Seamless Collaboration

ENABLING EMPLOYEES TO WORK TOGETHER ACROSS BOUNDARIES

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Developed in collaboration with APQC’s 2011–2012 Knowledge Management Advanced Working Group, which included representatives from:

- APQC
- Baker Hughes Inc.
- ConocoPhillips
- Deloitte Touche Tohmatsu Limited
- The Federal Reserve Bank of Cleveland
- Marathon Oil Corp.
- Rockwell Collins
- U.S. Army ARDEC
Collaboration in the Global Workplace

As technological advances and customer expectations spur organizations to be more globally integrated, leaders crave dynamic, collaborative workforces that can team up to solve complex problems and serve the worldwide market. In many cases, this desire is echoed by employees themselves: They want to have conversations that count and dialog that allows them to derive insights and inspiration from colleagues beyond their immediate circles.

Effective, close collaboration is predicated on the idea that employees can develop networks of trusting relationships that bridge any gap, be it geographical, functional, generational, experiential, or cultural. The challenge is to forge the connections needed to create value while eliminating the barriers and silos that keep people from operating seamlessly across boundaries. Although the vision for seamless collaboration varies by organization, the most successful interventions focus on timely, contextual, focused, and borderless collaborative opportunities that are integrated across systems and also embedded in employees' workflows.¹

That’s why collaboration is at the heart of knowledge management (KM). From expertise location systems to intranet discussion forums, KM programs provide the capabilities, approaches, and tools through which seamless collaboration becomes a reality. And recently, these programs have been reinvigorated by social computing tools that help employees easily create and share knowledge with a network of peers.

Yet as the ability to connect people across time and space expands, KM programs are grappling with the role they should play in promoting and supporting collaboration. How important is collaboration in comparison to knowledge identification and sharing, and where should KM leaders focus their attention? What types of interactions are most valuable? Should the KM program dictate the type of collaboration that needs to occur? What will engage people? And most importantly, how can the spontaneous, ingrained collaboration that occurs among local colleagues be replicated globally?

Using input from prominent KM program leaders and APQC research, the 2011-2012 APQC KM Advanced Working Group (AWG) examined strategic and tactical concerns associated with

¹ Further information about the characteristics of seamless collaboration can be found in APQC’s definition document Core Characteristics of Seamless Collaboration.
collaboration in the workplace. This white paper summarizes the AWG’s conversation, outlining key opportunities and challenges for creating a seamlessly collaborative global organization.

The (r)Evolution of Collaboration

The rise of social networking and the ability to be connected 24/7 from anywhere is changing what it means to be working, what it means to be available for collaboration, and even what collaborating means. As technology evolves to make collaboration easier and more efficient, why hasn’t there been a revolutionary response from people to engage with one another across boundaries and pursue shared goals in the workplace?

Digital access is ubiquitous, and employees dedicate their personal time to becoming savvy contributors and collaborators. People use social media platforms like Facebook to share information. They rely on mobile devices and deftly choose apps to navigate their days. And they are savvy enough to conscientiously manage their privacy and online reputations.

Yet these expanded digital capabilities have not so much simplified collaboration as changed how people develop relationships and interact. There is an incredible influx of potential input into any conversation. People can readily develop the perception of trust (e.g., “friending” the friends of friends), but relationships can be dissolved with a click. Expert advice gets replaced with crowdsourcing. The ability to group and rate people and information leads to the same problems experienced with earlier generations of collaborative tools, and persistent challenges—such as overcoming difference in how genders or generations communicate—do not magically disappear in the digital space. The result is that, despite ever-improving technological capabilities, people often fail to connect beyond their tribes and tap into the full range of expertise at their fingertips.

These dynamics inform any workplace application of social media and/or knowledge sharing tools. Employees may continually demand Google-like search capabilities inside the firewall, but
adoption of internal social networking systems remains lackluster, with only 8 percent of workers using one weekly.\(^2\) Navigating the complexities of interacting and collaborating with coworkers will never be as simple as navigating the menu of a bank’s automatic teller machine.

### Getting Collaboration to Work

Technology will continue to evolve in ways that enable virtual relationships, and new capabilities have the potential to fulfill the vision for global, seamless collaboration. More than ever, KM has the ability to create an environment where collaborative relationships are not strained by geographic or organizational distance. But have we made the process of collaboration too complicated? And more importantly, are we overemphasizing the need to collaborate?

One of the ongoing challenges for KM programs is to avoid investing in tools and techniques that few people will actually use. Insisting that every employee adopt a complex collaboration platform is likely to be time-consuming, exhausting, and ultimately counterproductive. It’s important to remember that the nature of employees’ work—not what a cool tool is capable of—should drive their level of interaction and engagement. Collaboration for its own sake is an irrelevant timewaster.

People naturally gravitate toward the level of collaboration that fulfills their work needs. This means that KM leaders should look at employees’ normal activities to determine the quality of collaborative interactions the KM program needs to support.

What do we mean by quality? Whether people are engaged with colleagues, partners, vendors, or clients, the quality of collaborative interaction is defined by the extent to which the participants connect, communicate, and co-create with one another. Sometimes a connection is all an employee needs. In setting the foundation for later collaboration, KM can connect people through approaches like networks and expertise location. At other times, employees need to talk to one another—to explain a strategy, direct others to information, or simply conduct an operational process. These situations typically call for communication tools like instant messaging, video conferencing, or discussion forums. More intense interactions involve people actually collaborating on problems and deliverables using tools such as project spaces, communities of practice, and even microblogging.

Ultimately, these three levels of interaction—connection, communication, and collaboration—come together to form a “sweet spot” where people trust one another and feel like they are part of a team, even if they have never met face-to-face. For employees who reach this sweet spot, collaboration is instinctive, in the flow of work,\(^3\) and a natural avenue to accomplish

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\(^3\) *In the flow* refers to KM approaches where people identify and share knowledge as part of their normal work processes. For more information, see APQC’s 2011 white paper *Managing Knowledge in and Above the Flow of Business.*
business goals. APQC and the KM AWG see this intersection of connection, communication, and collaboration as crucial because it is here that interactions go beyond the mere exchange of ideas to stimulate the creation of new, shared knowledge (Figure 1). The nature of the collaboration may still be basic and transactional (e.g., combining contributions to create a report), but the process has the power to enable collective achievement, learning, and innovation.

Where Connection, Communication, and Collaboration Intersect

![Diagram showing the intersection of connection, communication, and collaboration]

To create an environment where seamless collaboration can flourish, an organization must understand employee behavior and anticipate work needs. Knowledge managers must implement a suite of interoperable, flexible tools designed for employees’ teachable moments\(^4\) and then provide training and support so staff are equipped to select the tools that match their needs. But the real key to seamless collaboration is establishing trust among participants. In addition to providing the necessary technology infrastructure, KM can play a role in helping employees build their professional reputations in the digital space. Tools like employee profiles,

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\(^4\) The term *teachable moment* refers to a specific point in time when an individual is most receptive to learning something. It is based on the idea that information learned at a critical period, when an individual is faced with a problem or opportunity, is more likely to be absorbed and retained. For more information, see APQC’s 2011 white paper *Delivering Knowledge at the Teachable Moment*. 

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expertise location systems, and ratings on wiki articles and other content help people evaluate their peers and identify trustworthy, like-minded colleagues with whom they can partner. Without mechanisms to build virtual reputations and relationships, an organization is unlikely to achieve truly seamless collaboration in a global setting.

Critical Enablers for Seamless Collaboration

Recognizing the importance of both creativity and realism in terms of what is achievable, the AWG outlined the following guiding principles for creating an environment conducive to seamless collaboration:

- Think innovatively about potential solutions; be practical.
- Approach the sheer number of boundaries with caution, and prioritize.
- Beware of real vs. perceived boundaries.
- Identify ready-made solutions.
- Look for solutions that will address (i.e., knock down) multiple boundaries.

The AWG also defined a set of critical enablers that support the creation of a seamlessly collaborative environment. This paper explores three of them:

1. access to information,
2. access to people, and
3. organizational culture.

Below is a description of each enabler, including its defining characteristics, how it is used as a foundation for collaboration, and potential barriers.

ACCESS TO INFORMATION

Employees’ access to information is a long-time KM concern. It’s defined by the supply and delivery of explicit content and data from an organization’s existing body of knowledge. KM approaches bring together a variety of sources and media with push (e.g., alerts and delivery) and pull (e.g., self-service) tools to serve stakeholders.

In providing access to information for collaboration, KM programs are often required to unite disparate platforms and work spaces, create effective search functions, customize information for specific audiences, and deliver it in varying languages and classification systems. By removing barriers, such activities make it easier for employees to share knowledge and work in partnership.

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3 For a full list of the critical enablers identified by the AWG, see APQC’s Seamless Collaboration Architecture, which lays out a framework for thinking about the state of collaboration within an organization.
Successful KM programs have easily accessible search engine tools, with indices spanning multiple repositories and results filtered for each user’s requirements and needs. The programs’ enterprise content management processes index/classify all content using common processes for content authoring, storage, access, and site design. They align expertise access with employee directories and classification schemes. They use Knowledge Analytics⁶ and intelligent systems to continually update information flows based on an employee’s location, job, and areas of interest. In addition, successful KM programs offer multilingual content, streamlined platform landscapes for social networking, enterprise-wide classification schemes, and security as needed. Employees benefit from getting only the information they need, no matter where they are or what technology they’re using.

Figure 2 depicts the spectrum from unfiltered access to information, which tends to lead to inefficiency and information overload, to the ideal scenario in which relevant messages and content are customized and pushed to employees based on a wide range of considerations.

*Seeking Personalized Information Delivery*

![Figure 2](image)

Most KM programs begin with a focus on consolidating and delivering information. As a program matures, employees’ access to information typically follows the road map in Figure 3. The next level involves employees gaining confidence that they are receiving appropriate information for their roles. From there, the KM program hones approaches so that information is truly personalized and scenario-based. The ideal state is five-star service where the KM program accurately predicts the information employees need. For example, the KM system might use pattern recognition software to determine when an employee is approaching a scenario that looks like an existing one and then deliver information relevant to that type of scenario.

⁶ Knowledge Analytics℠ is a process designed to facilitate conversations with senior leaders and assimilate new, data-driven insights about knowledge into business decision making. For more information, see APQC’s 2012 white paper Knowledge Analytics: A Fresh Way of Thinking About an Old Problem.
KM programs must have stamina to proceed through this road map. Best-practice organizations typically initiate KM approaches at the enterprise level (or with the entire organization in mind). These KM programs lay out the classification and taxonomy prior to technology implementation. They treat search engine capabilities and enterprise content management as ongoing concerns. They have full executive support for standard operating procedures, protocols, and guidelines that filter through all information repositories—no matter how informal. And the KM programs have dedicated resources to maintain and update information and documents.

Access to Information: A Road Map

Figure 3

ACCESS TO PEOPLE

Throughout organizations and within KM programs, there is a growing focus on connecting people and a decreasing emphasis on collecting and managing content. It should be noted that, when we talk about connecting people, we mean more than just directing employees to relevant subject matter experts: The intention is to connect each individual to a range of others with a stake in the same issues, projects, processes, or domains. The ability to build relationships between employees at the right competency levels often complements the push to collect content, in that collaborators coauthor, edit, and disseminate one another’s work. When
people arrange themselves in effective networks, content and expertise are more likely to flow when and where they are most needed.

When connecting with colleagues, employees can become overwhelmed by an abundance of choices and unsure where to turn among disparate channels. Expertise designations also create a range of classification challenges, from out-of-date or out-of-data repositories to a lack of understanding about what makes an expert. These problems can be exacerbated by poor technology, incomplete inventories, and overlapping expertise location systems maintained by different parts of the organization (e.g., KM, organizational development, HR).

It is the KM program’s responsibility to remove these collaboration barriers by determining:

- what expertise is needed, by whom, and when;
- what type of information about expertise is most useful; and
- how to deliver that information.

Although a KM approach for enabling access to people can involve mentoring, collaborative spaces, and training, it typically starts with an expertise locator system that searches across enterprise databases and combines information from HR, communities, e-mails, and other sources. The result may be a simple expert directory, short summaries of peoples' experience, a skills inventory, a Facebook-like collaboration site, or network/community tools. Whatever form an organization’s expertise location approach takes, the KM team needs a strategy and process for keeping information up-to-date, with new data on employees’ work projects and expertise constantly flowing into the system. The team must also ensure that expertise location tools are easy to access and built into employees’ workflows.

The result of such efforts is that employees have confidence when seeking or providing expertise from/to colleagues. This hastens new hires’ time to competency and ensures that tacit knowledge flows effectively from those who have it to those who need it. Ultimately, it helps the organization identify the best available people, by situation, to provide the highest quality input.

**ORGANIZATIONAL CULTURE**

The third enabler, culture, is an important and complex facet of seamless collaboration. Global organizations must confront myriad internal micro-cultures propagated by different teams, departments, regions, languages, and work styles. Each culture has its own expectations...

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**Boundaries That Hinder Collaboration**

- **Physical boundaries**
- **Structural boundaries resulting in silos and rivalries**
- **Conceptual boundaries perceived through roles and responsibilities**
- **Language and cultural differences**
- **Turf wars**
- **Personal attitudes and preferences**
- **Tenuous trust in online relationships**
- **Limitations on collaborative time**
regarding collaborative behaviors, incentives, timeliness, relationships, accountability, responsibility, and commitment. When people from these different micro-cultures collaborate, problems can arise around conflicting work norms and value systems, incompatible communication modes and channels, and a general inability to grasp the problems of far-flung coworkers.

Organizations also must grapple with broader cultural issues, including disparities between generations, genders, experience levels, and backgrounds. The most common distinction discussed in the KM discipline is the conflicting modes of operation preferred by elder decision makers vs. incoming digital natives in the work force. Such challenges exist, but their exact nature is hard to predict given that preferences continue to change at an ever-accelerating rate.

Fostering an effective collaborative culture involves stepping into many different pairs of shoes. Part of the KM team’s job is to determine what seamless collaboration looks like for each micro-culture. APQC recommends using a use-case scenario template to profile each group, gauge work needs, and identify potential solutions. Once the KM team understands the work force’s collaboration habits and preferences, it can make smart, targeted investments in collaboration tools and approaches. (The contextual information also helps knowledge managers educate each micro-culture on how its ostensibly unique situation might be served by existing enterprise collaboration tools.)

Ultimately, KM programs need to offer tools and approaches that fit the organization’s various micro-cultures. Digital tools must align with user preferences, and every solution should be intuitive, easy to integrate into employees’ workflow, and meet an obvious demand within the work force.

Armed with desirable solutions, KM programs can educate the work force about cultural nuances, gain management support, target certain audiences for quick wins, leverage reward and recognition programs, and share successes to gain grassroots support. Cutting-edge change management can help ensure that the collaboration strategy intersects personal and work goals, that participation feels exclusive, and that the tools have a fun interface.

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7 Additional information on cultural issues related to collaboration can be found in APQC’s collection Building a Collaborative Culture in Your Organization.

8 For more information on the use of scenario planning and a copy of APQC’s template, see APQC’s Use Case Scenario Template and Examples.
And of course, training and guidelines are a necessary foundation to make all this collaboration work. With tools such as community sites, wikis, discussion boards, shared workspaces, and social networking applications, employees need clear rules of the road. They have to understand when to use digital collaboration tools, which platform is most appropriate for a given situation, how often to visit community sites, what language to use, how long they will have to wait for a response, and so forth.

The intended outcomes for these KM efforts are universal trust in expertise and content, knowledge sharing without borders, and collaboration that is integrated into the workflow.

How Advanced Working Group Members Enable Seamless Collaboration

Access to information, access to people, and the right organizational culture are vital to collaboration. But what does seamless collaboration look like in action? Below are descriptions of the collaborative environments developed by two members of the AWG, ConocoPhillips and Baker Hughes. Neither example should be interpreted as an exact recipe for others to follow, but both organizations have established impressive infrastructures and can be considered role models.

CONOCOPHILLIPS

At integrated energy company ConocoPhillips, collaboration is underpinned by a system of 140 formal, interlinked networks of excellence. The networks—groups of employees from different locations and business units who belong to a given discipline or functional area—are designed to enable horizontal workflows and discourage silo-based thinking and sharing. The objective is for members to build trusted relationships and then leverage those relationships to collaborate and share. Networks are held together by the passion and commitment of their members, and they last as long as there is business value and passion around the network topic.

Although ConocoPhillips supports some face-to-face meetings, networks interact primarily through a SharePoint-enabled interface. Three main tools are used to collaborate and share knowledge:

1. **Ask and Discuss boards**—These are online question-and-answer boards where employees can contact subject matter experts for problem solving, advice, and risk mitigation and support. There is one discussion board per network, but network leaders and coordinators can cross-post discussion threads to multiple networks.

2. **Knowledge libraries**—Employees use these online repositories to search for and upload documents, best practices, and lessons learned. Each network has its own library, and approximately 50 networks have enhanced libraries that leverage semantic analysis to search external file servers and store highly technical documents. Expiration dates are placed on documents to ensure that content is reviewed, updated, and retired as needed.
3. OneWiki—Introduced in 2010, OneWiki is the newest element of ConocoPhillips’ knowledge architecture. The tool is powered by MediaWiki, the same technology used for Wikipedia. OneWiki provides context for and links to information and documentation in the network knowledge libraries as well as relevant external sources. Any employee can contribute content to OneWiki, but moderators keep the wiki organized and populated with valid, trusted content.

All of ConocoPhillips’ knowledge sharing and collaboration tools are tied together by the organization’s FAST knowledge sharing model (Figure 4), which encourages employees to find trusted, validated content through discussion boards, knowledge libraries, and the wiki; ask peers and experts on the discussion boards; share what they know through the discussion boards and other network interactions; and trust both the relationships they build through their networks and the content being shared. According to Knowledge Sharing Director Dan Ranta, “Content validation and review is critically important in order to make sure it is trusted knowledge that people can go out and grab and reuse.”

ConocoPhillips’ Knowledge Sharing Model

![FAST model diagram]

Representatives from ConocoPhillips’ KM team assert that both the networks and the FAST knowledge sharing model that underpins them have generated significant business value in areas like well optimization and shutdown planning. The team estimates the value of the success stories it has collected to be in the hundreds of millions of dollars. Prior to 2008,
ConocoPhillips’ knowledge sharing team focused on tracking the monetary value of knowledge sharing, but the organization no longer feels the need to scrutinize return on investment at this level because knowledge sharing and collaboration have become institutionalized.

BAKER HUGHES

Oilfield services provider Baker Hughes began its journey toward truly seamless collaboration in 2009 when the organization shifted from a traditional divisional structure to a regional, or geomarket, configuration. The reorganization was driven in part by a desire to provide customers with composite, multiproduct solutions, which required increased collaboration across old divisional lines. In addition, Baker Hughes wanted to assimilate employees from newly acquired companies into its workforce and enable collaboration between them and the rest of the staff. These factors united to spur a move away from division-based KM tools toward a more consistent enterprise approach.

To meet the challenge, Baker Hughes’ KM team designed a suite of tools and enablers to facilitate organization-wide knowledge sharing and collaboration. The heart of the system is I-classify, a taxonomy designed to standardize technical terms and definitions. For example, when employees ask questions in a discussion forum, they must tag the questions with appropriate taxonomy tags. Wiki pages and documents in knowledge repositories are also tagged according to the taxonomy. This way, if an employee is interested in a particular topic, he or she can use the taxonomy to drill down to relevant content, discussions, and collaboration opportunities. The taxonomy also feeds the organization’s enterprise search function.

To help employees locate peers and experts for collaboration, Baker Hughes maintains an online corporate directory that contains contact information, job descriptions, and resumes. This system is complemented by a tool called I-locate, which analyzes traffic on the corporate network to isolate keywords from the I-classify taxonomy. Based on network traffic, I-locate creates a word cloud reflecting the taxonomy terms that employees use most often. That tag cloud grows in size and can surface the names and telephone numbers of people communicating about a given term.

I-locate is a subscription service, which means that employees must opt in to participate. Since the tool relies exclusively on network traffic, the people it surfaces as knowledgeable are not necessarily experts in a particular area. Someone may be using a particular term often because he/she is trying to learn more about it, not because he/she has deep knowledge. However, the tool serves as a connector to find colleagues who are experienced or interested in a particular area. Even if the people I-locate suggests are not experts, they may know who the experts are and be able to point colleagues in the right direction and make introductions. In an organization the size of Baker Hughes, this provides demonstrable business value.

Other tools include:

- I-discuss—a discussion forum where employees can ask questions and share ideas,
- I-share—a tool for capturing and sharing lessons learned,
- **I-know**—a wiki-style encyclopedia where employees can contribute and edit reference material,
- **I-ask**—a technical support forum where employees can post urgent questions and receive responses from designated experts,
- **I-connect**—a platform for communities of practice, and
- **BHI-collaborates**—an extension of the KM platform that enables external business collaboration with customers and partners.

Together, the tools form an enterprise KM platform available through the organization’s intranet portal. The tools are accessible to employees in every part of the organization, including those working off-site on oil rigs, as well as to select contractors, partners, suppliers, and customers. Users can move seamlessly among the tools, with I-connect community home pages providing links to relevant discussion threads, wiki pages, and lessons learned.

As Baker Hughes designed its tools and enablers, it focused on maximizing the value they provide to knowledge workers. The team believes tools that are easy to use and tangibly improve people’s work processes are most likely to foster widespread collaboration.

**Reasserting the Case for Collaboration**

Laying the groundwork for seamless collaboration requires facilitation and smart investments, but organizations like ConocoPhillips and Baker Hughes have found it well worth the effort. Collaboration increases the sharing of both tacit and explicit knowledge. It is not only a way of getting work done, but also a vehicle for empowering employees and enabling on-the-job mentoring and experiential learning. At its best, collaboration can help standardize processes, decrease time to competency, improve quality, and increase the velocity of innovation.

And in many organizations, KM is eager to be seen as the go-to function for collaboration. It is not the KM team’s job to force people to collaborate, but KM programs are the ideal mechanism to maintain the infrastructure, tools, processes, and support that allow employees to work together across boundaries.

In the ideal state, there are no distinctions between collaboration and “business as usual.” The integration of communication and teamwork into the workflow becomes the norm, enabling truly seamless collaboration.