Introduction to Transportation Systems

SUMMARY

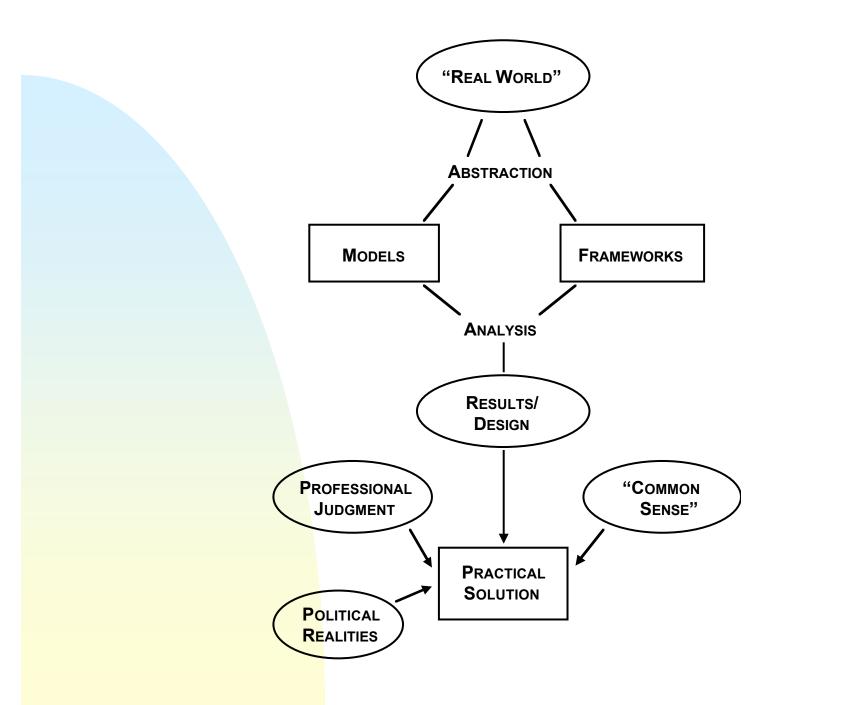
NOTE TO INSTRUCTORS: These slides cover major ideas from the course, and should be supplemented with other materials presented by the instructor.

SO WHERE HAVE WE BEEN IN 1.221?

- Concepts
 - CLIOS
 - 30 Key Points
- Freight Transportation
 - Total Logistics Costs (TLC)
 - LOS for freight modes
 - Operating issues
- Traveler Transportation
 - Automobiles
 - Urban Form and Transportation
 - ITS
 - Urban Public Transportation
 - Megacities
 - Intercity Traveler Transportation--Air, Amtrak, e.g.

SOME EMPHASIZED POINTS

The Triplet of **Technology/Systems/Institutions** Level-of-Service (LOS)--freight and travelers--the importance of the customer The Cost/LOS trade-off Supply/Demand/Equilibrium The Vehicle-cycle Transportation as a component of a larger social-political-economic system--a force for good and otherwise



TRANSITIONS IN THE WORLD OF TRANSPORTATION: A SYSTEMS VIEW

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SUMMARY OF TRANSITIONS

From	<u>To</u>
1. Capital Planning	Management and Operations Focus
2. Long Timeframes	► Real-time Control
3. Urban Scale Planning and Operations	Regional Scale Planning and Operations
4. Emphasis on Mobility	Emphasis on Accessibility (the Tr ansportation/ Land-Use Connection
5. "One Size	Customer Orientation
Fits All" —	→ Quality
Service	Pricing for Service

SUMMARY OF TRANSITIONS (CONTINUED)

FROM	<u>To</u>
6. Allocate	Allocate
C apacity —	C apacity
by Q ueuing	by Pricing
7. Aggregate	D ISAGGREGATE
Methods for —	METHODS FOR
Demand Prediction	D EMAND PREDICTION
8. Episodic Data for —— Investment Planning	D YNAMIC D ATA FOR INVESTMENT PLANNING (AND O PERATIONS)
9. Public Financing for Infrastructure and Operations	Private and Public / Private Partnerships for Financing of Infrastructure and O perations U sing H ybrid Return on Investment Measures
10. Infrastructure	N EW H IGH -
Construction and —	T ECHNOLOGY
Maintenance Providers	PLAYERS

SUMMARY OF TRANSITIONS (CONTINUED)

FROM	<u>To</u>
11. Static	D ynamic
Organizations	O rganizations
and Institutional	and I nstitutional
Relationships	R elationships
12. Professional E mphasis on D esign of Physical I nfrastructure	P ROFESSIONAL E MPHASIS ON T RANSPORTATION AS A C OMPLEX , L ARGE -SCALE , I NTEGRATED , O PEN S YSTEM (CLIOS)
13. E conomic	Sustainable
D evelopment	Development
14. Computers Are	U BIQUITOUS
"Just a Tool "	C OMPUTING
15. <u>From</u> Supply -Side S Perspective —>	<u>To</u> UPPLY / DEMAND E QUILIBRIUM FRAMEWORK <u>AND ON To</u> Systems that N ever Reach E QUILIBRIUM

SUMMARY OF TRANSITIONS (CONTINUED)

FROM		<u>To</u>
16. Independent C onventional Infrastructure Projects	>	Linked Advanced Infrastructure Projects Requiring a System Architecture
17. Vehicles and Infrastructure as Independent		Vehicles and Infrastructure as E lectronically L inked
18. Reducing Consequences of Crashes	>	Crash Avoidance
19. <u>From</u> Modal Perspective	<u>T o</u> Intermodal Perspective	<u>And On To</u> Supply Chain Management
20. N ARROW T RANSPORTATION SPECIALISTS		THE NEW TRANSPORTATION PROFESSIONAL