The Innovation Process

(Adapted from the book, Business Innovation in the Cloud: Executing on Innovation with Cloud Computing). In the April 2012 Column we explored an “Architecture for Innovation.” This month we drill down a little on innovation as a business process.

When we think of business process management, we often think of designing and managing workflow, case management, and transaction-oriented processes. Yet, there’s another kind of business process that should come to top of mind in these days of extreme competition: the innovation process. One of the key components within an innovation program is a process around how it should function. By thinking through and designing an innovation process, we must be able to “test” the process theoretically via “what if” scenarios. By conducting an iterative approach to process design, we can identify bottlenecks, breakdowns, system requirements, opportunities for automation and standardization, as well as resources required to handle expected volumes.

Refer back to the Innovation Architecture discussed in this Column in April. An architecture is the use of abstractions and models to simplify and communicate complex structures and processes to improve understanding and forecasting the behavior of the system. There we presented a way to think about constructing an innovation process.

Such innovation processes also force us to think of ways that innovation opportunities would, and should, come to core innovation teams. There is not one single widely accepted process for innovation. Various companies have evolved their innovation processes over time. Some have many detailed steps. Others are high-level guidelines. But regardless of the chosen process, it must be repeatable and disciplined.

There are many innovation processes out there, but all encompass the following steps:

1. **Understand and scope** opportunities to identify your most critical assumptions, usually around what problem you are trying to solve.
2. **Capture ideas** to develop the minimum product and service concepts to deliver value (desired, sought, identified, anticipated outcome) that will allow you to learn about those assumptions and deliver the needed outcomes.
3. **Evaluate and select** by testing ideas in the ecosystem of partners, suppliers, and customers to find out if what you believe is shared.
4. **Develop and experiment** as quickly and efficiently as possible until you discover the right answers to delivering the outcomes.
5. **Implement** quickly and then scale iteratively, openly, and collaboratively to the right product and market fit.
6. **Champion** innovative products and services in order to minimize the time the ecosystem has to climb the learning curve to understand the benefit. This isn’t about sales; it includes the internal organization, suppliers, partners, and customers—the entire ecosystem.
Below are three high-level innovation processes developed by PWC and Gartner, followed by a more detailed process approach.

Regardless of the specific innovation process chosen, there are two parts to successful execution—doing the right thing, then doing it right. The doing the right thing part would be an innovation architectural model, the doing it right would be the OODA loop model (always adjusting). Below we present an adaptation of the OODA loops, presented earlier in the book, that focuses in on an innovation process lifecycle.
The key to the five steps at the bottom of the model is that each step embeds or nests its own OODA loops. Each step, including the Idea and Concept step, requires adjusting as new information becomes available. And as it is in our discussion of fractals (Chapter 18 of the book, *Business Innovation in the Cloud*), each step can influence the overall process. The OODA loop diagram for the five main steps is shown below (See OODA Loops discussion in *BPTrends, July 2011*).

A business innovation initiative starts with building processes, systems, education programs, and funding that can be integrated into day-to-day operations as well as the culture of a company. An innovation program can foster stronger competitive advantage, contribute to a company’s recognition as an industry leader, and increase customer satisfaction, while also helping business partners be more competitive in their fields. Let’s take a quick look at the building blocks and types of plans needed to launch an innovation program.

**Building Blocks for Sustainable and Systemic Innovation**

Being innovative means being competitive and bringing value to both a company’s trading partners and its customers. On one hand, a company can continue to reduce its costs and remain competitive, but today’s customers want more than simply reduced costs. On the other hand, a company’s business partners want to team with a company that can enable them, and the entire value chain, to be competitive. Cutting costs is just one small part of the equation. Adding unique value is the critical variable in the competitive advantage equation.

There are several building blocks that are required to make business innovation happen, not just once in a while, but over and over again. These foundational building blocks include:

- Create a systemic culture of innovation starting at the C-level through to front-line workers
Understand how creativity and innovation work
Establish an Innovation Group within and a commonly understood architecture
Develop an innovation process and infrastructure, especially tools and capabilities that foster collaboration and a culture of innovation as described above
Redesign business processes to co-create value with customers and trading partners
Connect the entire value delivery system to end-to-end business processes
Work across countries and time-zones in a living ecosystem
Create multi-company virtual enterprise networks that are banded and disbanded with the ebb and flow of business
Deploy high-performance teams whose communication protocols are based on information bursts instead of commands (Bioteams, see Chapter 14)
Understand the requirements that are necessary to make the vision a reality, including reaching outside the company to gather and assess ideas, and then “do the work”

The critical factor is not continuous executive-level support and sponsorship; it’s total executive immersion and commitment to new business models.

Business innovation goes beyond just funding an initiative and on to the committed belief in systemic innovation throughout the organization. Just consider Google, Apple, Dell and Amazon. Their CEOs didn’t delegate “innovation.” Larry Page, Steve Jobs, Michael Dell and Jeff Bezos are, or were, in effect, their companies’ CIOs (Chief Innovation Officers)!

With executive commitment, large companies can empower thousands of employees to contribute to business innovation, everywhere, everyday.

The executive team needs to understand that failures are expected within an innovation program. They cannot go into a given initiative believing that every endeavor will result in great success. But the good news is that, thanks to cloud computing, a sandbox can be built in no time to test out potentially winning innovations. Google is famous for this approach by releasing beta versions of new offerings and letting users determine their fates.

Hmm? What ever happened to Google Wave? Oops, as Google’s site explains, “Google Wave is no longer being developed as a standalone product.” Stay tuned.

That’s okay, for in a culture of innovation, where a company is doing something never done before, what can be expected? A hole in one on every tee off?

However, the Cloud makes experimenting in a sandbox a no-brainer, with negligible costs and resources—and that’s indeed a really big “Wow” about cloud computing.

Plan of Intent (Observe and Orient)

Because not every innovative idea, proof of concept, or solution will be successful, it’s best to group innovation programs into two categories, Plan of Intent and Plan of Record. Earlier we referred to a Plan of Investigation that is essentially research into “what else do we need to research, what else do we need to watch, what are we missing, what do we don’t know we don’t know,” rather than a specific course of action leading to innovation outcomes as are The Plan of Intent and the Plan of Record.

The Plan of Investigation is a feedback loop into Foresight and Insight. The Plan of Intent involves innovation areas where a company will investigate, research, engineer and document various forms of innovations it expects it will need. These types of projects are more proactive in nature and allow the company to look at various trends, social media and industry observations, then assimilate that information to make recommendations as to where the company should be focusing attention on developing future capabilities.
Scenario planning is key to developing a Plan of Intent. Giving due credit to the military, scenario planning is an adaptation of methods used by military intelligence. For those readers unfamiliar with scenario planning, let's tap Wikipedia for a quick run down.

"Most authors attribute the introduction of scenario planning to Herman Kahn through his work for the US Military in the 1950s at the RAND Corporation where he developed a technique of describing the future in stories as if written by people in the future. Scenario planning may involve aspects of systems thinking, specifically the recognition that many factors may combine in complex ways to create some surprising futures (due to non-linear feedback loops). The method also allows the inclusion of factors that are difficult to formalize, such as novel insights about the future, deep shifts in values, unprecedented regulations or inventions. Systems thinking used in conjunction with scenario planning leads to plausible scenario story lines because the causal relationship between factors can be demonstrated. In these cases when scenario planning is integrated with a systems thinking approach to scenario development, it is sometimes referred to as structural dynamics."

"The scenarios usually include plausible, but unexpectedly important situations and problems that exist in some small form in the present day. Any particular scenario is unlikely. However, future studies analysts select scenario features so they are both possible and uncomfortable. Scenario planning helps policy-makers to anticipate hidden weaknesses and inflexibilities in organizations and methods. Here's how military scenario planning or scenario thinking is done:

1. **Decide on the key question to be answered by the analysis.** By doing this, it is possible to assess whether scenario planning is preferred over the other methods. If the question is based on small changes or number of elements, other more formalized methods may be more useful.

2. **Set the time and scope of the analysis.** Take into consideration how quickly changes have happened in the past, and try to assess to what degree it is possible to predict common trends in demographics, product life cycles. A usual timeframe can be five to 10 years.

3. **Identify major stakeholders.** Decide who will be affected by the possible outcomes. Identify their current interests, whether and why these interests have changed over time in the past.

4. **Map basic trends and driving forces.** This includes industry, economic, political, technological, legal, and societal trends. Assess to what degree these trends will affect your research question. Describe each trend, how and why it will affect the organization. In this step of the process, brainstorming is commonly used, where all trends that can be thought of are presented before they are assessed, to capture possible group thinking and tunnel vision.

5. **Find key uncertainties.** Map the driving forces on two axes, assessing each force on an uncertain/relatively predictable and important / unimportant scale. All driving forces that are considered unimportant are discarded. Important driving forces that are relatively predictable such as demographics can be included in any scenario, so the scenarios should not be based on these. This leaves you with a number of important and unpredictable driving forces. At this point, it is also useful to assess whether any linkages between driving forces exist, and rule out any “impossible” scenarios such as full employment and zero inflation.

6. **Check for the possibility to group the linked forces** and if possible, reduce the forces to the two most important, to allow the scenarios to be presented in a neat xy-diagram.

7. **Identify the extremes** of the possible outcomes of the two driving forces and check the dimensions for consistency and plausibility. Three key points should be assessed:
   - **Time frame:** Are the trends compatible within the time frame in question?
   - **Internal consistency:** Do the forces describe uncertainties that can construct probable scenarios?
   - **The stakeholders:** Are any stakeholders currently in disequilibrium compared to their preferred situation, and will this evolve the scenario? Is it possible to create probable scenarios when considering the stakeholders?

8. **Define the scenarios, plotting them on a grid if possible.** Usually, two to four scenarios are constructed. The current situation does not need to be in the middle of the diagram (inflation may already be low), and possible scenarios may keep one (or more) of the forces relatively constant,
especially if using three or more driving forces. One approach can be to create all positive elements into one scenario and all negative elements (relative to the current situation) in another scenario, then refining these. In the end, try to avoid pure best-case and worst-case scenarios.

9. Write out the scenarios. Narrate what has happened and what the reasons can be for the proposed situation. Try to include good reasons why the changes have occurred as this helps the further analysis. Finally, give each scenario a descriptive (and catchy) name to ease later reference.

10. Assess the scenarios. Are they relevant for the goal? Are they internally consistent? Are they archetypical? Do they represent relatively stable outcome situations?

11. Identify research needs. Based on the scenarios, assess where more information is needed. Where needed, obtain more information on the motivations of stakeholders, possible innovations that may occur in the industry and so on.

12. Develop quantitative methods. If possible, develop models to help quantify consequences of the various scenarios, such as growth rate, cash flow etc. This step does of course require a significant amount of work compared to the others, and may be left out in back-of-the-envelope-analyses.

13. Converge toward decision scenarios. Retrace the steps above in an iterative process until you reach scenarios which address the fundamental issues facing the organization. Try to assess upsides and downsides of the possible scenarios.

“Scenarios planning starts by dividing our knowledge into two broad domains: (1) things we believe we know something about and (2) elements we consider uncertain or unknowable. The first component – trends – casts the past forward, recognizing that our world possesses considerable momentum and continuity. For example, we can safely make assumptions about demographic shifts and, perhaps, substitution effects for certain new technologies. The second component – true uncertainties – involve indeterminables such as future interest rates, outcomes of political elections, rates of innovation, fads and fashions in markets, and so on. The art of scenario planning lies in blending the known and the unknown into a limited number of internally consistent views of the future that span a very wide range of possibilities.”

Scenario planning can be augmented with other tools and methods. For example, when exploring things we believe we know something about, companies such as GE turn to “prediction markets.” On the other hand, seeking the uncertain or the unknowable in scenario planning can be augmented or informed by the Delphi method, yet another innovation brought to us by the military during the Cold War to forecast the impact of technology on warfare.

Delphi is based on the principle that forecasts or decisions from a structured panel of experts are more accurate than those from unstructured groups. The Delphi method is a judgmental forecasting procedure in the form of an anonymous, written, multi-stage survey process, where feedback of group opinion is provided after each round.

The Delphi method has instrumental value in providing different alternative futures and the augmentation of scenarios. Because scenario planning is “information hungry,” Delphi research can deliver valuable input for the process.

There are various types of information output of Delphi that can be used as input for scenario planning. Researchers can, for example, identify relevant events or developments and, based on expert opinion, assign probabilities to them. Moreover, expert comments and arguments provide deeper insights into relationships of factors that can, in turn, be integrated into scenarios afterwards. Also, Delphi helps to identify extreme opinions and dissent among the experts. Such controversial topics are particularly suited for extreme scenarios or wildcards. Organizations can use Delphi in order to make their scenarios more profound and to create confidence in scenario planning. Further benefits lie in the simplification of the scenario writing process and the deep understanding of the interrelations between the forecast items and social factors.
As a form of “collective intelligence” the Delphi method is a natural for social networks in the Cloud. That’s precisely where Professor William E. Halal and his associates took the concept and developed the TechCast forecasting system. All organizations need technology forecasts for their strategic planning because technology drives the creative destruction of markets, introduces disruptive products and services, and alters the way organizations work. Managers often try to develop their own forecasts, but the time and cost are considerable and the results mediocre. The website (techcast.org) now approaches a million hits per year and taps the collective intelligence of experts in over 70 technology fields.

Organizations such as the Rockefeller Foundation offer publicly available macro-level scenarios that can be incorporated into individual company scenario planning efforts and initiatives.

Scenario planning should be the backdrop of the “Observe” phase of any business innovation initiative for it stretches and refocuses thinking—and creative destruction now operates at Internet time. The scenario portfolio can provide an organization with multiple frames of reference to embrace uncertainty and dynamically adjust to unexpected change—the kind of exponential change that’s no longer to be unexpected.

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**Scenario Portfolio --- Selected Innovation Initiative**

**Plan of Record (Decide and Act)**

The Plan of Record allows a company to identify specifically where it will invest and commit to deliver results. These innovation projects tend to be more reactionary in nature and have a lower
risk associated with them because the company can clearly see customer needs and demands for those categories of innovative solutions.

The objective as an industry innovator is to help ensure that both customers and suppliers are successful and able to grow and thrive. To achieve that, a company must recognize the need to work with a high degree of collaboration at every level, whether in solution design, operational integration, service-level management or change management processes. By working together with its customers and suppliers, a company can expect to identify innovative solutions that can help it meet its current and future business objectives.

To fulfill the role as a key influencer of innovation with our customers and suppliers, a company should jointly develop Innovation Plans with its customers and suppliers. An Innovation Plan includes the six components shown below.

![Innovation Plan Diagram]

**Innovation Plan**
If there is one truism to management it is this sequence – you get what you reward, you reward what you manage, you manage what you measure. For innovation to be a systemic, repeatable, predictable process, then some type of management system needs to be in place. Also, nothing happens unless it is on someone’s goal sheet, so all organizations should have a group dedicated to enabling, facilitating and accelerating innovation via education, training, mentoring and providing support systems for the innovation process and planning.

Business innovation is only achieved if it brings value to a company’s customers and trading partners. Having a comprehensive and well-maintained plan facilitates the implementation of innovative ideas, products and services that bring real value. The Innovation Plan is a resource and a guide that documents the high-level processes the multi-company team uses to identify viable innovation opportunities. It is used as a governance resource as well as a resource for new members of the team to understand the current status of innovation initiatives.

When the first Innovation Plan is collaboratively produced, it will consist of an Innovation Roadmap of items that are set to be implemented as part of the initial initiative as well as a view of possible innovations that could be implemented in the future. Typically, the Innovation Plan is updated at specified intervals, but may be updated more frequently as business conditions warrant.

The Innovation Plan details the processes that are used to regularly identify ideas to review, logs and tracks the innovative ideas that are presented and implemented, and includes a feedback loop to help refine and tune the plan. For emerging or anticipated issues for which there is no planned solution in the Innovation Plan of Record or Plan of Intent, a Value Challenge can be submitted to help solve the problems proactively.
**Innovation Roadmap**

- To assist customers and business partners in solving their business challenges and introduce innovative ideas into their environments, a company should produce and maintain an Innovation Roadmap. The Innovation Roadmap is a key component of the overall Innovation Plan. It is a timeline consisting of both planned and tentative innovations that will or could be introduced into their environment.
- Items listed on the Innovation Roadmap can include existing solutions, products and services that are on the Innovation Plan of Record and Plan of Intent, as well as relatively undefined solutions for emerging or anticipated issues.

**Periodic Innovation Reviews**

- To help ensure a sustained focus on innovation and that customer innovation needs are being met, the innovation team should hold a regular meeting focused on innovations that can bring additional value. Notwithstanding the planned meeting, if, in the course of working collaboratively to meet the goals, we discover a particular need that could be addressed by an innovative solution that would bring significant value, we may propose additional meetings.
- Prior to each meeting, a working list of candidate ideas, areas of interest, and possible services may be circulated or discussed to ensure expectations are met and needs are being appropriately addressed. These ideas may come from anyone in the team.
- These suggestions are part of a Potential Idea Pool that is populated and maintained based on the various interactions the innovation team has throughout the organization. Additional ideas can come from the other employees of customers, their customers, and other sources.

**Innovation Log and Feedback**

- The Innovation Plan includes a log of the ideas that have been considered and reviewed at the Innovation Review meetings. The Innovation Plan also tracks the lifecycle status of those that have been implemented at a summary level.
- Additionally, as part of the Innovation Plan, the innovative company solicits feedback from customers, staff, partners, even competitors via industry forums, if appropriate, on the various ideas and approaches that are presented. This information is used in conjunction with other input to refine and update the Innovation Plan and to help ensure the ongoing innovative ideas that are presented are relevant.

**Early Collaboration**

- Involving customers and trading partners in the innovation process can be mutually beneficial. An innovation-driven company believes in listening to its customers and giving them a voice early to help shape new products and services. For this reason, an innovation-driven company may occasionally approach its customers with opportunities to work collaboratively on new and innovative technologies, products, and services that are in the earlier stages of development.
- The scope of these initiatives will vary, but may include providing opinions, developing or evaluating requirements, providing specific feedback, or to possibly participating in trials and the early adoption of new products and services. Such a level of cooperation and collaboration helps ensure innovation is delivered as expected.

**Value Challenges**

A Value Challenge is the innovation equivalent of scrum techniques used for completing complex projects. Borrowing from the game of rugby, Hirotaka Takeuchi and Ikujiro Nonaka documented scrum techniques for business in a 1986 article in the *Harvard Business Review*, "New Product Development Game." Scrum is an agile development framework that is structured around sprints (or iterations of work). A key component of a sprint is the product backlog which is made up of prioritized user stories (or requirements). Scrum relies on a self-organizing, cross-functional team. The scrum team is self-organizing in that there is no overall team leader who decides which person will do which task or how a problem will be solved. Those are issues that are decided by the team as a whole. The team is cross-functional so that everyone necessary to take a feature
from idea to implementation is involved. These agile development teams are supported by two specific individuals: a ScrumMaster and a product owner. The ScrumMaster can be thought of as a coach for the team, helping team members use the Scrum framework to perform at their highest level. The product owner represents the business, customers or users and guides the team toward building the right product.

Value challenges are the foundation of the Open Innovation process. However, the audience to whom a value challenge is presented may be as open or closed as the problem dictates and the problem owner prefers. While high visibility innovation tends to focus on how to create breakthrough results in an industry or be totally disruptive to an industry, value challenges tend to focus on very specific problems (generally defined in terms of an outcome not being achieved) and solving them (creating the desired outcome). A classic example of a value challenge is demonstrated by the Goldcorp Challenge, described in Chapter 7 of the Business Innovation in the Cloud book, “The Gold Standard.”

**Takeaway**

To recap, there are several components that will be needed to execute and implement a sustainable innovation program. One of the challenges is how an innovation process is structured enough to keep the innovation process flowing, yet not so rigid as to stifle. The innovation process will need to be able to accomplish the following:

- Establish and mature innovation methodologies and common framework across the company
- Systematically identify high value external and internal targets for innovation
- Capture, evaluate, prioritize, and catalog innovative ideas
- Sponsor, develop, and refine those that have merit
- Promote the production of those that bring real value
- Facilitate adoption into operational environments
- Pilot and perform proof of concept projects
- Develop innovation experts to provide innovation consulting, training and Innovation Plan development
- Provide the processes, tools, templates, and resources that allow innovation teams to produce solid Innovation Plans

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