ASSET MANAGEMENT AND ISO 55001

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AGENDA

- Introduction to Copperleaf
- ISO 55000 Today
- The Seven Subjects of Asset Management
- Asset Management Ecosystem
- Conclusions & References
WHO IS COPPERLEAF

• Decision Analytics for asset intensive organizations
• Asset Investment Planning & Management
• Based in Vancouver, Canada
• Regional HQ in Singapore
ISO 55000 IN THE WORLD

Organizations per Sector

- Electrical Utility
- Facility Management
- Government
- Infrastructure
- Mining
- Ports & Airports
- Water & Wastewater
- Engineering/Construction
- Gas Utility
- Health
- Manufacturing, Process, Pharma
- Oil & Gas
- Transportation

Organizations by Country/Region

- China
- Hong Kong
- Malaysia
- Singapore
- Middle East & Africa
- The Americas
- India
- Japan
- Philippines
- Australia/New Zealand
- Europe

Known certified organizations (Nov 2018): 199
ISO 55001 – ASSET MANAGEMENT SYSTEM

• Value
  – Assets exist to provide value to the organization and its stakeholders
  – Value can be tangible or intangible; positive or negative
  – Asset management enables realization of value

• Alignment (“Line of Sight”)
  – Asset management objectives align with organizational objectives
  – Asset management decisions, plans and activities (technical, financial and operational) collectively enable the achievement of AM objectives

• Leadership
  – Leadership and culture are determinants of realization of value
  – Roles, responsibilities and authorities for AM are clearly established
  – Employees are aware, competent, and empowered

• Assurance
  – AM gives assurance that assets will fulfill their required purpose
  – Assurance is derived from effective governance, controlled processes and robust management of risks
  – Monitoring, evaluation, review and continual improvement
THE NEW ISO 55002:2018

- Published in October 2018
- Expanded detailed guidance for each clause
- Clarification of the contribution of each requirement to the four ‘fundamentals’:
  - Value
  - Alignment
  - Leadership
  - Assurance
- How to apply the requirements to the key domains:
  - Asset Portfolio
  - Asset Management System
  - Asset Management activities
- New guidance on 7 ‘cross cutting’ subjects
1 - SCOPE OF THE ASSET MANAGEMENT SYSTEM

Importance of clearly defining the scope (boundaries) of the AMS

- The scope of the AMS is influenced by:
  - organizational design
  - roles & responsibility
  - decision making
  - nature and criticality of assets
  - contractual relations in outsourcing
  - period of applicability
  - interrelationship with other management systems
2 - VALUE

• An asset is an item, thing or entity that has potential or actual value to an organization
• Assets exist to provide value to the organization and its stakeholders
• Asset management is the coordinated effort of an organization to realize value from assets
• Value is important because:
  – Optimal decision making requires a way to compare options
  – You can only manage what you can measure
  – Stakeholders want to quantify (and verify) outcomes
**ALIGNED OBJECTIVES**

- Everybody must understand the organizational objectives
- A **value framework** can facilitate and capture the alignment of all stakeholders
- Use value metrics to connect actions to objectives
THE NEED FOR ALIGNED OBJECTIVES

Different perspectives, focus, priorities, data, systems, etc.
3 - STRATEGIC ASSET MANAGEMENT PLAN (SAMP)

- SAMP helps align everybody
  - Roles along the lifecycle of the assets
  - Various functional groups
  - Forces all to agree on a common plan
- Translate general business objectives into more tangible AM objectives and plans
  - Ensures the long-term objectives are not lost
  - Reconcile with bottom-up reality
- Express the value of an asset portfolio in economic terms
  - Highlight risks, long term consequences, etc.
  - Sets the rules of the game
- Can expose/highlight needs for change
THE SAMP IN CONTEXT

Strategic Alignment

Organisational Objectives
Where is the business going & why

Asset Management Policy
Commitments, principles & controls

Asset Management Objectives
What must be achieved, and by when

Strategic AM Plan (SAMP)
Overall long-term intentions decision criteria & preferred methods

Asset Management Planning
What is worth doing and when

Project Delivery and O&M Delivery
Who does what, when, how

Value
LONG TERM STRATEGIC VIEW
4 - DECISION-MAKING

- Consistent, repeatable and documented processes
- Understand **how and why** decisions are made
- Foundation of optimal decision-making under constraints
5 - RISK MANAGEMENT

Model the Long Term
Optimize the Short Term
Funding Needs & Shopping List
Decision-Making & Execution

Value
Growth Technology Efficiency Competition

Condition Degradation Curve
Likelihood of Failure Curve
Consequence of Failure
Asset Condition Forecast
Asset Risk Forecast
Informs Investment Decision
RISK AND VALUE

NPV = 5,036
6 - FINANCE

- Importance of relationships between financial and non-financial (e.g. technical) functions for asset management
- Accuracy and traceability between the financial and non-financial data and information across the organization is imperative to support consistent decision-making
- Monetization of value:
  - Risks
  - Benefits
  - Costs

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<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
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<td>On-Site first aid injury</td>
<td>Injury requiring medical attention / near miss</td>
<td>Injury requiring medical attention / lost time</td>
<td>Multiple injuries requiring medical attention / lost time</td>
<td>Permanent disability</td>
<td>Fatality / multiple fatalities</td>
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<td>Environmental</td>
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<td>Minor impact / contained on-site / simple remediation</td>
<td>Minor impact / contained / moderate remediation</td>
<td>Limited impact offsite / contained / moderate impact on site</td>
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<td>11 → 22 GWh</td>
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<td>Generation</td>
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THE COST OF NOT DOING

System Cost Impact

- 2012 Present Value ($millions)
- 1800
- 1600
- 1400
- 1200
- 1000
- 1200
- 800
- 600
- 400
- 200
- 0

Unconstrained Funding
Stable Program
2010 IPR Recommended Plan
Reduce Funding 10 Percent
Reduce Funding 20 Percent

- 386m
- 547m
- 688m
- 962m

Investment Cost Savings
Increase in Risk

ASSET
INVESTMENT
RISK
ASSET INVESTMENT PLANNING & MANAGEMENT

INTEGRATED INVESTMENT STRATEGIES

ASSET LIFECYCLE STRATEGY
(<~20 YRS)

INVESTMENT PLAN
(<~5 YRS)

BUDGETING
(<~2 YRS)

OPERATING
(IN FLIGHT)

ASSET BASE

SUSTAINMENT EMERGENT

CANDIDATE INVESTMENTS

EXPANSION / GROWTH
OPERATIONAL IMPROVEMENTS

ASSESS VALUE

PREDICT

ASSET RISK UPDATES

OPTIMIZE

OPERATING UPDATES

MANAGE

ASSET RISK UPDATES

PREDICT

OPTIMIZE

MANAGE

ASSET RISK UPDATES

PREDICT

OPTIMIZE

MANAGE

ASSET RISK UPDATES
7 - SCALABILITY

- Organizations of any size can benefit from an Asset Management System
- Scale the scope and requirements to the organization’s complexity, context and asset portfolio
- Also applies to the processes and IT systems:
ASSET MANAGEMENT ECOSYSTEM (EXAMPLES)

FINANCIAL SYSTEMS (ERP)
- MM & BPC
- Financials
- Axapta

WORK MANAGEMENT (EAM/CMMS)
- EAM, CO & IP/BW
- Maximo
- Ellipse

ASSET DATA COLLECTION

APM
- Meridium
- Bentley Inavoryze
- Bentley
- DMM

GIS
- Smallworld
- ArcGIS
- GTech

PROJECT MANAGEMENT
- PS
- PPCMS
- Alfabet
- Primavera P6, JD Edwards
- PPM

DECISION ANALYTICS
- Copperleaf C55

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8 - CONCLUSIONS

• Asset management is relevant to all organizations – small or large, new or experienced
• Risk and value are central to modern asset management techniques
  – Risk drives the need for sustainment interventions
  – Value is core to all investments
• A value framework captures the strategic objectives
  – Translates the big picture into measurable items
  – Aligns all internal and external stakeholders
• Decision-making must be understood and supported by all
  – Value frameworks make the process transparent and consistent
• A long term view is essential
  – Both to predict asset needs and justify investments
• Where will you spend your last 10000 ¥?
GOOD REFERENCE MATERIAL
THANK YOU!

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More information:

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thelAM.org

www.ceati.com