

Collaboration and Content Strategies

In-Depth Research Overview



Trends in Social Software

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Conclusion

Enterprises are transforming themselves from structured hierarchies and internally focused institutions to bottom-up networks that connect teams and communities of employees, customers, partners, and suppliers. Social software offers opportunities to take advantage of informal interaction across these groups and to make it purposeful, thereby supporting the performance, growth, and innovation goals of most enterprises.

Publishing Information

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Synopsis

Consumer adoption (and media coverage) of blogs, wikis, tagging, bookmarking services, folksonomies, social-networking software, and media-oriented services (e.g., podcasting) has been extraordinary over the past few years. Interest has risen to such an extent that thought leaders and other experts have given this category of software its own label: “social software.” (Other terms that describe this category include “social computing” and “social media.”) Excessive publicity and exaggerated claims concerning how social software can transform organizations are rampant in the market. Business and information technology (IT) strategists must pragmatically assess social software to understand its applicability within enterprise environments. Although social software tools are exploding in terms of consumer adoption, enterprises need to examine such tools, applications, and infrastructure in a manner applicable to their markets, products, and services. Despite its hype, Burton Group believes that the intersection of multiple trends across consumer and enterprise markets will have long-term implications to organizations (e.g., informal learning and community building). These derivative impacts make social software an emerging technology sector worth tracking more closely:

- The need for higher levels of business performance, growth, and innovation is forcing companies to be more externalized and interconnected with customers, partners, and suppliers.
- The transformation from hierarchical, top-down organizations to flatter, networked organizations is pushing decision making to the edge rather than retaining it within traditional, centralized, command-and-control structures.
- The evolving demographic makeup of the future workforce—blurring lines between work, lifestyle, and technology convergence (e.g., pervasive connectivity)—is causing a collision between consumer and enterprise use of computing tools, services, and technologies.

These trends will encourage business leaders to adopt more socially oriented work models, organizational practices, and management methods designed to more clearly value the role, influence, and contributions of employees. Transforming the workplace environment will also encourage IT decision makers to re-examine technologies that workers need to better communicate, share information, and collaborate. It also will cause policy makers to reflect on the risks and governance implications associated with use of social software. IT architecture, infrastructure planning, application development, integration, and emerging technology teams should put themselves in a position to assess social software technologies (e.g., tags, social bookmarking services, folksonomies, and social networking) to best determine potential benefits, risks, alignment with current standards, vendor viability, and applicability to business initiatives. A maturity assessment of social software and identification of opportunities to pilot social software applications can then become part of normal IT planning cycles.

Analysis

Improving business performance, growth, and innovation has become a top-line goal that drives strategic initiatives of virtually all enterprises. Indeed, the cover of *BusinessWeek* (April 24, 2006) highlights a special report that profiles some of the world's most innovative companies. Executives already recognize that it is imperative to exploit interconnections among customers, partners, and suppliers at the process and information level. Senior leaders also understand the business transformation efforts necessary to become more agile in the marketplace. Over the years, a tremendous amount of time, money, and resources has been invested to externalize processes (e.g., for customer relationship management [CRM] and supply chain management), outsource low-valued functions, revamp information technology (IT) systems, and implement a more coherent framework for information management (driven in part by regulatory trends).

When it comes to employees, however, enterprises are full of contradictions. Actions taken in pursuit of top-line goals sometimes have derivative impacts on employees that impair such pursuit over the long run. One inconsistency has been the lack of recognition by senior management concerning the influential (and sometimes dominant) role employees play in enabling top-line goals to be achieved. In particular, strategists often fail to understand the value of [social capital](#) as a key organizational dynamic and the means by which it can be leveraged to support top-line goals. Active employee participation in loosely coupled groups (e.g., communities and relationship networks) establishes a variety of valuable connections for exchanging vital business insight.

As enterprises face undeniable demographic trends and workforce unrest, business leaders are becoming more cognizant that certain segments of their workforce are a critical, and increasingly scarce, asset. Aging-workforce trends have triggered renewed interest in organizational development strategies as a means to build the intellectual capital and talent base of the enterprise. As a result, enterprises are investigating ways to best externalize relationships with outside parties to facilitate fresh approaches and new ideas. Managers assessing younger hires or contracted professionals are also exploring more flexible work arrangements than were previously available for past generations of office workers. Improving the level of workforce commitment and sense of joint ownership in an age where ramifications from globalization often result in continual restructuring has management investigating ways to better encourage staff participation and feedback.

Different work models that build community among employees and new methods of compensating staff members (e.g., skill/competency development and talent management programs) are leading indicators that people are being viewed as a more critical business asset than they were in the past. This does not mean a return to the good old days of lifetime employment or Internet-era bonuses, but rather, a recognized need to improve the well-being, skills, competencies, and productivity of the talented, versatile, and knowledgeable workers who will be retained. Aspects of human capital management programs will also need to adapt to workplace environments that are much more virtual (e.g., where workers are highly mobile or rarely meet face-to-face). Human capital components of these programs will additionally leverage principles from past knowledge management (KM) efforts to better democratize information sharing, communication, and collaboration.

Another contradiction in the ways organizations deal with people versus their pursuit of performance, growth, and innovation goals concerns the organizations' management methods and decision-making practices. A typical enterprise might have portions of its management structure centralized, addicted to a hierarchical organization, and clinging to top-down decision making. Other business units in the very same enterprise might be decentralized, with varying degrees of autonomy between themselves and “corporate” for a variety of reasons (e.g., the market needs of a particular line of business). Even within a business unit (especially one that is large or global), management and decision-making practices can vary between those that are command-and-control driven versus those that are network-oriented and involve self-directed teams and communities. To harmonize the natural tension between centralized and distributed business entities, matrix reporting structures could be established to achieve better coordination but obfuscate accountability at the same time.

The resulting quagmire of inflexible and unresponsive management and decision-making structures is the quintessence of bureaucracy, and it negatively influences the agility of an enterprise, its culture, and the sense of community at all levels. Subsequently, workers are often left confused. This in turn has significant negative consequences on an enterprise's ability to develop its human capital, communicate, share information, and collaborate—all important traits of enterprises seeking higher and sustained levels of performance, growth, and innovation.

This apparent paradox has been well summarized in an article published in *The Economist*.¹ In the report (which is a compendium of articles), several companies (e.g., Philips, Emerson, BP, Toyota, and IBM) are used as examples of organizations that either overcame structural challenges or leveraged their internal culture to become more resilient and adaptive in order to excel in today's competitive environment. These concepts are not new. Management consultancies (e.g., Accenture and McKinsey & Company) and business thinkers (e.g., Peter Drucker, Tom Davenport, John Seely Brown, and John Hagel) have long identified the need for business transformation from hierarchical, top-down structures to flatter, networked enterprises that push decision making to the edge. As stated previously, business transformation programs that rely on edge-centric and network-centric organizational models will rely on new ways for employees to work together outside traditional reporting structures and office environments. Enterprises should apply best practices from a human capital and KM perspective to better socialize information sharing, communication, and collaboration.

Rise of the Social

Historically, socializing at work was akin to wasting time from a management perspective. Intuitively, however, most people recognize that informal interaction (whether done face-to-face or digitally) can be a valuable, if not essential, activity within an enterprise in terms of building relationships, professional associations, and community among employees, customers, partners, and suppliers. Evidence suggests that enterprises are gaining a better appreciation of informal interaction by experimenting with technologies that are socially oriented (refer to the "Introduction to Social Software" section of this overview) and by taking advantage of tools and services emerging from the consumer market that have gained broad adoption and accepted use. Blogs are perhaps the most mature example of social-oriented technology. Many popular examples of how blog technology is being applied can be found in the technology industry (e.g., IBM, Microsoft, and Sun Microsystems) and professional services sectors. There are also some blogs that are more generalized. Examples of public-facing blogs include:

- **Boeing:** [Randy's Journal](#) and [Flight Test Journal](#)
- **Cannondale:** [Race Blog](#)
- **General Motors:** [FastLane Blog](#)
- **McDonald's:** [Open for Discussion](#)
- **Stonyfield Farm:** ["Cow" munities](#)

Although these blogs represent more formal, company-endorsed efforts (with posting guidelines and/or internal review procedures likely), examples of unsanctioned social software applications can also be found. Some have garnered praise from media reports and users and have at least tacit approval from parent organizations. One site that has received such attention is [Beauty Dish](#). Positioned as the underground adventures of an Avon Lady, the site includes not only blog postings on a range of experiences but also product reviews, poems, podcasts, and stories. The information is not always directly related to Avon products but provides a personal glimpse into the author's life (thus building trust, credibility, and customer intimacy).

Conversely, employees have been terminated for personal blogs that were deemed inappropriate. A major airline's firing of an employee blogger was one high-profile example covered in the media. A major search engine firm also fired an employee because of blog use.

For the most part, blogs are becoming more widespread behind the firewall than outside it. In the press, many companies (e.g., automotive, insurance, government, pharmaceutical, and manufacturing) have been reported for using blog technology to improve information sharing, collaboration, and community building. Scenarios in which blogs have been applied include competitive intelligence projects, lab journals, operations logs, communication of insights from subject-matter experts (e.g., knowledgebases), market research, intelligence sharing (e.g., among federal agencies and law enforcement groups), litigation support, program, product, and project management, and general communications and news-related applications.

These examples bolster this overview's thesis that companies will experiment with new work models and emergent technologies to improve communication, information sharing, and collaboration if they directly or indirectly reinforce overall goals related to business performance, growth, and innovation. When the enterprise is not ready (for culture or governance reasons) to accept use of such technology as an official project, or even unofficially by employees outside normal channels (e.g., personal blogs), then action is taken to eliminate such use, reduce its risk, or postpone adoption of related tools for enterprise use until a better business case is made. This can lead to confusion and frustration on the part of workers looking for ways to think and excel “outside the box” when policies and enforcement actions are not clearly rationalized and delineated.

Social Software: Knowledge Management Redux?

Social software (and the media hype that surrounds it), resurrects memories of KM projects that erupted within many enterprises during the 1990's. Efforts at that time placed tremendous emphasis on conducting document inventories and aggregating information into centralized repositories where technology (e.g., content management, search functions, and expertise location) was applied under the guise of integrating “knowledge.” The vast majority of such efforts imploded due to unrealistic expectations and an over-reliance on technology (thus tainting the term “knowledge management” to this day). Around 2001, enterprise portals became synonymous with KM efforts. The ability of portals to compose user interfaces that were contextually based on user preferences and roles was indeed valuable. But when enterprises looked beyond the technology, they typically found that business value resulted from the organizational and process transformations that occurred. In essence, when done properly, KM is simply an addition to strategic business initiatives (e.g., CRM) and is rarely the lead reason to undertake social software efforts. KM generally fails when it is pursued as a holy grail in and of itself and especially when it over-prioritizes technology.

A consistent theme for use of social software is to take advantage of informal interaction and make it purposeful by facilitating group connections based on common attributes (e.g., interests, activities, location, and information). These connections can be explicit or inferred. Reasons for users collectively interacting vary greatly. At one extreme, such interaction can be very self-serving. Users might participate in socially oriented applications only to lurk on the edges, absorbing information from the community that is relevant to their own research, personal needs, or work-related tasks. The other extreme would represent highly active users. The intensity of their participation might be represented by their contributions (e.g., providing opinions, recommendations, insight, and other types of information, or by aggressively tagging and sharing bookmarks), their ability to persuade others to join, or their level of influence in brokering linkages between members in the community or network. In any case, the unforeseen discovery of peers doing similar things that result in purposeful action as a derivative outcome of informal interaction across small groups, larger communities, and loosely coupled networks makes social software consistent with KM goals.

Deconstructing Social Software

Industry characterizations of social software vary (refer to the “Introduction to Social Software” section of this overview). Although social software is generally considered something people know when they see it (e.g., blogs, wikis, and social bookmarking and networking services), experts such as [Clay Shirky](#) have concisely defined it as “software designed for group interaction.” This description is elegant in its simplicity, but it unfortunately extends the possible set of social software technologies to include virtually anything in the collaboration market (e.g., e-mail, instant messaging [IM], workspaces, discussion forums, web conferencing, and so on). Major vendors such as [IBM](#) and [Microsoft](#) have approached the topic from a slightly different perspective, preferring to put much of their related research in this area under the banner of social computing. For purposes of this overview, Burton Group will use the term “social software” rather than “social computing” and will include in that category any software that has a majority of the following attributes:

- Designed to be recombinant
- Enables a collective user experience
- Augments informal interaction
- Aggregates information from community-influenced network

- Spans work and lifestyle

This definition by behavior instead of a more traditional dictionary description supports a point implied thus far in this overview: Social software is not so much about a particular tool as about its design, application, and user experience in a group context (see the “Technology Aspects of Social Software” section of this overview). It also explains why traditional vendors are often not mentioned as providers of social software today. Existing enterprise communication-, collaboration-, and content-related tools and platforms have not yet been progressive enough in satisfying the design and user experience criteria outlined in this overview to be considered social software.

Today, a wave of technologies that has been popularly ascribed as social software (or that has such strong affiliations with social software that they are inextricably linked) possesses many of the attributes described previously. Such technologies include:

- Blogs (including mobile and video variations of blogging)
- Peer-to-peer (P2P) tools
- Podcasts
- Really Simple Syndication (RSS) and feed aggregators
- Search engines
- Social networks
- Tags, social bookmarks, and folksonomies
- “Web 2.0” (a loosely defined term reflecting an amalgamation of trends regarding the intersection of mass amateurism, consumer technologies, and mashup-based applications)
- Wikis

The scope of this overview is focused on tags, social bookmarking services, and social networking. For information on blogs and wikis, see the *Collaboration and Content Strategies* report, “[Blogs, Wikis, and Beyond: New Alternatives for Communication and Collaboration.](#)”

Tags and Social Bookmarks as Social Software

In the paragraphs that follow, a simple sequence of events is used to analyze how tags and social bookmarking services possess the attributes of social software outlined previously. See also the “Tags, Social Bookmarks, and Folksonomies” section of this overview.

When authors or viewers assign attributes to (i.e., tag) information (e.g., user profiles, webpages, and photographs), they are making a statement about the meaning of the object to them and how they want to relate to that information in a particular context. Authors tag information based foremost on the way they want to find it again later. They also tag information to guide its discovery by the general user population in a particular context. For instance, this overview could have been tagged with terms such as “social_software,” “knowledge_management,” and “collaboration.” Such data enables information specialists to connect this overview properly within a taxonomy structure or helps search engines automate categorization of its content. Readers, however, may tag this overview in a variety of different and unintended ways. Some might apply tags to associate this overview with a project by using the project name as the tag value. Others might tag this overview using terms not envisioned by authors or information specialists (e.g., “community_building” or “BurtonGroup”). This creates a natural tension between authors and viewers. Authors tag for reasons of personal information management and a desire to predefine a viewer's experience with the information. Viewers tag for whatever reason pleases them, sometimes with the intent to facilitate interpersonal communication.

Tagging information helps users recall and relocate information. As the number of users tagging information grows, new tags will surface; some existing tags might be reused slightly while other tags are reused heavily. A user community is likely using a social bookmarking service (e.g., del.icio.us) to apply, organize, and track their tags. The service they participate within inserts them into a community where the totality of tags created by all users can be aggregated to list tags that have been recently posted, the most popular tags, or group tags by category (e.g., news, business, or technology). These services are increasingly making use of tag clouds to visualize tags, their intensity (e.g., by font size or boldness), and clusters of related tags. This technique also helps in navigation and search queries executed when a tag is clicked by a user. Most services also have the ability to suggest tags and tag formats to guide user vocabulary (e.g., “Knowledge_Management” vs. “KM” vs. “knowledgemanagement” vs. “KnowledgeManagement”).

Eventually, patterns emerge that show how a community collectively associates information with personal or work-related activities. This compendium of tags, tagging, tag clouds, and social bookmarking services results in a bottom-up solution to information classification based on informal interaction within and across groups. This organic categorization establishes a folksonomy that complements formal taxonomy efforts by establishing feedback loops (e.g., use of new terms) to taxonomy stewards and extends capabilities of search engines and other types of aggregation frameworks (e.g., RSS feeds). Ancillary services will also emerge (e.g., Cloudalicious, Durl, extisp.icio.us, Revealicious, and TopTaggers) that extend social bookmarking service (e.g., del.icio.us) through formal partnerships or mashup techniques to recombine functions in new ways.

At some point, users are likely to subscribe to tags themselves or to the public bookmarks of users they have begun to trust as credible information filters. This will probably lead to eventual interaction between groups of people in a face-to-face environment as a sense of community builds around similar interests (that is, the interaction and relationships becomes purposeful).

Organizational Issues

Success and broad adoption of tagging and social bookmarking services within the consumer market does not provide comfort for those weighing the pros and cons of enterprise deployment. Organizations (e.g., businesses, governmental agencies, educational institutions, and non-profit groups) must consider a wide variety of cultural and related factors when determining value and risk associated with different types of social software. There are three critical issues to analyze:

- Establishing the business case and governance structure
- User surfing as a relevant business activity
- Participation by a critical mass of users

Establishing the Business Case and Governance Structure

Currently, there is no solid business case with well-defined return on investment (ROI) measures to support use of technology related to tags and social bookmarking software at an enterprise level. The technology is emergent for enterprise application. There is a reasonable and sound argument that tagging and social bookmarking does indeed aid community-building strategies. Enterprises can leverage and apply qualitative justifications to further investigate and pilot the technology under the auspices of related programs. Similarly, there is much promise that folksonomies will provide information to those maintaining taxonomies of terms and usage that previously were not easily gathered. Effective folksonomies have the potential to make taxonomies more relevant and resilient to change. However, there are few public success stories. IBM has been applying social software tools within its intranet to enable [tags](#), [tagging](#), [social bookmarks](#), and [folksonomies](#), though direct benefits from this effort are anecdotal.

There is greater likelihood that this technology will emerge based on community and role-specific needs upon which a more specific business case can be based. Two sites that could be prototypical of what might emerge for enterprise use bear watching. [Connotea](#) tailors its user experience around scientific and related research activities, and [CiteULike](#) targets the academic community. Both are similar in that they have vertical understanding of the reference management aspects of roles and activities. For enterprises, the reference management system might be connected to an enterprise content management (ECM) platform that has vertical applications (e.g., EMC, FileNet, or Open Text) or as an extension to other types of information-centric systems (e.g., IBM's recently announced WebSphere Information Server). It is also possible that tagging and reference systems could be integrated with packaged applications (e.g., those for CRM) to enable tagging of applications as part of exception handling, competitive intelligence gathering, and other process activities. The key point here is that such hybrid integration that better couples use of social software with business-process and information-management activities will identify more tangible benefits that can substantiate a business case and drive governance efforts.

User Surfing as a Relevant Business Activity

Management has traditionally frowned upon what is perceived (correctly or incorrectly) as aimless surfing of websites. The more strictly enterprises regard monitoring and devalue employee surfing, the less receptive management will be to tags, tagging, and social bookmarking as relevant and credible business activities. At the other extreme, enterprises in which workers are free to surf may find that tags, tagging, and social bookmarking result in information that is too chaotic and unrelated to business efforts. Individual users may find such tools valuable, but without a collective community focus, information captured provides no real value from an enterprise perspective. Champions of these emergent tools need to realize that a too stringent or too lax culture will influence success or failure in obtaining management attention and backing. Pilot programs need to be linked to a specified business gap or opportunity (e.g., competitive intelligence gathering or product development).

Participation by a Critical Mass of Users

Tags, tagging, social bookmarking, and the resulting folksonomies are most effective when adopted by a large number of users as a part of an everyday routine. Users must see personal value in order to participate (historically, adding metadata to content or applications has been viewed with disdain by users because it is driven by management edicts). This creates the underlying need for reciprocity among those interacting with socially oriented applications (as well as concepts such as trust and reputation). Unlike some tools (e.g., virtual workspaces) that are best used by small groups for activities such as team projects or exception handling, many social software applications benefit from broad, collective use by large groups. IBM's internal pilot resulted in 17,000 bookmarks generated over three months. (Other data on the IBM experience can be found in the ACM *Queue* article, "[Social Bookmarking in the Enterprise](#).") IBM has approximately 300,000 employees, which establishes a critical mass rather easily. Additionally, 40% of its staff does not have an office, so concepts of social software are relevant as the workplace becomes more virtualized (which also supports the thesis of this overview).

Information-Management Challenges

Tagging, social bookmarking services, and folksonomies can be disruptive to ongoing information-management efforts (e.g., taxonomies). Several areas concerning work practices, integration, and lifecycle management aspects of these technologies need to be fully understood before tools are introduced into the enterprise. Three critical issues to analyze are:

- Identifying the relevant information space(s)
- Enabling credibility
- Assessing strengths and weaknesses

Identifying the Relevant Information Space(s)

Consumer uptake of social software tools has been applied to a broad landscape of interests (e.g., photo sharing, relationship-building, and recreational activities). Strategists need to identify information spaces that are relevant to enterprise needs (e.g., research, competitive intelligence gathering, improving customer relationships, and product development) and balance formal information management such as metadata and taxonomy efforts with informal feedback loops created by tags and bookmarking services. Community guidelines will be essential to influence organizational behaviors to produce relevant business results. These tools need to be viewed and implemented as complementary solutions that extend information-management efforts.

Enabling Credibility

Enterprise environments are filled with policies, procedures, and other governance regulations that make them very different from consumer markets. Issues related to user trustworthiness (e.g., user reputation) and information credibility are likely given security, compliance, and other management directives to ensure a trusted environment. Integration with underlying infrastructure related to security and identity management (IdM) services are core underpinnings to sustain successful use. User reputation systems (sometimes implemented via profiles and feedback rating methods) are also important. Unfortunately, reputation systems are also not yet mature, and there are few examples of products successfully and broadly deployed within enterprise environments. In the consumer market, there are examples (e.g., [eBay](#)) of such success, but the market lacks a framework that provides for centralized reputation management or a means to exchange reputation data with other applications and usage contexts. Startup consumer-market companies (i.e., [iKarma](#), [Opinity](#)) are focusing on this opportunity, but it remains unclear whether their products will include business-oriented services. Alternatively, packaged applications and collaboration tools often can be used to capture user feedback. Implementing a discussion forum as part of social software etiquette may encourage users to reply if a posting was valuable to them. Knowledgebase applications sometimes have a check-box at the bottom of the page where a user can indicate that an article was helpful. But in general, online reputation systems remain embryonic. However, this does not diminish the need to consider a good reputation as an important success factor for social software, and it points toward integration with IdM and other user profile mechanisms.

Assessing Strengths and Weaknesses

There is a risk that enterprises will look at social software (and tags, social bookmarking services, and folksonomies in particular) as a silver bullet. Given the emergent and unsettled nature of the technology, processes, and information-management best practices involving these tools, several strengths and weaknesses related to tags and bookmarks can already be identified.

Strengths:

- Meaningful labels for users
- Immediate feedback
- Searchability and ease of “refindability”
- Informal classification of information
- Notifications possible via subscriptions to tags (e.g., via RSS)
- Collaborative filtering possible based on tags and group tagging
- Collective mapping and weighting suggests referential value of information being tagged
- Profiling of users based on their use of tags or their interest in tags
- Non-intrusive way of extracting metadata and applying it to information
- Bundling of tags can represent ad hoc taxonomy relationships
- Community building
- Ability to subscribe to tags

Weaknesses:

- Lack of consistent formats and typography (e.g., spaces, commas, and use of CamelCase)
- Lack of consistent vocabulary as well as misspellings and personal tags that have no meaning outside a single user

- Lack of semantic precision
- Lack of consistent categorization
- Lack of complex or intelligent search functions (e.g., use of a thesaurus, synonyms, or stemming)
- Requires scale over large numbers to show collective, meaningful patterns
- Requires credibility/transparency (e.g., identification) for use within enterprises
- Need for multiple security and privacy levels (e.g., public, group, and private bundling of tags)
- Imitation biases results (e.g., users apply popular tags rather than proper tags)
- Manual procedures required for integration among folksonomies, taxonomies, and search engines

In spite of potential business benefits, there is no demonstrable track record to predict how effective social software technologies will be in the long run (e.g., effects on lifecycle management and alignment with taxonomies) because there is a lack of established tools, standards, and best practices. Despite this cautionary note, this specific collection of social software technologies (e.g., tags, social bookmarking services, and folksonomies) will provide direct value to users collectively by helping them discover, gather, filter, organize, and share information as a natural outcome of their daily interactions and activities.

Process Implications

Although the predominant consumer examples of how tags and social bookmarks are used involve content- and community-related activities, business strategists are likely to examine applications outside that realm as well. One area of assessment is the scenarios and implications of applying tags, tagging, and bookmarking services to line-of-business applications. There are three critical issues to consider:

- Integration with applications
- Tags as intelligence-gathering and routing techniques
- Tagging people

Integration with Applications

Historically, developers have provided a variety of interfaces that enabled users to flag applications or add unstructured information (e.g., for exception processing or handling comments and ad hoc notes). Users have also employed e-mail or other collaboration tools (e.g., workspaces) or task-management and workflow products to direct the actions of certain work items. Tags (and related tools) offer another vehicle that has some interesting possibilities. Tag buttons can be used to tag records or transactions processed through browser-based applications in the same manner that they are used to tag content. Similar tag buttons can be added as client-side plug-ins to traditional desktop fat-client applications. Tagging applications can capture key metadata about the transaction (or record) and store the resulting tag data in a manner similar to content-centric tags.

There are subtle differences in processing, however, because transaction or record-level tagging would likely need to extract business data (e.g., account numbers and product information) to aid in locating and recalling what was tagged or bookmarked. Tag clouds can be integrated with applications as well, thereby functioning as a navigational technique. Information can be dynamically collected based on tag actions of peers working within similar applications to provide notifications or alerts to coworkers or to perform similar actions as a way of providing peripheral information that users can glance at while processing work items. Back-end systems can filter information and feed tag clouds with a variety of weighted data as well (e.g., a tag cloud could categorize call types in a call center so operators could get a sense of “customer service hot topics” or find out whether inbound calls were related to a marketing campaign).

Tags as Intelligence-Gathering and Routing Techniques

Consumer sites encourage use of tags and tagging in a variety of ways. Users tag information objects (e.g., photos and webpages) with some assumption that tags will be clicked by other users as a navigational method to discover that same information object or similar objects. There are similarities in this model for ways users could also tag applications (e.g., through a controlled vocabulary or entry of ad hoc labels). A claim interaction could be tagged as “fraud.” A sales transaction could be tagged as “HugeWinOverCompetition.” A product defect report in a customer service transaction could be tagged as “Recall_Issue.” Tags could also be interpreted by applications (given consistent formats and structure) to aid in routing and escalation of transactions tagged in certain manners (e.g., a “fraud” tag could route a transaction to an investigative unit). Capturing line workers' opinions (via tagging) as they enter transactional data (given the proper vocabulary and bookmarking service) can provide invaluable insight about a collective set of business activities and can provide dynamic routing capabilities based on metadata applied by users in a relatively unrestricted manner.

Tagging People

Not only are there application possibilities with tagging, but there are also interesting opportunities to exploit tags by applying them to people. Putting aside issues of appropriateness, security, and privacy concerns (which obviously would have to be handled properly through policy, monitoring, and enforcement procedures), tags can be used to dynamically and informally describe people in a particular context. In this approach, tagging people becomes a form of social annotation. For instance, as part of pre-sales activities, prospects and leads could be tagged to suggest characteristics about individuals that others on the account team might find helpful. Tags might include “tough_minded,” “difficultnegotiator,” “KeyDecisionMaker,” or “Prefers_Competition.” Tagging as a type of speech and conversation is an emerging area of social software research with some examples in consumer-oriented services. Tags applied to people provide anecdotal information that might not be captured in formal applications. However, such opinionated insight could provide situational awareness to an account team, even if the data was transitory or specific to a particular time period while a proposal or other engagement was under way. Such tags also act as indicators that such support should be included as part of the application itself through a more structured vocabulary.

Tags might also be used by users to describe themselves in terms of user profiles. Tags could reflect professional interests, current activities, and areas of expertise. There are well-known concerns with self-profiling (e.g., people tend to over-profile themselves, under-report competencies, or fail to maintain such profiles over time). The key point here is that tagging people will raise a variety of issues that include appropriate use (e.g., a user tags someone as “idiot”), but the model could become more applicable to demographics if consumer behavior applied to tagging continues to expand beyond bookmarking services and social-networking sites and becomes a behavioral norm in terms of work and lifestyle. Tags and tagging are already evolving within consumer contexts as an ad hoc language based on social annotation of objects that could be described as a type of conversational discourse with its own grammar, colloquialisms (e.g., idioms and jargon), or neologisms used by subcultures, communities, or other groups.

Social Networking

Informal interpersonal networks exist in all large enterprises. Some are declarative and explicit (e.g., communities of practice that leverage member contacts), but most are informal and often invisible to management (refer to the “Social Networks” section of this overview). Historically, the majority of work in the area of social networking has been driven by management consultancies. Approaches to automate network discovery and brokering connections has had mixed success at an enterprise software level. Expertise-location products remain relegated to a small segment of the market (e.g., products from [AskMe](#) and [Tacit Software](#)). Social-networking products (e.g., those from [Contact Networks](#), [Spoke Software](#), and [Visible Path](#)) have not garnered broad adoption beyond sales-related applications. However, within the consumer market, social-networking services have exploded with sites such as [LinkedIn](#), [MySpace.com](#), and others, achieving high levels of membership and participation levels (if members are motivated and choose to exploit network connections). Such trends raise three important questions:

- **Is consumer market adoption unique and not transferable to enterprise environments?** Consumer social-networking services and sites are inherently community oriented. Sites such as LinkedIn (with community and network connections based primarily on business relationships, interests, and associations) or MySpace (featuring community and network connections based on friendships, topical interests, listings, and so forth)

are held together by member interaction. This model appears transferable under the right conditions. Business-oriented sites (e.g., LinkedIn and Ryze) are more relevant models to examine in terms of possible applicability. Some companies attempting to form external social communities might adopt a more consumer-oriented approach. Edmunds.com, for instance, has launched a social network called CarSpace to support its automotive site. Companies involved in travel might examine TripConnect as a possible partner or model to emulate. Others might prefer to establish some level of business affiliation with an existing network (e.g., for recruitment purposes). Some consumer sites are already being leveraged by enterprises for recruitment purposes. It is also interesting to note that Facebook, a social-networking site targeting a college demographic, has recently made overtures to non-educational organizations (e.g., Accenture, Amazon.com, Apple Computer, Electronic Arts, Gap, Intel, Intuit, Microsoft, PepsiCo, and PricewaterhouseCoopers).

- **Is the current crop of enterprise software packages designed properly?** Many of the current products in the market rely on their own infrastructure to mine various sources of information contained in application systems (e.g., contact data in a CRM product), document repositories, e-mail repositories, desktop office suites, and personal information-management tools. They also typically include an aggregation and brokering mechanism to satisfy security and privacy concerns. Many are simply over-engineered, too self-contained, or not synergistic with existing collaboration infrastructure, which limits broad applicability outside process-centric applications. As communication, collaboration, and ECM infrastructure matures and becomes more broadly generalized (e.g., through the offerings of superplatform vendors), enterprise providers of social-networking products and services will have better opportunities to provide application-focused capabilities that augment existing tools.
- **How does social networking fit into the world of social software?** Consumer examples fit the definition of “social software” better than existing enterprise software tools do. Even though enterprise products focus on social networks, they are designed more as applications with predetermined capabilities and use-case scenarios. Indeed, much of the information described previously concerning tags, tagging, tag clouds, and social bookmarking services enable social networks better than today's dedicated enterprise social-networking software products do. Even blogs with blog rolls, cross-blog links, and [TrackBacks](#) exhibit informal social-networking traits better than do enterprise products designed for that purpose (especially when the various feed-aggregation services such as Technorati are added to that mix). Consumer sites (e.g., LinkedIn, Ryze, and Friendster) prioritize a collective user experience by enabling members to create or join groups that focus on topics of interest, share music, comment on photographs, and exchange opinions. These sites are community oriented, although sites that offer more business-oriented services can include formal methods of interaction and varying levels of privacy. Many of these sites offer tagging and other functions (e.g., ratings) that enable community aggregation of information (e.g., tag clouds and hot topics).

Social-Networking Analysis

When undertaken by management consultancies, a multitude of interviewing and analysis techniques for information exchange and relationship connections are employed. A social-network map can be used by strategists and decision makers for a variety of reasons. Identifying employees that are acting as reference hubs for staff members and mentoring peers can aid succession-planning efforts or help management guide those people's career paths to better exploit such traits. Identifying subject-matter experts can be leveraged for talent-management purposes. Uncovering gaps is also important. If a map reveals “dead areas” in terms of information flows across hierarchies, management can focus on more targeted communication strategies and team-building activities. Approaching social networks from this perspective is very useful when conducted properly and explained effectively to staff (e.g., this is not “big brother” watching every move and making every worker's interactions public knowledge).

Organizational Issues

Many theorists believe that the simple act of observing something changes its behavior (i.e., Heisenberg's Uncertainty Principle). This is a valid concern regarding social networks. Networks that thrive when they are informal and invisible are at risk for changing behavior or complete collapse if management suddenly becomes aware of them and attempts to influence, leverage, or exploit them in some way. There are other unintended consequences of making social networks and their interrelationships public. Maps of connections and nodes may surprise people because not all relationships might be mapped in a bidirectional manner, or if they are, they may reflect differing levels of perceived importance or value. For instance, a map could indicate that Party A is less important to Party B when Party A thought that the relationship with Party B was of value. Other people may not want to be perceived as a broker or a hoarder of information (e.g., perceived as a gossip or not being a team member). As a result, organizational mapping involves factors that need careful consideration in terms of who sees such information, the ways it is used, and the privacy of network participants.

Overall, the success and failure of technologies specifically geared toward social networking revolve around user participation, trust, security, and privacy. Users in some cases (e.g., sales) have historically protected prospect and lead information rather than sharing such data. Users generally are hesitant to believe that systems that crawl through their e-mail and documents to gather information in order to profile them (and in some cases rate their effectiveness) will not be used against them by management. Products and services that possess user controls with multiple privacy levels are just one aspect of successful implementations. Organizational issues regarding incentives for participation, managing behavior changes, and building effective communities have greater impact.

Information-Management Challenges

Social networks that are declarative by nature (e.g., LinkedIn) enable connections and nodes in the network to be explicitly defined and managed by participants who are in charge of their profile information, invitations, acceptances, endorsements, and so forth. Social networks that are more loosely coupled (e.g., based on affiliations with tags or interest groups) are still manageable in the sense that users can often remove themselves and their artifacts from the network when they delete their accounts with those services. Enterprise software packages are typically broader in terms of the information sources they analyze and also more stringent in how they address security and privacy needs. The challenge that both categories of social-network solutions face is that attempts to comprehensively derive expertise and/or social connectivity based on self-profiling, user activities, and interpretation of artifacts (e.g., e-mail, contact lists, and document libraries) have not proven themselves to be broadly applicable within enterprise environments beyond specific situational applications. Volume of interaction (e.g., number of e-mail threads) does not necessarily correspond to a close relationship between parties. Documents within ECM packages have varying levels of security and access controls that might limit the ability of these packages to crawl and index such information. So although evidentiary value can be gleaned from analyzing artifacts, the ability to make strong connections in terms of relevancy is best achieved under the auspices of specific application scenarios. This is why enterprise social-network vendors have had some success in applying their technology to sales processes, where assumptions can be made about relationships between people, content, and data.

Process Implications

Although social-networking software and related expertise-automation software remain embryonic in terms of maturity and deployment, there have been promising application scenarios in the market. Many workflow scenarios break down when workers are confronted with issues arising from complex process requirements, dense collections of information, constrained cycle times, geographically dispersed teams, or tasks that exceed their skill or competency levels. Within these scenarios, connecting with experts or other people who have experience in such situations (e.g., addressing “who knows what”) can be invaluable. In other cases, such as a salesperson seeking an introduction to a prospect, or someone from the outside looking for a background conversation about a possible professional position available within the company, a more socially oriented service can be more effective (e.g., addressing “who knows who”). Indeed, consumer services have gained success in the area of job recruitment as contact networks are leveraged by both job seekers and human resources (HR) personnel (e.g., via referral networks). Lack of success to date with enterprise software products is primarily due to these tools reflecting first-generation approaches to a difficult problem set.

Benefits and Risks of Social Software

Social software enables informal interaction and activities within and across groups to become more purposeful (if participating members in the community or network allow it to do so). In this sense, design and user experience factors enable social software to function as a different type of “middle ground for groups” (often augmenting “[weak ties](#)” between people)—an area that is not well served by existing technologies designed for more formal and semi-formal means of communication, information sharing, and collaboration. Social software exploits loosely coupled connections among people based on a variety of mechanisms (e.g., tags, social bookmarking services, tag clouds, and social-networking tools).

The benefits of social software are largely qualitative and relate primarily to strategies for development of an enterprise's human capital. Users engaged in socially oriented systems develop a sense of ownership, self-directed participation, and community building that can be applied to facilitate adoption of new work models and decision-making structures if such models and structures contribute (directly or indirectly) to the performance, growth, and innovation goals of the enterprise. Examples include:

- **Marketing and competitive intelligence:** Most enterprises assign formal roles and establish structured processes to gather and assess industry trends that may impact company, product, or service strategies. A socially oriented system can increase the number of people acting as sensors and filters to observe a given information space. It is possible that such collective insight could uncover items of interest that otherwise might be missed, thereby leading to a possible market opportunity or pre-emptive action to alleviate a customer dissatisfaction issue or a competitive threat.
- **Product lifecycle management:** Large enterprises have numerous groups involved in many different aspects of a product's lifecycle, including research, development, marketing, sales, and service. Such activities involve not only employees but also can involve customers (e.g., focus groups), partners, and suppliers. The communication, information-sharing, and collaboration challenges are amplified if the enterprise is global, has workers that are highly mobile, or has formal management and decision-making structures that inhibit rapid and fluid connections between teams. A socially oriented system can help users discover other experts (directly or through network referrals) or can enable community-building activities by creating an informal framework for interested parties to discover each other.

But there are clearly risks as well. Doing nothing in the area of social software does not prevent employees from exploiting consumer-oriented services for business purposes under the radar. Chaos and anarchy can erupt if use of unapproved systems occurs without the proper governance methods and change-management practices to alleviate conflicts with existing management structures and decision-making norms. Strategists might also discover that introducing social software tools into the enterprise can overlap or conflict with existing investments in applications and infrastructure related to ECM (e.g., search functions, content categorization, and taxonomy), communication (e.g., IM and presence tools), and collaboration (e.g., workspaces). Finally, there is risk from a lack of adoption due to demographics. Although social software tools are broadly used by younger demographics in consumer markets, their use may seem quite odd for use by older employees unfamiliar with such systems or personnel who might not be as motivated to share insight or who might feel intimidated by such systems.

Market Analysis

At present, the social software market is heavily consumer based. This section examines trends and scenarios regarding the ways social software will apply to large enterprise use.

Consumer Markets Influence Enterprise Innovation

Consumer markets are establishing themselves as the incubation chambers for enterprise technology. Both IM (e.g., AOL, MSN, and Yahoo!) and IP telephony (e.g., Skype) are well-known examples of technologies that have garnered widespread use—whether desired or not—within enterprise environments. Blogs represent another example of technology that gained widespread consumer traction prior to enterprise interest and adoption. Additional trends are illustrated by vendor and enterprise interest in products under the banner of “Web 2.0” and mashups (e.g., [Google Maps API](#) and [Yahoo! Widgets](#)) as representative of a new mode for application design, integration, and deployment.

Enterprise Options for Social Software

Especially for the social software technologies covered in this overview (e.g., tags, social bookmarking services, and social-networking tools), issues ranging from alignment with existing communication, collaboration, and ECM infrastructure to understanding market trends (and risks) have arisen as social software evolves from its consumer market roots to satisfy enterprise requirements.

Social Software vs. Existing Technologies

Some aspects of social software are not entirely new. Existing collaboration and site-building tools have included different methods for lists of information to be collected and shared:

- Workspace-related products (e.g., Microsoft Windows SharePoint Services, Lotus Notes/Domino, Open Text, and SiteScape) have the ability to create, store, and share lists, including connections to various websites or other information artifacts. These products also provide library services to help organize information sources. Such organization might require some updates to templates, but development aspects are relatively minimal.
- Specific community-oriented tools (e.g., Communispace, iCohe, Ramius, and Tomoye) also include various means of sharing information, links, and member and/or content rating mechanisms.
- Portal products have the ability to display links to favorite places that can be produced by back-end content systems or posted by subject-matter experts.
- Search tools (e.g., Autonomy) have included categorization and taxonomy-building capabilities for some time.

So although there are areas of overlap, in many ways, traditional vendors have not yet aggressively pursued social software beyond technology demonstrations. The current portfolio of products and services in social software offerings is generally designed for formal or semi-formal interaction or has not been designed to the level at which developers can construct socially oriented applications (although IBM has demonstrated some related capabilities for implementation on top of IM tools). For example, workspaces are best applied for activity-centric collaboration (e.g., projects and exception handling) and for small groups rather than for the loosely coupled, often non-deterministic and community-centric nature of social software. The sections that follow summarize four possible scenarios for the emergence of social software for enterprise use:

- **Scenario 1:** Consumer-oriented vendors offer enterprise-level solutions
- **Scenario 2:** Best-of-breed enterprise software vendors emerge
- **Scenario 3:** Superplatform vendors generalize social software
- **Scenario 4:** Social software bust

Scenario 1: Consumer-Oriented Vendors Offer Enterprise-Level Solutions

Premise: Existing consumer-oriented sites offer private-label, secure, hosted services that enterprises can use internally.

There are arguably too many tagging and social bookmarking services sites on the Internet already. Business models of tagging and bookmarking specialists will be put under pressure from larger sites building out their own solutions in this area. Yahoo! has its [Yahoo! 360°](#) effort and acquired [del.icio.us](#) in 2005. Google has been rumored to be entering this space as well. It's likely that AOL and Microsoft will also follow. Offering a "software as a service" option for enterprises will likely occur initially through specialty sites (e.g., [BlinkList](#), [RawSugar](#), and [Simpfy](#)). However, others, such as [Connotea](#) and [CiteULike](#), already offer vertical, role-based services to certain user segments. Such hosted options have proven to be successful in other markets. WebEx currently dominates the web conferencing market, and Salesforce.com has been a disruptive influence in the CRM market. Eventually, it is likely that large consumer sites such as AOL, Google, and Yahoo! will offer business services in the area of tagging and social bookmarking as well (through new and/or continued acquisition of smaller, best-of-breed sites).

Social-networking services such as LinkedIn are already being used as part of recruitment activities, so these types of contact and referral application scenarios will continue to mature and have the potential to become integrated (e.g., through Extensible Markup Language [XML] and web services) with internal HR-related applications to better exchange documents and data involving the integration of new hires and other professional services.

Scenario 2: Best-of-Breed Enterprise Software Vendors Emerge

Premise: Traditional search engine and ECM vendors, in addition to emergent pure-play vendors, offer traditional on-premises solutions.

Pure-play and open source options for social software are already available. [Scuttle](#) is one example that is driven by an underlying [open source project](#) (the GNU license). NetInfo is a service company that has developed a product called [Notorious](#). OpenDocs is another company that has released an enterprise tagging and bookmarking tool.

Search engine vendors have not yet incorporated social software as a complementary extension of their search and taxonomy platforms. This is surprising because the synergy among search, tagging, and bookmarks and between taxonomies and folksonomies is quite high. Being early to market with such features would provide search engine vendors with thought leadership regarding enterprise use of these technologies.

ECM vendors (e.g., EMC Documentum, FileNet, and Open Text) have not stated any direction regarding social software, either. These firms already embed search engines, plug into enterprise portals, and have critical business content and metadata that could be fed into tagging and bookmarking tools.

Scenario 3: Superplatform Vendors Generalize Social Software

Premise: IBM and Microsoft generalize social software services into their respective platform infrastructures.

IBM and Microsoft could slipstream these capabilities into their existing platforms as part of a general upgrade to an existing product (e.g., Microsoft SharePoint Products and Technologies or IBM's WebSphere Information Integrator). Microsoft has the added advantage of being able to integrate these services within its desktop products and browser software and link them to platform services it has announced for RSS support. Microsoft also has its emerging [Windows Live](#) and [Office Live](#) services that provide another channel for such capabilities to be delivered, and its recent acquisition of [Onfolio](#) is specifically targeted toward Windows Live (as part of the Windows Live Toolbar). Thus far, however, Microsoft has not indicated any moves regarding tags, social bookmarking, and social networking within traditional product groups (although it has some [research efforts](#) under way). IBM has been more demonstrative, showing prototypes of [dogear](#), a tagging and social bookmarking service that it has already deployed internally. However, there is no guarantee that such projects will result in IBM products. Even if such products were created, they are unlikely to appear within the next 12 months. If enterprise interest gains visible traction, it is likely that superplatform vendors would buy their way into the market and offer such solutions as a hosted service.

Scenario 4: Social Software Bust

Premise: Social software within the enterprise remains very niche- and consumer-oriented.

It is possible that social software technologies will not find broad management support within enterprise environments. Business leaders may find them inappropriate or not well aligned with strategic goals. IT executives might prefer to leverage existing communication, collaboration, and ECM infrastructure that will likely provide “good enough” alternatives. Integration concerns (e.g., security and identity) could forestall specialized social software outside niche internal applications or targeting of external community building (as Edmunds did with CarSpace).

Futures: Social Software Crystal Ball

In the short run, Scenario 1 (consumer-oriented vendors offering enterprise-level solutions) is the most likely to happen over the next twelve months. It has a low barrier to entry in terms of vendors extending existing capabilities. Consolidation in the social software space within the consumer market is likely to encourage exploration on the part of vendors to pursue other revenue streams, including business from large enterprises. An interesting derivative of this approach is a federated model in which multiple companies that are related in some manner agree to create a single namespace for collective tag and bookmark information. This model would include a larger number of users and would focus on multiple information spaces related to common business and research activities (e.g., those of an enterprise and its customers, partners, and suppliers). The result would involve increased security, privacy, and intellectual property concerns but could be worthwhile under certain circumstances.

Scenario 2 (best-of-breed enterprise software vendors emerge) will have mixed results. Burton Group does not believe that ECM vendors have enough credibility to establish themselves in the social software space. Also, because mass adoption is needed, the price point of ECM products inhibits broad, horizontal deployment within enterprises. Best-of-breed search tool vendors have traditionally not been able to execute well outside core competencies. Although they are more credible than ECM vendors when it comes to social software, the end-to-end solution would demand integration with browsers, developer tools, and some type of storage back end for tag information that might include copies of information being bookmarked (as is done with services such as [Furl](#)). These are areas in which search tool vendors are not likely to execute well. In addition, search tool vendors have not championed the folksonomy theme, given their investment in more formal and structured taxonomies. A social-networking direction would take search- and content-related vendors further astray (although Entopia has made some effort in this area). These vendors do have opportunities to complement social software technologies (e.g., those from IBM or Microsoft) but will fail to deliver the complete framework. Pure-play vendors present an even higher risk, given that the market is very unsettled and not well defined in terms of business models. These vendors might not survive at all. Within this scenario, only the open source option remains viable, especially for enterprises already inclined to take ownership of such endeavors if they exist as open source projects (e.g., use of Scuttle). Social-networking software will remain a niche technology over the next two years.

Scenario 3 (superplatform vendors generalize social software) is the most likely to last over the long run (but nothing is likely to appear in terms of product for another 12 to 24 months). Burton Group believes that Microsoft and IBM will include social software functionality as the natural progression and maturation of their respective superplatforms. Both are already active when it comes to blogs, wikis, and RSS. Tagging and bookmarking capabilities are a natural outgrowth of their social software directions. IBM will likely deliver its dogear bookmark application in some form over the next 12 to 18 months. Burton Group believes that IBM will execute more effectively than Microsoft when it comes to social networking by leveraging its business consulting practice (e.g., interviews, surveys, and visualization tools that map social networks) and exploiting internal tools such as “Fringe” (a directory crawler that looks for relationships and associations across people) and dogear. Microsoft will likely deliver more generalized software as part of Office 12 and SharePoint Portal as demonstrated at its “People Ready” event in New York City (March 16, 2006). However, it will need to rely on partners to build out the necessary professional services.

Scenario 4 (social software bust) is unlikely, although consolidation will occur over time through acquisition and generalization of the technology by numerous vendors. Social bookmarking pioneer del.icio.us (now part of Yahoo!) continues to see [growth in its number of posts](#). Blog use [also continues to grow](#), although abandonment rates reinforce the need for strategists to prioritize organizational aspects of enterprise adoption efforts. [Technorati](#) stats provide insights about the increased reliance on tags for finding and filtering blogs. Social-networking sites also continue to grow at solid rates. During a keynote address by Bill Gates at a recent Microsoft conference, Aber Whitcom of MySpace provided some site statistics:

- 65 million registered members
- 260,000 members added each day
- 38 million unique views (in February 2006)
- 23 billion page views (in February 2006)
- #2 site in terms of traffic on the Internet, passing Google, eBay, and MSN (per media metrics)²

The replay of the keynote address can be found [here](#) (Whitcom speaks about MySpace 27 minutes into the webcast).

Recommendations

Despite its emergent nature and first generation of products and services, social software represents a tremendous opportunity for enterprises to improve communication, information sharing, and collaboration. This section provides recommendations for enterprises seeking to exploit such prospects in a manner that best supports goals for improving (and sustaining) business performance, growth, and innovation.

Put Social Software on the Emerging Technology Watch List

Social software is an umbrella term applied to several different technologies. While vendor and open source support for some areas (e.g., blogs and wikis) continues to mature in the market (with offerings from vendors such as IBM, iUpload, Microsoft, Open Text, Six Apart, Traction Software, and likely others, including Vignette), options regarding other technology areas (e.g., tags and social bookmarking services) remain embryonic in terms of enterprise readiness. The dynamic nature of consumer market trends, evolving business models of existing market players, and fluctuations in usage patterns warrants a pragmatic perspective on social software by enterprises that are not early adopters of technology. These enterprises should include a select few of these technologies to track within emerging technology teams (using vendor briefings, interviews with other adopters, discussions with open source developers, and construction of prototype applications). There should also be a competitive intelligence angle pursued here as well, allowing enterprises to look for other enterprises that deploy such tools externally (as part of CRM efforts, perhaps) or internally. Enterprises should establish a feedback loop regarding social software as part of normal business and IT planning cycles to ensure that maturity assessments or other insights regarding any advancement in social software are included.

Determine Business Opportunities and Risks from Social Software

Two dimensions must be considered when examining value and risk associated with social software: external applications and internal applications. It is entirely feasible that pursuit of solutions based on social software (including partnerships with consumer-oriented services) will target external applications exposed to customers, partners, or suppliers. Establishing communities around products and services has been a well-known method of building brand loyalty, establishing exit barriers, and facilitating viral marketing through self-emergent customer testimonials. Such communities can also be a source of innovation by soliciting consumer input, customer suggestions, and critiques. However, there is a risk that such action could occur organically (e.g., attention is brought to some product or service defect or political issue). This situation requires management of social software implementations—and monitoring of related consumer services—to become action items for public relations, marketing, and related community outreach departments.

Internally, strategists should examine business processes and ongoing community-building activities to identify any possible application scenarios that can be used to build a business case. Some general examples include:

- **Sales:** Social-networking tools may provide a better introduction mechanism for accounts with higher conversion rates than cold calls can.
- **Marketing:** Tag clouds derived from an external social software application could provide a dashboard-like look into ongoing and timed patterns based on member tags and bookmarks.
- **Customer service:** Tagging of telephone or e-mail interactions by call center representatives could provide interesting commentary at a collective level (e.g., “possible_recall,” “product-defect,” “ConfusingInstructions”).
- **Competitive intelligence gathering:** Social bookmarking services can target a specific information space (e.g., competitor activities or ways people use a particular product).
- **Information management:** Folksonomy efforts could result in taxonomies that are more precise (e.g., integration with search engines) as well as more responsive to change by picking up on new terminology and providing users with a sense of participation and ownership.
- **Organizational development:** Tracking tags and bookmarks over time can reveal trends (e.g., using a Nielsen-like rating system) of what people are reading and what they find important, thus providing learning strategists and HR decision makers with insights into the types of training, seminars, or other topics that might

be of interest or skills/competencies to focus on. (For example, IT development personnel may be interested in Asynchronous JavaScript and XML [AJAX] or Ruby on Rails, which might also appeal to educational teams.)

Prepare a Governance Plan

Governance of social software may be more important than governance of other technologies because it will likely be done in parallel with other transformation efforts that result in releasing control from bureaucratic institutions, management hierarchies, and decision-making structures. As a result, not only will such programs require senior-management sponsorship, but they will also need grassroots steering committees and cross-functional teams to ensure that key issues (e.g., tag vocabulary) are handled properly. Given the untested nature of the technology, clear requirements may not be likely, which will limit traditional metrics for success. Other measures need to be fashioned (e.g., external metrics might include volume data and trend analysis on tagging and bookmarking).

Management and project sponsors should not be surprised that social software will create some overhead (e.g., administration) activities. Any new roles and responsibilities must be clearly defined, with responsible users and management made accountable. Social software efforts will likely result in several projects—some run concurrently while others are staged over time. There will likely be a need for some type of program structure and process for funding, training, communication, and knowledge transfer from project to project.

Adopt Social Software Tenets Within KM Programs

KM has garnered success in the area of community building (e.g., communities of practice). KM teams associated with these efforts have understood that although the content was an important piece of the puzzle, equal importance had to be placed on the people and relationship aspects of the ways groups share insights. This process introduced collaboration strategies into sets of methods and practices applied by KM teams. The focus on informality, group interaction, trust, reciprocity, reputation, conversation, and storytelling (i.e., using communities and networks) is also the point at which social software can help address challenges faced by KM teams and can offer a different set of tactics complementary to historical KM best practices. Designers and developers should adopt and apply the attributes used in this overview to describe social software and to help guide possible application scenarios. Other best practices for introducing socially oriented applications include:

- Garnering executive and management support
- Defining what social software means to the enterprise (e.g., changes expected, outcomes produced, and expectations set) in terms that can be aligned with business strategies (e.g., competitive intelligence gathering, organizational development, research and development, and customer satisfaction)
- Identifying which new skills, competencies, and talents might be needed to better understand the implications of social capital and socially oriented applications (e.g., including a social architect in IT groups who might have a background in anthropology, ethnography, psychology, or sociology as well as technology)
- Building leadership, commitment, and community at all levels
- Encouraging grassroots adoption and local ownership (within enterprise governance and change-management frameworks)
- Facilitating self-emergent leadership (e.g., evangelists) and fostering cooperative training of staff by peers
- Building on success (i.e., identifying what worked) and understanding failures (i.e., learning from mistakes)
- Looking for metrics that can be used for future efforts and can build the business case iteratively over time
- Ensuring that roles, responsibilities, and accountabilities are defined—especially those activities that are viewed as overhead but are essential aspects of lifecycle management (e.g., tag vocabulary and folksonomies)
- Including human capital management practices as a critical component of any effort to ensure that participation is encouraged and recognized through employee/supervisor assessment programs

Pilot and Learn from Success and Failure

Initial forays into socially oriented applications are likely to have a mixed record of success and failure. Project teams should talk beforehand about the post-mortem questions and issues that will need to be addressed so they can gather that information as the project progresses. Measures for success are likely to be intangible, so qualitative targets are likely to be satisfied by a mix of data points (e.g., user satisfaction, demand for access beyond the pilot group, adoption rates, usage levels, and tag/bookmark volumes). Failure should not diminish enthusiasm and continued exploration into ways these tools can be best applied. Root-cause analysis might reveal a range of issues such as user training, technology gaps (e.g., problems integrating browser plug-ins), tag vocabulary issues, or privacy concerns (e.g., social networks). Socially oriented applications can also point to gaps in other applications or can function as leading indicators for subsequent applications implemented in a more traditional manner.

Determine the Readiness and Maturity of Standards

There are many unknowns or poorly documented aspects concerning design and implementation of the technologies covered in this overview (i.e., how things really work under the covers). There is not a lot of [public information regarding the ways schemas and databases are implemented](#) for tags and social bookmarking services. Neither is there much information available on corresponding metamodels and metadata models for these tools. The absence of public information or best practices is an argument in favor of IT groups experimenting with open source versions as an educational experience and assessing technical underpinnings to ensure effective design, performance, and scalability. Application programming interfaces are also not likely to be well defined or preserved in system updates because many of these services are still evolving. Related standards activities (e.g., the Resource Description Framework [\[RDF\]](#) and the Outline Processor Markup Language [\[OPML\]](#)) and their impact on tags and bookmarking services also need to be considered.

Other dependencies, such as browser plug-ins, need to be considered when evaluating products or services. There are a variety of usability and functionality requirements to be defined (e.g., ease with which objects are tagged, ability to suggest tags, means to control vocabulary, and ability for bookmarks to be public, defined only for certain groups, or kept private) in addition to issues of integration with other infrastructure (e.g., implementing security and identity management). Multiple standards efforts are ongoing with no clear-cut consensus. Some groups favor the [rel-tag microformat](#) that is being used by Technorati, while others prefer that [i-tags](#) be used instead because they [can be represented using Extensible Resource Identifier \(XRI\)](#) as well (see [the Organization for the Advancement of Structured Information Standards \[OASIS\] XRI page](#) for more information). Recently, work on a microformat called [xFolk](#) has also gained attention for publishing collections of bookmarks.

On the other hand, social-networking software is already available for enterprises from a few vendors (e.g., Contact Networks, Spoke, and Visible Path), although it is also governed by few standards. On the consumer side of the market, the “Friend of a Friend” ([FOAF](#)) project has attempted to define a machine-readable format for expressing metadata and relationships among people. The effort is somewhat dubious because people are typically reluctant to express negative perceptions about someone that would be codified into a system. There are, however, technical issues regarding security, identity, and privacy concerns from these applications. Also, internally, most products or services have some relevancy engine that ranks relationship strength among nodes in the network based on evidence gathered by crawling e-mail, document repositories, and so forth. IT groups should closely scrutinize these capabilities for breadth of connectors supported and the overhead and complexity associated with crawling numerous information sources.

Complement Existing Communication, Collaboration, and ECM Infrastructures

Enterprises have made large-scale commitments to collaboration platforms from IBM and Microsoft as well as investments in other areas such as search functionality and ECM. Tactical and short-run decisions, especially concerning intranet deployments, should consider the eventual delivery of similar tools from existing vendors that would reduce technology costs, complexity, or overlap. Vendors such as consumer-oriented providers offering enterprise “software as a service” models or pure plays that are employed over the next 12 to 24 months are at risk of being discarded based on maturation of existing infrastructure. External applications are an exception; enterprises may choose to avoid investment in that type of infrastructure and may prefer to affiliate themselves with existing sites or partner with hosting providers.

Avoid Irrational Exuberance About Social Software

Decision makers also need to be on the lookout for projects selling social software as a cheap or easy fix for insufficient focus and discipline in other communication, collaboration, or ECM domains. Often, new tools are introduced without root-cause analysis of the reasons existing tools are insufficient or unable to support such functionality within a reasonable time frame. However, this is an undeniable opportunity to highlight emerging trends that are leading indicators of capabilities that ultimately will be delivered by mainstream vendors. This is not meant to throw down the gauntlet for introduction of emerging technology; rather, it is advice to approach social software as part of a pragmatic and reflective self-analysis to identify current patterns of underutilization and the reasons why benefits from existing investments are not being fully realized. In some cases, such discussions will lead to support for revisiting current implementations, design techniques, user surveys to uncover previously missed (or ignored) gaps, and so forth. In other situations, valid opportunities will be identified for social software implementation. A balanced approach can help alleviate political unrest because champions of currently entrenched tools may be somewhat disarmed, opposing or sabotaging efforts when a clear-cut gap and opportunity to support business needs is presented.

To engender success, many activities regarding management of tags and bookmarks (e.g., alignment between taxonomies and folksonomies, tag vocabulary, and tag standards) and organizational issues (e.g., scale of participation) need to be defined, and processes must be established along with change management practices. Discussions about tags and social bookmarking services are an excellent segue into a recommended conversation enterprises should have regarding information-management and community-building strategies.

Specific social-networking products in the market have only proved themselves credible in sales-related activities. Technology infrastructure associated with these applications does not have a track record of success (e.g., unmet expectations from expertise location vendors). Discussions about “who knows what” as a rallying cry for use of social networking is a perfect pretext for conversations regarding a lack of information sharing or reasons for not sharing information (e.g., incentives, employee competition, or hoarding). Social networking is more likely to become a professional services engagement first with subsequent recommendations that could include a range of technology, including social software and perhaps situational use of specific social-networking tools.

Close examination of the underlying technology of social software is a compulsory exercise for IT groups. It ensures awareness of underlying metamodel, metadata, and application interfaces important to developers. It also provides evaluators with the chance to identify any dependencies (e.g., browser plug-ins), integration requirements, and operational readiness issues.

The Details

The “Introduction to Social Software” section of this overview provides information on social computing trends and definitions.

The “Technology Aspects of Social Software” section of this overview examines specific subset of tools, online services, and software technology.

Introduction to Social Software

Although many people may consider social software tools and services as something new and unique, social software is not without historical context. Indeed, social concepts related to group communication, information sharing, and collaboration actually date back many decades:

- In 1945, [Vannevar Bush](#)'s essay entitled “[As We May Think](#)” (published in *The Atlantic Monthly*) established concepts that ultimately took shape as personal computers.
- In 1962, Douglas Engelbart brought forth the concept of “augmentation” in an essay entitled “[Augmenting Human Intellect: A Conceptual Framework](#)” (published while Engelbart was at Stanford Research Institute). These ideas were reflected in a hypertext system called the oNLine System (NLS).
- In 1963, [Ted Nelson](#) coined the term “hypertext,” and he also introduced other terms over time (e.g., hypermedia, transclusion, and virtuality). His vision of a “[docuverse](#)” later took shape as the [World Wide Web](#).
- In 1968, Dr. J.C.R. Licklider's article entitled “The Computer as a Communication Device” (published in *Science and Technology*) discussed the value of “critical mass” regarding communication, networks, and cooperation. The importance of critical mass and network effects was later reinforced by Robert Metcalf in a 1993 article published in *Forbes ASAP*, where he posited that the value of a network increases in proportion to the square of the number of nodes on the network.
- Additional opinions about the origins of social software can be found on the webpage “[Tracing the Evolution of Social Software](#)” and in Wikipedia's [social software](#) entry.

There are numerous other important events in the timeline of communication and collaboration software related to groupware (e.g., IBM Lotus Notes/Domino) that also form an important technology baseline and historical context for understanding the roots of social software. (For more information, see the *Collaboration and Content Strategies* overview, “[Virtual Workspaces: Hubs for Activity-Centric Collaboration](#).”)

May You Live in Interesting Times

Paralleling the emergence of social software has been the melding of consumer electronics with personal computing (for example, the Consumer Electronics Show [CES] has become a signpost for innovation in the PC market). Today, a plethora of consumer-focused devices and form factors is available to meet people's increasingly varied work, home, entertainment, travel, and lifestyle needs (e.g., iPods, personal digital assistants, camera cell phones, portable gaming devices, and global positioning system [GPS] units). The wall between a user's computing experience within and outside the workplace is rapidly crumbling. (Some would argue that the wall has already fallen within certain user demographics.) Increasingly, users have their own gadgets that are used universally across work and lifestyle activities. Although the capabilities offered by these devices are more personal and socially oriented, the always-on environment that increasingly surrounds users (given widespread pervasive connectivity options) makes it virtually impossible for workers to surrender them entirely in favor of traditional corporate-controlled alternatives.

The interplay of social software and the blurring of boundaries between work and lifestyle is an intriguing discussion topic in and of itself, but one additional trend makes for an even greater revelation. Emerging concepts such as “Web 2.0” and “mashups” (e.g., [Frappr!](#)) have also gained traction within the consumer market. Evangelized by technology early adopters, the hype has spurred a new wave of dot-com startups and has persuaded some industry experts to portray these technologies as representing the future model for web-based applications. Such technologies reflect a trend toward mass amateurism (i.e., software with exposed interfaces that enable its capabilities to be recombined and extended in unimagined ways) that also has implications for understanding the viral aspects of social software trends.

Defining Social Software

The sections that follow define the characteristics of social software.

Designed to Be Recombinant

Social software should be designed not only to be personalized or customized within a known design framework (as is most traditional enterprise software) but also to be extended and recombined with other software services to produce usage scenarios (e.g., mashups) that were unforeseen by its original designers and contributors. For example, numerous applications that can be built on top of Google Maps have emerged.

Enables a Collective User Experience

Social software should be designed for groups. This means implementation of a design point that is not so singularly about an individual user experience (e.g., a design point common in transactional and pseudo-transactional applications) but one that is more concerned with the group as an entity in and of itself. (In terms of mindset, this setup is more similar to game designing, in which group participation and immersive interfaces are core tenets.) Social software design should also endeavor to represent social context (e.g., natural interaction and visual cues). In addition, the design should support some level of peripheral vision—that is, a quick glance at “something” should allow users to maintain situational awareness of group activity or determine whether their attention should be diverted.

Augments Informal Interaction

Social software should emphasize and amplify informal interaction. This does not preclude intensive use of applications by users; the design point should not attempt to simulate traditional applications that are data entry oriented, workflow driven, or overly formal in regard to role, user status, and privileges. Groups connected through social software are likely bonded by both strong and weak associations with many different topics and with interaction characterized by varying levels of shared interest. Participation may ebb and flow for a variety of reasons, so use of the social software is often non-deterministic. In this sense, social software provides cohesion between activity-based collaboration (e.g., more formal workspaces that are likely to be outcome driven), communities (e.g., groups coming together coherently to share information and know-how about an interest or practice), and networks (e.g., loosely coupled connections among people based on a variety of interests, associations, or relationships).

Aggregates Information from Community-Influenced Network

Social software should promote the exchange of perspectives (ranging from opinions to actual know-how) among community-influenced networks. Some community structures are formal and visible to an enterprise (e.g., a community of practice), but many remain invisible and are more socially oriented and loosely coupled (e.g., personal networks and professional relationships). These silent networks are important to those within them, but existence of these networks is often not public and information from these exchanges is rarely captured or leveraged outside its participants (often due to privacy concerns). Social software should provide trust-based connection mechanisms that integrate such associations and relationships.

Social software should also look at ways to aggregate metadata and information that is casually produced through informal interaction and community-influenced participation. There are plenty of ways for people to classify and share information on a formal and structured basis; there is no need for social software to implement a better taxonomy, document-management, workflow-management, or e-mail system. Instead, the design should complement these systems and enable a more natural capture and categorization of information on a mass basis. Community interaction and influence (whether explicit or inferred) should help determine the ways relationships and information are connected, organized, and visualized (i.e., a more organic and bottom-up approach). This reinforces the focus of social software on the choreography that occurs within and across groups rather than on the specific types of tools being used.

Spans Work and Lifestyle

Social software should presuppose that users will utilize an ensemble of devices that they individually acquire as well as those that are provisioned to them by the enterprise. Social software should not be constrained to online-to-online interaction but should also facilitate offline engagement. Social software should not assume artificial boundaries around concepts of “workplaces” (the domain of traditional enterprise software) as a design point. These constraints should remain external parameters that could govern social software behavior. Social software should assume pervasive connectivity but also accommodate disconnected and/or offline usage scenarios. The key point of considering work and lifestyle issues is to encourage thinking about social software as having a role in mediating face-to-face engagement as well as online interaction, and to acknowledge the important role of devices, form factors, and networking. In some social software use-case scenarios, social value might be derived from wearable computers (e.g., [nTAG](#)) that facilitate face-to-face personal gatherings. The focus should not always be on the Internet.

Technology Aspects of Social Software

Defining the attributes of social software is not meant to avoid discussion of technologies that have emerged under the umbrella of social software. One could credibly argue that many of the technologies related to content, collaboration, and communication have socially oriented attributes (e.g., e-mail, instant messaging, discussion forums, search tools, and virtual workspaces). The primary difference between existing enterprise tools and tools being labeled as social software are social software's non-enterprise roots and its focus on socially oriented applications. Social software is a consumer market phenomenon that has the promise of enterprise applicability but remains an area where enterprise strategists and decision makers still grapple with defining a business case, governance, application scenarios, risk management, technology maturity, and expectations for return on investment (ROI). Indeed, as social software becomes mainstreamed over time and subsumed into enterprise software platforms, it becomes more of a “how” than a “what” in terms of its context and applied use as both product and technology. Arguably, blogs are crossing that chasm now as traditional vendors such as IBM, Microsoft, Open Text, and Stellent, and eventually others such as Vignette, move to support blog technology as part of their core offerings.

Tags, Social Bookmarks, and Folksonomies

Attempts to classify bodies of information have a long history. The [Dewey Decimal System](#) used for library classification was developed in 1876. The key concept in its approach was an emphasis on hierarchy and individual facets (in which groups of information elements could be assigned to multiple classifications). Supporting multiple facets enabled information to be reused in other areas and also enabled users to discover the same information from different paths. For instance, collaboration software might be classified by vendor (e.g., IBM or Microsoft), by type (e.g., real-time, workspace, or messaging), by market (e.g., North America), by audience (e.g., consumer, large enterprise, or small business), and by architecture (e.g., client-server or n-tier). Users could find information on “Lotus Notes” by traversing any one of these facets.

Other approaches have emphasized semantics over hierarchy. Ontology is a conceptual model of a domain, its relationships, and its constraints defined in a formal vocabulary. Discussions on the topic of ontology and its implications for enterprises often arise when strategists examine trends regarding the [Semantic Web](#) (e.g., use of Web Ontology Language [[OWL](#)] or the Resource Description Framework [[RDF](#)]). One of the promises of this approach is to reach a new level of automating semantic interpretation of the information available on the Internet that enables better integration and cooperation between people and computer systems (i.e., by having a language capable of being machine interpretable). Within most enterprises, ontology remains something that is still taking shape for general use, but there are situational or vertical instances in which it has garnered success (e.g., scientific and government-related endeavors).

For enterprises, hierarchical classifications have been broadly adopted under the generally accepted term “taxonomy.” Driven mostly by information- and knowledge-management efforts, enterprises have turned to taxonomies to help categorize, organize, navigate, and search a continuously growing amount of unstructured information across many different sources and intranet sites (e.g., webpages, documents, spreadsheets, and presentations). Leading providers of search technology include [Autonomy](#) (which recently acquired Verity), [Convera](#), [Endeca Technologies](#), [FAST](#), [IBM](#), and [Microsoft](#).

A common attribute across these approaches has been the reliance on a formal (typically top-down) and structured method that is heavily influenced by authors, subject-matter experts, or other information specialists. Enterprises have attempted to solve bottlenecks associated with this labor-intensive approach by throwing search technology at the problem. The hope has been that search tool vendors could deliver software that would intelligently classify content through a variety of techniques (e.g., metadata analysis, clustering, pattern matching, categorization, and syntactic analysis) that minimized human intervention. Although there has been success and search technology continues to improve, most enterprises still struggle with efforts to construct some type of taxonomy that satisfies enterprise information- and knowledge-management needs.

The Power of the Tag

Reliance on authors, subject-matter experts, and other professionals (e.g., librarians) inherently creates scale and responsiveness problems. The solution, from a social software perspective, is to informally expand the community of participants involved in associating metadata with pieces of information in a manner that is not intrusive and in which the system reciprocates value to the community as compensation for taking the time to assign attributes. Two websites, [del.icio.us](#) (acquired by Yahoo! in December 2005) and [Flickr](#) (acquired by Yahoo! in March 2005), emerged on the Internet and consumer market in late 2003 and early 2004, respectively. Both are generally considered to represent inflection points regarding informal information classification accomplished via tagging. Tagging is not new—keywords, metadata, and other properties have been assigned as attributes to information artifacts for quite some time (e.g., as part of office productivity suites and document management systems). What distinguishes these services from earlier attempts is the ability of users to take advantage of free-form tagging to assign their own terminology to information (e.g., using websites and blogs) in the manner that best suits them. For example, users can employ social bookmarking using [del.icio.us](#) as a means to organize sites for personal use or for sharing with others. Photographs can be tagged and shared using Flickr. Tags themselves can be defined in any form (e.g., “SocialSoftware,” “Social-Software,” “socialsoftware,” or “social_software”) and are limited only by the tools the individual service supports. In this sense, tags and tagging support a flat-space model without imposing notions of structure, order, relationship, and hierarchy.

Bookmarks Become Socially Acceptable

Publishing bookmarks on a central website for personal reference and access from other computers is also not new. What initially distinguished del.icio.us was its ability to aggregate and share bookmark information and tags on a mass scale. Because there was reciprocal value to the community, tags and tagging became a social exercise in addition to something individual users did to satisfy personal information-management needs. Users gained a sense of which tags were historically popular across a large network of users and insight into which tags were popular. Sites often suggested tags or related tags to users as they selected pages—adoption of Asynchronous JavaScript and XML (AJAX)-style user interfaces helped usability in this regard. Tagging became a metric for gauging intensity levels of certain information, derived by the volume and velocity of tags being added to a service. Tags also become breadcrumbs that connected people who shared similar interests. In this sense, tags and tagging enabled ad hoc network discovery and community building for users of related services.

Tags and Bookmarks in Action

Tags are not overly intrusive in the surfing style of users. Once a user registers and creates an account with a service (e.g., del.icio.us), components are added to the browser so that information can be easily tagged. Figure 1 shows a screen shot of a popular knowledge management (KM) site, BabsonKnowledge.org. Users can simply click the “post” option for del.icio.us to launch a page on which they can appropriately tag the site (see Figure 2) and build a shareable list of sites associated with KM (see Figure 3).

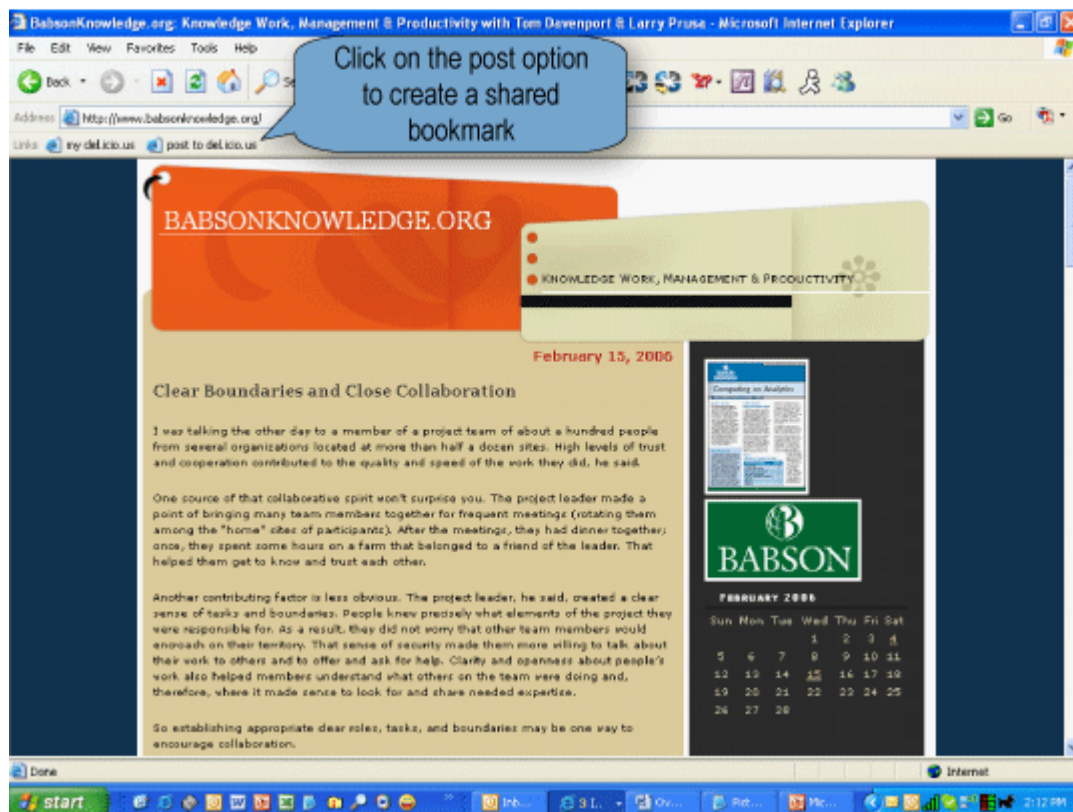


Figure 1: An Interesting Site

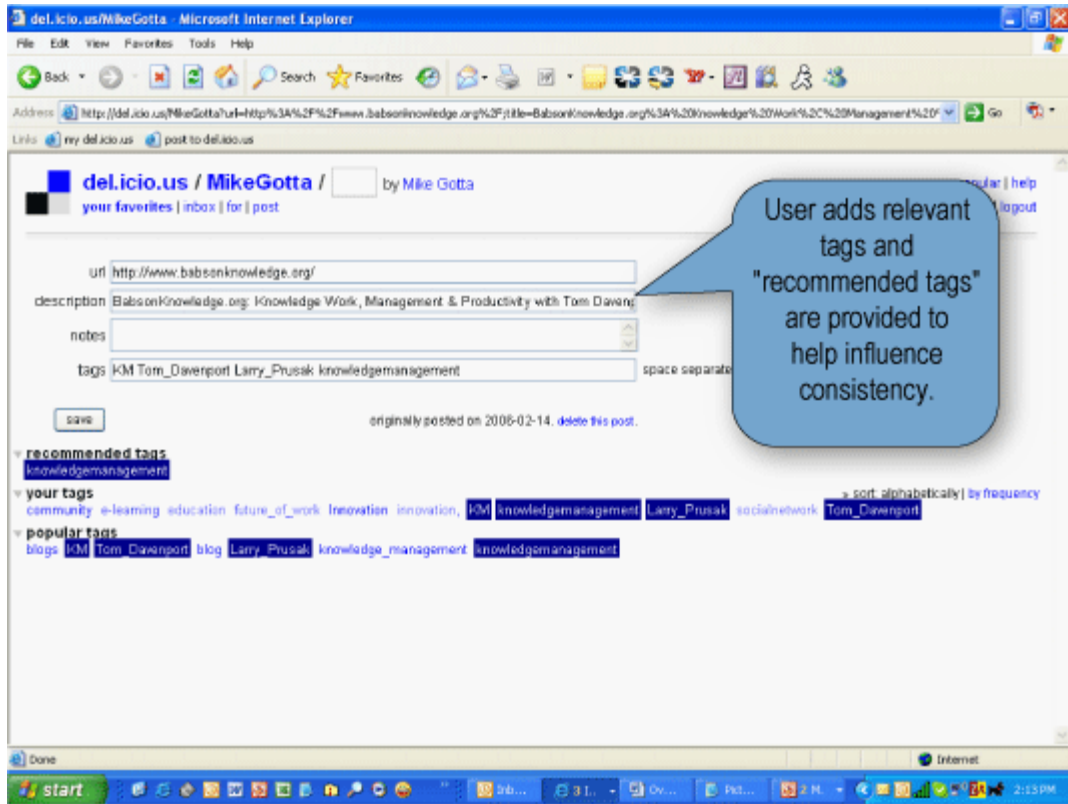


Figure 2: Tagging the Information

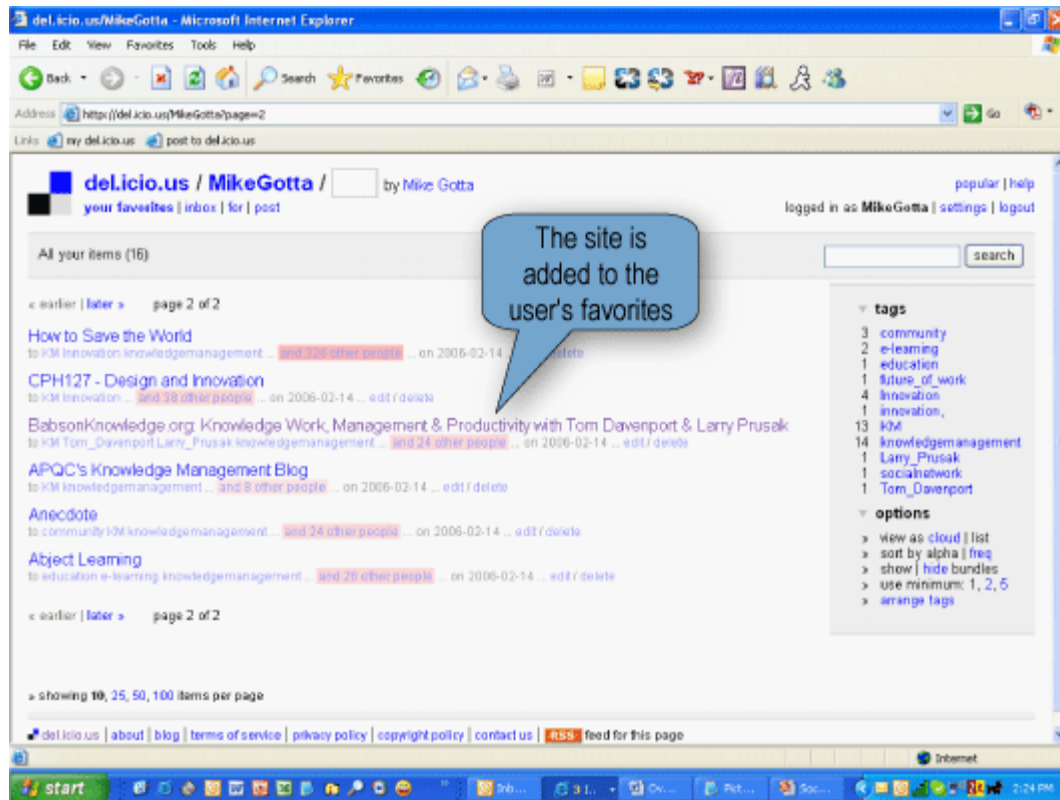


Figure 3: Creating a Shared Set of Tags for KM Resources

Clustering Tags

Flickr enables users to assign tags and notes to photos and to define private/public groups and sets (i.e., creating photo albums). Similar to del.icio.us, Flickr engenders a strong community and social-networking aspect. The need to better portray a large body of metadata (i.e., tags) gave rise to [tag clouds](#), a visualization of a weighted list in which clusters of tags are displayed using varying levels of size and boldface type to simulate different areas of emphasis (e.g., volume or intensity). Figure 4 depicts two types of tag clouds. These visual representations provide peripheral vision to the network of users that belong to tagging services and also act as a call to action for users involved in any community of interest related to such topics. Clicking any of the tags typically results in a link that brings the user to another area on the website where related information is displayed, based on information associated with that particular tag. Another method used by sites is clicking an element within a tag cloud to launch a query that displays a list of related sites and information.

Hot tags

In the last 24 hours

[quintaflower](#), [fonepix](#), [daphne](#), [wednesday](#), [ragdoll](#), [fermidaily](#),
[fowl](#), [week29](#), [findleastinteresting](#), [minasgerais](#), [lombardia](#), [week6](#), [photomatix](#), [birdsinsportugal](#), [bigsky](#),
[bumaby](#), [through](#), [algae](#), [filters](#), [vermelho](#)

Over the last week

[northernvoice2006](#), [february12](#), [kriskrug](#), [pillowfightsf](#), [moosecampmovie](#),
[capitaluxfeb122006](#), [kreweduvieux](#), [tcf2006](#), [blizzard2006](#), [blizzard06](#), [noreaster](#), [ficktums2](#),
[nycblizzard](#), [northernvoice](#), [blizzardof06](#), [wondercon](#), [blizzardo2006](#), [moosecamp](#), [pillowfightclub](#)

All time most popular tags



Figure 4: Flickr Tag Cloud

Folks + Taxonomy = Folksonomy

The cooperative and recursive nature of tagging, tag aggregation, and tag clouds exemplified by del.icio.us and Flickr resulted in the rise of another term now commonly used to describe this informal, community-influenced classification phenomenon: “[folksonomy](#).” It is a term generally credited to [Thomas Vander Wal](#). Although the term is increasingly becoming adopted, there is no perfect definition established for it nor is there any clear representation of what a folksonomy actually looks like. It is, however, broadly mentioned in the context of tags, tagging, tag clouds, and specific implementations (e.g., social bookmarking services). A tag represents metadata a user has associated with information objects in an informal manner. Social bookmarking services represent the aggregation mechanism that enables discovery, grouping, and analysis across tags, information objects, and “taggers” (i.e., users who assigned the tag) to derive relationships, patterns, and even ranking. Burton Group believes the term “folksonomy” is a more appropriate label to describe not just the output (e.g., representation by a tag cloud) but also the end-to-end set of user and system activities that occur (e.g., tags, tagging, aggregation, analysis, and visualization) as well as the unseen, but related, lifecycle management process (e.g., taxonomy alignment, reducing tag duplication, and administration).

Using Tags to Sort Out the Blogosph

Tags are commonly associated with social bookmarking services, but tags and tagging have other application scenarios as well. [Technorati](#) is an example of a search and tag aggregation service that concentrates on the [blogosphere](#). One of the last acts a user undertakes before posting a blog entry is to assign information that helps categorize the entry. Technorati can automatically classify blogs based on the tags that bloggers assign most often to categorize their postings. Users sign up to be members of the Technorati service or add code to their blog sites to have them included within Technorati’s search and aggregation process. The aggregation of tags enables the service to identify interesting patterns (e.g., [hot topics](#)) and link to the source of information that people are tagging about (e.g., a news article on the CNN website or an editorial in the *Washington Post* or *New York Times*). Aggregation also enables people to search for blogs that cover a particular topic based on associated tags (e.g., [knowledge management](#)). What is interesting here is that the search results include a series of “related tags” (e.g., technology, innovation, and collaboration) that allow users to dive deeper into related fields of interest. As with other types of tag aggregation services, the need to visualize activity is also important. Figures 5 and 6 illustrate Technorati’s ability to create tag clouds based on tagging activity.

Top 100 Tags from A to Z
 (All Languages)

Actualités... **Algemeen...** **Allgemein...** **Apple...** **Art...** **Articles...** **Blog...**
Blogging... **Blogs...** **book...** **BOOKS...** **Business...** **Computers...** **Computers**
and Internet... **Culture...** **Current Affairs...** **daily...** **Daily Life...** **days...**
Design... **Diary...** **Divertissement...** **empty...** **Entertainment...**
Entretenimento... **Entretenimiento...** **events...** **Family...** **Film...** **Food...**
Food and Drink... **Friends...** **Fun...** **Funny...** **Game...** **Games...** **Google...**
Health... **Health and wellness...** **hobbies...** **Humor...** **Informática e**
Internet... **Internet...** **Iraq...** **Journal...** **libros...** **Life...** **Links...** **Linux...** **Love...**
Música... **Mac...** **Marketing...** **Media...** **Misc...** **miscellaneous...** **MobLog...**
Movie... **Movies...** **Music...** **Musica...** **Musique...** **My Life...** **News...** **News**
and politics... **Noticias...** **Organizations...** **Pasatiempos...** **Passatempos...**
Personal... **photo...** **Photography...** **Photos...** **Podcast...** **Podcasts...** **Poetry...**
Politics... **random...** **Rants...** **Religion...** **Reviews...** **RO...** **School...** **Science...**
software... **Sport...** **Sports...** **stuff...** **Tech...** **technology...** **Television...**
thoughts... **Travel...** **TV...** **Video...** **Web...** **Weblog...** **Weblogs...**
wordpress... **Work...**

Figure 5: *Historical View of Tags*

Hot Tags This Hour

Ajax... Amore... **brrreeeport**... cartoon... **Cheney**... China... **Dick Cheney**... Flickr... Hunting... iPod... Iran... Islam... **Microsoft**... **Olympics**... Poesia... Politica... Republicans... technorati... **valentine**... Valentines... Valentines Day... Valentine\'s Day... web2.0... Yahoo...

Figure 6: Hourly View of Tags

The Tagging and Social Bookmarking Wave

Virtually all public use and media-covered applications of tagging, social bookmarks, and folksonomies reside in the consumer market. Table 1 illustrates a partial list of sites related to tagging and social bookmarking services. Although there are some open source options (e.g., Scuttle) and some options in terms of traditional on-premises software (e.g., NetInfo and OpenDocs), enterprises have few options.

Site	Description	Comments
BlinkList	Social bookmarking service	In contrast to services offered by del.icio.us , adds support for private links and watch lists and plans to add spaces for groups
Connotea	Social bookmarking service and personal library	Organizes references and bookmarks for researchers and clinicians (open source product that can be downloaded)
CiteULike	Social bookmarking service that automatically extracts citation information	Targets academics to help store and organize papers, sites, and other information; plug-in capability exists
del.icio.us	Social bookmarking service	Generally credited with sparking interest in the social bookmarking space
de.lirio.us	Social bookmarking service and enterprise tagging tool	Downloadable for intranet use
digg	Technology news site with combined controls for social bookmarking, blogging, RSS feeds, and editing	Social bookmarking is only one aspect of this hybrid site and service

Diigo	In beta as of April 2006	Social bookmarking service. Also supports posting of bookmarks to other services (e.g., del.icio.us, RawSugar, and Blinklist). Also supports annotation, search, and blog integration
Flickr	Photo management and sharing	Generally credited with sparking interest in the photo management space
FlipSkipper	RSS feed aggregator that uses a “river-of-news” style; FlipSkipper uses tags rather than folders to categorize individual feeds	An example of applying tags to categorize news feeds; the tag is the channel with multiple feeds merged together based on that tag relationship
Freetag	Tagging plug-in	Open source tagging module for PHP/MySQL applications
Furl	Social bookmarking service	Actually saves a copy of what is bookmarked (personal archive)
jamendo	Site through which artists distribute music under a Creative Commons license that enables members to download, remix, and share music	An example of tags being used to determine popularity of and to order music; tags help build community in addition to discovery and navigation
Jeteye	Online scrapbook service that supports bookmarking and tagging concepts	Enables users to create a “ jetpak ” (a bundle of links and notes)—tags are used to categorize jetpaks
Jots	Social bookmarking service	Supports sharing of links at private, group, and public levels
Linkroll	Social bookmarking service	Modeled after del.icio.us
Ma.gnolia	Social bookmarking service	Modeled after del.icio.us; supports bookmarks, tags, and groups (communities that use bookmarks)
My Web 2.0 by Yahoo!	Social bookmarking service	Associated with Yahoo! 360°
NetInfo	Enterprise tagging tool	
Netvouz	Social bookmarking service	Modeled after del.icio.us
OpenDocs	Enterprise tagging tool	For intranet use
Otavo	Launched in May 2006	Users create intentions (called quests) that create a place where others can contribute bookmarks
Oyax	Social bookmarking service	Modeled after del.icio.us

RawSugar	Emphasizes a directory structure and topical navigation framework on top of tagging and bookmarking	Compare RawSugar services with those of del.icio.us
Rrove	In beta as of April 2006	Supports tagging of places. Members share locations. Can be linked to mapping, event, and photo sharing services
Scuttle	Social bookmarking service	Open source effort that enables intranet use
Simpv	Social bookmarking service	
Shadows	Social bookmarking service	Part of Pluck , a social media company
Stylehive	In alpha as of April 2006	A tagging and bookmark site aimed at creating a collaborative shopping community
Spurl.net	Social bookmarking service	Modeled after del.icio.us and Furl (archives personal copy of bookmarks)
TagFacts	Site that keeps track of notes	Tags help organize note taking

Table 1: Sites That Exploit Tags, Tagging, or Social Bookmarking

On the Enterprise Horizon

Both IBM and Microsoft have active research labs examining potential enterprise application scenarios for social software.

IBM

[Project dogear](#) is being used on IBM's intranet so the company can learn more about the ways social bookmarking can take hold within enterprise environments. Dogear enables users to traverse websites and [bookmark them](#). The bookmarks are then sent to dogear. Within a two- to three-month period in its trial use, more than 17,000 bookmarks were created. As of April 2006, there are over 75,000 bookmarks (many imported from del.icio.us). IBM links dogear to its identity management system, thus enabling users to ascertain additional information about individuals (e.g., role, profile, and interest areas). The data that dogear collects can be used to for analysis purposes to [identify interesting network patterns](#), which are valuable from KM, social-networking, and community-building perspectives.

Microsoft

Microsoft has not been as demonstrative in the area of social software as has IBM. Some media attention was given to [Wallop](#), but not much has been delivered from Microsoft's efforts to introduce product groups or ongoing online services (e.g., [Windows Live](#), [Office Live](#), or [MSN Spaces](#)). Still, within its research group, Microsoft has several efforts under way that could contribute to eventual social software products or services relating to tagging and social bookmarking services. [PHLAT](#) is a new interface that extends the [MSN Search Toolbar](#) and Windows Desktop Search. PHLAT supports customized tags that can be applied to e-mail, office documents, or other files. [FacetMap](#) is another project within the Microsoft Visualization and Interaction for Business and Entertainment (VIBE) research group. FacetMap is an interface for exploring large, metadata-rich data stores. Its functions are similar to concepts surrounding tag clouds and folksonomies but go much further. Recently, Microsoft acquired [Onfolio](#) as part of its Windows Live efforts. Onfolio supports tagging and bookmarking functionality. MSN also has a unified contact store capability that could provide Microsoft with interesting opportunities to build services that are “relationship aware.” Windows Live services could leverage customers' unified contact lists so that users have a central point to access and interact with all of their relationships.

Social Networks

Theories pertaining to analysis of social networks date back decades and involve many research domains (e.g., anthropology, psychology, sociology, and fields related to organizational behavior). To the average person, the phrase “six degrees of separation” is probably the most recognized term that describes the number of nodes (e.g., people), connections (e.g., some association or relationship contact), and intermediaries (e.g., a chain of nodes and connections) needed to connect everyone in the world with each other. Social network analysis (SNA)—sometimes referred to as network theory—has been a technique used by management consultants over the years to identify various organizational patterns of information flow, community interaction, and other types of interpersonal interaction, exchanges, and relationships.

These patterns often represent informal networks of associations that are invisible to management but have tremendous influence on how well formal institutional structures and practices operate. In the simple example in Figure 7, analysis of communication flows reveals that Rachael, Amy, and Lisa are in potentially powerful roles in terms of communicating “unofficially” across departmental boundaries. In enterprises that are top-down and weak in information sharing outside formal business units, these workers could have tremendous impact on cross-functional flow of expertise, feedback, and staff perspectives.

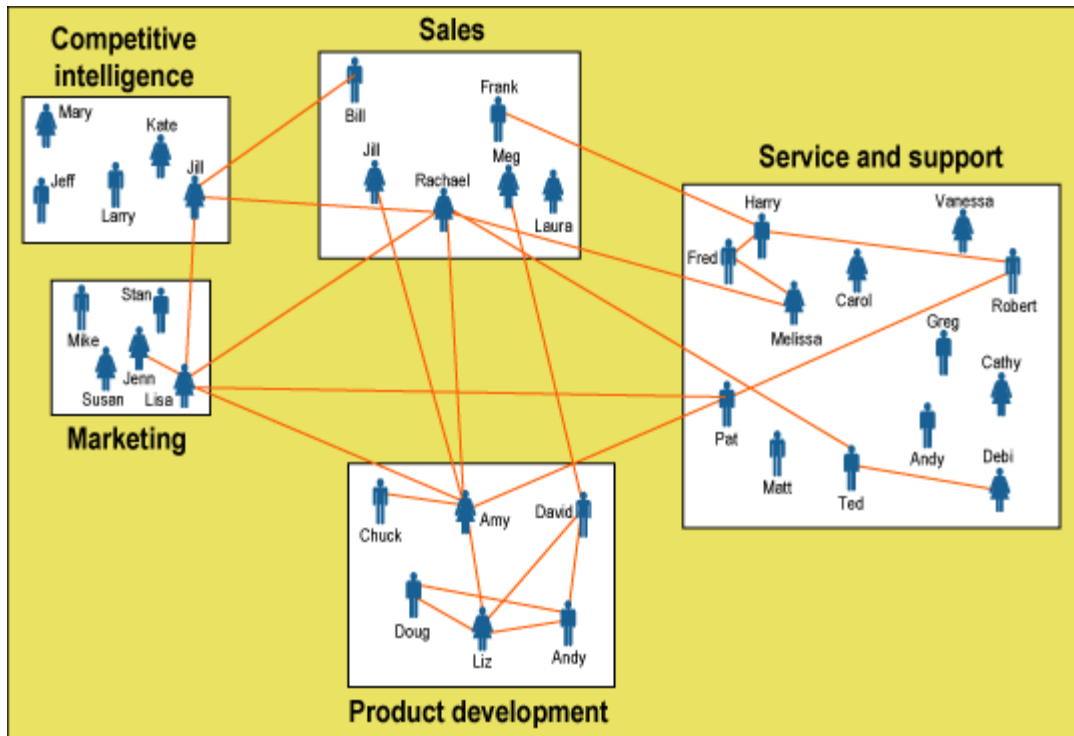


Figure 7: Social Network Based on Informal Communication Flows

Consumer-Oriented Social Networks

Over the past few years, online social-networking services have emerged within the consumer market, and their capabilities have been classified under the label of social software (refer to Table 2). In general, these services have four basic dimensions:

- **Account management:** Users join a service, create a profile (including elements such as interests, hobbies, and profession), set any related security and privacy settings, create their listing in the service (from which they can share information about themselves with the entire community or limit sharing to a private group), and manage their membership activities over time.
- **Community services:** Users join a network-centric community. There are typically many different information channels that allow users to learn about community news, events, offerings, discussions, and so forth.
- **Group services:** Many services also offer the ability for users to create smaller groups of people affiliated with a topic (e.g., a political or professional area), relationship circle, or other shared interest area.
- **Connection methods:** Social-networking services offer users a variety of ways to introduce themselves and to build their personal networks (e.g., through invitations, messages, alerts, searches, and tags). Some services also support trust mechanisms that allow users to gain credibility and recognition from their networks (e.g., through personal recommendations and endorsements). Many of these services are declarative, in the sense that people accept or decline explicit requests. Others are more loosely grouped by shared interests with no explicit connections needed between participants.

Finally, although these services are essentially free, many are becoming more focused (e.g., for job hunting or business opportunities) and increasingly offer advanced services that may require a paid subscription.

Social-networking service	Description	Comments
CollectiveX	Not publicly available as of February 2006	Focused on private groups and enterprises of all sizes

Friendster	Founded in 2002	Focused on friends and community and social relationships
LinkedIn	Founded in 2003	Business-oriented (e.g., offering introductions, job hunting, and location of service professionals)
Meetup	Founded in 2002	Differentiated from online social networks in its focus as an organizational mechanism to connect people for face-to-face meetings on a wide spectrum of topics
orkut	Launched in 2004	Community-focused site run by Google as an invitation-only service (i.e., members need to be invited into the network by existing members)
Ryze	Launched in 2001	Emphasizes jobs, business, listings, real estate, items for sale, and events (including physical gatherings); highlights networks related to interest, profession, or location
tribe	Launched in 2003	Offers aspects similar to those of listing services (e.g., jobs, housing, and items for sale) as well as reviews (e.g., for cities, music, books, and services) but includes community services as well (e.g., friends and social relationships)

Table 2: *Online Social-Network Services*

Applying Social Networks to the Enterprise

As mentioned previously, much of what has transpired in the area of enterprise application of social-networking concepts and practices has been anchored in consulting engagements. From an automation perspective, there has been very little direct support outside peripheral tools (e.g., [social mapping software](#)). Historically, efforts involving expertise location (e.g., offerings from [AskMe](#) and [Tacit Software](#)) have had only marginal market success. Failure often was the result of mismanaged expectations, misalignment in terms of selecting the right use-case scenario (e.g., generalized KM vs. specific process improvement), or overlap with existing tools that were deemed “good enough.”

Previous social-networking tools analyzed multiple information sources (e.g., e-mail messages and document libraries) to derive expertise and provided various interfaces to broker subject matter experts and connect them with people who need a particular type of insight. Recently, a new wave of vendors has emerged that focuses less on “who knows what” and more on “who knows who” (which is the realm of social networking). Applications and services of these products have focused heavily on customer relationship management and sales-related processes (refer to Table 3).

Social-networking service	Description	Comments
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Contact Networks	Uncovers relationships based on employee contacts, e-mail patterns, and related information sources	Solutions include applications within banking and professional services
Spoke Software	Uncovers relationships based on employee contacts, e-mail patterns, and related information sources	Recent focus on lead generation from marketing programs
Visible Path	Uncovers relationships based on employee contacts, e-mail patterns, and related information sources	Has integrated with Hoover's

Table 3: *Enterprise Software for Social Networking*

Of note, at its “People Ready” event in New York City (March 16, 2006), [Microsoft demonstrated a social-networking capability](#) within SharePoint that expands its search functionality to show experts and the social distance that those experts are from the person doing the search.

One difference in approach between consumer- and enterprise-oriented tools is that enterprise software products (or services) include discovery mechanisms to filter a variety of information sources (similar to the way expertise systems filter). This allows enterprise software to look for contact data and analytical/relevancy engines to determine relationship strengths. Such functionality is included in contracts with consumer social networks that are more likely to rely on explicit connections. Some of this information crawling includes data collected on people within the social network that are outside the core enterprise (e.g., contacts from partners, affiliates, outside service providers, and suppliers), thus allowing for prioritizing of security and privacy controls within these solutions.

Conclusion

Enterprises are transforming themselves from structured hierarchies and internally focused institutions to bottom-up networks that connect teams and communities of employees, customers, partners, and suppliers. Social software offers opportunities to take advantage of informal interaction across these groups and to make it purposeful, thereby supporting the performance, growth, and innovation goals of most enterprises.

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