

APQC Advanced Working Group

The Intersection of Innovation and Knowledge Management

To say that the concept of connectedness has evolved over the past decade would be an understatement. Ten years ago, being connected meant you had a laptop computer. Now, cell phones, handheld computers, “Palmtops,” and Blackberries are used with such frequency that consumers are wondering how they survived without them. Phrases that didn’t exist in our vocabulary 10 years ago are now part of our vernacular, as evidenced by the addition of “Googling” to the dictionary. Even U.S. President Obama uses a Blackberry in the White House. Today, the “fourth screen” has become as important as the first three to our way of communication.¹

Not surprisingly, mobile devices continue to transform the business landscape and have far-reaching implications for other business functions, such as innovation and knowledge management (KM). Simply put, people are more connected and are sharing more knowledge. But what does this mean for KM and innovation strategies, and how will organizations adapt to changing expectations? To address the dynamic landscape of innovation and knowledge management, APQC launched an Advanced Working Group (AWG) in October 2008. The AWG participants joined together to co-develop models and methods for using KM to innovate and grow in the future. The following organizations contributed expertise and knowledge to the effort: Baker Hughes, Singapore Ministry of Defense (MINDEF) /Singapore Air Force, Petrobras, the U.S. Navy, and the U.S. Armament Research Development and Engineering Center (ARDEC). These participants were joined by the APQC team—Carla O’Dell, president, and Cindy Hubert, executive director—as well as Larry Prusak, visiting professor at the Copenhagen Business School and senior advisor to NASA and the World Bank.

One AWG session in early 2009 focused on the role of KM in innovation—now and in the future—and the impact of mobile devices on both. As connectivity and collaboration continue to grow, both inside and outside organizations, innovation strategies are changing. Likewise, the role of knowledge management is evolving to adapt to new technologies and to support the innovation that emerges when diverse points of view come together to address a problem (“creative abrasion”).

The remainder of this white paper contains excerpts from the AWG discussion on KM and innovation.

THE DYNAMICS OF INNOVATION

One of the first questions posed to the AWG focused on the dynamics of innovation. Particularly, what is innovation today? Is it the newest mobile device that provides users with unlimited capabilities, or is it a process improvement that helps you do more, faster, and better? Or is it the creative ideas of a few “great men” and scientists within research and development?

Innovation is a word that connotes different things depending on where you sit in an organization. For some, innovation occurs in the “fuzzy front end” and is the process of creating new ideas that can profoundly change the marketplace. For others, innovation means putting ideas into action. Innovation

¹ The fourth screen refers the screen on mobile devices. The first three screens are the movie theater screen, the TV screen, and the PC screen.

begins with an idea and then is brought to life through product development, marketing, sales, R&D, graphics, and packaging. It takes a village to bring one idea to market.

According to one of the AWG participants from the U. S. Navy: “We are blurring the line between invention and innovation. We’re talking about technology ideas that would have failed if someone hadn’t found a way to make them marketable. Luck is when opportunity meets discipline, when serendipity is combined with an organization’s ability to take a disciplined approach. That is when you have innovation success.”

The participants from MINDEF/SAF opined that innovation is an essential component in the development of military capabilities. The military may have given birth to the Internet, but it still has a lot to learn about more recent software innovations, particularly those related to Web 2.0. For example, Second Life could be readily adapted to supplement training for dangerous situations, such as the diffusing of bombs, or to design training scenarios that emulate social interactions between military commanders/soldiers and locals in the theatre of operations. The emergence of network-centric warfare will require extensive innovation around information and knowledge sharing.²

Prusak believes that cognitive diversity plays an important role in innovation. This is where KM principles for building collaboration add value. The Great Man Theory, which attributes historically significant events to individuals based on their intelligence or wisdom, is a myth. According to Prusak, “people incrementally make small changes on a wealth of knowledge gathered from their surroundings and peers.” As a result, cognitive diversity, enabled by the best principles of KM, should be viewed as a new tool in support of innovation.

O’Dell agrees: “When you pull back the cloak on the Great Man Theory, the characteristics of highly innovative organizations continue to be ‘the five Cs’: connectivity, collaboration, cross-functionality, and creative abrasion, which comes from cognitive diversity.” Creative abrasion refers to the ability to manage a dialogue in such a way as to create insights from diverse and often uncomfortable points of view. Creative abrasion does not occur naturally, but is an orchestrated event. According to O’Dell, “This is because humans tend to gravitate toward others similar to themselves, rather than to those with whom they share few commonalities.”

To add another dimension to the “what is innovation?” discussion, it is worth noting that process and business model improvements often have more impact than product innovations. Some of the great winners in innovation history have not been winners because of products or services, but because of innovations in business processes or models. Take Amazon.com, for example. Amazon leveraged a successful business model that brought together diverse suppliers. Because of its model, the company has been able to offer one-stop shopping and convenience that is “just a click away.” Another example of innovation in action is Wal-Mart. By simply reinventing business processes and implementing supply chain improvements, the mega-retailer has been able to reduce costs and pass those savings on to the consumer.

² Network-centric warfare draws upon the ability to transmit information about a situation across battle spaces to all other participating units to reduce the “fog of war” and to aid in sense-making at all levels. This requires a great deal of innovative and creative integration of “sensors” and “shooters.”

Given the changing dynamic of innovation, how is the relationship between KM and innovation evolving? If there are many paths to innovation success, KM is the conduit that creates an environment in which innovation can thrive. It is well established that effective knowledge management is a critical piece of the innovation puzzle. In the absence of knowledge capture, use, and reuse, ideas and improvements often falter.

Past APQC consortium studies have shown that best-practice organizations use KM to become more efficient innovators. While knowledge sharing may not necessarily drive a lot of breakthrough ideas, robust knowledge processes make the socialization of new ideas more efficient. Specifically, KM leads to more efficient innovation by:

- limiting the time spent on redundancy and relearning;
- improving capabilities for reusing knowledge, information, and lessons learned; and
- reducing organizational risks, since someone has often done something similar in the past.

KM makes it easier for people to find the information and content they need to innovate. In addition, knowledge sharing and reuse free up time for employees to be creative and promote a culture that is more conducive to taking risks.

Effective KM improves time to market and creates a supportive environment in which people feel comfortable coming up with new ideas and working with others. KM also increases access to expert knowledge and improves collaboration across boundaries, which is a critical and value-added aspect of the relationship between KM and innovation. The reuse of knowledge prompts more organizational creativity and results in a higher yield from the innovation process. Problems provoke the search for new knowledge, and knowledge changes when used in new contexts.

As one of the AWG participants recognized, “We already know that effective KM provides the right information at the right point in time when a person needs it, and mobility and social networking are moving us away from large stores of data.”

INNOVATION ARCHETYPES

How organizations address innovation and implement KM methods varies greatly, and there is no one-size-fits-all approach. Attempts to replicate outstanding innovators such as Amazon, Wal-Mart, and Google often fail simply because of underlying differences in organizations’ operations and cultures.

In a previous white paper, IBM Global Business Services, Innosight, and APQC developed a model (Figure 1, page 4) to illustrate the different types of innovation archetypes. An archetype is a unique mix of cultural and operational traits that represent how an organization innovates. The model was a deliverable from the Open Innovation Research Study, which examined how organizations’ innovation capabilities impact business performance.

The study, which was conducted between December 2006 and August 2007, collected data from more than 250 organizations across various industries. The resulting Innovation Archetypes Model shows that the sourcing, shaping, and implementation of ideas at innovative firms tend to conform to a small number of innovation archetypes, which represent a self-reinforcing combination of culture and

operations.³ Below the name of each archetype, the figure lists an example of an organization that characterizes that archetype.

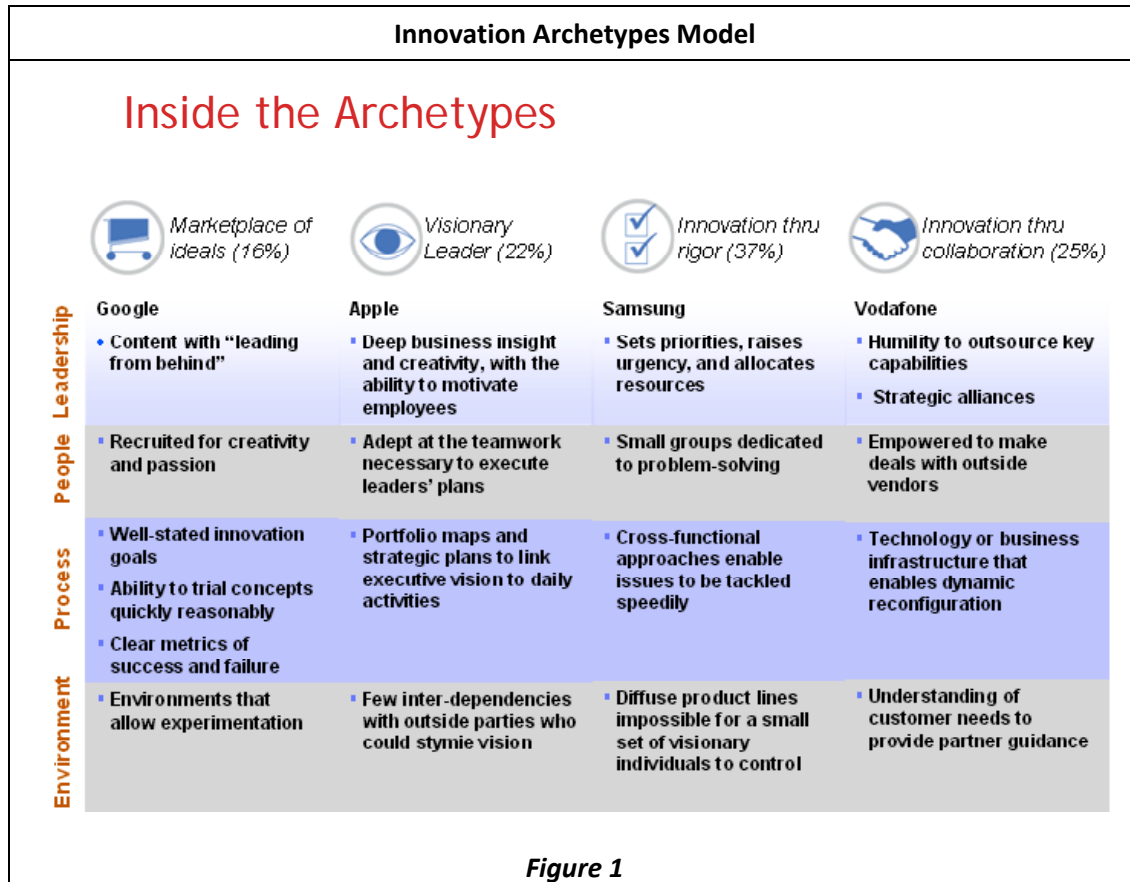


Figure 1

Archetypes, KM , and Open Innovation

Much attention has been given to the idea of “open innovation,” which refers to the use of external parties to help solve business issues. In the age of increased connectivity and distributed knowledge, organizations may opt to purchase or license processes or inventions from other organizations. Joint ventures, spinoffs, and licensing options may also be used to bring internal innovations to a broader external market. Leading organizations such as Procter & Gamble, IBM, InnoCentive, Nokia, and others are using and promoting open innovation strategies.

One of the questions posed to the AWG was whether or not the open innovation model will replace the traditional model for innovation. O’Dell responded, “I don’t think it will replace it, but it adds another opportunity.” Whether or not open innovation will work depends on an organization’s archetype. If an organization’s archetype is “innovation through collaboration,” which relies on strategic alliances with employees who are empowered to make deals with outside vendors, then open innovation is a realistic

³ George Pohle and Stephen Wunker. “Innovating on your own terms.” Published by IBM Institute for Business Value and Innosight, 2007.

opportunity. Also, according to O'Dell, organizations with semi-permeable membranes that are willing to explore outside information often find success with open innovation strategies. Procter and Gamble is a case in point. As part of its "connect and develop" strategy, P&G has the objective to acquire 50 percent of its innovations from outside the organization.

For some organizations, open innovation is attractive because it is consistent with social computing and taps into a cultural shift that encourages leveraging outside networks and vendors. As mobile devices continue to increase connectivity and collaboration, many organizations consider the transition to open innovation to be a natural progression. Others have seen the success of open innovation at leading organizations and find its potential tempting. Hubert, APQC's executive director of custom solutions, commented: "In the past few months, I've seen many organizations moving to open innovation models."

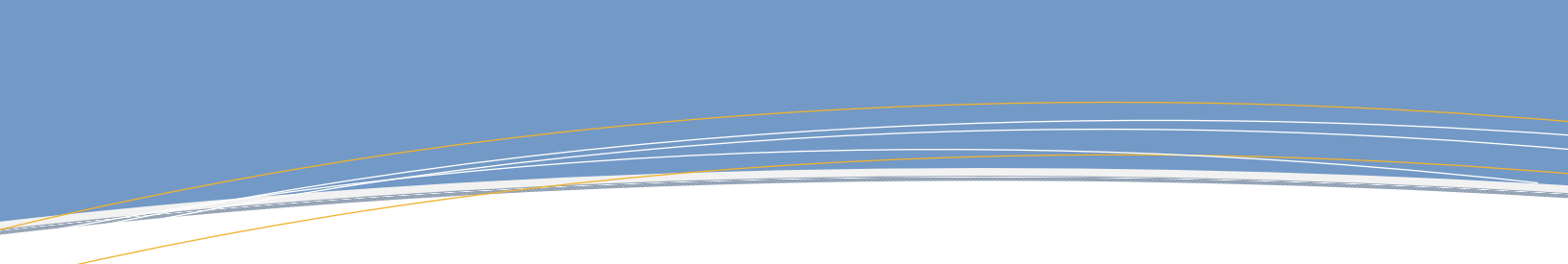
Despite the promise of open innovation, it is not without its challenges. Adopting open innovation strategies without supporting processes linking R&D, supply chain, and other key functions can lead to inefficiencies. According to Hubert, "many organizations fail to think through the processes required to help knowledge flow from where it resides to where it needs to be."

In addition, Prusak noted that the open innovation concept can be threatening to elements of the enterprise. "When you open innovation to the world, what are you saying about the value of your R&D department and your executives? Why are they being paid if you can get people from the outside to contribute solutions for a modest amount?" In addition, innovation archetype aside, Prusak believes that open innovation has its limits: "People don't give up power or sources of wealth too easily because it's the right or better thing to do." Open innovation is still a new concept, and most organizations are on the fringe of discovering how to adapt it in a way that makes sense.

INCREASING MOBILITY

The role of mobility is another issue that continues to challenge the future of KM. "I work in a company where every person at every level has a mobile device and is expected to use it," said an AWG participant representing the oil and gas sector. Using mobile devices to find knowledge and information is rapidly becoming the norm. "The dynamics have changed enormously," observed a participant from Baker Hughes. "If you can't find something in a grocery store, for example, instead of using traditional methods, you are more likely to call your better half." This approach translates into business functions as well. Rather than relying on archives and large stores of static data, organizations are turning to access and connectivity as ways to find information "just-in-time." As mentioned by a participant from ARDEC, "mobile devices are changing the level of connectedness and broadening the scope of who is involved in innovation." One of the challenges for KM moving forward is to adopt strategies that compliment increased levels of connectivity and mobility.

Social computing, tapping the wisdom of crowds, and connecting people to people—termed by APQC as the "new edge of KM"—are beginning to drive innovation strategies in many organizations. Knowledge that is described as "just in time, just enough, just for me" is becoming more attainable as a result of increased mobility and advanced connectedness. APQC's 2008 study *The Role of Evolving Technologies: Accelerating Collaboration and Knowledge Transfer* supported this finding, concluding that social



computing and especially social networking are driving collaboration in leading organizations.⁴ Collaboration appears to be a source of tremendous creativity and innovation.

Most AWG participants agreed that the concept of getting information and knowledge at the moment of need is a central tenet for KM as it evolves. One participant from the mobile devices industry noted: “In my experience, humans are terrible at documenting their processes and knowledge. It’s hard to classify and categorize knowledge, but we must make it available. As mobile devices continue to explode, I don’t know how this will change.” However, a participant from Petrobras pointed out the dark side⁵ of “always on, always accessible,” citing the negative effect that interruptions can have on the ability to concentrate deeply on problems requiring innovative solutions.

It is important to note that elements of military and security are taking a cautious approach to the use of commercial mobile communication devices due to security concerns.

While there is no single path to innovation, the Innovation Archetypes Model helps organizations determine what innovation path makes sense for them. As mentioned, the sourcing, shaping, and implementation of ideas can be categorized into four innovation archetypes. AWG participants discussed the value of the archetypes in crafting and implementing innovation strategies. Of particular interest was the role of serendipity in innovation. Breakthrough innovations such as the microwave and Post-it notes, for example, were developed outside of traditional innovation models.

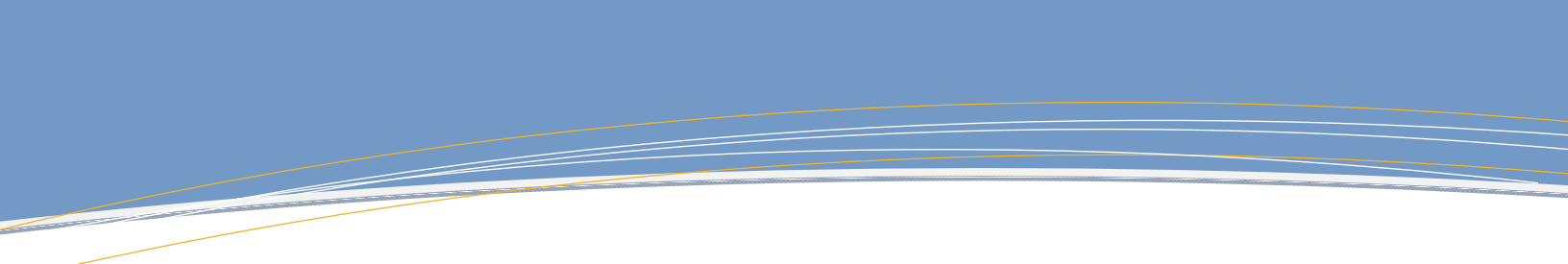
According to O’Dell, whether or not serendipity plays a role in innovation depends on the organizational avenues—real or virtual—that allow chance meetings to occur. “Serendipity happens when the structure lets you take advantage of it,” O’Dell said. Individuals have insights and discoveries every day, but if an organization does not have a structure that enables it to act on diverse opportunities, potentially serendipitous discoveries are not pursued. The “visionary leader” archetype, for example, is unlikely to encourage employees to pursue interesting “mistakes” and individual insights.

Some of the most successful organizations started with a simple idea or an individual in a garage. Apple and Hewlett-Packard, for instance, showed the business world how small innovations can catapult firms into industry giants. When knowledge provides the competitive advantage and capital start-up costs are minimal, organizations can act quickly on business innovations. Other industries, such as oil and gas, require more capital and protection for innovation. To be successful, IP and patents must be secured and addressed up front.

Clearly, mobility and connectivity will continue to expand, and the concepts of “one-ness” and instantaneous access will become integrated into day-to-day business functions. Technology is rapidly changing the way we do business, and mobile devices will provide opportunities that are yet to be imagined. Innovation and KM must evolve in ways that align with and support this brave new world.

⁴ APQC. *The Role of Evolving Technologies: Accelerating Collaboration and Knowledge Transfer*. APQC Publications, 2008.

⁵ Sharon Begley. “Will the Blackberry Sink the Presidency?” *Newsweek*, Feb. 16, 2009.



Connectivity, creative abrasion, cross-functionality, and enhanced collaboration must be integrated into future platforms and strategies to ensure viability and success.