

Intern Report at ESRI, Redlands

GIS Research Group Seminar
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1. Overview of my internship

- Term: Feb 16th, 2007 ~ May 14th, 2007
- Belongings: Industry solution/
Transportation
- Courses taken:
 1. Introduction to ArcGIS
 2. Introduction to ArcGIS
 3. Advanced Analysis with ArcGIS
 4. Working with ArcGIS Spatial Analyst
 5. Introduction to Geoprocessing Scripts
Using Python

My Belonging

- Marketing Department
 - >> Industry Solution
 - >> Transportation Group
- Supervisor : Mr. Terry Bills

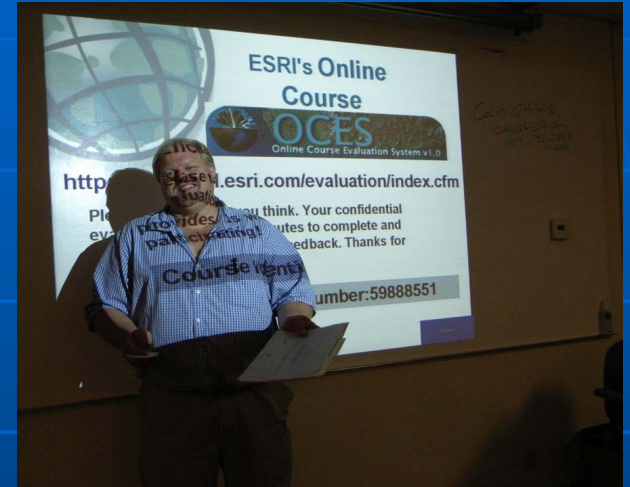


Building C: Industry
Solution

Training at ESRI Campus, Redlands



Course Books



Instructor



Students

Intern Project

- To study four US-based Land Use and Transportation Models
 - 1) MEPLAN
 - 2) TELUS
 - 3) TRANUS
 - 4) UrbanSim
- To choose the most applicable one for my PhD study

2. My study

- To analyze the impact of New rail line (Tsukuba Express) connected from Tokyo area to remote area, Tsukuba city.
- To estimate land use change in the future

Study area

- Tsukuba City
- Tokyo Metropolitan area
- In 1963, Cabinet decided to establish Tsukuba Science City
 - To ease overcrowded conditions in Tokyo
 - To build up a high-level research & education center



Tsukuba City

- Area: 284km²
- Population: 200,000
- Tsukuba Science City
 - 1973 University of Tsukuba was established
 - 1985 TSUKUBA EXPO/ Joban Expressway
 - 2005 Tsukuba Express(TX)



Tsukuba Science City Information
(http://www.info-tsukuba.org/english/city/city_02.htm)

3. Land Use and Transportation models

- 1) MEPLAN
- 2) TELUS
- 3) TRANUS
- 4) UrbanSim

- Developer, year
- Purpose of the model
- Application to Japanese Transportation models

MEPLAN

- Echenique, M. & Partners, 1995
- To forecast the spatial economies of cities or regions
- Applied to Japan
 - The MEMOTO; the MEPLAN model of Tokyo developed in 1996 by ME&P Ltd of Cambridge, and Appraisal Co of Tokyo (Estimated TX impact in 1996)
 - TAMA urban mono rail (Nishimura, and Matsuyuki 2005)

MEPLAN

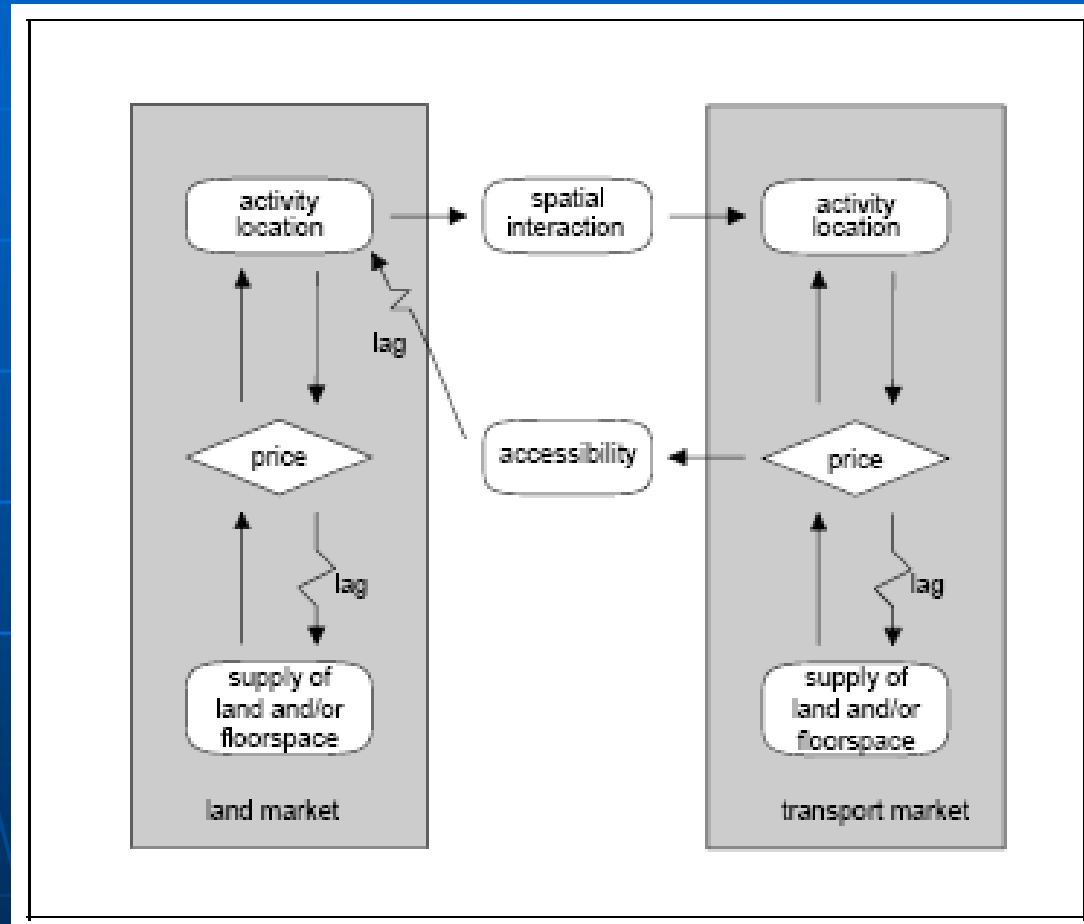


Figure 1: System of two types of markets: Markets in land and in transport and the interactions between them from the basis of the MEPLAN framework (Abraham, and Hunt, 1998).

TELUS

- -The Institute for Transportation of the New Jersey Institute of Technology (NJIT)
 - The Center for Urban Policy Research (CUPR) of Rutgers University (State of New Jersey)
 - The North Jersey Transportation Planning Authority(NJTPA), 1996
- To help MPOs* and DOTs** which produce TIP** every year

*MPO: Metropolitan Planning Organization

**DOT: Department of Transportation

***TIP: Transportation improvement program

TRANUS

- De la Barra and Modelistica (in Venezuela), 1989
- To simulate the probable effects of projects and policies of different kinds in cities and regions
- To evaluate the effects from economic, financial and environmental points of view

TRANUS

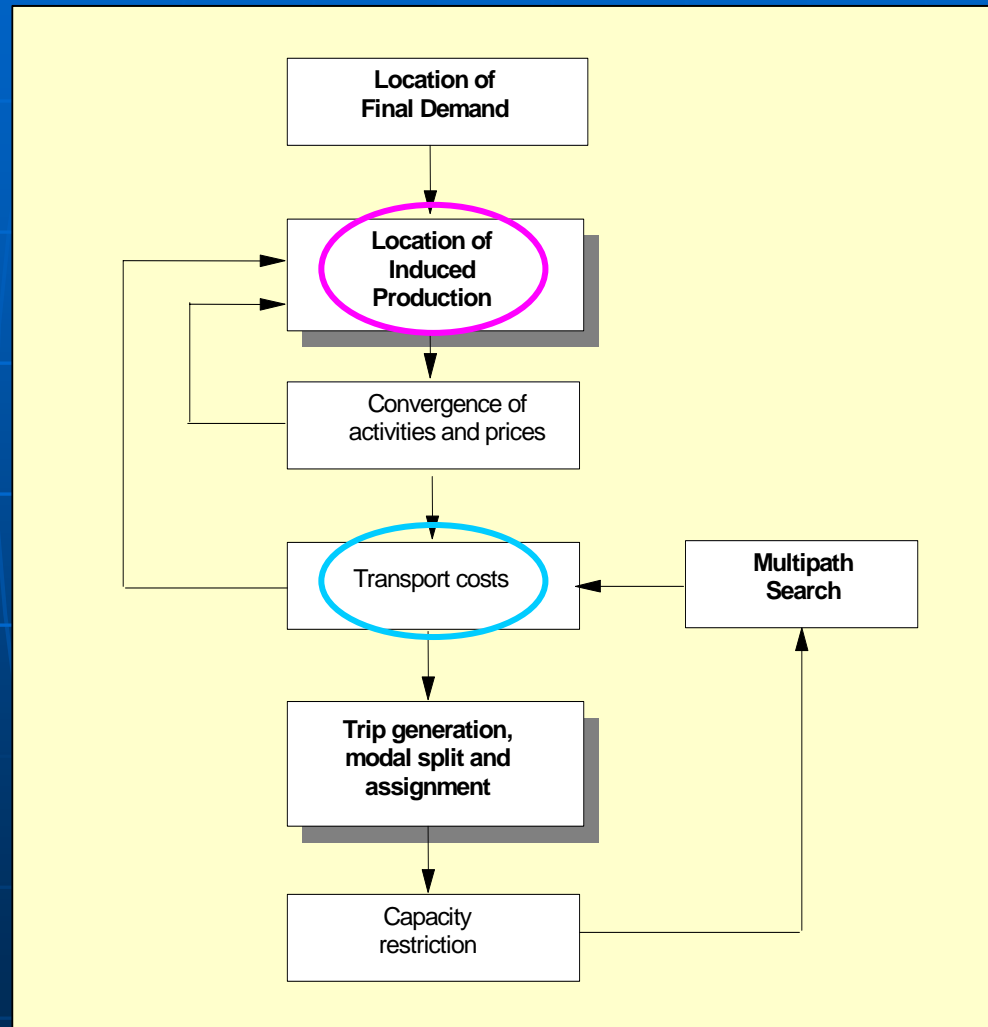


Figure: Sequence of calculations in the TRANUS system (medelistica 2006).

UrbanSim

- Waddepell, 1998
- To support land use, transportation planning, and growth management
- To predict the location behaviors of households, businesses, developers, consequent changes in land uses, and physical development

UrbanSim

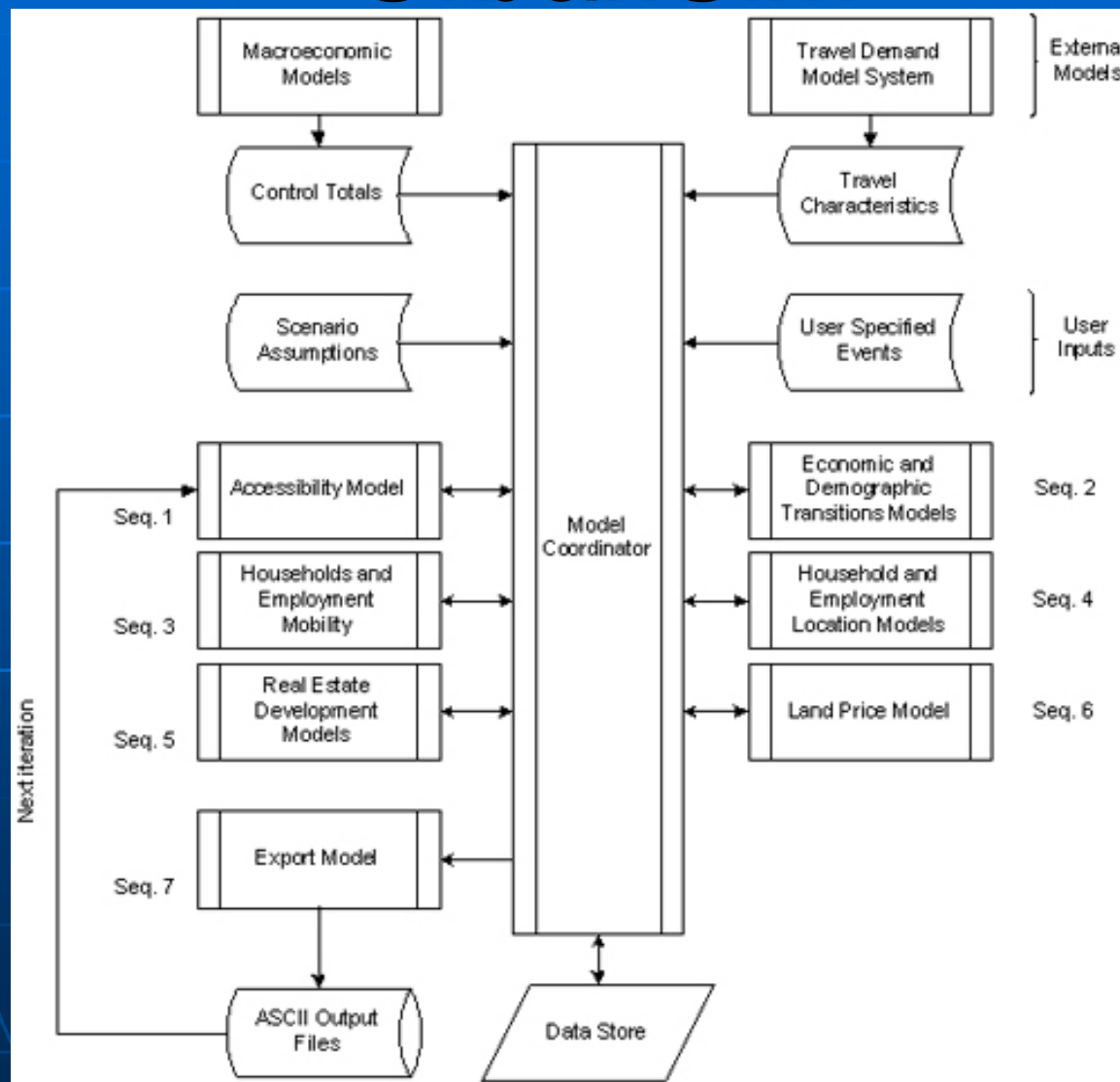


Figure : Data modeling in UrbanSim Source: Waddell (2002)

4.Comparisons

- MEPLAN, TRANUS, and UrbanSim
- TELUS:
 - low documents accessibility
 - The purpose of TELUS is focusing on MPO or DOT

4. Comparisons

Name	System Structure	Applied to Japan	Regional Scale
MEPLAN	Original Package	MEPLAN of Tokyo, TAMA rail line	
TRANUS	Windows base, ArcObjects	Sapporo	Flexible for Regional Scale
UrbanSim	Open Source(Python, MySQL...)		

Which does have the highest APPLICABILITY for my study?

5. Conclusions

The reason why I chose “TRANUS”

1. The flexibility at Regional scale
2. The friendly system to ArcGIS (ArcObjects)
 - PROPOLIS (EU)
3. TRANUS has graphic interface with full documentation

5. Conclusions

- What is the next step?
 - To get the results of “MEPLAN of Tokyo”
 - To review the papers related to “TELUS”
- What kind of skills do I need to perform my goal?
 - ArcObjects

Acknowledgement

I would like to express my gratitude to President Jack Dangermond and Mr. Jim Henderson for giving me the opportunity to come and stay at ESRI.

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Thank you for your
attention!

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