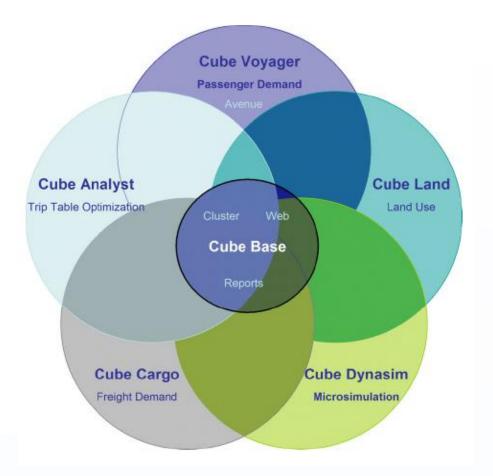


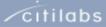
Cube Base:

cube 5

Comprehensive Transportation Planning System

- Cube Base
 - Application Manager : flowchart 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

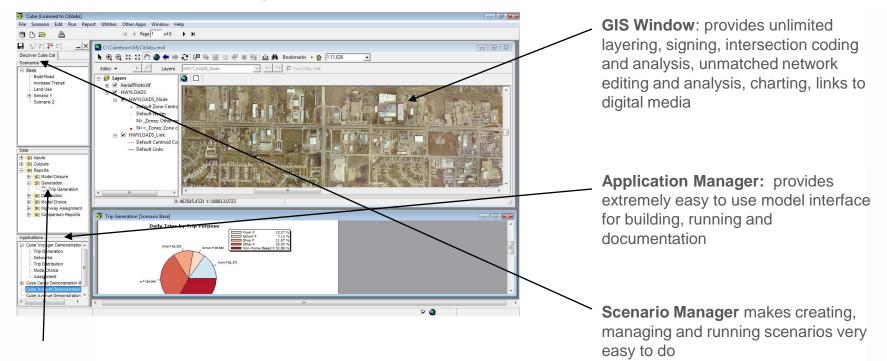




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Cube Base: Build, Test, Present

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



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

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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.)

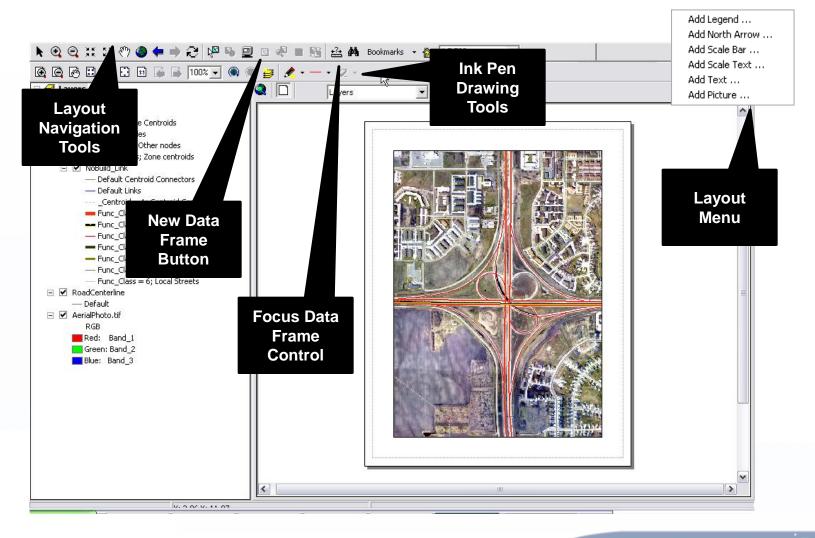
- ArcGIS Engine capability for MXD, MDB, etc.
- Geodatabase Manager
- Full support of ESRI-supported data formats including major raster, CADD, etc.
- Supports defined permissions for multiple "applier" types





Cube GIS Window

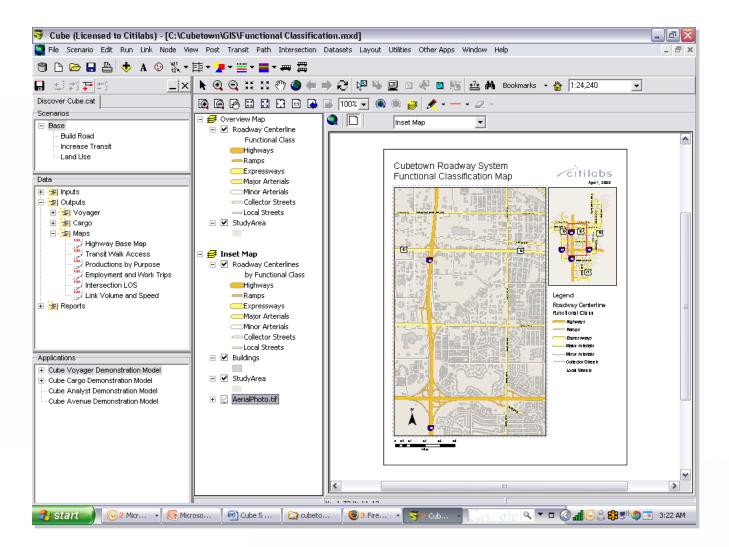
Map Production Tools



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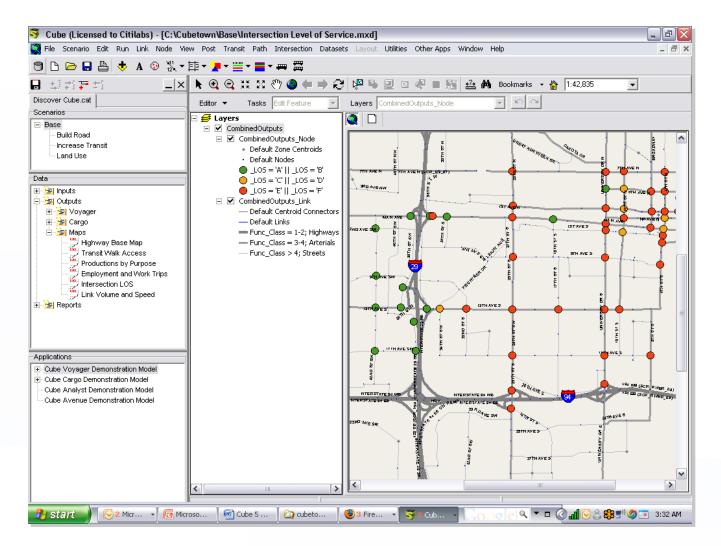
Cube GIS Window: High-quality Mapping with GIS Window





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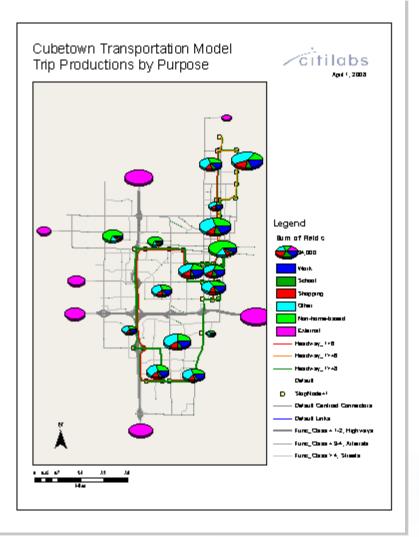
Cube GIS Window: HCM Level-of-Service Mapping

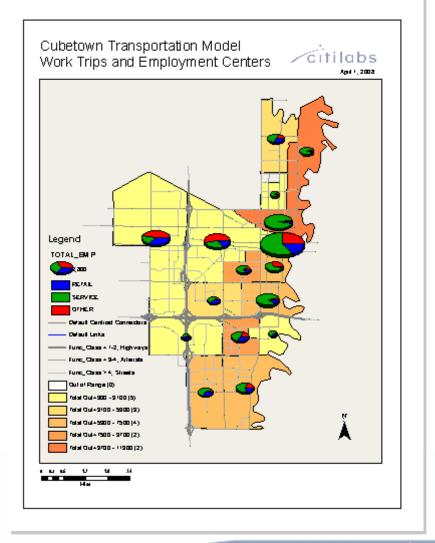


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Cube GIS Window:

Node/Point Chart Graphics





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Cube GIS Window: Integrated ESRI Symbology Library

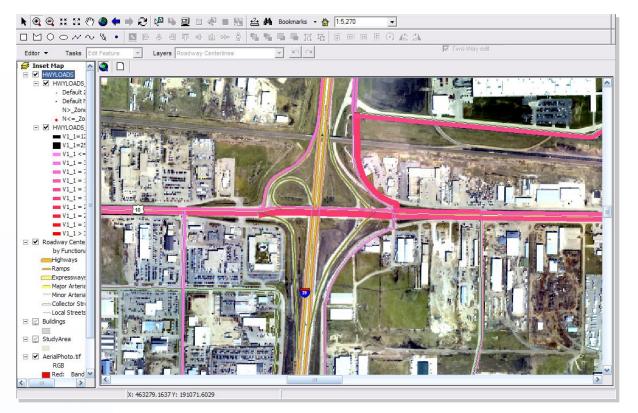
🐬 Highway Layer Link Color Specifications 1 📃 🗖 🔀								
Close Insert Append Delete Move Up Move Down Append From Cancel								
Color Palette tst-summer sunset 5 💌 🗾 🖉 🖉 🖉 🖉 🖉 🖉 🖉 🚺 🛨 🛨								
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	Highway	▼ 3	Func_Class = 1-2; Highways					
	Highway	• 2	Func_Class = 3-4; Arterials					
•	Highway	• 1	Func_Class > 4; Streets					
	Highway Highway Ramp Expressway Expressway Ramp Major Road Arterial Street Collector Street Residential Street	~						



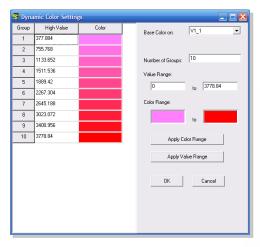
cube 5

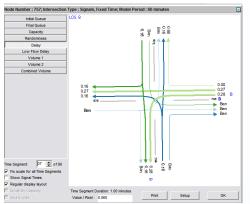
Cube GIS Window:

Dynamic (Avenue) Bandwidth, Colors..



Display 'keyed' network attributes using bandwidth and color

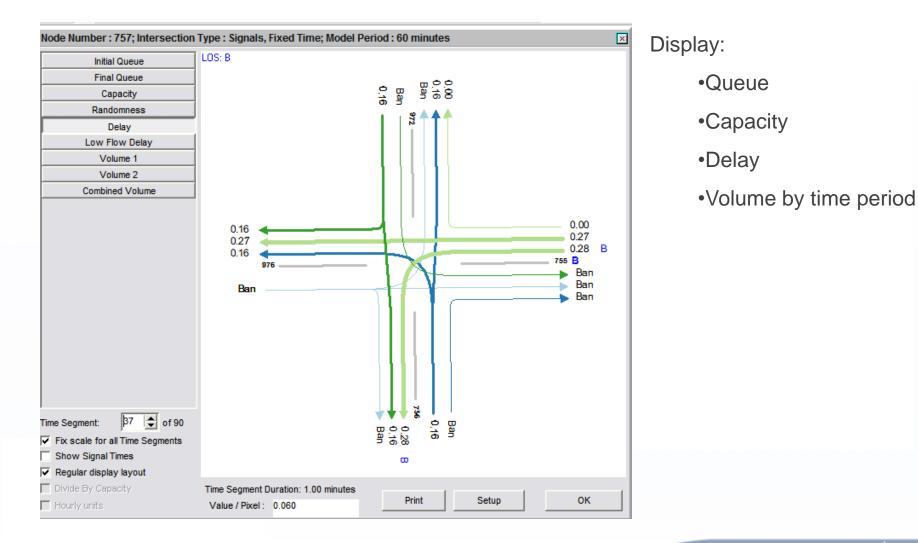






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Cube GIS Window Dynamic (Avenue) Intersection Displays



Cube Base:

cube **s**

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

Geodatabase Manager - Results.mdb (C:\Cubetown\Base)							
Stand-alone Feature Classes Tables Combined0utputs_SpdCap (Combined0utputs) — Combined0utputs) — MvdEtADS_SpdCap (HvvYL0ADS) — ModeTotals — TRIPENDS							
Open Other GDB Create New GDB Properties Refresh View Clo	se						
Import Export Copy Rename Delete Spatial Ref Compact N	lew						

Geodatabase Manager - Results.mdb (C:\Cubetown\Base)								
Networks								
HWYLOADS								
CombinedDutputs								
TRNLOADS (PT)								
NTLLOADS (NT)								
Feature Datasets								
Stand-alone Feature Classes								
En Tables								
 CombinedOutputs_SpdCap (CombinedOutputs) HWYL0ADS_SpdCap (HWYL0ADS) 								
ModeTotals								
TBIPENDS								
THILENDS								
Open Other GDB Create New GDB Properties Refresh View Close								
Import Export Copy Rename Delete Synchronize Compact New								



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Cube Base: Geoprocessing Tools

00000.000			
S Geoprocessing			
Buffer Multi Ring Buffer C	lip Intersect Union		
Input Feature Class Output Feature Class			1
Buffer Distance/Field	enter distance or select field	-	
Unit	Default (from input)	•	
Dissolve Type (optional)	NONE	-	
Dissolve Field(s) (optional)			
	Execute Close Open Output Feature Class Clear Output M	lessag	jes

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

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

Cube Base: External Program Wizard

Add/Edit User Program	×						
Program Input Files Output Files Parameters Options Command Line							
Executable Name:							
Display Name:							
Description							
Program Type C Executable (*.exe) C Batch Command File (*.bat) C VOYAGER DII							
Command Line Interface C Customised Command Line C TRIPS Control File							
C Customised Command Line C TRIPS Control File Run Path C Use Program path C Apply system PATH C Use CUBE Directory Suppress Quotes around file names (intended for interfacing to SATURN only)							
OK Cancel							

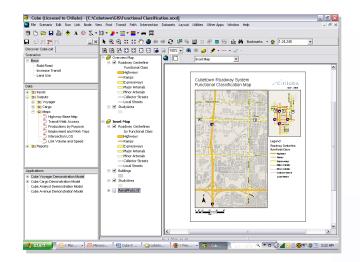
- Enables users to more easily add external programs to the Cube Base program menu
- Works with All Types of Programs

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Cube Base:

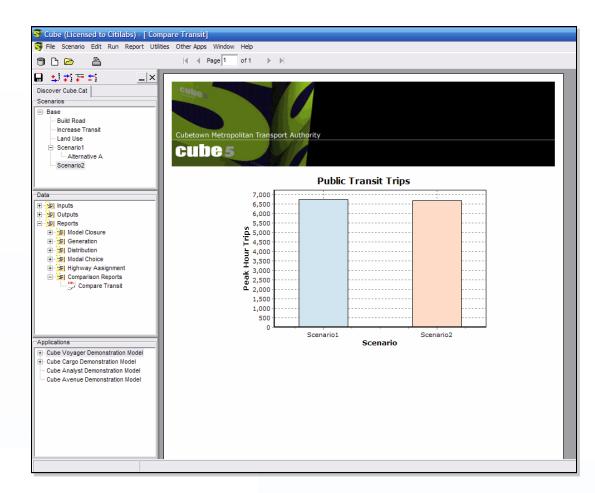
Enterprise Mapping Using ESRI MXD Files

- 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



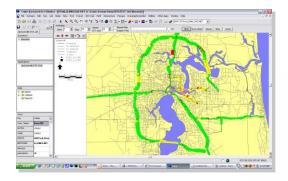


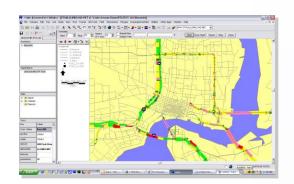
Cube Avenue:

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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

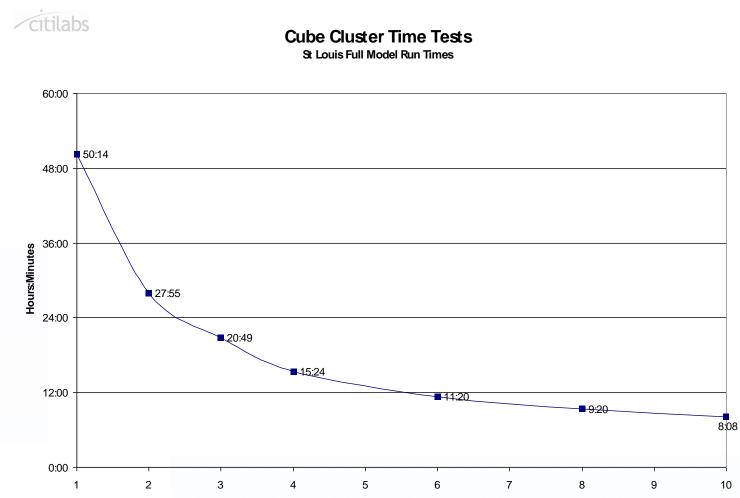
- Brings very large time reductions in model runs
- Provides 2 types of savings:
 - Multi: take a three time period run and run the mode choice models on three PCs simultaneously
 - Intra: run one mode choice model over multiple PCs.
- Time savings can be substantial
 - Take a 10 hour run model and put 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.)



Number of Processing Nodes





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

Add Tab						
cube v		SCENARIOS	MODELS	TESTS	HELP	250
Tueday, 5	r : Alameda County 5 November 2006 15:23 ome, Michel Clarke	1		pleae check you	I model has been uplo r old studies. maintenance from 10	
		MY	DATA			
ANNAPOLIS MODEL inputs ouputs	L					
		MY SC	ENARIOS			
ANNAPOLIS MODEL inputs ouputs	L					
		MY M	IODELS			
ANNAPOLIS MODEL inputs ouputs	L					
		MY	TESTS			
ANNAPOLIS MODEL inputs ouputs	L					
					Powered by	tilabs

- 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

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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





