In their book *Working Knowledge*, Thomas H. Davenport and Laurence Prusak explore the complexity of knowledge, distinguishing it from data and information. “Most people have an intuitive sense that knowledge is broader, deeper, and richer than data or information” (p. 5). Davenport and Prusak describe a knowledgeable person as someone with a thorough, informed, and reliable grasp of a subject, someone who is both educated and intelligent.

Businesses and organizations are recognizing that their employees and members are a valuable source of knowledge, but often aren’t sharing it. Several reasons for this exist. Organizational culture might prevent members from feeling comfortable about sharing knowledge. Geographical and technological hurdles might physically prevent members from interacting.

Millen, Fontaine, and Muller (2002) describe how large organizations are increasingly interested in the development and support of communities to promote collaboration, to improve social interaction and organizational performance, and to increase productivity. The groups, often called “communities of practice” or CoPs, are defined by a common disciplinary background, similar work activities and tools, and shared stories, contexts, and values (p. 69).

Various types of knowledge management systems are being developed with the hope that knowledge can be captured and shared within CoPs—to the benefit of the sponsoring organization and its members. Many of these systems combine technological and human elements. Intranets are one example.
What Is an Intranet?

For some, *intranet* is a misspelling of *internet*. Although these two gateways to information have many similarities, they are not identical. Whereas the Internet is a world-wide network, an intranet is a network within an organization. Although intranet users usually have unlimited access to the Internet, reverse access is restricted if not altogether prevented (Schneider & Davis, n.d.b, ¶ 2). Several other intranet definitions have been proposed, some vague and some specific:

- **An intranet** is a Web site designed to be used internally within a company (Van Duyne, Landay & Hong, 2003, p. 681).

- **The intranet** is a standard-based, open, cross-platform network able to deliver information through a combination of text, graphics, sound, and objects through the use of web technology (Harvey, et al., 1997, p. 113).

- **An intranet** is a network within an organization that uses Internet technologies to enable users to find, use, and share documents and Web pages. Corporations use intranets to communicate with employees (Dunne & Horgan, 2001, ¶ 1).

- **Intranets** centralize the business process in an easily accessible, platform-independent virtual space (Schneider & Davis, n.d.a, ¶ 2).

According to Harvey, Palmer, and Speier (1997), the underlying philosophy behind intranet usage is “information pull”: the user determines what (either the specific nature of the information or just that some form of information is needed) and when to access the information resources. This differs from the information *push* of traditional corporate environments where memos, employee handbooks, and reports are distributed to all organizational members on a pre-
defined distribution list. Also, within an intranet context, a user does not have to wait for a response from another entity; access to desired information is immediate (p. 112).

One benefit to intranets providing “just-in-time” information, say Bates, et al., is that printed information material is reduced. Stacks of print memos, reports, and industry magazines no longer need to be read or skimmed to find the kernels of information a specific user needs. Instead, users are empowered with the responsibility for determining and tracking their changing information needs and may actively and efficiently acquire the information when they need it (p. 112).

**Intranets as Groupware**

In their 1997 book *Intranets vs. Lotus Notes*, Sinclair and Hale hesitate to define groupware because the concept is so broad, encompassing all the human collaborative activity that takes place online now or that will take place online in the future. They do, however, identify five realms within groupware that provide some scope and context: communication, work management, conferencing, publishing, and training (p. 2-4). They also mention key features that every groupware alternative must include. The computers that use the groupware must be networked so they can to pass data to and from one another. Groupware should be easy to use. Groupware should also be able to run on whatever hardware is already in place in the organization (p. 26). The widespread use of groupware probably occurred as early as the 1970s during the infancy of the Internet (p. 25).

Lotus Notes is the archetypal groupware program against which all groupware programming must be compared. It emerged as the leader in integration and functionality. However, Sinclair and Hale suggest that maximum integration and functionality may not be for everyone because they come at a high cost: the cost of training. Instead they recommend easy-to-learn and easy-to-use intranets as a viable alternative (p. 2).
Intranets as Portals

A Web portal is a “supersite” on the Internet that provides, ideally, a comprehensive entry point for a huge array of resources and services. Corporate portals are internal websites that provide proprietary information to employees, suppliers, partners, clients and stockholders. When they serve only the needs of employees, they’re called intranets (Berkman, 2000, ¶ 1 & 3).

Intranets as a Tool for Creating Knowledge

D. Stenmark (2000) asserts that intranets are particularly suitable for supporting and facilitating corporate creativity and the knowledge creation process. “Managing creativity is about raising the probability of creative acts by stimulating the factors that works in favour of creativity.” He describes eight factors for creativity.

1. Alignment (being aware of, and working towards, the same set of key goals)
2. Skunk Works (working outside established bureaucracy and with minimal management control)
3. Serendipity (recognizing the potential in an accident)
4. Diverse Stimuli (exposing employees to new input)
5. Within-Company Communication and Co-operation (meeting informally and sharing ideas)
6. Trust and Reciprocity (declaring officially the importance of these values)
7. Intrinsic Motivation (cultivating employee interest and enjoyment in their work)
8. Rich information provision (providing direct access to search-and-retrieval media)

Intranets as a Tool for Building Community

Heather McNay (2000) asserts that corporate intranets provide two primary benefits. One is to provide a central location for all corporate information and the other is to nurture a sense of community for a dispersed work force (p. 197). Although most intranets start as a tool for
distributing company policies and benefits information, they can morph into a tool for building a corporate community where workers scattered throughout various departments and across the world share knowledge freely and often. Employees can use discussion groups to exchange ideas and experiences and even to provide technical support (p. 199).

**Intranets as Support for a Learning Culture**

The learning organization has been heralded as a proactive strategy to address the amount and rate of change facing businesses today. A learning culture provides managers with the information and analysis necessary to modify their organizations in order to satisfy stakeholders. According to Harvey, Palmer, and Speier (1997), the intranet is one mechanism that provides organizations an infrastructure upon which information acquisition, dissemination, and sharing can be supported (p. 110).

Harvey, et al., assert that learning has to be purposeful and directed. Without leadership, learning does not contribute to the overall mission of the organization. They go on to argue that leadership should provide a “detailed and quantifiable action plan” that relates the learning process to specific goals because without an appropriate infrastructure to collect, disseminate and analyze data, the learning process will be constrained. A learning culture also nurtures the following attributes within individuals and groups: creativity in addressing conflict and change in the environment and the ability to effectively implement the information to change the organization (p. 111).

Although a variety of information technologies have been used to address all these needs, including communications networks, e-mail, groupware, and electronic discussion lists, Harvey, et al., argue that the implementation of these technologies is often localized to specific parts of the organization. And further, growth beyond the initial technology implementation is often haphazard if not impossible due to interface problems between existing systems. Intranet
technology, they believe, provides a standard infrastructure upon which all phases of organizational learning can be supported (p. 112). Under an intranet computing model, employees are provided with the authority, knowledge, and resources they need to achieve work objectives (p. 113).

Harvey, et al., describe six areas in which organizations are applying intranet technology to facilitate learning and increase productivity.

1. Publications—Reports and other documents traditionally printed on paper can be “distributed” on-line.

2. Collaborative and Workgroup Communication—Employees can share and access information electronically.

3. On-Line Reference—As one example, human relations information can be updated immediately, and employees can access it at any time.

4. Interactive Communication—Surveys to users anywhere in the organization can be distributed through existing software applications, and the results can be stored in a database for further analysis. Memos can be distributed for group review and users can automatically annotate them.

5. Training—Web-based training (WBT) offers current information content when and where it is needed, reducing both the cost and time needed for training and the amount of information an employee is required to absorb at one time. It provides self-directed, self-paced instruction in any topic.

6. Workforce Automation—Intranets can increase efficiency in areas such as customer service and administrative tasks such as automatically submitting expense report forms and supply requisitions (p. 114).
According to Choo, Detlor, & Turnbull (2000), designing an intranet to support knowledge work embraces three nested layers: information behaviors; value-added processes; and information ecology. They propose a user-centered framework, both top-down and bottom-up. The intranet’s designer should keep in mind that an organization’s information ecology influences what information is produced and stored, what information is made available and to whom, and what information is required and valued in task performance. In order to accomplish this, eight elements should be examined:

- the organization’s mission
- the intranet’s goals
- information management plans
- information culture
- information politics
- physical setting
- information staff
- information handling

Information behaviors refer to the practices of individuals and groups as they go about obtaining and using information to resolve their work-related problem situations. Designers should define who the major sets of users are, identify what work they perform, and understand how they require, acquire, and use information in the course of engaging this work.

As value-added processes, intranet applications and services can be designed

- to support the information behaviors of users as they resolve their work-related problem situations;
- to fit or improve the organization’s information ecology;
• to allow users to move seamlessly between accessing content, engaging in communications, and collaborating with others;
• to facilitate the sharing, conversion, and combined use of the organization’s tacit, explicit, and cultural knowledge;
• to support the organization’s sense-making, knowledge-creating, and decision-making processes.

Why Are Intranets Popular?

In a 1996 BusinessWeek article, intranets were touted as the new way of improving companies by quickly and easily sharing valuable information with all employees. Because Web browsers run on any type of computer (and intranets operate through Web browsers) the same electronic information can be viewed by any employee. That means all sorts of documents—internal phone books, training materials, procedure manuals, product specs, commonly used forms—can be converted to electronic form on the Web and constantly updated for almost nothing. But these are not the biggest benefits.

[I]ntranets can do something far more important. By presenting information in the same way to every computer, they can do what computer and software makers have frequently promised but never actually delivered: pull all the computers, software, and databases that dot the corporate landscape into a single system that enables employees [to] find information wherever it resides (Cortese).

The Web site for Prescient mentions two recent studies that indicate how popular intranets have become. According to META Group, more than 85% of Global 2000 companies have implemented or are developing intranets. According to a 2001 Modalis Research study, more than 70% of all small and medium-sized businesses, including government agencies and non-profits, believe that having an intranet is important and either have an intranet or plan to deploy
The intranet’s open, non-proprietary architecture makes it flexible, easy to use with other applications, relatively inexpensive to install and maintain, and therefore attractive.

**A Brief History of Intranets**

The intranet phenomenon started in 1994 thanks to various entrepreneurial people at Lockheed Martin, NASA, and Amdahl. They all saw the potential for incorporating Internet technology within their own companies. Steven L. Telleen, at the time with Amdahl, was the one who coined the term “intranet” in July 1994. Amdahl eventually, though, did not dedicate the company to the pursuit of intranet technology. Telleen then left Amdahl to assume the role as director of strategy and business development at Intranet Partners in Palo Alto, California. He played an integral role in initially promoting the concept of an intranet to big corporations.

Major software developers—especially Netscape—soon recognized the commercial viability of Web technology for the corporation. Netscape’s initial strategy to focus on browser software and to establish a wide base of users has somewhat eclipsed the fact that the company has long been developing cross-platform software. Beating Microsoft to the punch, Netscape released its SuiteSpot server package in early 1996. Microsoft soon thundered past, however, surging into all of the markets where Netscape had established a toehold. Microsoft Explorer, MSN, and an answer to SuiteSpot—the BackOffice family—exemplify Microsoft’s aggression into Web-based markets. Other important players in the intranet market have been database vendors, such as Oracle, and groupware manufacturers, such as Lotus with their Lotus Notes (Messerschmitt, UC Berkeley SIMS, 1997).

**How Do Intranets Work?**

Like the Internet, but unlike other available IT infrastructures, the intranet has defined four major standards to ensure open communication: (1) TCP/IP as a network protocol; (2)
HTTP as a communications protocol; (3) HTML as a document format; and (4) a web browser, such as Internet Explorer or Netscape, as document viewers. These standards enable computers within an organization to handle multiple types of information and provide a protocol for networking together different media types and different operating systems (Bates, et al., 1997, p. 113).

Intranets usually reside behind firewalls, for security, and are not limited by physical location—anyone around the world can be on the same intranet. Intranets also link users to the outside Internet and, with the proper security in place, may use public networks to transfer data (Dunne & Horgan, 2001, ¶ 3).

**What Is a Firewall?**

A firewall is comprised of several software components that stand guard where your corporate network, or intranet, meets the Internet. If it is set up properly, it will look at packets of data as they come in from the Internet or as they leave your company network for the global network. It checks the data against defined policy tables to see if they should be allowed to pass (Mohan, 1998, ¶ 2). The goal is to prevent proprietary or sensitive information from being accessed, stolen, altered, or corrupted.

Firewalls can act as a buffer from the outside world and within the organization itself. Perhaps some files or databases should not be accessible to all employees, such as those that contain private human-resources records. A firewall can protect such information from everyone but those who have specific permission (Mohan, 1998, ¶ 3).

**Who Should Design and Maintain the Intranet?**

In his book *Intranets and Extranets*, Regis J. Bates discusses who usually ends up overseeing a company’s intranet—and who should be assigned this responsibility.
The group that is selected initially to develop the Intranet is the network group. After all, who knows more about networks? And isn’t this an Intranet? Unfortunately, these folks usually have their plate completely full of moves, adds, changes, and upgrades of all kinds. Their orientation is to get it working and get the heat off (2000, p. 543).

A better approach, says Bates, is to give the task to an infrastructure group or tools group whose position in the organization is such that they have an overview of the organization’s overall business objectives and direction. And to succeed, this group must have management support. The members should specify what design applications will be served and from which locations each service or capability will be accessible. If this group lacks the technical know-how to accomplish this, it should identify the overall objectives and hire a consulting firm to figure out a plan and help make cost/performance tradeoffs.

Bates warns against making this group a “bottleneck” for all the changes of the pages. Its job is, and should be, to set standards and formats so that pages from different groups within the company have a consistent look and feel. Its job should not be to make and approve all changes to every page. Stylesheets, forms, and templates should be created by the highly skilled team so routine tasks can be delegated, preventing bottlenecks and encouraging dynamic pages that are updated regularly and therefore visited more often (pp. 543-544).

Bates also recommends automating intranet page creation (within design guidelines) so that updating them is almost as easy as sending an e-mail.

Time spent in getting the proper tools to make Web publishing easy will pay off because more people will use this powerful tool. Web publishing should be as easy as drag and drop to encourage folks to communicate via the Web pages (p. 544).

Harvey, et al., would agree: “Information is authored and managed by those who create it, without having to rely on programmers to create data entry and reporting programs” (1997, p.
113). A secondary benefit is that as more information is contained on the intranet pages, the less need there will be to distribute file attachments via e-mail.

**What Is a Research Intranet?**

According to Alison J. Head (2002), intranets were originally designed to help employees carry out a board range of work tasks—e.g. finding a fellow employee’s telephone number, a map, company news, or a market research report—which could be provided by exclusively internal resources. Research intranets combine such company-generated content with links referencing outside resources, such as commercial databases and other research Web sites (p. 5). Such a resource would be invaluable to a business that focuses on finding, analyzing, and generating information, such as a newspaper.

**Focus on an Intranet: The San Antonio Express-News**

The *San Antonio Express-News* is a medium-sized newspaper that serves the greater San Antonio area and South Texas down to the Mexico border. It has reporters and bureau chiefs all over Texas, in Washington, D.C., in Mexico, and elsewhere when necessary. Its intranet was launched in April, 1998, by a team led by Kathy Foley, a news librarian who is currently Assistant Managing Editor, Research & Technology. Her primary goal was to collect as much job-related information in one place that could be accessed by all employees. The SAEN intranet provides resources such as an employee phonebook, access to an electronic SAEN article database, and hyperlinks to electronic resources and other Web sites. (See Figures 1-6.) Now reporters, editors, and news researchers have scores of resources presented to them in one place.

As mentioned previously, Heather McNay (2000) asserts that corporate intranets provide two primary benefits. One is to provide a central location for all corporate information and the other is to nurture a sense of community for a dispersed work force (p. 197). The SAEN is very successful at providing the former; it’s beginning to address the latter.
Although the SAEN intranet does allow for some interaction between employees, such as providing an electronic research request form that is automatically forwarded to news researchers (researchers usually reply via Outlook e-mail, which is external to the intranet) or by posting knowledge that can be read by users, direct interaction is fairly limited. What appears on the internet, especially on the Newsroom pages, is generally “controlled” by the news research department. The intranet does not currently support direct communication between users in, for example, chat rooms or discussion boards. E-mail usually serves this purpose in a limited manner. Overall, the SAEN intranet has a top-down approach to distributing information, versus a flat approach. It succeeds at providing a rich, varied collection of information resources, but its developers might want to consider ways for users to interact more with each other. One way might be to add more information to employee biographies in the employee phonebook, such as subject specialties (e.g., familiarity with courtroom procedures). Another might be to add some sort of discussion board or Web log (blog) that is accessible to everyone in the company or department. Instant messaging would combine direct communication and immediacy. Adding any of these knowledge management systems would allow the company to better utilize the inherent knowledge of one their greatest resources—employees.
Figure 1. The home page for the San Antonio Express-News (SAEN) intranet. Each blue “button” is a hyperlink to the home page of each department. Note other features, such as the company phonebook in the upper right corner. Ideally, most employees will use this page as their default homepage so their browser will automatically open it when launched.
Figure 2. A search in the employee phonebook produces a brief biography on each employee, including a photograph and some personal details. The personal information provided does help to build community, but additional professional information could be included, such as familiarity of a subject area, that would encourage knowledge sharing.
Figure 3. The EXFiles are archived SAEN articles (and those of its predecessors). Via this search screen, employees can search for articles on a specific topic, written by a specific reporter, in a specified section of the newspaper, within a specified date range, and so on. Approved news research staff can use a similar version of this search interface to update or otherwise alter archived articles.
Figure 4. Newsroom staff members are encouraged to use the Newsroom homepage as their own homepage so that it always appears when their Web browser is launched. This portal-type page is packed with resources. (See Figures 5 and 6 for the middle and bottom portions of the same window.) In addition to the site’s global navigation at the top, which links to resources elsewhere within the site, this page includes a link to the EXFiles search screen. (See Figure 3 for an explanation of the EXFiles.) Users are provided links to several search tools, including an imbedded Google search box, a link to a LexisNexis search page (a service the newspaper subscribes to), and several other resources traditionally offered in print that are now available electronically, such as the Associated Press Style Guide. Also provided are graphical links to the
homepages of other newspapers. The middle column of the page is dedicated to newsroom news, such as awards won by news staff or announcements of new employees.

Figure 5. The middle third of the SAEN Newsroom home page. In the left column is a hyperlink entitled “Research Request Form.” Users are encouraged to use this electronic form to submit research requests to the news research department. Requests are automatically sent to the e-mail in-boxes of news researchers. At the SAEN, only one news researcher is “on desk” at a time, so that person automatically addresses the request (although the user is not aware of how the message is forwarded).
Figure 6. The bottom third of the SAEN Newsroom home page. Note the blue link at the bottom of the page, where users are encouraged to read workshop reports submitted by newsroom staff—an example of knowledge sharing.
References


http://www.sims.berkeley.edu/courses/is206/f97/GroupA/topica.html#history


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