A continuous-learning process that updates and enhances planning scenarios

Gerald Harris

Gerald Harris is the President of the Quantum Planning Group based in Oakland, California (www.artofquantumplanning.com) and the author of *The Art of Quantum Planning, Lessons from Quantum Physics for Breakthrough Strategy, Innovation and Leadership* (Berrett-Koehler, 2009). A former strategic planner at Pacific Gas & Electric, he has collaborated on a number of scenario projects with Reos Partners and Global Business Network (GBN).

Scenario development has become a widely used tool for learning about and managing uncertainty within the strategic planning process of major companies and institutions. Scenario development techniques help leaders make business decisions by allowing them to surface their ideas and beliefs about the future and subject them to rigorous review, challenge, and importantly, expansion. After participating in a scenario analysis and developing strategies designed to be successful in several distinctly different futures, managers become more sensitized to potential shifts in their current markets and are better prepared to respond as the future unfolds. This experience is commonly referred to as scenario learning.

But, scenario development teams face two ongoing challenges:

- How to get corporate managers to view the scenarios, with their long-term perspectives, as a lens for tracking trends in the current business environment.
- How to make scenario learning a continuous process, one that integrates potentially significant new observations about business, social, technological and economic news into the existing scenarios.

During the period after the scenarios have been sketched out but before the company leadership reaches the strategy-development or investment-decision stage, a continuous learning process can help planners and senior decision-makers identify and track the unfolding events that are most relevant to the challenges and big issues facing their organization. One such learning tool is the EPS (Event, Pattern, Structure) system I designed with my colleagues at Reos Partners for the Western Electric Coordinating Council's (WECC) scenario-planning project. It is focused on long-term investment in the electricity transmission system in the western United States and the two most western provinces of Canada. A web-connected EPS tool allows all members of this multi-stakeholder Scenario Planning Steering Group (SPSG), as well as invited experts, to submit news articles, conference reports, research, scholarly articles and other published information into a database that is organized with links to four scenarios and their driving forces.

This continuous learning tool is particularly useful for companies that develop scenarios that evolve over long periods of time, a practice that is usually determined by the investment window or marketing cycle of an organization. An example of this long-term outlook, the transmission scenarios for the three-year long WECC project, are focused on a 20-year time period to account for the time required to develop electricity transmission facilities and the pace of the investment cycle within the electric-power industry, one with consumer-needs assessments and construction planning measured in decades. This 20-year horizon was selected because, even in the best of cases, it might take seven to ten years to approve, site and build a single new power plant or transmission line. Constructing multiple new transmission lines for the power needs of a region could span two decades. The leaders of

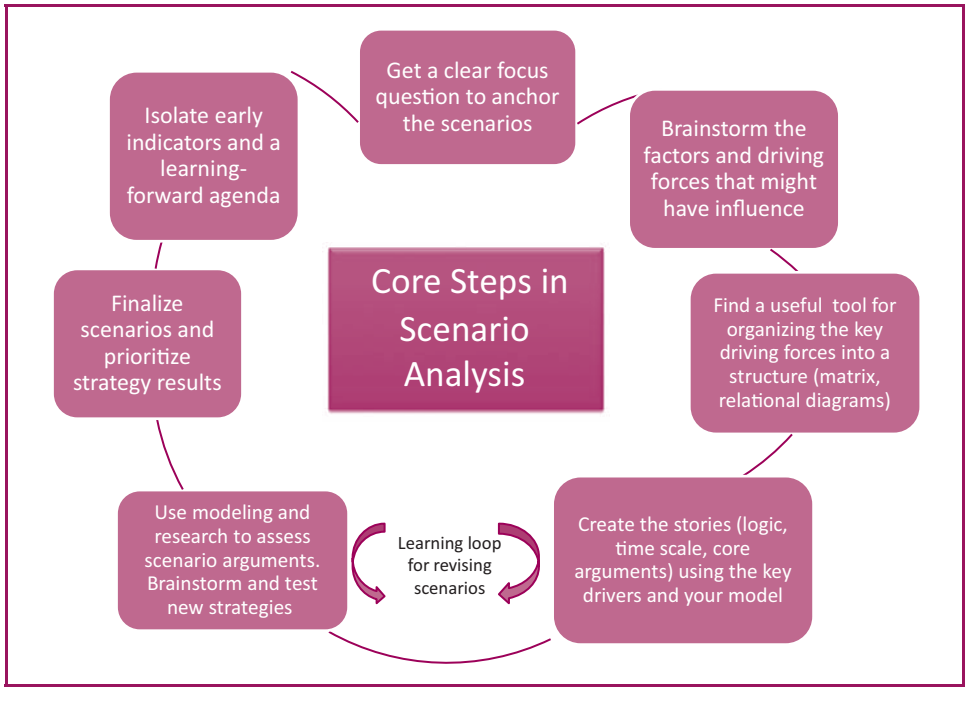
 | VOL. 41 NO. 3 2013, pp. 42-49, © Emerald Group Publishing Limited, ISSN 1087-8572 DOI 10.1108/10878571311323217

WECC selected a scenario-based approach to continuous learning not only to address the long time horizon, but also to allow for an accounting over time of powerful underlying drivers of change in the power business, such as technological advances, social attitudinal changes, and legislation.

The WECC scenario project involves all the key components of scenario-based planning (see Exhibit 1). When a learning agenda is created as part of either a long-term or short-term scenario analysis, the EPS tool can contribute insights to the ongoing learning process.

After a six-month start-up organizing phase that began in mid-2010, the core of the WECC scenario planning and analytical work is being conducted through the second quarter of 2013, with final reports due the third quarter of 2013. The scenario development process began in the fourth quarter of 2010 with preliminary scenarios developed by mid-2011. The first-phase scenarios were used to determine alternative inputs into transmission planning models so that a diverse set of transmission plans could be developed. Beginning with the first-phase scenarios, a learning-forward tool was needed to assist in refining and revising the initial scenarios, and to support continuous learning and dialogue of the members of the SPSG. The first-phase scenarios surfaced uncertainties and widely differing perceptions about the future among the SPSG members. While the modeling process was being implemented, members of the SPSG used the next several months to learn about and refine their understanding of key evolving issues within the power sector that might impact transmission investment. The EPS tool thus allowed members to collaborate and remain engaged in the thinking and evolution of the scenarios over the time of the project. The information and insights developed using the tool would thus be available in the final revision of the scenarios, conducted in the last quarter of 2012, which would also include the analytic results from the modeling. In addition, the content of the research in the EPS system will also be useful in the development and assessment of strategic options during the final phase of the scenario analysis. The core element of this learning-forward process, the EPS tool, can be applied to scenario-based-planning projects in general.

Exhibit 1 Key steps in scenario-based planning



How the EPS tool works

The EPS tool allows members of a scenario development team and invited outsiders such as content experts selected by the organization to collaborate in identifying, sharing and monitoring relevant developments in the organization's business environment and tie them directly to the content and key elements of their scenarios. Exhibit 2, a ''Research and learning tool for scenarios,'' defines the key steps – articulating the Event, Pattern, and Structure elements of the process.

The first stage begins with a team member describing an event – such as a recent federal policy decision or technological advance. This is followed by a suggestion from the submitter as to what pattern this event might fit with – for example, political change driving new federal policy or R&D work that points to significant technological advances. The pattern may indicate a particular trend in the market.

Next the submitter suggests what the pattern may indicate about change at the structural level – for example, a shift in voter values and desires that drive political change, which then influences regulation.

Next, the submitter suggests structural change that might be connected to the event, for example, scientific breakthroughs that enable fruitful R&D. By relating important events to their thinking about underlying meanings and potential trends, participants share their evidence-based insights, and establish a basis for fruitful and energetic dialogue.

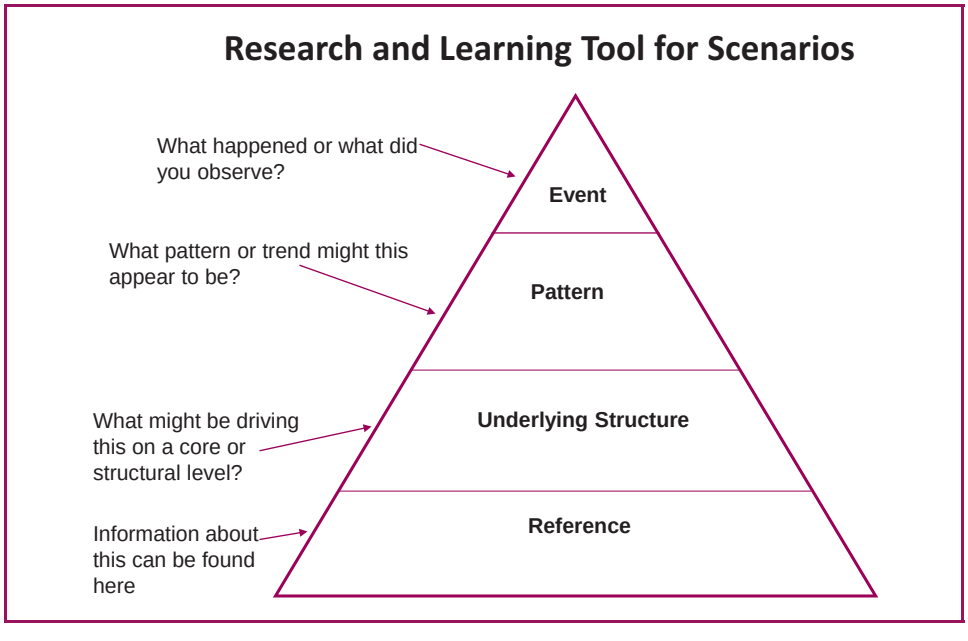
Finally the submitter supplies a link to the source material, such as a web URL.

It is important to note that the submitter is the interpreter of how the EPS information should be entered in the database. It is that person's point of view that is being shared. During discussions with team members other viewpoints may arise and the insights of these participants can be collected in the EPS system, thus allowing a wide range of ideas to be introduced and vetted.

How to use the EPS in scenario planning

The EPS tool retains and categorizes the submissions by the scenario team members. Each submission is classified both by driving force – in this case, how they fit into one of the ten

Exhibit 2 Research and learning tool for scenarios

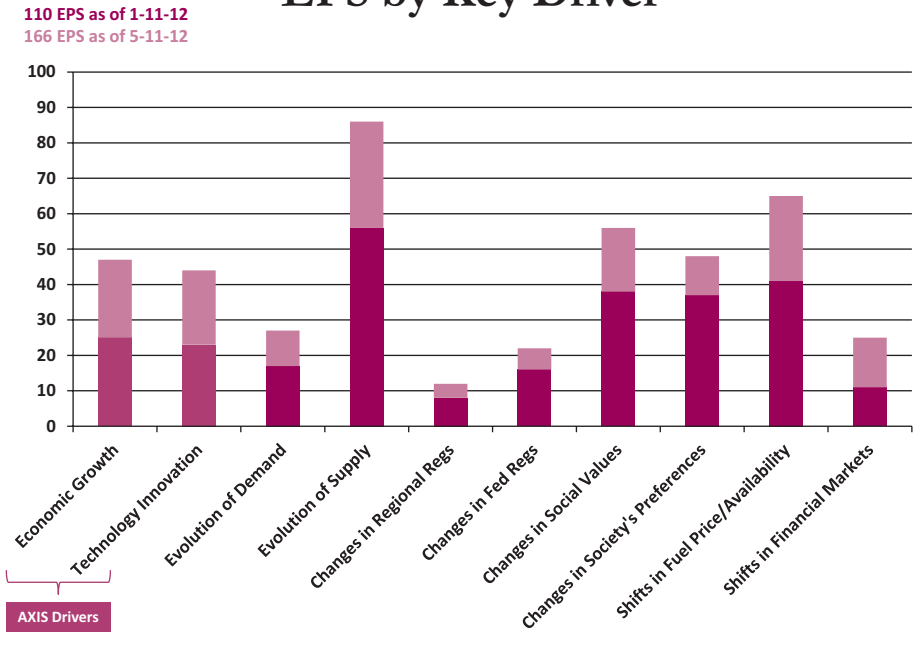


> **"During the period after the scenarios have been sketched out but before the company leadership reaches the strategy-development or investment-decision stage, a continuous learning process can help planners and senior decision-makers identify and track the unfolding events that are most relevant to the challenges and big issues facing their organization."**

driving forces of the WECC scenarios – and by how the submitter believes the entry speaks to a particular aspect of one or more of the scenarios. By associating each submission with a key driving force, the EPS tool builds a coherent database of reference points that contributes to an informed dialogue about the nature and importance of any particular driving force.

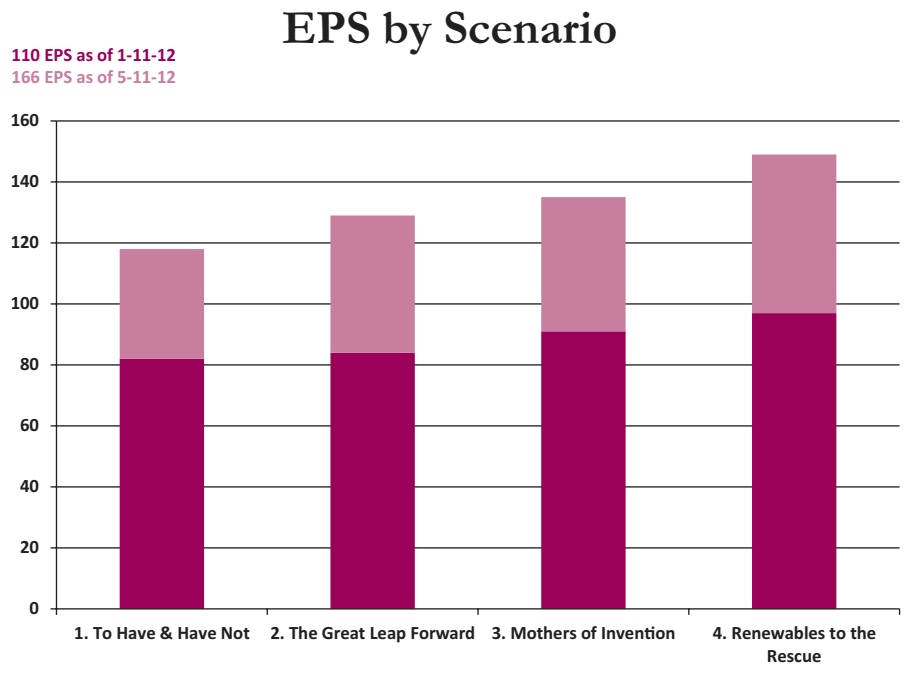
A summary report is produced monthly by the Reos consultants and submitted to the WECC team members. Key outputs of that report are shown in Exhibits 3 and 4. The summaries are normally accompanied by a list of emerging issues, which become the agenda for an hour or so of discussion (Exhibit 5). In addition, SPSG members and the Reos team identified certain topics that seemed especially important and set up webinars to discuss them. Often outside experts were also invited to participate in these webinars. Over a six-month period, five webinars were held on a range of topics including developments in financial markets and the

Exhibit 3 EPS submissions for WECC project by key driving force



Notes: This chart shows EPS submission for two periods of time, August through January, and February through May. This process will continue throughout 2012 and conclude once a final set of revised scenarios are completed in 2013

Exhibit 4 EPS submission for the WECC project by scenario



Notes: This chart shows EPS submission for two periods of time, August through January, and February through May. This process will continue throughout 2012 and conclude once a final set of revised scenarios are completed in 2013

impact of weather-related events on public policy. ''The EPS system has been a powerful tool for keeping a diverse set of stakeholders consistently engaged throughout the scenario project. We have shared a lot and become smarter through using it. It also allowed us to efficiently build a solid base of relevant research that stands behind our scenario work,'' says Byron Woertz, Senior Project Manager and staff leader of the WECC Scenario Project.

Once the stage-one scenarios are finalized, the next step in scenario planning is to generate potential strategic responses to each uniquely different possible future. Very often organizations start with their existing plans and strategies and assess how they might perform in the different scenario ''worlds.'' From that effort, new ideas can be generated by suspending disbelief and ''living'' in the alternative futures. In the case of the WECC scenarios, the transmission planning models are being used to generate alternative needs for transmission to serve expected load and to meet reliability and congestion standards. This information will be shared with WECC member organizations as an input into their plans for transmission investments.

As another example of an opportunity for the EPS tool to make a continuing contribution, there is a need for ongoing organizational learning during the decision-modeling activity that is informed by the scenarios. For the WECC project a full-scale modeling effort is being conducted after the scenario analysis. The initiative has two stages. The first is to define cases that incorporate different assumptions about a range of metrics including generation portfolios, economic-growth forecasts, rates of technological innovation in key generation technologies, natural-gas prices, and variations in carbon prices. The outputs from the first stage of the model are then transferred to a second network-expansion model which generates alternative transmission-line plans that are least-cost yet meet the needed reliability and congestion requirements for the robust operation of a transmission system. The scenarios, continuously updated by the EPS tool, were used to create alternative inputs into the first stage of the model – thus varying such inputs as economic growth, rates of

Exhibit 5 Example of an EPS Submission (EPS: can natural gas keep up?)

EVENT	A series of presentations at the April CREPC/SPSC meetings in San Diego have begun to highlight real issues and concerns about the future relationship between natural gas (NG) and electricity generation Key areas of concern include: 1. As coal fired generating plants are retired, the existing NG infrastructure (storage, distribution, system management, etc.) is ill designed and unprepared to keep up with fast increasing demand for NG generation facilities 2. Current projections indicate an additional need for 14 trillion cubic feet of NG to cover new NG coal replacement generation 3. The NG system is geared for seasonal demand of consumers for heating and industrial use, not the needs of electricity generation These are just a few of the areas covered in the presentations that are attached to this EPS
PATTERN	A disconnect exists between the NG system and the electricity generation/distribution systems New NG powered plants may not be able to keep up as coal fired plants are retired New and unforeseen opportunities for renewables to permanently fill the gap in the medium and long term, thereby restricting long term NG plant opportunities This combination, along with increased NG production may keep NG prices lower than anticipated in the long term
STRUCTURE	Inability of NG systems and electricity generation systems to ''synchronize'' over the life of our scenarios, or at least too late to prevent real disruption in coal fired plant retirement plans
KEY DRIVER	Evolution of Electric Supply in the WECC Region; Shifts in Availability and Prices of Fuels used in Electricity Sector
SCENARIO	Scenario 2: The New Frontier Scenario 4: Renewables to the Rescue
WILDCARD	Yes
Reference URL link Title Submitted by E-mail address Approval status Attachments	CREPC/SPSC meetings in San Diego April 2012 Key presentations/documents are attached to this EPS http://www.westgov.org/wieb/site/crepcpage/crepupco.htm Can Natural Gas Keep Up? Reos Team Research Approved ASPEN Gas vs Electricity Generation CREPC-SPSC 3Apr12.pdf EIA-2012 Annual Energy Outlook Early Release Report 9Apr12.pdf ICF gas vs electricity CREPC-SPSC 3Apr12.pdf OGJ-Massive investment needed for oil and gas facilities experts say.pdf

technological change, and carbon prices – which, when matched with the second-stage network-expansion tool, would identify different transmission-line alternatives. The result of all this work is an important product of the transmission planning WECC performs on behalf of its members, the organizations and government entities that actually make or regulate transmission-line investments.

Various other uses for the EPS learning tool

Strategic options can also be generated by assessing the likely actions and strategies of competitors in each scenario. Some organizations place a systems-based model of their organization within the scenarios to assess competitive advantages and weaknesses.[2] Some companies employ a SWOC (Strengths, Weaknesses, Opportunities and Challenges) analyses to experience what it would be like to operate in each scenario.

By ''living'' in the alternative scenarios and using the key driving forces as a starting point, planners can generate early indicators that signal whether a particular scenario or trends within a scenario are emerging. This is another area where the research collected in the EPS system can be used to watch for developments that portend operating-environment changes.

Potential strategic options developed from scenarios are often placed into two categories: ''robust'' – work well in all scenarios, thus move toward implementation; and ''contingent'' – work in one or two but not all scenarios. Early indicators can be usefully associated with

The WECC scenarios

The first step of a scenario-planning project is to settle on a focal question that clearly establishes what the scenarios are about. In the WECC project that question is: How will demand for electric power services in the WECC Regions change in the next 10-20 years and how should electric-power-supply services and related transmission networks change to accommodate that demand?[1]

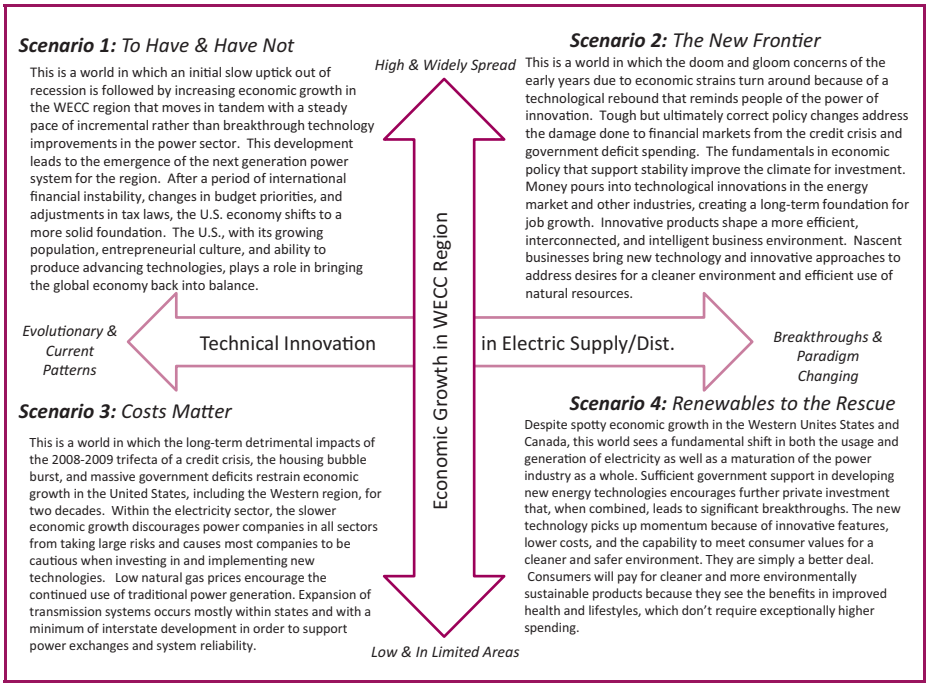
The second step requires brainstorming and organizing key issues and factors that can drive change in the business environment; such drivers influence the successful implementation of potential strategies, raise risk, and influence opportunities. The drivers that emerge from a brainstorming process are then organized in the seven to ten big categories. For the WECC project the key drivers are:

1. Technological innovation in electric supply technology and distribution systems.
2. The course of regional economic growth in the WECC Regions.
3. The evolution of electric demand in the WECC Regions.
4. The evolution of electric supply in the WECC Regions.
5. Changes in the regulation of electric-power systems in the WECC Regions.
6. Changes in federal regulation affecting the electric-power industry.
7. Changes in social values related to energy issues.
8. Changes in society's preferences for sustaining environmental and natural resources
9. Shifts in national and global financial markets.
10. Shifts in the availability and price of commodity fuels used in the electricity industry.

To narrow the number of scenarios to a useful set of four, the key drivers are prioritized around ''most important and simultaneously most uncertain.'' In the WECC project the top two drivers from the list of ten were selected and used to create a 2-by-2 scenario matrix. The matrix mapped four unique scenarios that the team then developed into four distinctly different but possible futures (see Exhibit 6, WECC matrix and summaries of the first-phase scenarios).

The full scenario report and access to the public work of the scenario planning project is available at: www.wecc.biz/committees/BOD/TEPPC/SPSG/default.aspx

Exhibit 6 Summary overview of WECC scenarios



"A web-connected EPS tool allows all members of this multi-stakeholder Scenario Planning Steering Group, as well as invited experts, to submit news articles, conference reports, research, scholarly articles and other published information into a database that is organized with links to four scenarios and their driving forces."

contingent strategic options. Essentially, potential strategies or actions can be thought through in advance, and once early indicators emerge in the business environment, those strategies and actions can be pursued proactively. This is one of the primary ways scenario-based planning reduces risks or allows organizations to seize opportunities with some foresight. An ongoing EPS process related to the scenarios and key drivers can support this kind of strategic monitoring of the business environment with the scenarios serving an organizing structure – that is, by categorizing ''what do we know and why do we need to know it?''

A learning agenda

In some instances companies can be well served by creating a learning agenda to augment the scenario-planning process. For the WECC project it will prove especially useful when detailed work begins on identifying strategic options and actions for transmission investment by WECC members. In addition, very often during the scenario-planning process, participants stumble upon areas that are important but that the leaders of the company simply know little about. Capturing these issues as they arise during scenario-planning and adding them to the EPS system can be the basis of a rewarding long-term learning process for an organization.

Notes

1. For the best guide to managing a scenario planning project see B. Ralston and I. Wilson, *The Scenario Planning Handbook: Developing Strategies in Uncertain Times* (Thompson, 2006).
2. Kees Van der Heijden, *The Art of Strategic Conversation* (Wiley, 2005).

Corresponding author

Gerald Harris can be contacted at: gerald@artofquantumplanning.com