



**BUILDING
INNOVATION** 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Infrastructure Management: Current Practices & Future Trends


Neil Shah

RICS Regional MD, Americas

January 10, 2017



Infrastructure Management: Current Practices and Future Trends

- RICS Research report written in May 2017 by The Building People 
- Audience:
 - Senior government officials & executives
 - Private sector service provider professionals
 - Stakeholders including investors
- Scope: all disciplines across the infrastructure life cycle



**BUILDING
INNOVATION 2018**

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Expert Roundtables across North America

New York City

Toronto

Washington DC





**BUILDING
INNOVATION** 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Goals of the Report

PRIORITIES

Identify and establish clear priorities across the industry in terms of governmental and social needs.

INSIGHTS

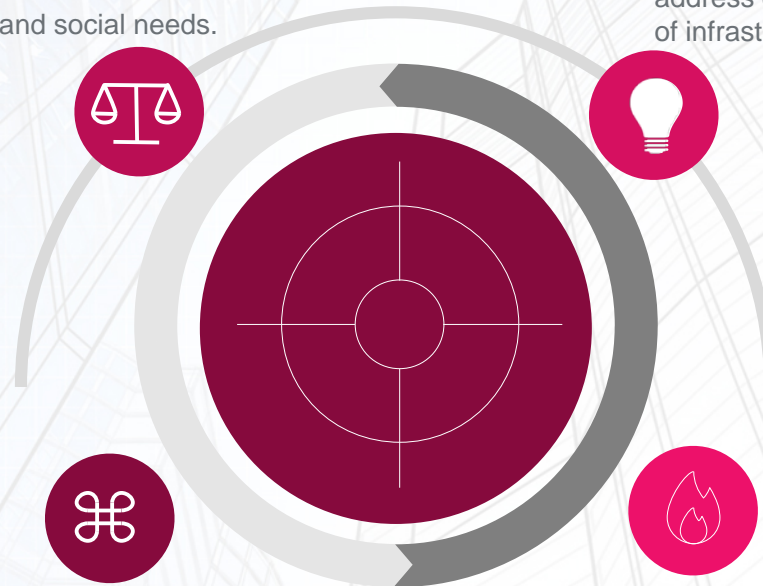
Provide insight and guidance on how to address challenges throughout the lifecycle of infrastructure Projects.

INNOVATION

Recognize innovation and best practice across core areas of infrastructure asset management, at both the federal and local level.

SYNERGY

Establish synergies between infrastructure operations professionals by raising awareness for professional standards and best practice.



The Report

21st Century Infrastructure Challenges

1.0

Explores the current state of infrastructure across five core sectors and identify the challenges, priorities, and roadblocks that need to be addressed.

4.0

Workforce

Discusses how to address the skills gaps, attract talent, and adopt strategies to develop the next generation of infrastructure professionals.

Infrastructure Management

2.0

Focuses on issues that need to be addressed in finance, asset management, organizational management, and quality control.

5.0

Advancing Best Practice

Concludes with practical steps on how RICS can work with industry leaders to advance high priority best practices and cross sector policy issues that require the attention of executives and policy makers.

Technology, Data, & Automation

3.0

Explores how trends in these areas impact the industry and what executive managers must do today to ensure they are ready for the future.

Insight



May 2017

Infrastructure Management:
Current Practices and
Future Trends



rics.org/insights

21st Century Infrastructure Challenges

1.0

P3 stakeholder structures

Is there enough talent to fill the need?

Innovative financial approaches

How much investment is enough?

ASCE's suggested \$4.5 trillion?

Trump's suggested \$1 Trillion?

Long-term Lifecycle Strategies

Managing risk

Do crowdfunding strategies work?



Ribbon cutting syndrome



**BUILDING
INNOVATION** 2018

National Institute of
BUILDING SCIENCES

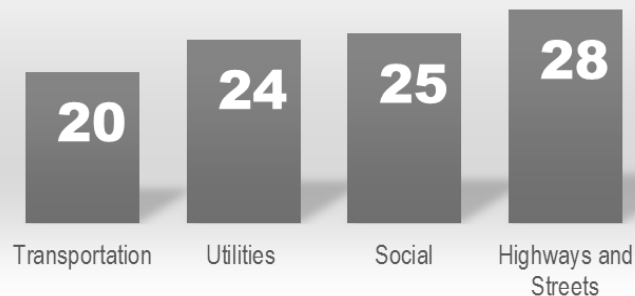
CONFERENCE & EXPO

US Infrastructure Challenges

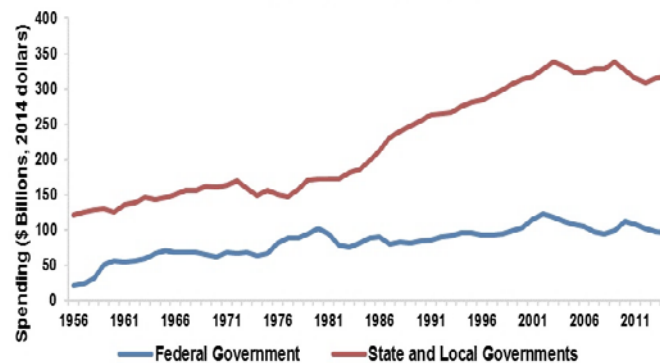
ASCE Report Card	
CATEGORY	2017
Aviation	D
Bridges	C+
Dams	D
Drinking Water	D
Energy	D+
Hazardous Waste	D+
Inland Waterways	D
Levees	D
Ports	C+
Public Parks & Recreation	D+
Rail	B
Roads	D
Schools	D+
Solid Waste	C+
Transit	D-
Wastewater	D+
GPA	D+
Cost to Improve**	\$4.59T

Figure 6: ASCE 2017 Infrastructure Report Card

Average Age of Infrastructure in the U.S. in Years (2015)



Real Infrastructure Spending by Federal vs. State & Local Governments (1956-2014)





BUILDING INNOVATION 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Infrastructure Management

2.0

How to attract private investment in public infrastructure?

Creating value through partnerships

relationships

Regional P3 structure for infrastructure management

What constitutes a quality asset management strategy?

"Don't rely on the policy to drive business decisions,
make good business decisions to drive policy."

resiliency

Strategic asset planning

influence

Successful business cases

Driving value from infrastructure



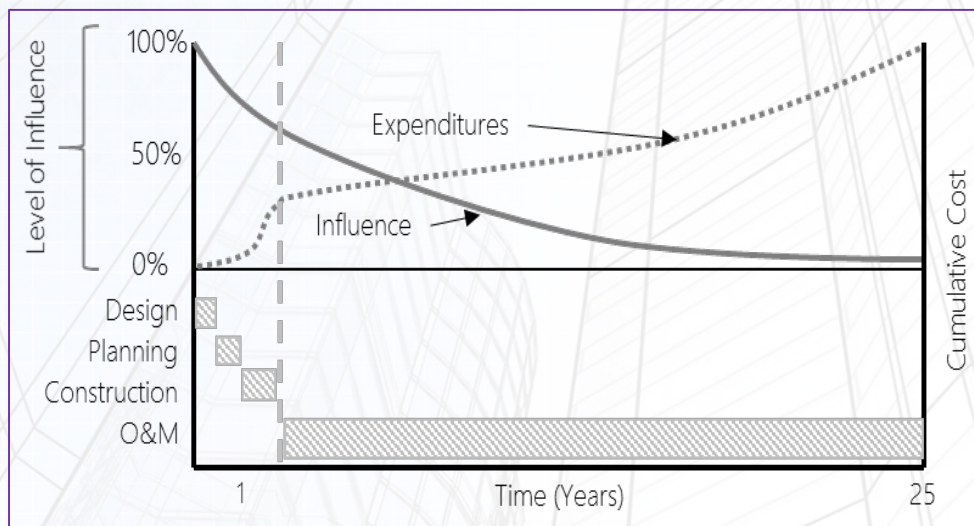
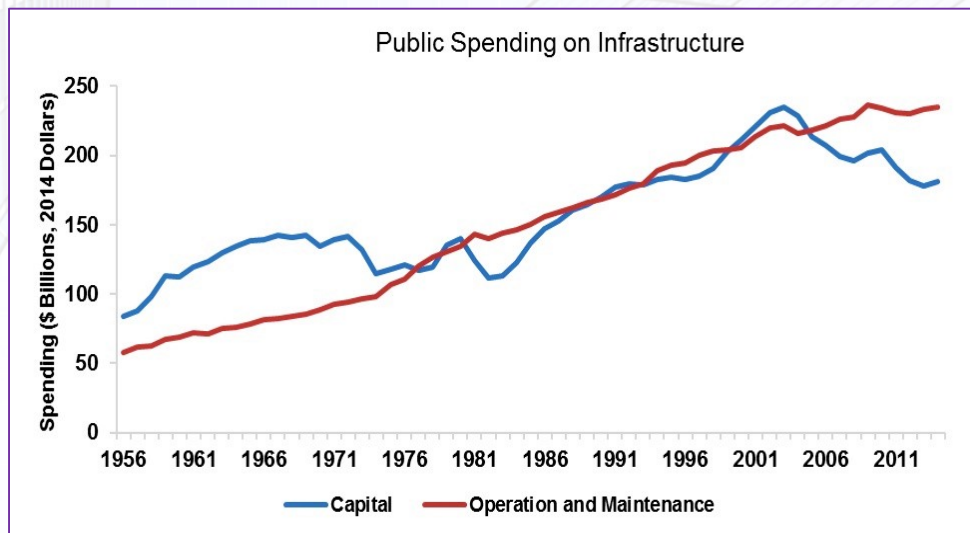


**BUILDING
INNOVATION 2018**

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Infrastructure Asset Management





BUILDING INNOVATION 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Technology, Data, & Automation

3.0

Managing data & information systems
Machine learning
Robotics
resistance
Pre-fabrication

Adopting change

“Across the spectrum there is a lack of cradle to grave mindset. Managers still do not understand how to transform data into knowledge to help them make long term decisions.”

Measuring returns on Technology investments

Big data

“I love data! It is our life blood in quality assurance. The models are what matter; how do we capture old data and make it relevant to a particular job?”



**BUILDING
INNOVATION 2018**

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Technology Adoption Principles

Technology Adoption Curve

EVERETT ROGERS - DIFFUSION OF INNOVATIONS 1962

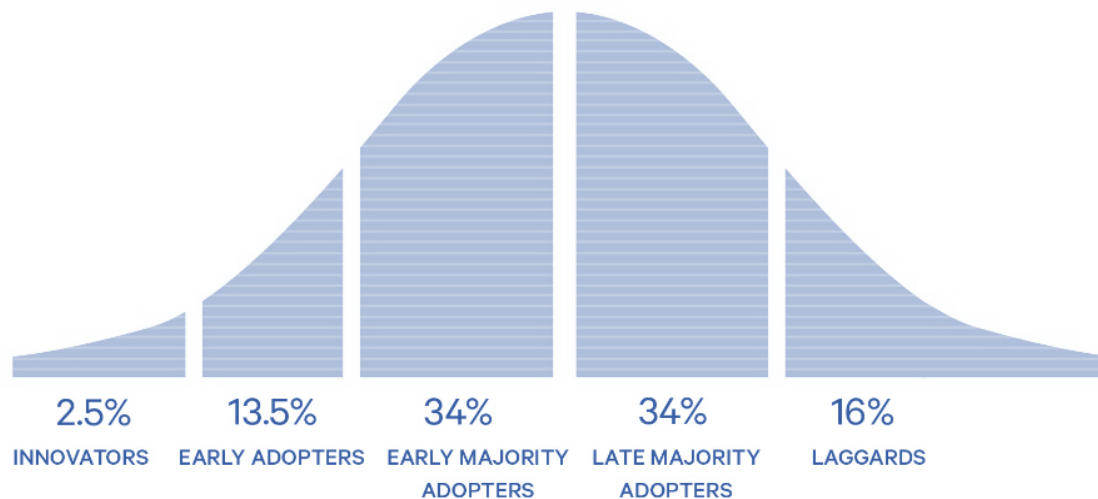
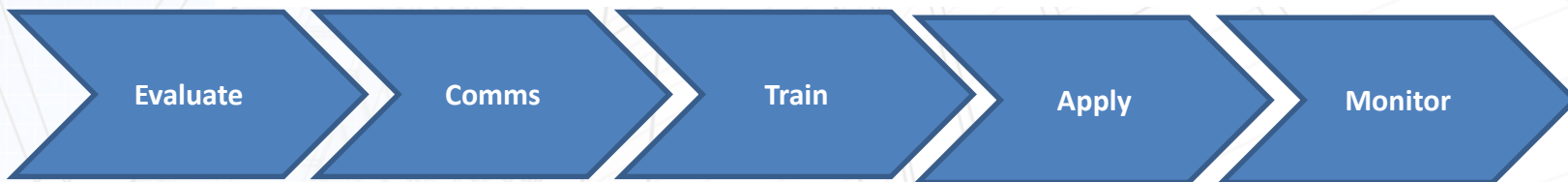


Figure 13: Rogers Adoption Curve





**BUILDING
INNOVATION** 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Key Factors for Consideration

- Resistance from the client
- 'Big data' and professionals ability to use
- Pre-fabrication and its limitations
- Automation – the need for integration
- Robotics in use across the life cycle
- Cultural change across all fronts

Workforce

4.0

diversity

Attracting new skills

mentoring

Transforming professional culture

Training and development

Selling the industry

“Experience can be shared, but it can’t be taught.”

institutional outreach

Maintaining skills

Developing talent

Skills gap

“I did not realize surveying was such a male dominated field. After noticing I was the rare female, it became a strength because people remembered me and I used that to my advantage.”



BUILDING INNOVATION 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Advancing best practice

5.0



1.0

21st Century Infrastructure
Challenges

2.0

Infrastructure manage

3.0

Technology, data, &
automation

4.0

Workforce



About RICS

Who is RICS?



RICS is the world's leading professional body for qualifications and standards in land, real estate, infrastructure and construction, promoting and enforcing excellence, worldwide.



RICS supports business by helping to setting **standards** for the built environment sector, and **training, qualifying and regulating** professionals to **deliver** those standards in markets across the world.



