Asset Management Lessons from Peers

Results and Best Practices International Transmission Asset Management Study 2016 (ITAMS 2016)

Johan Huisma, June 2017
Introduction

It is acknowledged across various industries and business sectors globally that commercial success is dependent on the ability to coordinate all aspects of the business towards achieving common goals and objectives. Top level strategic management must align with daily operations and asset infrastructure management. Effective asset management plays a central and critical role in bringing all the business disciplines together and ensuring the most profitable balance of benefit, cost and risk.

In 2016/17 eleven TSOs from the USA, Canada, Australia, Finland, Belgium, Italy, Slovenia, United Arab Emirates, Oman and Saudi Arabia joined the International Transmission Asset Management Study (ITAMS) to compare Asset Management systems and processes and share knowledge and experience with a view to targeting and implementing improvement programs based on industry best practice and compliance with ISO55001 requirements.

This eBook presents an overview of the ITAMS program, the program’s most recent results, and concludes with some major take outs of this cycle.

Enjoy your journey of discovery,

Johan Huisma
Program Manager ITAMS
UMS Group Europe BV
Chapter 1

ITAMS

The International Transmission Asset Management Study (ITAMS) is a multi-company initiative, designed for the leading companies in the area of Asset Management. It creates insights into leading practices for improving the effectiveness of Asset Management and is aligned to ISO 55001. ITAMS has been set up as a learning consortium and is supervised by an Executive Advisory Board comprised of participants. ITAMS was launched in 2010 and is performed every two years. A cycle ends with a results/best practices conference designed for sharing knowledge and addressing opportunities and improvement initiatives.

The ITAMS program:

- Focuses on four areas: Operating Model; Process; Competences; Information Management & Enabling Technology.
- Benchmarks the maturity, alignment and completeness of the AM-system;
- Shows the effectiveness of asset management;
- Shows how (well) asset management is performed, organized and supported, and allows companies to learn from the best practices;
- Covers quantitative, specific and practically applicable elements, complementary to ISO 55001.
During the last four cycles of ITAMS the following companies participated:

<table>
<thead>
<tr>
<th>Europe</th>
<th>North-America</th>
<th>Australia</th>
<th>Middle East</th>
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</thead>
<tbody>
<tr>
<td>Elia (BE)</td>
<td>SaskPower (CA)</td>
<td>TransGrid (AU)</td>
<td>TRANSSCO (AE)</td>
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<td>Fingrid (FI)</td>
<td>TVA (US)</td>
<td>ElectraNet (AU)</td>
<td>OETC (OM)</td>
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<td>ELES (SL)</td>
<td>BC Hydro (CA)</td>
<td>TRANSPOWER (NZ)</td>
<td>DEWA (AE)</td>
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<td>Terna (IT)</td>
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<td>GCCIA (SA)</td>
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<td>TenneT (NL)</td>
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<td>TenneT (DE)</td>
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<td>Swissgrid (CH)</td>
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<td>EirGrid (IE)</td>
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<td>MAVIR (HU)</td>
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<td>LANDSNET (IS)</td>
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During the last run (ITAMS 2016) eleven companies participated:
Chapter 2

Results ITAMS 2016

The results are based on an assessment of companies asset management systems and practices by gathering data from four key areas: Operating Model; Process; Competences; and Information Management & Enabling Technology (IM&ET). The results are analyzed and presented together with findings and recommendations in a report of approx. 200 pages at high level and in detail. The high level results of ITAMS 2016 are shown below.
Chapter 2

The ITAMS maturity scale is aligned with the maturity scale used for assessing compliance with the requirements of ISO55001. The scores for ‘Company’ indicate a high level of compliance with the requirements of ISO 550001. The results (orange) of the overall four best performers (BP) are plotted in the graph on top of the overall results (dark grey). By comparing it can be easily determined which BP offers a best practice which might be inspiring for further development. In some cases where the overall average (Avg.) is substantially higher than the ‘ISO 55001’ level a best practice might be found at others as well. Five of the participating companies are ISO 55001 certified of which three are BPs indicating that certification according ISO 55001 pays off.

Major areas for improvement (Avg. below ‘ISO 55001’ level) are:

- Target Setting
- Well Defined Risk Register
- Decision-making Skills
- Prioritization/Optimization of CAPEX/OPEX
- Maturity of Enabling Technology
- AM Ownership of IT & Data Management

ITAMS is based on the hypothesis that a better Asset Management (AM) Performance (average of scores per element on page before) leads to a better operational results, measured by the Operational Performance which is reflected by a weighted set of KPIs (System Minutes Lost; Transmission circuit availability; LTIF; ROCE; % of planned CAPEX and OPEX delivered). The results for ITAMS 2016 show and confirm that companies with a high AM Performance have better operational results.
Chapter 3

ITAMS 2016 Conference, Dubai

At the end of March 2017 the participants of ITAMS 2016 gathered in Dubai to discuss the results and best practices. Besides the formal program, there was room for peer to peer discussions, exchanging experiences and tightening professional bonds.

At the conference extra emphasis was put on the business case for implementing an asset management system, risk management and data driven asset management. On the latter some interesting developments were presented by Fingrid and Stattnet. Also the contributions of TransGrid and OETC regarding their AM journey were inspiring. An overview of the topics and presentations is given on the next page. Two of the best practices are outlined in chapters 4 and 5. The balance between participants best practices and UMS point of view on some topics was perceived as just right and highly appreciated.
Chapter 3

At the ITAMS 2016 Results Conference the following topics and best practices were presented and discussed:

1. ITAMS 2016 High Level Results (UMS)

2. Organizational Developments
   - Successful reorganizing the Asset Manager (TransGrid)
   - Major developments (All)

3. Risk Management
   - RM-tool SAM and interface with MBI (TERNA)
   - Risk Management process OETC (OETC) - see chapter 5
   - Risk Management from an international perspective (UMS)

4. IM & ET
   - Data driven asset management. Is there a business case? (UMS)
   - ELVIS Project (Fingrid) - see chapter 4

5. Maintenance Strategies
   - Value driven maintenance (ELES)
   - Maintenance 2021 project (Fingrid)

6. Interface with Internal SP(s)
   - Peer review process Terna (TERNA)
   - Practice per participant (All)

7. Business Case for implementing an AM System
   - AM journey at OETC (OETC)
   - The real value added by Asset Management (UMS)

8. Technical Innovations
   - Mobile capturing device substation inspections (TransGrid)
   - Use of drones for OHL inspection (GCCIA)
Chapter 4

Best Practice 1: ELVIS Project at Fingrid

Main goals

- **Master Data** - To have a system where Master Data would be in control and all available data (+ external data resources) is usable for analytics. Single source for power system information (one version of the truth). Data entered only ONCE into ONE system, other systems uses this data.

- **Integration** - Combining asset management data with IoT (Internet of Things) generated data. Enabling industry wide data analytics by integrating all business data. Able to tie data to a physical location.

- **Digitalization** - A common platform for asset and operation management that will fulfill today’s and future needs. From performance dashboards to on-line location based heatmaps.

ELVIS Solution

A more efficient tool for Fingrid’s asset and operation management by replacing existing tailor-made grid information systems by integrated best-of-breed standard software products.
Chapter 4

Take outs

• ELVIS is part of the Asset Management strategy, not part of IT.

• Fundamental Architectural Strategies:
  • Data should be entered once and distributed as needed;
  • Standard software products should be used with a minimum of customization required.

• Integration based on a Service Oriented Architecture, with the adoption of the IEC Common Information Model (“CIM”) as the canonical data model.

• The consolidated data strategy ensures the high data quality that is the foundation for any qualified decision making.

• The clue regarding business process optimization lies in seeing the big picture and implementing a data sharing strategy. With better business process support and lots of flexibility it is:
  • Easier to calculate the value of the grid;
  • Possible to make more accurate calculation and assessment of life-cycle costs;
  • Easier and quicker to access relevant and updated information for Fingrid personnel – centrally as well as in the field using mobile devices;
  • Adapt to future developments and make use of Big Data.

• Cost and time intensive. (ELVIS contract was signed with IBM in 2012. ELVIS fully in operation in 2016.)

• Any transmission or large distribution company aiming at optimizing processes across GIS, enterprise asset management and electrical grid calculation / design should take a look at the Fingrid ELVIS solution.

Videos about Elvis at Fingrid are on YouTube channel:

• https://youtu.be/gL4z-guklKM
• https://youtu.be/OwXrqIIBLzE
Chapter 5

Best Practice 2: Risk Management at OETC

The overall process for Enterprise Risk Management in OETC was developed to support the implementation of the OETC Risk Management Policy and the OETC Enterprise-wide Risk Management Framework (ERMF). The documents listed in the table below besides several templates and risk/opportunity registers were developed to provide the foundation for the integration of risk management into processes and activities in a comprehensive manner. Enterprise Risk Management in OETC fully aligns with the requirements of ISO 31000/2009.

<table>
<thead>
<tr>
<th>OETC Risk Management Policy</th>
<th>Asset Investment Planning Approach</th>
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<tbody>
<tr>
<td>Enterprise-wide Risk Management Framework (ERMF)</td>
<td>ERMF - Risk escalation and de-escalation procedure</td>
</tr>
<tr>
<td>Risk Management Process</td>
<td>ERMF - Management of risk related opportunities procedure</td>
</tr>
<tr>
<td>Asset Management Risk Framework</td>
<td>Occupational Health and Safety Risk Management procedures</td>
</tr>
<tr>
<td>Asset Risk Assessment</td>
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<tr>
<td>Asset Risk Weighting and Scoring</td>
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</tbody>
</table>

The risk management process and activities are monitored and controlled by the Business Planning & Risk Management Department. At department level the department heads, risk owners and risk champions are responsible for the risk assessment, reporting and developing of mitigating measures.
Chapter 5

For risk assessment two frameworks are applied. In the first place the Enterprise Risk Management Framework (5x5 matrix) used for evaluating risks regarding 10 categories (Business Values): Strategy; Operations; Safety; Financial; Human Resources; Legal and Regulatory; Governance; Reputation and Community; Projects. Additional for assets the Asset Management Risk Framework (7x7 matrix) because given the large number of specific assets a 5x5 matrix would result in too much data compression. Assets are assessed for 6 categories which relate to 4 categories of the ERMF (see corresponding colors). Further alignment is established by combining some of the likelihood-categories.

**Enterprise Risk Management Framework (ERMF)**

<table>
<thead>
<tr>
<th>Risk source/categories:</th>
<th>Strategy; Operations; Safety; Financial; Human Resources; Legal and Regulatory; Governance; Reputation and Community; Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing Consequence:</td>
<td>Insignificant</td>
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<tr>
<td>Certain</td>
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<tr>
<td>Likely</td>
<td>7</td>
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<tr>
<td>Possible</td>
<td>4</td>
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<tr>
<td>Unlikely</td>
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<td>Rare</td>
<td>1</td>
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**Asset Management Risk Management Framework**

Risk are registered in three registers: Department Risk Register; Asset Management Risk Register; Corporate Risk Register. Escalation of risks from one register to the other is done according the risk escalation and de-escalation procedure.
Chapter 5

An example from the Asset Management Risk Register is shown below. Highlighted are the risk numbers indicating how the risks in the separate registers are related.

When taking action to manage and mitigate risk, opportunities may arise. As part of the risk management process opportunities are identified and assessed, and treated as per the OETC Risk Management Process. Opportunities are included in the registers as well. Risks are coded with an R (e.g. AMR....) while opportunities are coded with an O (e.g. AMO....).

Reporting and coordination of Risks and Opportunities is undertaken on a quarterly basis.

**Take outs**

- Clearly defined responsibilities and roles together with a specialized risk management department are essential to develop a good functioning and effective risk management process.
- ISO 31000 offers a good framework for organizing Risk Management and contributes highly to create an Asset Management System that meets the requirements of ISO 55001.
- Risk Management is an important enabler for decision-making, especially optimization.
- To prevent misalignment of frameworks it is advised to use the same matrix-dimension (e.g. 7x7) for all frameworks applied. The higher the dimension, the more distinction is made between the level of risk and the easier priorities can be set.
Chapter 6

Conference Attendee Testimonials

Learnings/Insights

- Validation of current path
- Equal challenges for all peers
- Insight into practices of front runners
- Resulted in insight into improvement road map
- Improved understanding of questions data pack

Program Conference

- Well-chosen topics
- Excellent content of the program
- Balanced mix of participant practices and UMS point of view
- Strong link between benchmark and conference topics

Conference

- It was great
- It has been inspiring
- Very open atmosphere
- Great learning
- Impressed about English language skills
Chapter 7

Major Take Outs ITAMS 2016

There is no “right” structure or model for organizing asset management. For most companies, of the three distinct roles, the Asset Manager role (decision-making) and Service Provider role (execution) are clearly separated. Not all companies have a dedicated Asset Owner role which might compromise the alignment of the asset management strategy and business strategy. Good outcomes require clear roles, governance and system integration. Management systems (incl. the asset management system) need to adapt to suit organization and not be implemented just for certification.

The diversity of applied risk matrices illustrate that risk management is still not acknowledged as major part of decision-making. Integrating risk management in the decision-making process (risk-based asset management) offers the possibility to determine threats that really needs solving before starting to develop solutions. Also the process of prioritizing and optimizing of the asset plans benefits from a well aligned risk matrix.

Although MS-Excel is still broadly applied, the developments at Fingrid and Stattnet show the way forward. New technologies (IoT, drones, etc.) offer new cost effective ways of gathering data and new ways of integrating IT-systems for storing and processing this data. Data Driven Asset Management seems to become the new focus area for TSOs. Evident is, that implementing these technologies and systems is part of the Asset Management strategy, not part of IT. This requires new skills for processing and analyzing the huge amount of data this development creates.

ITAMS 2016 was great learning experience again. ITAMS is an excellent way to serve a company’s ambition to learn from others and illustrate their excellence to the board and certifying authorities. The current participants underpin the great value of benchmarking their asset management practice and sharing this. Therefore they would like to invite more TSOs to join ITAMS.
Chapter 8

Join ITAMS 2018

If you are interested in the ITAMS program or want to join the ITAMS 2018 please contact Johan Huisma at

jhuisma@umsgroup.com or +31681766523

More information about the ITAMS Program and UMS Group can be found on

www.umsgroup.com