Integrated Urban Transport Planning

Flexible, Open Data and Modeling Solutions to provide Scalability
- A scalable solution answers the immediate need, but provides the foundation for growth.

Enterprise Data and Modeling Solutions to provide Simplicity & Usability
- A useable solution will get used! (Critical for ongoing comprehensive planning)
- A useable solution puts information in the hands of decision makers.

Complete Data and Modeling Solutions consider all aspects of the Urban Environment
- Integrated Transport and Land Use
- Public and Private Personal Transport
- Active (non-motorized) Transport
- Air Quality, Sustainability, and the Environment
- Environmental Justice and Social Sustainability
- Policy Questions for Land Use and Demand Management
- Revenue from Transport and Land-Use
- Inter-Regional and Inter-National flows of People and Freight
- Operations, Maintenance, and Management of Traffic and Infrastructure
Cube provides a flow-chart based model building interface called Application Manager.

Each box in the flow can be either:

- Processing Step
- A link to a sub-flowchart

The Hierarchy lets each view be simple and the user digs-in for more detail as needed.

The model self-documents as anyone can easily understand the model inputs, outputs, and process.
Citilabs provides the most **flexible and open** transportation and land-use **modeling platform** for planners and transportation engineers around the globe.

Citilabs solutions enable customers to make the most informed transportation and land use development decisions **to create a better future**.

http://bit.ly/1i2cZyx
Prepare Data for Import Process

- Script File
- Model Network

Prepare individual DynusT inputs:
- xy.dat
- network.dat
- movement.dat
- origin.dat
- destination.dat
- demand.dat

Prepare Raw DynusT Files

- Script File
- Model Network

Prepare Raw DynusT Files

- Script File
- Model Network

Prepare Raw DynusT Files

- Script File
- Model Matrix
Add Detail to Enhance Results
2009: Pilot study implementation begins at Kern COG, leveraging Uplan GIS data and integrating with pre-MIP Cube Voyager travel demand model to test SCS for SB 375.

2011: San Joaquin Valley MIP updates travel demand models to adopt a standard structure. As part of Fehr & Peers team, Citilabs updates Kern COG Cube Land implementation to match new travel demand model structure. Model retains pre-MIP bid function elements and is sensitive to travel times but not non-auto accessibility.

2012: Fehr and Peers transfers Kern COG Cube Land model structure to Madera County.


2014: Fehr and Peers and Citilabs partner again for the second Valley Model Improvement Project. CHTS and CoStar data collected for bid-rent functions across all counties to enlarge estimation sample size. Models calibrated for every county in the Valley and used to prepare land use forecasts including economic performance measures.

“California Climate Change Law, SB 375, asked MPO’s to develop an integrated land use and travel model. Cube Land has worked out better than I had hoped. Stakeholders and decision makers had asked for an economic, or market based model. Cube Land satisfies this and the results we are getting are validated by those in the private development community about land use scenarios and strategies, such as increased infill.”

- Troy Hightower, Kern Council of Governments
Taiwan National Expressway System

Dec 2013 – Implementation of system wide gateless ETC on entire Freeway/Expressway System

• 900 KM in length – the world’s largest multi-lane free flow ETC system
• Need a tool to forecast traffic and revenue prior to implementation
• The tool should also be able to analyze and evaluate various traffic management and toll strategies.

2010 – THI successful developed an integrated Macro and Meso travel demand model built with Cube Voyager and Cube Avenue.

“The integrated model allows the understanding of travel demand and market segmentation using Cube Voyager (macro-model) but captures the detailed operational congestion effects using Cube Avenue (meso-model). Having the integrated model built on the Cube modeling platform allows the model developed for this study to now be a resource for the agency.”

Ian Lee
Head of Transportation Planning, THI.
Scalability – Collaboration

Cube is Open and Built for Collaboration:

• Model builders can be working on different components of the flowchart at the same time.
• Cube has absolute integration with esri’s ArcGIS and the GeoDatabase allowing many people in different departments and agencies to be:
  • Multi-User Data Development
  • Reviewing & Sharing Model Results
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Model Developers may customize the interface for any type of user. The customized interfaces help to eliminate any user error:

- The users can only access the parameters and inputs appropriate for their use.
- The set-up to make a new run is simplified making each scenario quick and efficient.
- The inputs may be validated and checked for quality automatically to prevent any mistakes.
Usability – Sharing the Model

Sharing a model with a consultant or partner agency has always been troublesome.

Cube allows a version of a model to be shared in two ways:

- Export the Model to Cube Cloud
- Package the model for another Cube User

In either case, the model may be set and secured for a specific type of user.
ArcGIS Online

CUBE CLOUD

Appliers

Stakeholders

Data Management & Analysis

Sugar

Model Developers

Cube 6
Usability – Managing Scenarios

A specific scenario is defined for a user as a unique set of inputs which defining the run.

Similar to folders on a computer, Cube manages an unlimited set of scenarios organized in a user-defined hierarchy.

- Calibrated Base-Year
  - Forecast Year 2020
    - Base
    - Alt A
      - Alt A+B
      - Alt A+B+C
    - ...
    - Alt B
    - ...
  - Forecast Year 2030…
  - Forecast Year 2050…
  - ...

Once a scenario is complete, Cube offers many options for analyzing and sharing results:

- Customized printable reports or tabular output on a scenario.
- Reports and charts comparing scenarios
- Printable maps and infographics
- Network or Land-use data output in a Geodatabase for outside analysis
- Web maps through Cube Cloud
- Automatically upload results to ArcGIS Online

http://arcg.is/1MEG8sQ
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Walkability, Livability, Accessibility

http://www.citilabs.com/sugaraccess
TIS Model Process:
Tax Parcel Model Estimated Origin - Destination Patterns.

Sample “Trip Origins” By Neighborhood
Example: Change in Accessibility Resulting from Adding New Path

New Multiuse Path (shown in Scenario) Increases Accessibility of Existing Residential Areas to Commercial Corridor
Accessibility Metrics

Travel Times
• Minimum travel time to a grocery store in the city by walking
• Minimum travel time to job center using public transportation

Destination Summation
• Amount of jobs accessible within 30 minutes using transit
• Number of parks accessible within 15 minutes by walking

Access Score
• Local walkability score
• Healthy living index

http://arcg.is/1DEG2es
Traffic Operations and Parking
Home

Open Model Data: Collaborating on data formats for transportation and land use modeling.

You've found the Open Model Data website! We're a loose group of transportation and land use modeling professionals who want to specify universal data formats for the large and usually proprietary data formats we use in our daily work, and will eventually expand to other data types as well.

Join us! There's so much to do. :-)

News

05/28/2015 - TRB Planning Apps meetup had about 15 people, which was not bad given our time slot. We discussed possible network format. We generally agreed that a simple network format could be done, but beyond that, the definition of a network format could be difficult to agree upon a standard. And, it would be even more difficult to actually get it adopted in practice. For a suggestion, suggested just using open street map XML. TransCAD has native support for OMX in version 7 and Cube has started looking into OMX well. OMX is now being used in a few new models too, with Cube, VISUM, R, and Java.

02/10/2015 - TRB meetup went well. One neat idea - store centroid Xs and Ys as lookups in order to make mapping easier. We plan to meet again at the TRB Planning Applications conference in May. Stay tuned.

OMX Data File Specification Released!

OMX is a file specification for an open matrix (OMX) and a series of APIs for reading/writing OMX files. We've started working on studies and use cases. We also reviewed existing solutions such as HDF5 and zip matrix. Also check out our discussion forums.
Helping You Create a Better Future

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