2008 Catalog of Citilabs Training Courses

Courses that help you get more from your software investment

Citilabs is pleased to offer a full array of training courses designed to help you learn more about Cube and get more from your software investment, no matter what your current level of expertise. See *Opportunities to Learn Cube in 2008* for the schedule of training courses.

Courses described include:

Scenario analysis, mapping, and reporting with Cube

This course is designed for those interested in learning more about Cube. The course material caters to analysts who need to apply existing models and produce meaningful summary data, maps, and reports.

Attendees will learn:

- How to set up and run multiple model scenarios using the best methods
- How to prepare, edit, analyze, and compare model input
- How to inspect, analyze, and compare model output
- How to create standardized maps, charts, and reports

Software used: Cube Base 5

Prerequisites: None

Citilabs, Inc.
312 Clay Street, Suite 180
Oakland, California 94607, USA

World Wide Web
www.citilabs.com

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Introduction to application development with Cube Voyager

This introductory course is designed for those interested in learning the basics about developing Cube Voyager models. The course introduces travel-demand model theory and then shows how you can begin developing your own models using Cube's application-building and scenario-management tools.

Attendees will learn:

- How to set up catalogs containing applications anyone can apply
- How to create an application structure using simple flow-chart-based tools provided with Application Manager
- How to use the Cube Voyager scripting language with four-step models to manipulate networks, text data, and matrices

Software used: Cube Base 5, Cube Voyager

Prerequisites: None

Introduction to traffic microsimulation and Cube Dynasim

This course is designed for those wanting to learn about traffic microsimulation and the tools and techniques you can use to produce detailed operational results and visualizations of traffic flows.

Attendees will learn:

- Theory of traffic microsimulation modeling
- How to organize projects that support analysis of multiple scenarios
- How to build simulations that include roads and pedestrians with the basic tools
- How to create interactive 2D and 3D animations along with numerical output summaries
- How to add transit and rail to a simulation model
- How to properly simulate freeway weaving areas and roundabouts

Software used: Cube Dynasim 2

Prerequisites: None

Intermediate application development with Cube Voyager

This intermediate course is designed for model developers who would like to more fully understand and develop travel forecasting models using Cube Voyager.

Attendees will learn:

- How to use the Cube Voyager modules and scripting language together to fully develop a traditional travel demand model, including standard mode-choice and public-transport models
- How to apply Cube Voyager modules in order to develop complex applications and automate standard analyses
- How to integrate user programs and macros into an application
- How to properly document an application and prepare a user interface and standard reports for end users

Software used: Cube Base 5, Cube Voyager

Prerequisites: *Introduction to application development with Cube Voyager* or equivalent experience.

Advanced modeling procedures and script methods in Cube Voyager

This advanced Cube Voyager course is designed for those wanting to learn advanced modeling methods implemented with Cube Voyager scripts. The course requires a good basic working knowledge of the Cube Voyager modules and the Cube Voyager/TP+ scripting language. Basic knowledge of the Cube user interface, including Application Manager and Scenario Manager, is helpful but not required.

Attendees will learn about:

- Multiple user class, equilibrium assignment
- Link and intersection-constrained assignment
- Stochastic assignment methods
- User-specified convergence control
- Advanced network-coding and access-generation tools in the Public Transport module
- Implementing capacity constraints in Public Transport assignments
- Subarea extraction and matrix estimation for subarea analysis
- Nested MNL modeling with the CHOICE control statement
- Advanced data manipulation and formatting procedures

Software used: Cube Base 5, Cube Voyager

Prerequisites: *Intermediate application development with Cube Voyager* or equivalent experience.

Using Cube for transit project planning and New Starts

This course is designed for those wanting to learn Cube Voyager's Public Transport (PT) program and incorporate it in a transit model. The course emphasizes elements related to the modeling guidance for FTA New Starts projects. This three-day course will include lessons and hands-on exercises.

Attendees will learn:

- PT's modeling logic and capabilities
- How to code sophisticated public transit systems using the network window and the new GIS window
- How to code complex transit fare systems
- How to develop transit network access, including walk, transfer, park & ride, and kiss & ride
- How to build transit paths with PT's best-path and multi-path functions
- How to develop XCHOICE-based nested logit models that produce Summit data files and how to calibrate the models on mode choice
- How to use basic assignment features and more advanced elements, including select-link and station-to-station matrix extractions and reporting

Software used: Cube Base 5, Cube Voyager

Prerequisites: *Intermediate application development with Cube Voyager* or equivalent experience.

Large-scale traffic simulation with Cube Avenue

This course is designed for those wanting to learn how to use Cube Avenue, the Cube Voyager extension that supports dynamic traffic assignment. Useful for small subregions or large-scale urban networks, Cube Avenue enables you to model new levels of detail and produce analyses of peak periods, entire days, or multiple days. You might use these analyses to study time-dependent traffic policies or special-event traffic evacuations.

Attendees will learn:

- How to code input data, including representations of network and demand
- How to set up or modify existing Cube Voyager scripts to apply Cube Avenue
- How to simulate, calibrate and analyze time-dynamic traffic flows.

Software used: Cube Base 5, Cube Voyager, Cube Avenue

Prerequisites: *Intermediate application development with Cube Voyager* or equivalent experience. Good familiarity with traffic assignment methods and the use of Cube Voyager.

Distributing models across multiple processors with Cube Cluster

This course is designed for those who want to use Cube Cluster to reduce model run time. You can use Cube Cluster commands within Cube Voyager script files to distribute model processes across available computer processors and improve model run-time performance.

Attendees will learn:

- Concepts behind Cube Cluster
- How to developing a strategy for "clusterizing" a model
- How to implement Cube Cluster script commands
- How to optimize Cube Cluster

Software used: Cube Base 5, Cube Voyager, Cube Cluster

Prerequisites: *Intermediate application development with Cube Voyager* or equivalent experience. Good familiarity with the Cube scripting language and of matrix and highway assignment concepts.

Cube Base 5 for users of Cube Base 4.x

This course is designed for those wanting comprehensive, hands-on training using Cube Base 5. A major change in Cube, Cube 5 provides an integrated ArcGIS solution within Cube Base. In essence, Cube Base 5 merges Citilabs' GIS tools for transportation and modeling with ArcGIS. Cube 5 offers an extremely powerful analysis system. Cube 5 uses the ESRI geodatabase to store model network data, which you can share with your entire GIS team. This course will focus on the changes implemented from Cube 4.x to Cube 5.

Attendees will learn:

- How to import and export data
- How to use the geodatabase for networks
- How to develop and edit highway networks
- How to develop and edit public transport networks
- How to create graphics and maps

Software used: Cube Base 5

Prerequisites: *Scenario analysis, mapping, and reporting with Cube* or equivalent experience. Good familiarity with Cube Base 4.1 or earlier.

Design, manage, and deliver with Cube Reports

This course is designed for those interested in using Cube Reports to easily create tables, charts, and cross tabulations of input and output data from models and simulations. Cube Reports lets you create high-quality charts and tables of single or multiple scenarios, simplifying the analysis of model results and enabling you to convey the results to decision makers and the general public.

Attendees will learn:

- How to build presentation-quality chart and table graphics, including pie and bar charts, histograms, line graphs and scatter plots, and tables and cross-tabulations.
- How to generate reports automatically from existing scenario runs
- How to develop standard reports with templates
- How to access and format data into dynamic information
- How to build end-user interaction into reports
- How to associate data with reports for easy maintenance
- How to integrate reports easily and efficiently

Software used: Cube Base 5, Cube Reports

Prerequisites: *Introduction to application development with Cube Voyager* or equivalent experience. Good familiarity with the Cube Base and use of Scenario Manager and Application Manager.