USING ASSET MANAGEMENT TO IMPROVE INVESTMENT DECISION-MAKING

Simon Smith
Transportation Research Forum – New York Chapter
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Introductions – Simon Smith

• Originally from UK
• Lived in NYC region since 2008
• Past 12-years focused on transportation

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AMCL – Leading Asset Management Since 1997

60 Asset Management Specialists

Operating in 7 locations

Across 4 Continents

Transportation
Power
Cities/Utilities

- Gap assessments and roadmaps
- Implementation support
- Technical advisory
- Capability improvement
- Training and change management

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<table>
<thead>
<tr>
<th>AMCL – Leading Asset Management Since 1997</th>
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<td><strong>North America</strong></td>
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<td>Transport</td>
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<td>MTA</td>
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<td>BART</td>
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<td>DFW (Dallas Fort Worth International Airport)</td>
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<td>Massachusetts Bay Transportation Authority</td>
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<td>New York City Transit</td>
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<td><strong>Cities/Utilities</strong></td>
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<td>Brampton, CA</td>
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<td>Metro Parks</td>
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<td>Scottish Water</td>
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<td>Thames Water</td>
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<td>Affinity Water</td>
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<td>UISCE (University of Southern California)</td>
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<td>Sydney Water</td>
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<td>MTR</td>
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<td>Sydney Trains</td>
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<td>MMETRO</td>
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<td><strong>Australia / Asia Pacific</strong></td>
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<td>Land Transport Authority</td>
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The New York Metropolitan region has a wide variety of assets
We all play a role within the transportation system

Operations  Maintenance  Engineering  Finance  IT  Planning

Politicians  Suppliers  Consultants  Construction  Customers  Taxpayers
Our assets are overstretched, yet funding remains a challenge

What It Will Take to Fix America’s Crumbling Infrastructure
by Rosabeth Moss Kanter

$85Bn backlog in deferred maintenance
FTA News April 2013
An FTA report on the US Transit industry has identified over $85Bn in deferred maintenance...

Governor Declares State of Emergency for NYC Transit System
Gov. Andrew Cuomo says he’s asked the new leader of New York City’s troubled public transit system to focus on the agency’s management and aging infrastructure.

June 29, 2017, at 2:14 p.m.

State-Commissioned Group Says Struggling MTA Needs New Funding
Recommendations to aid legislators and transportation agencies as they consider ways to raise funds and improving service

Poor road conditions cost NYC-area drivers $2,800 a year: Report

Matt Spillane, Rockland/Westchester Journal News
Published 8:26 a.m. ET Nov 14, 2010 | Updated 12:30 p.m. ET Nov 14, 2018
A key question

Given limited funding, what are the *right investments* for my assets?
Using Asset Management to improve investment decision-making

1. Introduction to Asset Management
2. Asset Information as a foundation
3. Making asset investment decisions
Using Asset Management to improve investment decision-making

1. Introduction to Asset Management
2. Asset Information as a foundation
3. Making asset investment decisions
Some Asset Management definitions

The **optimal lifecycle** management of physical assets to **sustainably** achieve the stated **business objectives**

*EFNMS Asset Management Committee*

**Coordinated** activities of an organization to realize **value** from assets

*ISO 55000*

The **strategic and systematic** practice of managing capital assets over their **lifecycle** to balance their **performance, risks, and costs**

*Federal Transit Administration (paraphrased)*
The Institute of Asset Management “Conceptual Model”

Organizational Strategic Plan

Scope of Asset Management

Strategy & Planning

Asset Management Decision-Making

Lifecycle Delivery
- Acquire
- Operate
- Maintain
- Dispose

Risk & Review

Asset Information

Customers
Legislation
Investors
Commercial Environment

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Managing Assets vs Asset Management

**Managing Assets**
- Daily service
- Age
- Up-front cost
- Maintenance
- Silos
- Reactive

**Asset Management**
- Long-term performance
- Condition and risk
- Whole-life cost
- Lifecycle management
- Integration
- Proactive

Daily service vs Asset Management

Age

Up-front cost vs Long-term performance

Maintenance vs Whole-life cost

Silos vs Lifecycle management

Reactive vs Integration

Proactive
Using Asset Management to improve investment decision-making

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Asset Information is the foundation for good Asset Management
Asset Information supports Asset Management decision-making

“A combination of data about physical assets used to inform decisions about how they are managed, both for short-term operational purposes and for long-term strategic planning”
From asset data to asset decisions

- **Data**
  - Raw: Red (192.234.876.21)

- **Information**
  - Meaning: Traffic light #7 at Pitt and Glasson is red

- **Knowledge**
  - Context: The traffic light I'm driving towards is red

- **Decisions**
  - Application: I'd better stop the car!
Using Asset Information to make an asset decision

When should we replace this asset?

- What is it, and where is it? (Inventory)
- How is it performing? (Performance)
- How much does it get used? (Utilization)
- How important is it? (Criticality)
- How often and badly does it fail? (Failures)
- How will it cost to replace? (Replacement cost)
- What will it cost to continue maintaining? (Maintenance cost)
- What condition is it in now and in the future? (Condition)
- How much environmental strain does it face? (Environment)
Now imagine you had thousands of assets...
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Developing an investment plan relies on good decision-making.
An example capital investment plan

MTA Capital Program 2015-2019


New York City Transit

Passenger Stations

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<tr>
<th>Station</th>
<th>Year</th>
<th>Cost</th>
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<tr>
<td>Station A</td>
<td>2015</td>
<td>$50M</td>
</tr>
<tr>
<td>Station B</td>
<td>2016</td>
<td>$70M</td>
</tr>
<tr>
<td>Station C</td>
<td>2017</td>
<td>$90M</td>
</tr>
<tr>
<td>Station D</td>
<td>2018</td>
<td>$110M</td>
</tr>
<tr>
<td>Station E</td>
<td>2019</td>
<td>$130M</td>
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MTA Capital Program

Amendment No. 2
As Proposed to the MTA Board May 2017

mta.info/capital

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The Asset Class Strategy in the context of the end-to-end Capital Planning process.
The Asset Class Strategy is an iterative, analytical process (some of which can documented)

Objectives
- Safety, reliability, financial, safety, customer, etc.

User Needs
- Improved reliability, enhanced functionality, more assets etc.

Strategic Influences
- Political, economic, socio, tech, legal, environment

Constraints
- Access, resources, funding, regulatory, etc.

Iterative analysis and discussions

Asset Class Strategy and investment ‘rules’
- Replace track at condition 4...
- Refurb station every 7 years...

Asset Information
- Inventory, age, condition, cost, performance, etc.

Asset Class Investments
- Pump 1, replace 2019, $30m
- Pump 2, refurb 2021, $11m
- Pump 3, add 2022, $41m
- Etc.

Capital Plan
- All asset classes

Some, or all, can be documented in an “Asset Class Strategy” document
Improving your investment decision-making maturity

- Asset Class Strategy and investment 'rules'

- Decision-making Basis
  - Structured Analysis & Evidence
  - Risk-based
  - Condition-based
  - Time-based
  - Reactive

- Asset Information
  - Substantially Complete
  - Good, Trusted
  - Improving but with Gaps
  - Poor, Incomplete

- Increasing Investment Planning Capability Maturity
Moving from age-based to condition-based decision-making

Asset Class Strategy and investment 'rules'

Replace later   Replace next   Replace sooner

Newest  Age  Oldest
Moving from age-based to condition-based decision-making

- **Worst**
  - Replace sooner
- **Best**
  - Replace later
  - Monitor for changes to condition

**Asset Class Strategy and investment 'rules'**
Understanding the economic optimum life of your assets

Average annual cost ($) vs. Renewal frequency (years)

- Cost of Replacing Asset
- Economic optimum
- Total Business Impact
- Increasing Costs of Running Asset

Asset Class Strategy and investment 'rules'
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