Jasper Ocean Terminal
South Carolina
Located on the Savannah River, the terminal is expected to be one of the largest ports on the east coast. We prepared the environmental impact statement to evaluate sea level rise, scenery, protected species and habitat, transportation, noise, vibration and air quality.

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

- 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
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

Where will we get the funding to do this?

How will I justify the cost?

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

How do I know where to start?

How will we manage the cultural change?

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…

NY MTA Concept of Operations

MARTA ISO 55000 Certification

Port of Melbourne
Asset Management Policy
Trends
Responding to disruption

<table>
<thead>
<tr>
<th>Disruption</th>
<th>Digitization/Automation</th>
<th>Maximizing/Expanding Capacity</th>
<th>Alternative Delivery &amp; Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>5G, sensors, IoT</td>
<td>Panamax/post-Panamax</td>
<td>PPP, DBOMF</td>
<td></td>
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<tr>
<td>Design response</td>
<td>Digital design</td>
<td>Digital twin</td>
<td>Digital rehearsal</td>
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<tr>
<td>Asset Management response</td>
<td>Data governance</td>
<td>Portfolio optimization</td>
<td>Whole life cycle thinking</td>
</tr>
</tbody>
</table>
System of systems

All connected

Data at the center

Waste not, want not
What does it mean to move from waterfall design to data centric design?
A Architect

E Engineer

C Contractor

O Owner
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

INVESTMENT VS. SAVINGS IN MILLIONS

Investment: $20, $45, $70, $115
Savings: $2, $4, $7, $5, $2

Year 1, Year 2, Year 3, Year 4, Year 5
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.
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.

Hover for information on icon.
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:

- Sum of Maintenance Cost: 71%
- Sum of Safety Upgrade: 1%
- Sum of Reg. & Env. Compliance: 1%
- Sum of Replace In-Kind: 27%
BEGINNING ASSET PORTFOLIO LOS:   5.8  OUT OF  10.0
TARGET ASSET PORTFOLIO LOS:   6.5  OUT OF  10.0

ASSET PORTFOLIO OUTCOMES:

<table>
<thead>
<tr>
<th>CAPITAL STRATEGY</th>
<th>LOS</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE BASED</td>
<td>4.4</td>
<td>$699 M</td>
</tr>
<tr>
<td>STRATEGY BASED</td>
<td>6.3</td>
<td>$558 M</td>
</tr>
</tbody>
</table>

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
Coming full circle - Whole life cycle thinking
Practical every day advantages
Shift in thinking
*Top down approach…data centric approach*
Thank You

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