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Your Partner In Asset Management

CONSIDERATIONS FOR IMPLEMENTING AN EAM SYSTEM

White Paper

Abstract
This white paper provides an overview of what organisations should consider when implementing an asset management system

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1   Overview

The increasing availability, depth and accuracy of equipment data means the adoption of an asset management and maintenance planning system has never been more accessible, nor more daunting, to novices and veterans alike.

Implementations of EAM systems are fraught with difficulties and pitfalls, with the number one concern for a successful implementation being the associated change management to ensure user adoption and widespread acceptance.
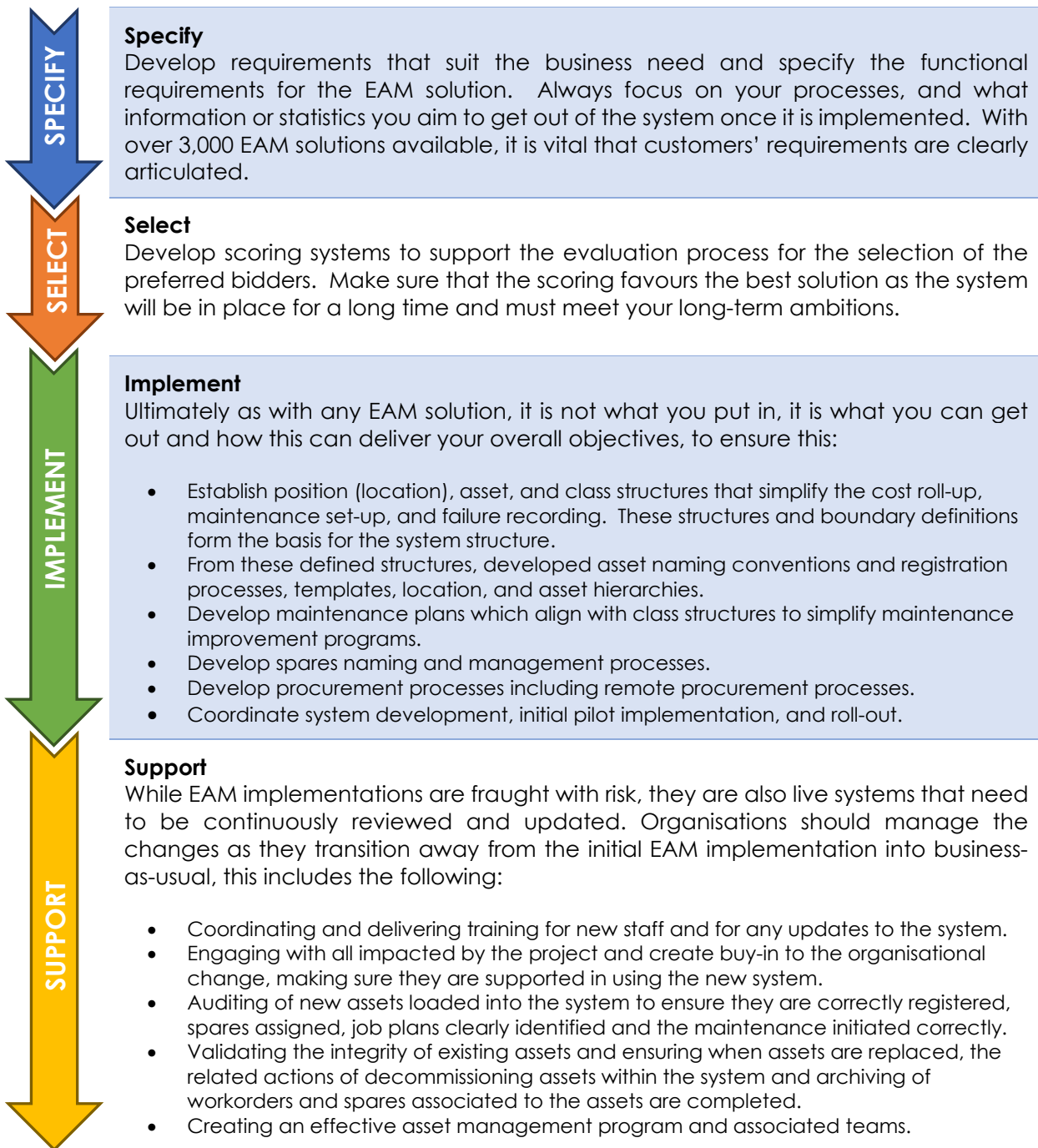
Each organisation will have different starting points and challenges ahead, so it is vital to have engagement from a variety of stakeholders to implement an effective solution that will continue to reap benefits well after handover to Business-As-Usual.

The key to a successful implementation is to be clear about your requirements and to build an experienced project team with the ability to challenge the status quo and to counter the 'but we've always done it this way' when required. Having the right people, process and plant in place allows you to deliver a successful project to meet these requirements.

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2 EAM System Life Cycle

2.1 The Four Stages

When implementing a CMMS or EAM system, there are four (4) stages which will drive a successful delivery:

SPECIFY

Specify
Develop requirements that suit the business need and specify the functional requirements for the EAM solution. Always focus on your processes, and what information or statistics you aim to get out of the system once it is implemented. With over 3,000 EAM solutions available, it is vital that customers' requirements are clearly articulated.

SELECT

Select
Develop scoring systems to support the evaluation process for the selection of the preferred bidders. Make sure that the scoring favours the best solution as the system will be in place for a long time and must meet your long-term ambitions.

IMPLEMENT

Implement
Ultimately as with any EAM solution, it is not what you put in, it is what you can get out and how this can deliver your overall objectives, to ensure this:

- Establish position (location), asset, and class structures that simplify the cost roll-up, maintenance set-up, and failure recording. These structures and boundary definitions form the basis for the system structure.
- From these defined structures, developed asset naming conventions and registration processes, templates, location, and asset hierarchies.
- Develop maintenance plans which align with class structures to simplify maintenance improvement programs.
- Develop spares naming and management processes.
- Develop procurement processes including remote procurement processes.
- Coordinate system development, initial pilot implementation, and roll-out.

SUPPORT

Support
While EAM implementations are fraught with risk, they are also live systems that need to be continuously reviewed and updated. Organisations should manage the changes as they transition away from the initial EAM implementation into business-as-usual, this includes the following:

- Coordinating and delivering training for new staff and for any updates to the system.
- Engaging with all impacted by the project and create buy-in to the organisational change, making sure they are supported in using the new system.
- Auditing of new assets loaded into the system to ensure they are correctly registered, spares assigned, job plans clearly identified and the maintenance initiated correctly.
- Validating the integrity of existing assets and ensuring when assets are replaced, the related actions of decommissioning assets within the system and archiving of workorders and spares associated to the assets are completed.
- Creating an effective asset management program and associated teams.

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2.2 ISO 55001

The acquisition and implementation of an EAM solution is one of the steps on a longer journey towards Asset Management Excellence as described in ISO 55001 (Asset Management – Management Systems Requirements). This standard fits into the category of Management Standards the same as ISO9001 (Quality Management Systems — Requirements), which sets out the principles and guidance to set up your Asset Management (AM) Systems. Please remember that an EAM solution is a tool to help you meet the requirements for your AM System.

Based on our experience in AM Systems, we have developed the following diagram to help describe the elements that are covered under the ISO 55001 standard, all of which would need to be covered under your AM System in order to meet the requirements. In reality, as it is a management standard, it requires that you have clearly defined processes for the management of assets throughout their life cycle and this is usually set out in the Strategic Asset Management Plan (SAMP).
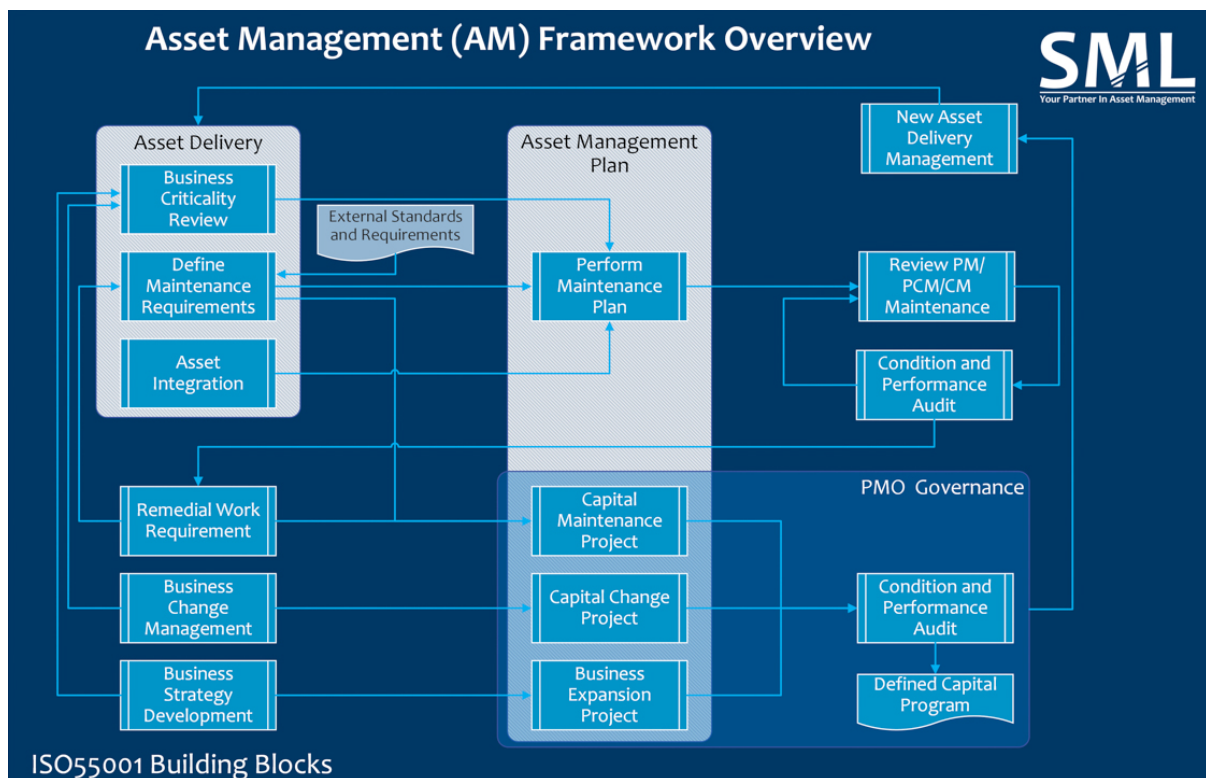
Image 1 – SML Asset Management Framework Overview

The diagram shows several supporting processes that are developed as part of this overall implementation that will need to be considered:

- **Asset Delivery.** When new assets are added or existing assets are updated in your environment, they will need to be assigned to an asset class and reviewed in terms of how they fit into your business model and ultimately how important they are to your business. Within this process there are several sub processes each of which would have a further series of sub processes, all of which culminate in defining how you manage the asset delivery process within our organisation.
- **Asset Management Plan.** This defines how you intend to finance, operate, maintain, refurbish, and renew your asset classes throughout their life. An EAM system sits squarely in this process, as it is where you record all the operational and maintenance

information about the individual assets as well recording the spares used and the equipment condition.

- **PMO Governance.** As with any organisation, where and how you spend your money is vital to the longevity of the business, and as such the decision-making process to identify which projects to deliver also forms part of the AM System. In addition, projects usually deliver new or modified assets into a business, and therefore how these projects are managed and executed must align with how you intend to manage that class of asset within the AM System going forward.

While it might not be necessary to become ISO 55001 accredited, it is a well thought out standard that can be applied to many asset intensive industries and ensuring that the various processes are in place and aligned with the standard will help organisations to focus on what is necessary for them to succeed. In addition to this, using the standard as a guideline will also aid in helping to define what you want to get out of the EAM System once it is fully functional.

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3   Organisation

Understanding the roles and responsibilities within an EAM implementation project is crucial to its success and will enable an organisation to select resources with the most appropriate skillsets to deliver the objectives.

There are several key roles to consider when implementing an EAM system, and the following business areas outline clear guidelines for assessing and developing role profiles, accountabilities, and management structures.

3.1   Project Management

Project Management should be based around team cohesion and governance. Having a competent project team in place will ensure planning, execution, and management tasks are undertaken in a timely manner, to allow the implementation of the EAM solution the best chance at success. For an EAM specific project, there are several key things that the Project Manager will have to fulfil with a varying focus depending on which phase of the Project you're in.

Some of the key areas will include:

- Understanding the landscape, both in terms of the Project and the business
- Participate in site visits to understand how an organisation operates, get to know the stakeholders, methodologies and strategies currently being applied.
- Develop a complete understanding of the business approach and the status of the project as well as the expectation of completion of the project.
- Support in technology selection and the decommissioning of any existing platforms that will be replaced with the new system.
- Develop the Project Management Plan, which will include the stakeholder engagement strategy and other key cost and risk documents.
- Adopting or developing simple and understandable project reports to communicate progress to the organisation as well as highlight any potential issues to be swiftly addressed.
- Align the risk register to the organisations perceived risks and allocate resources to these risks in case they materialise.
- Review the Benefits and Requirements trackers and ensure they align with the vision and objectives of the organisation – this may result in a realignment of requirements or even a change in direction or focus OR it may mean a validation of the current assumption and focus on executing the existing plan.
- Review of the Work Breakdown Schedule (WBS) for the Project and ensuring each area has an accountable and a responsible person, ensuring that the resources being deployed are consistent and sufficient for the expected timeline.
- Review the interdependencies and ensure that all interfaces have been accounted for and planned for and if not, add them to the list and include them in the WBS to ensure actions are undertaken to complete the work.
- Develop a testing and validation plan with the support of the Subject Matter Experts and Test Management to ensure the testing validates the employer's requirements.
- Develop a realistic schedule for the rollout of the project, which will include definition, design, execution, testing, and operational transition activities, as well as close-out and benefits management handover.

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3.2   Change Management

Change is one of the greatest risks of any project and it is vital for any successful project that change is both managed and measured carefully. While we may have the senior management team buying into the benefits from an EAM System, it will be the operational teams and individual workers who will need to be brought onboard as their work lives will be impacted most by this implementation. Most people cope with change as shown in the change curve below, so it is important to build customised change management plans around these key stages.
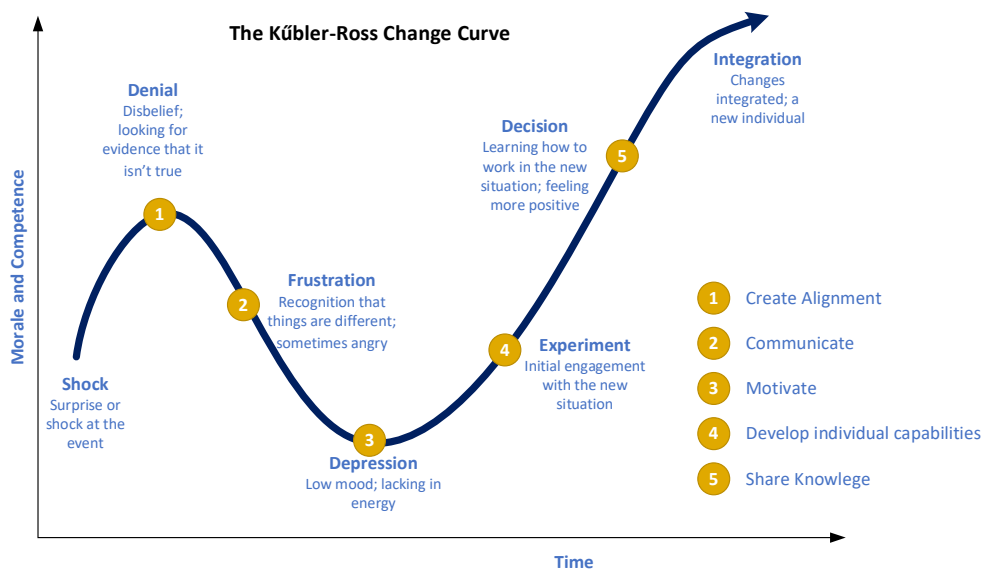
Image 3 – The Kübler-Ross Change Curve

Focus areas will include the following:

- Develop a greater understanding of the organisational environment, both in terms of the Project and the business.
- Participate in site visits to understand how the organisation operates and get to know the stakeholders, methodologies and strategies currently being applied while also understanding how they might need to change.
- Ensure that the new organisational strategy being driven by this project and others identifies all those impacted or affected by the changes and confirms that the engagement plans cover them.
- Develop and update all customised engagement plans, focused around the five key change stages, for ensuring these employees or stakeholders are appropriately aware, enlisted, engaged, supportive, coached and trained.
- Facilitate the successful deployment of the EAM System in order to allow for full benefit realisation to maximise on investment.

An organisation and workforce that are engaged and open to change will be more adaptive and receptive to market opportunity and success. Early adoption and embedding of the change management programme will fast track an organisation's journey towards continuous improvement.

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3.3   Training Management

The biggest change for the operational teams, whose buy-in is so crucial, is the movement from a paper-based or low-tech system to one using mobile solutions and enriched data quality. Whilst handheld technology has come a long way in recent years and the benefits are numerous, with any system change there will be challenges in ensuring those benefits can be realised.

Whilst some users will adapt to the technology quickly, many users will be less computer literate and view the change as an unnecessary frustration to their working day. Reaching these users and engaging them in an effective training scheme to help aid their transition is key to overcoming two key hurdles:

1) Since any EAM system is only as good as the worst of the data input, consistent high standards from all users is important.
2) Typically, those users who have the lowest computer literacy are in the older generation and therefore more likely to be seen as the experienced leaders within their teams and thus their refusal to adopt the technology can lead to a domino effect that impacts far and wide.
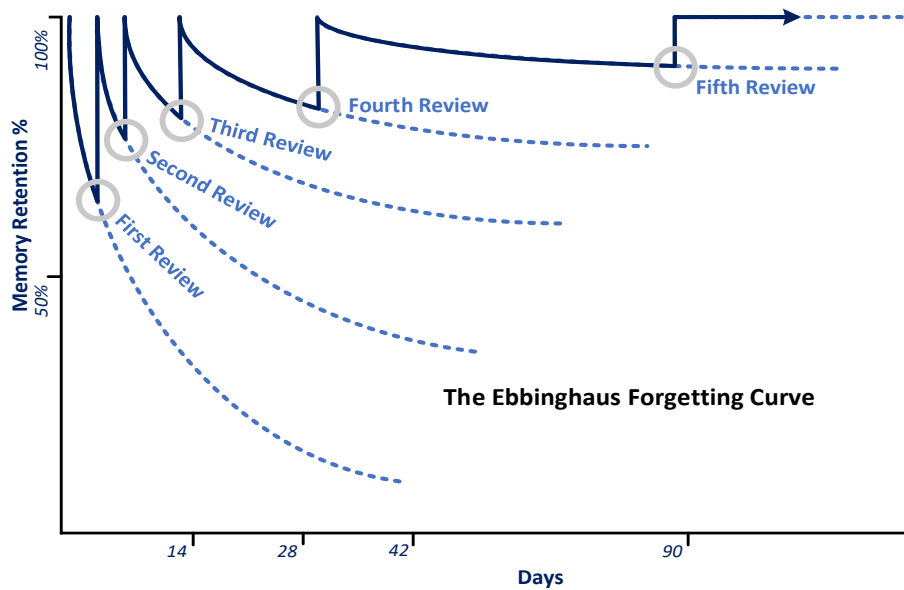

Image 4 – The Ebbinghaus Forgetting Curve

Another important element of the training on the project will be ensuring that all users engage and retain the information long after the project is over. This will require careful planning of the training material and follow up tasks which will be guided by The Ebbinghaus Forgetting Curve.

Focus areas will include the following:

- Reviewing that the Training Needs Assessment (TNA) has comprehensively engaged with all users, particularly with those who might struggle to adapt to the change to a technological system, and with sufficient detail to consider tailored approaches for particular individuals or teams.

- Identifying where training delivery is to be prioritised for individuals / teams to align with business needs and to reduce risk of challenges mentioned above.
- Responsible for ensuring that the training delivery engages with staff and encourages them to take responsibility for their own progress within it, important for when the project finishes. Adapting the training as needed to ensure this engagement.
- Development of a training delivery plan including:
    o A training module to skills matrix that can be mapped back to finding of TNA,
    o Logistics and rollout planning,
    o Identification, training, and ongoing support of superusers as 'local' trainers if required.
- Development of the training materials and the training delivery platform to ensure full inclusion and emersion of all people to be trained including provisions to tailor or revisit training for those individuals or teams identified as needing further support.
- Deliver the training including pre-assessments, post assessments and follow up to ensure full adoption.

3.4   Testing Management

Any EAM Solution implemented must have its capabilities tested to ensure it aligns directly with the design requirements. You should apply the V-Model methodology to demonstrate the relationships between each phase of the development life cycle and its associated phase of testing. Using this methodology, the testing will allow direct linkage between project requirements and system validation.
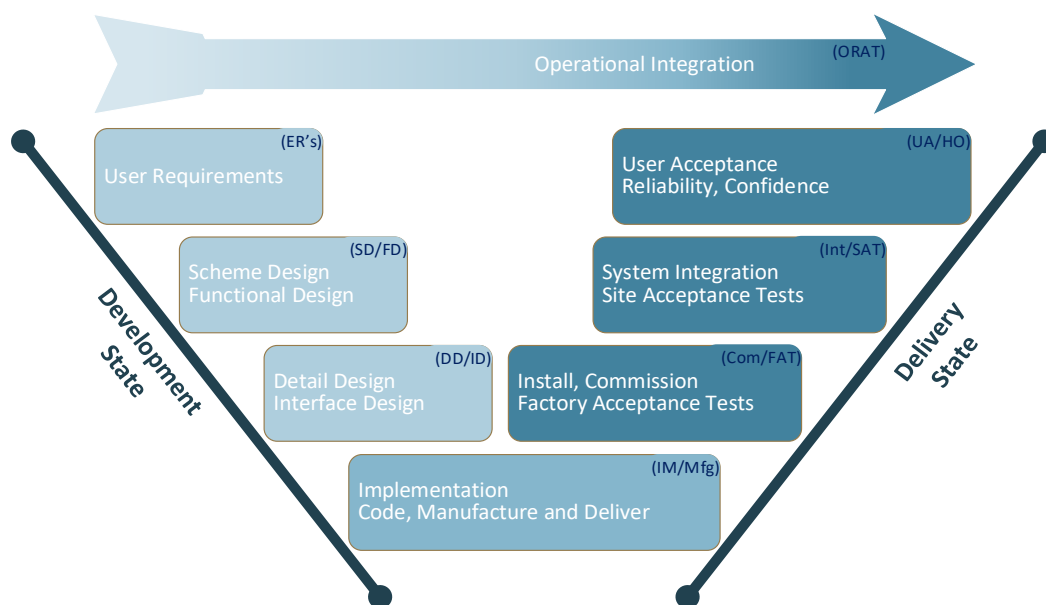
Image 5 – V Model Methodology

During the system data migration and integration stage the scope would be:

- Develop a test management plan along with test scripts covering all required busines processes and workflows. There should be light touch testing on standard system functionality with more focus on scripts and automated processes developed above the standard functionality driven by business rules.

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- Ensure that the user groups are clearly defined with their associated permissions, and that these align with the business rules and defined requirements.
- Implement and track the defect management system to ensure all defects are identified, tracked, and resolved.
- Identify areas of risk relating to the EAM System deployment and develop contingency plans to be able to mitigate issues that arise with pre-defined work arounds.
- Review the reporting capabilities to ensure they are fit for purpose.
- Ensure supplier support agreements are in place and that the reporting processes are clearly mapped and available to all users.
- Provide support during service transition for system handover to business as usual, tracking and resolving defects, implementing work arounds where necessary, and tracking of benefits realisation.
- Provide support for the decommissioning of the legacy system (if required).

3.5   Data Management

Implementing a successful solution is all about ensuring asset data can be converted into a value stream for the business. As such, all data collated and moved into the EAM System must be cleansed, audited and relevant to achieving the longer-term goals for your organisation.

To gain a higher level of knowledge from data, and get to a level of wisdom, we need to be able to enrich data with context, relevance and accuracy.
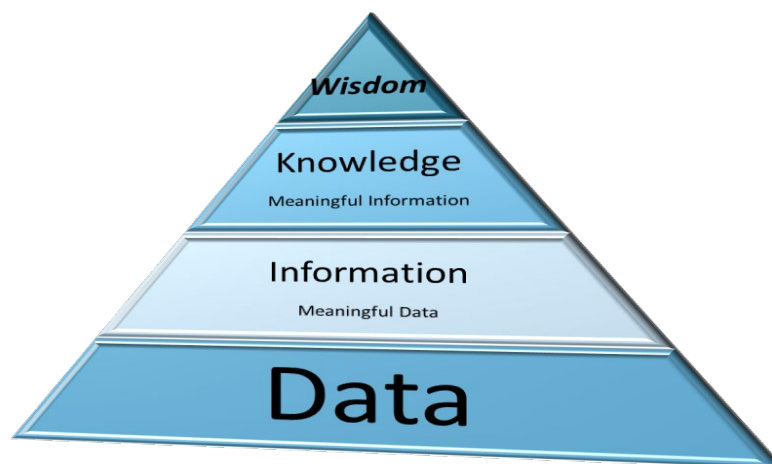

Image 2 – Data, Information, Knowledge, Wisdom (DIKW) Triangle

The role of Data Management in the implementation team could encompass:

- Defining and Reviewing the master data structure and ensuring that it aligns with the business requirements and aids with the implementation of future requirements.
- Ensuring that there is a comprehensive data management plan in place and that all collected and uploaded data is both relevant and accurate.
- Auditing of the upload scripts to ensure that the data provided in the upload scripts is of a high standard and correctly inserted in order to reduce and eliminate rework.
- Loading data into the system for all sites as and when the systems are ready to receive data.

4   Conclusion

The implementation of an EAM System might sound like it is a simple thing to do, and the benefits in many instances will far outweigh the risks.   The problem is that many implementations fail due to reasons outside of the control of the implementation teams. These reasons for failure can be caused by any of the following reasons:

- The system is not specified correctly and as a result does not match the needs of the organisation, or in the worst-case scenarios only meet the needs of a small section of the organisation.
- Lack of acceptance by the workforce who see it as a management tool to control them, as opposed to a rich data source that allows them to monitor and track the reliability of their equipment.
- Poor, insufficient, or inaccurate data. This could be in relation to assets and spares alike, in the form of incorrect information provided, items incorrectly registered in the system or incorrectly named or assigned. Ultimately, we cannot make plans or report on items that we do not know about or perform maintenance on items that have been removed from service but left in the EAM System.
- The system is overly complex, and restrictive. Any system that is supplied needs to be user friendly and must simplify work processes. When the systems become to onerous or complex, the end users start bypassing the system and as a result the information provided back into the system by the users becomes suspect.
- The system is poorly implemented because the organisation fails to understand the risks associated to the implementation and make assumptions around the user acceptance.

Ultimately when you apply the right level of resources with the required experience, have a clear design mandate, a clear end state goal, and management buy in you significantly improve the likelihood of success for this type of project. Without these, the likelihood of success is limited and the EAM System will struggle to reach its full potential in meeting you needs and acting as an Asset Management improvement driver.

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