

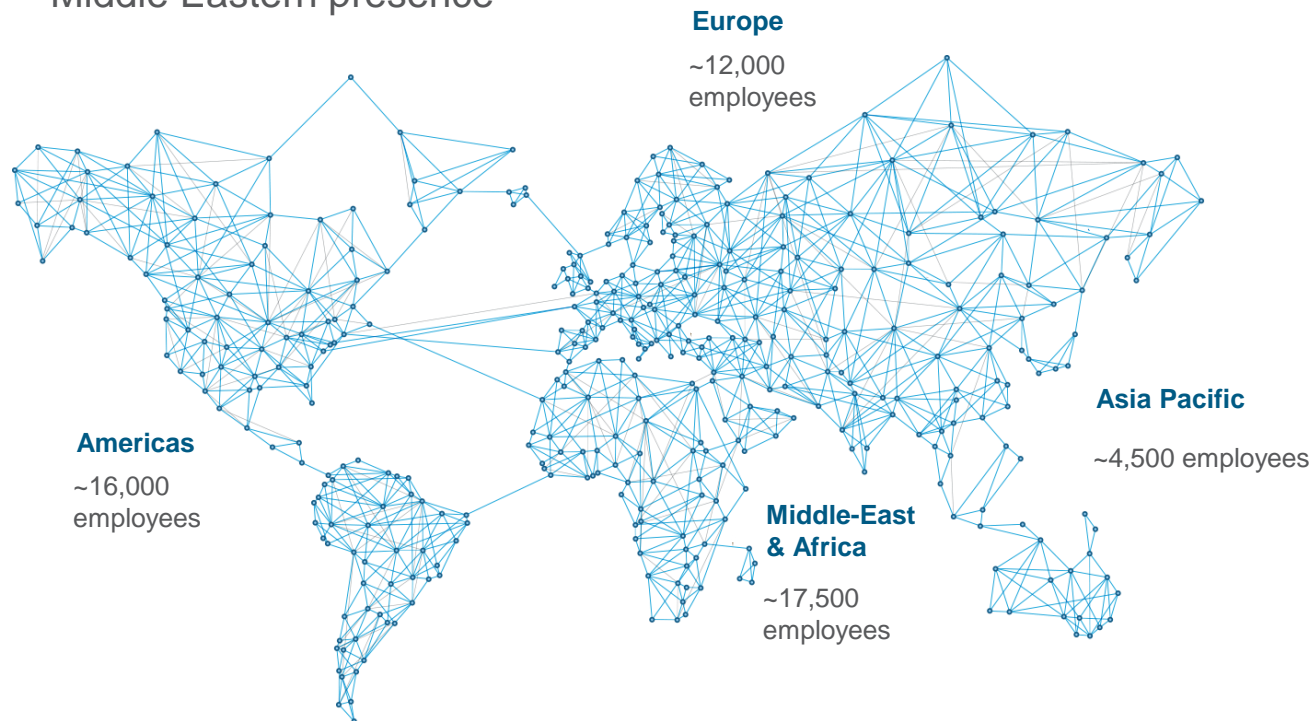
# Asset Management: Key trends, implications and opportunities for the port industry

AAPA Facilities Engineering Conference



# Increased geographic reach

- › An established and balanced footprint
- › Greater “at-scale” European and Middle Eastern presence



APPROXIMATELY  
**50,000**  
EMPLOYEES

SPEAKS  
**70**  
LANGUAGES

WORK FROM  
OFFICES IN OVER  
**50**  
COUNTRIES

REPRESENTS  
SOME  
**130**  
NATIONALITIES

- › Atkins Energy segment allocated 41% Europe, 46% North America, 9% Middle East & Africa and 4% Asia Pacific
- › Atkins segmentation based on fiscal year ended March 31, 2016 applied to twelve month period ended September 30, 2016
- › Pro forma financials based on SNC-Lavalin fiscal year ended December 31, 2016 and Atkins twelve month period ended September 30, 2016

# Client depth



Municipal  
Infrastructure



Highways &  
Bridges



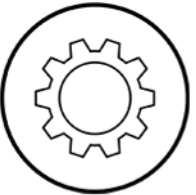
Rail & Transit



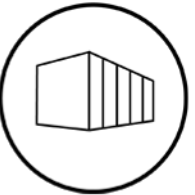
Ports



Airports  
and Aviation



Industrial

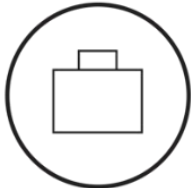


Procurement



Buildings &  
Facilities

# Full lifecycle experience



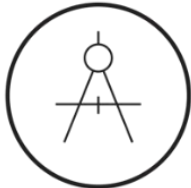
Capital



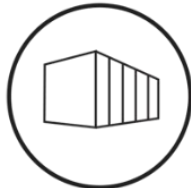
Consulting & Advisory



Digital & AI



Design & Engineering



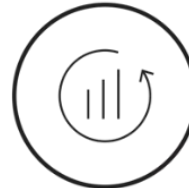
Procurement



Construction & Project Management



Operations & Maintenance

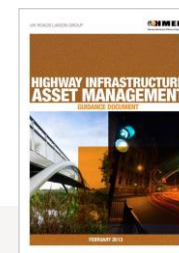
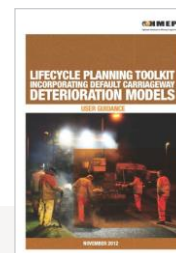
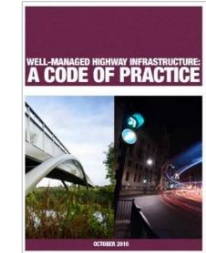
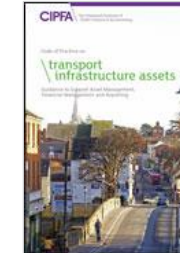
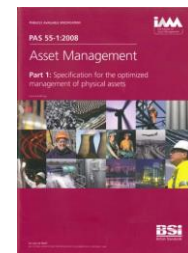
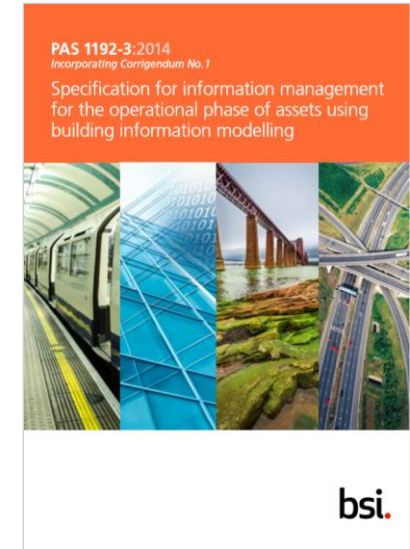
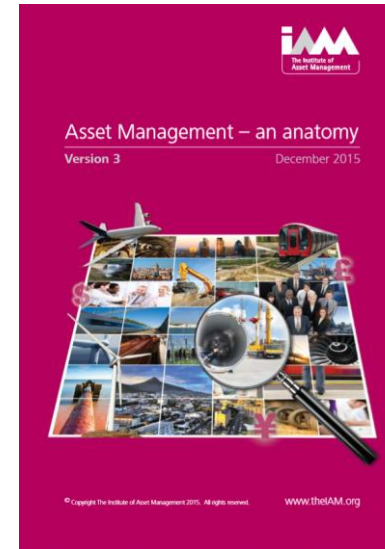
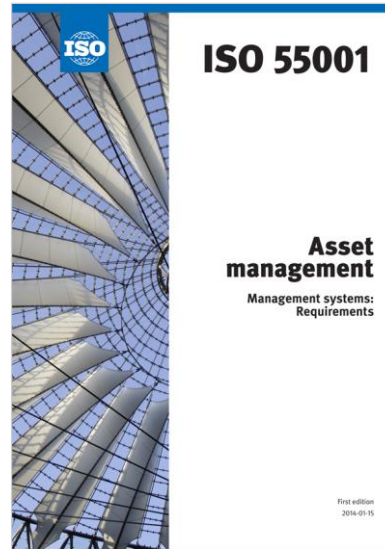


Sustaining Capital

# Thought leadership expertise

Atkins has been integral in the development of:

- › ISO standards for Asset Management
- › The IAM Asset Management Anatomy
- › BIM standards for operation phase of assets



# Data & software

## Our capabilities

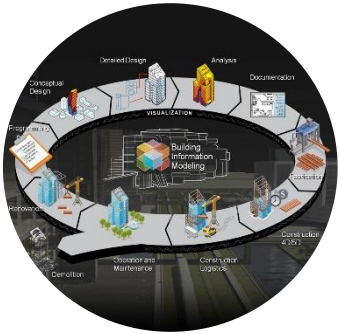
- › Analytics, AI/Machine Learning
- › Applications, Systems Integration
- › Virtual Reality, Augmented Reality
- › BIM, 3D Modelling, Laser Scanning
- › Intelligent Networks, Internet of Things

Facilitating performance based  
lifecycle asset management



# Opportunities

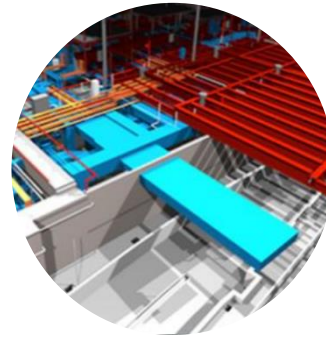
# Keeping the end in mind...



Optimizing the lifecycle cost, risk and performance



Improved planning and business case



Improved detailed design through BIM



Efficient construction through modular prefab units



Reduced OPEX & risk; improved asset performance through smart sensors & IoT



Enhanced asset value through optimized life-extension and improvement decisions



# We know how it feels

How will I justify the cost?

How will we manage the cultural change?

Where will we get the funding to do this?

How do I know where to start?

Implementing an asset management system is difficult time consuming and expensive!

Will my supply chain partners support this?

# Shift in thinking

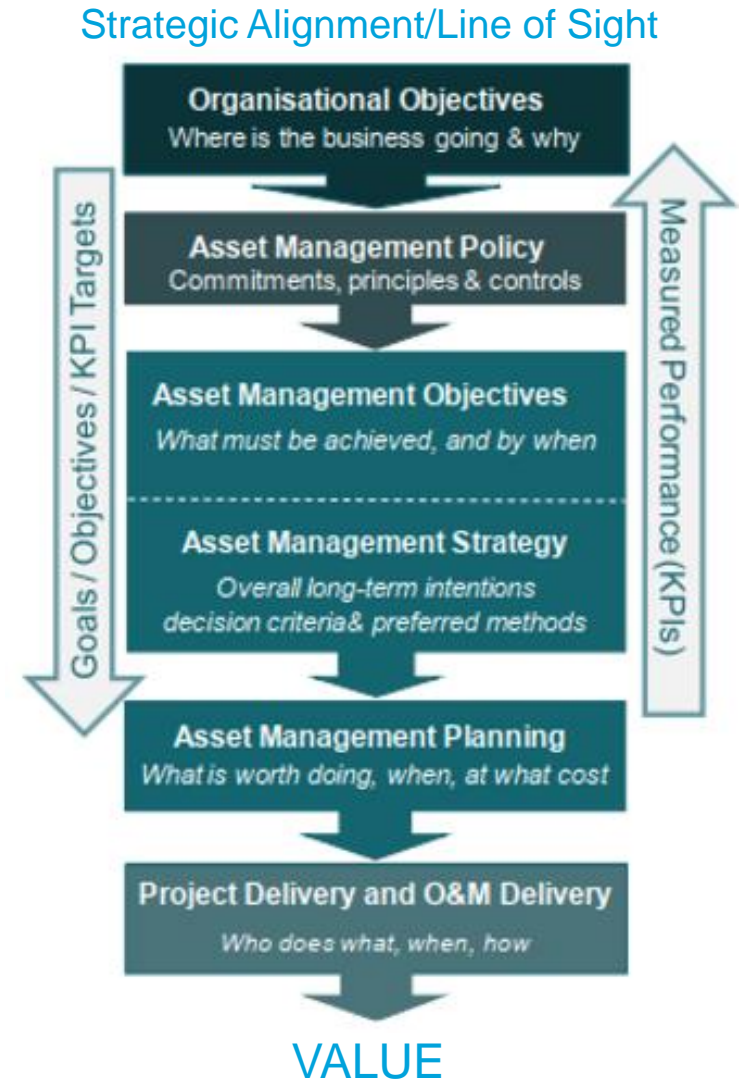
## From “bottoms up” to “top down”

An asset management system is a management system for the management of assets – **not software**

The starting point for asset management system:

- › Executive management defines how it will utilize assets to achieve the organization’s goals and objectives – **Asset Management Policy**
- › Each increment in cost and complexity must be tied to, and justified by, the information required to make decisions in how assets will be utilized – **Asset Management Strategy**
- › Specifying and carrying out asset management decisions consistent with the organization’s goals and objectives – **Asset Management Plan**

Data, software, and consultants are enablers of the asset management system



# It's happening...



Metropolitan  
Transportation  
Authority

NY MTA Concept of Operations



MARTA ISO 55000 Certification

Port of Melbourne

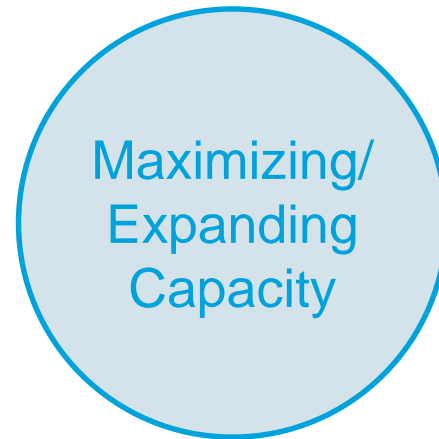
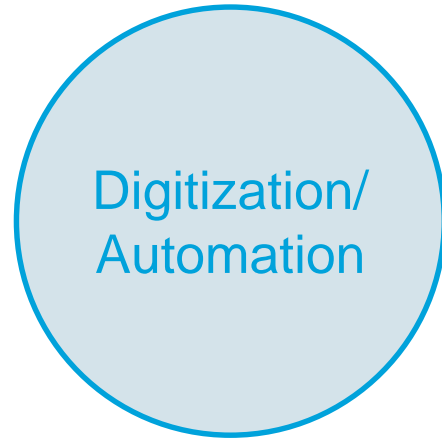


Port of Melbourne  
Asset Management Policy

# Trends

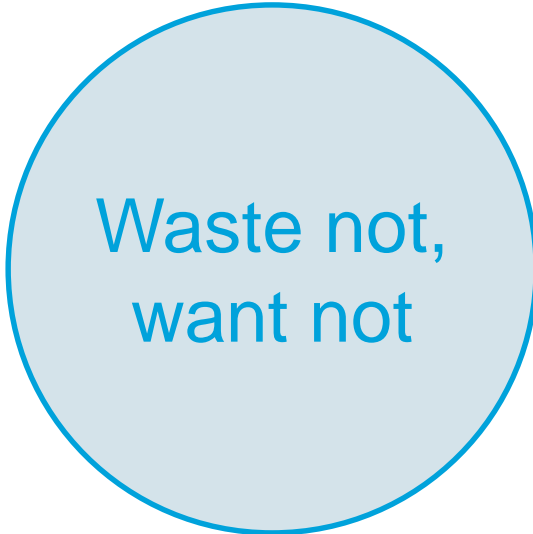
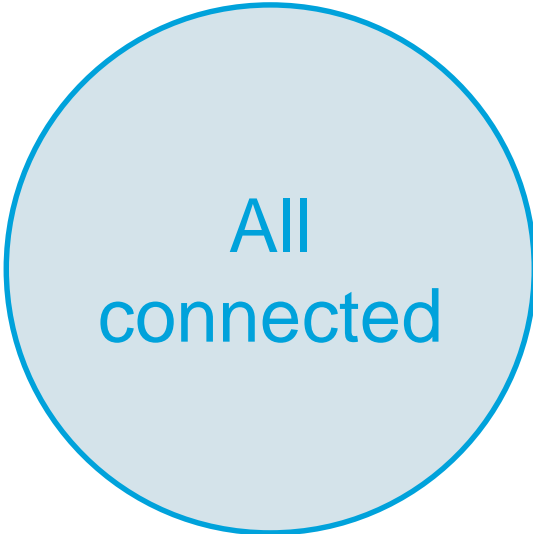


# Responding to disruption

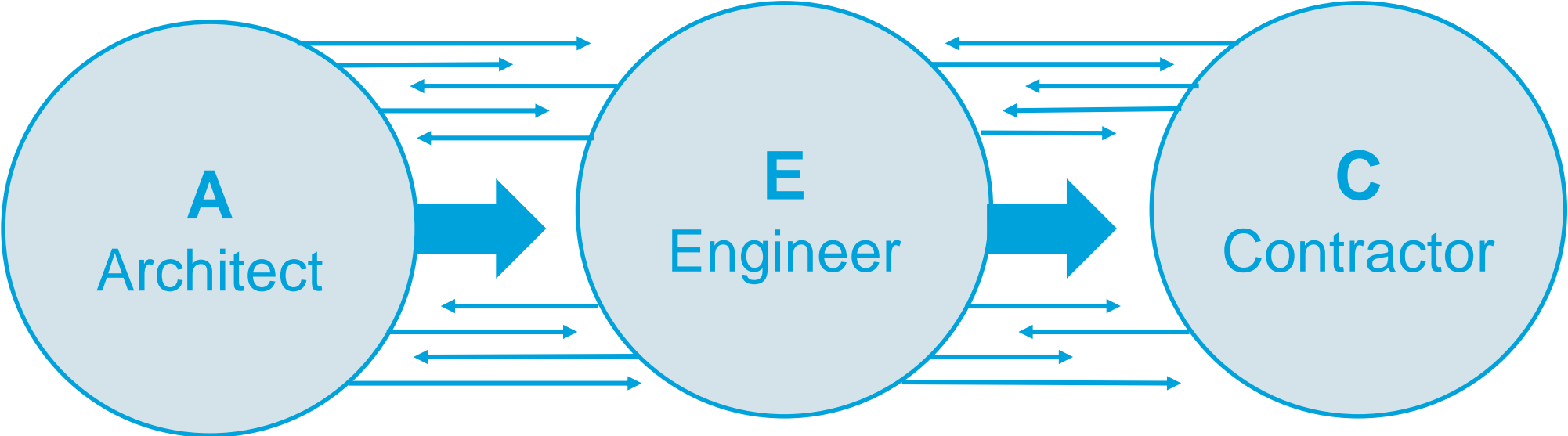


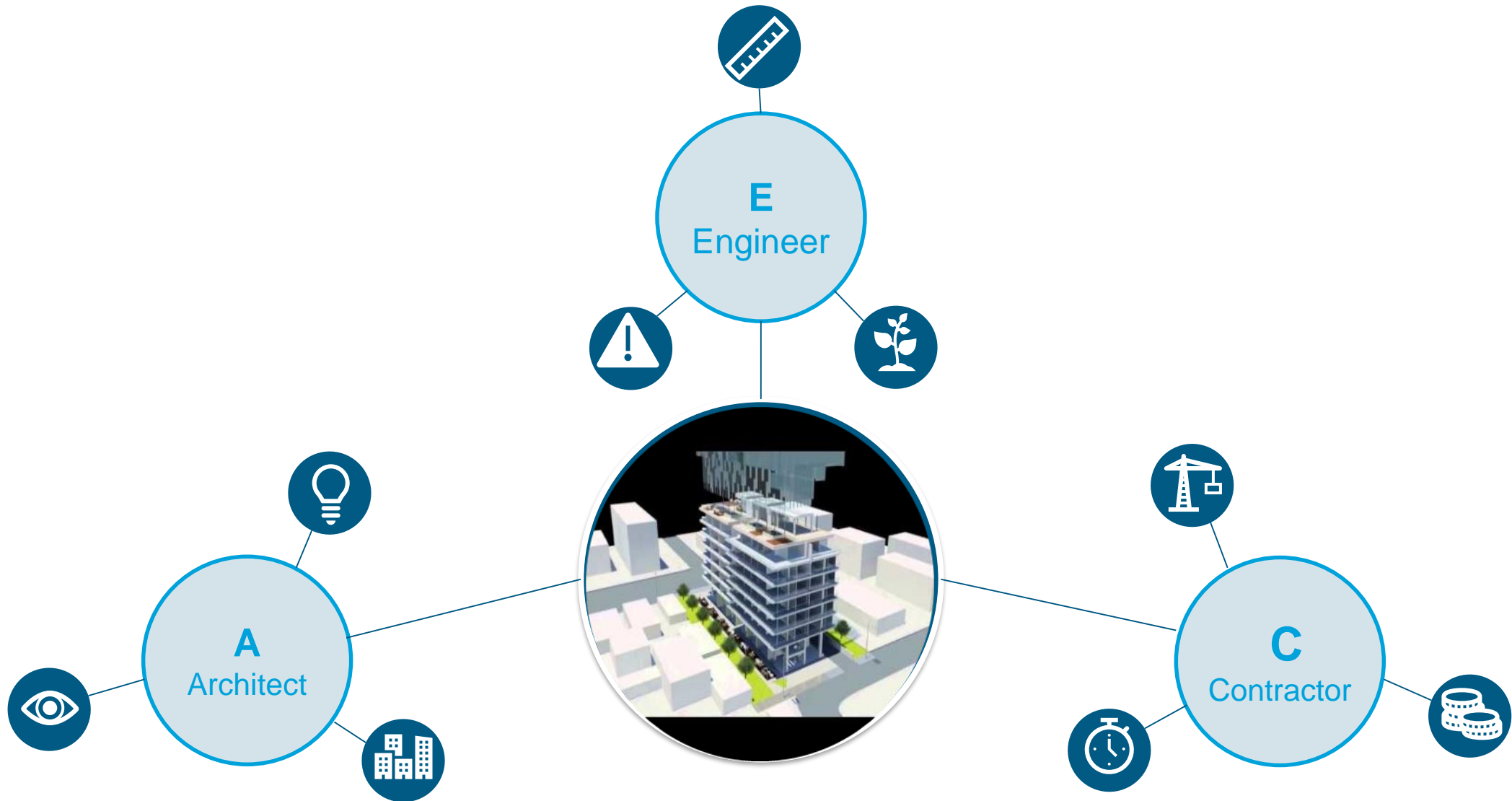
Disruption	5G, sensors, IoT	Panamax/post-Panamax	PPP, DBOMF
Design response	Digital design	Digital twin	Digital rehearsal
Asset Management response	Data governance	Portfolio optimization	Whole life cycle thinking

# System of systems

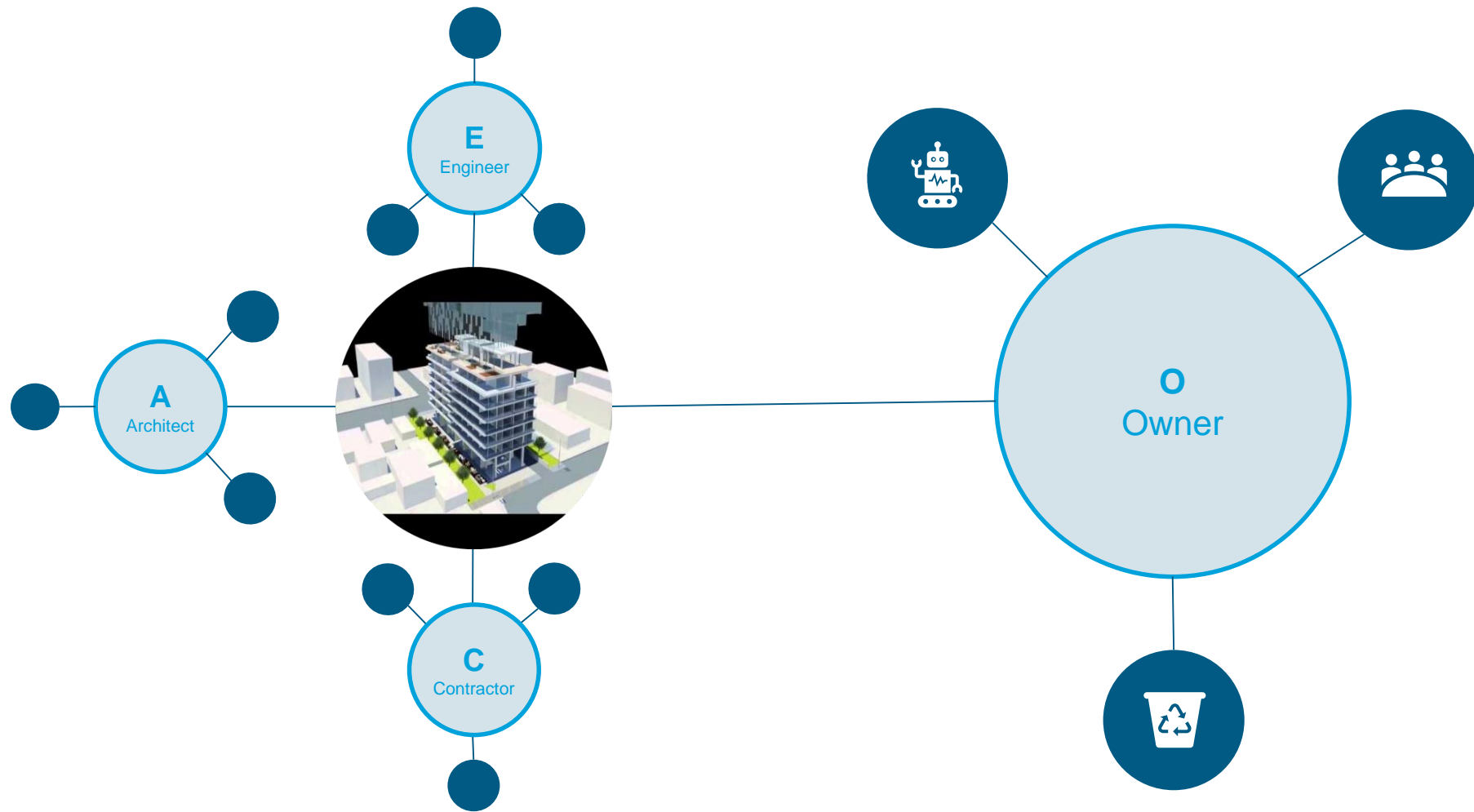


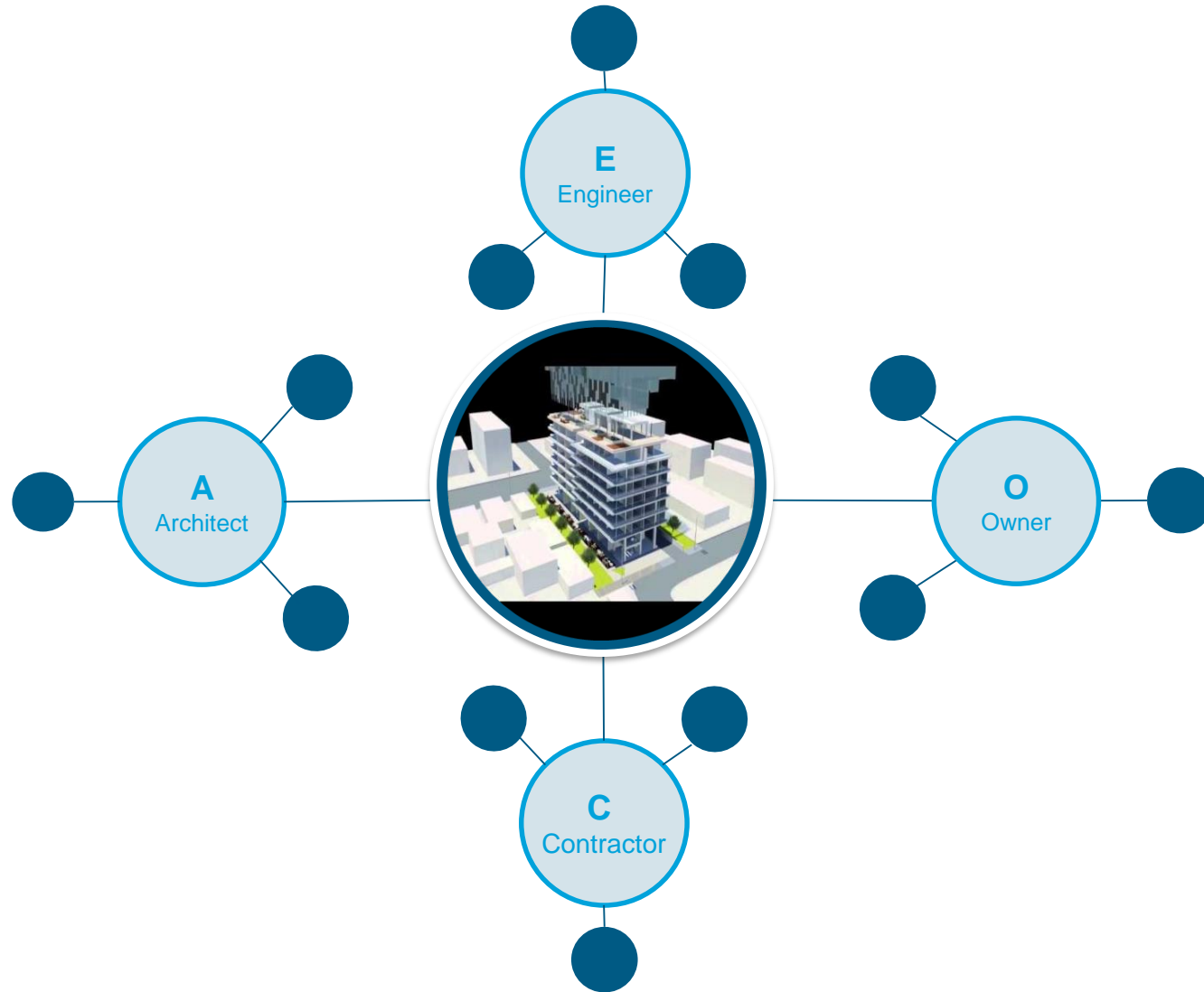
# What does it mean to move from waterfall design to data centric design?





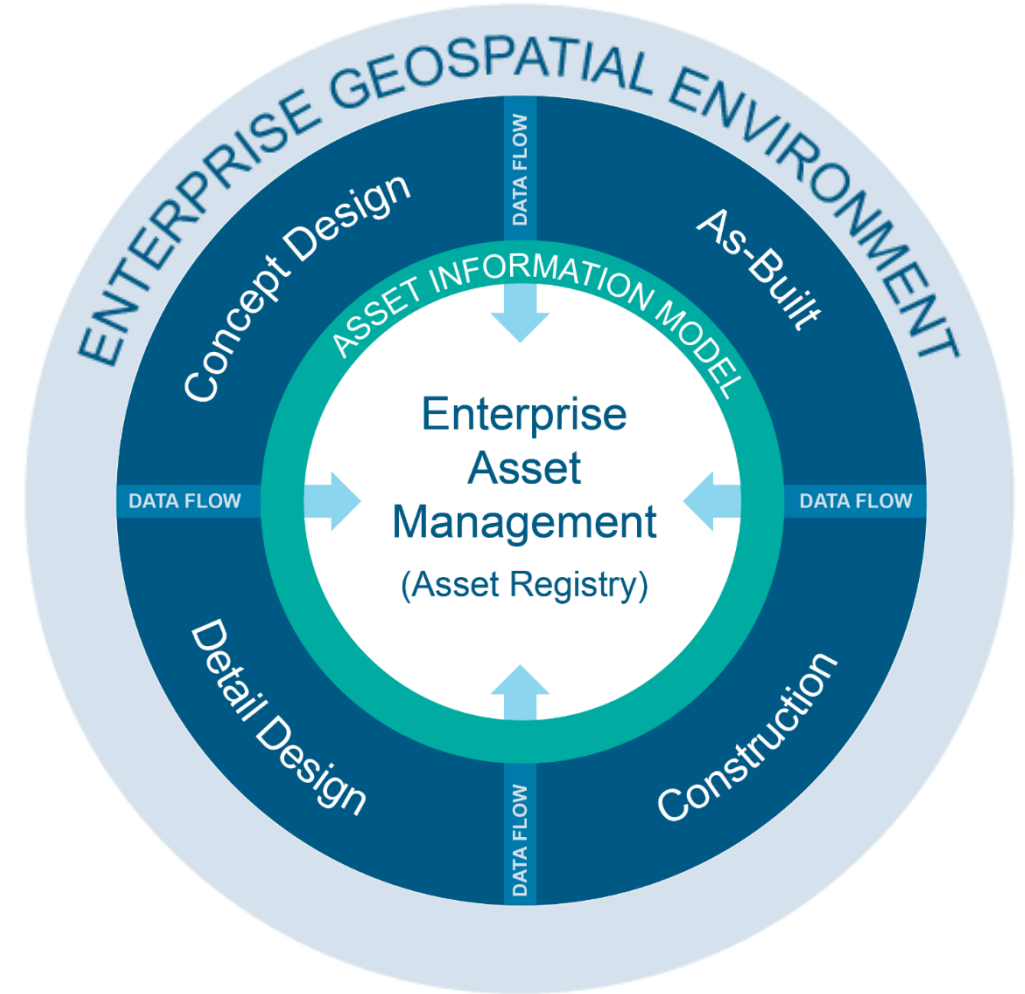






# The Asset Information Model

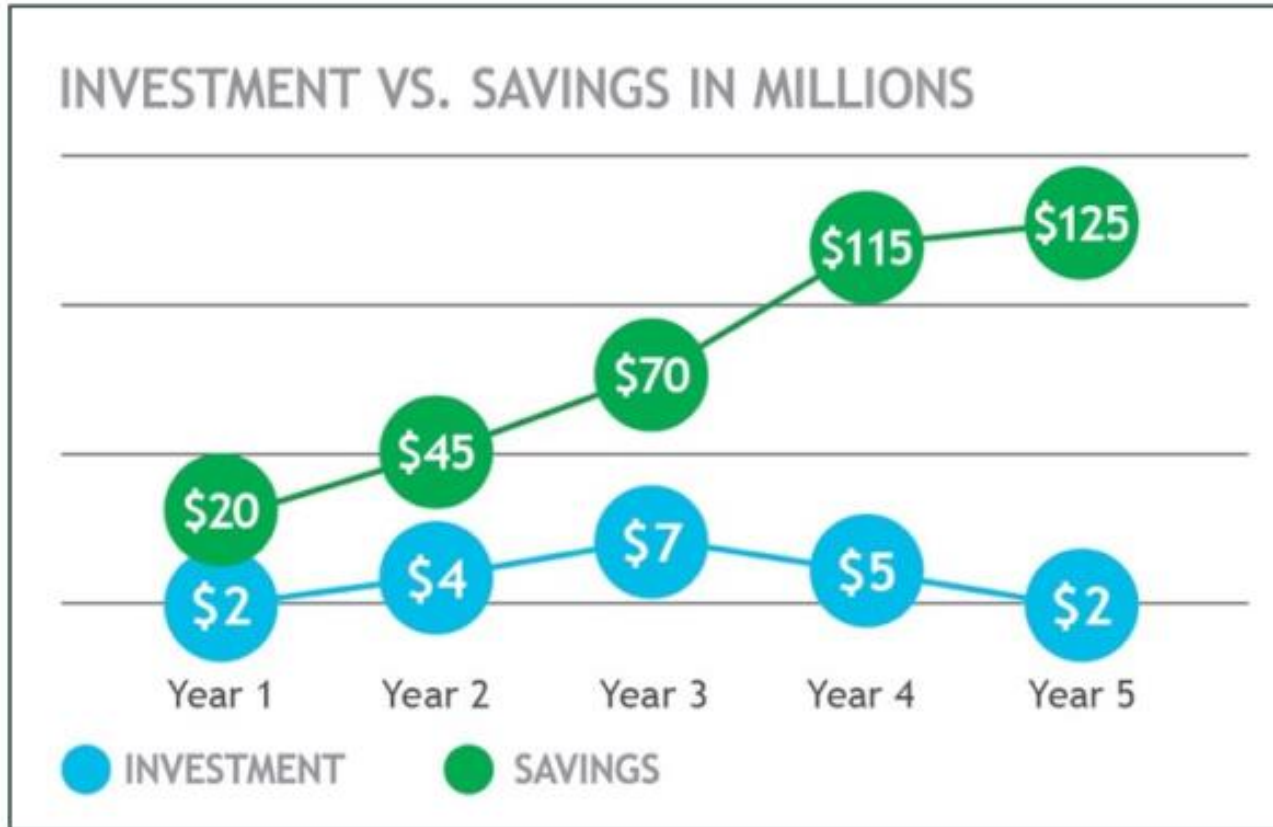
The Asset Information Model plays a critical role in translating and managing the data requirements of the Enterprise Asset Management System whereas the project and construction information models evolving through the project life cycle are informed by the Asset Information Model from the start thereby allowing a structured and systematic flow of data from the proposed and newly developing infrastructure to maximize work programming and investment planning. The enterprise geospatial environment provides base data and spatial context to both design and asset management functions.



# The relevance of data governance



# Data: Fact and Fiction



# Data Governance

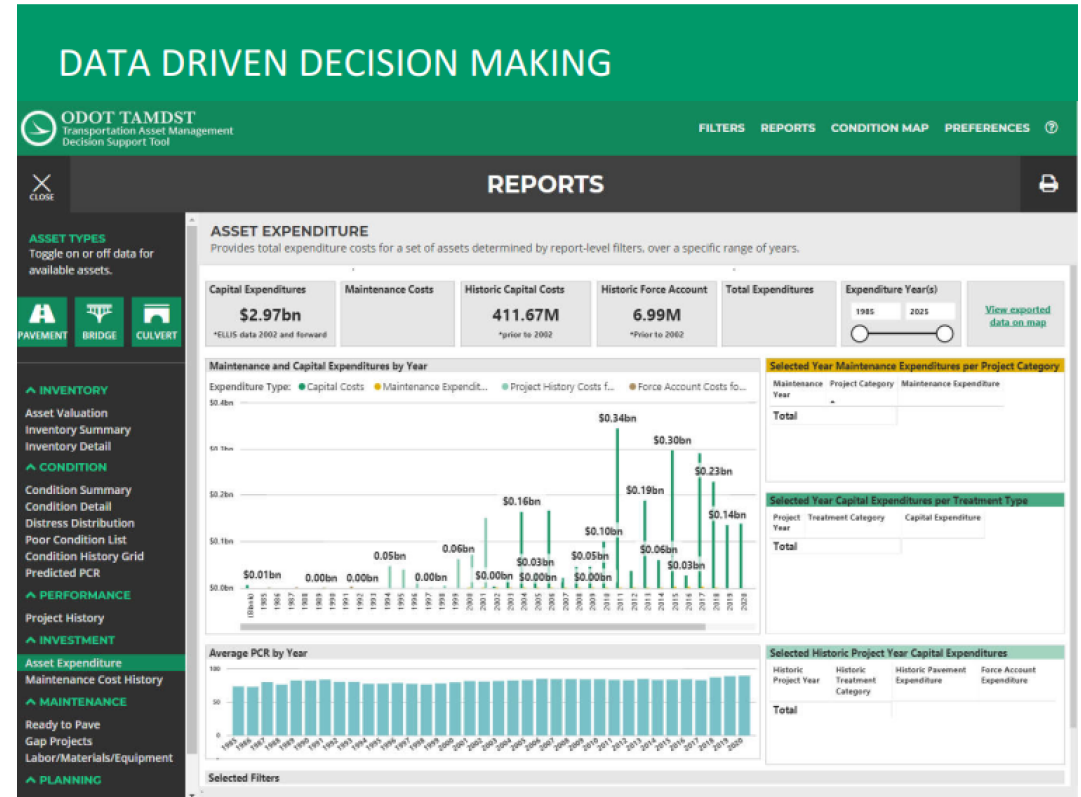
What?

Data governance is defined as the management of an organization's data assets to achieve its business purposes and be compliant with any relevant legislation and regulation.

Why?

Making right data investments at the right time for the right reason is key.

Data driven decisions are defensible decision.



VUEIntelligence

HOME PREFERENCES FILTERS CONDITION MAP REPORTS

## Welcome to VUEIntelligence

Just go to the green title bar at the top of the screen and select the following:

- 1 PREFERENCES**  
 Pop up the Preferences window and decide what type of asset data you want available.  
 NOTE: You typically will do this infrequently.
- 2 FILTERS**  
 Pop up the Filters window to narrow down the assets you want to work with.
- 3 CONDITION MAP**  
 Display the Map page and zoom and pan, turn assets on or off, select assets and get information about them.
- 4 REPORTS**  
 Display the Reports panel and select a report to generate, restrict the data you want to see in the report, and drill-down for more details.

ASSET TYPES  
Click icon(s) to turn on or off data for available assets.

PAVEMENT BRIDGE CULVERT

INVENTORY  
Asset Valuation  
Inventory Summary  
Inventory Detail

CONDITION  
Condition Summary  
Condition Detail  
Distress Distribution  
Poor Condition List  
Condition History Grid  
Predicted PCR

dts MAKERS OF VUEWorks.

Type here to search

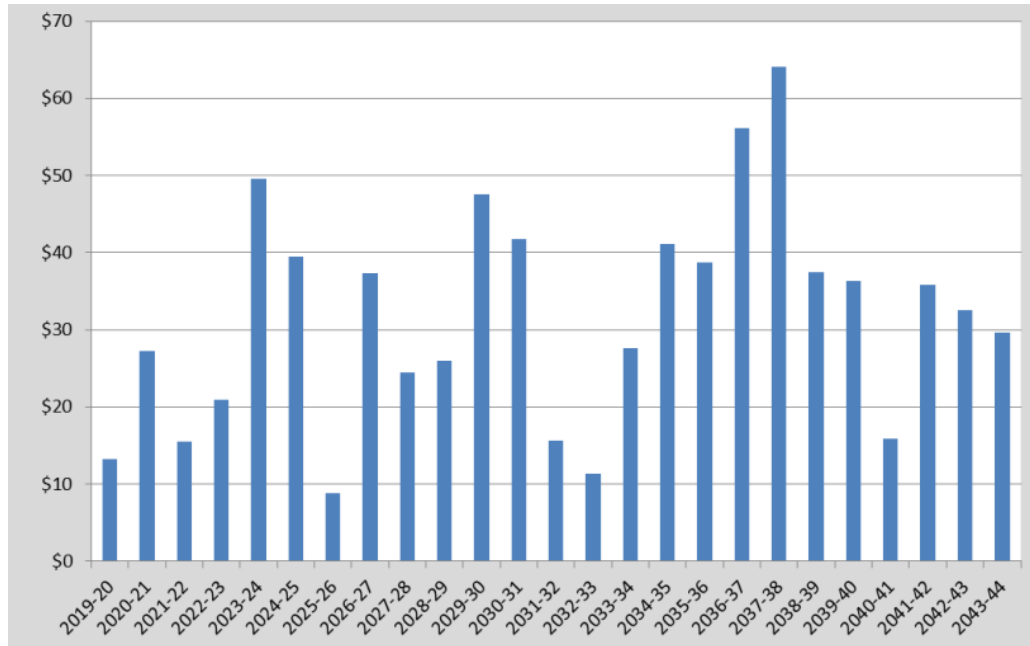
5:36 PM 4/22/2019

# The value of portfolio optimization

# Port of Melbourne, Australia

## Age based capital strategy

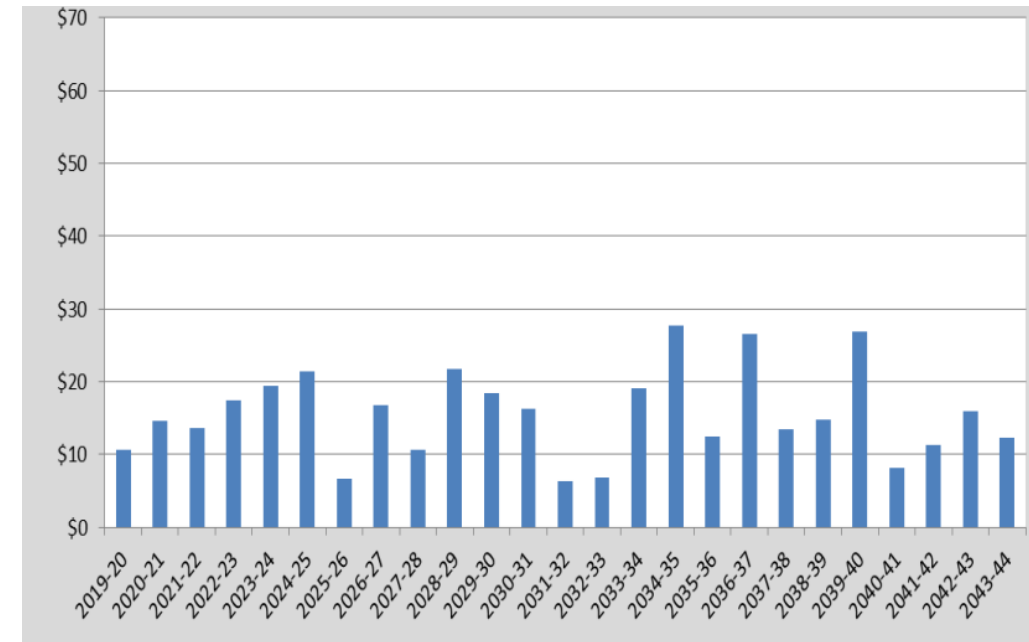
### Asset management – Perpetuity strategy

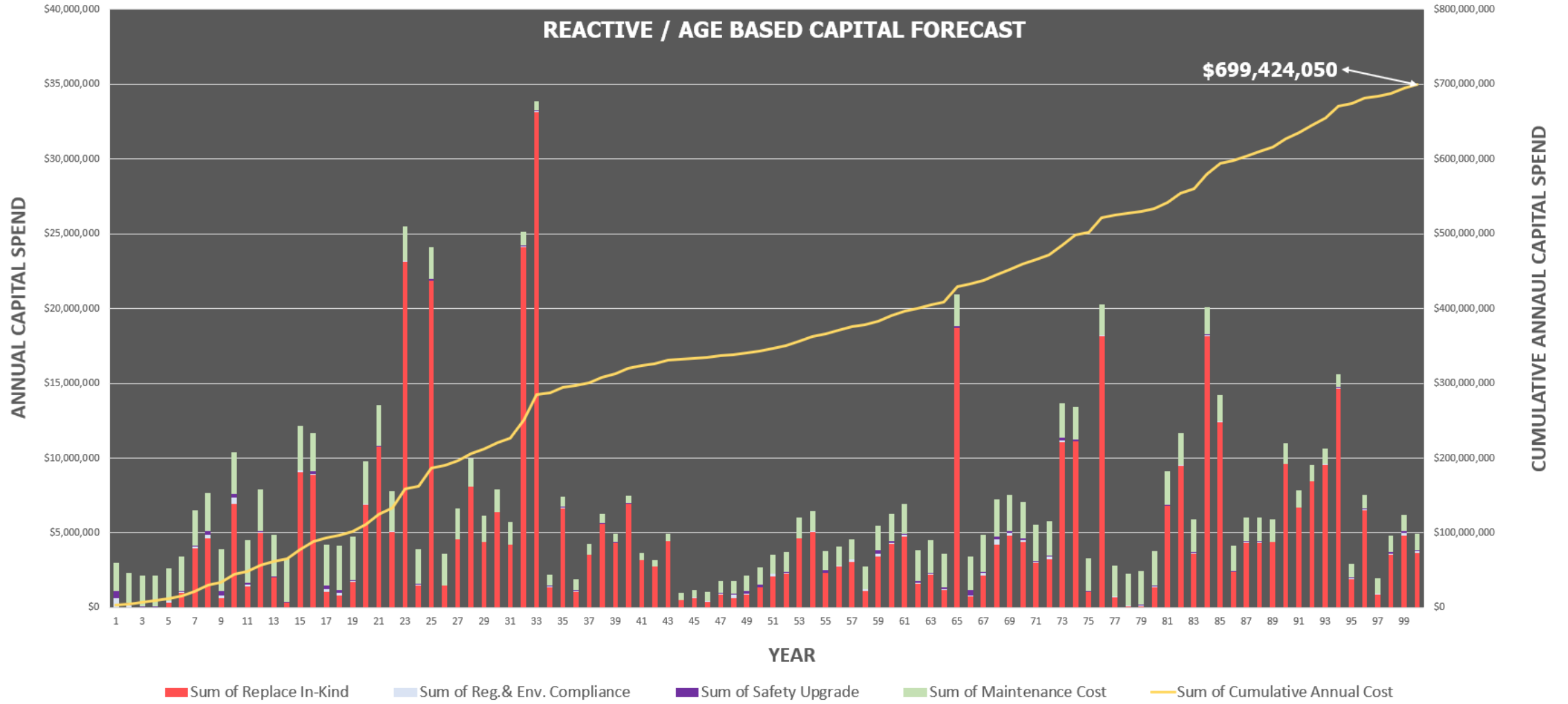


## Asset Management based capital strategy

CONDITION & RISK BASED RENEWAL TRIGGERS

### Asset management – Commercial strategy

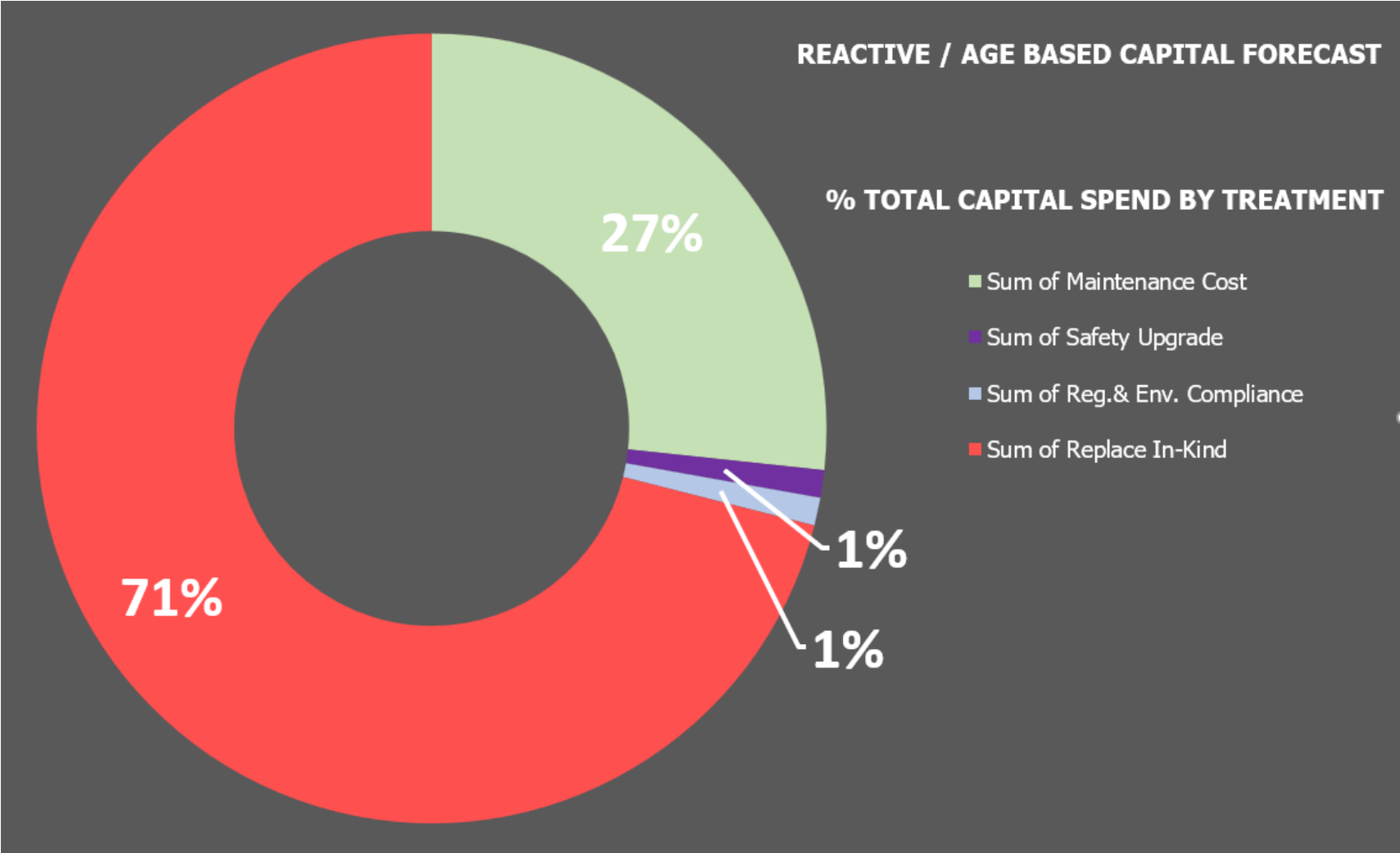


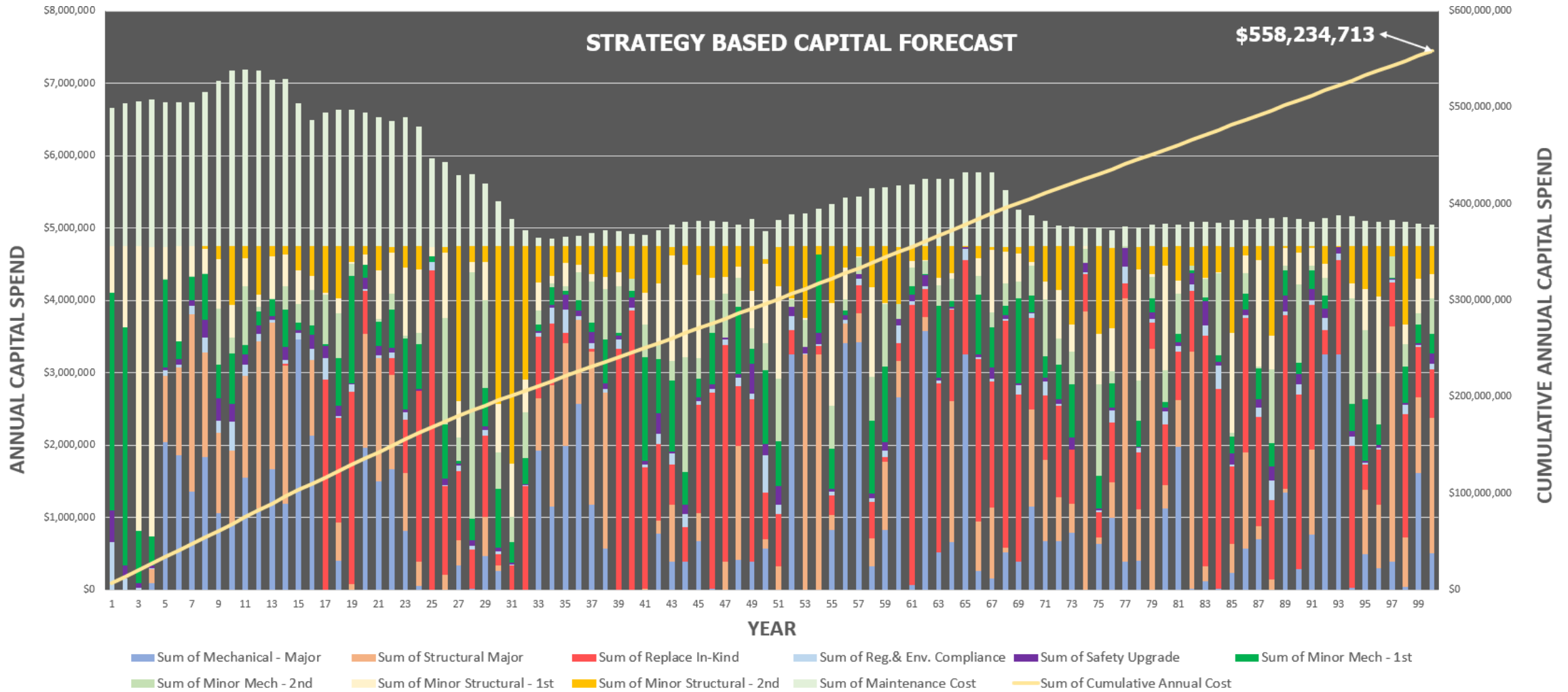


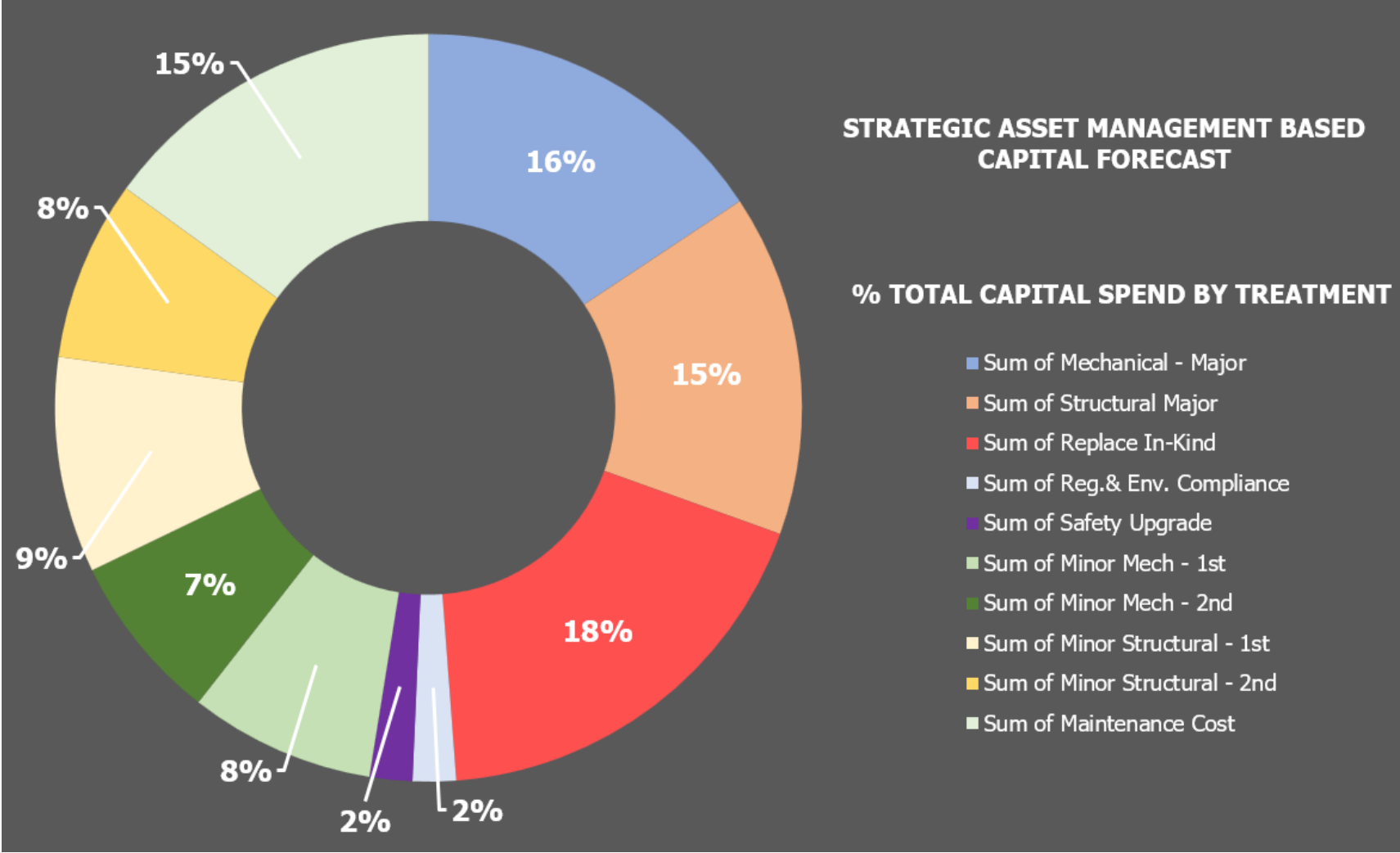


**REACTIVE / AGE BASED CAPITAL FORECAST**

**% TOTAL CAPITAL SPEND BY TREATMENT**







**BEGINNING ASSET PORTFOLIO LOS: 5.8 OUT OF 10.0**  
**TARGET ASSET PORTFOLIO LOS: 6.5 OUT OF 10.0**

**ASSET PORTFOLIO OUTCOMES:**

<u>CAPITAL STRATEGY</u>	<u>LOS</u>	<u>COST</u>
<b>AGE BASED</b>	<b>4.4</b>	<b>\$699 M</b>
<b>STRATEGY BASED</b>	<b>6.3</b>	<b>\$558 M</b>

**OUTCOMES**  
**INCREASE LOS BY 43.3% (97% OF GOAL)**  
**SAVED \$141 M**  
**ROI 25.2% (EXCLUDING VALUE OF LOS GAIN)**

# Underscoring whole life cycle thinking

The screenshot displays the VUEWorks GIS application interface. The browser address bar shows the URL <https://demo.vueworks.com/vueworks/Main/Main.aspx>. The application title is "Box Store".

**Left Sidebar:**

- Welcome, Todd Spangler
- Administration
- GIS Assets
- Document Link
- Service Requests
- Work Orders
- Resource Manager
- Assets

**Home Page Section:**

**Getting Started:**  
Read the Getting Started section in Help or just start exploring the map.

**To Select or Locate Assets:**  
Use the select tools above to map or the search button above.

**To Locate an Address:**  
Enter full or partial address information below to center the map at the address specified.

Owner:

No:  Street:

Buttons: Abutters, Locate, Service Calls, Work Orders, Clear

**Map Area:**

The map shows an aerial view of a commercial building and its surrounding parking lot. A yellow polygon outlines the building's footprint. Numerous yellow and pink circular markers are placed throughout the parking lot, representing individual assets. A toolbar at the top of the map area includes a "Select From" dropdown menu set to "Store 223".

**Select From: Select Assets**

- Add to selection
- Replace selection
- Remove from selection
- Keep

Click on map to select assets...

**Map Scale: 1:2,256**



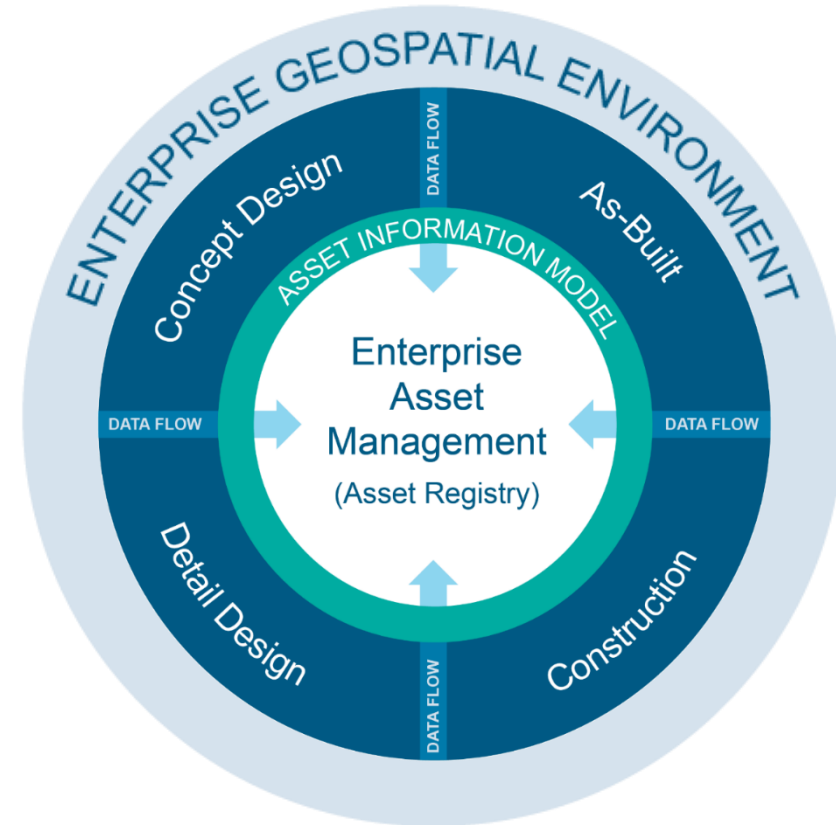


**ATKINS**

Member of the SNC-Lavalin Group

# Shift in thinking

*Top down approach...data centric approach*



# Thank You

## Points of Contact

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[tspankler@dtsgis.com](mailto:tspankler@dtsgis.com)