



Proactive & Predictive Waterfront Asset Management

Port of Rotterdam Experience

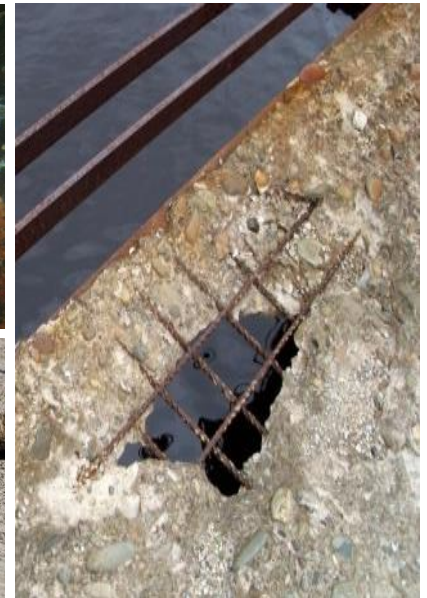
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Deterioration of Infrastructure Assets

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 - More Challenges



More intensive use of



ships

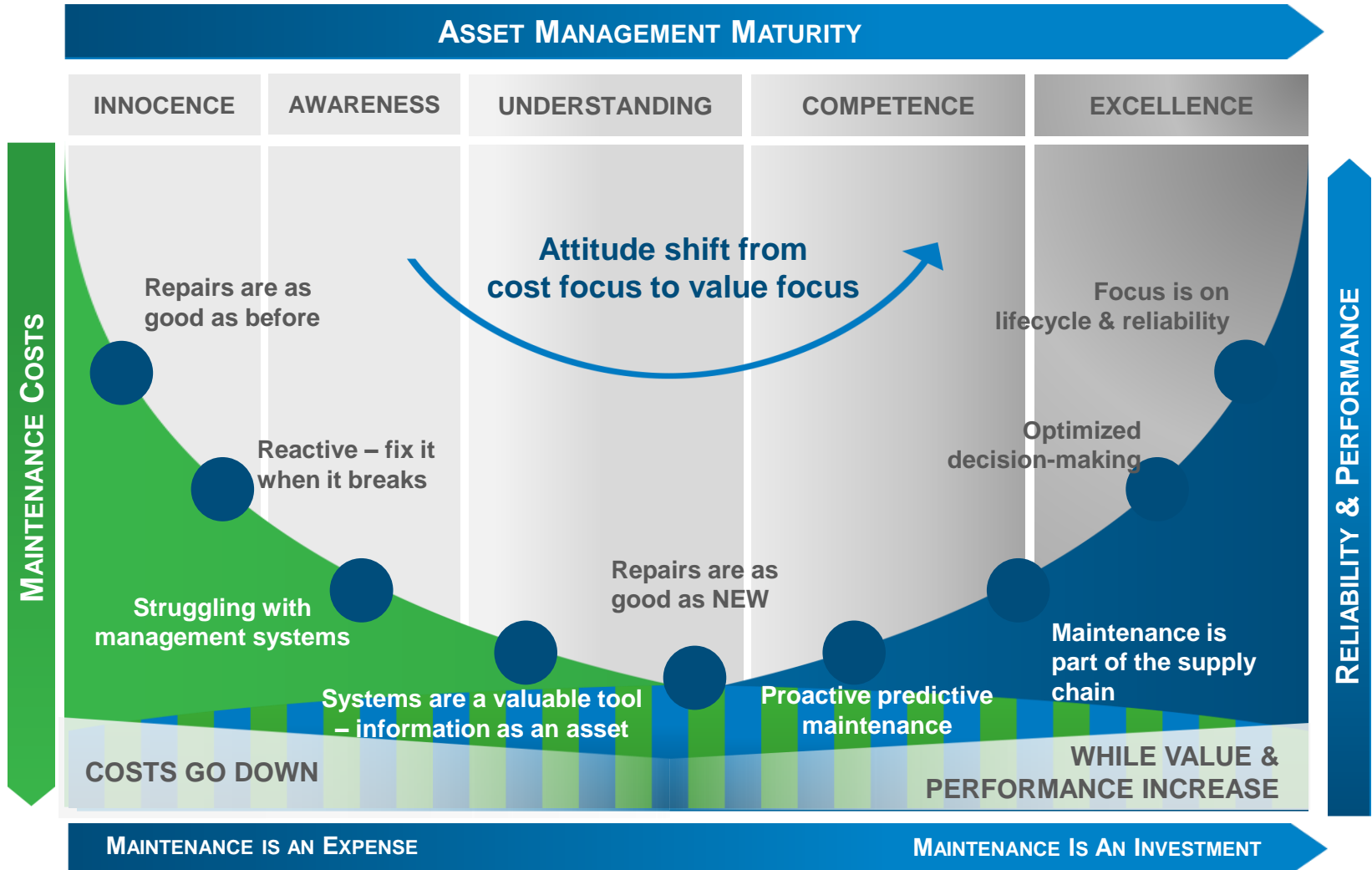


Justification of maintenance plan to board of directors



Extension of tenant leases

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?

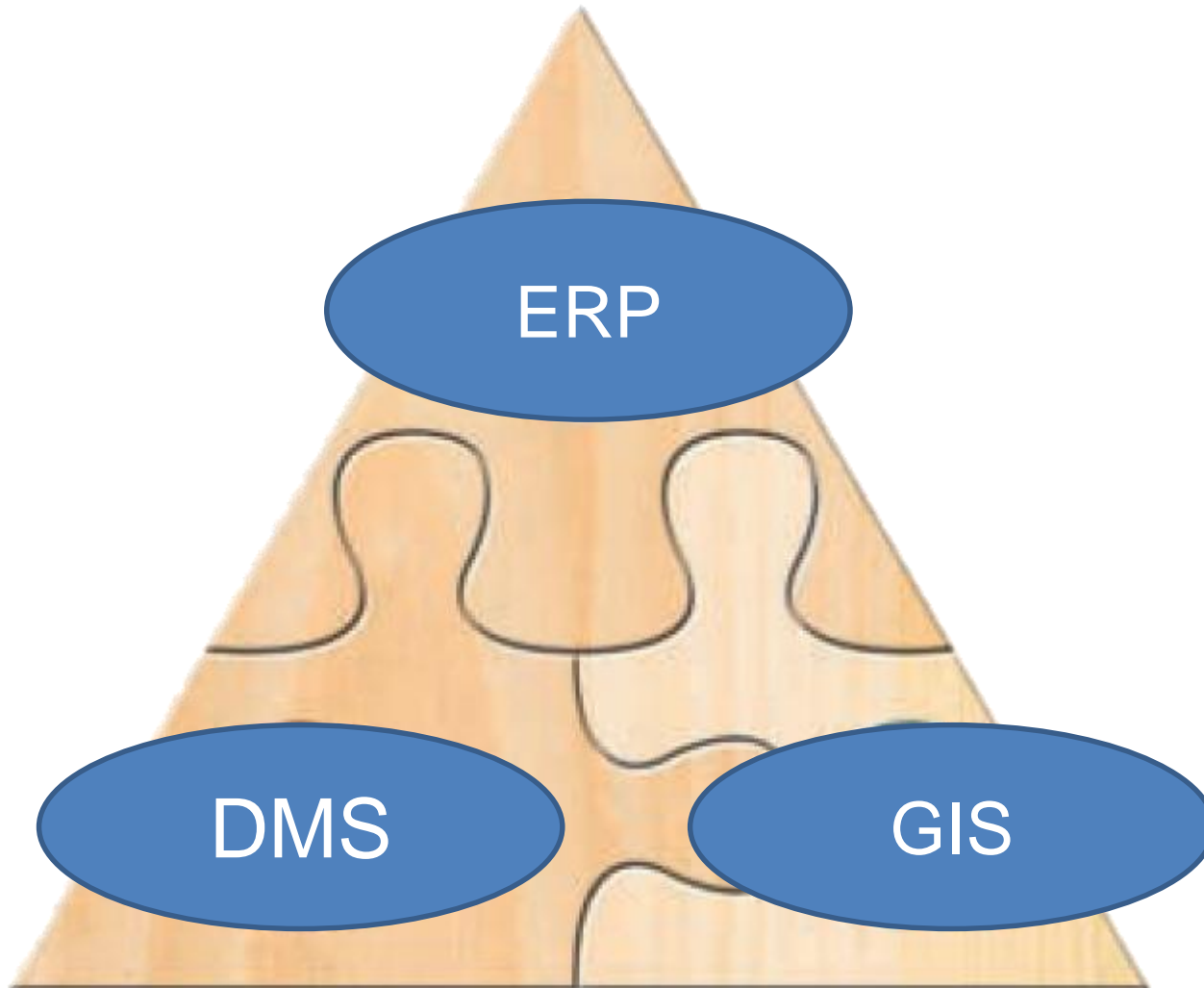
PROCESSES

- 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

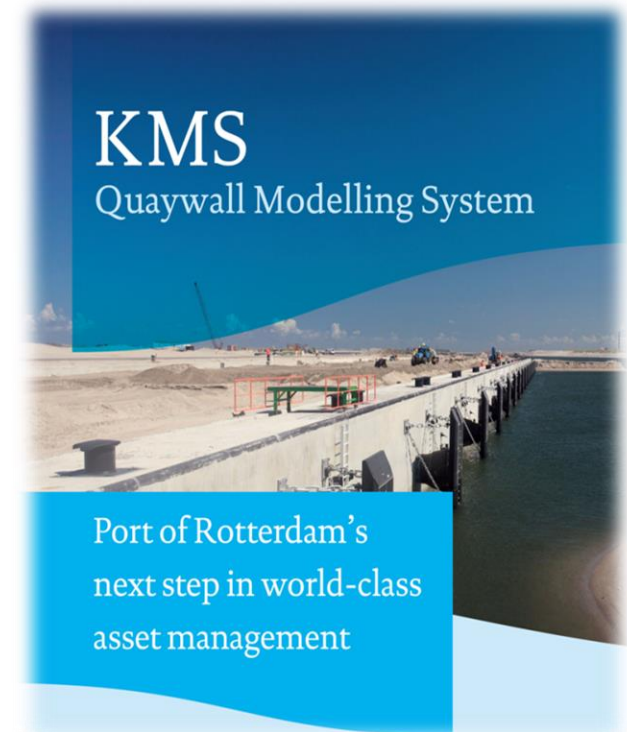


What is our Direction – Now and in the Future?

- Once the baseline/foundation is in place, the following questions still need to be answered:
 - How safe is the structure?
 - What does it mean for the tenants?
 - How do we prioritize?
 - What is the best time to intervene?
- The self evident-facts to have in mind are:
 - Cutting costs will directly impact the long-term performance of an asset
 - The condition determines the availability of an asset, not its age

From Model to KMS

- Port of Rotterdam developed in partnership an asset management tool called KMS, that:
 - Uses the results of **deterioration models for concrete and steel** and compares it with the “end of contract” date
 - Identifies and ranks **the risks** that endanger the functionalities of the structure
 - Uses **the business value** of a quay wall to clarify its maintenance priority

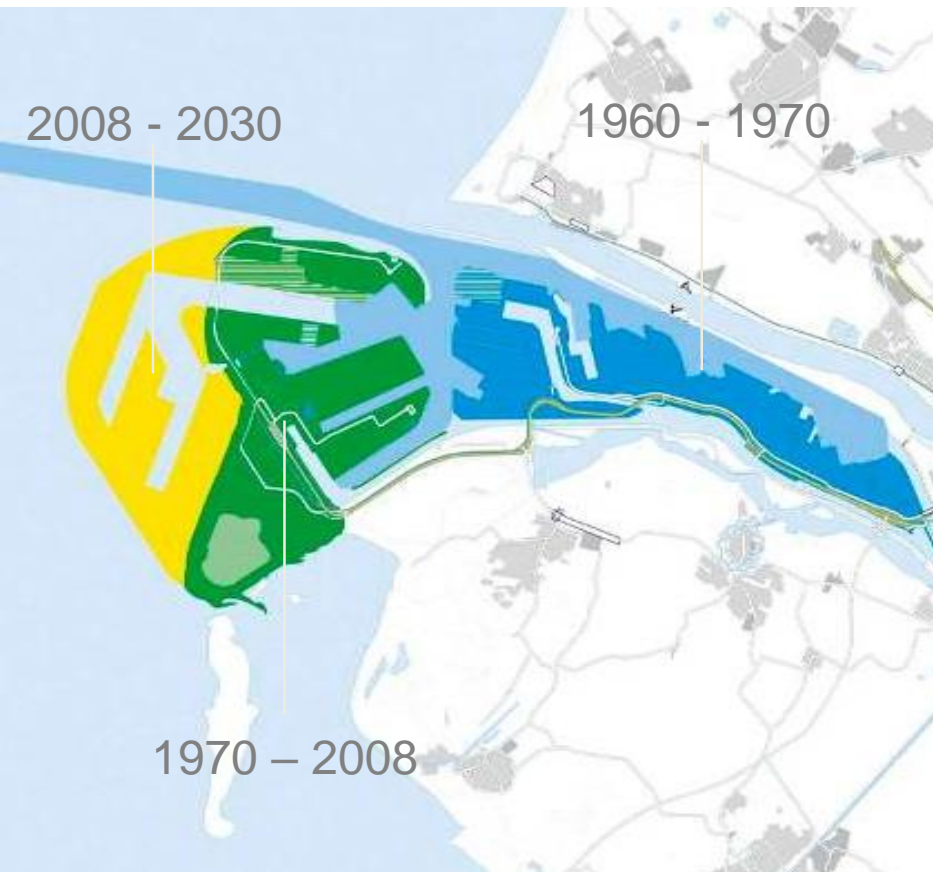


Benefits

- **Transparency** in the annual budget for maintenance
- **Reliable assessment** of the performance and residual service life of marine structures
- **High-precision data** to help extend the service life
- **Insight into the costs associated** to maintenance and repairs of concrete and steel
- **Helps to effectively plan** the maintenance program of port infrastructure which represents significant savings for owners from reduced commercial inactivity related to repairs, maintenance and construction
- **Just-in-time inspections** – not too early or not too late (reducing inspection costs and/or needed resources)

Return on Investment (ROI)

With More than 70 KM of Quay Walls...



**An Estimated
2.1 Million Euros
in Savings
Between
Inspections**

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

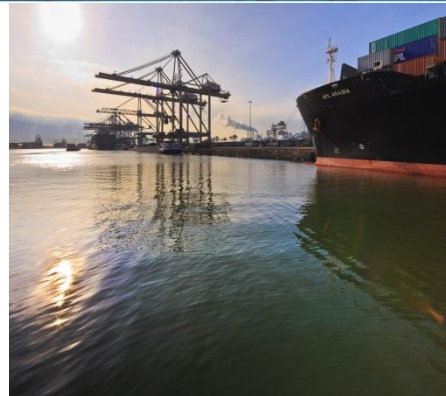
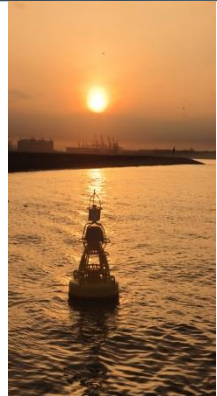
Step 6 : Establish the level of service for an asset and calculate the cost of service

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

Wrap up & 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

Port of Rotterdam - KMS



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