ITS Carolinas Annual Meeting, 2018
Session 2B — ITS Yesterday, Today, Tomorrow

Yesterday: History of ITS, Technology, and Smart Transportation

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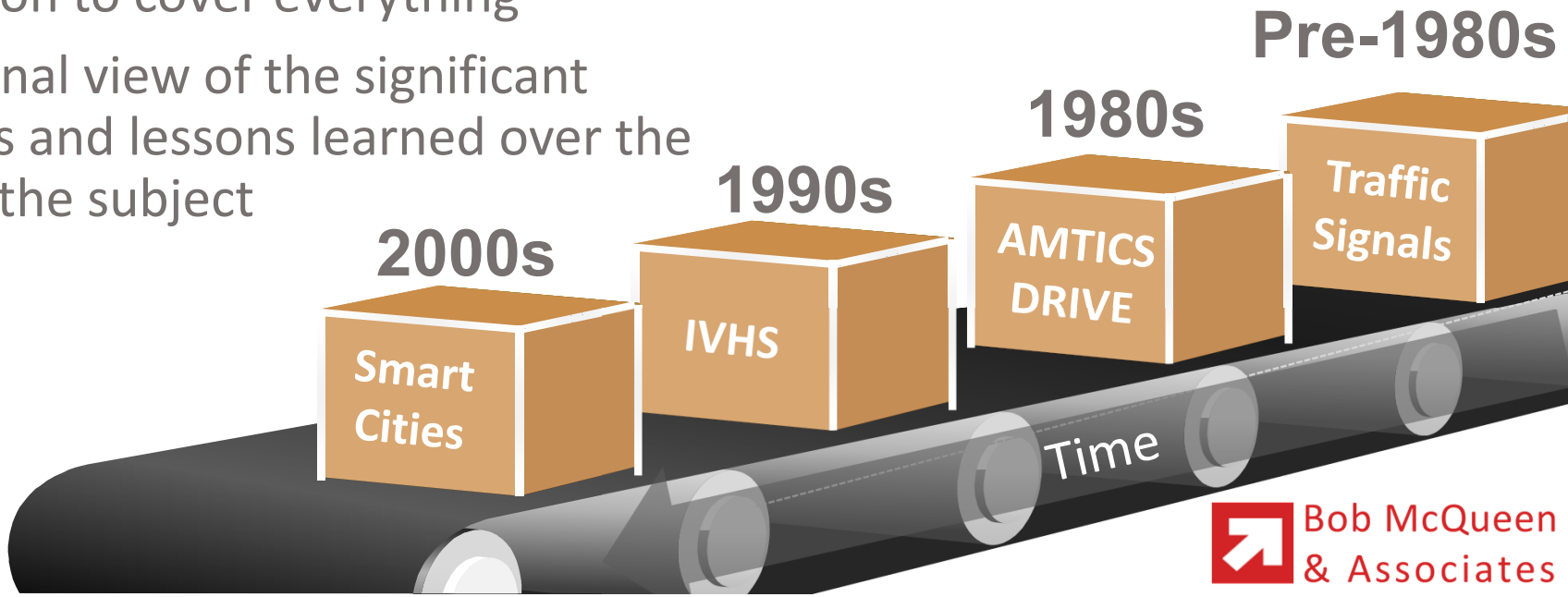
Introduction

- Intelligent transportation systems have a long history
- It would be impossible in a short presentation to cover everything
- This personal view of the significant milestones and lessons learned over the history of the subject



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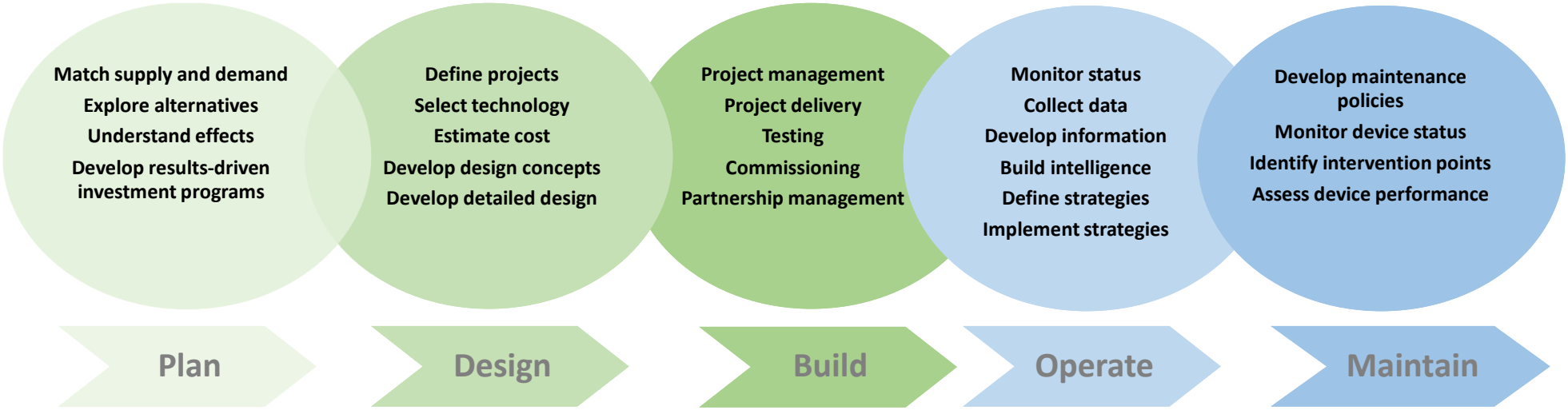
Topics

- What are intelligent transportation systems?
- Milestones and lessons
  - Pre 1980s
  - 1980s
  - 1990s
  - 2000s
- Conclusions

What are Intelligent Transportation Systems?

"The application of information and communication technologies to all aspects of transportation including planning, design, build, operate, and maintain"



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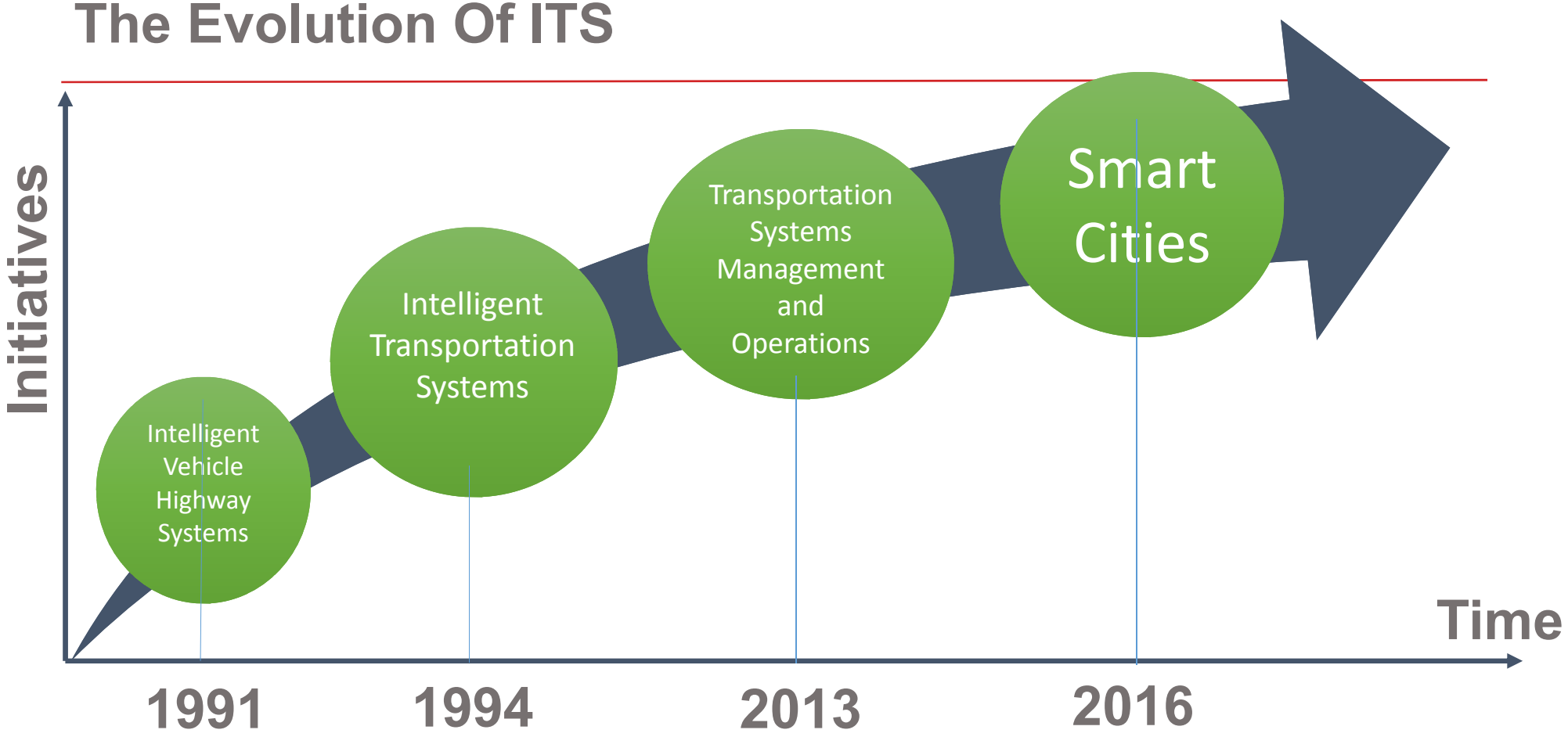
The Evolution Of ITS



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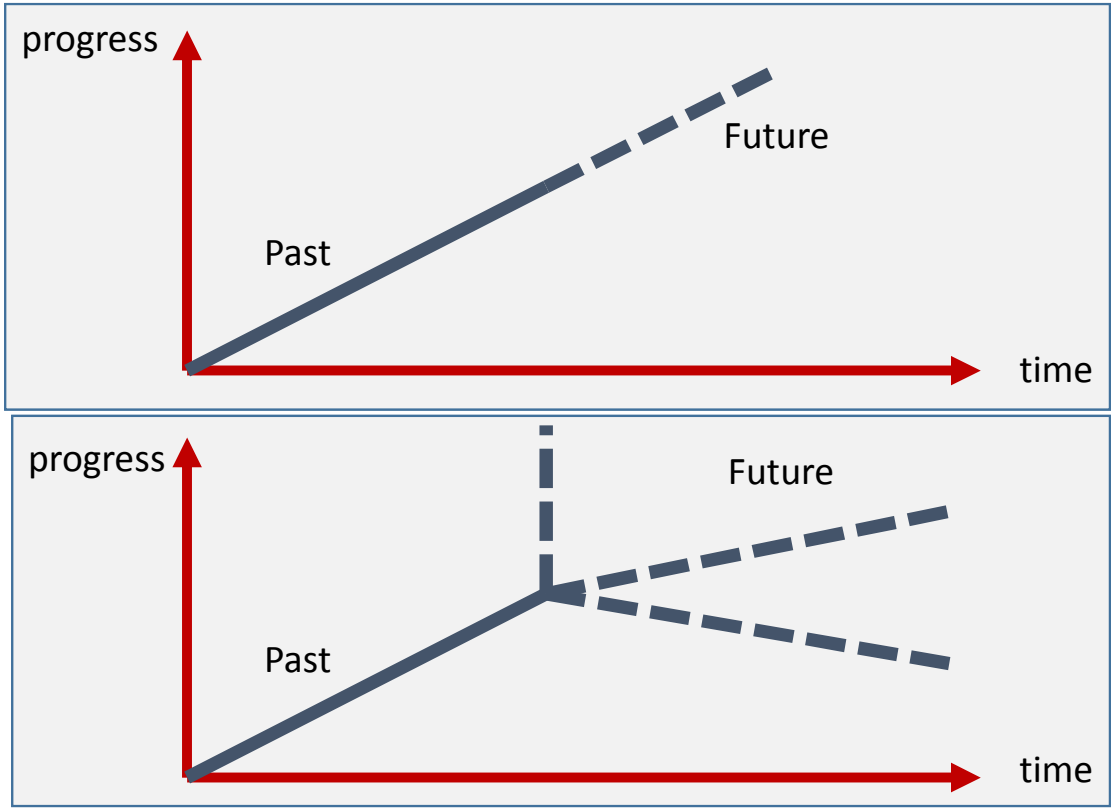
From History to the Future?

- Can the future be extrapolated from the past?
  - National ITS Architecture initially didn't include the Internet
  - George Stephenson (steam locomotive inventor) locomotive inventor) thought that people wouldn't be able to breathe above 4 MPH



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Pre 1980s Early Traffic Signals

- The first traffic signal was invented by J P Knight, a railway signaling engineer
- installed outside the Houses of Parliament in 1868
- Waving semaphore arms ,red-green lamps, operated by gas for night use
- It exploded, injuring a policeman
- There were no more signals in London until the 1900s
- The first electric traffic signals were installed in Cleveland in 1914.

If you're not sure it is going to work don't try it in a high-profile place

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Pre 1980s Early legislation against the automobile

- The Locomotive Act 1865 (Red Flag Act)
- A speed limit of 4 mph (2 mph in towns) was imposed
- A man with a red flag was to walk at least 60 yd ahead of each vehicle

Lesson:

Market forces can overcome legislation

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1980s AMTICS Japan and DRIVE Europe

- Japan and Europe take a lead over the USA in strategic transportation technology development programs
- Advanced Mobile Traffic Information and Communication System (AMTICS)
  - An integrated traffic information and navigation system in Japan will display information gathered at police-managed traffic control and surveillance centers in 74 cities.
- DRIVE
  - Pan-European project to develop Road Transport Advanced Transport Technologies (ATT) and Road Transport Informatics (RTI)
- Electronic Road pricing pilot in Hong Kong between 1983 in 1985
  - Implementation was halted due to public opposition
  - Forerunner of Singapore, Copenhagen and London congestion pricing implementations

Lesson:

If you have the technology and organizational ability to put a man on the moon then you can surely compete with Japan and Europe

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1990s IVHS

- "I'm IVHS Positive" lapel badges appear at a conference and shortly after, the name is changed to Intelligent Transportation Systems
- National ITS Architecture Development Program
- Washington Metropolitan area transit Authority (WMATA) began using the SmarTrip smart card for payment on Metrorail in 1999
  - Users had two options: anonymous use or registered
  - Registered use came with a balance recovery feature
  - More than 90% of users chose to be registered

Lesson:

It's easy to kill a brand with something that "seemed like a good idea at the time"

Lesson:

People are prepared to trade privacy for benefits

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2000s

- 511 Advanced Traveler Information
- AHS demo San Diego
- UBER: launched March 2009
- USDOT
  - Smart City Challenge 2015
  - FAST Act funded projects 2016

Lesson:

It's possible for the public sector to drive the private sector out of a market

Lesson:

Sometimes a company comes along that doesn't know any better and solves a long standing problem with technology

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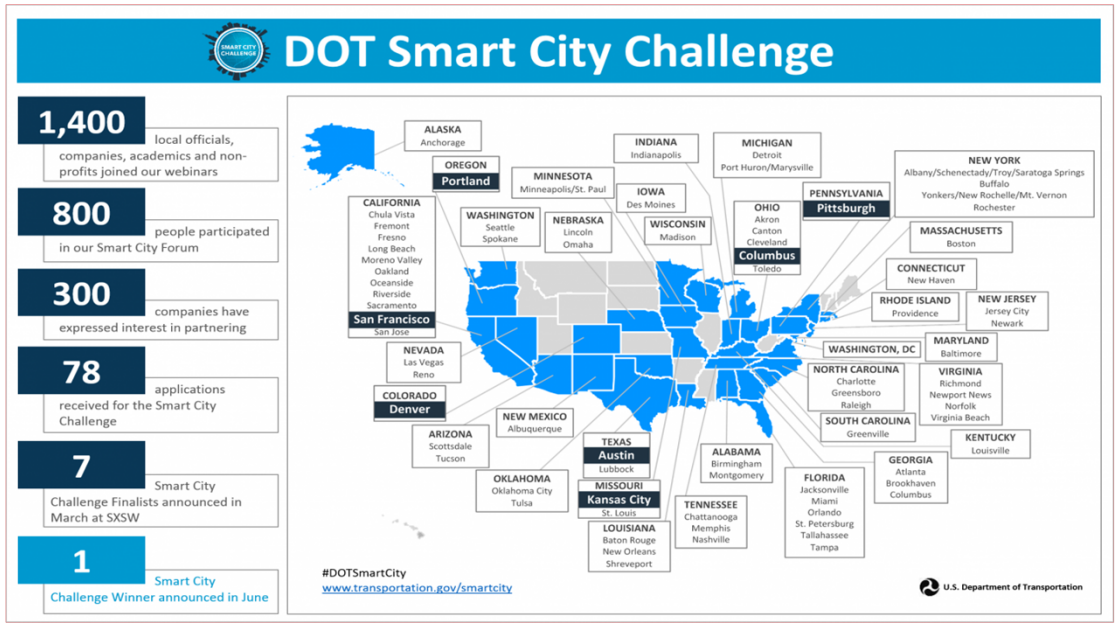
Smart City Challenge Funding 2015 and FAST Act 2016



Project name	ATMCMD Grantee
Freight Advanced Traveler Information System (FRATIS)	LA COUNTY MTA, $3,000,000
Adv Tech to Improve Safety & Mobility w/in Promise Zone	LOS ANGELES DOT, $3,000,000
San Francisco Smart City Program	SAN FRANCISCO, CITY & COUNTY $10,990,760
Denver Smart City Program	DENVER, CITY & COUNTY $6,000,007
Connected Region: Tech Innovations in NITTEC Region	NIAGARA FRONTIER TRANS AUTHORITY $7,813,256
NW 33 Smart Mobility Corridor	MARYSVILLE ,OH $5,997,500
SmartPGH	PITTSBURGH, $10,899,318
ConnectSmart: TSMO & Active Demand Management	TEXAS DOT $8,939,062

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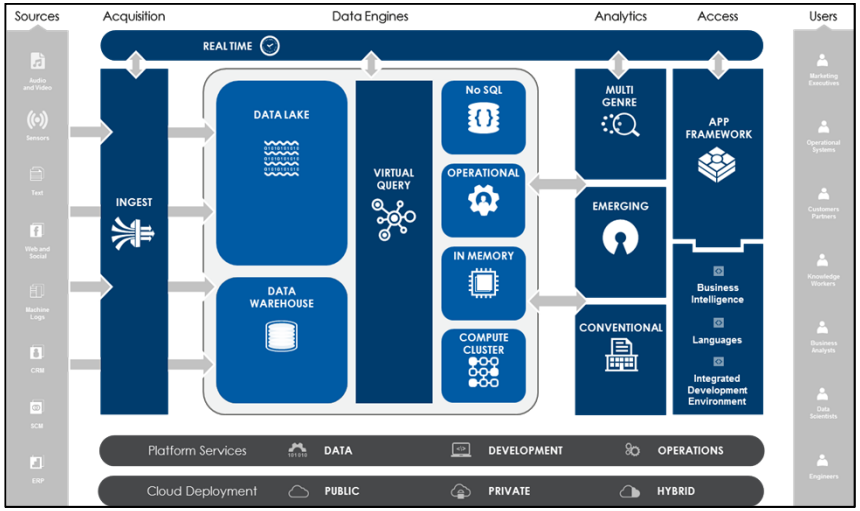
There is Good and “Not so Good” data management

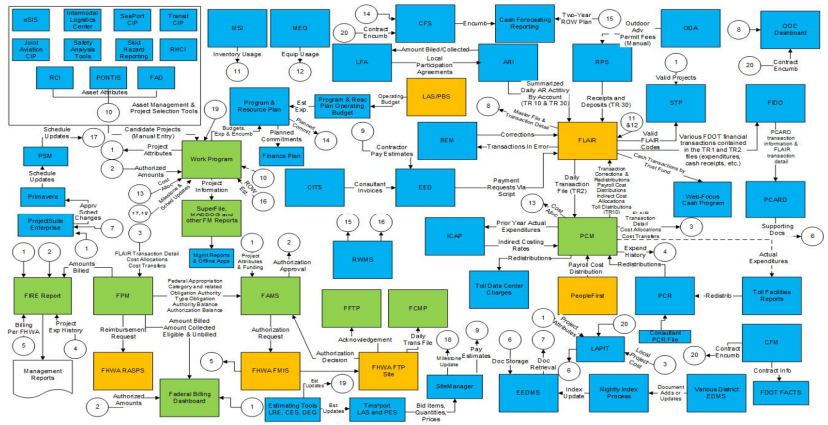
- Data silos
- Fragmentation
- High cost of data use



Data to Information to insight to action

Lesson:
Organic growth of data management systems limits the future and we don’t transform data to action

Lesson:
We don’t need to fragment the data to be able to manage it anymore



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Conclusions

- We've come a long way
- Our history is rich in achievements and lesson learned
- The pace of technology development is accelerating
- Market players have changed over the past 30 years
- Better use of data will be crucial

Lesson:

Practical experience from the past can guide the future and help us to avoid some pitfalls

Lesson:

History can provide some good risk management

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Thank you for your time and attention

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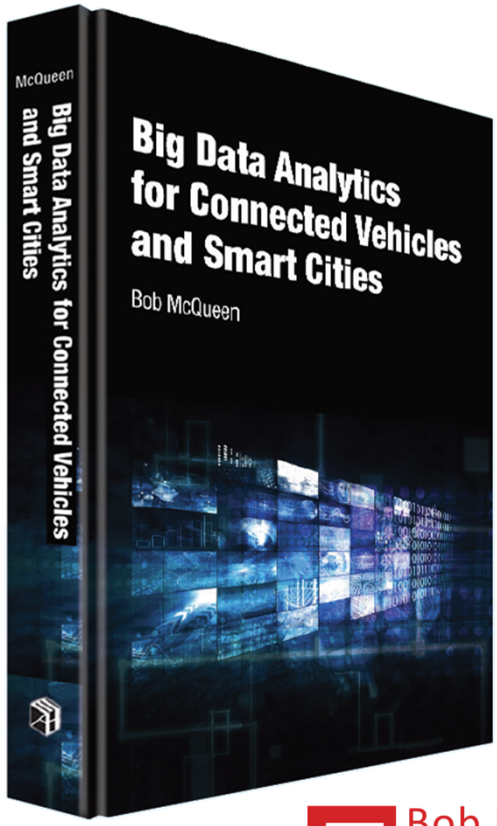
- Latest book:
  - Big data Analytics for Connected Vehicles and Smart Cities
  - Artech House, published August 31, 2017



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