

# The Evolution of Knowledge Management within NCR Corporation

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*As information is requested and accessed more and more frequently, we search for better/quicker ways to share knowledge; particularly within the corporate Information Technology environment. One new initiative which is beginning to receive a lot of attention at NCR Corporation is Knowledge Management. This paper will examine Knowledge Management as an internal business process for information management, specifically for capturing best practices within the Information Technology division, from a process improvement approach. This paper is geared toward technical communicators with little or no experience in Knowledge Management as a business process.*

## INTRODUCTION

As information is requested and accessed more and more frequently, we search for better and quicker ways to share knowledge; particularly within the corporate Information Technology environment. As Paula Brown wrote in *Quality Progress*:

Today's technology streamlines information collection and analysis and expands it to a rapidly maturing knowledgebase to stimulate organizational performance and improvement initiatives—all while producing more effective results. . . .it [Technology] can now be used to truly lead, manage, and improve businesses.

One initiative which began quietly and accelerated to a program level within NCR Corporation is Knowledge Management. This paper will examine Knowledge Management as an internal business process for information management, specifically for capturing best practices within the Information Technology division, from a process improvement approach.

## BACKGROUND ON NCR CORPORATION

NCR Corporation, a Dayton, Ohio-based company, started in the late 1800s as a cash register manufacturer. Since then, the Fortune 500 Corporation has emerged as a dominant figure providing computer solutions to the retail, financial, and communications markets worldwide. While prominent in high performance merchandising solutions as well as automatic teller

solutions, NCR is the world leader in data warehousing and high availability transaction processing. Why is Knowledge Management important to NCR? In order to support NCR's external customers, a readily-accessible, time-sensitive environment for Knowledge Management is critical. Or, as Brown simply states, "To have longevity in today's highly competitive world markets, every successful organization must have a framework for planning, problem solving, and decision making."

## WHY KNOWLEDGE MANAGEMENT AT NCR?

Like many large companies in the 1990s, NCR experienced an internal information explosion. Within the IT Division alone, it became increasingly difficult for employees to keep up with everything from who worked in what organization, to the strategies and objectives of the various functional organizations. Employees wanted to regain some type of control over the masses of information, and, hopefully, this control would be personalized from the individual's desktop or individual PC workstation. As Brown states, "Ask any executive or manager who has successfully implemented performance improvement initiatives and he or she will say that one of the main contributors to his or her company's success is the continual growth and development of its people: its knowledgebase, its intellectual capital." With the corporate and industry emphasis on process improvement, NCR IT professionals wanted accessible, re-usable, historical data. Two items on a typical IT employee's wish list were "lessons learned" and access to electronic project binders—interfaces which would contain everything an employee wanted to know about a particular project, project plan, etc.

## KNOWLEDGE MANAGEMENT DEFINITION

According to Yogesh Malhotra, Knowledge Management practitioner and web author, "Knowledge Management is a brand new field emerging at the confluence of organization theory, management strategy, and management information systems." Breaking apart this definition, Knowledge Management can be defined as an internal, corporate strategy. Knowledge

Management can also stand alone as a separate, Information Technology program. Malhotra is right on target when he states that Knowledge Management is a brand new field. Knowledge Management began receiving airplay in 1996. At that time, Tom Davenport wrote in *CIO Magazine* that a chief knowledge officer “captures and leverages structured knowledge, with information technology as a key enabler.”

Expanding upon Malhotra and Davenport’s definitions, Knowledge Management within NCR Corporation can be defined via a business objective (strategic), a method of Knowledge Management delivery (the management information system), and a role within the organization. NCR’s objective is to create, capture, and disseminate knowledge. Recall that the emphasis in this paper is upon the internal business process of Knowledge Management. NCR’s IT division enables Knowledge Management by deploying knowledge repositories critical to the corporate infrastructure. The repository’s assets are internal, corporate, information essential to NCR Corporation. NCR’s 38,000 employees in over 130 countries have unlimited access to this repository. One group of “Knowledge Workers” within NCR is its 1,800 Information Technology professionals.

Now that we have defined the fit between Knowledge Management within the industry and NCR, we need to ask, “What type of information is NCR trying to manage?”

## WHAT TYPE OF INFORMATION IS NCR TRYING TO MANAGE?

Within IT, NCR is focused on managing process information. According to Brown, “An integrated information management system designed to collect, track, manage, and communicate organizational information leading to knowledge growth and transfer is a critical requirement in today’s business environment.” This information is archived according to the type of process (software development, vendor management, release process) as well as program-specific information.

## THE EVOLUTION OF KNOWLEDGE MANAGEMENT WITHIN NCR

Two major enablers toward Knowledge Management were implemented by the IT division at NCR during the past decade: electronic repositories and intranet interfaces to the repositories.

## ***Electronic Repositories: The first phase of Knowledge management***

Knowledge Management within NCR has been a gradual evolution, occurring in a phased approach. The first phase to this approach began with an electronic repository. As Janis L. Gogan writes in *InformationWeek*, “A well-managed knowledge repository can be an invaluable corporate asset. But poorly managed, it can actually do more harm than good.” As NCR’s electronic repository illustrates, the key to a successful knowledge repository lies in its management.

### **Definition**

Dubbed “The Knowledge Center,” the electronic repository consisted of a structure managed by the Information Technology division, where the end-user or knowledge worker was empowered through careful training to maintain his/her discrete area of this repository. This repository was essentially a directory-tree structure, containing several hundred “collections” or subfolders. Examples of these collections included Employee (organization charts), Human Resources (policies and procedures), and Information Systems (with a dozen or so subfolders). Each subfolder was maintained by an individual department within NCR. At the department level, a single employee was responsible for “moderating” the collection. Think of the collection as a file drawer, with the employee responsible for maintaining the documents and files within the file drawer. A moderator determined which employees could access (READ) the information and which employees could add or delete information to the collection. The units of information, or files, could include text and word processing, presentation graphic, or spreadsheet files.

### **Benefits**

The chief benefit of Knowledge Management is the reuse and sharing of knowledge. As Robert Camp writes in *Business Process Benchmarking*, “These databases—or more appropriately, these knowledge bases, because they are more populated with information rather than data—have primarily been created to ensure that best practices are documented, shared, and saved for future reference.” Within NCR’s Knowledge Center “Information Systems” collection, a “Best Practices” sub-collection was created. Any Information Technology professional from around the world could access this collection and download documents and templates. These documents might include “Lessons Learned” from a particular team on a particular project. Project plans and meeting documentation were possible candidates for Best Practices. The most often requested information from Information Technology professionals at NCR is in regards to project metrics. How long did it take to accomplish X program application? Another use for The

Knowledge Center is to archive metrics regarding project documentation—the length of time to complete the required project management templates.

One of The Knowledge Center collections which receives the most inquiries is the Information Systems “Processes” subcollection. Within this collection, the various, functional, Information Technology organizations have documented their processes. Microsoft Word documents on organizational processes are archived for the help desk, the technology and infrastructure group, and the application development group. These documents are dynamic and are constantly updated. For instance, in the span of one month or less, the help desk has updated release processes three times. These updates are accomplished with virtually no training. The collection owner simply clicks a button and the new document is available to the entire NCR population within a matter of minutes.

Finally, an Information Technology group used The Knowledge Center to post process maps and documentation culled from a global process conference. The information was added nightly to a newly defined collection. The conference participants could go to The Knowledge Center for instant access to critical conference outputs. They did not have to wait for weeks to access the information or for privileges to shared drives from their respective locations.

### ***Intranet Interfaces: The second phase of Knowledge Management***

While The Knowledge Center directory tree structure was an effective interface for NCR’s Knowledge Management in its embryonic stages, the structure became increasingly cumbersome over time. The challenge: the sheer mass of information to populate, maintain, and update. Janis L. Gogan writes: “Just because a knowledge repository is chockfull doesn’t guarantee it will be used well.” NCR was cognizant of this fact, and in the late 1990’s, the *moderators* of the repository transitioned into the role of *information brokers*, responsible for the corporate intranet. NCR’s IT division architected the intranet as a collection of smaller communities.

#### ***Definition***

Each community owned its separate real estate on the intranet, defined as a community desktop. Professionals with similar job functions or roles accessed the same desktop. For instance, the Information Technology division developed its own community desktop intranet site, geared primarily towards IT professionals. The desktop provided access to all of the same files contained in The Knowledge Center, as well as process resources and tools coded in HyperText Markup

Language (HTML) files or links to internal and external web pages.

#### ***Benefits***

The IT community desktop, as well as all of the other NCR intranet sites, could link to the existing electronic repository. An NCR IT professional could go to the IT community desktop, select a topic of interest (detailed program information, for example), and simply click on a hot link to download the program information file. The user did not need to know where the information was located or stored in the electronic repository. The IT professional simply needed to have an idea of the topic and where to find it at a very high level (Programs) on the community desktop, rather than searching through hundreds of files in the repository. As Brown articulated in her article, “When technology is easy to learn, consistent in output, and demonstrates costs or opportunity savings, people will use it.”

The NCR IT professional benefited from being able to find information much more easily and quickly. As with The Knowledge Center, any NCR employee could suggest content. Similarly, any employee could develop a community desktop, given minimal training, the correct tools, and procedures. With the information dynamically changing, procedures were instituted so that desktop contributors could change their content weekly. This solved the problem of information becoming stale, or residing on the desktop for weeks at a time.

We have discussed the evolution from an electronic repository to the intranet within NCR and are now ready to look at specific Knowledge Management applications within NCR.

### ***Managed Web Pages: The third phase of Knowledge Management***

NCR is currently using multiple applications for managing knowledge. In this section, we’ll examine two different approaches being implemented in the IT division. A corporate intranet based on communities and roles is one method of disseminating information and knowledge quicker and more efficiently. However, as NCR learned, being dependent on one individual to manage the community desktop--determining content, adding content, deleting content, and supporting the entire effort—may not be the most efficient use of an employee’s time.

#### ***Definition***

In an effort to both empower the community desktop content developers (NCR IT professionals) and to place the onus on them for contributing and maintaining content, the IT division rolled out a more efficient

approach to the community desktop intranet interface. IT organizations were provided with a single, generic, easily expandable template, referred to as a "Managed Web Page."

### **Benefits**

The template, in the form of a spreadsheet, could be electronically mailed to any organization within the IT division requiring its own web site. Most importantly, the template did not require the user to be a web programmer or to know HTML. (Contrary to popular belief, not all IT professionals are web programmers.) The template removed another layer of complexity, in terms of enabling non-HTML programmers to quickly and easily (in a matter of a few hours) develop a web site. The template allowed for some flexibility, such as web page buttons as well as graphics. Content was not dictated. As in the case of The Knowledge Center, the IT division rolled out a single user training session and some simple documented procedures.

Using the intranet template, the organizations could continue to link to the electronic repository (described previously), link to their existing intranet sites, or create new intranet sites and new links. Ultimately, the users were chartered with designing their site, populating it, and sending the files to a central server. From an efficiency standpoint, information on process improvement methodology, such as documentation on how to follow a particular IT process, could be accessed quickly and easily. Similarly, the simplicity and the consistency of the templates provided an almost instantaneous development cycle.

### **Commercial Applications: The Fourth Phase of Knowledge Management**

While the Managed Web Page is one example of NCR improving upon internal technology in order to perform Knowledge Management, another environment within the IT Division is using an external application to drive efficiency with the help desk. Using Lotus Notes®, the Support team ties together several existing and new repositories. Information in the form of problems, resolutions, support calls, code, white papers, etc. is stored in the repository. This knowledge can be retrieved by help desk consultants using simple search criteria. Information on past support and service calls can be easily found and reused, leading to more efficient problem resolution and increased help desk margins. Historical data can also be used to train new help desk or IT employees, and the data can be leveraged as a tool for continuous learning and process improvement.

## **WHERE DO WE GO FROM HERE?**

Each of NCR's Knowledge Management tools (Knowledge Center, Managed Web Pages, Lotus Notes®) allow the use of abstracts, which enable a researcher to locate the date of a particular study, the company division, and the author of the document. As we progress into the 21<sup>st</sup> century, Knowledge Management of benchmarking will become increasingly more important. NCR employees will be encouraged to share more external benchmarking reports, presentation charts, trip reports, etc. Abstracts will become more refined and focused on business processes studied, external companies and officials contacted for benchmarking, and best practices found external to NCR.

In this paper, we have defined Knowledge Management both within the industry and NCR, and explained the need for Knowledge Management at NCR; as well as traced the evolution of Knowledge Management tools enabled by the IT Division. At NCR Corporation, the IT Division designed the tools and processes for managing corporate information specific to their IT process needs. What distinguishes NCR from its competition is its Knowledge Management process—few companies collect ongoing performance information on leadership systems, implementation of strategic goals and objectives, and management and development of people and work processes. Brown aptly summarizes this: "The use of technology for filling data files or just gathering information is now being transcended by the need for organizations to develop a system that sustains knowledge and promotes analysis of performance information to act upon."

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