

Getting the balance right between delivering maintenance cost improvement and overall strategic control of your assets

The mining industry's top performers are attuned to the benefits that the implementation of a Strategic Asset Management (SAM - see Figure 1) model can bring.

The aim of the game is to:

- thoroughly understand equipment utilisation and performance, highlighting critical improvement areas (reliability focus)
- achieve greater predictability and control in maintenance spend and budgeting
- use asset data systems to capture a wide spectrum of relevant asset information to enhance decision making
- design roles and responsibilities and reporting structures around business priorities
- develop people in terms of capability, understanding and integration into the principles of Asset Management.

Mining businesses want a functional model that is PAS55 compliant, accessible to their people and one that delivers tangible business value.

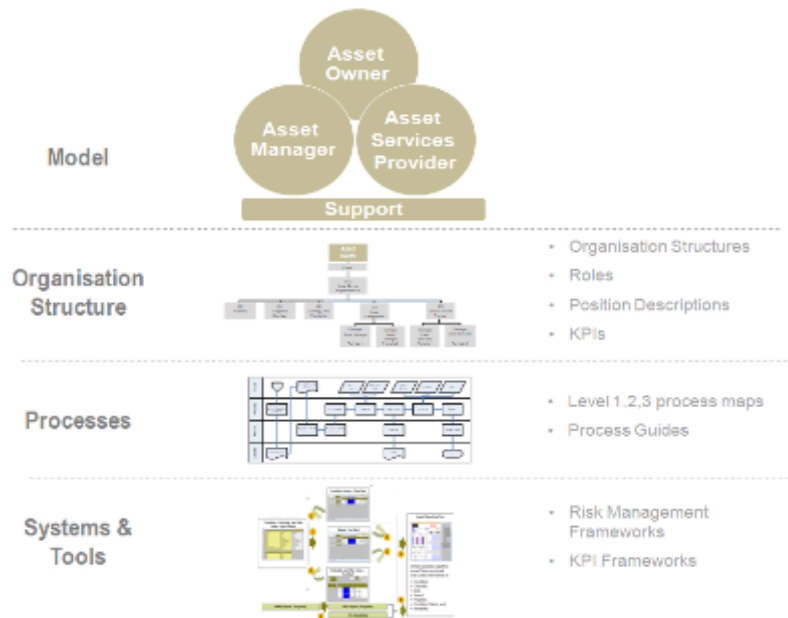


Figure 1: The SAM Model drives informed decision making with appropriate division of accountability and responsibility

Marchment Hill Consulting has researched a multitude of recent attempts to 'get it

right' and while it appears many miners many have launched an asset management initiative of some magnitude, the success stories remain few and far between. Marchment Hill recently discussed the experiences and challenges of implementing a SAM model with a range of Asset and Maintenance Managers at both corporate and group level in mature mining businesses. The aim was to get their perspectives on what has worked for them to date and to understand where they saw the major opportunities to improve.

Three key learning's emerged from our review:

1. **Scope:** Many programs have suffered from trying to go too wide and too deep, using unrealistic timeframes and a one size fits all model and approach. Translating corporate guidelines locally also proved challenging.
2. **Relationships:** Poor engagement and understanding between corporate and sites, lack of a co-ordinated program office and competing priorities between "the corporate AM program and the daily maintenance fire fighting".
3. **Benefits:** Lack of benefit delivery in the short to medium term and the impacts of this on program momentum and ultimately long term success.

The full SAM journey can take a number of years to implement while yearly budgets require a stabilisation or lowering of maintenance unit costs. So how do you get the balance right between gaining overall control over your assets whilst simultaneously delivering early maintenance cost improvement?

Set an implementation scope that is fit for purpose

Achieving the full benefits of SAM implementation requires adequate planning from the start of the process, so an early decision on the scope will have long term implications for the final outcome. The trick is understanding which sites and which asset classes to include, and how mature an asset management model the business is aiming for.

"Not finding the right mix with long-life assets can erode margins and have a dizzying impact on long term production plans".

Knowing how wide, by the number of sites and asset classes, or how deep, the degree of SAM maturity you are aiming for, can prove challenging. The diverse range of maturities on the mine life scale may find a comprehensive rollout to be distracting and too long in duration to derive true benefit. Conversely, not finding the right mix with long-life assets can erode margins and have a dizzying impact on long term production plans.

Longer life, large scale assets have the potential to deliver large scale improvements and will naturally require a deeper implementation while smaller sites with short lives should adopt a 'lite' version. In all cases, identifying short term maintenance cost drivers and developing effective response strategies will represent better value for money than addressing all asset types on site.

The key distinction between a Deep Implementation (Figure 2a) and a 'Lite' approach (Figure 2b) is the recognition of the high value linkages and controls that need to be established in order to maximise short term benefits, against an holistic review assessing every aspect of the asset management function.

Applying SAM principles to the asset management cycle requires adequate capability, defined responsibility and sufficient resources.



Figure 2a: Deep SAM implementation addresses each step in the asset management activity cycle.

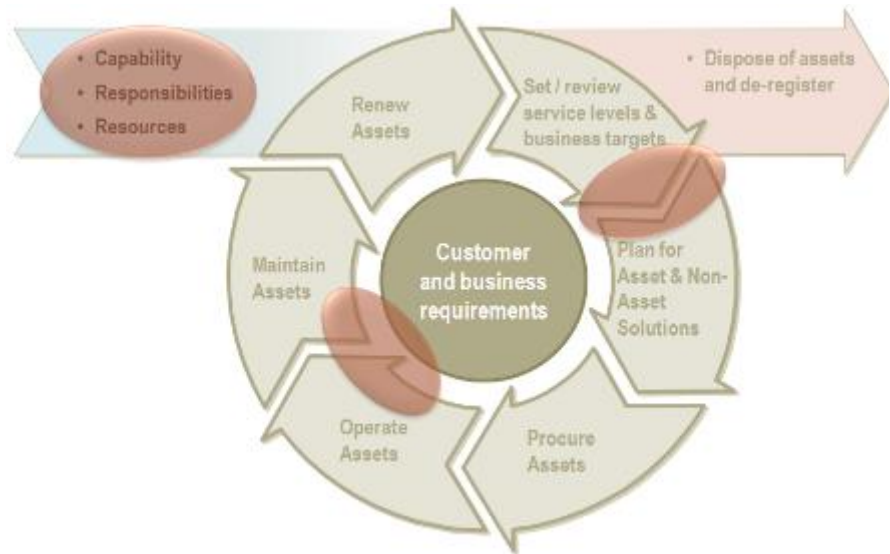


Figure 2b: In an Asset Management 'Lite' Approach the focus is on critical hotspots and linkages.

Tailoring the mix for implementation to suit the business is essential to ensure benefits are consistently realised from an early stage and that the implementation doesn't lose its way and become an expensive failure.

Establishing relationships- the lynchpin in the journey

Obtaining the time and buy-in of operational staff can more than test the strongest of 'central and site' relationships. Maintenance and operational managers may be struggling to meet reliability and cost targets for their areas and usually find it challenging to participate fully in the implementation of SAM. However, it's these individuals that hold the key to both the data and decisions that will have the biggest impact on maintenance costs and plant reliability.

Data is often seen as the critical element of a SAM model, however the data cannot be gathered, crunched and turned into benefits without the goodwill of all staff. SAM projects are significant change management exercises, where strong relationships are the best indicator of likely success. Engaging sites early in the process and ensuring the relevant people knows what's coming as well as inviting them to be part of the development process is crucial to establish and maintain support for the program.

Asset Managers can also fall into the mentality that the relationship between themselves and site maintenance teams is that of master and slave. Our research and experience has shown that the strongest SAM models rely less on command and control measures and contracts, but more on a solid understanding and support of the objectives, and a mutual respect for the roles each group has. There are a number of critical relationships that will influence the success of the asset management function in the mining context.

- The relationship between the corporate entity and the sites defines the expectations around performance, timing and costs. It is critical that the corporate team (Asset Manager, Asset Systems Manager and Asset Reliability Manager) are connected to the site team and are viewed in a support context.
- The relationship between maintenance delivery (site) and performance analysis (site/central) drives the flow of data upon which decision making relies.

By ensuring the health of these relationships the foundations of the Asset Manager function can be strengthened to focus on improvement without the burdens of major change programs on the operational units. Once the foundations are established, the focus can shift to ensuring that decision making depends on adequate, appropriate and timely data.

Keeping everyone interested - Achieving early bottom line benefits and sustaining momentum

Whilst sounding counter-intuitive, SAM implementations are often inhibited by placing too much emphasis on the long-term. Yes, robust data and analysis can help squeeze out every last ounce of cost improvement and reliability performance, but there are a number of quick wins that can be achieved early on.

“SAM projects can run out of steam because participants often feel they are getting very little return for their effort.”

While a mature asset management function relies heavily upon robust and comprehensive asset performance and operational data, much can be achieved in the short term by leveraging existing knowledge and experience. Focused upfront analysis of a mine site's assets through the asset management lens can deliver greatly improved understanding of:

- those assets which are critical in achieving targets, validated root causes of failure (including operational impacts on performance) as well as the major inter-asset relationships and dependencies across the asset lifecycle
- the correct emphasis of fix-on-fail, predictive and preventative maintenance strategies based on asset criticality, as well as the value of 'soft' investment such as training and enhanced works scheduling, shutdown planning and supervision
- relevant whole-of-system performance and activity metrics to drive asset management activities
- the role of individual asset systems and components in delivering on the business targets
- whole-life costs both for individual assets and systems, and at a whole-of-site level.

Targeted improvements can quickly be identified. In a relatively short space of time they can be formalised, prioritised through complexity and value parameters and mobilised. This enables an ongoing schedule of improvements to be visible to the business and serves as a touch point for keeping teams engaged and committed to both the SAM implementation and short to medium term cost and reliability improvement.

Ultimately, even without robust data, an assessment of throughput/cost per unit and throughput/total profit can be built up and projected to reflect the current and future impacts of maintenance and operational practice. This greatly assists management at a site and central level, providing fresh insight into - and justification for - the optimum blend of activity and investment.

Moving forward

Historically, the mining industry has experienced a variable level of success with Strategic Asset Management implementations but most businesses agree that gaining adequate control of your assets is difficult to achieve without it. With relentless pressure on maintenance departments to also deliver ongoing cost improvements, reaching the right balance of effort to deliver on both fronts requires flexible thinking. To get the balance right, you need to:

- Define the right scope that fits your portfolio's mix of mine lives, complexity, data maturity and internal capability
- Foster an equal and supportive relationship between the Asset Manager and site Maintenance teams with clear communications and change management processes in place
- Develop and deliver a solid sequence of quick and medium term wins that deliver cost improvements and keep teams engaged and committed to the successful implementation of SAM.

By starting with a pragmatic approach on how far and how deep you go with SAM, every business can benefit from having a fit for purpose platform to clearly plan and manage costs as well as robust processes to reach and maintain high levels of reliability.

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