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ADVANCES IN PORT MANAGEMENT  
**LAMAR UNIVERSITY**

**STRATEGIC ASSET MANAGEMENT:**  
**WHAT IS IT; WHY IS IT; WHO'S DOING IT; HOW TO DO IT**

**AAPA--MTMT**  
**OCTOBER 3, 2018**

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# Agenda

- SAM Overview
  - What
  - Why
  - Who
  - How
- Two Case Studies
  - Port of Oakland
  - Port of Vancouver
- Wrap-up and Discussion

# What is Asset Management?

- Strategic Asset Management is the “...coordinated activity of an organization to realize value from assets.” (ISO 55000)
- Basically, strategic asset management links the organization’s assets to its strategic and business goals
- It is not a project.
- It is a process—a business process, that demands for its success the engagement of the entire organization.

# Why do it?

- **Aging infrastructure**—Uncertain condition and life expectancy
- **Insufficient capital resources** – Scarce public K, cautious private K, inadequate internal K
- **Capital planning**—Ad hoc investment prioritization
- **“Preventative maintenance”** --Typically ‘run-to-failure’
- **Deferred maintenance**--Substantial but uncertain and too often ‘don’t want to know’
- **“Deficient and silo’d data** — Not enough, not the right kind, not in the right places
- **Uncertain level-of-service requirements**—What performance is required? By whom? For how long?
- **Establish defensible lease or monetization values**—Based on knowledge of asset value
- **Leaseholder responsibilities**—Ill defined, and not monitored
- **Human resources**--Retiring ‘Boomers’ and loss of institutional knowledge
- **Optimize risk management policies**—Again, with understanding of asset value

# Why do it? Part deux

- Unpleasant surprises—facility failure
- Lack of confidence by Board and senior management (how many emergency Board and/or CEO meetings in last five years?)
- Damaged reputation among critical stakeholders and customers
- Inconsistent, opaque, fragmented decision processes
- Suboptimal allocation of scarce capital—not based on risk assessment
- Higher than necessary repair and maintenance costs; longer down times
- Due diligence challenges – “what is the value of this facility?”
- Lower employee morale (fixing same thing over and ...)

# Who is doing SAM?

- Global: Port of Melbourne; Port of Rotterdam
- North America (partial list):
  - Port of Vancouver, BC
  - Port of Portland
  - Port of San Diego
  - Port of Houston
  - Port of Longview, WA
  - Ports America
  - Port of Montreal
  - NW Seaport Alliance (Port Of Tacoma And Seattle)
  - Port of Baltimore
  - Port of New York And New Jersey
  - North Carolina Ports Authority

# How?

- Two main approaches:
  - External, jump-start consultant/internal staff initiative
  - Internal business process built organically, bringing in outside consultant resources as needed
- Port of Oakland
- Port of Vancouver





**AAPA WEBINAR: PORT INDUSTRY STRATEGIC ASSET MANAGEMENT**  
**PoM SAM BUSINESS CASE, PRIVATISATION AND ISO 55001 CERTIFICATION**

**Domenic (Mick) Lo Bianco**

**Head of Certification Program**

**30 April 2018**

Port of Melbourne





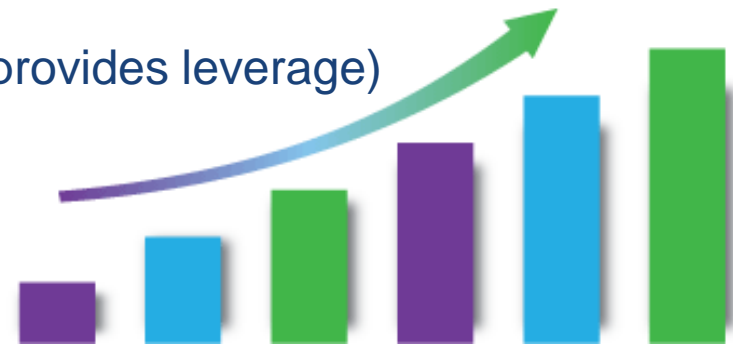
# Why Strategic Asset Management?

- Recognition of ageing asset base
- Age = worsening condition = increased risk
- Balance sheet pressure
- Understand future renewal liability
- Direct funds to assets in greatest need
- Asset planning based on whole of life costs
- Decision making based on Risk and LoS
- Optimise renewal decisions based on Rol
- Repeatability in decision making

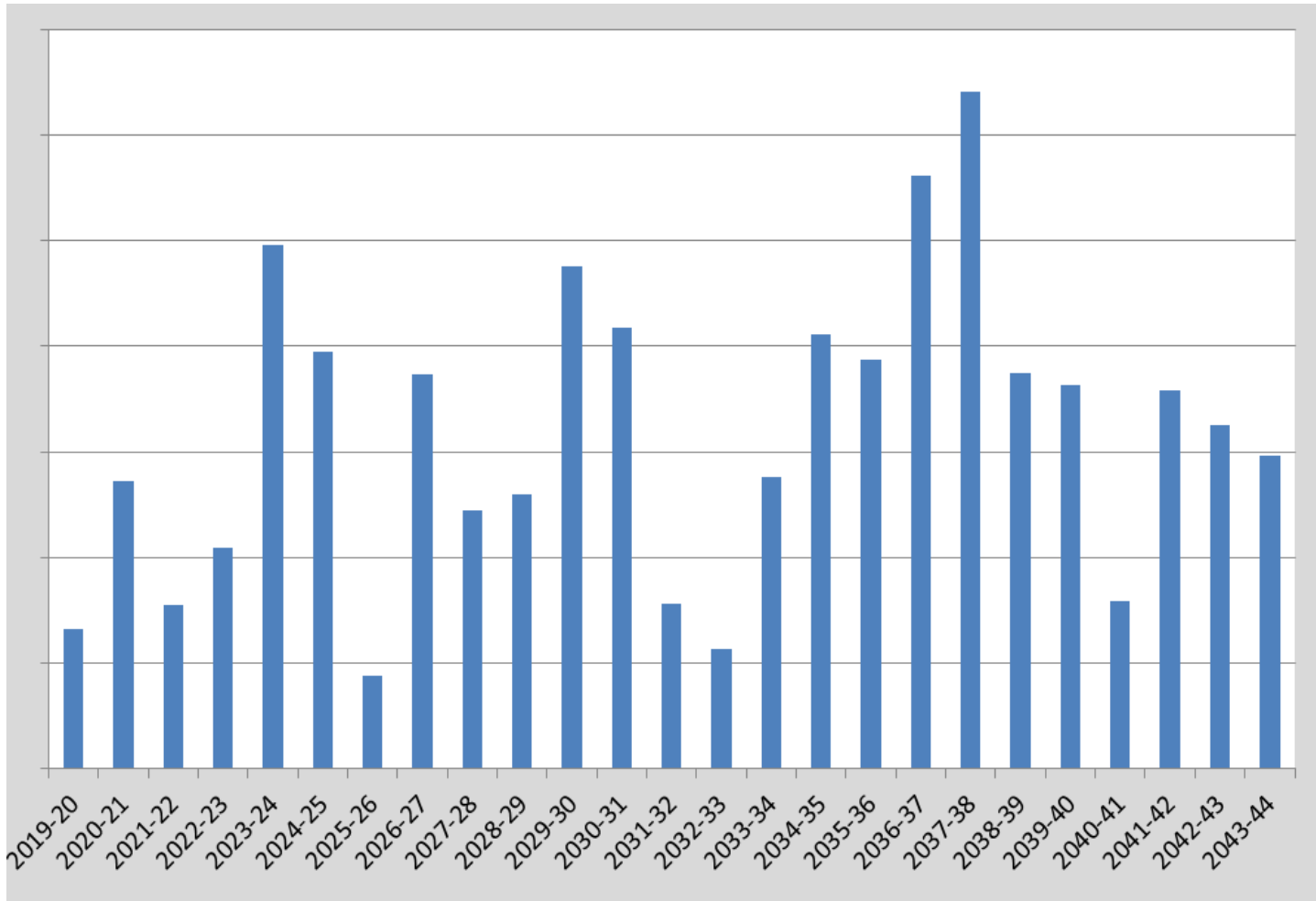


# SAM Business Case Considerations

- PoMC SAM Business Case developed 12 years ago
- Benefits: *Ongoing and long term. Some less tangible*
  - Opportunity cost of deferred capex (small % provides leverage)
  - Reduced risk profile
  - Reduced unplanned maintenance
  - Improved reputation and customer/stakeholder confidence
- Costs: *Relatively easy to identify. Most are one off set up costs*
  - People – headcount, training, consulting support, retention, staff competence
  - Processes - data capture/management, business process redesign, governance
  - Systems - technology, modelling software development
- Long term compounding benefits by embedding cultural change



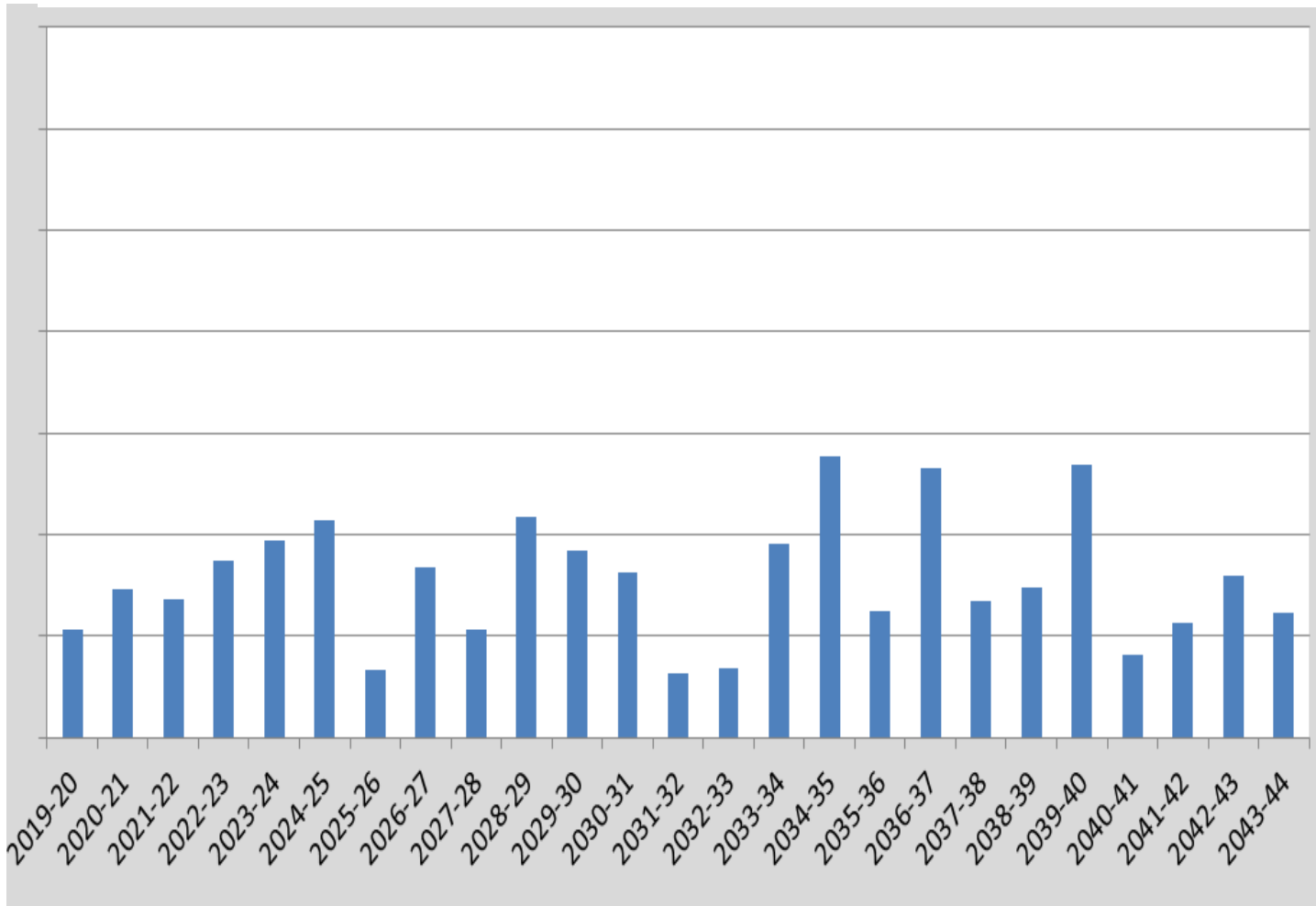
# SAM Application – Perpetuity Renewal Forecast



Port of Melbourne



# SAM Application – Optimised Renewal Forecast



Port of Melbourne







# Proactive & Predictive Waterfront Asset Management

## Port of Rotterdam Experience

**Henk Voogt, Asset Manager, Port of Rotterdam**

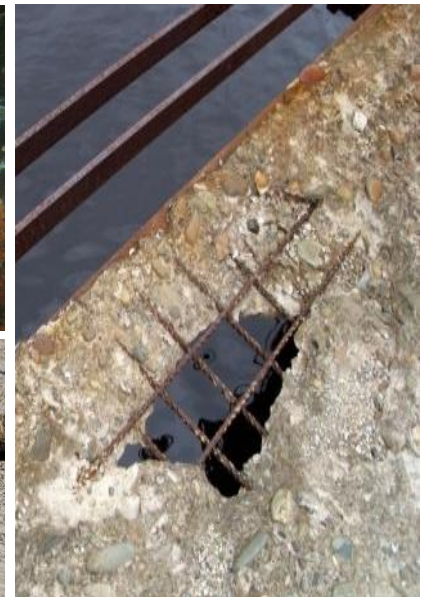
AAPA Webinar Strategic Asset Management



# Deterioration of Infrastructure Assets

## Nothing lasts forever...

- Deferred maintenance costs
- Inadequate capital allocation
- Run-to-failure repair & maintenance programs
- Inspections based on random observations
- Loss of competitive edge and productivity
- Safety/security concerns





# Asset Management - A Strategic Imperative



Waterfront structures like quays, jetties and wharves are the pivot of the business case



Income of the Port depends on the availability of the asset



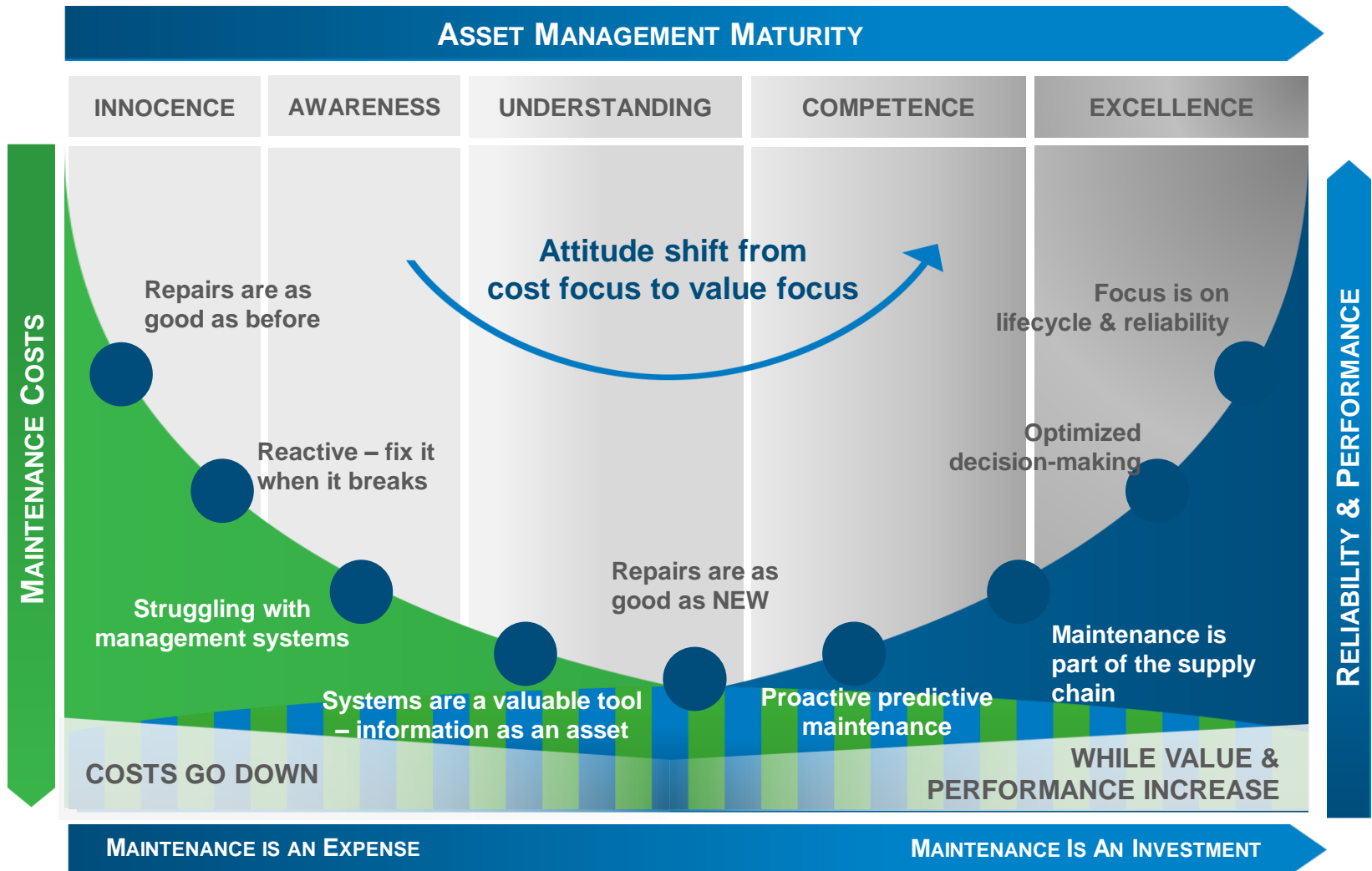
Loss of profit will decrease cash flow and thus the opportunity to invest in the future



Disruption to the tenant's business is the most unwanted situation



# Asset Management Maturity



# Four (4) Main Elements for a Good Asset Management Foundation

## MASTER DATA

- How many assets?
- Are dimensions known?
- Are specs and drawings available?
- Etc.

## RISK ANALYSES

- Assets must be available for service to its tenants
- What phenomena can endanger the asset's functionality?

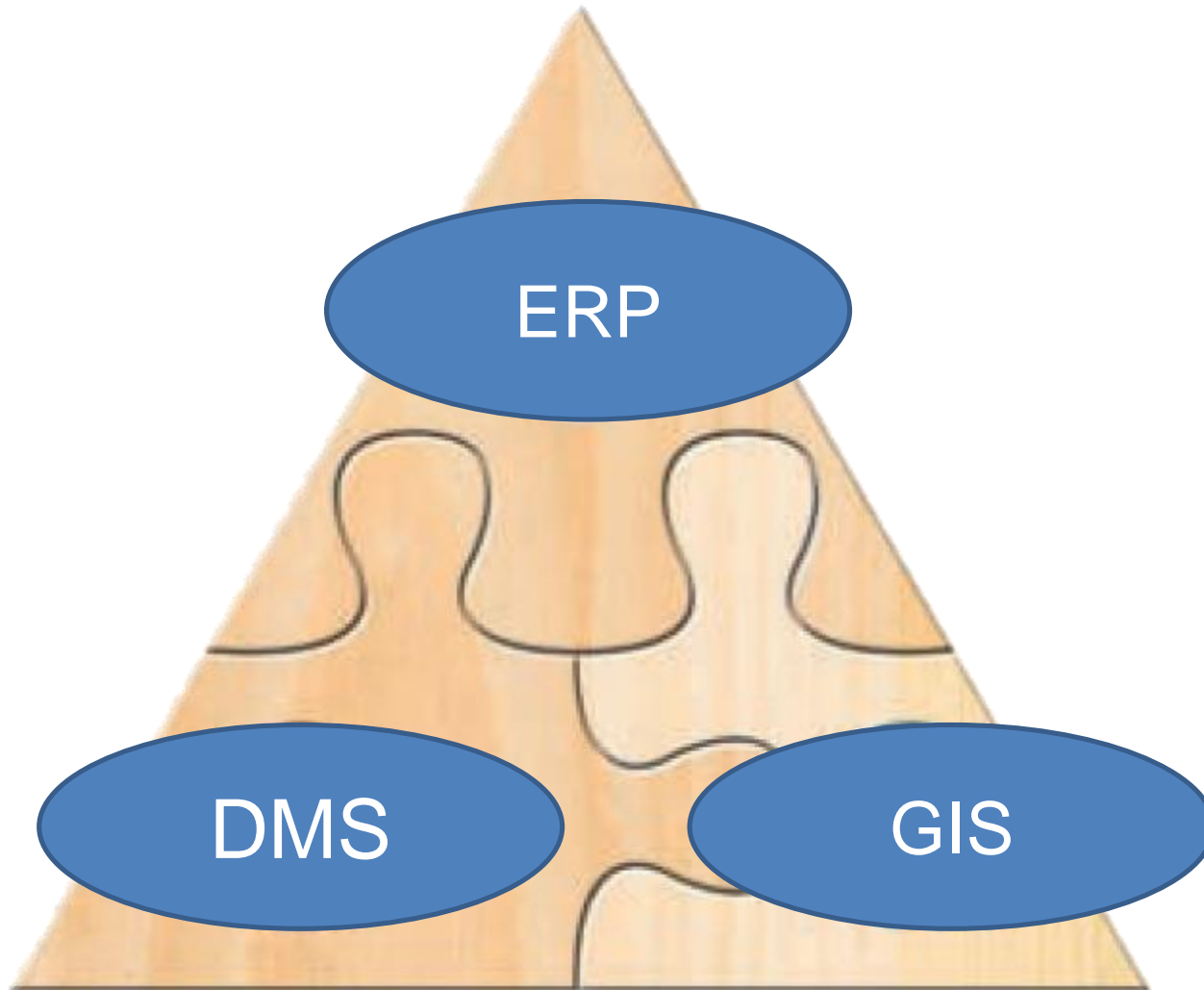
## PROCESSES

- Process must be well documented and implemented to ensure efficient management of assets

## BUSINESS VALUE

- Multi-criteria calculated figure that represents how much an asset contributes to the goals of the organization

# Main Elements for a Good Asset Management Organisation



# Asset Management Program: Stepstones

Step 1 : Document the assets owned and managed

Step 2 : Understand the current condition of the assets

Step 3 : Understand what budget is needed to catch up, keep up and move forward

Step 4: Understand what endangers the functionality : risk analysis

Step 5 : Understand the business value, what the contribution of an asset to the business goals

Step 6 : Establish the level of service for an asset and calculate the cost of service

Step 7: Prioritize the needed budget based on risk and business value

# Conclusion

- Building an asset management organization from zero base to going concern in .. year(s) ?
- Start small and grow,
- Start with your one million dollar quay wall
- Knowledge and Expertise is in the house
- Getting AM in the hearts and minds, tell the story
- On top of daily work
- Don't under estimate project management





# *ASSET MANAGEMENT PORT OF OAKLAND*



# What is Asset Management?

- ISO 55000 states that asset management is the “Effective control and governance of assets by organizations is essential to realize value through managing risk and opportunity, in order to achieve the desired balance of cost, risk and performance.”
- Boils down to really understanding all the capabilities of managing an organizations assets; the strategy, policies and processes in place, technology in place, information being gathered and how the data is being utilized, and ultimately the people in place implementing these programs.
- Asset Management vs. Managing Assets.



# Why the need for Asset Management

- Have a comprehensive understanding of the inventory of all owned assets for an organization.
- Have an understanding of the condition of all owned assets for an organization.
- Shift from a run to failure, reactive, or minimal based maintenance program to a more proactive, prioritized and optimized maintenance program for the organization.
- Prolong the life of the assets.
- Be able to set strategic goals to prioritize replacement and development of new capital infrastructure.
- Improved financial forecasting.

# Business Case

- Business case along with the asset management program should align with the mission and vision of the organization.
- Is it level of service based or failure based?
- Identified cost savings from efficiencies.
- Risk mitigation.
- What do you have as an organization to lose?

# Current State

- In plans to develop a strategic roadmap for asset management.
- Developing various asset maintenance programs to address immediate asset concerns; ie roadways, underwater structures (piles, sheet piles ect.) and roofs.
- Identifying resource and funding options.



PORT of  
**vancouver**

# Managing Port Assets Strategically

*Willy Yung, P.Eng., ENV SP  
Director, Engineering & Maintenance*

*October 3, 2018*

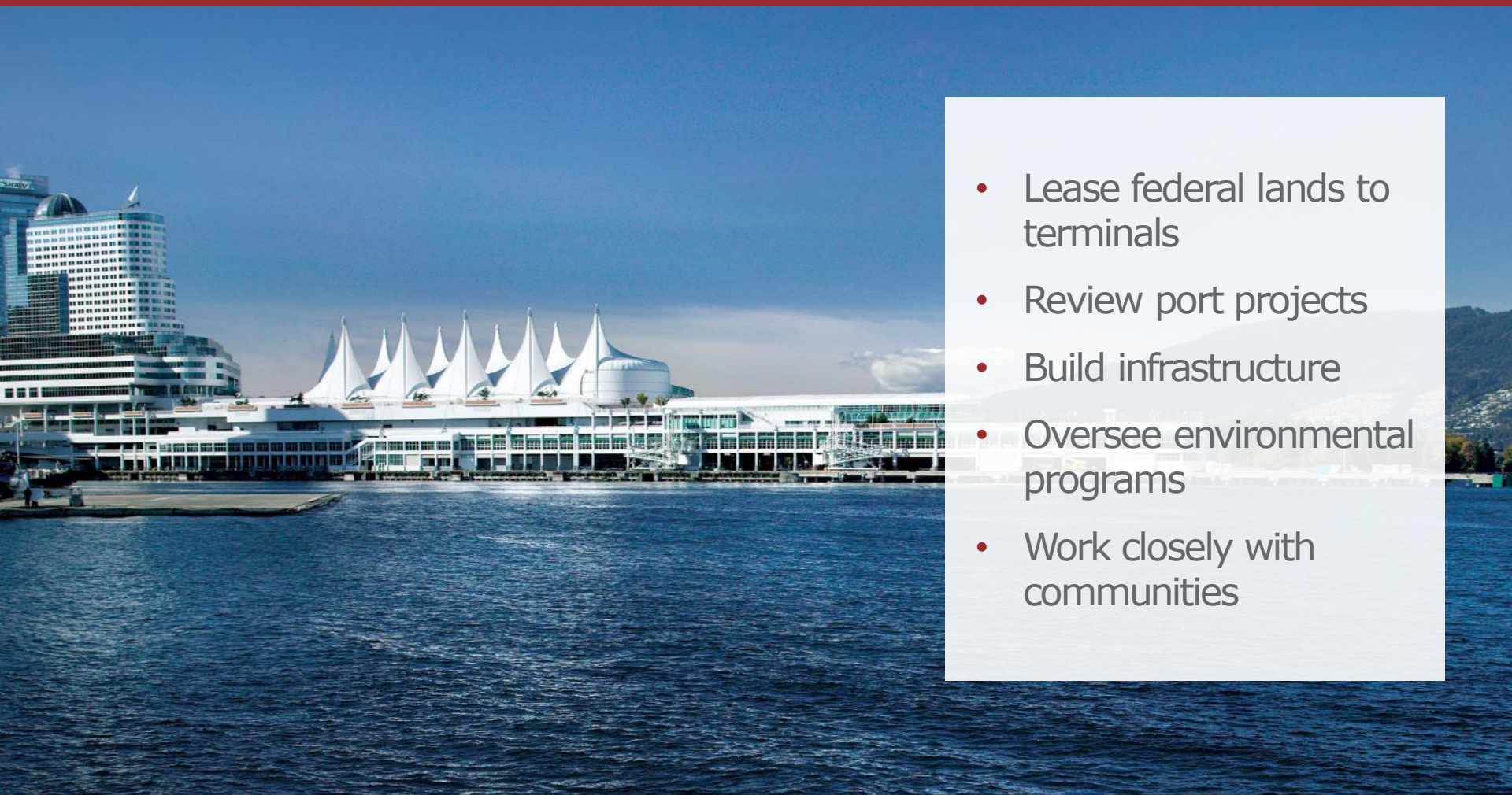


PORT of  
**vancouver**

## Presentation outline

- Port of Vancouver overview
- Infrastructure Asset Management
  - Program development
  - Directive
  - Asset inventory
  - Current works
  - Challenges

# Vancouver Fraser Port Authority enables Canada's trade



- Lease federal lands to terminals
- Review port projects
- Build infrastructure
- Oversee environmental programs
- Work closely with communities



# Port authority stewards federal lands and waters

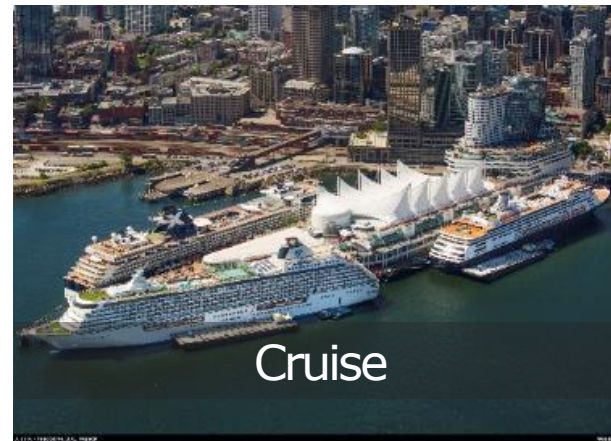
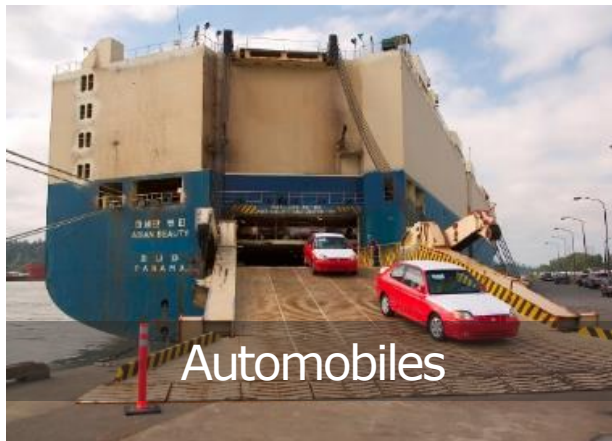
**2.3**  
million  
people



**16**  
municipalities



# Most diversified port cargo in North America



# IAM – Program development

- 2011 – Joined Strategic Asset Management Collaboration program led by Erik (evolved through AAPA's Finance and Facilities Engineering committee)
- 2011 – Launched Infrastructure Asset Management program
  - Ineffective/inefficient planning
  - Supply Chain Disruption

# IAM – Program development

- 2011 to 2013 – Implement IAM program works
  - Update asset inventory and categorized asset types
  - Reviewed and organized past inspection reports
  - Developed inspection templates and completed base line (L1) inspection of “owned” assets – condition ratings, GIS reference, photos, notes
  - Derived inspection frequencies – future year OPEX (L2/L3)
  - Derived replacement values and importance to operations
  - Developed IAM Directive (policy) - framework, procedures and application

## **DIRECTIVE STATEMENT**

- The Vancouver Fraser Port Authority (“VFPA”) shall manage the capital infrastructure assets it owns and maintains in a cost effective manner, utilizing a lifecycle costing approach in accordance with sound business practices. This will enable the VFPA to deliver an organized, planned approach to infrastructure design, construction, acquisition, inspection, repair & maintenance, rehabilitation, decommission and replacement, to preserve an inventory of safe, sustainable and operationally reliable infrastructure assets to meet the needs of its business sectors.

## **REASON FOR DIRECTIVE**

- To determine most cost-effective approach to managing an asset given customer needs, acceptable risk level and asset condition.
- To provide definitions, management approach, responsibilities, and other factors pertinent to infrastructure assets.
- To address organizational considerations, including infrastructure age and useful life, facility reinvestment budgets and schedules, lifecycle costing for new and existing assets, changes in facility utilization, unforeseen major maintenance, disaster planning, sustainability, and business optimization and resilience.



# IAM – Asset inventory

- 750 +/- assets in total
- Categorized into 14 classes

**Dock Structures**

**Overpasses**

**Rip Rap**

Water Systems

Sanitary Systems

Electrical Systems

Equipment

**Buildings**

**Roads**

**Terminal Pavement**

Storm Systems

Communication Systems

Natural Gas

Other (*site fencing, signs, etc.*)

# IAM – Current works

2014 - Concrete Structures Program

2016 - Road Maintenance Program

2017 - Shoreline Slope Protection Program

- Forecast future repair, maintenance and rehabilitation needs for future year planning and budgeting
- Determine inspection frequencies for monitoring performance

2018 – IAM Software (JDE module)

- Integrate Eng & Acct asset data to ensure data integrity
- Simplify inspection scheduling and financial planning

Program adherence – Annual audit committee report; external audits

# IAM - Challenges

- Limited budgets – OPEX/CAPEX; competing corporate needs
- Prioritization between competing assets
- Business case - life cycle cost analysis, including social and environmental needs
- Determining acceptable level of risk and impact to operations
  - Deterioration risks: wear and tear or failure
  - Operational risks: changes in operational requirements
  - Environmental risks: fire, storms, floods, earthquakes
  - External risks: power failure, spills, labour disruption, and traffic accidents

# IAM - Challenges

- Estimating useful life/future asset utilization
  - Sea level rise (1m by 2100?) – location, service life (design elevation)
  - Design events – more intense and frequent wind, rain storms, snowfall, temperature extremes
  - Changes in functional needs - vessel size growth (berth length and depth, fender and mooring loads, throughput – total and peak)



# Thank you

[www.portvancouver.com](http://www.portvancouver.com)



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# Questions? Comments?

