The relationship between risk and asset management

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Agenda

This presentation aims to raise awareness of:

• What is ‘asset management’
• What is ‘risk management’
• Some of the key risk-based processes used in the development of asset management plans.
What are assets?
Where does asset management fit?

What do companies do?

Stakeholders  ➔  Services/Outputs  ➔  Concept

Business Planning

with certain Risk Profiles  ➔  Investment Options

Plan  ➔  Acquire  ➔  Operate, Maintain, Improve  ➔  Dispose

where the best option leads to

Asset Management Planning

Services/Outputs
The asset lifecycle

The scope of asset management includes every stage of the asset lifecycle

- The asset lifecycle integrates organisational functions including Planning and Finance, Project delivery, Budgeting, Procurement, Maintenance & Operations and Disposal
- ‘Systems engineering’ is a tool that enables a complex multi-disciplinary project or activity to reduce the risk that the ‘services’ will not be delivered (that is, be confident that they will be)
Asset lifecycle management – key risks

- Select services (and performance) that are not needed
- Select solutions that cannot meet service needs
- Poorly specify needed assets
- Assets do not meet the specification
- Assets do not deliver the services
- Difficult to improve or manage change to assets
- Get unexpected surprise at disposal of assets

Non Asset Solution

Concept
Specify
Acquire
Operate & Maintain
Improve
Dispose

Business Plan
Financial Approval
Commissioning
Change Approval
De-commissioning
How is risk apparent?

What is engineering?
The controlled transformation and use of energy.

Where functional performance is:
1. Acceptable performance
2. Acceptable risk (safety, environment, financial etc)
3. Required reliability & availability & maintainability
How is risk apparent?

- System (assets & people in use)
  - with imperfections in design, manufacture & installation lead to...
  - Parts that fail
    - that releases...
    - Energy
      - that is now uncontrolled...

- With a Failure Characteristic Curve
- Asset Management Plans
  - that are mitigated by...

- Probability
- Consequences (Safety, Production Environment)
  - each with a certain...
  - a number of...
  - that determines...

scenario
FMEAs – a risk-based analysis process

Business Requirements → Asset Solutions → Functional Performance

System Functions → Equipment Functions

Risk:
- Failure Modes
- Failure Effects
- Failure Probability

Consequence:
- Probability
- Operator Actions
- Maintainer Actions
- Redesign Actions

Preventive Actions → Identify Mitigation

Reliability Block Diagram

High Risk (H) → Reduce Risk

Low Risk (L) →
Why is risk such an important tool?

A short history:

- Pre 1928 – Newtonian physics and Certainty
- Post 1928 – Quantum mechanics and Uncertainty/Probability
- Post 1946 – The explosion of Uncertainty/Probability and Risk

The identification and management of risk is the fundamental basis that supports asset management.

“Risk is the only tool the modern world has, that can make the future come true”

*Peter M Kohler*
Asset management

Coordinated activities of an organisation to realise value from assets

*ISO 55000 Asset Management*
Risk and asset management

Conclusion

• Asset management (AM) is applied risk management, associated with the concept, design, operation and support of physical assets
• Risk management (within AM) applies to the assets of all operators (there are no other tools!)
• Application of AM reflects the level of risk and the business context (there is no one-size-fits-all approach)
• Good AM practice:
  – has been identified
  – is documented
  – is demonstrably practical
  – makes business sense.
Risk and asset management

Conclusion

For more information, see the supporting paper:

Sharing practice: A discussion on the relationship between risk and asset management

Any questions?