Towards Digital Transformation, Main Roads WA's Journey

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Content

- Data as an asset
  - Digitisation
  - Digitalisation
  - Digital transformation

- Pre requisites
  - ISO 55000
  - PAS 55
  - Austroads GAM

- Main Roads WA Initiatives
Towards Digital Transformation

- Historically data critical for asset management; recognised as an asset; however not captured in the asset valuation.


  - IRIS (Integrated Road Information System) integrates asset inventory and condition, crash and road usage, data is spatially enabled and linked to the road centreline but not with other corporate systems.

  - Work flows: e.g. incurring and certifying; asset transfer.

  - Corporate Records system (TRIM).
Towards Digital Transformation, cont.

- **2000-nowadays: Data Digitalisation** - value adding, customer centric, enhanced decision making, real time data; data visualisation apps.

  - Customer based applications: Travel Time; Road Crash on Line; Rest Areas; Work Zones; RAV Network.


  - Data visualisation, Power BI; Tableau.
Towards digital transformation, cont.

**Next: Digital Transformation** - customer is changing from being a consumer of information and services, to someone who actively participates in the design of the value chain of businesses.
- Data is easily accessible for use across various platforms, devices, interfaces.
- New business applications that integrate all this digitized data and digitalized applications.

**Examples**
- Improving the customer journey experience, from ticketing to interchanges to real time data availability;
- Creating integrated transport services to increase travel choice;
- Applying effective land use policies for sustainable growth;
- Optimising the balance of public transport use e.g. bus vs cycling vs walking.
ISO55001 Asset Management Policy S7.1

In determining its information requirements, the organisation will consider:

- The roles and responsibilities of Asset Management.
- The asset management processes, procedures and activities.
- The exchange of information with its stakeholders.
- The impact of quality, availability and management of information on organisational decision making.
Austroads Guide to Asset Management

To determine the data needs of an organisation the following process should be followed:

- Identify where data is required and who is it used by
- Define an Information Architecture
- Map the Information Architecture to the relevant activities
- Identify what data is stored by the organisation, how it is used and if any gaps exist
- Prioritise the gaps and address them appropriately.
PAS 1192-3 Recommendations

Identify Plain Language Questions (PLQs) by addressing the following:

- What questions do you need answers to?
- What data do we need? What is the level of detail? Where is it stored?
- What tools do we need to visualise, analyse and present?

### Asset and Geospatial Information

<table>
<thead>
<tr>
<th>Activity ID</th>
<th>Activity</th>
<th>Business Process</th>
<th>PLQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A7</td>
<td>Reporting and improvement</td>
<td>Update IRIS</td>
<td>What format do users require?</td>
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<td></td>
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<td></td>
<td>What are the timing/currency requirements?</td>
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<td>What questions do the users need answered?</td>
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<td>What specific details/attributes do users require?</td>
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</tbody>
</table>
**Approach**

- Asset management functions – prescribed by the Strategic Asset Management Plan (SAMP) and Section 7 of Guide to Asset Management
  1. Strategy and Program Development
  2. Investment Planning
  3. Financial Reporting
  4. Performance monitoring, evaluation and review

The stakeholder groups included:

- **Key Information Consumers:**
  - Network Management
  - Regional Asset Management
  - Budget and Program Management
  - Finance Management
  - Road Safety
  - Term Contracts

- **Key Information Providers:**
  - Asset and Geospatial Information
  - Environment
# AM Functions and Data Needs

<table>
<thead>
<tr>
<th>Function</th>
<th>Activity</th>
<th>Information Requirements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy and Program Development</td>
<td>Long term modelling of asset needs</td>
<td>Roughness, rutting, strength and texture</td>
<td>☹️ Condition data for the dTIMS model is required around May. Most recent condition data should be used (April 2018 NRs and Jan 2019 SRs). However, due to delays in data processing, old data is being used (2016/2017). This will not only impact dTIMS but more importantly the Region's bid development process and decision making.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual works program</td>
<td>☹️ Due to delays in updating the Region's AWP, most recent information is not always readily available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term funding forecast</td>
<td>☹️ The dTIMS model requires a 20-year funding forecast. This is currently not formalised, as it is completed on an ad-hoc basis between DNM and dTIMS owner Qindong Li.</td>
</tr>
<tr>
<td>Whole of Life Cost Assessment</td>
<td>Asset Remaining Lives</td>
<td></td>
<td>☹️ A mismatch has been identified between NMB’s and Finance’s understanding of useful life.</td>
</tr>
</tbody>
</table>
Main Roads WA Visualisation Applications

- Tableau and Power BI
- Route Planning
- Maintenance Management Information System (MMIS) Roads
- SPARKS MMIS for Electrical Assets
- 10 Year road Network Development Plan (10YNNP)
Route Planning (Tableau)
Route Planning

LOS Summaries:

CUSTOMER FACING LEVELS OF SERVICE (H002)

LOS Proportions per Category Type, by State Link No.

Service Indicator per Category, by State Link No.

Overall Service Indicator (Full Route)
Route Planning Rest Areas

Rest_Areas.twbx
Route Planning Deficiencies Summary

WOS Deficiency Summary.twbx
MMIS

- System solution including a desk top application and a field, in car-mounted, touch screen application.

- Microsoft Dynamics CRM 2013 platform can be accessed by office-based staff and field technicians - who have been equipped with Panasonic Toughbooks running Windows 8 - to better collaborate, schedule jobs, and create management reports.

- Used by over 300 people including maintenance coordinators, maintenance and asset managers, and maintenance/crew people responsible for maintenance inspections and maintenance delivery.

- Considerably improved the logistics of maintenance activities by integrating asset inventory information, with asset condition, severity and extent
**MMIS**

- Significant improvements to the work practices, increased efficiency and consistency in recording road defects, better prioritisation of the road network needs and improved value for money.
SPARKS

Electrical Assets

The platform is streamlining the transfer of fault reports for traffic and electronic school zone signals so that field technicians can be rapidly assigned jobs to alleviate congestion faster, with a view to extending it to systems including road lighting, message signs and electrical systems in the future.
Main Roads WA 10 Y Network Development Plan
CONCLUSIONS

- Digital Revolution is inevitable, if organisations want to be sustainable.
- An evolving process, reflects the level of asset management maturity.
- It’s more than data and systems, requires new business processes, new culture, ongoing innovation, AI, machine-human learning, the customer is shaping the design of the value chain.
- It’s an exiting opportunity!
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