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Grounding principles to get the most out of enterprise 2.0 investments.

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Governing Web 2.0

WEB 2.0 APPLICATIONS aspire to make maximal use of the level playing field for engagement offered by the Internet, both technologically and socially.[11,12] The World Wide Web has thereby entered "the realm of sociality,"[2] where software becomes fused with everyday social life. This evolution has taken huge strides—Web 2.0 environments such as Wikipedia, Facebook, and MySpace have all become household names.

Both practitioners and researchers are converging on the usefulness of Web 2.0 for professional organizations. In and around enterprises, Web 2.0 platforms have been professed to support a profound change in intra- and inter-enterprise communication patterns. It is still the early days in terms of available management research on so-called "enterprise 2.0" experiences. Nevertheless, we have observed, as have others,[3,7,9] that the way for organizations to capture benefits from Web 2.0 technology in the enterprise probably differs substantially from the way they attended to other enterprise information system (IS) projects in the past.

In this article, we propose a set of grounding principles to get the most out of enterprise 2.0 investments. The principles represent a synthesis of existing management theory and our own case research of companies with recent experience in introducing Web 2.0 into their enterprises. The successful introduction of Web 2.0 for the enterprise will require a move away from predesigned paternalistically imposed communication strategies and structures, toward carefully stimulating a many-to-many, decentralized emergence of bottom-up communicative connections.

Although each principle stands on its own, it is important to realize there is a common thread running through all four principles. When dealing with Web 2.0 investment initiatives, management needs to be wary of imposing the adoption of a system, or restricting the use of it. Rather, to reach a critical mass of communications, it is important to consciously balance both directive and emergent styles of governing the use of the Web 2.0 environment. What is more, the cases suggest that for this type of investment management would do well to favor the latter style whenever possible, and only to take recourse to the former style of governance if absolutely necessary or risk discouraging user participa-

» key insights

- **Research about effective benefits realization from Web 2.0 investments in (inter-)enterprise contexts has not yet reached full maturity. Drawing from established IS management theory and our own case research, we argue that some organizations are developing a specific approach to governing such enterprise 2.0 initiatives.**
- **Enterprise 2.0 initiatives are often connected to lofty strategic objectives, for example, open innovation and collective creativity. Attempting to realize these with inherently social Web 2.0 technologies, means allowing for emergent meaning attribution by the users.**
- **Four governance principles illustrate how enterprise 2.0 governance can favor a bottom-up and emergent approach to empowerment, processes, collaboration, and people and culture; rather than adhering to a command and control view on technology adoption.**

tion. We will draw on examples from our case studies to illustrate how that might actually work for each principle.

To structure our findings, we borrow a general view on organizational benefits realization from Peppard and Ward.[15] The benefits realization framework allows us to distinguish between three categories of concepts that can help to understand what co-determines the value to be created from Web 2.0 investments. These elements are: the means (the information technology artifacts), the ways (new working practices), and the ends (organizational objectives) of the Web 2.0 investment.

Here, we first present the means and ends associated with Web 2.0 investments. We then address the grounding principles for governing Web 2.0 investment initiatives. Figure 1 outlines the model of means-ways-ends illustrated in this article.

WEB 2.0: The Ends

McAfee[8] coined the term enterprise 2.0 to describe companies buying or building platforms with wikis and social networking software to support and enhance the continuously changing and emergent collaborative structures of knowledge work across the (extended) enterprise. Organizations that have chosen to embrace the next generation Internet are using the technologies to provide users—inside and outside of the enterprise—with the operational means for achieving many different high-aimed objectives ranging from customer intimacy to knowledge management.

In our case studies, two related objectives were strongly present in the rationale for investing in Web 2.0: *collective creativity* and *open innovation*.

"Collective creativity reflects a qualitative shift in the nature of the creative process, as the comprehension of a problematic situation and the generation of creative solutions draw from—and reframe—the past experiences of participants in ways that lead to new and valuable insights."[6] This concept forms a counterweight to a traditional approach to innovation, which might conceive of innovation exclusively as a chain of top-down initiated innovation projects executed by relatively fixed and closed teams. For example, international high-tech manufacturer, Bekaert, invested in a Web 2.0 environment to enable co-operative idea exchange and evaluation among not only the members of its R&D departments, but also between all of its employees..

"Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology."[4] Travel agency Connections, introduced its ConnectR Web-based exchange platform to allow their customers to share and comment on positive or negative traveling experiences and promising destinations. Connections then used the content created on the platform to detect emerging traveling trends.

WEB 2.0: The Means

Making people mindful about the capabilities of the technology is an absolute precondition to benefits generation from the technology. Some of the skepticism among businesses and IT professionals with respect to Web 2.0 has been attributed to this very lack of understanding.[10]

Literature searches and our own case study work led us to identify six structural capabilities embodying the promise of Web 2.0 technology:[8-12,14]

- The software enables reuse and recombination of functionalities from different applications and data from different sources.
- The software enables flexible design, quick updates, and adaptability.
- The software enables collaborative content creation and modification.
- The software does not impose predefined structure on the content.
- The software provides a rich, responsive and personalized user interface.
- The software enables the gathering of collective intelligence.

WEB 2.0: The Ways

Technology alone will not guarantee an organizational success for any investment in IS. Realizing the objectives of a software implementation depends heavily on how the organization and its constituents will interact with the given technological artifacts and sustain the use thereof within the fabric of the enterprise. It is well established in the IS literature that the most ambiguous, yet critical part of realizing the aspired benefits from an IT investment is providing for the right organizational complements to the technology.[9] The latter come in four flavors:

Empowerment: the attribution of decision rights and accountabilities to ensure desirable behavior;

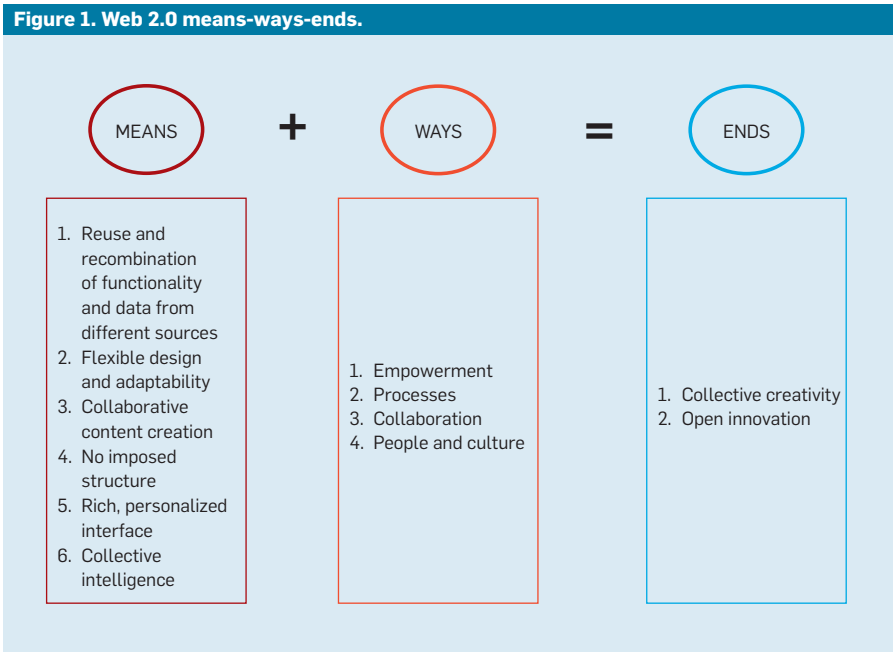
Processes: systematized transformation of inputs into valuable outputs;

Collaboration: new ways of forming teams, interaction patterns, and relationships; and

People and culture: developing a culture of individuals understanding the why, what, and how of participating voluntarily.

To serve as guidelines for developing the organizational complements to the Web 2.0 technological artifacts, we propose four grounding principles. Each principle refers to ways of appropriately governing the management of the aforementioned organizational complements. Before we lay down this set of grounding principles, we elaborate on the need for a style of governance that is appropriate for realizing the benefits from a Web 2.0 investment.

Figure 1. Web 2.0 means-ways-ends.



Appropriate Web 2.0 Governance

Governance is an organizational design activity that serves to simultaneously restrict and enable management. In line with the encyclopedic entry on Wikipedia,[17] the activity of governing involves defining expectations for the organization and its constituents; specifying allocation rules and guidelines for deploying the resources to help accomplish these expectations; and defining the framework to verify the organization's performance. IT governance, in particular, according to Weill & Ross[16] intends to encourage desirable behavior in using IT, in this case Web 2.0 technology.

Governing the way an IS investment is managed always implies striking a balance between two views on organizational benefits realization. On the one hand, encouraging desirable be-

havior in using a corporate resource ultimately relates back to the proper articulation and execution of the enterprise's aspired strategic identity.[16] This serves as an a priori specified boundary control mechanism to effectuate the realization of benefits from the intent of strategic decision makers downward into the operations.

On the other hand, when engaging with an IT artifact, users automatically set in motion a bottom-up process of structuration.[13] Structuration theory distinguishes between the capabilities of an IT artifact, and the meaning attribution by users that emerges from its ongoing use. By using the artifact and integrating the (non-)use into their work practices, users attribute a certain meaning to the technology. They will begin to change or reinforce their social interaction patterns, thus impacting the structures and processes embedded in the organization. From that point of view, the benefits realized by the technology become a function of the interaction between the users and the technology, and the ensuing interactive social patterns of meaning attribution by the users. This process occurs regardless of any (strategic) intent attributed to the investment by its initiators.

Because of their inherent sociality and openness, Web 2.0 capabilities can stimulate a particularly reciprocal relationship between the technology and its users. Such open-endedness is also reflected in the lofty aspirations of collective creativity and open innovation that are associated with investments in Web 2.0. Governing such an environment will thus imply that certain degrees of freedom are sustained to allow for emergent meaning attribution by the users.

Consequently, in our problematization of governing Web 2.0 investments, we want to emphasize the importance of structuration as a key process for realizing benefits with such technologies. We have developed four grounding principles to reflect a kind of governance for Web 2.0 investments that is supportive of the process of structuration. The principles are especially mindful of the importance of favoring, whenever possible, a bottom-up emancipatory style of governance, rather than a top-down, control-oriented style. To reflect this observation, we have formulated the principles in an "X-rather-than-Y" form.

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Grounding Principles for Governance

Empowerment Principle: *"Empower users to discover desirable uses of the technology, rather than draw up barriers to unwanted use."*

In a Web 2.0 context, it is important to acknowledge that the focus of governance, by way of principle, is to enable desirable use rather than have users comply with a prespecified set of rules to counter a priori notions of unwanted use. Moreover, the notion of unwanted use itself, especially from an a-priori point of view, remains a controversial one. Users ought to be given enough freedom, even power, to let value emerge from their use of the technology. Users and managers will do well to monitor incessantly whether the desired benefits are being realized, rather than on how the system might be abused.

This principle also embodies a dynamic notion of governance. As the desirable use of the system grows organically the governance of its use may have to adapt. Consequently, governing Web 2.0 investments becomes an evolving process rather than a one-off design activity. In fact, a preordained attribution of decision rights and responsibilities may well deny the Web 2.0 investment the possibility to reach its full potential. Yet, notwithstanding this overarching plea for freedom, the users will still benefit from having some form of guidance to discriminate desirable behavior from less desirable behavior. For example, much like in Trip Advisor or eBay, the ability to evaluate and influence people's (proven) competency is likely to become an important, if not the most important, driver of emergent role attribution.

Travel agency Connections provides a nice example of an empowerment focused governance set-up. In 2008, next to their customer-oriented ConnectR platform mentioned earlier, they launched a social networking system enabling their employees to digitally share travel experiences among themselves. The company was convinced that sharing such stories would enrich employees' advice to shoppers.

Connections' management firmly believed that governance was best left to emerge from the actual use of the system. Thus, it empowered employees to co-design the system and to take up roles and responsibilities as they saw fit while making use of the system. So, much like in Wikipedia, employees were free to take up roles as content contributors or reviewers as they saw fit.

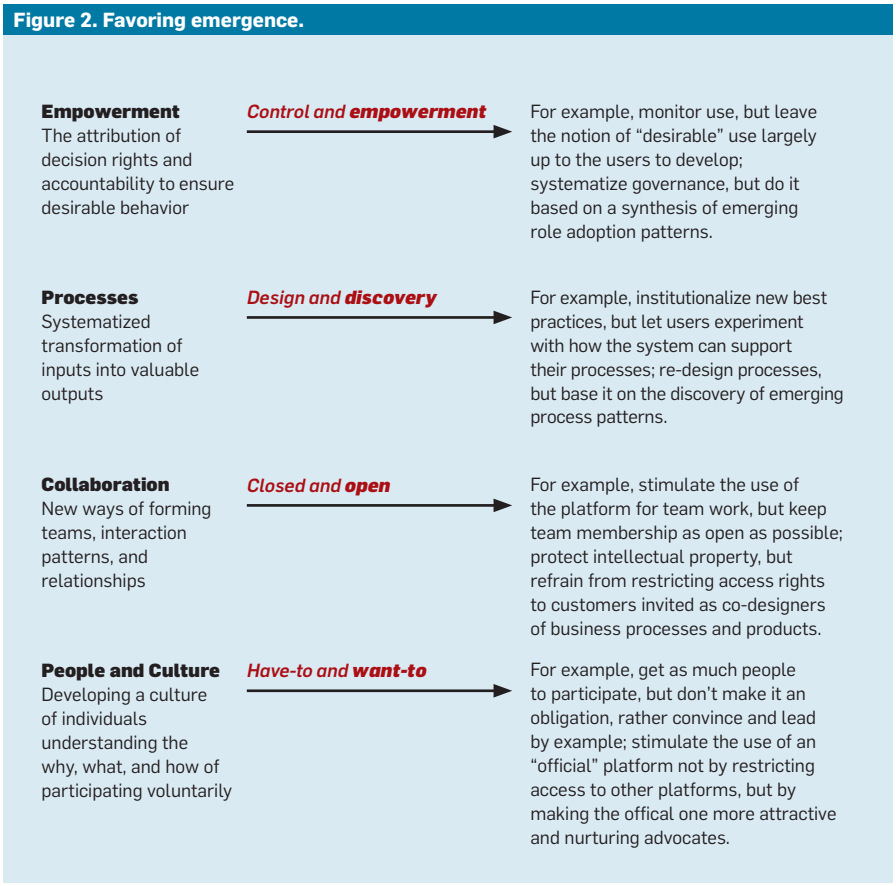
This approach had been very different, for example, from how they had set up the governance for their transactional applications in the past. In those cases, role assignments had been carefully specified up front. Compliance had been the name of the game in that operational environment.

Processes Principle: *"Enable process workers and managers to capture value from experimenting and progressively synthesizing new ways for processing based on emergent patterns of communication, rather than have them only adhere to top-down institutionalized business process models and work flow."*

A business process is "a [coordinated] collection of activities that takes one or more kinds of input and creates an output that is of value to the customer."[5] Many organizations have used the institutionalization of explicit business processes as a means to industrialize, and often largely rigidify, best practices. In a Web 2.0 setting, however, process governance ought to be mindful of the evolving nature of best practice. Governance will need to accommodate a more dynamic and continuous improvement approach to organizational learning. More dynamic, that is, as compared to traditional top-down process redesigns.

Participants will have to be granted sufficient freedom and training to use the Web 2.0 capabilities for process experimentation and discovery purposes. First, in a so-called *single* learning loop, workers and managers could use Web 2.0 technologies to experiment and deviate from the prescribed working processes when required by a specific instantiation of that process.[1] For example, participants could use social networking capabilities to connect with otherwise disconnected co-workers from different domains across the enterprise to solve an issue they might have with a particular case.

Figure 2. Favoring emergence.



Beyond the single loop, completing a *double* learning loop cycle would require that process workers and managers are willing, able, and empowered to (re-)design processes along the lines of the latest state of collective knowledge.[1] Participants could use wikis to synthesize improvements to a specific process based on common single loop learning experiences, or they could use tag clouds and search capabilities to identify relevant communications and social networks that might inform a process (re-)design.

The way high-tech manufacturer Bekaert governed its Innovation Portal since 2004 provides a good illustration of this principle. From the outset, the company was not intending to implement a predesigned business process change to its innovation processes. Rather, the objective was to reinvigorate the fuzzy front end of their innovation funnel; that is, the early idea generation phase of the innovation process. Management promoted the use of several different functionalities embedded in the portal to loosely guide the processing of innovative ideas.

All employees were shown how peer-review functionalities could enable them to review, vote, and collaborate on improving each others' ideas and suggestions. In turn, management could ask the system to periodically synthesize the outcomes of the continuously evolving idea generation processes by creating rankings on the portfolio of ideas discussed on the platform at any given moment, based on page views, votes, tags, among others. Also, by making past trails of ideas, suggestions, and projects easily retrievable through intelligent search capabilities, the employees were encouraged to refrain from reinventing the wheel, to learn from past mistakes, and to pick up on old ideas that might have been dismissed at first. Visionaries in the company believed that, over the long haul, advanced data mining could even be applied to the logs of the engagement patterns in the process to help boost the search for more efficient and effective patterns for processing ideas.

Collaboration Principle: *"Let (virtual) communities and teamwork emerge from a free-flow of collaborative engagements, rather than preassign the bulk of*

roles, activities, and access rules."

Collaboration is a central theme for investments in Web 2.0. The organization will only achieve its enterprise 2.0 objectives if the work performed by the individual members is incorporated into a greater whole of activities, interactions, and relationships. Successfully governing this constellation of engagement patterns in a Web 2.0 universe differs substantially from setting up a hierarchical or functional concept of team collaboration. The technology does not limit the way people collaborate. In the end, it is all about facilitating a self-sustaining ecosystem that emerges out the Web of individual contributions. If knowledge sharing and collaboration halts, the system basically ceases to exist.

Management should be wary of limiting access, connections, and contributions exclusively to specifically assigned team members. The mantra should rather be to encourage all possible contributions as being potentially useful until proven dysfunctional. Collaborative value is not derived from guarding individual compliance, but rather emerges from the freedom of individuals. Of course, for this to work properly each individual must be aware of his own responsibilities and be willing to take up some. Also, the community of users should be able to hold individuals accountable for their contributions and intervene when necessary.

From our case research it seems that creating and respecting the necessary room for such an auto-governance of collaboration and teamwork remains rather tough, especially between different organizations. As Web 2.0 systems grow, the likelihood increases that management raises security, privacy, or other concerns—some of which may be rooted in a perceived loss of power and control. However, restricting access can have a very negative effect on reaching a critical mass of collaboration.

At Bekaert, for example, they placed few limits on the access rights to their Innovation Portal for their own employees. However, the company's management was convinced that access rights had to be seriously downgraded for their external partners because of intellectual property rights issues. In the end, while the internal idea market flourished, the external contributions had not yet reached the level that management originally hoped for.

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Another example comes from GDF-Suez Group's technical competence and research center for electricity, Laborelec. They started piloting Web 2.0 tools in 2008. Laborelec's goal was to enhance knowledge sharing and to encourage the emergence of communities of practice around certain technologies. When asked about the most important lessons learned from the first set of pilots, participants highlighted the possibilities for autonomous knowledge accumulation and development without too much external control. Granted, not everything was allowed or possible. There were some strict ground rules and constraints governing the use of Web 2.0 applications. However, every single one of these was collaboratively put in place, never imposed, and continuously exposed to challenging based on emergent trends and patterns of better practice.

Based on their experience, Laborelec believed strongly that if participants would not be able to perceive the platform as being a natural knowledge sharing environment made for and, more importantly, by the participants, then the platform simply would not survive. As a result of their learning from the pilots, in early 2009, the company drew up a "Charter for Knowledge Initiatives." This charter clearly stated the primacy of supporting a bottom-up drive for developing collaborative teams and networks.

People and Culture Principle: *"Invite people to participate. Continuously stimulate, guide, and convince potential participants of the value of cooperation, rather than coercing them to work in a particular way."*

Reaching critical mass in communications is a key success factor for any open interaction platform. This means that for a Web 2.0 platform to realize any benefit at all, management needs to find a way to get as many people as possible to actively contribute to the platform. Ideally, a Web 2.0 system starts out as an open invitation for an individual to join a collective. The invitees have a free choice to either take part in the system or not, and thus ultimately help shape the finality and value of the system.

A voluntary approach requires that management promotes awareness about the capabilities of Web 2.0 and incentivize participation. For some people, participation in a Web 2.0 experience goes against a natural inclination to protect their own ideas, or a reluctance to put their ideas and opinions to the test of collective judgment. These people nevertheless ought to be stimulated to participate in an open knowledge and experience sharing culture. They need to understand that judgment as such is not the goal of idea sharing, but knowledge enrichment is. Ultimately, they need to understand and appreciate the why, what, and how of contributing to the collective. They need to see the potential benefit for them.

A reward system might help the Web 2.0 system to reach critical mass. Why not reward people who share great ideas, rather than people who secretively submit them to an idea box? Growth of the system can also be fueled by the provision of attractive functionalities to potential users. Interestingly, functionalities do not have to be strictly limited to what is directly related to the organization or the work. We have seen instances were offering entertainment functionalities or organizing contests on the platform, for example, can certainly entice some users to take part.

Whichever means are used, management will have to be watchful not to be perceived as forcing a certain Web 2.0 platform onto its staff. Otherwise, the initiative might become perceived as some sort of "big brother" initiative by management aimed at recording, exploiting, and controlling employees' every move or thought. The ability to retain a positive perception about management's intentions with the platform will take a lot of tact and empathy. It requires a carefully selected set of measures that will not clash with the open spirit embodied in Web 2.0. Failing to do so will probably risk undermining any positive structuration processes that might be occurring.

At geographical information provider Tele Atlas, management was facing the tricky challenge of completing a move away from an existing, bottom-up created, yet unsecured open source wiki system. The system had been developed by and was mostly being used by a limited group of engineers only. Management wanted to roll-out a more secure and enterprisewide platform. However, they decided they did not want to restrict employees' access to the open source system. They did not want to risk spoiling the existing goodwill in the company to use a wiki; thus potentially losing any benefits that Tele Atlas could accrue from its use.

Management knew the adoption of a better secured commercial Web 2.0 system would only be possible through word-of-mouth advocacy of its extended functionalities and user-friendliness. Recognizing the important influencer role of the early adopters of the old open-source wiki system, they kept them as close as possible when designing the system. These early adopters would turn out to be the new system's strongest advocates. Without having to shut down access to the old wiki, one and a half years later, the in-house platform was being used extensively and the open source system was hardly mentioned any more.

Conclusion

The promise of enterprise 2.0 is enticing to many organizations. However, experience and research into managing such investments to effective benefits realization has not yet reached full maturity. Based on the available literature and our own case research, we have argued in this article that the nature of the Web 2.0 technological capabilities and related organizational aspirations will require organizations to consider the implications for governing their initiatives. Respecting the process of structuration calls for favoring a bottom-up, emergent, and dynamic approach to governing the organizational complements (such as empowerment, processes, collaboration, and people and culture) required to make the initiative a success.

We have formulated four principles in a context-free way, that is, disregarding the specific circumstances and choices of particular enterprises and their leadership. Figure 2 summarizes and exemplifies each principle. Enterprises can use these principles, and the lessons learned from the quoted examples to avoid the fallacy of going into such an endeavor with too much of a command and control view on technology adoption. It is now up to the leaders of organizations to decide how they will instantiate the set of grounding principles presented in this article and cast them onto their own specific context. C

References

1. Argyris, C. Double loop learning in organizations. *Harvard Business Review 55*, 4 (1977), 114–125.
2. Bouman, W., de Bruin, B., Hoogenboom, T., Huizing, A., Jansen, R. and Schoondorp, M. The realm of sociality: Notes on the design of social software. In *Proceedings of the 28th International Conference on Information Systems*, (Montréal, Quebec, Canada, Dec. 9–12, 2007).
3. Bughin, J. and Manyika, J. How businesses are using Web 2.0: A McKinsey global survey. (2007); http://www.mckinsey.de/downloads/publikation/mck_on_bt/2007/mobt_12_How_Businesses_are_Using-Web_2_0.pdf
4. Chesbrough, H., Vanhaverbeke, W. and West, J., eds. *Open innovation: Researching a new paradigm.* Oxford University Press, Oxford, UK, 2006.
5. Hammer, M. and Champy, J. *Reengineering the corporation: A manifesto for business revolution.* Harper Business, NY, 1993.
6. Hargadon, A. and Bechky, B. When collections of creatives become creative collectives: A field study of problem solving at work. *Organization Science 17*, 4 (2006), 484–500.
7. Koplowitz, R. and Young, G. *Web 2.0 Social Computing Dresses Up for Business.* Forrester Research, Cambridge, MA, 2007.
8. McAfee, A. Enterprise 2.0: The dawn of emergent collaboration. *MIT Sloan Management Review 47*, 3 (2006), 21–28.
9. McAfee, A. Mastering the three worlds of information technology. *Harvard Business Review 84*, 11 (2006), 141-149.
10. Murugesan, S. Understanding Web 2.0. *IEEE IT Professional 9*, 4 (2007), 34–41.
11. O'Reilly, T. What is Web 2.0: Design patterns and business models for the next generation of software. (2005); http://www.oreillynet.com/lpt/a/6228
12. O'Reilly, T. Levels of the game: The hierarchy of Web 2.0 applications. 2006; http://radar.oreilly.com/archives/2006/07/levels-of-the-game.html
13. Orlikowski, W. Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science 11*, 4 (2000), 404–428.
14. Parameswaran, M. and Whinston, A. Social computing: An overview. *Commun.AIS 19*, 1 (2007), 762-780.
15. Peppard, J. and Ward, J. Beyond strategic IS: Towards an IS capability. *J. Strategic Information Systems 13*, 2 (2004), 167–194.
16. Weill, P. and Ross, J. *IT governance: How top performers manage IT decision rights for superior results.* Harvard Business School Press, Boston, MA, 2004.
17. Wikipedia. Governance. 2009; http://en.wikipedia.org/wiki/Governance.

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