

The Role of Knowledge Management in Enterprise 2.0

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Abstract—The term Enterprise 2.0 (E2.0) describes a collection of organizational and IT practices that help organizations establish flexible work models, visible knowledge-sharing practices, and higher levels of community participation. E2.0 parallels and builds on another term commonly being used in the industry – Web 2.0. E2.0 represents also new packaging for strategic collaboration and Knowledge Management (KM). Organizations rely on collaboration and KM initiatives to attain innovation, growth, productivity, and performance goals

Keywords—Web 2.0, Enterprise 2.0, Knowledge management, knowledge planner, collaboration

I. INTRODUCTION

A simplified perception of Enterprise 2.0 – or E2.0 – is bringing Web 2.0 technologies into the office, but that is not entirely accurate. In part, E2.0 is a push toward integrating the social and collaborative tools of Web 2.0 into the office environment, but Enterprise 2.0 also represents a fundamental change in how businesses operate [1].

E2.0 is not something totally new – rather, it represents the evolution and maturation of best practices for collaboration and knowledge management (KM).

In the traditional corporate environment, information flows through an ordered path. Information is passed down the chain from the top to the bottom, and suggestions made from the bottom flow toward the top.

E2.0 changes this structured order and creates controlled chaos. In an Enterprise 2.0 structure, information flows laterally as well as up and down. It cuts the chains that hold back collaboration in a traditional office environment.

This is one reason why Enterprise 2.0 can be a tough sell to management. Order is a manager's best friend, so knowingly unleashing chaos runs counter to their instincts.

Value of E2.0 initiatives consists of greater responsiveness, better knowledge capture and sharing, and more effective collective intelligence [2].

Enterprise 2.0 is unleashing chaos in the office, but when done right, this chaos cuts the bonds keeping employees from good communication and boosts overall productivity.

II. EMERGENCE OF ENTERPRISE 2.0

Enterprise strategists have long been aware that the “informal organization” has tremendous influence on business

success or failure. A vibrant culture with a strong sense of community and cross-functional network of employee relationships can significantly augment traditional management methods and processes structures [3]. Hierarchy and formal controls can inadvertently result in compliance policies, decision-making roles, and work handing rules that constrain the ability of people to effectively communicate, share information, and collaborate.

In many cases, these “gating mechanisms” are necessary business constructs that serve valid purposes (e.g., security), but they have unintended consequences: Communication may not be timely, relevant knowledge might not be shared, and collaboration may not occur across departmental boundaries. Breakdowns in information sharing and collaboration and a poor sense of community within an enterprise can impact a worker's willingness to share insight and pass along experiences.

Catalyzing the informal organization is becoming a more complex challenge for business and information technology (IT) strategists as shifting employee demographics crystallize concerns regarding aging workforce trends and expectations of younger employees (e.g., new work models).

So, the concept of Enterprise 2.0 has emerged. The term “Enterprise 2.0” describes a collection of organizational and IT practices that help organizations establish flexible work models, visible knowledge-sharing practices, and higher levels of community participation. Improved employee engagement, in turn, helps organizations reap productivity and performance benefits that assist in attaining strategic goals.

The justification for E2.0, therefore, is largely being driven by [4]:

- Innovation and growth strategies that require improvements to organizational productivity and performance;
- A multi-generational workforce that is causing employers to invest in programs to improve their human resources (HR) and employee relations (e.g., strategic talent management).

E2.0 as a catch phrase has merit and deserves attention from business and IT strategists. Beyond the meme, however, E2.0 represents new packaging for strategic collaboration and Knowledge Management [5]. Organizations often rely on collaboration and KM initiatives to attain innovation, growth, productivity, and performance goals. Collaboration and KM efforts can also help address needs of the informal organization when these efforts are properly linked to human capital management programs that improve HR and employee talent strategies [6].

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III. WHAT IS ACTUALLY ENTERPRISE 2.0?

Many organizations can cite examples where collaboration and KM efforts made in past were defeated because strategists and sponsors failed to appreciate the complex influence of informal work practices, hidden employee attitudes, untapped community participation, and opaque social relationships that connected people within and across boundaries. The result has been unfortunate.

Despite the negative perception of the term, the principles behind KM remain very much applicable to today's business environment. The continued pursuit of collaboration and KM goals has led many forward-looking business strategists and emerging technology teams to monitor consumer market trends. These strategists and teams are seriously examining popular social Web sites as templates that can be replicated within the enterprise to improve how people work together.

Users tend to stay on these sites for long time periods and tend to visit them on a daily or weekly basis. The simplified scenario below outlines a typical sequence of events and flows [7]:

- People begin to use socially oriented sites for their own purposes.
- After joining, they discover they can share content more easily with friends and family.
- Along the way, they also realize they can find interesting information and activities more rapidly within the community.
- By participating to a greater degree, they expand their connections with other site members, forming relationships and communities.
- Value from social interaction persuades them to create, customize, and extend their own involvement.
- They are encouraged to reciprocate to the broader community, adding value back across their associated networks and groups.

In the consumer market, certain technologies (e.g., Ajax, mashups), coupled with data centralization and adoption of social software tools (e.g., blogs, wikis, social bookmarks, Extensible Markup Language (XML) feeds, and social networking), have been associated with the term Web 2.0 [8]. A leap-of-faith argument states that Web 2.0 systems and resulting levels of consumer participation are transferable to an enterprise environment. The parallel application of this consumer-centric phenomenon in a business context has been labeled Enterprise 2.0 or E2.0, although a decade ago, Knowledge Management (KM) was the more popular term.

Proponents argue that E2.0's organizational and technology constructs represent a new approach toward improving productivity and performance, which in turn can significantly influence how well organizations satisfy growth and innovation objectives set forth by senior management. The knowledge-sharing aspects of E2.0, supporters argue, can be viewed as a credible solution to address concerns about shifting employee demographics and the aging workforce.

It is also true that many KM efforts failed in the past

because the methods, practices, and supporting technologies were immature or not effectively applied, not because the KM principles driving the effort were incorrect. In many instances, KM efforts collapsed because too much faith was put in technology as a panacea. A market parallel between KM and E2.0 can reasonably be drawn, given the level of "irrational exuberance" in the media that emphasizes the technologies associated with the term (e.g., blogs, wikis, and social networks).

Where we differ from the viewpoint adopted by E2.0 enthusiasts is that the constructs comprising E2.0 are something *new*. We believe that E2.0 represents the evolution and maturation of best practices for improving collaboration and KM.

A new meme is helpful, however, to reinvigorate business and IT focus on these strategic topics. A "rebirth" in terms of rethinking fundamentals, understanding past successes and failures, and examining evolving cultural situations can profoundly alter past assumptions regarding collaboration and KM efforts – leading to novel approaches in light of today's business and organizational challenges [9].

IV. ENTERPRISE 2.0 AND WEB 2.0

E2.0 parallels and builds on another term commonly being used in the industry – Web 2.0. Four key principles from the Web 2.0 paradigm are important when assessing E2.0:

- *Web as platform*: Over the past decade, a variety of infrastructure and application services have matured. Emergence of various security, directory, and integration services, as well as lightweight programming models, have made it less complicated for developers to construct systems rapidly and at a higher level of abstraction. The Web itself can now be thought of as a programmable hypertext platform where pages are no longer static but can be dynamically composed from multiple resources (e.g., content, rich media, scripts, and applications).
- *Richer user experience*: More advanced presentation models (often based on Ajax or Adobe Flash), which come closer to user interface capabilities found in traditional desktop applications, provide people with more immersive and interactive content, as well as applications that are more contextually aware. The emergence of mashups represents a more freeform delivery model, where content and application components include interfaces that enable them to be manipulated, co-mingled, and extended in unplanned ways to form a unique iteration of those content and application resources (sometimes involving multiple Web site, content, and application providers) [10].
- *Data centralization*: Websites designed to consolidate, aggregate, and correlate data and metadata (including user-generated data and metadata) enable platforms to continually analyze information and user interaction patterns. The output of this analysis becomes a critical aspect of social applications and the surrounding user

experience. Analytics helps platforms improve capabilities involving personalization, recommendations, voting, ratings, popularity statistics, and community actions (e.g., what's been read, what's been commented on, and what's been tagged). These data results can be contextually displayed to users, providing a collective feedback mechanism.

- *Architecture of Participation (AoP)*: From a Web 2.0 perspective, an AoP requires designers and developers to have an understanding of the cultural dynamics in order to provide technology capabilities to mediate that social interaction. The cultural aspects focus on establishing an environment, or a set of community ethics, that encourages levels of open cooperation. Some cooperation might be explicit (e.g., members helping other members within a community), while other actions might be informal (e.g., members making their tags and bookmarks public). Voluntary contributions in terms of content generation (e.g., blog posts and wiki page edits) and user-defined metadata (e.g., tags and bookmarks) are intrinsic elements to successful AoP efforts. Even if those contributions are made for selfish reasons but shared nonetheless, participation in and of itself adds value. From a technology perspective, user involvement should not include burdensome participation barriers. The system should be designed to enable participants to extend the environment through their own individual actions as well as collectively by the community itself. When combined with other key Web 2.0 principles, network effects are more likely to occur.

V. A CONCEPTUAL MODEL FOR ENTERPRISE 2.0

A conceptual model for Enterprise 2.0 includes and integrates six major entities [11]:

- Persona
- Voice
- Groups
- Tags
- Feeds
- Networks.

The way these entities are integrated into a comprehensive model is shown in Fig. 1.

A. *Persona*

Conceptually, a persona can have multiple facets, or segmentations, based on permissions and other access/privacy controls. A common baseline may be formed from authoritative information but a persona should have flexibility in terms of how a user wants to reveal certain layers of informal information on top of that baseline, depending on the relationship that user has with a particular community or social network.

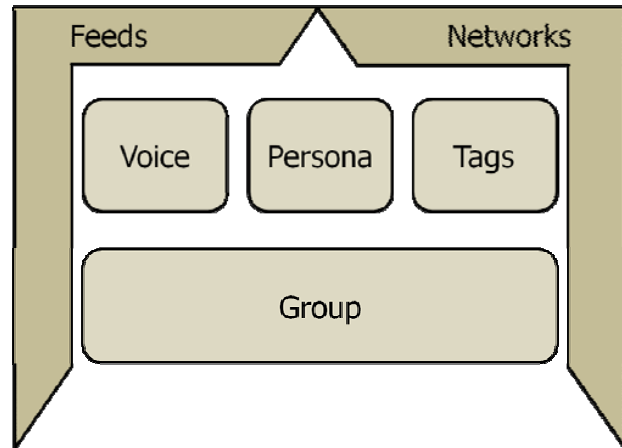


Fig. 1 A conceptual model for Enterprise 2.0

For purposes of this paper, "Persona" refers to:

- The profile users create to describe themselves (e.g., role, projects, and experience);
- The augmentation of that profile with authoritative enterprise information added to satisfy management requirements (e.g., identity);
- The narrative information that users add to help other people form a particular social perception of them (e.g., hobbies and interests);
- Other underlying resource data aggregated from other systems (e.g., course and professional development information added by learning management and HR systems) that may someday include external enterprise sources.

B. *Voice*

While many technologists might equate voice with human speech or telephony, the metaphorical context within E2.0 is similar to definitions like:

- a person or other agency through which something is expressed or revealed, or
- a medium or agency of expression.

From a technology perspective, this might be made available in the form of blogs or social filtering applications.

C. *Groups*

Typically, when strategists talk about groups and their formation, the discussion focuses on the structure teams and communities and the interrelationships between these two types of structures [12]. While these topics are important, it is also critical to understand the social experience and psychology that permeates group formation and how groups can be better leveraged without dependency on formal sanction and reliance on management direction.

Enterprises typically consist of multiple groups (large and small) that can overlap with each other and support cultural variations based on the dynamics that bind the groups together in the first place (e.g., goals and interests). A sense of community that is workplace-wide may develop, as well as a sense of community within other groups (e.g., teams) as

communities form across structural and relationship boundaries but remain interconnected by various social networks.

Collaborative authoring of content using wikis is one example of how this component could be instantiated while supporting these four elements. But, while the wiki content is important, it is clear that the real value is found in the community interactions, relationships, and activities around the content.

D. Tags

As user-generated metadata, tags are almost always freeform and are emergent in the sense that they are created and assigned by users to some information object. A user may tag something in an ad hoc or purposeful manner. Tags are also shareable with others, who benefit as the collection of tags increases over time.

Users can also tag information sources multiple times using multiple tags. For instance, a user may tag a Web page as "Project X" so they can view all pages relevant to those activities whenever needed. Or, a user may tag a page as "Enterprise" to create a more specific label that categorizes a collection of information that the individual wishes to be associated with a particular term.

When a tag is clicked, any information source tagged in that manner by any user is typically displayed. As more people participate in the tagging platform, often implemented via a social bookmark system, network effects occur.

As an Enterprise 2.0 component, Tags have a valuable role. Tags are identified with the person who applied the metadata. Tags are also identified to an information resource. The triad of people, information artifact, and tag creates multiple ways for people to build connections [13].

Participants in the tag and social bookmark system can discover information they might not otherwise have found based on the tags of coworkers. Additionally, tags can function as a type of connector between people who share similar information interests.

E. Feeds

The concept of feed as a coupling device to receive transmissions from some type of distribution network is not new. Other industries (e.g., broadcast media) have adopted this concept to deliver information to a large number of receivers used by audiences to "tune in" [14]. Feeds enable users to select and subscribe to channels that winnow the mass volume of information and communication available to them.

Add to this concept the notion of "subscriptions" and the component becomes compelling from an Enterprise 2.0 perspective. The act of subscribing to a feed establishes an inferred association to other people who also subscribe to that feed (establishing a base for subsequent community-building and social networking efforts).

By subscribing in an opt-in manner, users receive periodic updates to whatever information they are tracking and want to be notified about, represented by the feed. Feeds are often associated with XML syndication (e.g., RSS). XML feeds are

one technology example to instantiate this component (for more information (see Fig. 2).

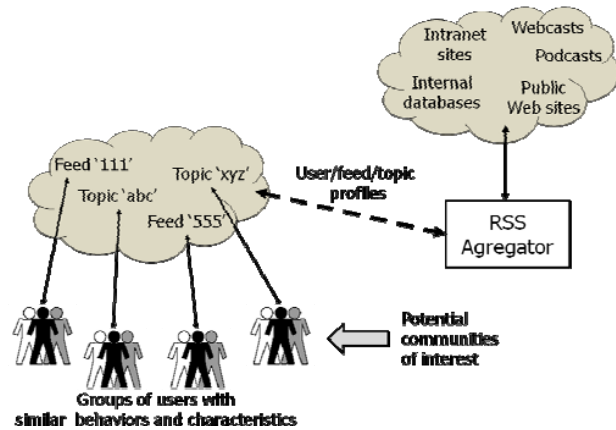


Fig. 2 Community Building via XML Feed Channels and Topics

But people also leverage a Feed model when they add someone to their Instant Messaging (IM) buddy list. In essence, they are subscribing to a presence feed where status updates are transmitted by a system agent (or watcher) to the IM/presence platform and that then broadcasts the update to all receivers. A Feeds component does not map one-to-one with XML syndication technology.

Feeds enable users to create their own collection of channels for how they want certain types of information to be communicated to them – a type of self-empowerment that supports many underlying tenets of Enterprise 2.0. Concerning XML feeds, users can export their subscription lists from XML feed clients into a format called Outline Processor Markup Language (OPML), which can be shared and imported by other users into their own readers. Feeds can be included in a variety of applications (e.g., e-mail, IM, Web browsers, and portals).

E. Networks

Management methods and practices have long discussed aspects of "the informal organization" that cut across formal work structures and reporting hierarchies. While formal structures and formal decision-making processes are critical to how organizations operate, they are augmented by a myriad of social networks that exist and function often without any direct management knowledge, control, or influence.

Understanding the value of social networks is critical when addressing strategies related to HR and employee engagement. These networks often provide workers with a range of capabilities and resources that help people with a variety of needs, such as [15]:

- *Filtering*: Who and what is credible
- *Sense-making*: Awareness (e.g., did you know) and synchronization (e.g., what does this mean)
- *Connection*: Information sharing, "who knows who," or "who knows what"

Networks, in the context of this paper, reflect the social structures that connect people based on relationship, activity, or information associations. Networks can be explicit (declared in some manner), inferred (derived indirectly by analysis of various artifacts such as documents, communications, contacts, memberships, and other shared circumstance), or organic. Organic networks are serendipitous in that users elect to be associated with each other for reasons that cannot be intelligently automated [16].

A Networks component within an E2.0 technology context leverages a profile along with methods of “contactivity”:

- *Methods of contactivity*: Communication options and practices
- *Methods of participation*: Tools that enable users to contribute, share, and exchange information or collaborate within a community or network
- *Methods of social presence*: Methods that enable users to understand how their profile is represented; relationship permissions and privacy controls

An example of flow within a social network site may be seen in Fig. 3

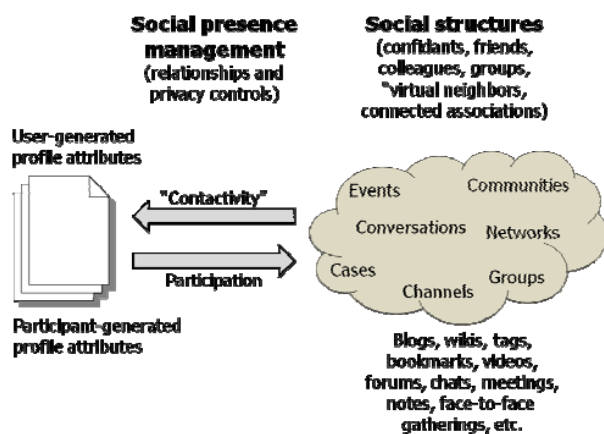


Fig. 3 Example of flow within a social network site

VI. NEW KNOWLEDGE MANAGEMENT EFFORTS

Despite the screams that would arise from E2.0 purists, it is true that much of Enterprise 2.0's community-building and social networking aspects are long-held goals of those involved in organizational learning and Knowledge Management. The mistakes of past KM initiatives should not be forgotten (e.g., a techno-centric focus), but neither should organizations walk away from those methods that have enjoyed success over the years.

Certain Knowledge Management best practices, especially those tied to program governance, should be adopted as part of E2.0 efforts:

- Define what E2.0 means to the organization. Do not rely on vague industry definitions and media hype.
- Assume that E2.0 is a program, not a project. The E2.0 journey will last for some time, comprising multiple initiatives.

- Support the business model. Some walled gardens are necessary to satisfy security needs. Compliance needs can require “ethical walls” (e.g., separation of duties between people in different roles or groups). Both requirements limit collaboration and network effects in valid ways.
- Garner executive support, but thrive on grass-roots ownership.
- Design end-to-end value (e.g., to growth and innovation goals) rather than functional gains.
- Align with Human Resource (HR) programs to address multi-generational workplace needs.
- Define “program” metrics. While a formal Return on Investment (ROI) may not be possible in all cases, there should be some agreement on success, failure, progress, and completion of the effort.
- Enable E2.0 around a technology ecosystem, not a particular product set of vendors or products.
- Include methods to communicate success and failures (lessons learned) across the organization.

Besides all these efforts, E2.0 also creates one brand new need – the need for engaging Knowledge Planner (KP). The role of this position would be to efficiently mediate between the growing supply of various information content items available through different Web 2.0 channels and also growing demand for different types of knowledge.

More precisely, KP should operate knowledge available management mechanisms and introduce new, pursuit sources of knowledge, describe them and their features, find appropriate knowledge, qualify it according to appropriate criteria, analyze various knowledge items and compare them, and, finally, source them.

The role and position of Knowledge Planner is presented in Fig. 4.

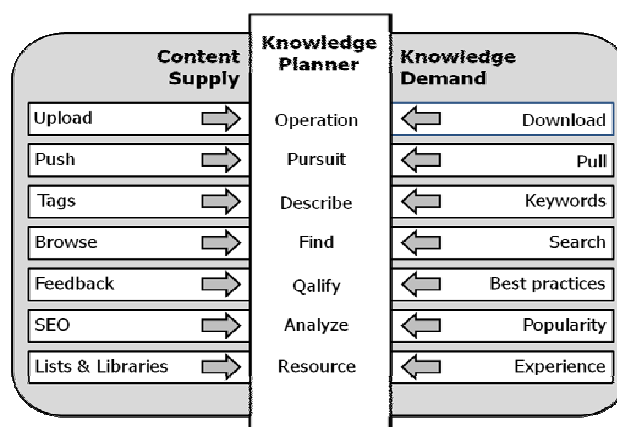


Fig. 4 The role of Knowledge Planner

VII. CONCLUSION

The term “Enterprise 2.0” (E2.0) describes a collection of organizational and information technology (IT) constructs that enable more flexible work models, knowledge sharing, and community building. Enterprise 2.0 is not something totally

new – rather, it represents the evolution and maturation of best practices for collaboration and knowledge management (KM) in today's enterprises.

The meme is useful, though, to help reinvigorate business and IT focus on these strategic topics. A “rebirth” in terms of rethinking fundamentals, understanding past success/failures, and examining evolving cultural situations can profoundly alter past assumptions regarding collaboration and KM efforts – leading to novel approaches in light of today's organizational challenges.

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