The future scorecard: combining external and internal scenarios to create strategic foresight

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Abstract

Purpose – The purpose of this paper is to provide a new and systematic approach towards strategic foresight by combining traditional external scenarios (market-based approach) with internal scenarios (resource-based approach) into a future scorecard, which can be used to describe alternative internal development paths for an organization.

Design/methodology/approach – The paper builds on the existing literature as well as on multiple case examples to illustrate the application of the future scorecard.

Findings – The findings of this paper are that it is possible to combine the external (market-based) and internal (resource-based) view to create a strategic early warning system.

Practical implications – The implications for practitioners are twofold, first, the paper outlines the importance of integrating a future perspective into performance measurement systems, second, it demonstrates the applicability of scenario thinking for the internal resource-based view of the firm.

Originality/value – The paper combines thinking of the market-based and the resource-based view of the firm in order to provide a new tool to supplement most static measurement approaches with a tool that monitors the future developments – externally and internally. Scenarios are traditionally used to describe possible alternative future developments in the external environment, which then inform current strategy assessment and future strategy development. However, with a shift in focus away from the market-based paradigm and towards a resource-based view of strategy, scenarios can also be used to describe alternative internal development paths for an organization. These two types of scenarios can then be systematically developed and combined to form a significant element of a strategic early warning system – the future scorecard.

Keywords Balanced scorecard, Performance measurement (quality), Intellectual capital, Intangible assets

Paper type Conceptual paper

Introduction

To survive and grow in an era of continuous change, organizations must identify upcoming opportunities and threats early enough and address them in their strategic planning. Scenario planning became popular in the 1970s as a tool to help organizations in this process by distilling the countless possibilities of the future state into a limited set of coherent views. This limited set of scenarios could then influence strategic decision-making. The development of scenario planning was closely associated with the emergence of strategic long-range planning. During that time,

models of strategy were emphasizing the exploitation of market power with the competitive forces introduced by Porter (1980) and the model of strategic conflict presented by Sharpiro (1989). In this predominantly externally focused mindset scenarios were exclusively used to describe alternative future market developments (Miller and Waller, 2003).

More recently, internally focused models of strategy that emphasize efficiency were introduced to supplement the externally focused models. This movement resulted in concepts such as the resource-based, competence-based and evolutionary views of the firm. Strategists were forced, therefore, to move away from a "black-box" view of the firm and match external opportunities with organizational capabilities. In this paper, the authors will demonstrate how scenario planning is following this development and how both external and internal future scenarios can be created. This allows firms to match external opportunities and threats with the threats and opportunities of internal developments in their strategy planning.

In the remaining part of this paper we will demonstrate how the two scenario approaches can be used to build a strategic control instrument – the future scorecard – combining strategic planning and early warning systems to enable strategic foresight. First, we will describe the traditional role of scenarios in strategic management, outlining the four-step process for scenario development and discussing how scenarios are used in strategic planning; then we will discuss the resource-based view, outlining how it informs scenario thinking and how to develop internal strategy scenarios; in the subsequent part we discuss how strategic planning can be based on internal and external scenarios; before we conclude, we describe how a future scorecard can be developed based on the strategic insights from the scenarios.

Scenarios in strategic management

Today's environment is increasingly unpredictable and often appears to be in a state of flux. It seems unsafe, therefore, to rely on just one single view of the future. Instead, scenarios help organizations to cope with growing uncertainties by acquiring multiple views that describe a range of opportunities. Scenarios are based on two main principles.

(1) *Systems thinking.* There seems to be ever-increasing diversity and dynamics in entrepreneurial activity. At the same time, most management approaches are still built upon traditional cause-and-effect thinking in distinctive sub-systems. This often leads to structural problems. In the course of their planning, organizations thus need to consider the development and the behaviour of complex systems by dealing with the interconnections between the most important key factors of a larger ecosystem (Moore, 1996).

(2) *Future-open thinking.* It is increasingly difficult to make precise predictions of future trends and developments. Organizations, therefore, have to unlearn the idea that a single predictable future exists. Instead, they have to include alternative options in their calculations of how influencing factors may develop.

The term "scenario" is used for a variety of different approaches – from simple alternative projections (e.g. "the high-price-scenario") to results of complex simulation-models. Here, we use the term scenario only for future images that combine future-open thinking with systems thinking. That means a scenario is one of

the several future images that describes a future situation based on a significant number of consistent developments. The use of this kind of complexity-processing scenario in corporate or business planning is described as Scenario Management (Figure 1).

Figure 1 also shows some traditional approaches in this field: system dynamics is a combination of Systems and Strategic Thinking – but without the multiple perspectives (A). Most scenario planning approaches, on the other hand, are based on future-open thinking and strategic thinking – but they neglect the complexity in the market environment and scenarios become obsolete very soon (B). Scenario technique approaches – mostly from Continental Europe – create very complex scenarios, but often fail with their integration into strategic management (C). The unique feature of scenario management is that it combines these methods of systems thinking, future-open thinking and strategic thinking. In the following we will outline the four steps of developing a scenario.

Four steps of scenario development
Most scenario processes are initiated within planning or strategy development processes. Their goal is to improve the decision-making process by including uncertainties in complex environments. Planners, therefore, have to define a specific scope that we call the "scenario field". It describes the subject of the scenario creation process. The most frequently used scenario fields are based on the market-based view and focus on corporate or business environments in general, industries, markets, technologies and specific global issues, e.g. electronic business or payment systems. To describe possible future images of a scenario field, planners have to work through the following four phases (Figure 2).

(1) *Detection of key factors (Phase 1).* Every scenario field consists of a large number of influence factors. To avoid unwanted concentration, the scenario field is systematically structured into different spheres. Each sphere is described by specific influence factors, which are summarized in an influence
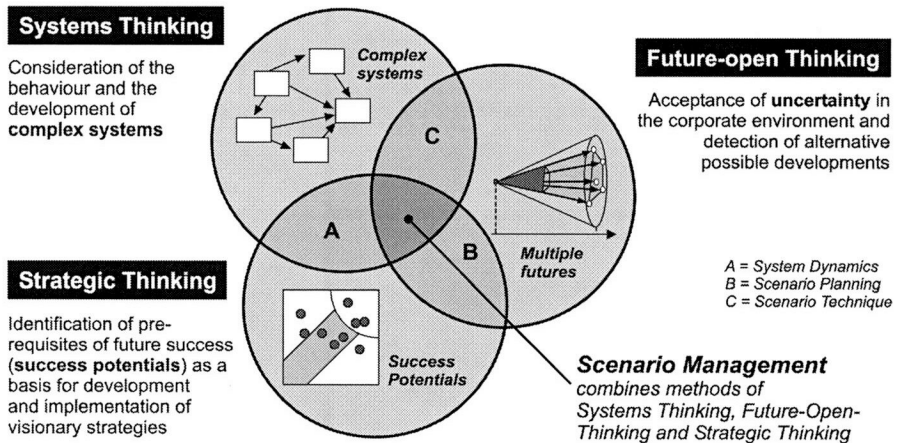

Figure 1.
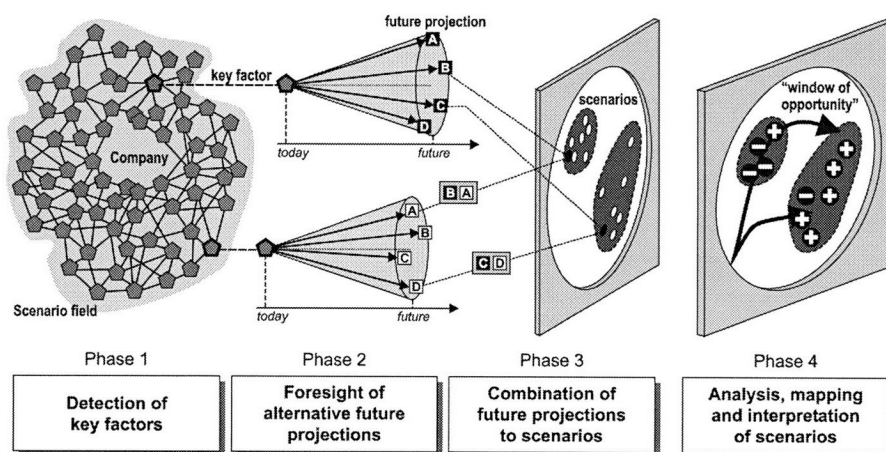Main principles of scenario management

Source: Fink *et al.* (2000)

Figure 2.
Four steps of scenario
development

Phase 1	Phase 2	Phase 3	Phase 4
Detection of key factors	Foresight of alternative future projections	Combination of future projections to scenarios	Analysis, mapping and interpretation of scenarios

Source: Ringland (2002)

factor catalogue. Using the full number of identified factors during scenario creation would lead to scenarios that are too complex and blurred. Only those factors are selected that are either characteristic for the development of the whole scenario field or have a strong influence on the centre of the scenario field. These so-called "key factors" can be extracted with the help of an influence analysis. Based on the assessment of the interconnections, the systemic behaviour of all factors is visualized to identify subsystems, dominant factors, and critical feedback loops.

(2) *Foresight of alternative projections (Phase 2).* This is the heart of the scenario development, where we look into the future. First, the scenario team defines a future horizon – the time in the future that should be described by the scenarios. After this, the team identifies possible developments for all key factors – the so-called "future projections". The aim is not only to find the one most likely projection, but also to find alternative and plausible images that can be used to enable the scenarios to describe the full "window of opportunity." Usually three or four projections are described per factor to avoid one-dimensional "black-and-white" thinking.

(3) *Calculation and formulation of scenarios (Phase 3).* Two goals determine the third phase: ideally each scenario should represent a possible and internally consistent future situation and the set of scenarios should represent the entire "window of opportunities", including all possible images of the future. To work out consistent future images, the consistency of all pairs of projections is assessed and all possible combinations – the so-called "projection bundles" – are checked. Scenario software can be used to assist this process. To find a suitable set of scenarios, the highly consistent projection bundles are systematically grouped in a cluster analysis. The number of scenarios is pre-determined and more diversely the members of the scenario team think into the future, the more scenarios will be produced. Projections that appear in the majority of projection bundles of a certain scenario are named "scenario

elements". While some projections appear in more than one scenario, others are a distinguishing feature of only one scenario. These characteristic elements are at the centre of the scenario description, which can take the form of a report or more innovative formats, such as newspapers, interviews, or even theatre plays.

(4) *Analysis, mapping and interpretation of scenarios (Phase 4).* In addition to the scenario description, each scenario can be analysed in detail: What are the scenario drivers? How robust is the scenario? What are the likely outcomes? Who are the winners and losers in the scenario? And what happens if disruptive factors are included? What are possible sub-scenarios? A second set of questions concerning the consequences of the scenario could be asked too: What are the opportunities and risks for us as a result of the scenario? What would we have to do in case the scenario became reality? However, even if all scenarios are described and analysed in detail, many executives strive for an overview of their "window of opportunities". Using multi-dimensional scaling the input bundles can be projected into scenarios, which are then visualized in the so-called "scenario maps". Such a map can be used to interpret the set of scenarios. Often the current situation is marked on the map so that alternative development paths can be seen as arrows from the current situation to other scenarios.

The scenario development processes
Scenarios are developed in different ways (Figure 3). Intuitive approaches are used by "gurus" (who sell scenarios as products) and by companies mainly in the Anglo-American area. These scenarios are often well formulated, but they are not reconstructable, which leads to problems when companies try to integrate their dialogue-based scenarios into continuous planning processes. Typically, systematic approaches like scenario management are either used by external experts and consultants who sell scenario studies; or they are developed directly within the company – often supported by internal or external facilitators or moderators.
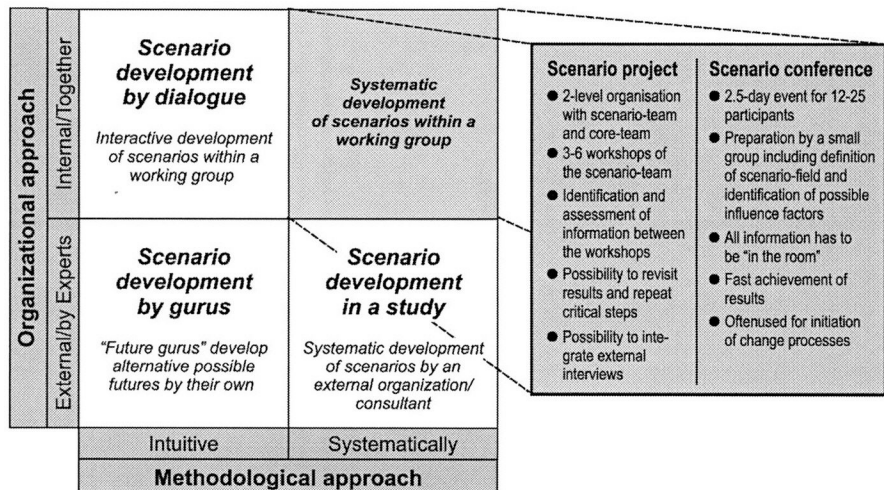

Figure 3.
Organization of scenario development-processes

The most common form of scenario development are scenario projects. They generally last between a couple of weeks and a couple of months, depending on the complexity and work intensity. Typically, two to five workshops take place, where a scenario team of 10-20 participants discusses the most significant steps of the process. A smaller core team is responsible for the preparation and documentation of the workshop as well as taking responsibility for some specific analyses. While this traditional approach often takes quite a long time and requires substantial resources, others prefer a scenario conference. Here, the scenarios are jointly developed in two or three days. Scenario conferences enable participating managers to explore alternative concepts in a creative atmosphere and to systematically develop a vision together with their peers. This has the added advantage that all key influencers have contributed to the same discussion and, therefore, their buy-in to the conclusions is likely to be greater.

How scenarios are used in strategic planning
Strategy development rarely starts with a blank piece of paper. Often the aim is not to invent a completely new strategy, but to examine the suitability of the existing strategy with the help of external scenarios. The strategy in question can be an existing corporate or business strategy, or it can be a hypothesis-based strategic option put forward by the strategy team.

Strategy valuation processes can discover problems or inconsistencies in the current strategy as well as new market opportunities. Both could lead to a revision or abandonment of the current strategic direction. This is why the traditional scenario planning process starts with an analysis of the impact of external scenarios on the company or business unit in question. Here, the rule of thumb is to keep all scenarios in the game for as long as possible. This often leads to new findings, such as underestimated threats in a – previously superficially viewed – "good" scenario and to hidden opportunities in "bad case" scenarios. Based on insights from the scenarios in terms of opportunities and threats, companies can develop new strategies. Strategies can be approached in the following three ways, depending on the specific planning situation and the corporate culture of the company (Makridakis, 1990; Courtney, 2001).

(1) *Planning-oriented strategies.* This approach is based on the belief that there is a relatively certain future. On that assumption, planners do not have to wait and react, but can make decisions and take actions in anticipation of forthcoming changes.

(2) *Preventive strategies.* Here, the emphasis is on reacting to environmental changes. Uncertainty is accepted and the aim is to cope with unforeseen change.

(3) *Proactive strategies.* Here, strategists accept that a wide range of changes in the corporate environment are unpredictable, but nevertheless attempt to anticipate potential events and so are able to react ahead of time to exploit their arrival (if, and when, they do). Furthermore, action can be taken by the organization to bring about desired change that would not have occurred otherwise or would have happened later (Makridakis, 1990).

The development of strategies can vary between two extremes.

(1) Focused strategies are based on one single reference scenario – in most cases the one with the highest probability. Within this kind of strategy, resources are

strongly focused and the strategic direction is easy to communicate. Companies working with focused strategies have to be aware of changes in the corporate environment. They need excellent market research and early warning processes to make sure that they are always on track. They also require organizational adaptability to fast changes in their strategy.

(2) Future-robust strategies are based on multiple scenarios, ideally all the identified scenarios. These are very flexible strategies, which are open to changes in the environment. But robust strategies are often very complex and difficult to communicate.

How the resource-based view of strategic management informs scenario thinking

In this section, we would like to briefly review the implications of the resource-based view of the firm, introducing strategy scenarios as a tool to understand the internal developments in firms. Subsequently, we provide a classification of firm resources and a selection of case examples of how strategy scenarios were applied to assess the internal resource developments.

As outlined above, scenarios have traditionally been used to detect and explain the developments and possible changes in the external environment of the firm. This approach is rooted in the market-based approach of strategic management, which widely ignores the developments of internal capabilities. Andrews (1971) has highlighted the danger of ignoring the internal capabilities when he states that opportunities without the necessary capabilities are a "trip to fairyland". In recent years a new theory of strategic management has emerged, which argues that a competitive advantage of organizations arises not only from identifying new external opportunities, but instead from managing the difficult to replicate resources and capabilities, which in turn form the basis for capabilities. A new way of thinking about strategy was framed into the resource-based view of the firm. This understands firms as heterogeneous entities characterized by their unique resources which, when combined, form different distinctive and leveragable capabilities. The view that firms compete on their unique resource architecture was shaped by scholars including Wernerfelt (1984), Rumelt (1984), Barney (1991) and supported by theories of evolutionary economics (Nelson and Winter, 1982), the notion of competence-based competition (Prahalad and Hamel, 1990) and the increasing importance of knowledge and intangible assets (Winter, 1987; Itami, 1987; Teece, 1998) in firm performance. However, the aim of this paper is not to review the theoretical foundation of the resource-based view; this has been done elsewhere[1].

Transaction cost theories show that organizations should focus on the capabilities they are good at and not necessarily use excess capabilities (and resources) to enter a multi-product or diversification strategy (Teece, 1980; Montgomery and Wernerfelt, 1988). This means that firms need to strategically manage their resources and capabilities in order to gain a competitive advantage and improve their performance.

Development of strategy scenarios
The future-open thinking does not need to be limited to the external environment. As outlined by Barney (1991), firms obtain sustained competitive advantages by

implementing strategies that exploit their internal strengths through responding to environmental opportunities, while neutralizing threats and avoiding internal weaknesses. It is not enough any more to just determine the market, industry and technology trends and then create a strategy that is suitable for the foreseen developments. Internally, organizations have many options of how to react to external opportunities and threats. As outlined above, strategic options often depend on each other and are path-dependent – that is, present choices about options are influenced by past choices (Post, 1997). It is often these dynamic interactions, which create causal ambiguity and gives organizations a difficult to replicate advantage (Collins and Montgomery, 1995).

Within an organization there are often different perspectives on current problems, unsolved conflicts, different assumptions about the levers, where changes can be started, inconsistent compromises, different prioritizations of reasonable measures and resources – and different interests. Not taking those into account in the strategy formulation could turn the strategy implementation into a "suicide mission" right from the beginning. The above challenges can be addressed during the development of alternative strategy scenarios. In this way, management executives bring in their personal ideas and visions of the company's future and systematically link them to several strategy scenarios.

The development and interpretation of such strategy scenarios is carried out in the following four steps.

(1) *Identification of key elements of the strategy (Step 1)*. A strategy scenario describes "how we could conduct our business in the future". Typical elements of strategy scenarios are the way the company sees itself: its resources, its capabilities and competencies, the future portfolio and its behaviour in the competitive arena, the different key processes and its resource management. During a strategic dialogue usually up to 20 key elements are identified.

(2) *Development and description of future options (Step 2)*. The aim of this step is to describe each key element's "windows of opportunities". Consequently the following questions are the centre of attention: What could our portfolio structure look like in the future? How do we cope with our current capabilities? How are our resources interacting to create a competitive advantage? How significant could alliances and partnerships be in the future? Members of the scenario team rapidly encounter these questions as they are closely related to their daily business.

(3) *Combining of future options with strategy scenarios (Step 3)*. Linking the future options for each key factor to strategy scenarios is done in parallel with the creation of external scenarios: this includes a consistency check for all future options and leads to a suitable number of possible strategies that describe a range of "windows of opportunity" for the company or business unit in general. Yet, it is important that the members of the scenario team now develop their own image of every strategy scenario.

(4) *Development of a strategy roadmap (Step 4)*. The basis for all strategy scenarios, the change needed and the necessary resources required, is analysed and the various "windows of opportunity", which are described by each of these strategy scenarios, are visualized in a "strategy roadmap" (Figure 4).
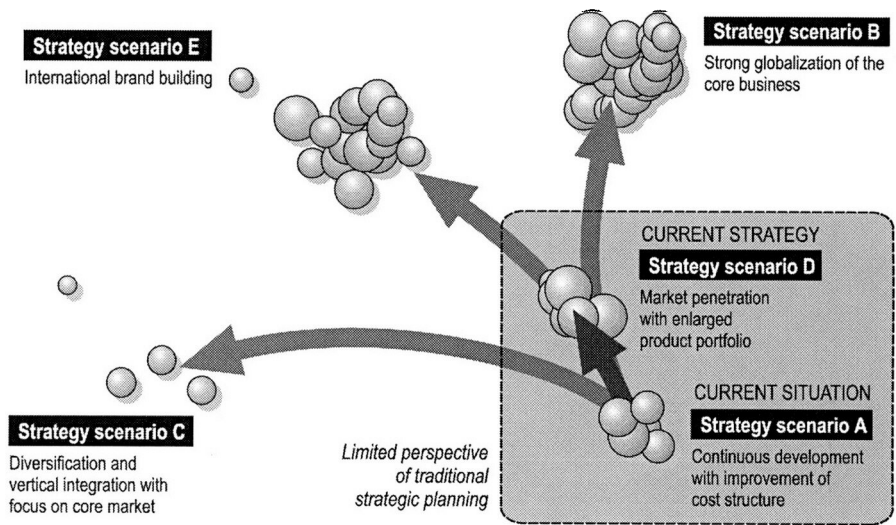
Figure 4.
Strategy roadmap

Taxonomy of organizational resources

In order to discuss the organizational strategy in terms of resource architecture and resulting capabilities we need a taxonomy of organizational resources. Many scholars and managers have highlighted the fact that it is the more intangible and knowledge-based resources that provide firms with a potentially sustained competitive advantage as they are valuable, rare and not easy to imitate or to substitute (Barney, 1991).

Over the past decade or so various taxonomies have been introduced to categorize the key resources in firms. In particular, the emergence of concepts such as intangible assets and intellectual capital has added further depths to the definition of organizational resources (Marr, 2005). The Swedish insurance and financial services company Skandia was among the first to categorize their intellectual capital (Edvinsson, 1997). Skandia split intellectual capital into "human capital" (e.g. knowledge and skills of employees) and 'structural capital' (for example, the patents, processes and practices that remain when employees have left the firm). Other classifications also add "relationship capital" (e.g. vital relationships with customers, suppliers and other significant stakeholders) as an additional category (Roos and Roos, 1997). Today, the differentiation between human capital, structural capital and relationship capital seems to be an accepted classification of the resourced-based view of intellectual capital[2]. In order to include physical assets and to add further granularity to structural resources, we use the following taxonomy of resources (Marr and Schiuma, 2001; Marr et al., 2003).

Organizational resources are the sum of stakeholder resources (including employees as stakeholders) and structural resources. This distinction reflects the two main components of an enterprise: its actors and its constituent parts. Figure 5 shows the taxonomy of resources with its sub-classifications. Stakeholder resources are divided into stakeholder relationships and human resources. The former identifies relationships with external actors of a company while the latter represents internal
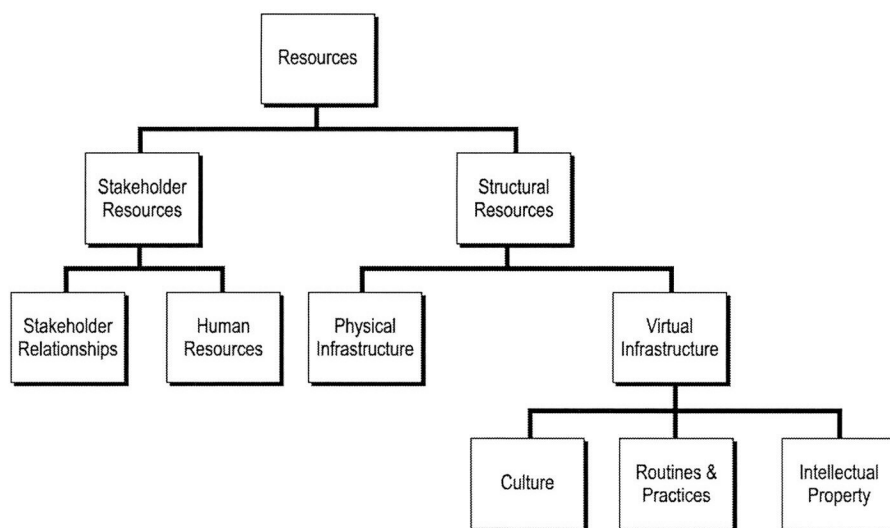
Figure 5.
Classification of resources

Source: Marr and Schiuma (2001)

actors. Structural resources are split into physical and virtual infrastructure, which refers to their tangible and intangible nature, respectively. Finally, virtual infrastructure is further sub-divided into culture, routines and practices and intellectual property. These categories and their subsets are illustrated conceptually within the figure.

- Stakeholder relationships include all forms of relationships of the company with its stakeholders[3]. These relationships could be licensing agreements, partnering agreements, financial relations, contracts and arrangements about distribution channels, as well as informal relationships. The stakeholder relationships also include customer relationships and brand image, representing a fundamental link between a company and one of its key stakeholders.

- Human resources embrace all components of employees including competences, commitment, motivation and loyalty. Some of the key components are know-how, technical expertise and problem-solving capability, creativity, education, attitude and entrepreneurial spirit.

- Physical infrastructure comprises all infrastructure assets, such as buildings and their structural layout and location, machinery and equipment, as well as information and communication technology like computers, servers and physical networks.

- Culture embraces corporate culture and management philosophies. Some important components are organizational values. Culture is of fundamental importance for organizational effectiveness and efficiency since it provides a framework, sometimes implied, through which to interpret events.

- Practices and routines include internal practices, virtual networks and routines, i.e. tacit rules and procedures. Some key components are process manuals providing codified procedures and rules, tacit rules of behaviour as well as

management style. Practices and routines determine how processes are being handled and how work processes flows through the organization.

- Intellectual property is the sum of patents, copyrights, trademarks, brands, registered designs and trade secrets whose ownership is granted to the company by law.

However, for the development of effective strategies organizations not only require an insight into the nature of their resources but also an understanding of the dynamic interaction of individual resources and how they complement one another. It is often this dynamic combination of resources that is the key to success and competitive advantage (Marr *et al.*, 2004). For example, a company may have excellent programming skills that enable it to build software, but they might be worth little unless accompanied by a strong distribution network, loyalty and commitment from its employees and a powerful brand name. This type of combination of resources is often the recipe for success in companies such as, for example, Microsoft or CISCO Systems. The following section provide examples of strategy scenarios based on the above outlined taxonomy of firm resources.

Examples of strategy scenarios
Strategy scenarios are not only developed for the whole company or one business unit. Very often, strategy scenarios focus on specific resources and their interrelated strategic issues. Below we outline some case examples of how organizations have developed strategy scenarios for some of their key resources (Figure 6).

- *Stakeholder relations.* In an increasingly unstable environment, municipalities and regions have to act more and more strategically. The German city of Bueren
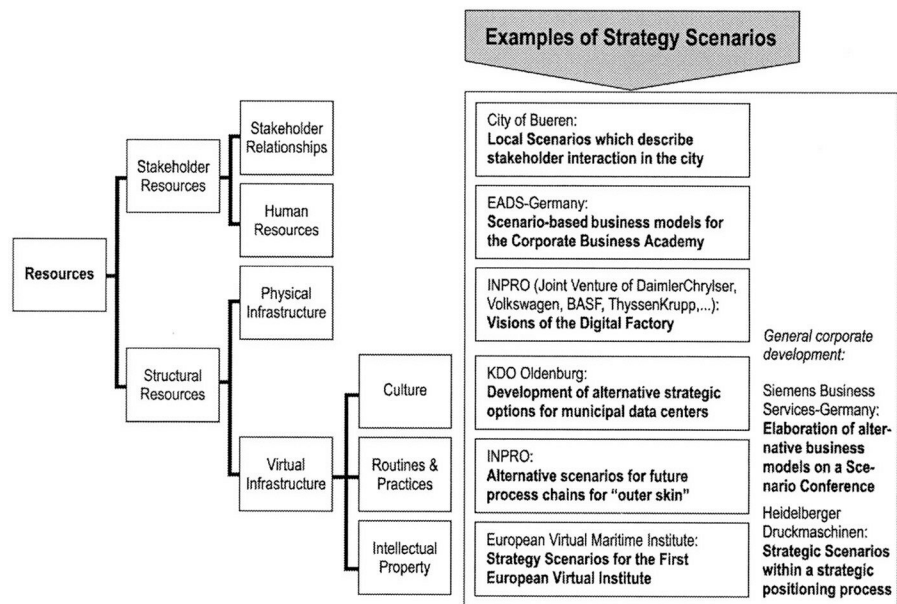

Figure 6.
Examples of strategy scenarios

decided to examine the perspectives of the city and its surroundings with the help of a multiple-stakeholder scenario planning project. Participants in the review were, in addition to representatives from the council and administration, 30 inhabitants from different groups and associations. The aim was to develop proposals for a sustained and prosperous development and future interaction between the various stakeholder groups[4].

- *Human resources.* The European Aeronautics Defense and Space Company (EADS) was created in a merger between the German DaimlerChrysler Aerospace AG, the French Aerospatiale Matra and CASA of Spain. EADS realized the critical role of their knowledge workers and wanted to reorganize its corporate learning. To support this process, strategy scenarios were created to identify different business models of how to create a Corporate Business Academy and how to evaluate them in the context of the specific EADS business culture.

- *Physical infrastructure.* INPRO is an affiliated company of the automotive manufacturers DaimlerChrysler, Volkswagen and suppliers BASF, IWKA and ThyssenKrupp Automotive. The innovative work of INPRO consists of applying latest research to applications in the production practice. Within a scenario-project, possible visions for the future of product development, production preparation and production processes in the car industry (digital factory) were explored. The current physical infrastructure was an important factor in this project. The scenarios evaluated the industry development as well as new forms of co-operation between the suppliers and the customers. The integrated use of information services played an important part, which in turn changed the role of the physical infrastructure.

- *Culture.* A municipal data processing company (KDO) offers a variety of services to their clients – the local governments. Doing this, KDO acts in an uncertain environment, defined by terms such as 24-hour Town Hall and Local Authority District Online. Culture is an important aspect in two ways – first, the culture of the local region influences the work that is carried out and secondly, a good organizational culture of KDO is seen as an important factor of attracting new talent as KDO is restrained by relatively low government pay scales. Scenarios were used to understand future development possibilities in the environment of the KDO, trying to examine possible technical and social changes that will impact the work of KDO. In addition, internal scenarios were created to investigate possible impacts of organizational culture on the services KDO can offer to meet the challenges and risks resulting from the external scenarios.

- *Routines and practices.* A leading telecommunication provider used scenario analysis not only to understand technology trends in this fast moving sector but also to develop internal strategy scenarios to understand the impact of new technology trends on its business model. In particular, taking into account processes and routines as a closely integrated process chain is seen as one of their key competitive advantages. In another case example, a manufacturing company used scenario management to identify and combine relevant resources and technologies in order to design consistent process chains.

- *Intellectual property.* The pressure on maritime industry in Europe has significantly increased during the last years. Harsh competition and battles to

survive characterize the actions of most companies. Only few succeed in concentrating on the necessary strategic questions. This is why the European Union supported the foundation of the European Virtual Maritime Institute, EVIMAR A/S. This amalgamation of 17 industry partners from the maritime and economic research meets the growing challenges of the maritime industry. In the foundation process, strategy scenarios were developed to comprehend possible interactions between the diverse partners. Particular emphasis was put on the analysis of the strategic policy regarding their intellectual property. It was critical to understand possible conflicts in the usage and development of new research or patents in order to address them in the design of EVIMAR.

Combining internal and external scenarios in strategic management
In today's complex business environments it is necessary to look at both internal and external developments in order to inform strategy development. The process of "scenario-based strategic planning", integrating internal and external scenarios, is shown in Figure 7.

The first step is the "strategic analysis". Here, the present situation is described with the help of suitable methods and tools. Well-known instruments of strategic planning like portfolios, success factors, strategy maps, value chain analysis or business segmentation can be used.

The second step is the description of possible future developments of the external environment. The third step in the development of strategy scenarios. The central step is "strategy finding" where companies reach a critical point in the process. All experiences and recognizable information are aggregated up to this point. Based on the existing information companies have to decide on their strategy – ideally based on one strategy scenario suitable for all external scenarios.
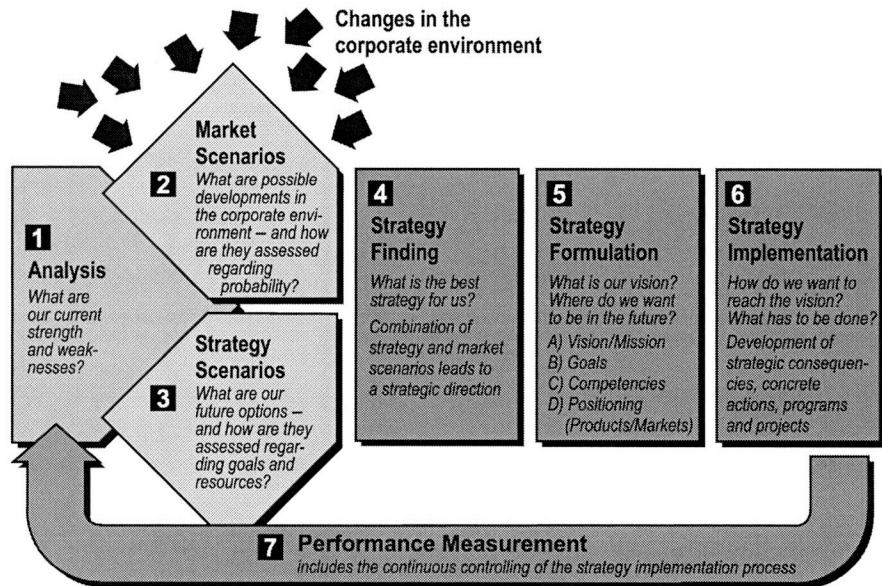

Figure 7.
Scenario-based strategic
planning

The process of "strategy formulation" starts once the strategic direction has been defined. Recurring parts of corporate and business strategies are visions and mission statements, strategic or core capabilities and strategic positions. Strategic consequences, programs and measures build the bridge between the present situation and the objectives described as vision, mission, capabilities and positions – and therefore, the starting point of the "strategy implementation". The final step is the continuous measurement of the strategy implementation process, which in turn acts as a feedback loop into the analysis.

Strategy finding based on a scenario matrix
By developing strategy scenarios and external scenarios the risk level and uncertainty are examined in two different directions. The external scenarios reveal possible side conditions like industry, market, or global developments. Strategy scenarios, on the other hand, clarify the firm's own options. The suitability of strategy scenarios within the individual external scenarios is then valued and put into a "scenario matrix" (Figure 8). This matrix can answer two questions:

(1) How robust is the strategy scenario? The rows in a scenario matrix show how robust a complex bundle of options expressed as a strategy scenario is against the uncertain environmental development.

(2) Which strategy scenarios are suitable for a specific external development? The scenario matrix can also be read the other way round, where the columns show, which strategy scenarios are suitable for a specific situation.

Often the different resources interact so strongly that strategy scenarios have to describe the whole bundle of corporate or business options. This is why Siemens Business Services used strategy scenarios to describe their future development
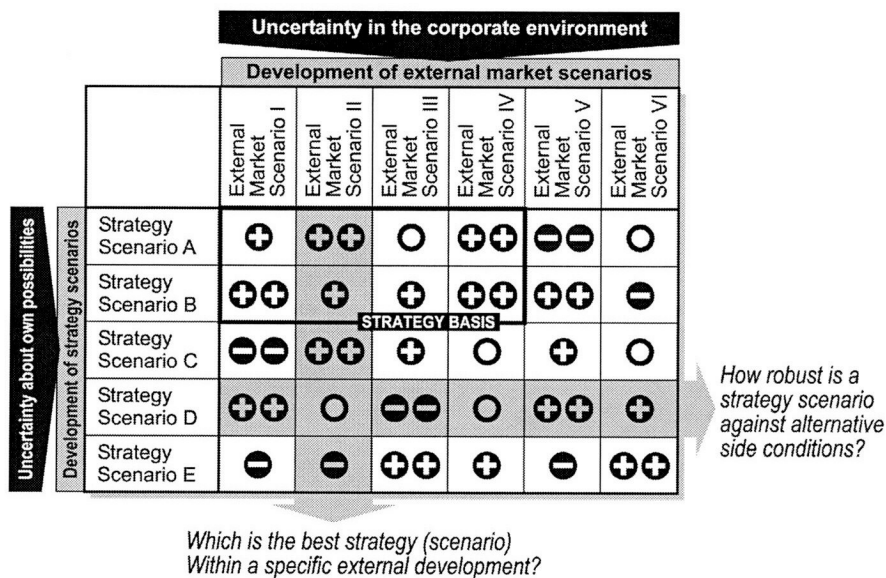

Figure 8.
Scenario-matrix

possibilities and strategic positioning in Germany. First of all, external scenarios were developed indicating the alternative possibilities for SBS in the German market. Later, alternative internal strategy scenarios were developed using a scenario-conference. These strategy scenarios were then used to match them with the external scenarios. This led to the creation of a future-robust mission statement for Siemens Business Services Germany.

A second example is Heidelberger Druckmaschinen AG (Heidelberg), the market leader for print and publishing industry solutions. Heidelberg has become a global player that constantly has to react to fast-changing industry trends. Recent examples include the progress in digitizing data and the merger of diverse industries into a cross-media market. To secure its leading position and to foster its development towards a solutions provider, Heidelberg has to detect changes in the graphical industry as well as the embedded communication economy at an early stage. Furthermore, the company has to evaluate its strategic options in the changing external conditions. To support this process Heidelberg developed both market environment and strategy scenarios to compare them with each other in a strategic workshop of the Heidelberg board.

The need for strategic early warning
Within the last few years, many companies were able to significantly improve their strategy implementation process using instruments such as the Balanced Scorecard (Kaplan and Norton, 1996) and the Performance Prism (Neely *et al.*, 2002). Nevertheless, organizations were repeatedly surprised by dynamic changes in the environment and it soon became clear that old strategies had been maintained for too long. Only with hindsight, it was evident that those "sudden" events were preceded by the so-called "weak signals", which could have been detected in its early stages. The recording and evaluation of such information is the subject of strategic early warning. Thereby, the traditional perception is changed in three dimensions (Figure 9, left):

(1) *Integration of external information about the environment.* Especially in the area of strategic planning, the majority of early warning information can be gained from the corporate environment (Schoemaker, 2002).
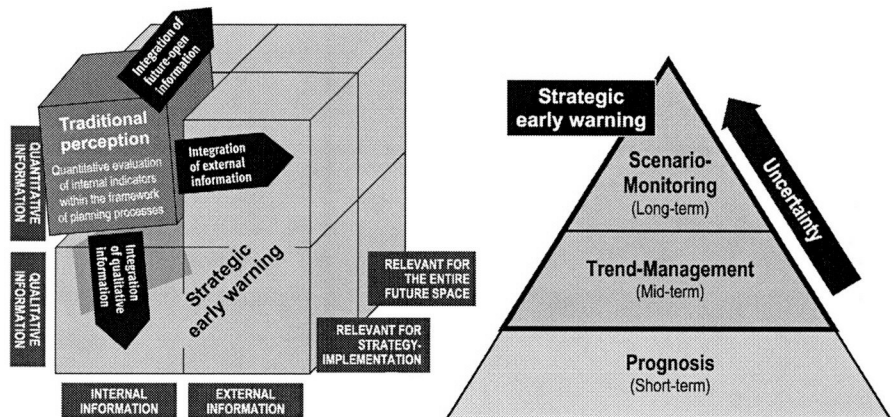

Figure 9.
Basics and core elements of strategic early warning

(2) *Integration of qualitative information.* Most strategically relevant developments are difficult to quantify, so that qualitative factors, trends and developments have to be drawn into consideration.

(3) *Integration of future-open information.* The fixation on a once-determined strategy within the scope of strategy implementation processes and the underlying external assumptions are leading to a substantial narrowing of the horizon. Thus, it is important for the company to extend their focus beyond the current strategy.

Several of those tendencies can be found in current management approaches. The performance prism integrates external environment information, qualitative risk-management focuses on imprecisely measurable danger zones and scenarios enable handling uncertainty. With strategic early warning all three approaches are combined in two core activities: in mid-term focused trend-management, possible future developments are identified and analysed. In long-term focused scenario-monitoring, the scenarios are assessed by current developments and identified trends.

The combination of strategic planning and strategic early warning

If companies succeed in detecting "weak signals" in good time and purposely using them, then their scope to take opportunities and avoid risks is enlarged. This strategic early warning is closely interconnected with the process of strategic planning and controlling (Figure 10).

- *Strategic contingency controlling.* The success of a once developed strategy depends not only on the companies' actions and performance to implement
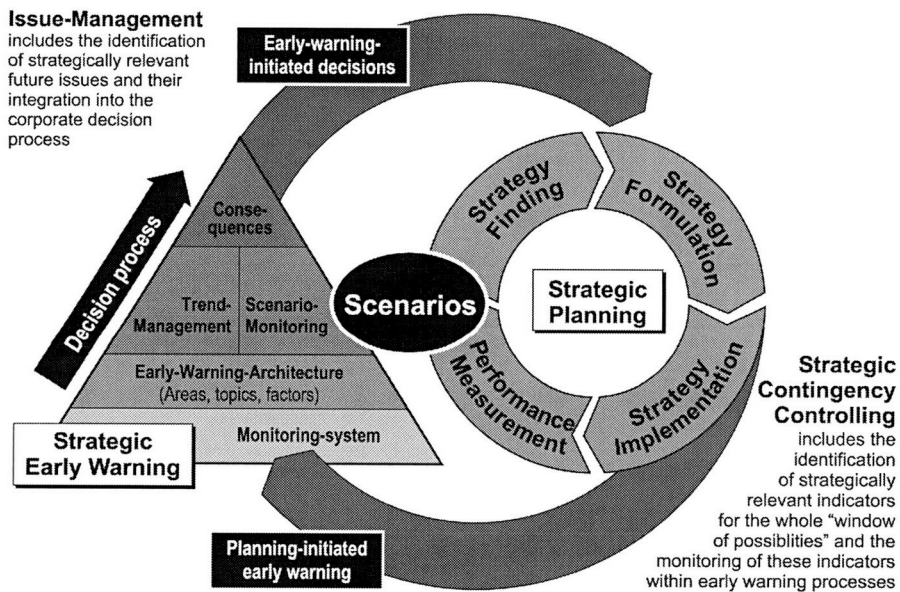

Figure 10.
Combining early warning
and strategic planning

the strategy. Companies must also ensure that their strategy is in line with the current developments of their markets, industry and global environment. That is why external indicators are integrated in most performance measurement systems – but usually as one-dimensional premises, which are built upon a strategy-conformant market perspective. New trends usually do not arise from these kind of indicators though. To recognize "weak signals" in time, managers have to widen their horizon to those areas, which are not part of their current strategy – and often beyond their current mental models.

- *Issue management.* Many relevant future trends lie outside of the previous strategic viewpoints. Often they derive from initiatives apart from the traditional planning process, e.g. in business development, in product and innovation management or in separated foresight activities. As a result of these activities, new issues, strategic consequences and possible actions are identified. It is far from acceptable to wait for the discussion of these issues and the resulting decision-making until the next planning cycle. That is why companies need an additional perspective of "early-warning-indicated planning" or decision-making.

We define the combination of strategic planning and early warning as "strategic foresight". Scenarios can play a significant and new role in combining the well-structured planning process with the often less-organized and in some planners' minds more "chaotic" early-warning processes:

(1) *Scenarios can be the nucleus for new early warning processes.* While the implementation of early warning processes often needs a longer timeframe, scenarios deliver first results in relatively short time. That is why a scenario project – which often delivers a framework for environmental scanning and significant scenario indicators – can be an excellent starting point for an early warning process.

(2) *Scenarios define the scope for monitoring processes.* When companies decide on focused strategies, the scenarios, which are not considered define a specific scope for monitoring. These important sources of "weak signals" can only be structured by scenarios.

(3) *Scenarios are needed to identify " weak signals".* Early warning processes are much more than long-term market research. They focus on "weak signals", which appear first in less plausible alternatives to the current mental models. Scenarios are an important tool for clearing the way for these new ideas into the strategic thinking.

(4) *Early warning processes initiate new scenario processes.* Often topics, which suggest a closer examination in form of scenarios are the result of early warning process.

(5) *Scenarios and early warning systems use the same kind of information.* On one hand, well-structured knowledge about future developments can be used to reduce the time of scenario processes as well as their quality. On the other hand, well-written scenarios can return into early warning systems as new information.

The future scorecard as an instrument of strategic foresight
In traditional performance measurement approaches, companies continuously observe their performance and ask: "How is the implementation of our current strategy going?" (Figure 11). Today, many companies include external strategy premises into their performance measurement-systems and ask: "How are the premises of our current strategy developing?" But even this strategic approach fails if dynamics are too strong and new trends and issues arise independently from the current strategy.

A future scorecard could help companies to avoid these risks by monitoring:

- not only the premises of the current strategy but also the critical market indicators (CMI) based on external scenarios, which are not taken into consideration within the current strategy; and
- not only the internal performance indicators but also the change indicators from alternative strategy scenarios, which are not part of the current strategy.
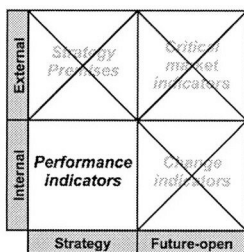
The combination of strategy premises, critical market indicators and strategy indicators leads to a future scorecard, which we believe is an important addition to existing performance measurement approaches.

Requirements for the implementation of a future scorecard
The implementation of a future scorecard is strongly interconnected with a scenario-based planning approach, which is shown in Figure 12. Here, a company develops external scenarios (box "1") and analyses their impact on the strategy (box "2"). To integrate organizational uncertainties, they develop their strategy based on internal strategy scenarios and their combination with the external ones (box "3"). The continuation of the scenarios processes includes the identification and monitoring of scenario indicators (box "4").

Once a strategic guideline is defined, the implementation of this strategy is measured in different ways. This process traditionally focuses on current, internal and financial indicators. Performance measurement-approaches like the balanced scorecard
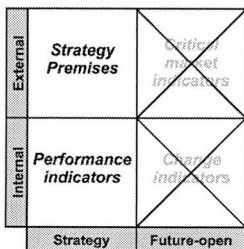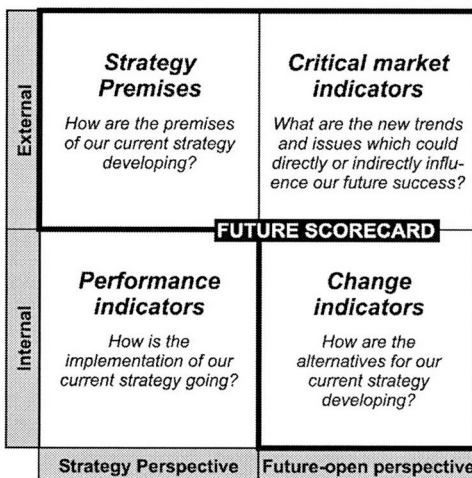
Figure 11.
Elements of a future
scorecard

SYSTEM ARCHITECTURE	EXTERNAL SCENARIOS	EXTERNAL INDICATORS
Structuring of the corporate arena, especially subdivision of internal and external driving forces **[1]**	Development of market or industry scenarios that describe possible side conditions for business activities in the future **[3]**	Identification and monitoring of indicators that could be used to foresee future developments in the corporate environment

STRATEGY SCENARIOS	STRATEGIC GUIDELINE	EXTERNAL SCORECARD
Development of internal strategy scenarios that describe possible corporate visions, or implementation strategies **[2]**	Combination of external and strategy scenarios in a scenario-matrix and detection of a strategic guideline **[4]**	Strategic assessment of the external indicators ("What are the relevant premises for our strategy?) and monitoring

INTERNAL INDICATORS	INTERNAL SCORECARD	FUTURE SCORECARD
Identification and monitoring of indicators that could be used to foresee possible corporate actions in the future **[4]**	Strategic assessment of the external indicators ("What are the relevant indicators for our strategy?) and monitoring **[4]**	Combination of strategically relevant indicators (premises and performance indicators) as an add-on for traditional performance measurement

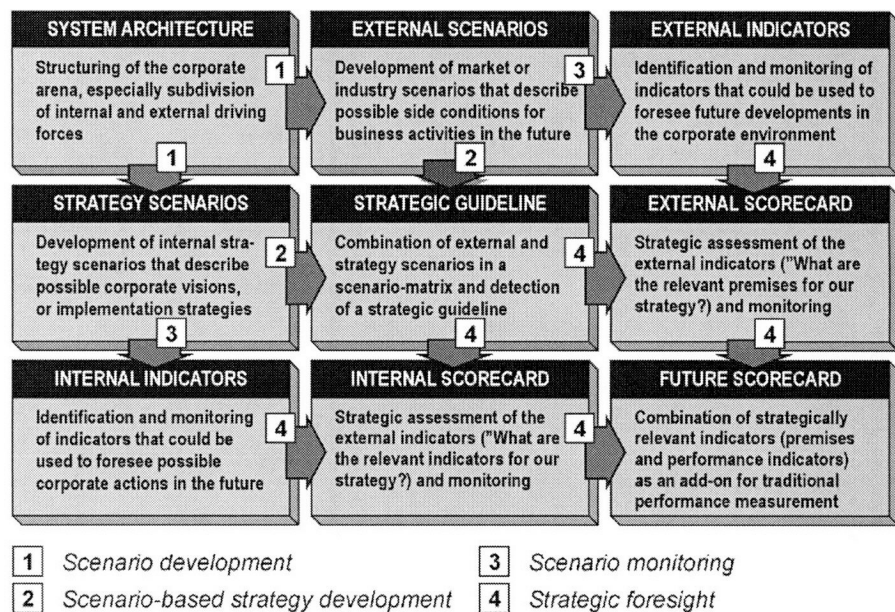| **1**	Scenario development	**3**	Scenario monitoring
2	Scenario-based strategy development	**4**	Strategic foresight

Figure 12.
Implementation of a future scorecard

or the performance prism have significantly enlarged the perspectives and integrated non-financial and external indicators. However, most performance measurement processes focus only on the currently followed strategy.

Based on the future scorecard approach companies have three different ways to address future developments:

(1) *Change your operation.* Companies can change their operations without changing the strategy:

- they could change their operational and tactical behaviour to strengthen the performance and to influence the strategy indicators directly; and
- they could react to changes in the environment shown by external indicators.

(2) *Change your strategy.* Companies could change their strategy without changing the way they see the future of the environment or their own possibilities:

- they could change the way they assess the external scenarios, e.g. by changing the possibilities or the risk management premises;
- they could change the assessment of the internal strategy scenarios, e.g. because of changes in their own resources or unexpected competence-developments; and
- they could develop new contingency plans for alternative side conditions or possibilities, which might become relevant in the future.

This kind of change leads to additional changes on the operational level.

(3) *Change your view on the future.* Companies could change the way they see the future of the environment or their own possibilities:

- they could rework their external scenarios due to significant changes in the environment;
- they could rework their strategy scenarios due to significant changes in the way the organization can cope with the environment; and
- they could rework their combination based on the new developments.

This kind of change leads to new strategic discussions and – very often – to changes in the strategy, too.

The development of a future scorecard needs to be based on a creative learning culture and on experiences in the fields of future thinking and strategic management (Van der Heijden, 2002). One core element is open dialogues about the perspectives and strategies of the company (Zohar, 1997). The future scorecard overcomes traditional limits in thinking, leads the decision makers to new questions and increases the tolerance of different points of view. Scenarios are the right basis to initiate and carry out such strategic dialogues. At the same time they enable the decision makers who are "trapped in operative daily business" to free themselves and systematically broaden their perspectives.

Conclusion

Scenarios have traditionally been used to develop different and internally consistent pictures of the future external environment. With the emergence of the resource-based view of strategy, more emphasis was placed on organizational resources and how they can be used to address the challenges posed by external change. In this paper, we have outlined how organizations can develop internal strategy scenarios to complement external scenarios in order to provide strategic foresight. In a world of endless opportunities, path-dependent organizational development, as well as strong interconnectivity of the resource base, such strategy scenarios are valuable tools that allow organizations to address the complex strategic issues in a future-open way. Combining both external and internal strategy scenarios enables organizations to create a future scorecard – a continuous measurement tool to complement other performance measurement approaches in order to deliver the openness and flexibility needed for sustainable performance in today's increasingly turbulent business climate.

Notes

1. For a good compendium on the resource based view see Foss (1997).
2. For more information see for example, MERITUM Guidelines (2002).
3. Stakeholders include in accordance with Neely et al. (2002, p. 84) investors, customers, intermediaries, alliance partners, suppliers, communities, employees, labour unions, pressure groups and regulators.
4. For more information on scenarios in the public sector see Ringland (2002).

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