A photograph of an industrial facility, likely a refinery or chemical plant. In the foreground, two workers in blue protective suits and hard hats are working on a large, horizontal white pipe. One worker is standing and leaning over the pipe, while the other is kneeling. The background shows a complex network of pipes, valves, and structural steel under a clear sky.

POLICY & STRATEGY

ASSET MANAGEMENT POLICY & STRATEGY

Jos Van der Aelst
Principal Consultant Asset Management
Stork Technical Services



FOREWORD



It is my pleasure to present this second whitepaper on asset management. It addresses the needs of physical asset driven companies that are looking at their assets in a holistic way, from a strategic, organizational and financial perspective. Leading asset-driven companies understand the lifecycle, know how to organize the necessary disciplines and are able to optimize asset performance within given cost and risk boundaries. Predictable and reliable performance of assets will suit the needs of company owners and financial backers.

This is not an easy thing to accomplish. Our lead consultants have worked with asset owners in the market and have developed workable methods and frameworks on asset management, based on sound methods and models with practical implementation strategies.

This paper reflects a successful way of working and is meant to inspire key players in their asset management strategies and implementation. It will help them to shape their asset management agenda and to set up asset management strategies and policies. In our view, it should become as logical as having safety and environmental strategies and policies in place.

Stork Technical Services' overall view of asset management is presented in the paper "A Field-proven Vision on Asset Management." This paper, "Asset Management Policy and Strategy," is complementary and elaborates the policies and strategies further.

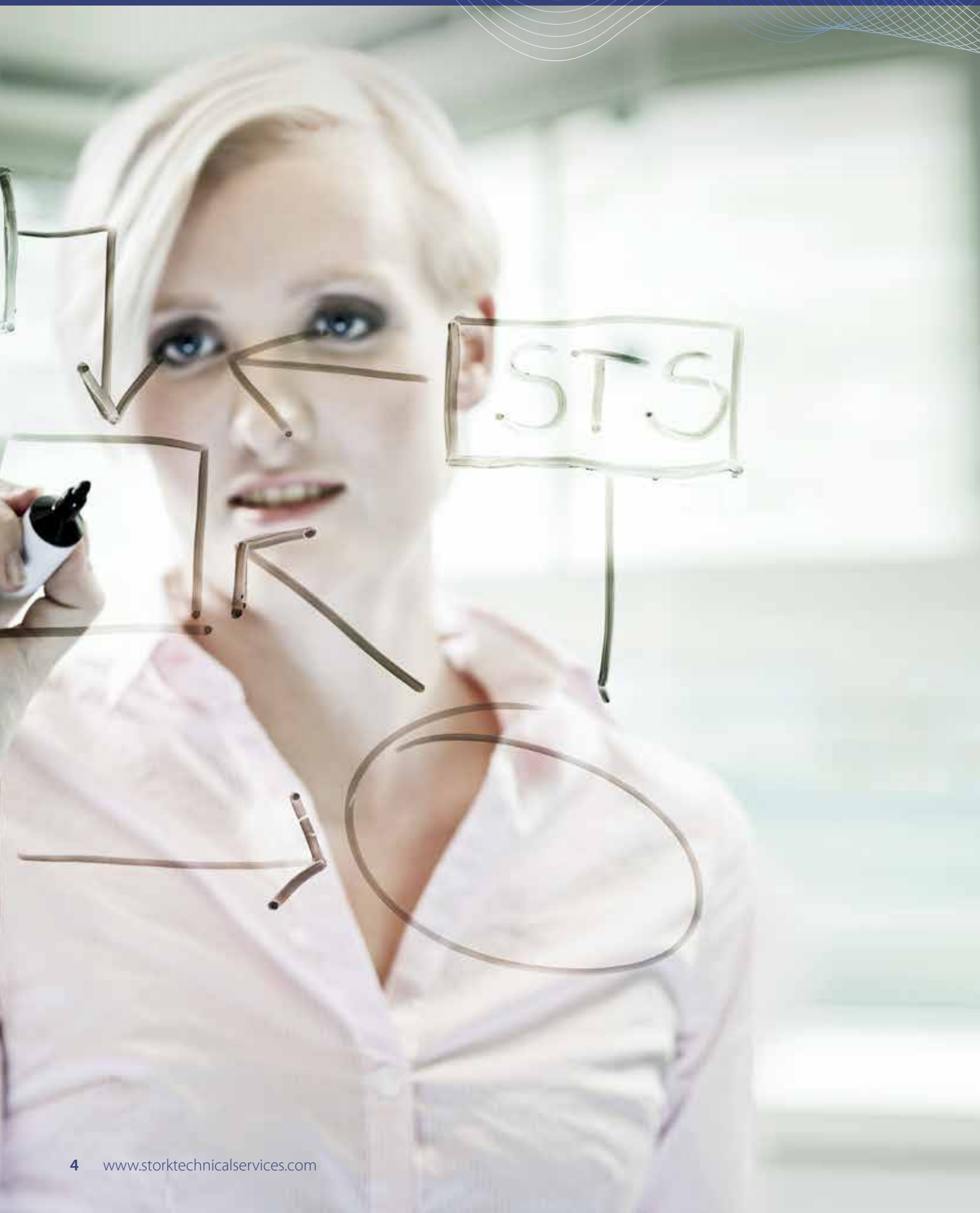
We trust this whitepaper will be a helpful starting point for setting up or reviewing your asset management policy and strategy and that it will enable you and your company to achieve world-class performance in terms of asset management.

I would like to thank our clients for their valuable contribution and for sharing their insights with us and I would like to thank the author of this paper, principal consultant Jos Van der Aelst.

Femke de Jager

Vice President Asset Management Consultancy
Stork Technical Services

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1 INTRODUCTION

INTRODUCTION TO ASSET MANAGEMENT

'Asset management is simply the optimum way of managing assets to achieve a desired and sustainable outcome (PAS 55-1 2004)' /1/.

Assets in industrial environments generate or manufacture products for (internal and/or external) customers. The relation between the asset activity cycle and the supply chain cycle is presented in figure 1.

The asset activity cycle describes the lifecycle of an asset, from concept to disposal. Assets must be designed, operated, maintained and managed to satisfy the requirements of the supply chain

(customer perspective: e.g. quantity, flexibility, quality), while meeting the requirements of safety and environmental regulation.

The entire range, from individual assets to a company's complete asset portfolio is part of the asset management scope. Asset management covers all asset lifecycle related activities: asset creation, care, utilization, improvement and disposal; and it incorporates decision-making processes and actions at the strategic (policy and strategy), tactical (concept and plans) and operational (service providing) levels.

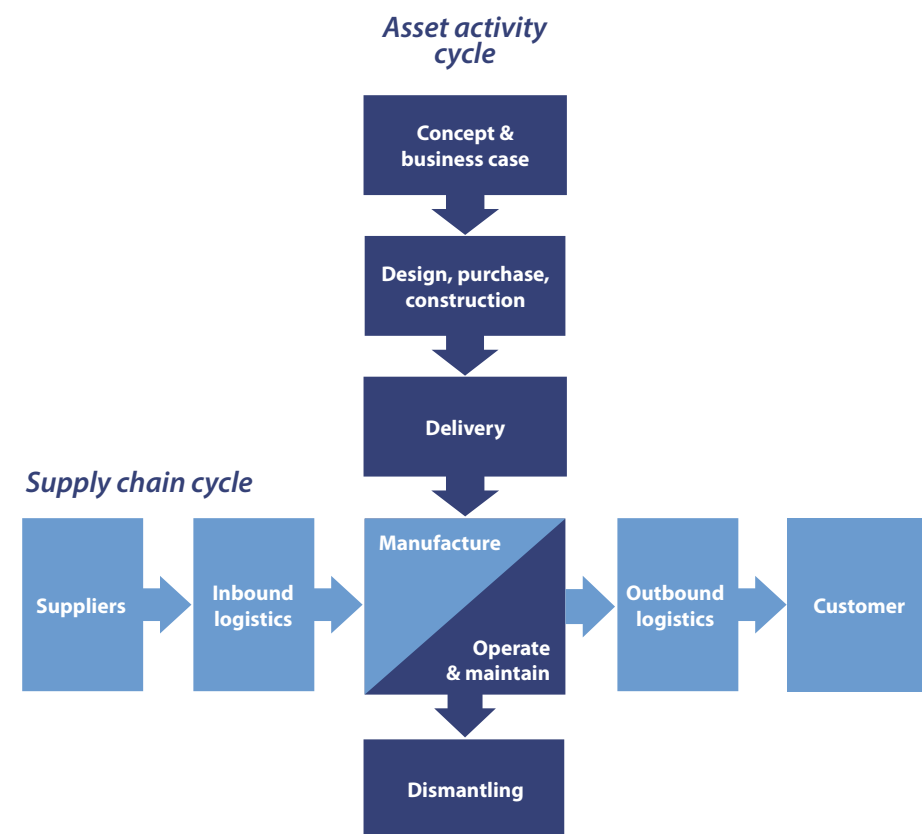


Figure 1: Asset activity cycle and supply chain cycle

2 GOALS

ASSET MANAGEMENT GOALS

The ultimate goal of a (private) company is creating value and generating profit in a short and long-term perspective. The way in which asset management contributes to the overall business objectives must be made explicit to the shareholders and to other stakeholders. There is a strong link between asset management goals and financial indicators such as EVA (Economic Value Added) and/or ROCE (Return on Capital Employed). The assets' output and the total cost of ownership directly influence a company's turnover, profit and capital employed.

In industrial companies, six main asset management goals can be distinguished:

- **Asset - output:** generating the correct number of 'conform' and 'quality' products at the right time. In many industrial companies, asset output is expressed by OEE or Overall Equipment Effectiveness
- **Asset - input:** management of "input" losses and optimization:
 - energy losses
 - (raw) materials
 - labour/overhead (e.g. extra activities due to limited function of the asset)

- **Asset integrity and compliance:**
 - meet the requirements for safety, health and environment
 - comply with (internal and external) rules & legislation
- **Asset lifetime:** achieve the required lifespan of the assets
- **Costs:** achieve above requirements at optimal cost in the short and long term (in the perspective of lifecycle cost and risk management)
- **Innovation and improvement:** continuous improvement of assets and asset management

These asset management goals can be linked to business values and company goals (see figure 2). It is not a one-to-one relation between both. An asset management goal will influence one or more business values.

To ensure business continuity and/or the license to operate, assets and asset management must be compliant and their integrity must be assured. A company needs to deliver products or services at optimal cost to assure profitability. Asset waste management and ensuring the asset lifetime expectation contribute to a company's operational excellence and sustainability. And finally the innovation and improvement of assets and asset management will help shape and build the company's future.

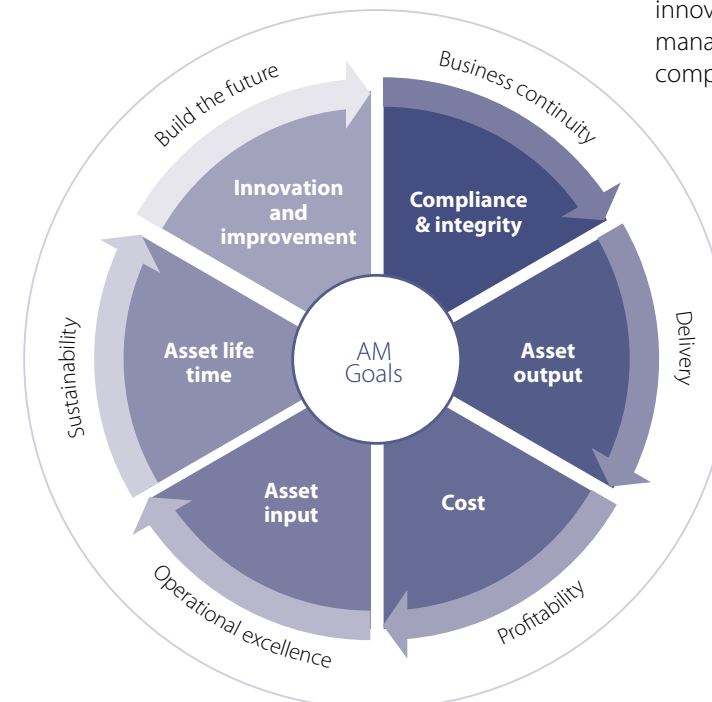


Figure 2: Asset management goals and business drivers

3 MODEL

STORK ASSET MANAGEMENT MODEL

An appropriate asset management system has to be implemented in order to realize the business values and the asset management goals. Stork Technical Services has developed a “field proven” asset management model that is used to design the asset management system. The model refers to the structure of the PAS 55 /2/ asset management system and is built up around 11 domains:

Asset management (AM) governance provides the asset management methods & techniques, best practices and processes for the entire company.

Risk management is an integral part of asset management and is applied in all other domains to support the decision-making process in order to assure “added value” creation.

The asset management process starts with the **AM policy & strategy**, which provide the direction for asset management.

This strategy is translated into **AM concepts**. These concepts bundle all the rules in order to manage the assets and risks (e.g. engineering, maintenance, spare parts, concepts).

The concepts are integrated into **AM plans** (e.g. budget plan) which need to be executed by **AM service providing** (operation for asset utilization, maintenance for asset care and engineering for asset creation) with the focus on efficiency and quality.

In order to close the loop, the **AM performances** must be measured, **analyzed & improved**.

An appropriate **AM organization** with clear roles, responsibilities and accountabilities needs to be installed and staffed by **people** with the right knowledge, competencies and culture. Finally, the **AM infrastructure** and means (e.g. computerized maintenance management system) need to ensure the effective and efficient realization of the AM processes.

These domains are further refined in activities/elements. See figure 3.

The asset management policy and strategy is the starting point for the entire asset management process and is derived from the company’s strategic plan and the stakeholders’ requirements.

Note: this paper covers asset management policy and strategy. A more extensive description of asset management is presented in the paper “A Field-proven Vision of Asset Management” by Stork Technical Services.

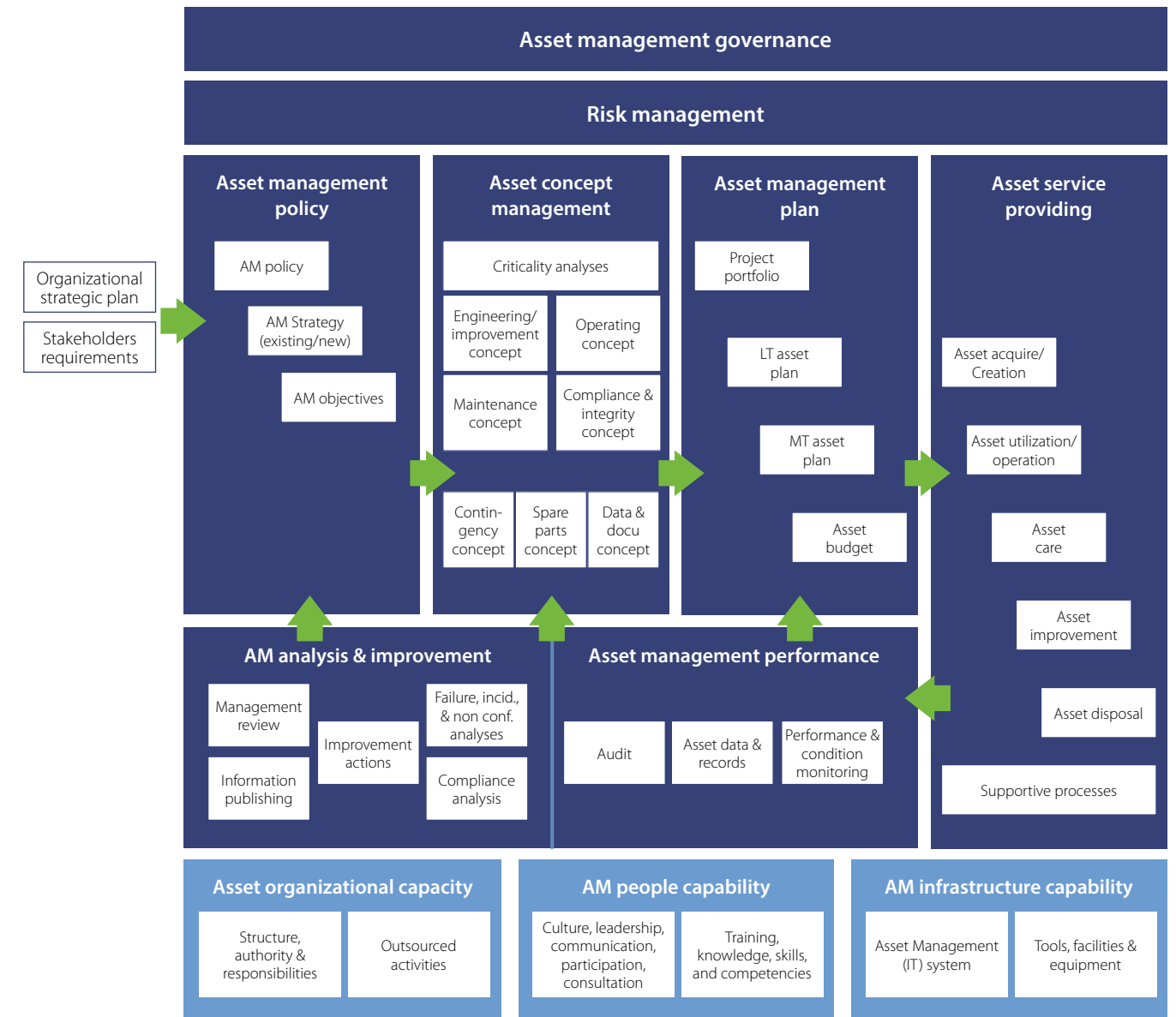


Figure 3: Asset management activities / elements

4 POLICY & STRATEGY

INTRODUCTION POLICY AND STRATEGY

The story of "Alice in wonderland" shows the importance of policy and strategy.

Alice: Would you tell me, please, which way I ought to go from here?
The Cat: That depends a good deal on where you want to get to.
Alice: I don't much care where.
The Cat: Then it doesn't much matter which way you go.
Alice: ...so long as I get somewhere.
The Cat: Oh, you're sure to do that, if only you walk long enough.

Alice in Wonderland – Lewis Carroll

The importance of policy and strategy is that they provide something to hold on to and define the direction for a company and/or organization. In a fast-moving environment, policy is a reference point. It provides direction as a compass does. The strategy describes the way on how to get there.

A **Policy** is a "Statement of Intent" or a "Commitment." The policy must provide principles and guidelines for governing the company and it defines the direction and limits within decisions have to be made.

There are many ways to express a company's policy. The company's policy can be made explicit by a combination of the mission, vision, values, overall goals and principles & guidelines.

Vision and mission statements are often confused with one another. In simplest terms, the mission is the organization's reason for existence, and the vision is what the organization wants to be.

For an example of a company's mission & vision, see: Stork Technical Services the next page.

A company's strategy describes "how" to realize the policy. Which approaches and actions are necessarily to enable an organization to achieve results? To make the desired results of a company more concrete, measurable and tangible, objectives are to be defined.

Similar to the company's policy and strategy, the asset management policy and strategy must provide direction for asset management and this has to be concretized in objectives.

- The asset management policy defines why asset management has been implemented, what it wants to become and achieve, and it describes the principles and mandated requirements to follow.
- The asset management strategy is the long term optimized approach and plan (how) for the assets and asset management.
- The asset management objectives are the levels of performances or conditions of assets and asset management.

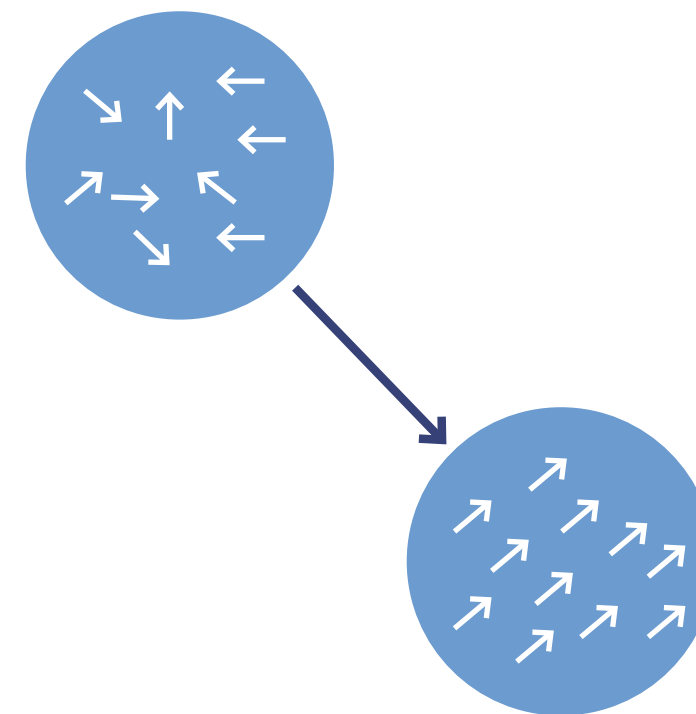


Figure 4: Clear policy drives alignment

Mission

We help our clients to reduce risk, assure safety and improve environmental performance and we enhance profits through innovative solutions, and integrating 'Thinking and Doing'.

Vision

Our vision is to be the leading global provider of knowledge based asset integrity services focusing on the Oil & Gas, Power and Chemical sectors.

Mission & vision of Stork Technical Services

5 DEVELOPMENT

THE DEVELOPMENT OF THE ASSET MANAGEMENT POLICY, STRATEGY AND OBJECTIVES

Asset management policy, strategy and objectives are the starting point for the asset management process. They are the basis for the development of concepts and plans that need to be executed. (see figure 3). Implementing this “line of sight” from policy to execution must guarantee that all decisions and activities create added value for the company.

The asset management policy, strategy and objectives apply to the concerned scope of the assets, of the company's asset management system and to the scope of activities which are part of it.

A risk management approach supports the development of the strategy. Risks associated with assets and asset management must be addressed to meet “the license to operate” requirements at a

minimum. Asset management must also implement the necessary measures (on strategic, tactical and operational level) that contribute to the realization of the business values.

The set-up of the asset management policy, strategy and objectives must guarantee that current and future market and environmental conditions, stakeholder's requirements and the company's policy and strategy are taken into account (“line of sight” principle).

Next to these current and future (external asset management) requirements is the AS-IS status of the assets and asset management important input for the development of the strategy. This development process is presented in figure 5.

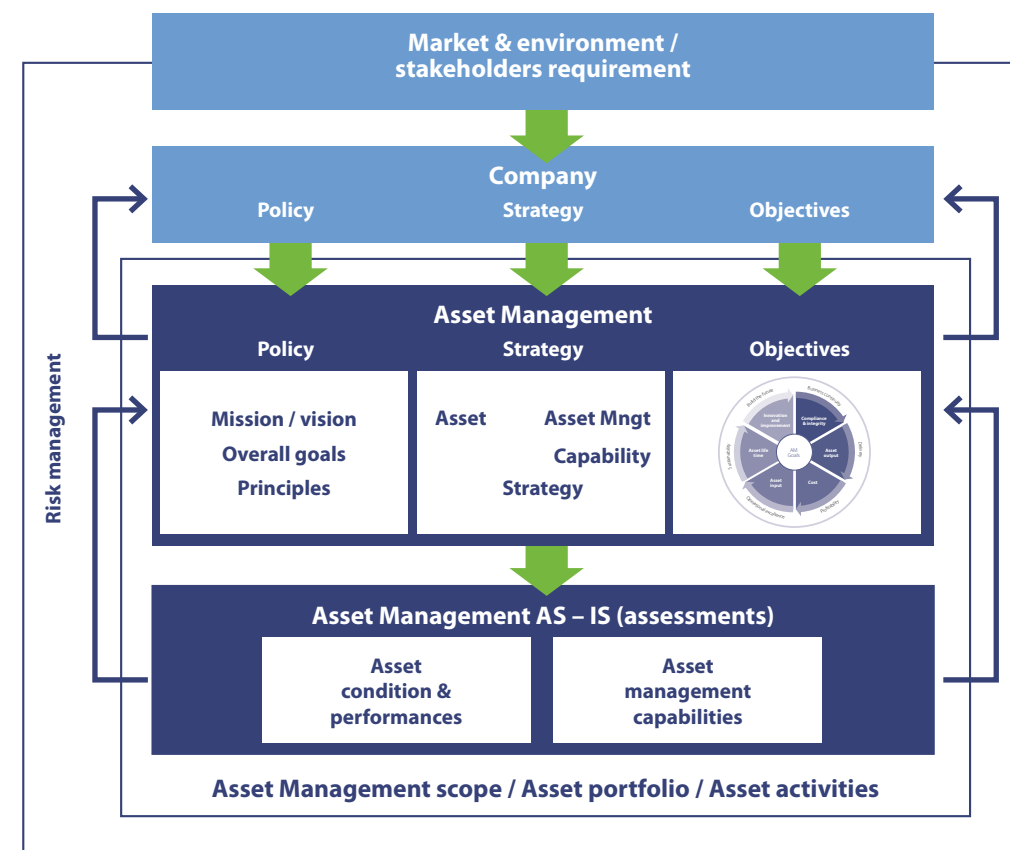


Figure 5: The process of the development of the AM policy, strategy & objectives

5.1 Asset portfolio, asset management and asset management activities scope

Before setting up an asset management policy and strategy, the identified scope must be clear. The scope of:

- Asset (type) portfolio
- Asset management
- Asset management activities

Companies have many different physical assets. The asset scope needs to be defined and documented in the asset register (including specifications, data and performance requirements). It is not only the “production” or “manufacturing” related assets to include into the asset management system, but also for example: control systems, safety and environmental devices, utility systems, building and infrastructural assets, laboratory equipment, quality equipment, equipment/tooling, IT systems, mobile installations and others.

Asset management is understood and interpreted in many different ways. The scope of asset management can be defined based on the Stork 3D scope model. See figure 11. This model helps to define the scope in three dimensions - the business dimension, the asset lifecycle activity dimension and the organizational

dimension. The full range of these three dimensions is part of asset management, but companies may decide to limit their asset management system because parts are already covered within other management systems and/or the company does not have complete authority over some aspects of the dimensions (e.g. asset management considered at plant level has no authority over the corporate engineering (asset creation) department). If the scope is limited in one or another dimension, the interaction with the excluded activity or level must be managed appropriately. For example if the asset management scope is limited to the system (plant) level, the interaction with the BU (business unit) must also be managed (the BU is the stakeholder in this case).

Note: the 3D scope is described more in detail in the whitepaper “A Field-Proven Vision of Asset Management.”

In addition to its “asset scope” and “asset management scope”, a company also has to define which asset and asset management-related “activities” are taken into account (e.g. purchasing, human resource, finance) in their asset management system and which relations/interactions need to be managed.

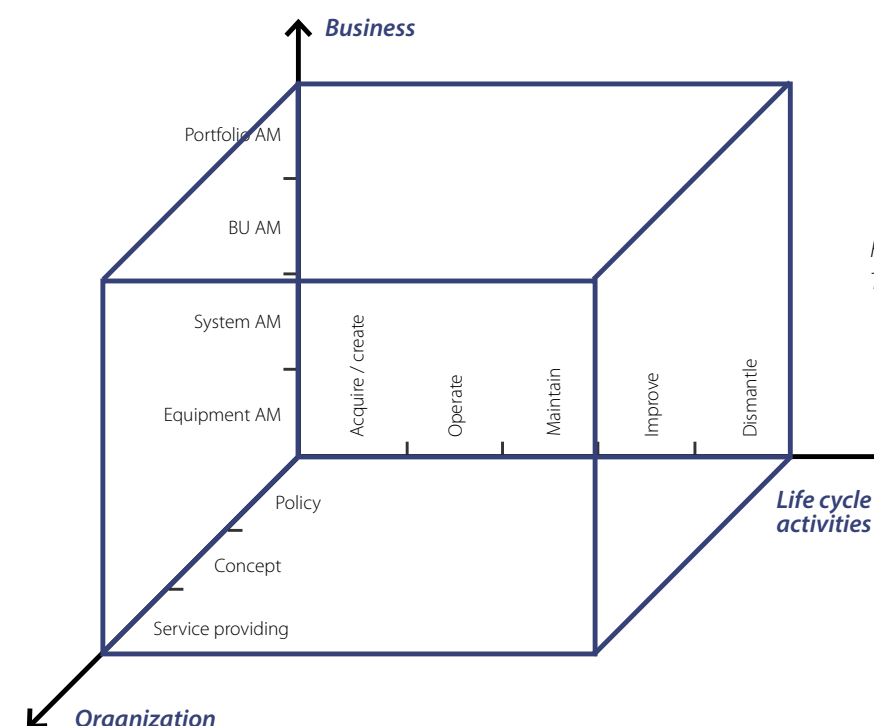


Figure 6: The Asset Management 3D – scope

5.2 Risk management

The identification of the company's risks and/or opportunities is an important input for setting up asset management policy and strategy. The environmental, stakeholders' and company's risks and opportunities need to be identified (see next chapters) and integrated into the company's risk register(s).

The company's risk management methodology should support the process of identifying, analyzing, evaluating and managing the risks. The relevant detected risks/opportunities and the proposed measurements need to be integrated into the asset management policy and strategy.

The asset and asset management-related risks, captured from the assessments (e.g. asset health studies, asset management audits), could be managed with the same risk management methodology (analyzing, evaluation and risk reduction/control management).

A risk register and an explicit risk management approach/process is a requirement for asset management. Not only for the set-up of the policy and strategy, but also for the determination and justification of the concepts (what to do) and plans. The risk management process assists the decision-making process at all levels of asset management (from policy to concepts/plans and service providing) in order to assure that all executed activities will **add value** for the company.

Note: if a company uses a risk matrix, this can help to justify strategic improvement plans and prioritize actions. Moreover, a risk matrix can be useful in demonstrating the line of sight of proposed strategic actions. An action is thus linked directly to company values. See figure 7.

Area at risk					Probability			
					Unlikely	Slight	Occasionally	Frequent
Impact	Safety & health	Environ-ment	Revenue loss	Cost increase				
	Nea		Production	USD	1	2	3	4
	Accid lost			USD	2	4		8
	Incid ti			USD 00	3	6	9	12
	Ince perri injury	leakage	> 40 hrs	USD 00	4	8	12	16

No impact

Low impact

Medium impact

High impact

Strategic action

Figure 7: Risk matrix showing the objective of the strategic action

5.3 Market & Environment analysis

In addition to stakeholders' requirements, relevant market and environmental conditions, risks and opportunities should be integrated into the company policy and strategy (and into the company's risk register). Relevant elements for asset management can be derived from this in most cases. However, it is worthwhile to check specific possible (current) influences and (future) trends from the market and environment for asset management and take these into account when defining the asset management strategy.

Some examples where market and environment influences and trends are impacting asset management:

- Society: Incidents are not acceptable. The integrity of the assets and assets management needs to be in control all of the time
- Environment: If the company is based in an environment where for example a future shortage of competent people, due to demographic evolution, is expected, asset management must challenge this risk
- Value chain: Value chain requirements have a strong impact on asset management. If 'Just-in-Time' delivery is required, asset management must be appropriately designed for it
- Market: This will also be reflected in the company's policy and structure. But the impact of working in a growing or in a shrinking market will influence asset management (e.g. investments, disinvestments)
- Technology: Is the required technology (and service) available? Or is the technology so fast changing that asset management needs to implement measurements to reduce the risk and grab the opportunity?

5.4 Stakeholders' requirements

In addition to analyzing the market and environment, asset management needs to capture the present and future requirements of the various stakeholders.

The main stakeholders for asset management are:

- Customers - the importance of knowing the customers (external and internal) and their requirements (e.g. quality, flexibility) is a prerequisite for asset management (see also the relation between the asset lifecycle and the supply chain cycle)
- Shareholders - asset management has to be in line with the requirements of the shareholders (e.g. financial return or turnover)
- Regulation and law - To guarantee the "license to operate", existing and new legislation or other rules must be integrated into the asset management strategy
- Employees - what are the employees' expectations? What are the cultural elements to integrate? How will asset management be organized within this context?
- Suppliers - asset management needs to know the supplier requirements and possibilities. For example, can suppliers deliver spare parts within a certain time frame or not?

Asset management needs to assess all the different stakeholders' requirements in order to set up an appropriate asset management policy and strategy. The same remark applies as in the previous chapter, many elements are already integrated into the company policy and strategy.

5.5 The company policy and strategy analysis

The asset management policy and strategy must be derived from and be consistent with the company's policy and strategy. The key elements for asset management in the company's mission, vision, goals, strategy and objectives must be reflected and translated into the asset management policy and strategy. Besides this, asset management policy and strategy must also be consistent with other company policies (e.g. safety and environmental policies).

Some examples of company's strategic choices that will influence the asset management policy & strategy:

- The products and product strategies
- Flexibility (product, mix, capacity flexibility)
- Company strategies in place - operational excellence, customer intimacy, product leadership, just-in-time, total quality management, total productive maintenance, lean manufacturing
- Other company business policies and strategies (e.g. HR / HSEQ / Finance)
- Other management systems in place (e.g. ISO 9001, OHSAS 18001, ISO 14001)

Asset management objectives must be derived from the company's objectives. Some company's objectives related to the Balanced Score Card (BSC) are:

- Financial: turnover, profit, cash flow
- Customer: market share, customer satisfaction, quality

- Internal focus - operational excellence in operation, customer management process
- Learning and growth: technology development, people competences

5.6 Assets & asset management - AS-IS situation

Assessments need to be performed in order to know the current or AS-IS situation. The strategy must fill the gap between the AS-IS situation and the TO-BE situation (vision, goals, strategy and objectives).

Assessments should clarify the status of:

- The assets' condition (e.g. asset health studies)
- The assets' performance (e.g. benchmark studies)
- Asset management performance (e.g. auditing versus best practices)

Different assessment methodologies can be applied, such as risk assessment, SWOT analysis and auditing.

A typical asset management audit process is presented in figure 8;

The currently implemented practices are compared with best practices and the results of asset management are compared with benchmarks and stakeholder requirements. Based on a GAP analysis, improvement actions will be defined and strategic actions will be integrated into the asset management strategy.

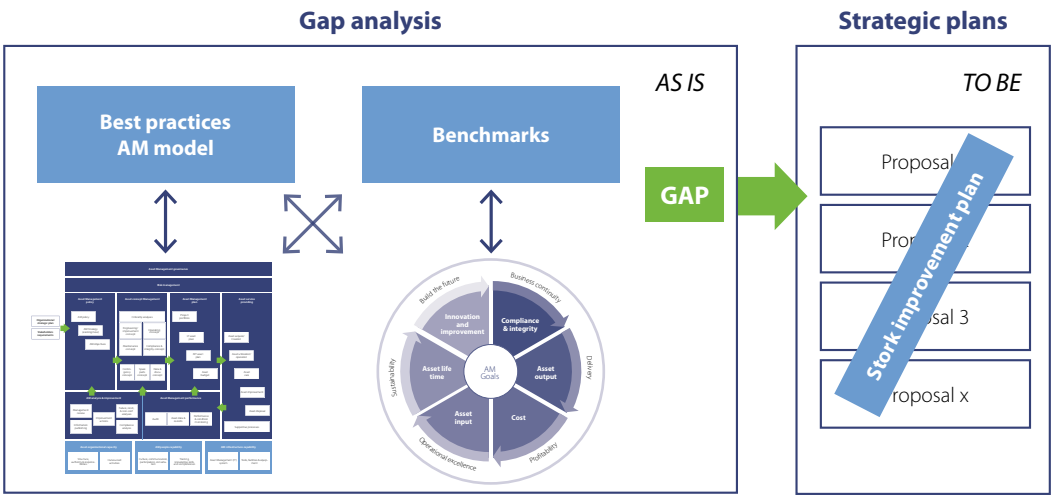


Figure 8: Audit process

5.7 Asset management policy

The definition of asset management policy as described in PAS55 is: "Principles and mandated requirements derived from, and consistent with, the organizational strategic plan, providing a framework for the development and implementation of the asset management strategy and the setting of asset management objectives" /3/.

There are many different ways of describing or making this policy explicit. It can be in the form of a list (bullets) with principles and requirements. Stork Technical Services advises to express it by the following elements:

- Asset management mission
- Asset management vision
- Asset management overall goals
- Principles

The **mission** describes the primary function of an organization (a permanent assignment or the long-term task). It explains its "raison d'être" and the intention of asset management.

The **vision** demonstrates an ambitious picture of the desired and potential achievable future. It should describes what asset management wants to accomplish within the business context.

AM Mission	The X company's mission for asset management is to design & procure, maintain, improve and optimize plant performance, to guarantee the safety of people, the environment and assets, and to minimize the total production cost, while being flexible and accountable to changing business priorities.
AM Vision	The integrity and reliability of asset management provides the factory a short and long-term competitive advantage by the achievement of world's best in class practice.
AM Overall Goals	<ul style="list-style-type: none">- AM optimizes asset reliability, availability, maintainability.- AM optimizes and avoids losses of energy, (raw) materials, labour/overhead.- AM realizes the integrity and compliance of the assets and asset management- AM assures that assets last the required lifetime.- AM realizes all goals at an optimal cost in the short and long term.- AM drives continuous improvement of the asset management system and assets.
AM principles	<p>We will realize the mission and achieve the vision and overall goals by:</p> <ul style="list-style-type: none">- Focusing on safety, health and environmental requirements.- Meeting legal, quality management and internal housekeeping requirements.- Implementing a risk management approach for the entire asset management system.- Following best practices for asset management governance.- Applying and establishing best practices for managing asset functionalities, condition and lifetime requirements.- Focusing on the financial consequences of asset management and applying Total Cost of Ownership methodology.- Implementing effective and efficient performance management (measurement and analysis).- Transforming the strategy into effective concepts and plans in order to realize the objectives.- Executing efficient and qualitative service providing processes for asset care, asset design/creation and (technical) asset utilization.- Establishing clear roles, responsibilities, and accountabilities for all asset management processes and related processes.- Implementing a learning organization with a focus on leadership, knowledge, competencies and culture.- Executing improvement loops and reviews at several levels of asset management while ensuring continuous improvement.

Figure 9: Example of an asset management policy

Adding overall asset management **goals** (see chapter 2) to the policy concretize the “value” contribution of asset management. These overall goals will be translated later into measurable and tangible objectives.

To make the policy more explicit and comprehensible, asset management **principles** are added. These principles describe the main “intentions” and “requirements” to be followed in order to realize the mission, vision and goals.

All these elements (mission, vision, goals and principles) indicate the direction of asset management (for the entire organization) and provide a framework for the development of the asset management strategy.

The set-up of the asset management policy must be performed and validated by senior management. If the company uses a format and/or method to define and to make the company policy (or other policies) explicit, both can be used to formulate the asset management policy. Several sessions with top management are required to setup, discuss, review and validate the asset

management policy. The line of sight with the company policy must be assured. The policy has to be made explicit and is usually presented on a single sheet of paper (see example in figure 7). Communication and awareness programs have to be implemented to ensure that the policy will be known by the stakeholders.

5.8 Asset management strategy

There are several definitions and interpretations of strategy. Strategy interpreted as guidelines or approaches and strategy interpreted as a set of actions that enable an organization to achieve results. However strategy is the answer to “how”. The strategy describes “how” an organization will realize its asset management policy and “how” asset management will contribute to the realization of the company’s strategic plan.

The definition of asset management strategy in PAS 55 is: “Long-term optimized approach to management of the assets, derived from, and consistent with, the organizational strategic plan and the asset management policy” /4/.

The asset management strategy or the long-term optimized approach consists of:

- Strategy practices
 - Strategy practices describe the (main) approaches/methods to be applied
- Strategic actions
 - The description of the broad plan of main actions

Both the strategy practices and strategic actions need to be defined for the “assets” as well for the “asset management capabilities”.

- The asset management strategy has an impact on the assets and must make the strategy related to the asset lifecycle activities explicit.

For example:

- “Asset” strategy practices: We apply condition based maintenance for our critical assets
- “Asset” strategic actions: We invest in asset x to obtain an increased output capability of 20%
- Beside this “asset” strategy, there must be a strategy that describes how to implement, maintain, enforce, develop or create “asset management capabilities” or activities/elements. This “asset management capability” strategy covers all strategy practices and strategic actions related to the different asset management activities/elements (see figure 3). For example:
 - “Asset management capability” strategy practices: We apply Zero Based Budgeting as methodology for the development of budgets
 - “Asset management capability” strategic actions: We will yearly review the efficiency of the maintenance work flow processes

As mentioned before, the asset management strategy describes how it will implement the asset management policy and contributes to the realization of the organizational strategic plan. This implies that the asset management strategy needs to narrow the gap between the AS-IS or given situation and the requirements for the future. New strategy practices and strategic actions need to be deployed and/or developed in order to close this gap. The strategy also needs to describe and

document those strategy practices and strategic actions which are already in place and which must be maintained in order to realize the vision and goals.

These dimensions are presented in figure 10.

The existing or to be maintained strategy practices/ strategic actions should be documented in a strategy document. For example, it is required to document per main asset or asset type the strategy practices and the strategic actions. The new or to be developed strategy practices / strategic actions are to be documented in a strategy improvement plan.

For the set-up of the asset management strategy, two main strategic planning models are used:

- “Goal” based strategic planning (from the future to the present). The strategy is defined based on (future) requirements
- “Issue” based strategic planning (from the present to the future). The strategy is built up from the AS-IS situation to meet future requirements

In reality, strategy set-up involves a mix of both models in most cases.

There are also two main approaches or characteristics for the implementation of the strategy.

The implementation of the strategy practices and strategic actions based on a “change facts” approach (new initiatives, major changes in the way of working) or the implementation based on a “growth process” approach (strengthen the existing organization, processes).

Figure 11 presents the two strategic planning models in relation to the two implementation approaches.

	New or to be developed strategy Practices / Actions	Existing or to be maintained strategy Practices / Actions
"Asset" strategy	<ul style="list-style-type: none">• We develop an overhaul best practice for asset x• We invest in new asset y• Etc	<ul style="list-style-type: none">• We apply basic maintenance as minimum for all our assets• We apply the 5 yearly based turnaround strategy on asset z• Etc
"Asset management capability" strategy	<ul style="list-style-type: none">• We develop a spare parts optimization best practice• We will implement TPM (Total Productive Maintenance)• Etc	<ul style="list-style-type: none">• We use competence management for the development of our people's capabilities• We execute yearly an audit on the condition and performance of AM• Etc

Figure 10: The asset management strategy matrix

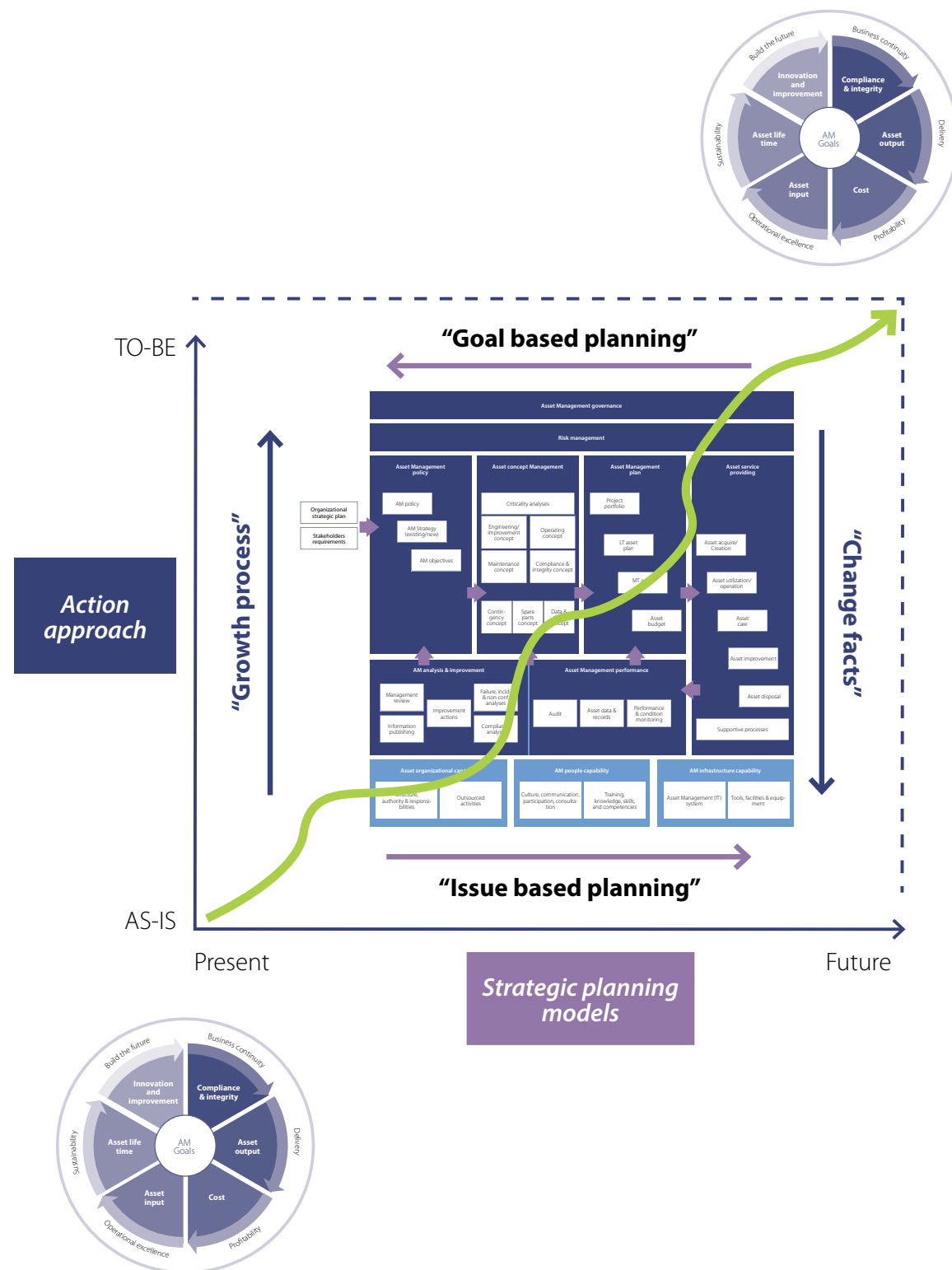


Figure 11: Strategic planning model + implementation approach

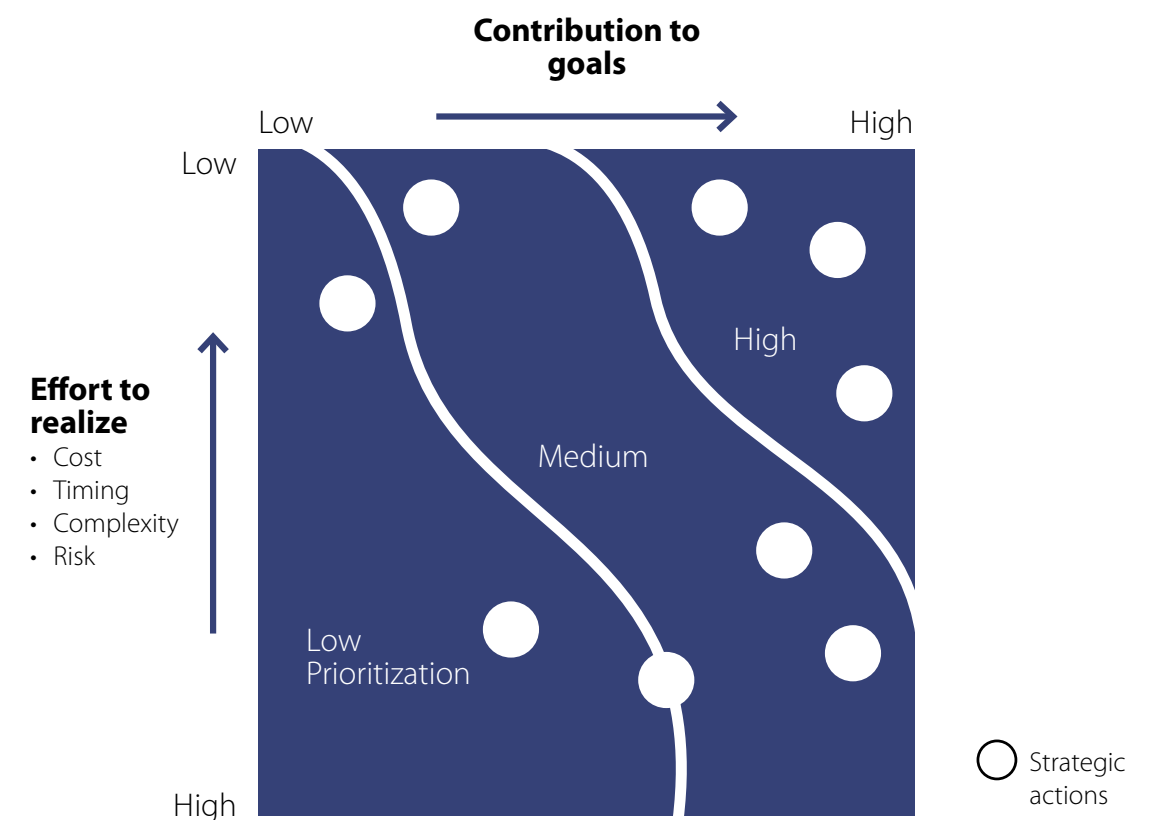


Figure 12: Prioritization matrix

Strategic analyses such as scenario analysis, “what if” analyses, environmental analysis and other analytical approaches will lead to the development of different strategy practices and strategic actions in order to reach the goal. Several strategy “implementation-scenarios” can be retained (“more roads lead to Rome”). Depending on the requirements, the added value, the degree of urgency and the available resources and capabilities, choices have to be made for an ambitious or conservative approach.

The prioritizing of new strategy practices and strategic actions to be implemented can be done with the help of a prioritization matrix (see figure 11). The contribution of the practice/ actions required to meet the organizational

strategic plan and asset management policy is presented versus the required effort (in terms of costs, timing, complexity and risks). The practices/ actions high contribution and low effort are prioritized as “high” and those with low contribution and a high level of effort as “low.”

As mentioned, the risk matrix is another powerful tool for illustrating the contribution to the company. This matrix reflects the company's values and can be used to make the value of the strategic action explicit (see figure 7).

5.9 Contingency strategic plans

The market & environment, shareholders and company's analyses and the risk assessments will provide developments, risks and opportunities for the company and for asset management. These will potentially require the reduction, maintenance or development of strategy practices and strategic actions (see figure 13).

For those developments, risks and opportunities with a high probability (or, indeed, already a fact), the appropriate strategy practices and strategic action needs to be part of the asset management strategy. The priority for the implementation is related to their level of impact.

For those developments, risks and opportunities with a potential high impact on asset management but a low probability of occurrence, strategic contingency-scenarios need to be developed. If the development, risk or opportunity becomes a reality, the company must be prepared and must know immediately how to react.

For developments, risks and opportunities with a potential low impact and a low probability of occurrence, no strategic scenario's will be developed.

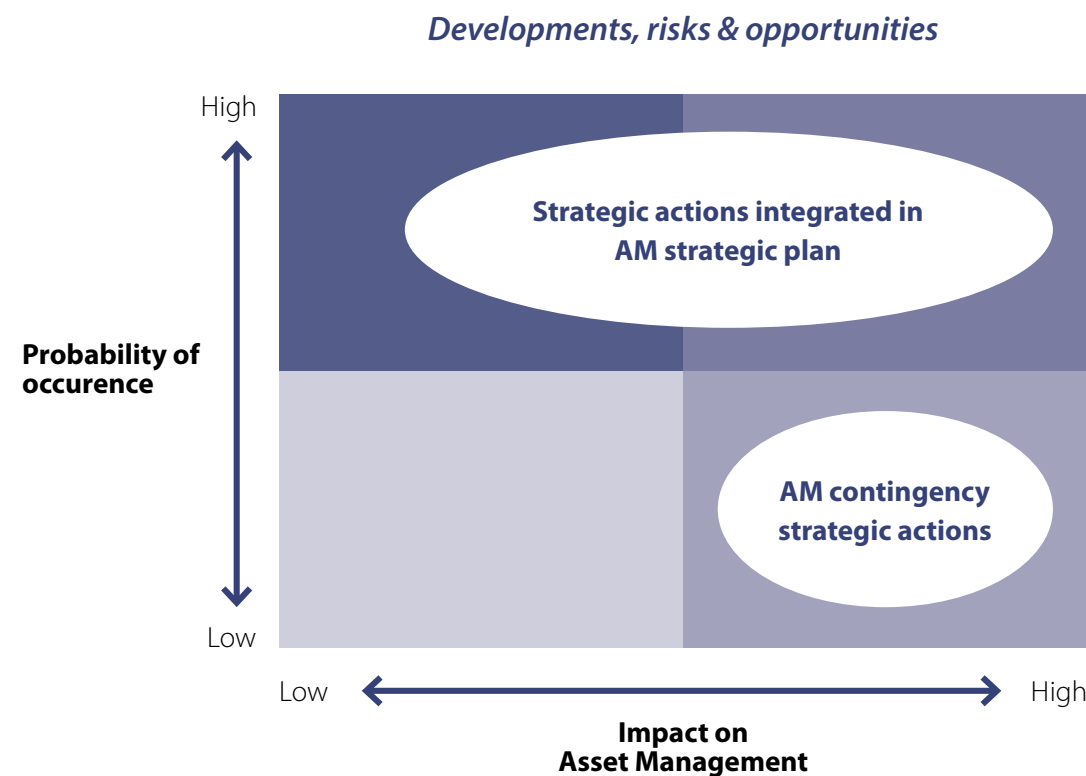


Figure 13: Development of asset management contingency strategic plans

Example of different asset management scenarios as a function of the combination of the required asset life and the required asset performance.

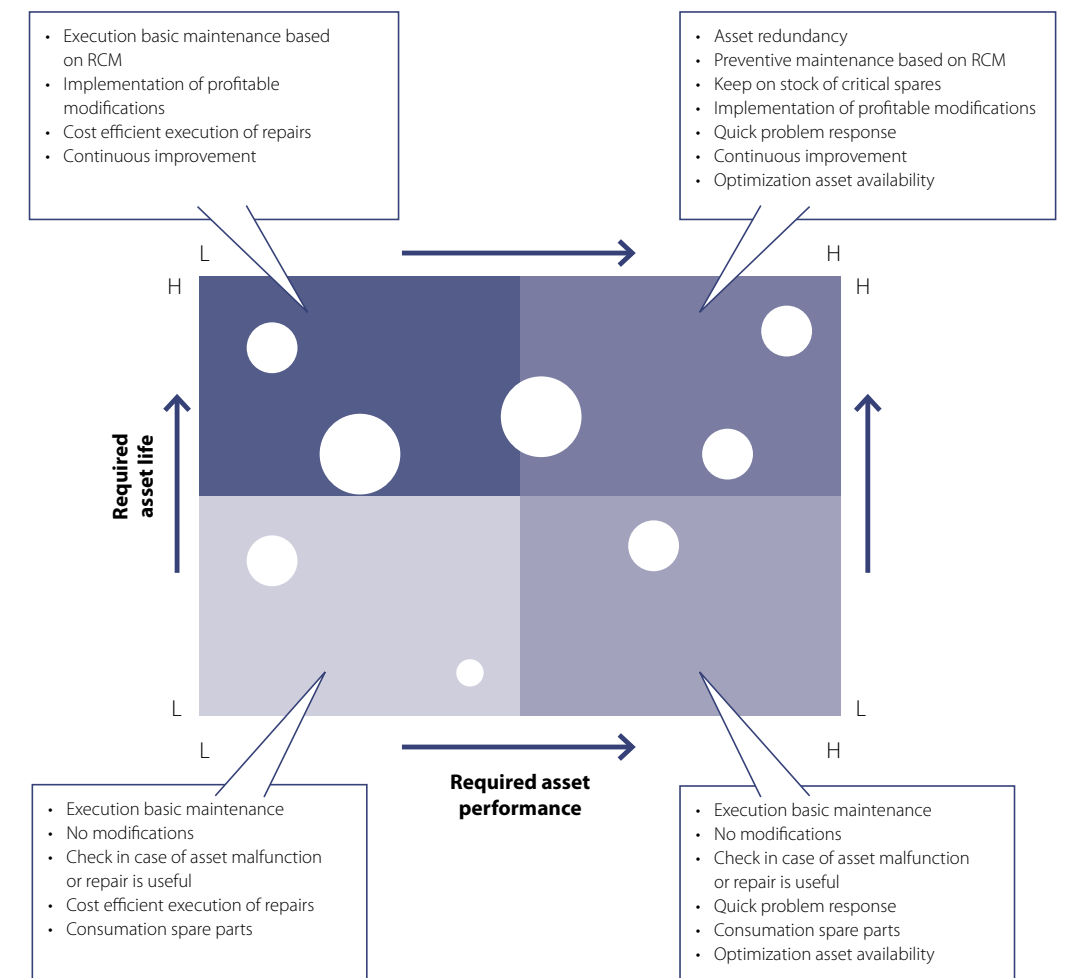


Figure 14: Example of different asset management scenario's

The various assets are represented by the circles. Depending on the required performance (e.g. asset output) and the remaining required lifetime, the necessary measures are indicated. In this case, basic measurements/actions are presented for the 4 quadrants.

These measures will impact various fields such as design (redundancy), maintenance (preventive maintenance), spare parts, knowledge and skills (fast intervention), costs etc.

Anticipating changed business goals (e.g. reduced output requirements due to the economic crisis) by incorporating countermeasures into the asset strategy and concepts is an integral part of the asset management process.

5.10 Asset management objectives

Asset management objectives are “detailed and measurable level[s] of performance or condition required of the assets and specific and measurable outcomes or achievements required of the asset management system” (definition from PAS55/5/).

Asset management objectives must be derived from and consistent with asset management policy and strategy and the organizational strategic plan.

The objectives are the more detailed concretization of the overall asset management goals (see chapter 2). The objectives should be as SMART (Specific, Measurable, Achievable, Realistic, Time-based) as possible.

A very important objective in industrial companies is the ratio of the cost per unit produced (e.g. €/ton, \$/m², €/km)

The process of defining strategy and objectives is an iterative process. Strategy creates objectives, objectives creates strategy (e.g. strategy improvement plans). This process is shown in figure 15.

The responsibility for the realization of the objectives has to be assigned to a position with the appropriate authority in the organization.



Figure 15: Strategy and objectives as Iterative process

AM goal	Objective – target	Strategic AM improvement actions	Main plan activities	Related to company strategy domain
Asset output	Increase output by 10%	<ul style="list-style-type: none"> Invest in new installations Improve operational reliability by reliability improvement programs 	<ul style="list-style-type: none"> Set up investment plan Execute criticality analyses Execute RCA and RCM studies 	Economically and commercial
Asset input	Decrease energy losses by 50%	<ul style="list-style-type: none"> Implement energy-reduction program 	<ul style="list-style-type: none"> Define bad actors Set up of energy concepts 	Compliance
Compliance & integrity	Meet ISO Asset Management certification	<ul style="list-style-type: none"> Design and implement the Asset Management model 	<ul style="list-style-type: none"> Set up the AM System Describe the business processes Implement procedures / instructions 	Compliance
Asset life time	Increase life time of asset by 10 years	<ul style="list-style-type: none"> Invest in life time extension for installation Invest in required spare parts 	<ul style="list-style-type: none"> Execute life time investigation program Set up investment plan 	Technology and economically
Cost level	Keep cost level (related to asset repl. value) under 3%	<ul style="list-style-type: none"> Implement monitor and control program on cost level 	<ul style="list-style-type: none"> Set up of cost information system 	Economically
Innovation & improvement	Increase competence level of people	<ul style="list-style-type: none"> Implement competency management model 	<ul style="list-style-type: none"> Define required and actual competencies Set up competency developing programme 	People and culture Technology

Figure 16: Example of the relation between company strategy domains, asset management goals, objectives, strategy improvement actions and main plan activities

5.11 Visualising “line of sight”

If a company already uses templates or methodologies to develop or visualize policy and strategy, it is useful to also use these for the development of the asset management policy and strategy. It supports the recognition within the company and it can help make the principle of “in line of sight” more explicit. An example of this is presented in figure 17.

This company used to visualize the corporate strategy and objectives the “strategy map and balanced scorecard” from Kaplan and Norton /6/). In order to assure the “line of sight,” the asset management strategy and objectives were drawn up in the same format. The links between the company and the asset management level were made explicit by this presentation format.

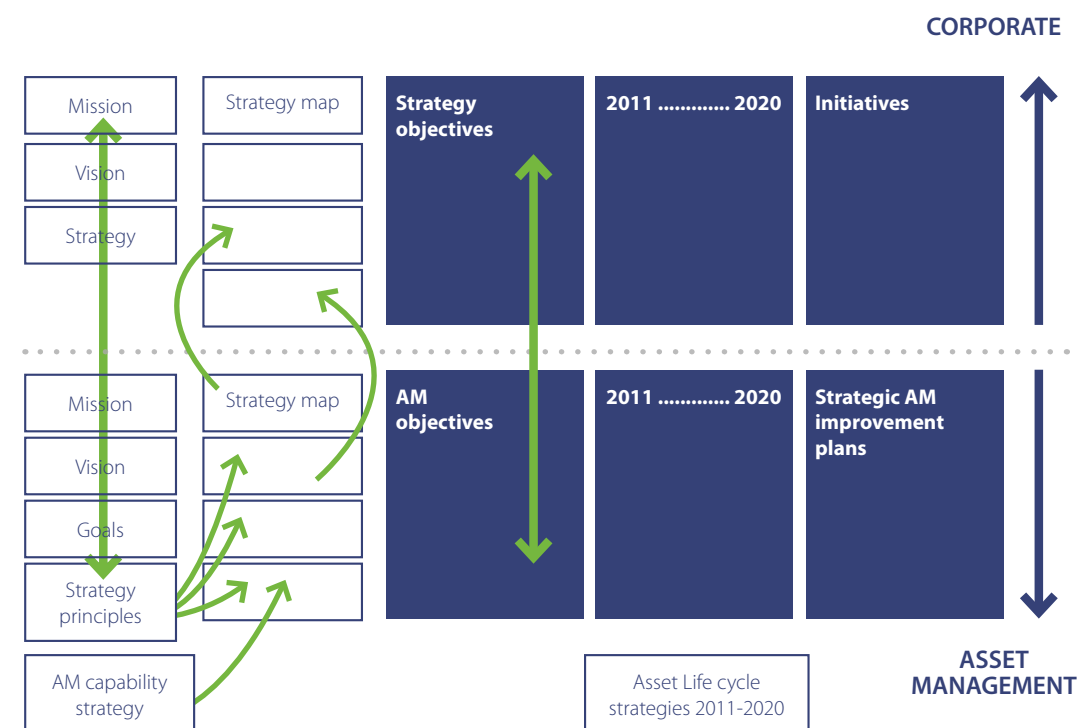


Figure 17: Visualizing the company and asset management strategy

6 CONCLUSION

In the past and more recently, companies have suffered from financial, safety and/or environmental disasters due to asset failures. The non-integrity or unreliability of the assets led to failures with huge impact.

In many cases, however, the main cause was not only a lack of “asset” integrity but also, and even more importantly, a lack of “asset management” integrity. Was the asset management policy and strategy directed towards a sustainable future or was it focused on short-term profitability with a lack of focus on safety and the environment?

The importance of the policy and strategy is that it creates the desired direction for asset management. It demonstrates the commitment of senior management and it is the driver for implementing and maintaining integrated and consistent approaches and behavior in order to become or remain a sustainable, integrity-based, profitable company.

This document provides models and frameworks for helping set up an asset management policy and strategy while assuring that the “line of sight” is guaranteed and traceable.

Stork Technical Services’ challenge is to help companies realize world-class asset management and therefore we are pleased to share our knowledge and field-proven practices with our customers.

Jos Van der Aelst

Principal Consultant Asset Management
Stork Technical Services

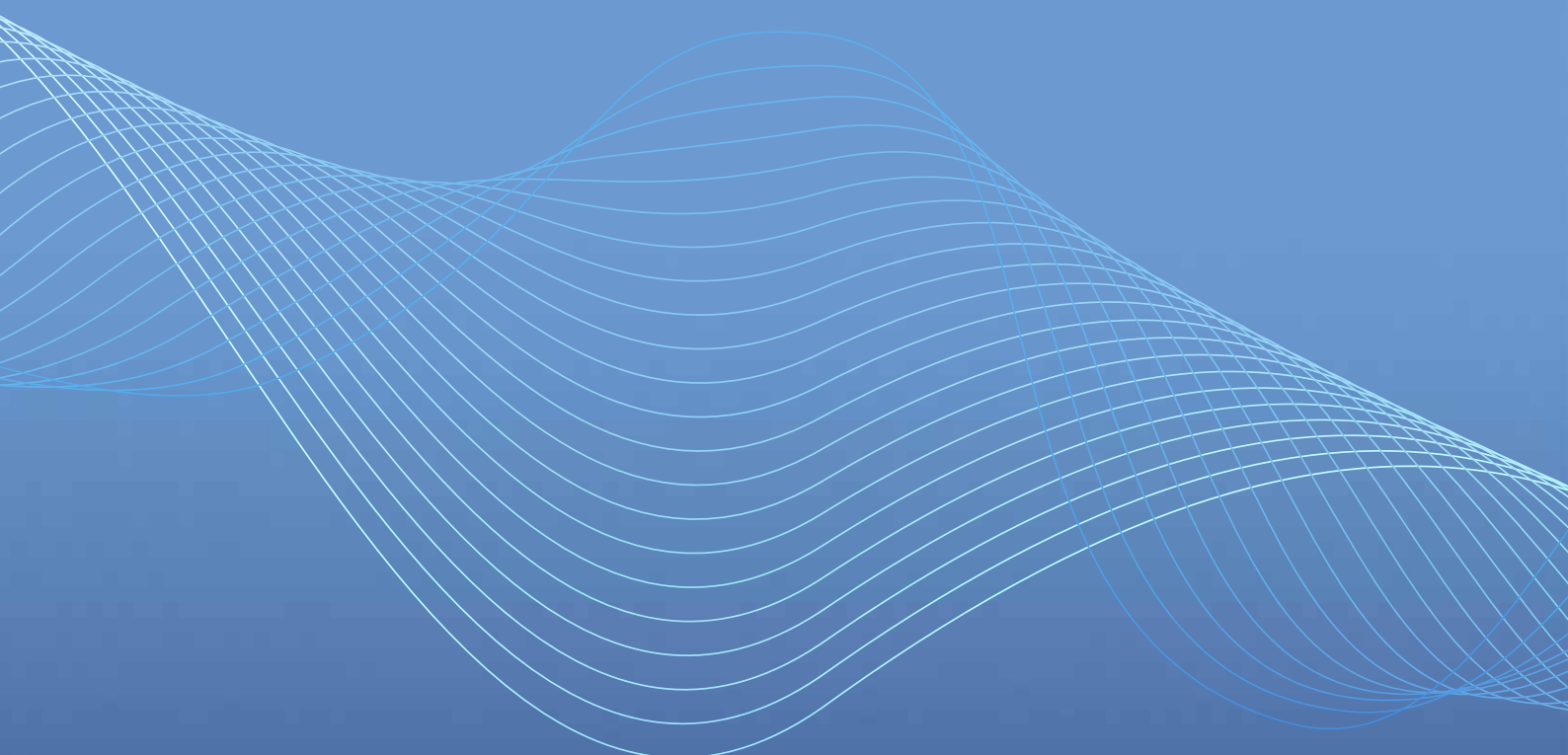


7 REFERENCES

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- 2 PAS 55-1 2008, PART 1, chapter 3.2, Asset management definition
- 3 PAS 55-1 2008, PART 1, chapter 3.8, Policy definition
- 4 PAS 55-1 2008, PART 1, chapter 3.9, Strategy definition
- 5 PAS 55-1 2008, PART 1, chapter 3.5, Objectives definition
- 6 Strategy map – Kaplan & Norton

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