# Decision Driven Scenario Planning for Process-Level Interventions

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*This article builds on previous work that classified types of scenario planning as effective or relevant for particular situations, by adding consideration for levels within the organization. In addition, the argument is built for using a particular form of scenarios to anticipate or explore process level problems and outcomes. The problem of information stickiness is introduced and a specific type of scenarios are explored and advocated as a means for solving such problems.*

Keywords: Scenarios, Process, Decisions

Scenario planning has traditionally focused on long-term strategic issues. Several companies have had considerable success using scenario planning to explore and investigate plausible future environments. These companies, however, have typically had their successes using scenarios at a macro level. That is, scenario planning provides a means for considering multiple futures in relation to social, technological, economic, and political changes. It has been suggested that several cases of scenario planning failure have involved issues and situations in which the core problems were more specific and involved a shorter time frame (Courtney, 2003).

This article explores vision-driven and decision-driven scenarios drawing from Courntey's (2003) work, and expands upon it by introducing the three levels of performance advocated by Rummler and Brache (1995). The argument is made that vision driven-scenarios are most appropriately applied to issues concerning the organization level, and that decision-driven scenarios may find their best use in process level issues and decisions. Scenario planning literature provides only a few examples of process level interventions, thus, the few available case studies are used to support the argument, and a call for further investigation is provided along with research suggestions that may verify or refute the use of scenarios for process level issues and interventions.

## Scenarios and Scenario Planning

Some definitions and background are offered to clarify the intent and focus of scenario planning interventions. Scenarios and scenario planning have been defined in several ways:

1) "A scenario is an internally consistent view of what the future might turn out to be – not a forecast, but one possible future outcome" (Porter, 1985, p. 63).
2) "A scenario is a tool for ordering one's perceptions about alternative future environments in which one's decisions might be played out" (Schwartz, 1991, p. 45).
3) "Scenario planning is that part of strategic planning which relates to the tools and technologies for managing the uncertainties of the future" (Ringland, 1998, p. 83).
4) "Scenario planning is a disciplined methodology for imagining possible futures in which organizational decisions may be played out" (Schoemaker, 1995, p. 13).
5) "Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance" (Chermack and Lynham, 2003, p. 364).

The key outputs of scenario planning embedded in Chermack and Lynham's (2002) definition are plausible alternative stories about the future, dialogue within the organization, learning, altered mental models, better decisions, and improved performance. In this context *scenario planning* is taken to indicate the overarching process of positing plausible alternative future environments and using these environments for strategy development. *Scenario building* is taken to mean the process of constructing the stories themselves, as a component of the larger scenario planning process. As this article focuses on two key *types* of scenarios, it is argued that different types of scenarios should be used for specific situations and circumstances.

**Vision Driven Scenarios**

Vision driven scenarios are aimed at identifying assumptions at a macro level. This means that considerable time is spent exploring trends and forces in the environment. The STEEP (Social, Technological, Environmental, Economic, and Political) forces are commonly considered as well as those items coming from in-depth interviews with executives, managers and other organization members. Courtney (2003) differentiated between vision-driven and decision-driven scenarios, arguing that scenario planning is often used at a macro level in cases where innovative thinking about unpredictable forces is called for. He stated: "Vision-driven scenarios help management teams think 'outside the box' and question their assumptions about the future" (Courtney, 2003, p. 14).

**Decision Driven Scenarios**

Vision driven scenarios, however, "are not usually tied to any near-term strategic decisions. Decision-driven scenarios, on the other hand, are used to inform a well-specified strategic choice -- a choice where the 'best' option is unclear due to uncertainty over the impact of that choice" (2003, p. 15). Decision driven scenarios are used to address more specific issues such as new product launches, or choices such as whether or not to build new plants (Courtney, 2003). Courtney (2003) argued that the broad ranging vision drive scenarios are not appropriate tools when facing slightly more near-term decisions, suggesting that using the wrong type of scenarios often leads to failure in the process. These two general forms of scenarios are presented in Table 1 with further elaboration upon the nature of the processes and how the scenarios can be explicitly used.

*Table 1.* Vision-driven vs. decision-driven scenarios (from Courtney, 2003).

| | ***Vision-driven scenarios*** | ***Decision-driven scenarios*** |
|---|---|---|
| ***Nature of scenarios*** | • Emphasis on broad, macroeconomic and global drivers of change<br>• Longer term (5-10-20+ years) | • Focused on specific uncertainties that drive decision<br>• Generally shorter term (driven by time necessary to evaluate pay-off decision) |
| ***Nature of process*** | • Emphasis on divergent thinking and broad perspectives<br>• Heavy reliance on experts, consultants and facilitators | • Data-driven and analytical when possible<br>• Heavy reliance on internal expertise and industry experts (unless major confidentiality concerns) |
| ***How scenarios are used*** | • Generate new strategic ideas<br>• Develop shared sense of possible futures and need for change<br>• Launch follow-on projects and analyses to further develop implications of the scenarios | • Test options for a specific decision against the range of potential outcomes and develop implications for which option to choose |

The basis of Courtney's (2003) differentiation between these two kinds of scenarios is rooted in the failure of some scenario planning projects in which the scope of the project and the problem for which it was intended to provide a potential solution were mismatched. It is therefore clearly important for executives and managers using scenarios to first consider the time frame in which they are working and the problem that needs to be solved. If executives and managers are dealing with near-term strategic decisions, the scenario planning process should take a different path than those managers seeking a more general view of the future as Courtney has pointed out.

**Information Stickiness**

A further point can be made in the domain of decision-driven scenarios. Organizations are increasingly relying on knowledge intensive processes managed and operated by interdisciplinary teams (Ford & Sterman, 1998). Stickiness refers to the difficulty in information transfer between or among people. Von Hippel (1998) defined "stickiness" as "the incremental expenditure required to transfer that unit of information to a specified locus in a form useable by a given information seeker. When this cost is low, information stickiness is low; when it is high,

stickiness is high" (Von Hippel, 1998, p. 629). Discussions of stickiness have included the simple recognition that there is a cost associated with the transfer of information, and second, in differentiating stickiness and friction (Ford & Sterman, 1998). That information becomes "sticky" is important in decision-making because often expertise or knowledge of a specific domain is required for decisions. For example, McKinsey consultants who are on call will fly anywhere in the world to make their expertise available are a result of the fact that knowledge becomes incredibly sticky and an example that the costs associated with transferring the information or knowledge can become quite high [6].

Stickiness is the core characteristic of specialized, personal, tacit knowledge that inhibits easy transfer (Szulanski, 1996; von Hippel, 1998; 1994). Stickiness refers to the general difficulty in transferring tacit knowledge and has been defined as "the incremental expenditure required to transfer that unit of information to a specified locus in a form useable by a given information seeker. When this cost is low, information stickiness is low; when it is high, stickiness is high" (von Hippel, 1998, p. 629).

*Research on knowledge stickiness.* In an examination of knowledge stickiness, Szulankski (1996) identified several important characteristics that affect the knowledge transfer process:

1) Characteristics of knowledge transferred
2) Characteristics of the source of knowledge
3) Characteristics of the recipient of knowledge
4) Characteristics of the context

Szulanski (1996) then conducted research to test which of these characteristics were most important in inhibiting knowledge transfer. The findings were that "the three most important origins of stickiness are the lack of absorptive capacity of the recipient, causal ambiguity, and an arduous relationship between the source and the recipient" (Szulanski, 1996, p. 36).

*Lack of absorptive capacity of the recipient.* Cohen and Levinthal (1990) suggested that recipients may simply lack the ability to absorb new knowledge based on their preexisting knowledge. That is, individuals absorb, assimilate, and apply new knowledge based on their previous experiences and knowledge base.

*Causal ambiguity*. Lippman and Rumlet (1982) argued that difficulty in transferring tacit knowledge is likely a result of ambiguity about the elements of the process or task to be understood and how they interact. Additionally, it has been argued that causal ambiguity is a result of a failure to view the process or task from a systems perspective (Sweeney & Sterman, 2000).

*An arduous relationship between source and recipient.* Nonaka (1994) suggested that knowledge transfer requires several interactions between the expert and novice and that the success of the exchange of knowledge rests heavily on the nature of the relationship between the source unit and the recipient unit.

**Addressing these Origins of Stickiness**

Scenarios and scenario planning are posited as tools that can solve these three origins of stickiness by: 1) sharing and reconstructing mental models, leading to increased recipient capacity and 2) utilizing a process that demands close and frequent interaction between the novice and the expert. Each of these will be reviewed in further detail.

*Sharing and Reconstructing Mental Models.* Allee (1997) stated that: "another powerful collaborative learning and knowledge-creation process is scenario building. Scenario building can help companies rethink much more than long-term strategy. It can help a company reframe their identity, their operating assumptions, their values, and their vision for the future" (p. 179). Senge (1994) identified three stages of an effective organizational learning process: 1) mapping mental models, 2) challenging mental models, and 3) improving mental models. Scenario planning has been shown to meet all three of these stages (Georgantzas & Acar, 1995). The planners at Royal Dutch/Shell Oil had several insights as they pioneered the scenario planning technique. After becoming masters at designing technically magnificent scenarios they realized that by focusing on the scenarios themselves, they were overlooking the core purpose of their work -- to alter the mental models of the management teams for whom they were developing plans (Senge, 1994). Therefore a core aim of the scenario planning process is to alter the mental models of managers.

*Close and frequent interaction between novice and expert.* By reducing the cost of information transfer, in theory, decisions can be made more effectively and efficiently. Scenarios and scenario planning seem to address information stickiness by providing a forum for multiple individuals to develop similar expertise about the potentials of the organization. The strategic conversation (van der Heijden, 1997) is one example of how developing a shared mental model, and thus a shared language, can reduce the stickiness of information within the organization. The process of creating a shared mental model facilitates the process of information transfer. A scenario planning project can last anywhere from a one-week workshop to a multi-year process. While this time frame will naturally

fall closer to one-week in decision-driven scenario situations, the nature of the process itself requires dialogue and intense interaction among the participants relevant to the decision under examination. By requiring such frequent and intense interaction, scenario planning reduces the cost of information transfer, making information less sticky.

**Levels of Uncertainty**

Courtney (2003) also devised a simple classification system for assessing uncertainty in relation to scenario planning. Level 1 uncertainties are almost irrelevant. That is, these uncertainties are important to consider, but the impact of either potential polar event may not, in fact, drastically affect the outcome of the decision. "McDonald's, for example, generally faces level 1 uncertainty when it makes its US restaurant location decisions…dominant strategy choices can be identified" (Courtney, 2003, p. 16). Level 2 uncertainties occur when multiple futures can be identified, one of which will occur. "For example, investors in the US stock market faces level 2 uncertainty in trying to determine the identity of the next President of the USA throughout the fall of 2000" (Courtney, 2003, p. 16). Level 3 uncertainties introduce a range of possible futures into the equation. In level 3 uncertainty situations, one can identify a range of possible future outcomes, say, for example "consumer demand for new products and services" (Courtney, 2003, p. 19), but can only estimate that the consumer demand increase could be from 5 to 40 percent. Level 4 uncertainties introduce true ambiguity into the decision making dilemma. These uncertainties are "both unknown and unknowable" (Courtney, 2003, p. 20). That is, a range of possible future outcomes cannot be identified for these kinds of uncertainties. Examples of level 4 uncertainties include the events of September 11, 2001. "In the immediate aftermath of the horrific terrorist attacks that occurred on 11 September, even the most prescient security experts could not confidently bound the range of future terrorist activity" (Courtney, 2003, p. 20).

*Table 2.* The four levels of uncertainty (from Courtney, 2003).

| ***Level of Uncertainty*** | ***Description*** | ***Example Sources of Uncertainty*** |
|---|---|---|
| 1 | A clear enough future: can define point forecasts that are "close enough" for the decision at hand | • Returns on "common" investments in mature, stable markets<br>• Customer and competitor reactions to strategies that reposition well-established brands |
| 2 | Alternate futures: can define a limited set of possible future outcomes, one of which will occur | • Potential regulatory, legislative or judicial changes<br>• Unpredictable competitor moves<br>• All-or-nothing industry standards competition |
| 3 | A range of futures: can define a range of possible future outcomes | • Demand for new products or services<br>• New technology performance and adoption rates<br>• Unstable macroeconomic conditions |
| 4 | True ambiguity: cannot even define a range of possible future outcomes | • The outcomes of major technological, economic or social discontinuities<br>• Market evolution in markets that are just beginning to form |

These levels of uncertainty help to frame the appropriate choice of vision or decision driven scenarios. While Courtney (2003) stated that decision-driven scenarios could appropriately address any of the four levels of uncertainly, the argument presented in this article suggests that decision-driven scenarios might most effectively be used in situations facing uncertainties at levels one or two. Further, vision-driven scenarios might most effectively be used to address uncertainties at levels three or four.

Thus, another interpretation of the use of specific forms of scenarios for addressing specific kinds of uncertainties is found in Table 3.

**Addressing Level One Uncertainties**

Addressing level one uncertainties often may not even require the use of scenarios. Risks are generally very low in level one situations and forecasting is an appropriate approach to considering multiple plausible alternative future outcomes. However, depending upon the issue, decision-driven scenarios may provide useful insight if they can be developed quickly and at a low cost.

*Table 3.* Types of scenarios for Uncertainty Levels

| ***Level of Uncertainty*** | ***Type of Scenario*** | ***Rationale*** |
|---|---|---|
| 1 | Decision-Driven | • If scenarios are used at all, they must be focused, short-term, and must be developed quickly at a low cost. |
| 2 | Decision-Driven | • Significant risk is present, but a precise number of outcomes can be projected. |
| 3 | Vision-Driven / Decision-Driven | • Both scenarios types are appropriate, but outcomes outside of an assumed range must be considered. |
| 4 | Vision-Driven | • Genuine ambiguity is prevalent and scenarios must illuminate an unknown range of possible outcomes. Plausibility is the key to stretching organizational assumptions. |

*Addressing Level Two Uncertainties*

Level two uncertainties are prime for the use of decision-driven scenarios. These uncertainties are considerable enough to introduce significant risk into the decision-making process, but a limited number of future outcomes can be defined. These situations also allow for a fair determination that one of a small number of outcomes will actually occur. Thus, a set number of possibilities allows planners and decision-makers to know the range in which the actual outcome will fall.

*Addressing Level Three Uncertainties*

Level three uncertainties introduce a greater level of risk. While the range of possibilities can be generally assumed, planners working with level three uncertainties must at least begin thinking about the possibilities of outcomes falling completely outside of the assumed range. Vision-driven and decision-driven scenario types are both appropriate when considering level three uncertainties because there is usually a more focused issued with which to deal, but the number of potential outcomes is still relatively manageable.

*Addressing Level Four Uncertainties*

Vision-driven scenario planning is really the only appropriate scenario method for facing level four uncertainties. These uncertainties introduce genuine ambiguity into the planning equation, and a range of possible future outcomes cannot be defined. Thus, planners are left to the ultimate test of their creative devices -- to provide scenarios that cover the widest range of possibilities, while providing plausibility and a challenge to organization decision-makers and managers.

**Summary**

To briefly summarize, decision-driven scenarios seem to be best suited to address level one and two types of uncertainties, while vision-driven scenario seem best suited to address uncertainties at levels three and four. A further concern about appropriate scenario use is introduced in the consideration that there are multiple levels within the organization.

**Levels of Performance**

Rummler & Brache provided three levels of performance that must be considered when working to improve performance in organizations. Regarding the link between performance and strategy, Rummler & Brache stated: "The most powerful strategy implementation tools we have found are those that help us effectively design and manage performance at the organization, process and job/performer levels" (1995, p. 84). A clear strategy for evaluating the outcomes of the scenario planning processes is to evaluate changes in performance at these three levels. But these three levels are also useful to categorize varying *types* of scenarios and assess their uses.

*The Organization Level*

Rummler and Brache (1995) defined performance at the organizational level in terms of three core variables, namely, 1) organization goals 2) organization design and 3) organization management. Organization goals frequently include a focus on productivity, cycle time, cost, and profit improvement efforts. Performance focused

analysts "design an organization that enables the goals to be met" (Rummler & Brache, 1995, p. 37), thus a focus on the input-output relationships within the organization allow a design that accommodates and supports the organization goals. Goals, performance, resources and interfaces between functions are all areas requiring frequent assessment "help identify what needs to get done (goals), the relationships necessary to get it done (design), and the practices that remove the impediments to getting it done (management) (Rummler & Brache, 1995, p. 43). The organization level of performance provides the foundation for understanding, analyzing and managing performance at the process and individual levels.

*The Process Level*

Commonly viewed as how work is accomplished, processes can be more specifically defined as value chains in which each step adds value to the previous step. Based on a view that effective processes produce effective organizations, Rummler & Brache (1995) asserted that process goals, design, and management are the key variables to address for improving process performance. Process goals are considered sub-goals of organization goals, and should be designed to efficiently convert process inputs to process outputs. Managing, analyzing and adjusting processes goals, performance, resources and interfaces ensure the maintenance of high levels of process performance (Rummler & Brache, 1995). Targeted as the level with the greatest opportunity to contribute to performance improvement, the process level is largely ignored, and often misunderstood.

*The Job/Performer Level*

Jobs must be designed to support process steps, enabling the achievement of process goals, and in turn, organization goals. Job goals must be aligned with process goals and jobs must be designed and structured such that the performer can achieve those job goals (Rummler & Brache, 1995). Job management is considered a function of 1) performance specifications 2) task support 3) consequences 4) feedback 5) skills and knowledge and 6) individual capacity. These components of job management, if effectively addressed, help job performers achieve process goals, leading to the fulfillment of organization goals.

Most applications of scenario planning clearly emphasize the organization level. The classic and often cited examples of Royal Dutch / Shell and Daimler-Chrylser are clear examples of scenario planning at the organization level. It could also be argued that these are both examples of scenario planning at the individual level since these reports often center on specific *reactions* to the scenario planning process and the insights it produces.

**Scenario Planning at the Process Level**

A case study by Burt & van der Heijden (in Ringland, 2002) contained as one of its primary aims the reconfiguration of supply chain processes. The case study examined the use of scenarios in the paper industry with a general aim of redefining how the organization perceived its business environment. Three emergent themes included 1) the reconfiguration of the supply chain, 2) the development of electronic media and forms of paperless publication, and 3) the impact of customer empowerment. Ultimately, the participants were "able to connect process insight with existing knowledge to 'stretch' their thinking and understanding. Suddenly, concern about closer working relationships had and underlying rationale. The participants recognized that they had a lack of interface at the point of sale that prevented the development of customer knowledge" (Burt & van der Heijden, in Ringland, 2002, p. 231).

While it is logical that scenario thinking might be used to develop alternative processes and explore more efficient means of delivering products and services, scenarios have rarely been applied in this context. However, some scenario projects such as the IT company International Computers Ltd. (Ringland, 2002) have incorporated systems diagrams to map information markets in process formats, or as in the case of Diamler-Benz Aeorspace (Tessum, 1997) systems diagrams were used to map early warning systems as processes of contingency planning. van der Heijden et al., (2002) suggested that organizational change is effectively brought about through process change, although "process gain requires persistence and consistency over an extended period" (p. 84).

Another example of scenario diagram use for a process level issue is in the case of Telekurs-Payserv, a Swiss company that carries out Automatic Teller Maching (ATM) PIN verification and recording of transactions for the banking industry in Switzerland. Telekurs-Payserv worked with Janus Global Consulting (2003) to develop a strategic plan based on its payment processing needs. Janus Global Consulting conducted a scenario planning workshop, using the results to map the company's payment process strategy (2003). van der Heijden et al., (2002) suggested that such organizational change is effectively brought about through process change, although "process gain requires persistence and consistency over an extended period" (p. 84).

Some preliminary conceptual arguments for using scenarios in the process context have included the use of scenarios as cognitive objects in which scenarios are vehicles for process management and knowledge transfer. For example, in an experiment testing consumer preferences, Stanford MBA students were asked to assess the

persuasiveness of an advertisement from a California Winery (Martin, 1982). Given a choice among numerical data from the winery's sales division, a policy statement about the winery's strict quality standards and a story about the founder of the winery and his procedures for delivering a quality product, results showed an overwhelming preference for the story precisely because it contained the same, or very similar data in a form that was easy to remember. While the use of stories in this context varies slightly from the use of scenarios in a planning context, some parallels can be drawn. For example, this research demonstrates that an event made more available from memory will be more easily acted upon. In this sense, events made more available from memory through inclusion in a scenario can reduce the time required for managers or individuals to react to signals in the environment. That is, scenarios appear to be one way of transferring large amounts of information in a format that it is easy to recall.

These are key areas for further investigation that might use scenarios to explore alternative processes for improved efficiency and storage spaces for descriptions of knowledge work. Research studies that document the effects of scenarios applied to processes would provide much value by potentially providing an additional application area for scenarios and as Rummler and Brache stated "the process level has been the least understood level of performance" (1995, p. 44) and as such, the process level provides the most potential for improving performance.

**Conclusions and Recommendations**

The utility of classifying types of scenario planning according to uncertainty and organization levels is in the ability to help organization leaders choose the appropriate tools for the situations and problems they are facing. Too often, consultants prescribe a specific tool or intervention in completely different situations (Micklethwait & Woolrdige, 1995). This kind of activity is often the result of a lack of knowledge on the part of the consultant and is characteristic of management fads. Thus, the intent of a classification system is to provide more information to organization decision-makers in a manner that is clear and concise, and does not require those individuals to conduct their own research or read through every detail that has been published regarding scenario planning.

This article offers a means for quickly classifying strategic problems in terms of type of uncertainty and organization level, and then suggests a general approach to scenario planning based on those items. While this article does not prescribe the conditions of organizational readiness to engage in scenario or strategic processes (and this is an area in need of further exploration and documentation), the goal has been to offer a fresh look at varied approaches to scenario planning with an eye on the process level.

From this point, one conclusion is that decision-driven scenarios seem to be an effective means for coping with short-term strategic decisions, although this conclusion is only supported by theory and logic. In order to move toward establishing the most effective *process* for using scenarios in this domain, a series of case studies would be an important starting point. It also appears that scenarios may be effective in addressing process level issues.

The contribution of this article to new knowledge in HRD is mainly as a portion of the larger argument that HRD should be embracing scenario planning technologies. Scenario planning has been shown to be an effective organization development intervention (Phelps, Chan & Kapsalis, 2001) and it appears that scenario planning may be effective at the other organization levels discussed by Rummler and Brache (1995). The documented neglect of sound research and thus cumulative knowledge about the function of the scenario planning process provides a clear research agenda with practical benefits.

HRD has long claimed to work at the three levels of performance advocated by Rummler and Brache (1995). More tools at the process level (which has been described as the least well understood and that with the greatest potential for benefit) would hopefully increase the options for the HRD professional, however, a theoretical, and then empirical understand are first required. This article has provided the basis on which further investigations, empirical or case study, might be conducted to further assess the utility of this application domain.

While the argument for linking HRD and scenario planning has been presented (Chermack & Lynham, 2002), the role of HRD in scenario planning for process level interventions may be even more difficult to articulate. The role of HRD in this context can be simply thought of as process expertise -- targeting the human expertise as the core knowledge to be accessed helps to highlight the potential role that HRD professionals might play. Further linking process technologies and scenario planning is the role of human expertise. The phenomenon of human expertise in process knowledge is not often acknowledged in HRD literature, but the process domain houses some of the greatest potential for improvement and the expertise component is readily available and well understood by HRD professionals.

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