KNOWLEDGE ORGANIZATIONS IN THE TWENTY-FIRST CENTURY

A suggested systems approach to a KM solution for improving an Internet bank's customer response

Francesco A. Calabrese

Enterprise Excellence Management Group, Inc., Vienna, Virginia, USA, and

Jo Ann Remshard

National Institute of Standards and Technology, Gaithersburg, Maryland, USA

Abstract

Purpose – The Institute for Knowledge and Innovation at the George Washington University advocates "theory to practice – a continuum" in the University's knowledge management (KM) graduate programs. At the practice end, guidelines for "eight easy steps to a KM system for improving business performance" were initiated as a tool for their students in the Fall of 2000. Aims to address the issues surrounding this.

Design/methodology/approach – This paper applies the eight step guidelines to a hypothetical internet bank to create a knowledge collaborative environment and integrated repository to improve the effectiveness of the bank's customer response team function.

Findings – Correlating changes in business processes to take advantage of benefits from a collaborative knowledge sharing environment can be enhanced using a systems approach to tie the knowledge facets to the enterprise's purpose for being. Employees will more readily accept changes in their work habits if there are clearly defined processes that assist in getting improved results with subsequent positive performance recognition for the employee. Managers will more readily embrace KM if a clear "cause and effect" trail leads to overall improved effectiveness fostering the enterprise's growth, stability and positive image.

Originality/value – This paper helps all those involved with KM to identify knowledge gaps, opportunities and risks.

Keywords Knowledge management, Information management, Systems engineering, Online banking, Customer service

Paper type Research paper

Introduction

Today's adult students are often juggling a full-time job; an emerging family; and the part-time pursuit of a graduate degree. Theory is an interesting dollop, but most students want the future sustainability of practical tools applicable to their work environments. In the George Washington University (GWU) knowledge management (KM) program, the "theory to practice continuum" accommodated this pragmatic need with its "eight easy steps" to a KM system for improving business performance (A. Murray and F. Calabrese, 2000 – unpublished lecture notes). Over the ensuing five years, dozens of students have found it possible to adapt the "GWU eight-step model" in the relatively short space of 12-weeks to identify knowledge gaps, opportunities and risks (GOR's) occurring in selected business processes representing both realistic and hypothetical scenarios. The eight-step approach is shown in Figure 1.
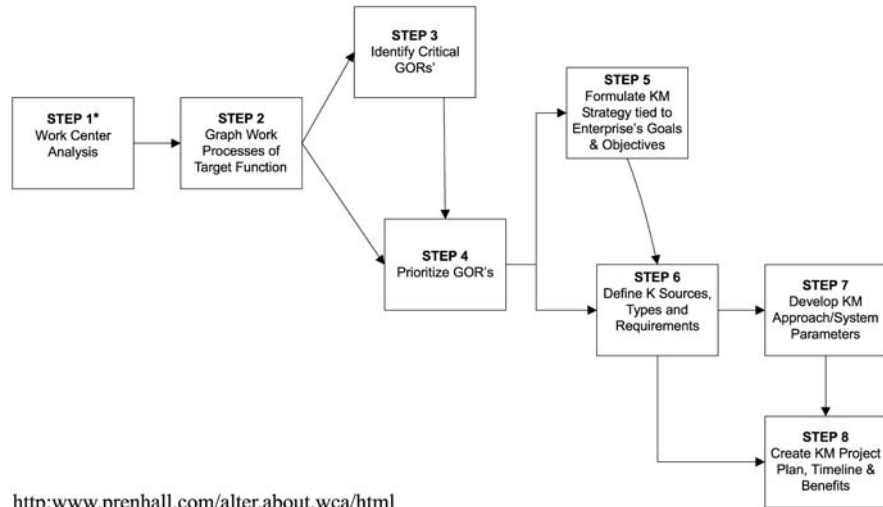
http:www.prenhall.com/alter.about.wca/html

Identification of these knowledge GOR's is followed by a series of activities for designing a means of converting the GOR's into enhanced efficiency and effectiveness of an enterprise's performance through the creation of a proposed knowledge collaborative environment. The application areas and enterprise sectors encompassed are numerous. The example selected for this paper is a hybrid realistic/hypothetical internet bank set in the contemporary realism of today's online world, 24 × 7, at the touch of a few keys for the customer's convenience, accessible anytime from anyplace.

Background
An internet bank needs to dynamically demonstrate its viability. An internet bank is a virtual bank with "offices" online; therefore, one can save money in the overhead costs that "brick and mortar" banks charge back to you. This bank is open 24-hours a day, seven-days a week. The customers can go online anytime to get access to their accounts and find the answers to their questions. The only schedule one has to worry about is one's own. A customer can manage his/her financial life with electronic speed. However, a virtual bank does have and need a functioning organizational structure. Additionally, some human interaction may be needed when disruption in service is encountered by a customer or simply if a customer has a question. A critical function of the organization is the customer response team (CRT). This team provides the human interaction when needed. Two key goals of an internet bank are:

(1) to have a "knowledge library" of pertinent information that would help the bank better service the customers and create a competitive advantage; and

(2) ultimately, to become the best internet bank, with good profitability and dominant market share.

Some benefits to using KM in an internet bank are to help:

• share customer specific information and other valuable information, stored in e-mail records, databases, text files and other "discrete knowledge/information islands";

- understand and capture the customer requests/complaints especially those that are most numerous for a more proactive/responsive approach to complaint resolution and building better customer relationships; and

- determine customer's needs and interests both to serve the current base and to assist in appealing to additional customers.

Step 1 – The work-centered analysis
The purpose is to put the enterprise being analyzed into an overall context that will facilitate the ability to identify the aspects, business processes, products and/or services required to achieve the enterprise's purpose for being, i.e. customers, markets, stakeholders served. Figure 2 shows these elements for the generic internet bank to be analyzed.
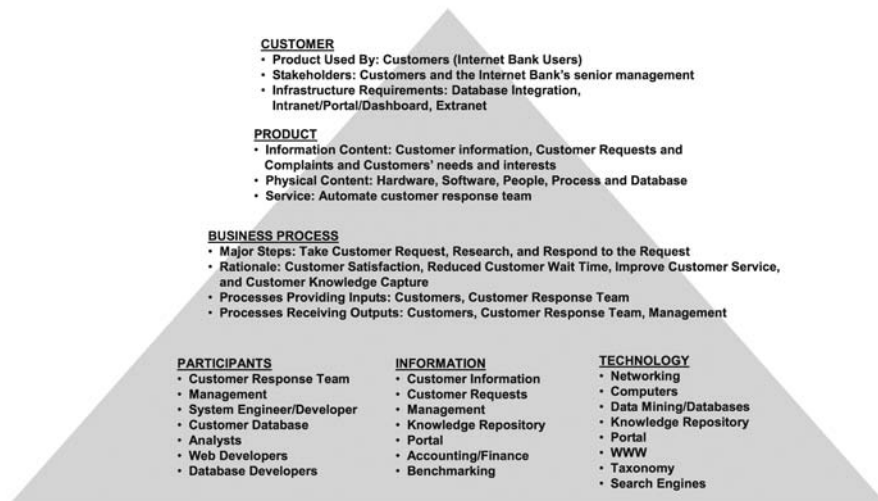
Step 2
Locating a knowledge critical function in the routine of the internet bank centers on customer contact(s) through the CRT as shown in Figure 3.

Organizational participants
Figure 3 shows a simplistic and straightforward process of responding to a customer contact. However, as is true in most instances there is an organizational entity behind the electronic interface which an internet bank presents to its customers. That organizational structure shown in Figure 4 shows the prospects of traditional "silo type" activities which usually leads to non-integrated repositories of customer information in each of four elements: customer relations; information technology; marketing/communications; and finance.

Step 1.0 – The Generic Internet Bank Work-Centered Analysis System Snapshot

CUSTOMER
- Product Used By: Customers (Internet Bank Users)
- Stakeholders: Customers and the Internet Bank's senior management
- Infrastructure Requirements: Database Integration, Intranet/Portal/Dashboard, Extranet

PRODUCT
- Information Content: Customer information, Customer Requests and Complaints and Customers' needs and interests
- Physical Content: Hardware, Software, People, Process and Database
- Service: Automate customer response team

BUSINESS PROCESS
- Major Steps: Take Customer Request, Research, and Respond to the Request
- Rationale: Customer Satisfaction, Reduced Customer Wait Time, Improve Customer Service, and Customer Knowledge Capture
- Processes Providing Inputs: Customers, Customer Response Team
- Processes Receiving Outputs: Customers, Customer Response Team, Management

PARTICIPANTS	INFORMATION	TECHNOLOGY
• Customer Response Team	• Customer Information	• Networking
• Management	• Customer Requests	• Computers
• System Engineer/Developer	• Management	• Data Mining/Databases
• Customer Database	• Knowledge Repository	• Knowledge Repository
• Analysts	• Portal	• Portal
• Web Developers	• Accounting/Finance	• WWW
• Database Developers	• Benchmarking	• Taxonomy
		• Search Engines

http:www.prenhall.com/alter.about.wca/html

Figure 2.
The generic internet
bank – WCA

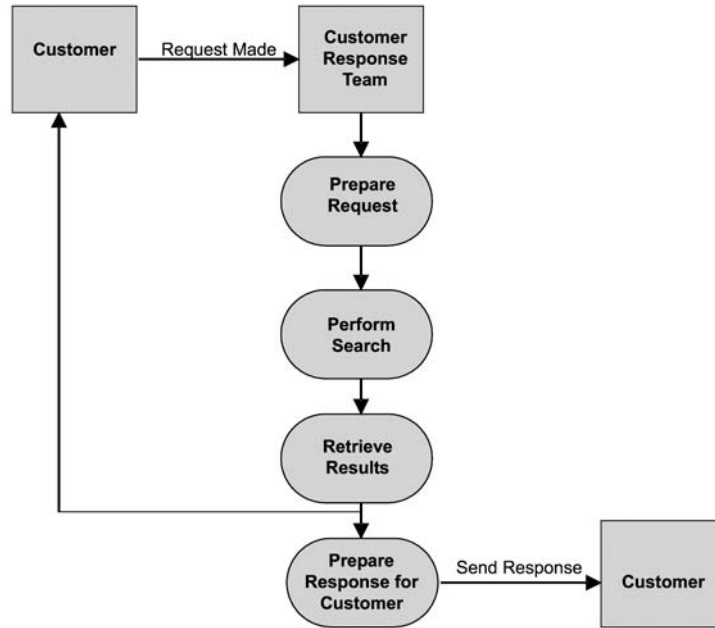**Step 2.0 – Customer Response Support Model**

Figure 3.
Customer response
support model

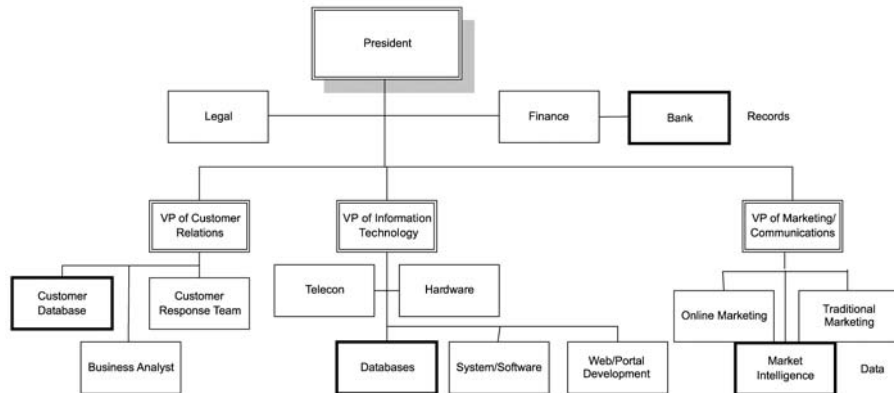**Organizational Chart – The Generic Internet Bank**

Figure 4.
Organizational chart – the
generic internet bank

Step 3 – Identify knowledge-critical gaps, opportunities and risks
Given the prospect of multiple versions of customer related information to serve the
perspectives of the marketing, information technology, finance and customer relations
roles and responsibilities, Figure 5 shows the possibility for a dual feedback loop with
the customer created by the GOR elements described. The bank's preference would be
that all required information and knowledge come together seamlessly and obviate the
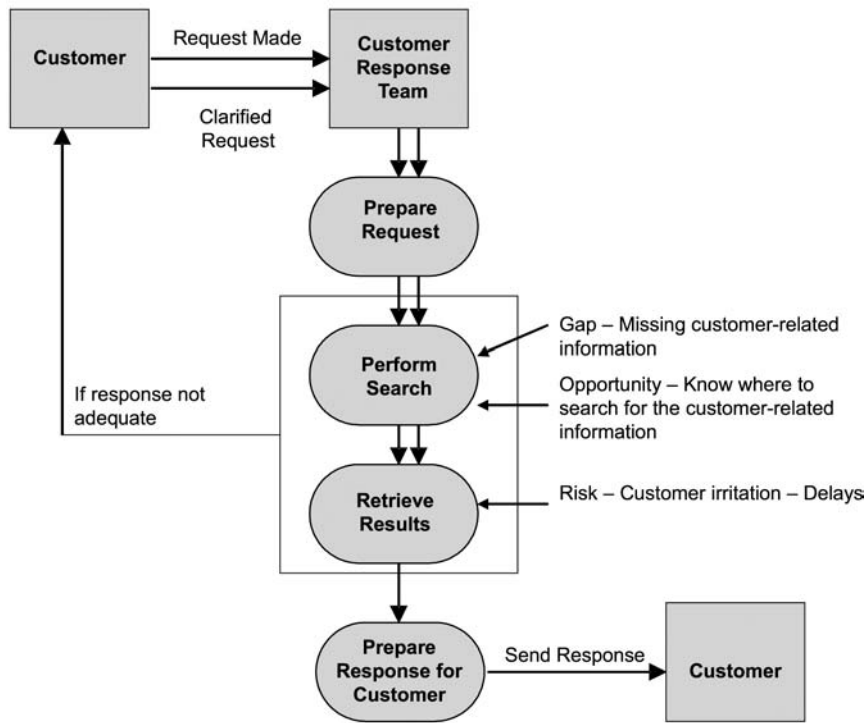
Step 3 – Customer Response Support Model

need to seek clarification from the customer. However, the reality is that until a planned knowledge integration is implemented, the depiction shown is more likely to occur. Correcting this situation leads to the necessary subsequent steps in the process.

Step 4 – Rank critical knowledge gaps, opportunities and/or risks
Based on the analysis and interrelationships in the GOR profile, it was determined that all three are of equal priority in the KM solution. Consequently, in moving forward all steps in the GWU template will treat this as one problem area. Figure 6 shows an expanded description of the GORs to better define possible knowledge sources and participants when determining a KM solution approach.

Step 5 – Company strategy
Describing the bank's strategic environment and key components establishes the setting to be sure that any proposed KM system solution will reflect tie-in to the purpose of the business entity.

- *Vision*. Make "this Bank" the standard for all internet banks.
- *Mission*. Provide timely, accurate and complete response to all customer needs 100 percent of the time from any internet connection.

Figure 6.
Gaps, opportunities and
risks

Step 4 - Gaps, Opportunities and Risks

Knowledge Worker-Related Opportunities/Gaps

To add more information to the repository	Retrieval of Information in a timely manner	Lack of internal communication (KM/IS)	Inability to find information via search or navigation

Knowledge Worker-Related Risk Identifiers

Poor lifecycle methodology (QA, BP, documentation)	User feedback on "what's missing"	Visibility into business initiatives for proper align	Many single points of failure on the KM team

Organizational Risk Identifiers

Poor lifecycle methodology (QA, BP, documentation)	Lack of enterprise-wide controls/rules/culture	Perishable quality of content in KM systems	Visibility into business initiatives for proper align	Many single points of failure

- *Goals.* To develop a "knowledge library" of pertinent information that would help the bank better service the customers and create a competitive advantage. All tacit and explicit knowledge that is required to be retrieved at the appropriate time, for the appropriate person, in the appropriate format, and with full and accurate content.
- *Objectives.* Share and integrate customer information and other valuable information, which is stored in databases, text files and other "discrete islands." Understand the customer requests/complaints that show up most often in order to be more proactive in building a great customer relationship reputation.

Specific initiatives
There are many initiatives to see to fruition, and these are the four most important that need to be accomplished first.

(1) *Collaboration.* Knowledge repository (database) and portal are the tool of choice for collaboration, integration and document management – the single view of the customer requires integrating the various data/information holdings to serve all levels of the organizations including the management team and possibly the Board of Directors. The judgment criterion includes producing a dashboard type display with pertinent information.

(2) *Service.* CRT provides a service where any customer request will be answered within one hour – customer first is another important initiative. The database (s) will need to be constantly updated. There will be an automated process used for confirming that the site is still live. Staff will confirm the relevancy of the information on the site. The judgment criterion includes answering the question – does the customer continue to use the internet bank's site?

(3) *Intranet.* Frequently asked questions and an expert database will be provided – the intranet will be developed. It will be a portal to the information. Content needs to stay relevant and accurate for users to continue using the site. The judgment criterion includes reviewing usage statistics.

(4) *Extranet.* For the extranet the areas needed are passing on specific information to the customers and personalizing the extranet – the extranet will be developed for customer, partners and appropriate stakeholders. Content needs to stay relevant and accurate for users to continue using the site. The judgment criterion includes reviewing usage statistics.

Functional requirements
Meeting these requirements will provide capability:

- for knowledge artifacts to be integrated from various locations;
- for customers to make requests and receive responses;
- for generating and gathering information from the intranet;
- for customers and other stakeholders access to the extranet; and
- to audit usage, trends, activity levels, etc.

Response system performance requirements:

- customer queries given system acknowledgement in ≤ 10 seconds;
- integrated customer record retrieved in ≤ 15 seconds; and
- intranet/extranet access in ≤ 10 seconds.

Step 6 – Knowledge requirements analysis
This section looks back into the GORs discussed in Step 3 to depict the "As Is" and "To Be" knowledge environment and distribution by type; users; and decision levels. Knowledge sources were drawn from all units of the organization, and the outcomes are determined by audits, interviews and analyses of the GOR's. The knowledge is currently applied through interpretations, estimations, procedures, categorizations, judgment and decisions. Figure 7 shows the findings for the knowledge "As Is" and projected "To Be" environment.

Knowledge Type	As Is	To Be	Knowledge Users	As Is	To Be
Tacit	30%	10%	Individual Agents	20%	10%
Implicit	20%	10%	Organizational Agents	40%	20%
Explicit	50%	80%	Automated Agents	40%	70%
Decision Type	**As Is**	**To Be**	**Decision Level**	**As Is**	**To Be**
Intuitive	20%	10%	Strategic	10%	10%
Heuristic	20%	10%	Tactical	40%	20%
Procedural	60%	80%	Operational	50%	70%

Figure 7.
Findings "As Is" and "To Be"

Step 7 – Knowledge management approach/system parameters
The approach for generating, codifying, validating the integrity, transferring, assessing the use of the knowledge, implementing enablers and practices for seeing the total success of the KM "To Be" system is reflected below through several depictions. Figure 8 is the overall schematic of a KM based knowledge life cycle system; Figure 9
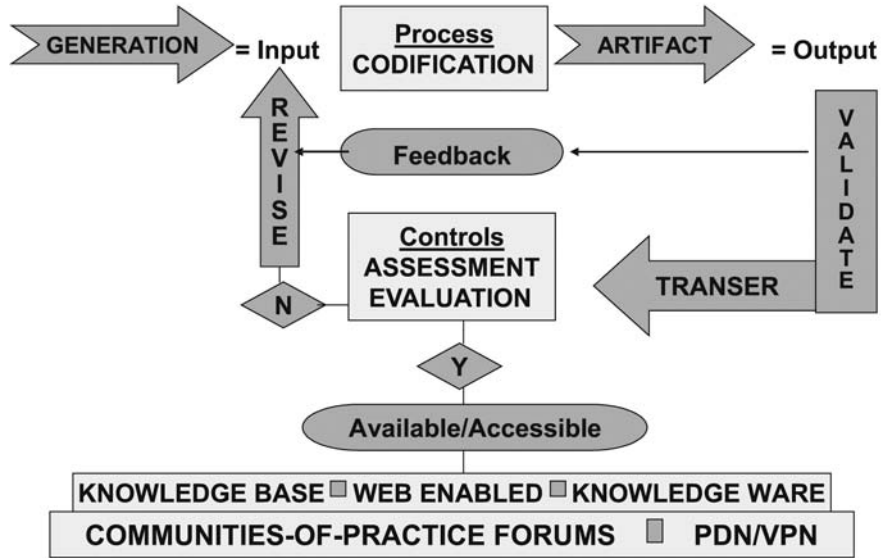
Knowledge Life Cycle – System Diagram

Figure 8.
Knowledge life cycle – system diagram

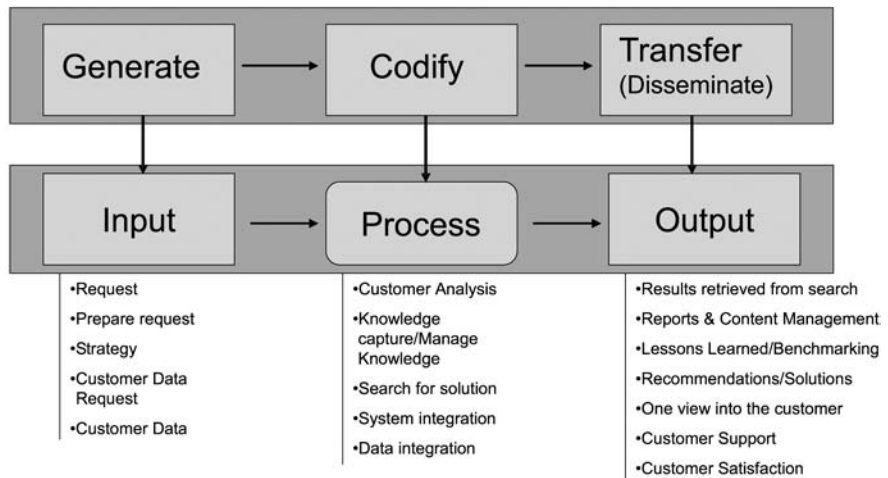Customer Response KM/IM System Support Model

Figure 9.
Customer response KM/IM system support model

focuses attention on the three classic system components (input-process-output) from both a KM and information management (IM) perspective for this bank application; and the subsequent narrative contains the type of information elicited by the GWU template as a means of guiding the responder to an integrated KM/IM system concept of operations thus facilitating the creation of the proposed initiative plan required to complete the process in Step 8.

(1) How will one capture, generate, or acquire the knowledge?
   - Interview/survey department heads to identify customer information.
   - Inventory information/data on customers.
   - Integrate the "discreet islands" of information and data.
   - Develop an understanding of the business processes surrounding customer information and any changes to these business processes that may need to take place.

(2) How will one codify or retain the acquired knowledge?
   - Prepare a requirements document for each department's business processes.
   - Evaluate the business processes and any change that may be necessary.
   - After integration of all the systems, pull the necessary information into a single view that can be retrieved per customer per need.

(3) How will one validate and maintain the integrity and veracity of the knowledge?
   - A KM software engineer will evaluate and maintain the infrastructure.

(4) How will one enable the transfer of the knowledge? How will one balance access versus intellectual property protection?
   - All personnel will have electronic access. There will be an advanced searching tool for finding information easily and quickly.
   - Will implement an expert database. This will help in sharing tacit information.
   - Advanced security will be implemented for intellectual property protection.

(5) How will one determine how well the knowledge is being applied? What mechanisms will one put in place to continually assess and refine the knowledge?
   - Usage statistics will be generated from the single view as well as from the "behind the scenes" databases.
   - Surveys will be used to gather information from customers.
   - All access to update information will be given to the appropriate people.

(6) What enablers will one employ to carry out the above approaches?
   - A knowledge repository will be developed. A portal or dashboard will be used for the single view of the customer.
   - Methods (changes to the business process) will be implemented as determined by the new procedures emerging from this KM approach.
   - Tools and technologies that support the methods will be added to the system.

- Leadership role – the senior management team will support and encourage use of the systems.
- Culture considerations – incentives – will implement a reward programs to further encourage the use of the systems.
- A community of practice on customer response will be created to refine responsiveness ideas and monitor effectiveness.
- Training for all participants as part of the initiative implementation.
- Change management orientation and facilitation also as part of implementation.

Step 8 – Knowledge management initiative planning
The principal
   The principal focus will be on completing the functional analyses undertaken in these initial stages, and gaining approval/acceptance for an integrated KM/IM architecture and implementation schedule. Once the KM procedures/changes are in place and the customer response findings validate the effectiveness of the service to customer needs, the technical criteria for inter/extranet access, uptime, flexibility, portal taxonomy and content, etc. can be added for overall system effectiveness as reflected by the proposed tasking timeline chart in Figure 10.

Training
There will be training to assist in getting employees to "buy-in" to the procedures/processes of the new system and its capabilities. Training will be made available and easily accessible to all. There will be online sessions or e-learning for those who want to do it through asynchronous learning.
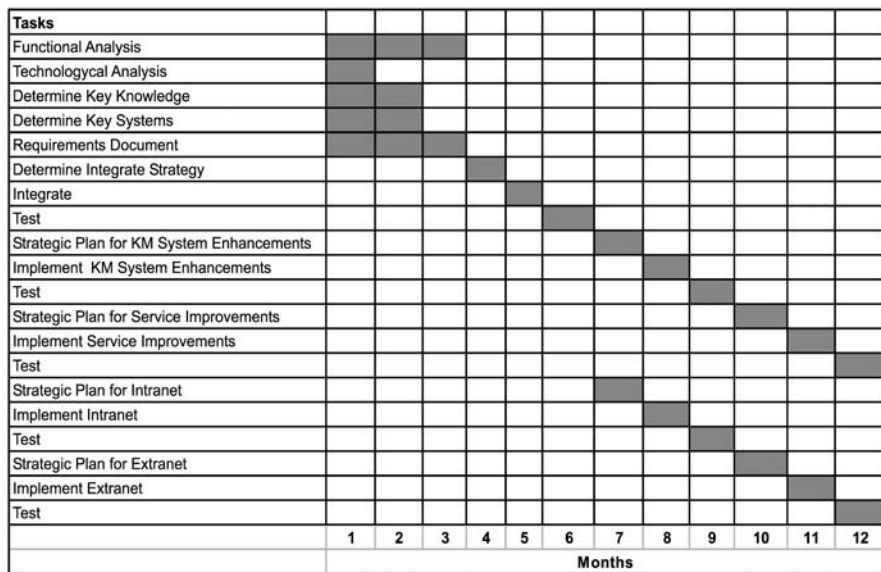

Figure 10.
Tasking timeline

Change management

After the training, a specialist will be used to facilitate change management as further assurance of success and "buy-in" by all employees.

Summary

Correlating changes in business processes to take advantage of benefits from a collaborative knowledge sharing environment can be enhanced using a systems approach to tie the knowledge facets to the enterprise's purpose for being. Employees will more readily accept changes in their work habits if there are clearly defined processes that assist in getting improved results with subsequent positive performance recognition for the employee. Managers will more readily embrace KM if a clear "cause and effect" trail leads to overall improved effectiveness fostering the enterprise's growth, stability and positive image. Graduate students will better understand and appreciate theory that nets them repeatable "Tool Skills" at the practice end of the continuum.

About the authors

Francesco A. Calabrese is co-founder and President/CEO of the Enterprise Excellence Management Group, Inc. (ExMG), a knowledge and strategy management consulting firm of affiliated professional associates. He is an Adjunct Professor in the George Washington University, School of Engineering and Applied Science KM program specializing in the fields of Leadership, Systems Engineering, Decision Support Systems and Technology Impact Analyses, and serves as Managing Director of GWU's Institute for Knowledge and Innovation. He has had extensive writings in project management and technical reports in the fields of geodetic, cartographic, engineering and intelligence systems; has published technical manuals in engineering subject areas; and has been publishing most recently in the KM field. He is a Fellow of the American Society for Engineering Management, a Charter Member of Epsilon Mu Eta, the Engineering Management Honor Society, a Member of Chi Epsilon, the Civil Engineering National Honor Society. He holds degrees in Civil Engineering, Management and Systems Engineering. He is a graduate of Dartmouth University's Executive Program – "Beyond the Bottom Line"; two winter sessions in the Jungian Institute, the Psychology of Human Behavior; and was a Certified Nuclear Weapons Analyst and the US Army's Technology Representative for Mapping and Geodesy during the change management era of moving from ground and air to satellite based acquisition and production materials, technology and processes. Francesco A. Calabrese can be contacted at: fcalab@gwu.edu

Jo Ann Remshard is a Knowledge Management Librarian at the National Institute of Standards and Technology. Prior to joining NIST, she worked in a start-up company developing taxonomies and a software development company where she conducted training on and assisted staff in using knowledge management technologies. She earned a Master's degree in Information Science as well as a Master's degree in Information Systems from Drexel University in June 2000. She earned a knowledge management certificate from the George Washington University in September 2005.

www.manaraa.com