

# GBTT 251-01 Transportation Systems Fall 2010

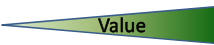
Class 25 12-2-2010

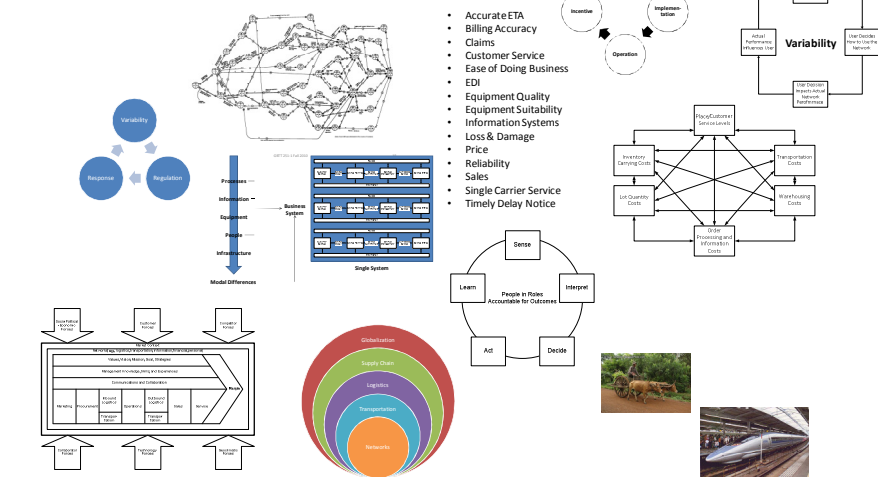
## M13 The Future; Intelligent Transportation Systems

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1

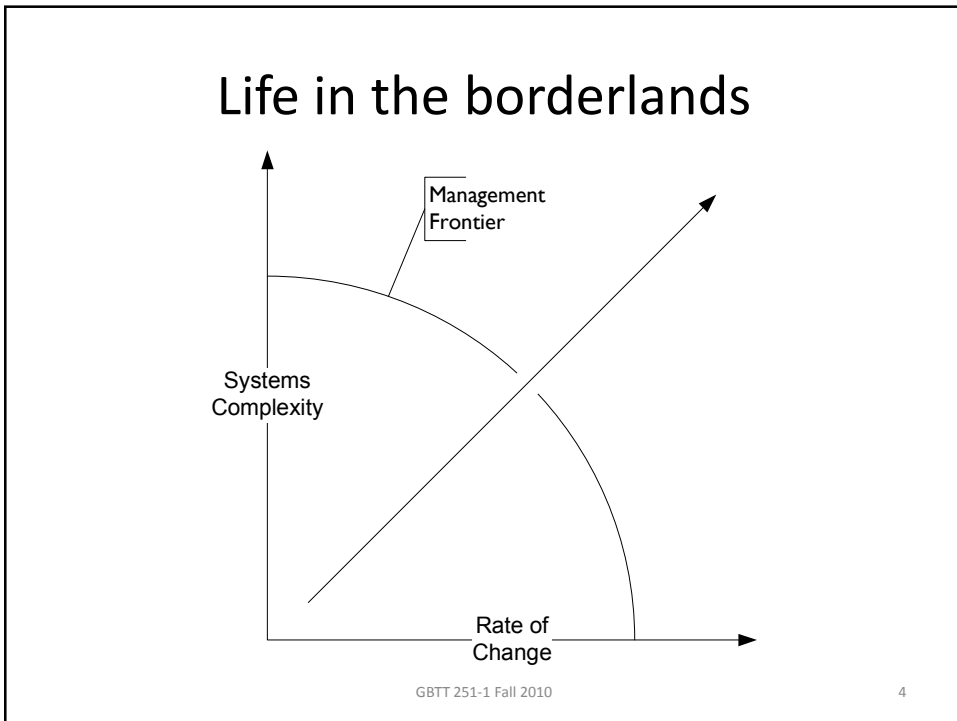
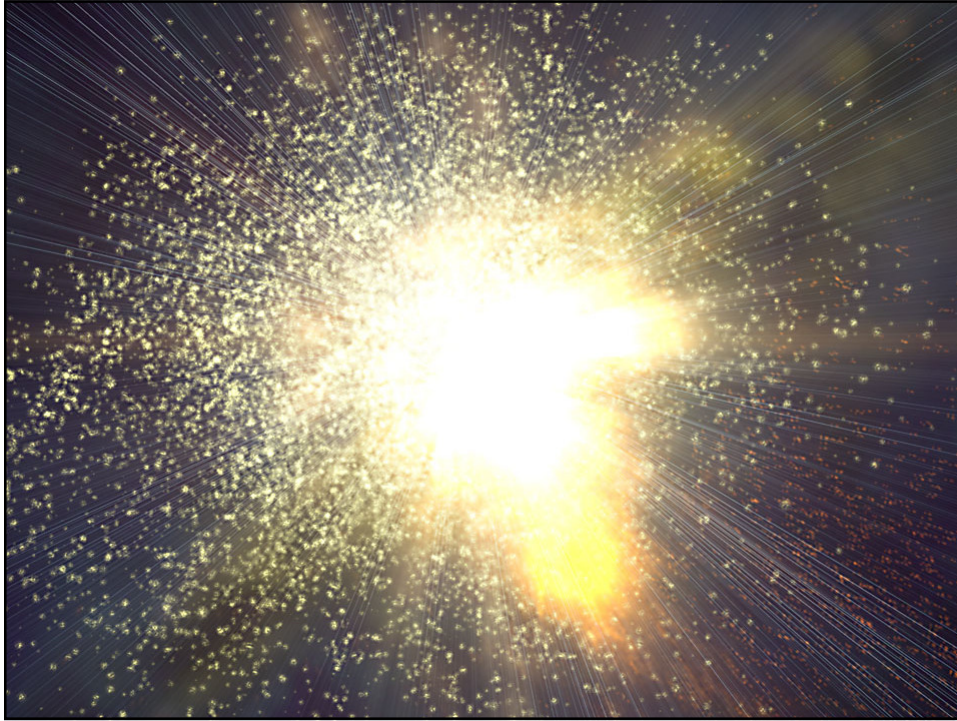
# Increasing everything

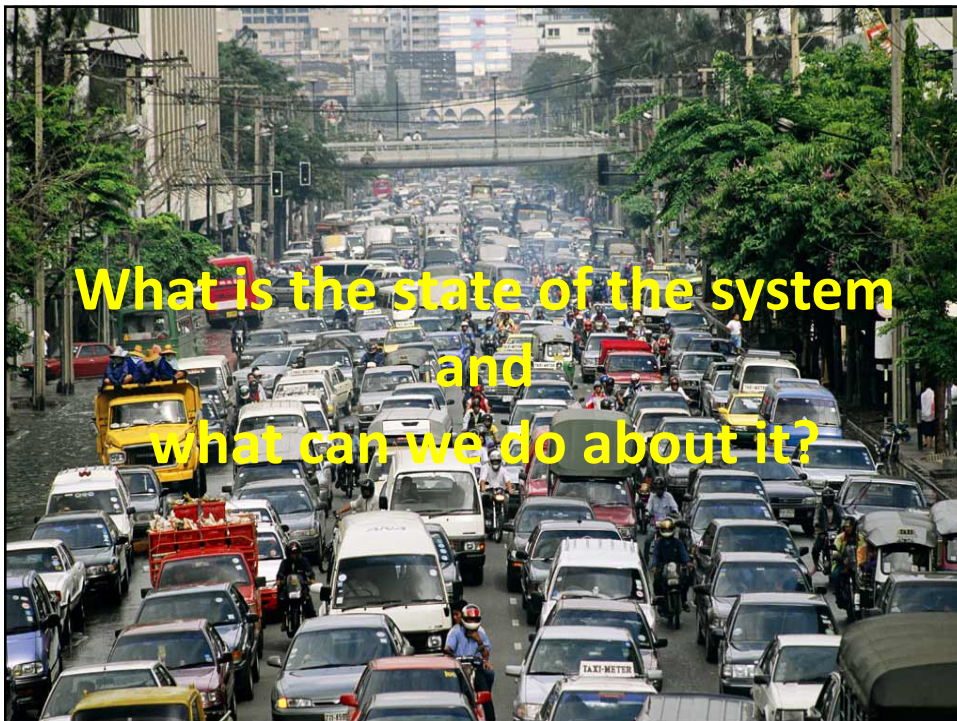
Supply  Demand



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2





## Are there enough taxis?

August 1, 2008, 5:38 PM

### Gigantic Airbus A380 Arrives, at a Diminished J.F.K.

By JENNIFER 8. LEE

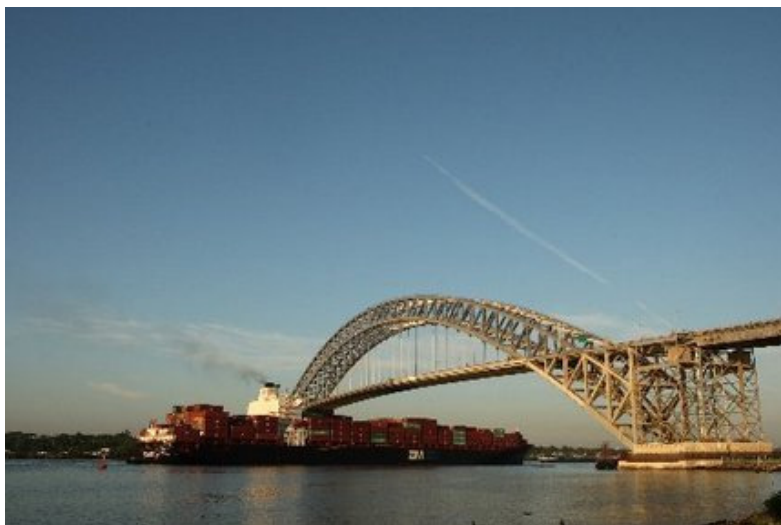


The maiden voyage of the Emirates Air Airbus A380 touched down at John F. Kennedy International Airport in Queens on Friday afternoon. (Photo: Robert Stolarik for The New York Times)

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7

## The Bayonne Bridge, but not beyond



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8

## Congestion in New Haven, which way out?



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9

## Is there a better way?



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10

Is there a needle in the haystack?



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11

What is out of place in this picture?



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12

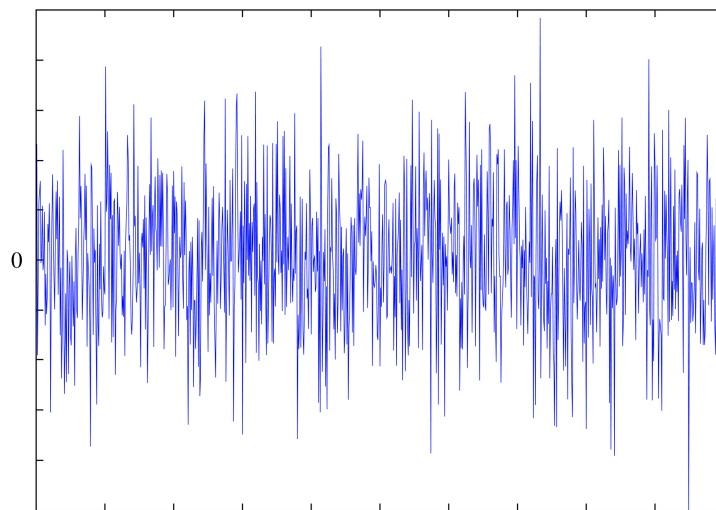
## Can we see?



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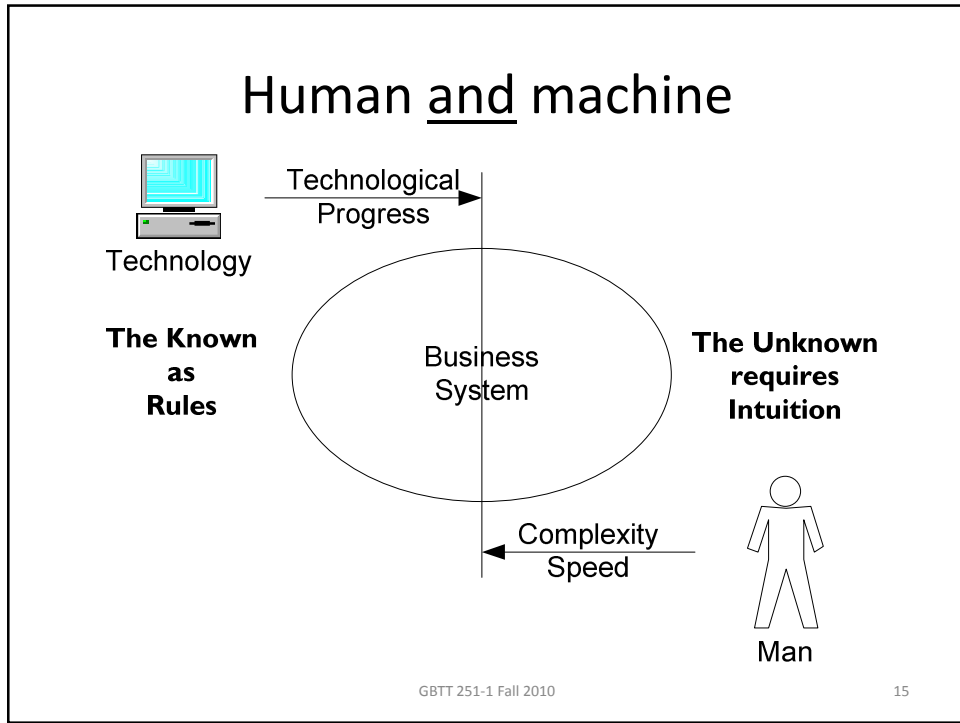
13

## Noise or data?





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14



## Intelligent transportation systems are not new



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## Railway use of the telegraph in 1840



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17

## Automation arrives in the railways

Next, machines were installed at the New York Central railroad in **1895**. "The Central alone processed nearly 4 million freight waybills a year--each one by hand. If a punched card could take the place of the written waybill transcript, as Hollerith proposed, **the giant railroad could chart its freight movements--and freight revenues--on a weekly rather than a monthly basis**. It could tell on a nearly current basis how many hundreds of tons of freight were moving East--or West; which of hundreds of stations along its lines were profitable; where freight cars should be sent or returned; what freight agents were being paid. It would give the railroad a much firmer command of its far-flung business." (Austrian, pp. 124-25)

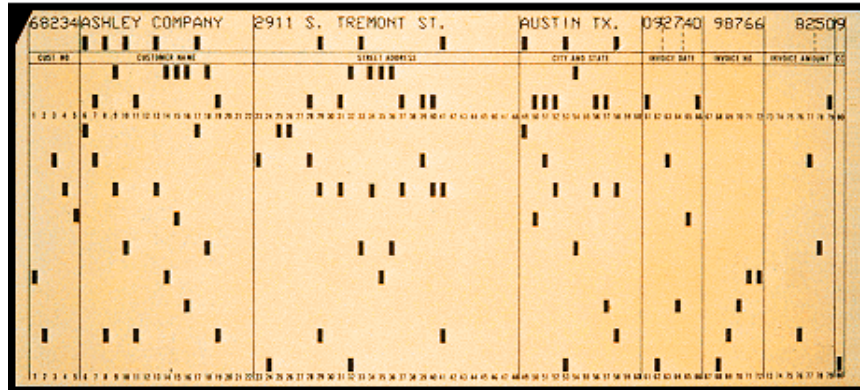
Early Office Museum, Antique Data Processing Machines,  
[http://www.officemuseum.com/data\\_processing\\_machines.htm](http://www.officemuseum.com/data_processing_machines.htm)

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18

## The unit record (aka punched card)

From Computer Desktop Encyclopedia  
© 2000 The Computer Language Co. Inc.



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19

## Evolution into the digital age

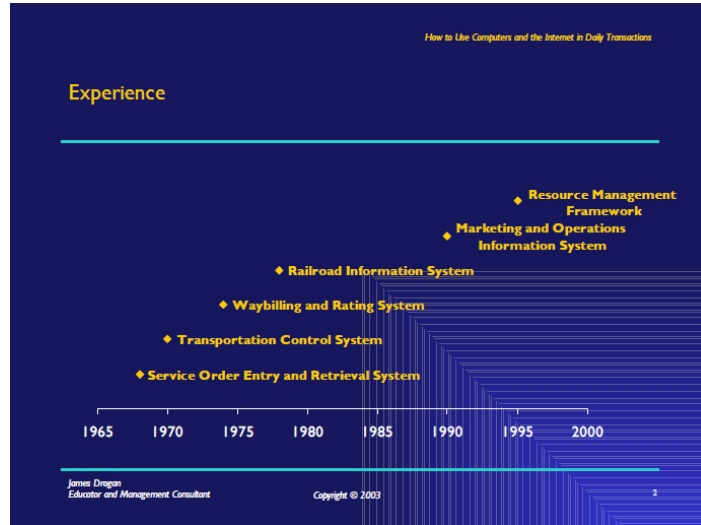
- TOPS (Total Operations Processing System) is a set of programs originally written by the Southern Pacific railroad **in the 1960s for complete control on their operations**. It covers all aspects of railway operation including stock location and maintenance records, train consists and real-time train running reports. It has since been sold to a number of railways in North America and around the world.
- It was generally accepted that **the TOPS programs were so complex and badly understood that nobody would seriously consider modifying them in any way unless it proved unavoidable**. Most of the original documentation was seriously out of date and some of the subsequent modifications have not been documented at all.

The History of TOPS, <http://www.trainweb.org/rews/tops/history.htm>

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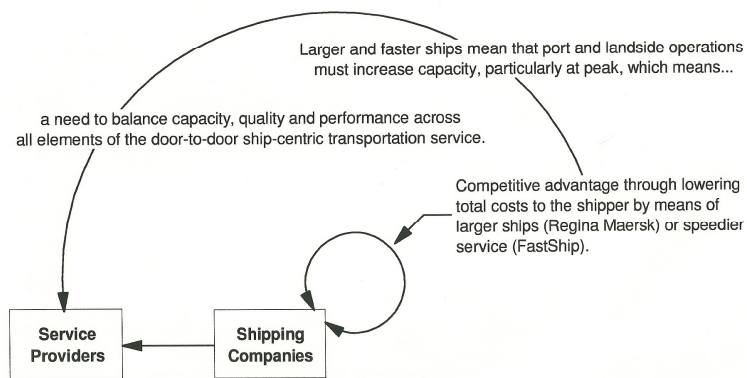
20

# As technology goes, so goes...



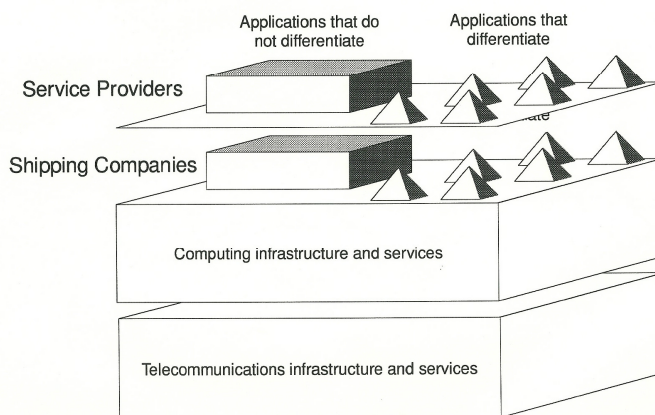
# And the ship comes in

**Changes in the industry point to other opportunities to utilize the telecomputing structure to gain value.**



## Collaboration in the industry

**A natural extension of the structure is to enable telecomputing support for the service providers.**



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23

## And the trucks

- FERST (Freight Equipment Report System for Transportation)



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24

## The importance of this history is...

- The world has been about the business of intelligent transportation systems for some time
- There is a significant sunk investment
- You cannot throw the baby out with the bath water

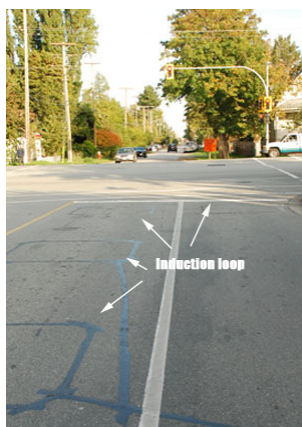
therefore,

- Revolution perhaps, but evolution is more likely

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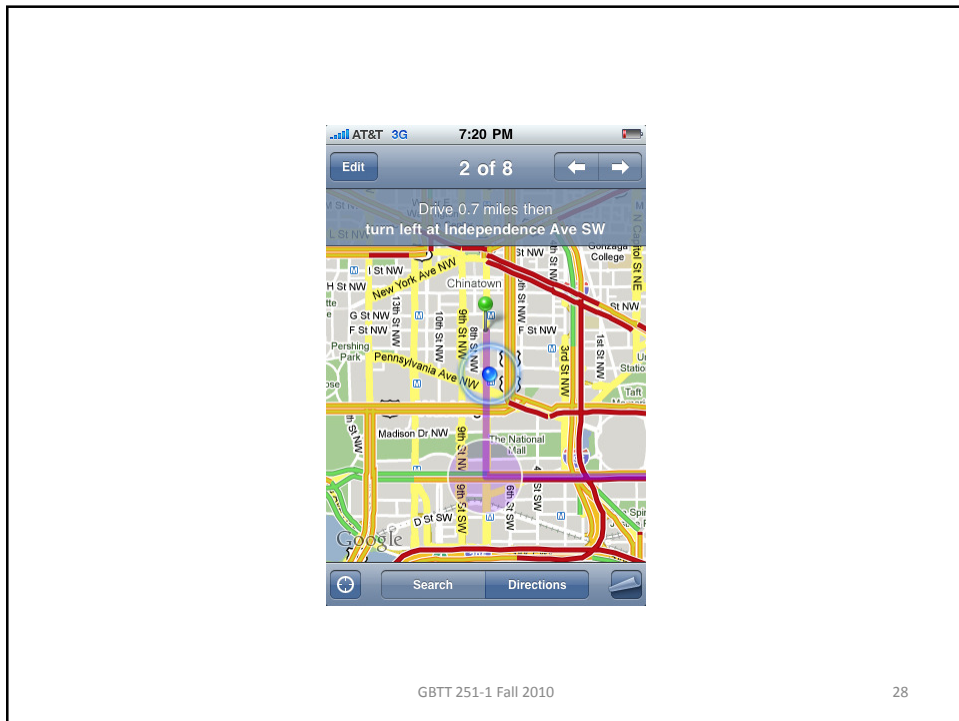
25

## Today...



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26




## Everything at anytime from anyplace

- Everything important is always visible
  - Inventory
  - Resources
  - Commitments
  - Customers
  - Collaborators
  - Competitors
  - Socio-economic-political factors
  - Culture
  - Weather
- Everything to be managed is always reachable
  - Inventory
  - Resources
  - Commitments
  - Customers
  - Collaborators

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29



### Advancing mobility

The new frontier of smarter transportation

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30

Needs

Processes

Information

Equipment

People *Nada?!*

Infrastructure

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GBT 251-1 Fall 2010 32



## Key points

- Increases in everything except time; time decreases
- Intelligent transportation systems have a long history and a significant sunk cost
- Increasing comfort with and expectations for some kinds of rapid change
- Beware the boiling of the frog
- “It's not what we don't know that hurts, it's what we know that ain't so.” Will Rogers
- People, people, people