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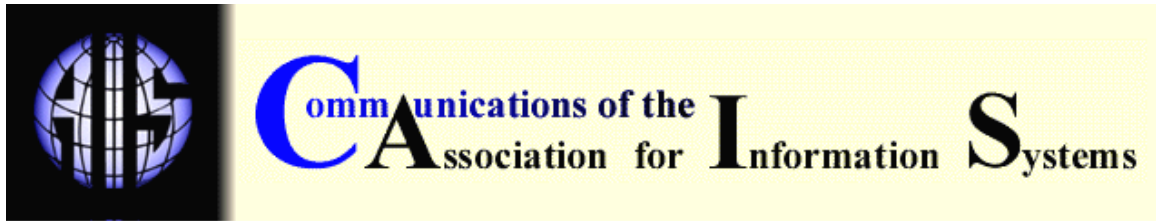
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## DEVELOPMENTS IN PRACTICE XII: KNOWLEDGE-ENABLING BUSINESS PROCESSES

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### ABSTRACT

While in theory what an organization knows is fundamental to its success, in practice only a few companies have seen significant business results from their knowledge management (KM) initiatives. Therefore, many knowledge managers are rethinking how and where knowledge really adds value. Connecting knowledge activities to core business processes is slowly coming to be recognized as a second, and more effective, stage of KM in organizations. This paper examines how practicing knowledge managers from several different organizations are knowledge-enabling business processes to deliver business value. It then integrates their experiences with previous research to present a preliminary framework of how to link KM better into business process design activities.

**Keywords:** knowledge management, information management, business process design, KM methods, value of KM

### I. INTRODUCTION

In the first stages of knowledge management (KM), many companies focused on building knowledge repositories and facilitating communities of practice so that they could benefit from the knowledge sharing that would result. Unfortunately, many of these programs failed to live up to their early promises and were, at best, marginally successful [Davenport and Glaser, 2002]. It is a sad truth that a number of these initial KM efforts simply are not used or are perceived as being irrelevant to or disconnected from the work of their organizations [Stewart, 2002]. As a result, many knowledge managers are currently rethinking how and where knowledge can add value and repositioning KM activities to bring them closer to the everyday work of the firm.

While in theory what an organization knows is fundamental to its success [Stewart, 1997], in practice only a few companies have yet seen significant business results from a focus on knowledge management. Those that are deriving value from KM tend to be companies that integrate knowledge directly into their work processes using a combination of IT, changed information behaviors and values, and effective information management [Marchand et al., 2001, Davenport and Glaser, 2002]. Therefore, connecting knowledge activities to processes that create business value is slowly coming to be recognized as being an essential ingredient of effective KM [Seeley, 2002].

Davenport [1999] suggests that “baking knowledge into business processes” (i.e., embedding KM tools, techniques and capabilities into a process) is the second evolutionary stage of KM. The challenge for knowledge managers will be to learn how and where to embed KM. To examine how practicing knowledge managers are knowledge-enabling business processes to deliver value, the authors convened a group of practicing knowledge managers from a variety of organizations. The managers were asked to describe a business process their firm had enhanced successfully with knowledge and the factors that contributed to its development and effectiveness.

This paper builds on these experiences, integrating them with previous research to present a preliminary framework of how to integrate knowledge into business practices. It first examines the challenges facing knowledge managers in organizations today that are driving this trend (Section II). Then it looks at some examples of processes that have been substantially enabled with knowledge (Section III). Finally, using these examples, it extracts some lessons learned and suggests an initial set of steps to link knowledge management better with business process design activities.

## II. THE PROBLEM FACING KM TODAY

It has happened many times before in business. Remember re-engineering, total quality management, the dot com craze? It seems there is a predictable cycle to any new business trend (aka the “Hype Cycle”) [Gartner Group, 2004]. It starts with a good idea, which leads to rapidly inflated expectations of its ease of implementation and benefits, and is followed by an equally rapid descent in to the “Trough of Disillusionment” as companies realize that the current

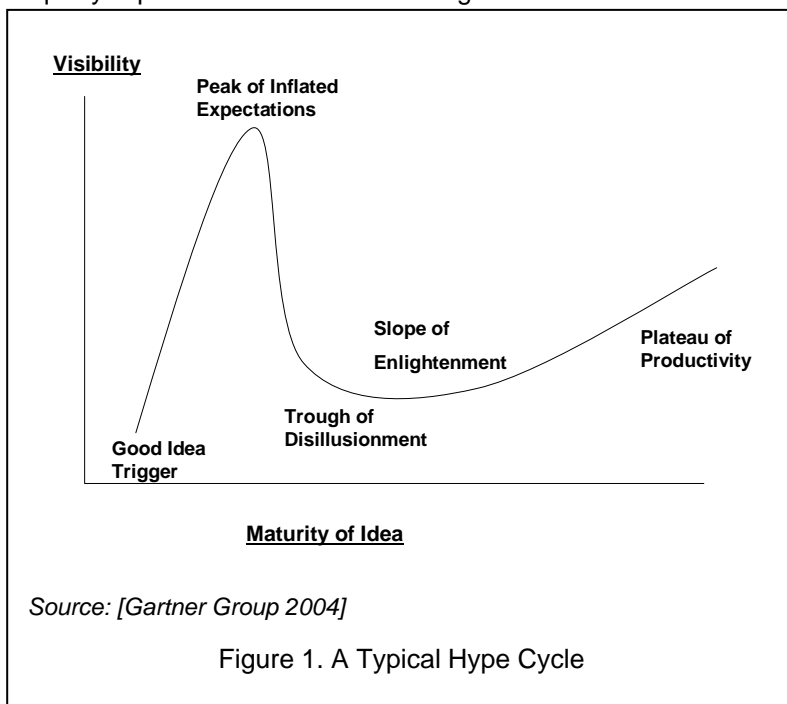
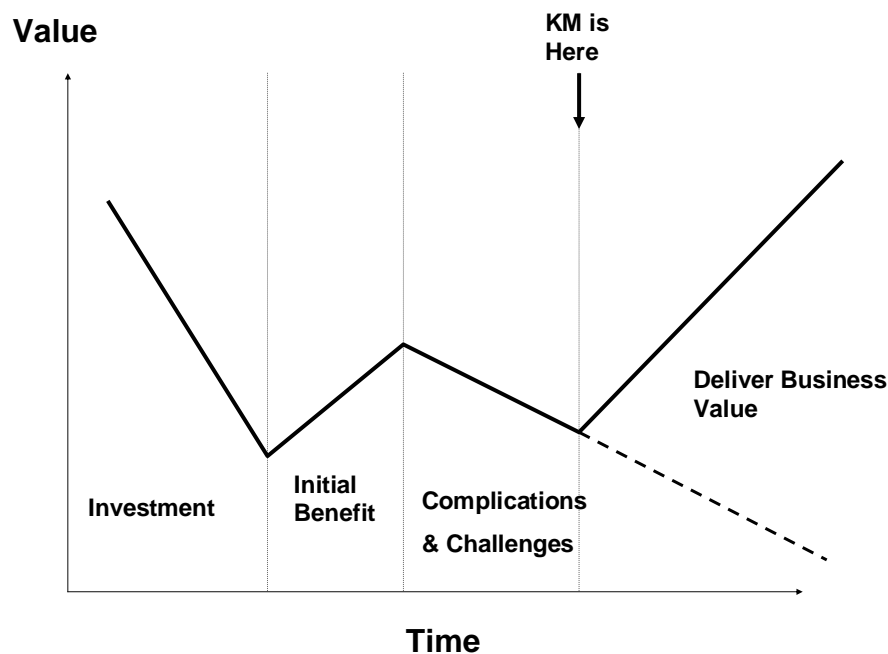


Figure 1. A Typical Hype Cycle

fad will not be a “silver bullet” for all their problems (Figure 1). Negative talk then often causes companies to abandon their efforts before value can be delivered. As a result, companies can end up with the worst of both worlds: spending large amounts of money when the fad first hits and then not persevering until benefits are achieved.

A closer look at how business value is derived from new ideas shows return usually follows a “W” pattern (Figure 2). That is, an investment is followed by a period where no benefits occur during which programs are developed and implemented. Then, some value is realized as companies

achieve initial benefits.



Source: [Chatterjee and Segars, 2002]

Figure 2. Innovation Delivers Value in a 'W' Pattern

However, as use increases, complexities also grow and unanticipated challenges increase. At this stage, many can lose faith in the initiative (i.e., fall into the trough of disillusionment). This period is dangerous. Long-term sustainable value can only occur by reassessing and reevaluating what needs to be done to address the problems and complexities involved and to refocus on ways that will simplify and add value to the business. If an organization can do this, it can achieve sustainable long-term value from its investment – whether in technology, systems, or new ways of working. [Smith and McKeen, 2003; Chatterjee and Segars, 2002].

It will come as no surprise to most knowledge managers that KM is currently somewhere on the downward slope of disillusionment. A recent survey showed that many companies have laid off or reassigned their Chief Knowledge Officers.. Those CKOs that remain are “judiciously distancing themselves from the original craze while still exploiting the concept and ... reposition[ing] themselves to remain relevant” [Pringle, 2003].

Thus, most knowledge managers are re-evaluating and reassessing what they are doing in their organizations. They are beginning to realize that some of the initial assumptions that were made about how knowledge brings value to organizations and on which many knowledge projects were based, are not bearing fruit. For example, we now recognize that simply capturing, stockpiling and transferring ever-greater quantities of knowledge will not automatically lead to improved organizational performance or to the increased use of knowledge [Swan, 2003]. While it is relatively easy to capture and access knowledge, knowledge managers find it is much more difficult to use knowledge in decision-making and embody knowledge in products, services and processes [Soo, 2002].

The gap between knowledge and action in KM is now widely recognized [Pfeffer and Sutton, 2000; Baird and Henderson, 2001; Smith and McKeen, 2002].

*"...one of the main reasons that knowledge management efforts are often divorced from day to day activities is that the [people] who design and build the systems for collecting, storing and retrieving knowledge have limited, often inaccurate views of how people actually use knowledge in their jobs."* [Pfeffer and Sutton 2000]

An artificial dichotomization (tacit vs. explicit knowledge, information vs. knowledge) led to other problems.[Storck and Henderson, 2003, Swan, 2003]. These distinctions reinforced misunderstandings about how and where knowledge can be used in organizations. For example, many knowledge initiatives avoided traditional IT systems and were designed to create a "parallel universe" in which knowledge is paramount. Thus, KM groups built knowledge bases to capture and reuse explicit knowledge and provided forums within which people could share their tacit knowledge quite apart from their regular work. It is therefore no wonder that it has been difficult to transform firms through KM programs [Gold et al, 2001, Stewart, 2002]. Knowledge, as it is currently conceptualized by many organizations, is not connected to the work of the enterprise [Seeley, 2002].

The conclusion that many now reach is that knowledge management needs a new approach – one that will more closely tie KM with the processes where the actual work of the organization takes place. Seeley [2002] argues that KM must

*"reframe [its] efforts by focusing on knowledge-enabling business processes [and] better integrat[ing] knowledge and the work processes in which that knowledge has the greatest value to the organization."*

Davenport and Glaser [2002] suggest that knowledge should be embedded into everyone's work in ways that make knowledge so readily accessible that it can't be avoided.

The focus group managers agreed.

*"The sooner we get knowledge embedded in our work processes the better"* stated one.

*"If we can present knowledge at the time it is needed, the benefits will be huge"* said another.

They believe that using knowledge to address core business problems is fundamental to the future effectiveness of KM.

*"We must solve problems through the business process"* one member stated.

*"We can no longer differentiate between knowledge, information and data. All are needed"* explained another.

### **III. THE BUSINESS PROCESS AS THE FOCUS OF KNOWLEDGE MANAGEMENT**

When the business process itself is the primary focus of KM, rather than knowledge on a stand-alone basis, many opportunities for adding business value with knowledge become much clearer.

*"Using a business process as a platform [for KM] creates a context within which the relationship between knowledge and human capital can be better understood in a more concrete way."* [El Sawy and Josefek, 2003].

In turn, the knowledge that is generated *from* a business process can be the basis for enterprise knowledge. This interplay between knowledge and process, grounded in the execution of a business process, is central to the creation of new knowledge in an organization [El Sawy and Josefek, 2003].

When one begins to look for them, it is clear that many of today's most successful processes are knowledge-enabled, although they may not be billed as such. Wal-Mart is the classic example (see sidebar). Well-known in the retail industry as a leader in automation, its sales process is actually a sophisticated front end for generating knowledge about trends and business opportunities. Unfortunately, this type of very straightforward KM opportunity to add value is often ignored by knowledge managers.

*"In the rush to use computers for all transactions, most organizations have neglected the most important step in [turning data into knowledge]: the human realm of analyzing and interpreting data and then acting on the insights."* [Davenport et al., 2001].

In one study less than 10% of firms have made any significant progress turning transaction data into knowledge. Few even summarize or synthesize across multiple transactions to develop a coherent picture of their customers [Davenport et al., 2001].

Members of the focus group agreed with this analysis.

*"We realized we were in trouble a few years ago when our customers, like Wal-Mart, knew more about our business than we did"*

said one manager. In his company, KM was brought in to add a higher level of value to its sales process. Using sales transaction data and the sales process as their starting point, KM worked with the sales team to redesign the process to take advantage of the company's existing formal knowledge and capabilities. It built a portal that became the working environment for sales managers and account representatives, enabling them to see real time information in ways that helped them do their job more effectively. For example, account reps saw sales data and trends from their particular customers, while managers were able to see composite information. The portal also integrated externally-obtained information about customers. Finally, it linked all the people concerned with a particular customer together to generate insights and dynamic information. While the information was based on computer data, KM demonstrated how it can add value to a transaction-based process by putting it together with an understanding of how the sales reps and senior managers worked, with external information, and with key relationships and then presenting it in a user-friendly fashion.

**KNOWLEDGE FROM SALES TRANSACTIONS  
AT WAL-MART**

Wal-Mart's sales process collects information on all its transactions. It shares this information with its suppliers in near real time so they are better able to control production and distribution. It also uses a data warehouse to extract trend data which is combined with real-time transaction information to develop a high degree of local awareness. Each manager is able to identify opportunities in near real time and take appropriate action (Cebrowski and Garstka, 1998).

Other types of knowledge can also be embedded into processes. Intel integrated both explicit and tacit knowledge transfer into its Copy Exactly! program for building new semiconductor factories (see sidebar). At one level, every process step is documented and standardized so that it can be copied in minute detail. This explicit technical and procedural information is complemented by a recognition that much of what goes into making a process effective is not always immediately apparent and is, in fact, tacit knowledge. Intel therefore makes a significant investment in both areas of knowledge transfer. Standardized processes, roles, and responsibilities enable the company to leverage scale and scope. All factories operate as if they are one virtual factory. Having the existing and the new factory teams work together for an extended period of time builds relationships, enables tacit knowledge transfer on many levels (e.g., know how, know why, and culture), and improves the transfer of explicit knowledge.

*“The Copy Exactly! policy is a resounding success and has brought about dramatic improvements in transfer effectiveness. Intel is now able to open new factories with yield, quality, reliability, and efficiency ... beginning on the first day of production. In the past, each new facility had to repeat much of the same learning curve independently and usually took several months to catch up”* [Suzlanski and Winter, 2002].

In short,

*“KM has been process-enabling at Intel. We have been able to apply our understanding of knowledge transfer to a mission-critical process”*

said an Intel knowledge manager in the focus group.

Each of these companies learned that effective knowledge creation and transfer can result from the marriage of the human elements of a process with its more systematic dimensions. Whereas most IT systems are designed to reduce processes into a set of codified rules, KM takes a more flexible approach to the application of knowledge, seeking not to replace people but to recognize their competencies and support and facilitate their work. This approach can be effective at many different levels in organizations from front-line workers to subject matter experts.

One focus group company used KM and IT to help it design a “Customer Service Workbench” (CSW), which helps walk customer service representatives (CSRs) through hundreds of possible service requests. This system

*“is really a work manager rather than a traditional computer system. It directs the CSR about what to do next, integrating the necessary tools and screens to step her through processes in a clearly defined and repeatable way.... The system seamlessly links the screens of numerous legacy systems and tools and provides job aids about that particular step.”* [Smith, 2001].

Previously, CSRs were required to memorize and practice the processes involved for each type of service request. Now, after an initial three week training period, the CSW enables them to gradually take on more roles and responsibilities as they become more proficient. The emphasis of this approach has been more *effective* work rather than efficiency. While productivity has improved by 20%, training time for a new CSR has been reduced from six months to one month.

*“By combining knowledge, data, processes and technology on a just-in-time basis, this project... has brought new levels of flexibility and innovation to the business as well as providing significant business value.”* [Smith, 2001].

A similar approach can also be applied to the work of more skilled workers. Partners HealthCare integrated up-to-date medical knowledge into a key work process for doctors ordering drug prescriptions.

#### **BUILDING NEW FACTORIES AT INTEL**

Intel believes that the wisdom embedded in its complex practices may not always be apparent right away. Its Copy Exactly! process is designed to transfer semi-conductor know-how from the first factory that produces a particular device to subsequent ones. This detail-oriented template-driven process requires the new factory to copy everything done in the first factory down to the smallest items, unless it is physically impossible to do so.

This complex, multi-level process involves matching criteria for physical inputs, process outcomes, and products. Exact replication facilitates rapid problem solving because employees become so involved with the detailed implementation of individual activities or components (Suzlanski and Winter, 2002).

This process is made even more successful by the training the company uses. The team that will be building the new factory will go to the initial factory and work there for up to a year. “This is a holistic approach to learning” said an Intel manager. “Living in the process improves knowledge transfer and seeds the culture we want to replicate.”

*“When doctors order tests, medications, or other forms of treatment, they’re translating their judgements into actions. This is the moment when outside knowledge is most valuable.” [Davenport and Glaser, 2002].*

The system provides alerts to possible drug interactions, suggests alternative drugs, points out when proposed treatments are counterindicated, offers reminders and enables physicians to consult other experts in real time. Doctors are able to override the system but are requested to give a reason. The key feature of this knowledge-based system is its ability to pull together several data bases and pieces of complex information to provide useful, just-in-time information for a specialist. While it is technically-enabled, it is really a “hybrid human-computer knowledge system” [Davenport and Glaser, 2002].

Finally, knowledge can be packaged as a value-added process. One company offers its commercial clients a visual tool to help them model and troubleshoot their networking operations. Through the use of clever visuals and experiential technology, this firm educates and engages its clients as well as providing a useful service. In this case, the company’s knowledge of networks and the problem diagnosis process were embedded as part of a product it offered its customers and became a key selling feature of the product [McKeen and Smith, 2003].

These examples illustrate several important aspects of the relationship between business processes and knowledge:

- KM can be used to develop and enhance many different types of business processes.
- It is considerably easier to illustrate the value of KM to a business when it is embedded in a process.
- A hybrid human-computer approach can be a helpful way of viewing how knowledge can work with IT in a process.
- Useful knowledge can be derived from business processes.
- Knowledge can be used to add valuable services to an existing process.

The focus group agreed that it is now time to bring a KM perspective to business process design. The next section addresses some ways in which this can be done.

#### **IV. INTEGRATING KM INTO BUSINESS PROCESS DESIGN**

Clearly KM is a valuable element in many (if not all) business processes. Yet the integration of the KM perspective continues to be almost completely missing from both business process re-engineering (BPR) and information system design practices [Nissen et al. 2000]. To date, therefore much key KM work takes place outside these two areas. This state of affairs is unfortunate for two reasons.

1. As we showed in Section II, KM can contribute significantly to business value in the context of a business process – both as a support to those working in the process and as a means of creating new knowledge.
2. Both the experts and the focus group generally agree that

*“unless KM systems are embedded within the context of organizational work practices, they are unlikely to be used. The absence of continued interaction can result in atrophy and obsolescence.” [Nissen et al. 2000; see also Stewart, 2002, and Seeley, 2002].*

This section therefore addresses how companies can begin to integrate KM into business process design. While it does not attempt to delineate a methodology, it does identify key steps



that should be undertaken to ensure that the knowledge perspective is addressed in process design in the future.

1. **Focus on Core Business Processes.** Although KM can enhance many processes, its need to demonstrate value to business and its limited resources mean that knowledge managers should pick and choose very carefully where they will focus their energies.

*“Knowledge management activity must be driven by a business imperative”* stated one focus group manager.

*“You need a sense of what’s important in your world now and then you should go after it”* stated another.

Unfortunately, even significant improvements in peripheral processes simply won’t get the attention of senior executives these days.

2. **Start with Process Redesign.** While knowledge is important, the process is the place to start [El Sawy and Josefek, 2003]. Embedding knowledge in business processes begins with process analysis and design. This approach ensures that KM is embedded in the process and not vice versa [Nissen et al., 2000]. KM and IT should both be involved in BPR to determine where and how each can best contribute through systems analysis and knowledge analysis. Both can provide a layer of value to most processes by simplifying, streamlining, facilitating and enhancing them (Figure 3). However, while BPR and systems development methodologies and tools are well-established, knowledge work and what it can contribute is considerably less well understood [Nissen et al., 2000]. It is therefore important at this time for knowledge managers to explain and explore the ways they can add value above and beyond these two processes and to identify how and where KM work should intersect with process redesign and system development work.

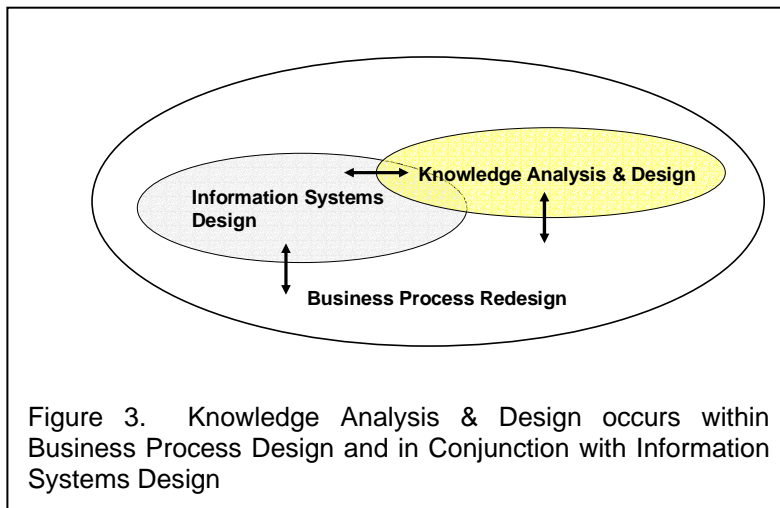


Figure 3. Knowledge Analysis & Design occurs within Business Process Design and in Conjunction with Information Systems Design

The focus group managers agreed that technology is an important tool for supporting many types of knowledge work but stressed that a knowledge solution should never be just technology (e.g., a repository, a portal or a search engine). Instead, it must address all aspects of a process and seek to address the true complexity of the work environment. Thus, knowledge analysts should be part of any process design team from

the beginning. They should work not only with business process analysts but also with systems analysts to identify ways in which knowledge can enhance the business process and how technology can facilitate knowledge access and integration.

3. **Knowledge Analysis.** Once a preliminary process design is determined, both KM and IT can begin their work. It should go without saying that supporting a business process is a team effort that requires collaboration and iteration as the most effective business, technology and knowledge dimensions are worked out. The first level of business value KM can add is determining how best to support and facilitate the new business process with knowledge. Several activities are involved (Figure 4):

- **Assess Knowledge Needs.** Knowledge analysts should begin by assessing needs of the process' users in each step.

*"Look for disconnects. Understand what's going on in an interaction and make sure that people have the right information to do their job."* A focus group project manager

Use of trained knowledge analysts is important here because there is often a gap between what people say they want and what they actually do, which must be carefully evaluated.

- **Organize and Package Structured Knowledge.** Next, knowledge analysts should look for ways to organize and link existing knowledge (e.g., from systems or manuals) for better understanding. Often, simply pulling all information needed by a process into a

more coherent picture can save time and make relationships between different types of information clearer. This is what the sales project did by integrating sales information from different sources with external information.

- **Formalize common practices.**

**KNOWLEDGE DESIGN TIPS FROM THE EXPERTS**

- ✓ Embed the business process in a portal
- ✓ Make the work environment the knowledge environment
- ✓ Use templates – they embed existing knowledge and capture reusable knowledge. They also support virtual teams well.
- ✓ Offer alerts when new information is made available
- ✓ Make process steps more consistent and formal.

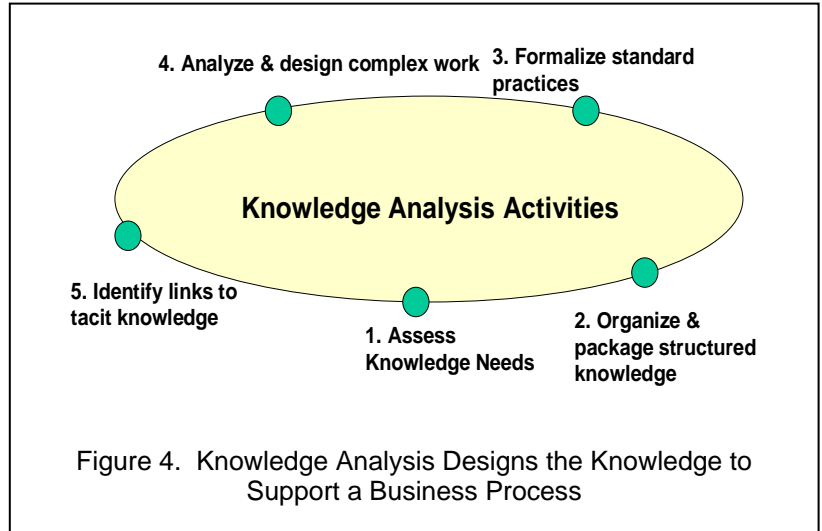


Figure 4. Knowledge Analysis Designs the Knowledge to Support a Business Process

Sometimes people's work practices can be made more standard. These practices can be analyzed, documented and tested by knowledge analysts and supports can then be built into a computer system [Nissen et al., 2000]. For example, this was done in the CSW application (Section II). The workbench integrated screens and information from a number of different systems and documented the steps involved in several hundred customer service jobs to ensure each representative understood what work must be accomplished before a job was considered complete.

- **Analyse and Design Complex Work.**

Further knowledge analysis should then look at the interaction between codified and standardized information and less structured or non-canonical knowledge. This analysis will likely involve the more complex aspects of processes involving more skilled individuals. These areas are often central to an organization's distinctive competence [Nissen et al., 2000]. For example, Partners HealthCare addressed the complex process of ordering prescriptions and tests using a combination of structured knowledge and doctor's personal judgements.

- **Identify and design links to tacit knowledge.** Finally, knowledge analysts should identify and develop ways for transferring and extracting more informal knowledge. Linking tacit learning into an important business process adds a degree of immediacy to

this type of knowledge transfer. It also makes it more visible to senior executives, who tend to view this particular aspect of knowledge management as being both less valuable and less important. Intel's Copy Exactly! process is a good example of how informal knowledge can be effectively integrated into a highly structured business process.

4. **Contextual Analysis.** As knowledge managers know better than most, the organizational context in which knowledge exists can significantly impact how effectively people use information [Marchand et al., 2000].

*"A culture predisposed to knowledge sharing is essential to the successful implementation of knowledge processes in an organization."* A focus group manager.

Understanding this larger context of organizational work is essential to analyzing the higher level knowledge that builds on information collected within a process to create, evolve and apply new knowledge in different ways and in different business processes. Contextual knowledge analysis uses a business process as a platform for growing new knowledge that will be useful both within the process and to the organization above and beyond the process itself. It is truly a second layer of value that KM can bring to a business (Figure 5). It should be stressed that effective contextual knowledge analysis should be process-based. Isolating it from the other steps involved in business process analysis is likely a recipe for creating irrelevant knowledge.

Contextual analysis looks beyond the existing needs of a particular process to discover ways in which knowledge derived from that process can be applied at higher levels. Knowledge analysis looks *within* a business process and is inherently localized and supportive of people. Contextual analysis is *based on* a business process. It creates knowledge from the process and presents it to people who apply it in another process or in a broader context [El Sawy and Josefek, 2003]. Several types of analysis can be performed on basic process information:

- **Reinforcement Mechanics.** Contextual analysis can identify and develop mechanisms that will reinforce the behaviors and values the organization desires to inculcate into the process itself (e.g., knowledge sharing, trust, integrity). Ease of use, closing feedback loops, careful attention to expectations and rewards, and good change management practices are all strategies for ensuring that the broader knowledge context in which a process operates will be facilitated.
- **Aggregation and synthesis.** Through analysis of basic process data (e.g., transactions) valuable new knowledge can be created. For example, Wal-Mart takes transaction-level information from the sales process, aggregates and analyzes it to make it useful both to the sales process and to other areas of the business such as marketing, supply chain management and store management. It identifies trends and opportunities based on

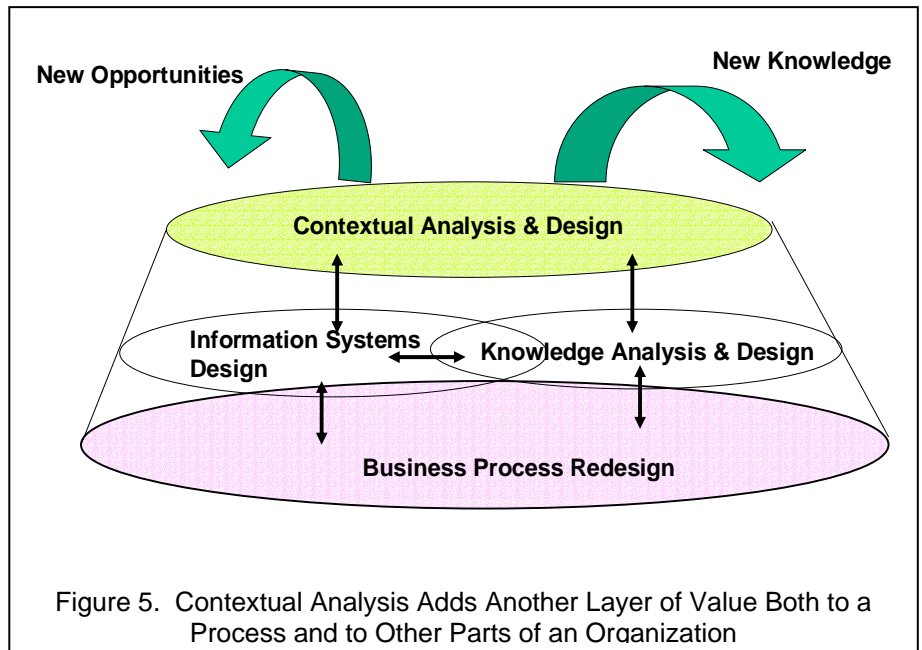


Figure 5. Contextual Analysis Adds Another Layer of Value Both to a Process and to Other Parts of an Organization

aggregate level analysis and provides the ability to view information in different ways, leading to new levels of understanding.

- **Business Intelligence.** Decision making at higher levels in the organization may be facilitated by providing “what-if” analysis and “slice-and-dice” tools and intelligent integration with other sources of information. For example, the Sales System integrates aggregated and synthesized information with external news items and presents it differently for individual sales teams.

**Relationship Facilitation.** Contextual analysis also looks for ways to enhance informal

<p><b>CONTEXTUAL DESIGN TIPS FROM THE EXPERTS</b></p> <ul style="list-style-type: none"> <li>✓ Try to find a contextual metaphor for the knowledge initiative, e.g., Copy Exactly!, to brand the knowledge work that is being done.</li> <li>✓ Offer collaborative space for team work, e.g., preparing documents.</li> <li>✓ Build knowledge centres for best practices by customer, by topic, lessons, contacts, competitive intelligence, key websites, and more.</li> <li>✓ Offer different screen views, e.g., by process, by customer.</li> <li>✓ Make relationships visible, e.g., embed contact names.</li> <li>✓ Offer scenarios to illustrate different situations.</li> </ul>
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knowledge transfer and development at higher levels i.e., beyond a single process or function. For example, it may seek to build relationships between people doing similar jobs or working with the same clients (e.g., communities of practice, collaborative space, yellow pages) or simply make them more visible to each other (as in the Sales Support System).

- **Personalization and repurposing.** Contextual analysis may reveal the habits and preferences of particular users and customers and this knowledge can be used to improve process execution and outcomes (i.e., it can make the process smarter) [El Sawy and Josefek, 2003]. Knowledge captured for one reason may also be repurposed for another. Thus, for example, the diagnostic tool developed

for the service team was enhanced and re-presented as a customer service tool.

- **Exception Analysis.** This emerging area of higher level knowledge analysis promises to be a source of much learning about changes in the business environment. Some suggest that exception processing should be designed as a separate process that captures both identified and non-identified exceptions because they are more knowledge intensive than normal business process activities. Exceptions can also be a source of learning about changing customer requirements and a chance to uncover problems and opportunities with a current process [El Sawy and Jacobek, 2003].

**5. Verification and Validation.** Embedding knowledge into business processes should not be considered complete once knowledge design is finished. All aspects of knowledge management related to a particular process must be tested for accuracy and evaluated for effectiveness. These activities need to be designed in accordance with the type of process that is involved. The quality of outcomes (e.g., accuracy, reliability, customer satisfaction) needs to be measured in whatever ways are important to the organization. In addition, analysts should monitor the types of information used in the new process, where tools and knowledge are being used differently than originally intended and where additional knowledge gaps appear. As with all types of work change, judgements will need to be made as to whether difficulties are the result of the normal challenges of adapting to new ways of working or design problems that must be corrected. Ideally, any process changes that include knowledge should make the process easier to use and more intuitive. Applying the “Turing test” is a good way to validate any aspects of a process that require skilled expertise (e.g., Partners Healthcare). That is, if an informed person cannot tell the difference between the performance of knowledge embedded in a system and that of an expert human, then the system is working the way it should.

**6. Maintenance and Evolution.** Focus group managers emphasized that the knowledge embedded in processes or derived from processes must be accurate and timely. As with any other system, errors, deficiencies, and opportunities will appear. KM functions should therefore put mechanisms in place to detect and correct problems and to evolve knowledge designs over time.

*“Knowledge management is a dynamic process. Embedding knowledge in a process is not a one-time activity. We need to be able to leverage off it on an ongoing basis.”* A knowledge manager.

## V. CONCLUSION

Ever since knowledge management was first conceived, it has seemed inherently right to many people [Stewart, 1997]. Nevertheless, knowledge management has become a hard sell in most organizations because many of the ways it has been implemented to date proved ineffective [Stewart, 2002; Seeley 2002]. As a result, knowledge management needs to take a new approach [Davenport and Glaser, 2002]. Many practitioners and experts are beginning to suggest that one such approach is to embed KM more thoroughly into particular business processes. Some even suggest that

*“the time will come when the knowledge created from a business process will be more valuable than the execution of the actual business process itself”* [El Sawy and Josefek, 2003].

However, to date, it is unclear to many knowledge managers and their organizations exactly how to integrate KM into business processes. This paper draws from several successful examples of knowledge-enabled business processes to suggest a preliminary approach to doing this. While by no means complete, it is hoped that this framework will form the basis of a clearer understanding of how KM brings value to business processes, how it interacts with the BPR and system development processes, and how to begin to go about embedding knowledge effectively into daily work.

*Editor’s Note:* This article was received on August 28, 2003 and was published on January \_\_, 2003.

## REFERENCES

EDITOR’S NOTE: The following reference list contains the address of World Wide Web pages. Readers who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

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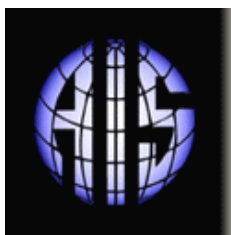
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