Systems of Intent

Digital Workplace Technology Roadmap

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About the author

Guido A.J. Stevens MBA combines an integral business perspective, with in-depth technical expertise. He is passionate about innovation, learning, networking and open source technology.

After obtaining his MBA, cum laude, Guido founded a series of companies in the field of open source internet technology. As managing director of Cosent[1] he enhances our collective intelligence by improving knowledge flows in networked organizations.

Guido has published peer-reviewed research on knowledge diffusion in the Plone ecosystem (Kuk and Stevens 2010). He is the primary author of PloneSocial[2], an integrated suite of social business add-ons for the open source Plone CMS[3].

In his spare time, Guido explores nature, travels the world, takes pictures, reads a lot and has a tendency of getting involved in social innovation initiatives.

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1 http://cosent.nl
2 http://github.com/cosent/plonesocial.suite
3 http://plone.org

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Executive Summary

Information technology has become the ubiquitous driver *and* manifestation of deep shifts in both cultural attitudes and the business environment. To treat this as anything less than a strategic challenge misses the point. Technology needs to be recognized and prioritized as a pervasive capability that touches and transforms all aspects of organizational processes.

The web has out-innovated the enterprise, and the pressure is not letting up. While many organizations are still struggling to integrate social technologies and more openly networked modes of operation into their value streams, web technology leaders like Google are already deploying a new paradigm centered on machine reasoning.

We can call this new paradigm: Systems of Intent.

The Digital Workplace Technology Roadmap presented here shows, how new knowledge technologies can be combined with social technologies and legacy applications to optimize knowledge flows, accelerate innovation, improve process efficiencies and engage stakeholders.

This roadmap provides a holistic framework to evaluate an application portfolio, and articulates a consistent long-term vision that can be used to guide information technology investment decisions.

Foreword

by Stephan Schillerwein

The gap is definitely widening. Talking to organisations of all sizes and sectors, it really seems that technology is leaving the corporate world behind, once and for all. While the reasons for this are of course manifold, one seems to dominate all others. This is, when viewed from the perspective of what has most (negative) impact on an organisation's ability to derive maximum value from the rapid evolution that is going on.

I would argue, that this one key reason is the (often total) lack to treat all things "digital" as business critical and therefore acquire the competencies needed to excel in this area. It is because of this shortcoming that we are still operating in an obviously outdated, defunct industrial age mode when it comes to information and knowledge. The effects of this are tremendous, but still go unnoticed by most business leaders.

Let's test this: are you aware that your organisation has a 25+% productivity issue in information work, that affects 60+% of your employees, especially in those tasks that are most relevant for your (future) success and that also affects employee engagement, creativity, innovation, attractiveness for new hires plus your ability to execute business strategy?

This much we know from scientific studies on information-related work about the current situation in enterprises around the world. We also know, that so far ridiculously little is done to get away from this unbelievable, though normal, state.

Given that the Digital Workplace (and I agree with Guido's refreshing look at this term) is not a system, but rather a concept, a journey, a goal and a new way of how we think about work itself, it doesn't come as a big surprise that the maturity of software in this area is also still very low. Companies still have to nut and bolt together what they need, which requires a high level of know-how about the offerings available on the market in the first place.

This is where Guido's "Digital Workplace Technology Roadmap" comes in. It's one of the few publications in this area that wasn't primarily written from a marketing perspective. Instead, it is meant to enable organisations to really get a grip on what the future of workplace technology has in store for them. It doesn't provide all the answers, nor does it claim to do so – which is also quite a refreshing change. But it will set you on the right path from which you will be able to explore the next steps on your own.

Stephan Schillerwein
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Introduction

Back To The Future

I have a personal confession to make: I don't like the term "Digital Workplace".

Much like "horseless carriage" and "information superhighway", "digital workplace" is a term that tries to name the future in words of the past. It's best-by date will be gone soon. Translated into Dutch, my native language, anything "digital" sounds like a relic of the early nineties, nicotine-stained beige PCs with clunky fish bowl monitors running Windows 3.11. Slowly.

We don't talk of "horseless carriages" anymore: one drives a car. Nobody except Al Gore mentions the "information superhighway" anymore: one uses the Internet. Similarly, instead of "digital workplace" one says: ....? There's the rub. We don't have a better word. Yet.

In a way, this is very apt. We're running on outdated systems, and we're running out of time. We know we are. We're using clunky words to try and get a grip on a future that's unfolding at breakneck speed.

The discomfort I experience at the term "Digital Workplace" mirrors the discomfort people experience every working day, trying to get their jobs done at twenty-first century speeds with eighties-like applications and nineties-like email systems.

So let's embrace "Digital Workplace" as a call to action, a name of honor, a stinging reminder of the challenge we're facing and all the lost ground we need to recover. Fast.

Accelerating Change

Many organizations, and individual employees, find themselves overwhelmed by increasing workloads, tighter resource constraints, ever-higher quality demands, and ubiquitous, relentless 24/7 communications.

The world has become more complex, more volatile, more unpredictable and generally: faster. (Bhatia et al. 2011)

The bad news is, that technology-induced disruption shows no signs of letting up.

> *"Technology disruption will continue, and is likely to accelerate, in the decade ahead, confounding the beliefs of some that innovation and disruption are slowing." (Watson 2012)*

Accelerating change, both in the external environment and internally in response, induces uncertainty and threatens to stress work systems beyond the breaking point into chaos.

The natural reflex to slow down internal change may buy some short-term stability, but is not a viable long-term strategy as it compounds the problem.

> *"The problem [...] is one of industrial age work practices that have never been adapted to the requirements and possibilities of the information age. [...] This has brutal consequences for employee productivity." (Schillerwein 2011)*

The structural solution is to strengthen the organizational capability to absorb innovation and change. Or even better: to induce an appetite for change (Taleb 2013) and actively out-innovate the environment, creating and harvesting new opportunities.

We need to change the ways we work, think, collaborate and innovate.

Enterprise 2.0

The good news is, that by now we have a pretty solid understanding of what it takes to move organizations firmly into the 21st century.

The technology required is well known, widely available and simple to use. Probably, most of your employees already actively use those technologies. When they're not at work, that is.

Many enterprise environments look like computing museums when compared to the ubiquitous, massively connected, real-time personal computing environments with attractive user interfaces that people routinely use in the form of smart phones, tablets and web services on home PCs. Especially when one considers how all those devices auto-synchronize to provide a seamlessly integrated user experience.

The web has out-innovated the enterprise.

> *"Over the past decade, there has been a fundamental change in the axis of IT innovation. In prior decades, new systems were introduced at the very high end of the economic spectrum, typically within large public agencies and Fortune 500 companies. Over time these systems trickled down to smaller businesses, and then to home office applications, and finally to consumers, students and even children.*
>
> *In this past decade, however, that flow has been reversed. Now it is consumers, students and children who are leading the way, with early adopting adults and nimble small to medium size businesses following, and it is the larger institutions who are, frankly, the laggards." (Moore 2011)*

This wave of consumer-led web innovation is generally called: web 2.0. It is characterized by massive participation, high interactivity and fast innovation.

The challenge for enterprises is obvious: adopt the best of what web 2.0 has to offer, and integrate it into the enterprise: Enterprise 2.0. (Miller and Marks 2011; Jacques Bughin, Manyika, and Miller 2009; James Bughin and Chui 2010; Chui et al. 2012)

The vision presented here reaches beyond the 2.0 paradigm and seeks to integrate knowledge management and semantic web 3.0 technologies into a fully context-aware Digital Workplace.

Technology roadmap

The devil, as always, is in the details. Information Technology is one of three major aspects of any change effort, the other two being People and Processes. This roadmap focusues on the technology perspective, providing a blueprint of how a fully connected digital workplace can be realized.

The roadmap presented here did not result from an ambition to define a once-and-for-all definitive Digital Workplace model. There's plenty of Digital Workplace models out there; each serves a purpose, and an audience.

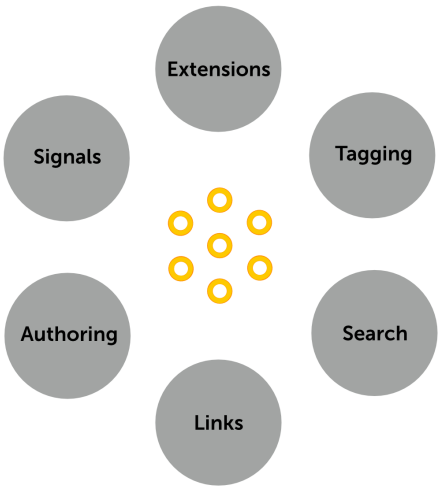
Rather like a piece of open source software developed to "scratch your own itch", this model was developed for a specific purpose. At Cosent we're building PloneSocial[1], an open source social intranet/extranet suite on top of Plone CMS. In the course of our research into tagging systems it became apparent, that tagging is not just a "social" feature but also has significant overlap with developments in the fields of semantic web technology and knowledge management.

I've developed this Digital Workplace Technology Roadmap as an integrated, cohesive model that combines aspects of Enterprise 2.0, Web 3.0 and knowledge management research with Digital Workplace visions and traditional intranet approaches.

1 http://github.com/cosent/plonesocial.suite

It's useful to us as a consistent model to guide our technology strategy. In the spirit of open source I'm sharing it with you, in the hope that it may be useful to you too.

The intended audience for this roadmap is intranet professionals, enterprise architects, interaction designers and technology consultants - basically anybody who thinks about intranet technology holistically, at a strategic level, including CIOs and CTOs.


Extensions
Signals
Tagging
Authoring
Search
Links

Enterprise 2.0 Affordances

The concept of Web 2.0 was launched at the O'Reilly Media Web 2.0 conference in 2004. It refers to a set of technologies like social networking, blogs, wikis, folksonomies and mashups. Don't worry if you're not familiar with these terms, I'll describe these technologies in what follows.

The defining characteristic of web 2.0 is it's social nature: instead of users interacting with a system, like in traditional e-commerce, web 2.0 services provide a platform where users interact with each other.

Suddenly the web wasn't about computers anymore, it was about people. That struck a nerve, as witnessed in the meteoric rise of Facebook usage since it's launch in 2004.

The term Enterprise 2.0 was defined by Andrew McAfee in 2006 as follows:

> *Enterprise 2.0 is the use of emergent social software platforms within companies, or between companies and their partners or customers.* [1]

McAfee refined and expanded his ideas in a series of blog posts, culminating in the publication of his book "Enterprise 2.0" (Mcafee 2009).

McAfee argues that Enterprise 2.0 consists of a suite of specific technologies, that provide strong and measurable benefits when deployed within an enterprise context. Interestingly, while he lists a number of specific applications, McAfee distills the essence of Enterprise 2.0 into a set of generic functions provided by those applications. The functions listed by McAfee are summarized in the acronym SLATES: **signals, links, authoring, tagging, extensions, search.**

1 http://andrewmcafee.org/2006/05/enterprise_20_version_20/

In design terms such functions are called "affordances": things that the software allows you to do. By separating affordances from specific implementations, McAfee provides a generic model we can use to map various technologies.

The SLATES model forms the core of the Digital Workplace Technology Roadmap. Let's examine each of these Enterprise 2.0 affordances.

Signals

Signals is an affordance where you can subscribe to event notifications and get semi-real-time updates of what's going on. Any online social network nowadays features an activity stream that provides you with updates tailored to your network connections or interests. If you've ever seen Twitter or Facebook, you know how it works.

An older and less-known variant of this is RSS, which allows you to subscribe to updates from news websites and blogs, and read those updates with the help of a special RSS reader instead of having to visit each source site separately. A good example of this is Feedly.com.

The key advantage of these technologies is that they allow for fast scanning of the internal or external environment, picking up new trends and shaping something like a "peripheral awareness" of what's going on in your world. (Markopoulos and Mackay 2011)

The core aspect of Signals is it's platform, or published, nature. Publishing a signal allows anybody who is authorized to access that update, either now or later. The update becomes part of a searchable conversation that anybody can join if they want to. If I'm joining a conversation later, I can read up on what was discussed before. Compare this with email, where not everybody receives all messages and you easily get a fragmented conversation.

The crucial distinction between Signals and email is the level of control you, as a recipient have.

In a Signals system, it is *you* who decides what updates you'll receive, and which you choose to read. The receiver is in control, not the sender. The receiver decides which sources to subscribe to. Furthermore, even if you've subscribed to a stream that doesn't mean you *have* to read it all. You can safely ignore some or most updates within your activity stream: this is the normal and expected behavior. Anybody who tries to read all Twitter updates or all Facebook status updates from all their contacts has either a very limited network, unlimited time, or mental health issues.

In email stuff just gets pushed into your inbox without your say-so, and you're supposed to read it all. You normally don't have the option of ignoring senders (try that with your boss) or the freedom to delete whole batches of unread messages without risking nasty consequences. The fact that there's a scourge of Cc emails that you *want* to ignore, rather reinforces the point. Your organization may be trying to use email as a signals system, but doing that within the context of email, which carries an implicit expectation of "must read", creates a big noise problem. If you didn't read that Cc and something goes wrong you're at a disadvantage in the ensuing blame game.

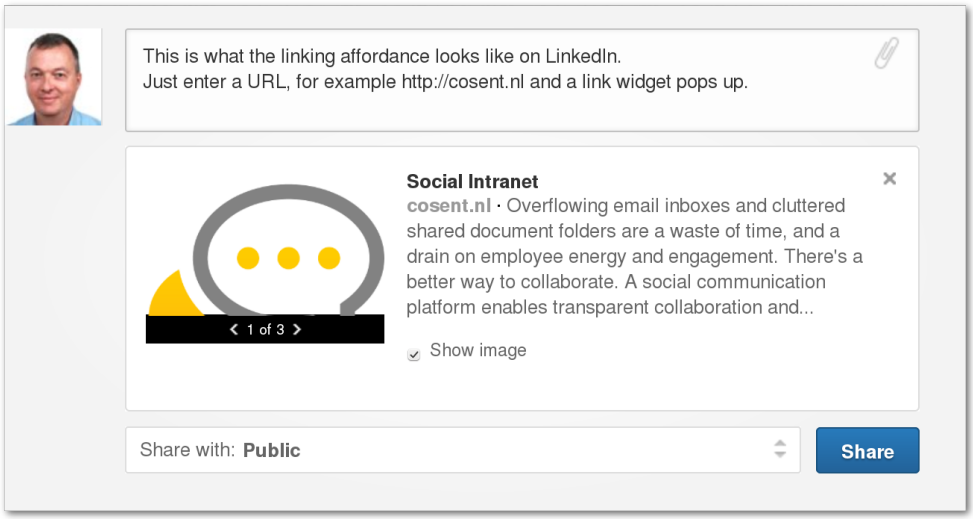
Separating the "peripheral awareness" signals stream from the "must read" email message stream is a key productivity enhancement that underpins most Enterprise 2.0 business cases.

Links

Links provide the affordance of connecting one page or context, with another. Everybody is familiar with hyperlinks: they are the most defining characteristic of the World Wide Web. They've been around since the web was invented in 1989, and you'll likely click dozens of even hundreds of links every day when you're online.

It's easy to overlook the significance of something as simple, old (in internet time), and ubiquitous as hyperlinks. Specifically, the ability to *create* hyperlinks.

On the web, every page has a URL, or Universal Resource Locator, that you can link to. The web is defined by it's linkability. You want to say something about a page? Say it, and link to the page. The big social networks all have special interface elements that make it easy to do just that: make a remark about a linked page.



Now keep this web-centric perspective, where everything is eminently linkable, and apply this expectation to the enterprise. Want to say something about a customer? Say it, and link to the customer page in the CRM. Mention a colleague? He'll be auto-linked and notified. Share a document? Send a link. Prepare a report? Link to relevant documents spread across the archives.

You get the point. Links should be easy. Organizations would communicate better, if linking were as easy as breathing. Instead, enterprises are usually characterized by compartmentalized application silos which offer poor linkability, if at all. The fact that we take this for granted, as par for the course, within organizations, yet happily link across the web in our personal time, speaks volumes about the ways that enterprise IT has fallen behind the open web.

Authoring

Authoring is the ability to write down what you want to say, and publish it to the relevant audience. On the web, you can set up your blog in a couple of minutes and share your thoughts with all the world at no cost. Whether the audience will actually come and read it is a different question.

The key thing about enabling many voices is not that anybody can publish. The key effect is the enabling of conversation. You publish your point of view on your blog. I comment, or write on my own blog and link to yours. This way, a multi-actor conversation emerges that is spread across many web pages but still is a coherent, interlinked body of text.

The contrast with prevailing in-organization communication cultures is striking. Most intranets are governed as strictly one-way publication channels, with carefully guarded gateway choke points that inspect and edit every piece of text going out. The boss gets a big shouting megaphone. The rest may bitch in private if they don't agree.

It's clear that this is an organizational culture issue, much more than a technology issue. Embedded within open web technology is a long cultural tradition of open discussion and merit-driven, consensus-oriented decision making. (Galloway 2006) The web naturally facilitates networked, non-hierarchal modes of conversation. (Rainie and Wellman 2012)

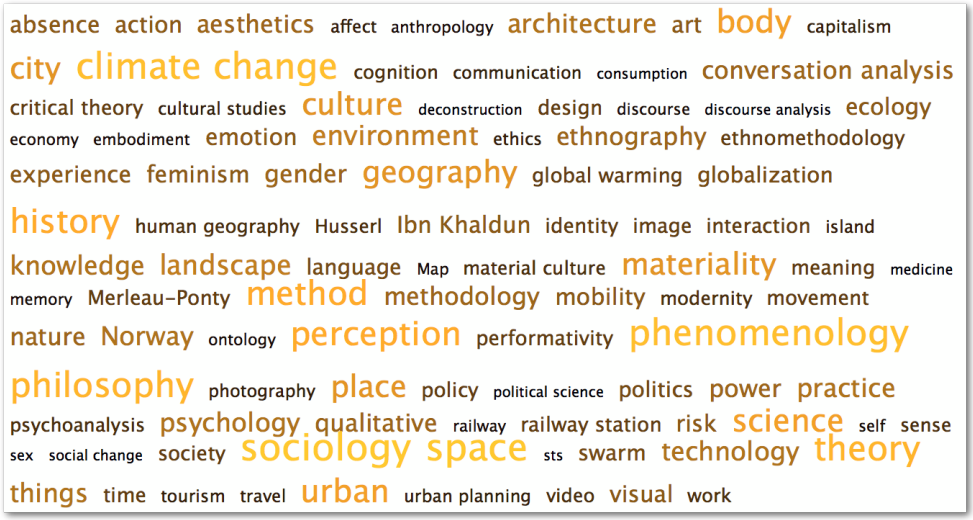
Organizations are usually more structured and hierarchical. In a way, this is the main distinction between organizations and open markets. However, it's important to realize that improvements in networked collaboration technologies drive a shift towards more open, networked forms of collaboration both between and within enterprises.

Adapting to, and taking advantage of, this shift to networked modes of organization requires a re-calibration of your communications culture. Opening up the internal conversation may pose some control risks, but the potential pay-off in terms of employee engagement, innovation and customer satisfaction can be very high.

In any professional, knowledge-driven organization, employees are the most important assets. Giving those employees a voice and a platform to express and exchange their views, giving them the affordance of Authoring, can be a powerful change catalyst and productivity driver.

Tagging

Tagging allows users to assign their own keyword labels to pages, documents or other information objects. Tags were first popularized by the social bookmarking site Delicious, and the photo-sharing site Flickr.



Tagging is a form of metadata assignment. Metadata is data about data. If you have a picture, the picture image file is the primary data. All the other things you know about that picture are metadata: who created it, when it was last modified, etc.

Traditional metadata systems are highly constrained. The metadata schema, which defines what you can say about a content object, will be defined in advance by experts. Content editors can then assign specific values for each metadata option.

This results in taxonomies, rigid tree-like classification systems where everything has it's place.

Tagging does away with all of that:

- All users can tag a piece of content, not just editors.
- Users can assign any tag they like. They're not constrained by having to select tags from a pre-defined classification system.

Allowing *anybody* to assign *any tag* results in the emergence of folksonomies, a crowd sourced *folk wisdom* cloud of tags associated with information objects.

Tagging is a gateway feature to semantic web technology. Tags can be modeled in formal semantic ontologies which makes it possible to connect tags with the linked data web in machine-readable ways. (H.-L. Kim et al. 2010; Shepitsen et al. 2008; Specia and Motta 2007; H. Kim, Scerri, and Passant 2011)

This makes it possible to enrich information on the basis of it's tag, or concept relationships, to which we'll return in the section **semantic contextualization** further below.

Extensions

What McAfee calls **extensions** are essentially recommender systems. (Ricci et al. 2011; Cantador, Bellogín, and Vallet 2010)

If you've ever used Amazon, you'll have noticed that when viewing a book, Amazon recommends some other book titles. This is based on buying behavior: a lot of users who bought *this* book also bought *that* book. This is quite useful, since it allows you to explore the enormous choice of available book titles by following trails left by people like you.

Similarly, if you start to follow anyone on Twitter, Twitter suggests some other users for you to follow.

It's as if the system *extends* your behavior, extrapolating previous choices into predictions of your most likely next steps.

More on that in the section **Systems of Intent**, which explores the type of big data analytics needed to power such recommendation engines.

Search

We all like to think we know what search is. Everybody knows how to *Google* something.

In terms of affordances, search enables you to find something.

- This presupposes that you know what you're looking for and will recognize it when you found it.
- It also requires that the search results specifically contain the thing you're looking for, and not just a load of irrelevant noise.
- Finally, it requires that the search engine actually knows about the thing you're looking for, since if it's not indexed it won't be found no matter how well-tuned your search engine is.

Search implementations will vary significantly across these three aspects: user interaction, relevancy ranking, and index coverage.

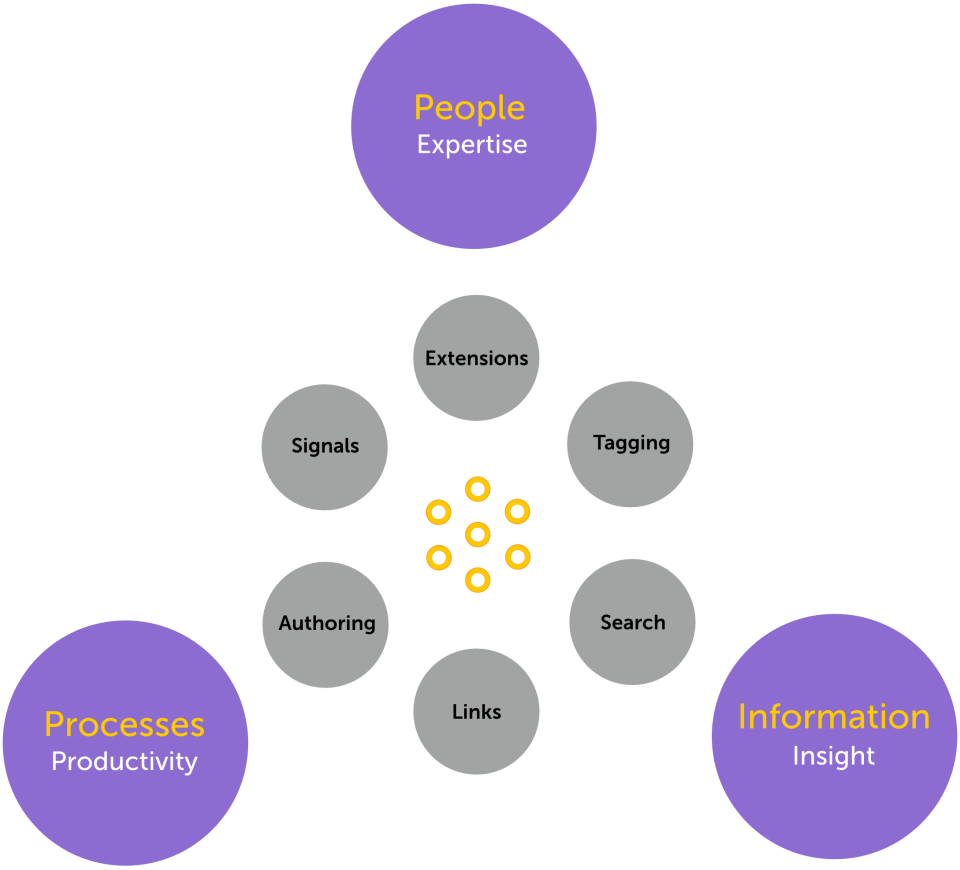
For example, many company-internal search engines rely for relevancy ranking on traditional keyword frequency statistics, instead of the more advanced link network analysis that drives Google Pagerank. Additionally, lots of internal documents are poorly indexed, and many crucial databases are not searchable at all. Incomplete indexes and poorly ranked results conspire to create an underwhelming search experience.

To improve the search facility, I propose the following:

- Increase indexed document coverage by providing a social information sharing facility in the form of a social network with activity streams. Documents shared will be indexed.
- Social search uses social network analysis of employee connections to filter and prioritize search results that are most likely to be of interest to you, given your connection network.
- Semantic search (Cantador and Bellogín 2011) leverages topic folksonomies, which are created by allowing tagging. Even if only a

fraction of the user base assigns tags, this provides a much better relevancy ranking base than mere keyword frequency analysis.

Combining these techniques results in a fully personalized social semantic search that "knows" what you're interested in, and which information is most likely to meet your needs. This is a key feature of the Systems of Intent discussed below.


People
Expertise
Extensions
Signals
Tagging
Authoring
Search
Links
Processes
Productivity
Information
Insight

Knowledge Flow

In the knowledge-based view of the firm (Grant 1996), knowledge is the most strategic resource of an organization (Ikujiro 2007; Nonaka, Toyama, and Hirata 2008). Differences in knowledge capabilities between firms determine competitive advantage. These differences in knowledge capabilities in turn derive from differing values, purposes and visions.

> *"Firms differ from each other because they envision different futures [...] Knowledge creation is a future-creating activity, and the future is always open."* [1]

Knowledge resides in the heads of individual people; organizations provide coordination in applying knowledge to the production of products and services.

The significant point is, that information is not knowledge. You can manage information, capture it in a document and store it in a database. Knowledge, on the other hand, is fluid and cannot be captured.

> *"Knowledge is process, not substance"* [2]

Knowledge management is not about managing document stores; it is about managing the process of knowledge sharing and optimizing the flow of knowledge within and between organizations. (Trentin 2011)

Enterprise 2.0 has been called "the new knowledge management" for good reason: it emphasizes flow, speed, sharing and learning over outdated control-obsessed management practices.

For our purposes, we've mapped the knowledge flow perspective to the Digital Workplace Technology Roadmap in the form of a triplet of concepts: processes, people, information.

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1 (Nonaka, Toyama, and Hirata 2008)

2 ibid.

This corresponds with a triad of thing/being/sign as used in modern linguistics and dating back to at least Aristotle, which is used by Pierre Lévy as the foundation for his Information Economy Metadata Language - an ambitious collective intelligence project extending the semantic web. (Pierre Lévy 2011; P Lévy 2010)

Knowledge flows in a learning cycle (Nonaka and Toyama 2003; Nonaka, Toyama, and Hirata 2008; Nonaka, Toyama, and Konno 2000; Fernandez 2009) that runs clockwise in this diagram.

- Knowledge starts as tacit knowledge, subconscious practical wisdom that is embedded within **processes** and drives productivity.
- By collaborating with other **people** and articulating rules-of-thumb heuristics and other know-how, knowledge is socialized and shared. In this stage, like in all the other stages of the cycle, new knowledge is created in the process of sharing.
- Socialized, shared knowledge is re-shared and systematized into a larger body of knowledge that manifests as collections of **information** artifacts, i.e. documents. This is usually called explicit knowledge, but we should take care not to misinterpret that concept as if knowledge would actually reside in a document collection. A document doesn't know. Only humans know. A human reading a document may bootstrap new knowledge by integrating the insights articulated in a document, into a wider network of concepts.
- The fourth stage, not shown in our diagram, is the combination of concepts and ideas from various sources into new connections and new solutions. These inventions get prototyped and become embedded into productive processes. The cycle starts anew.

For the sake of brevity, we'll just list some key points for each of these three aspects. There's a vast literature on organizational learning and knowledge flow; in addition to the sources already mentioned I'd like to point readers to (Scharmer 2009).

Processes

- Productivity
- Structural capital
- Tacit knowledge
- Thing / Pragmatics

People

- Finding expertise
- Social capital
- Sharing knowledge
- Being / Semantics

Information

- Generate insight
- Intellectual capital
- Explicit knowledge
- Sign / Syntactics


People
Expertise
Social Networking
Activity Streams
Extensions
Q&A
Signals
Tagging
Social
Bookmarking
Microblogging
Semantic Search
Projects
Communities
Blogs
Social Search
Authoring
Search
Processes
Productivity
Wikis
Links
Media
Information
Insight
Mashups

Application Landscape

We now have a framework we can use to map various specific applications against the affordances they provide on the one hand, and the knowledge flow functions they fulfill on the other hand.

Applications

Following the knowledge cycle clockwise:

Media & Files

Videos, Word documents, PDFs and Powerpoint presentations: these are all opaque binary documents that of themselves do not easily integrate with web technology. Publishing media on an intranet web URL makes them **linkable**, and given the right search technology, also **searchable**.

Wikis

Wikis are web documents that are open for collaborative editing. This provides a strong **authoring** experience that forsters collaboration. Being web documents, wikis providing **linking** and **searchability** and can easily be integrated with other applications.

Blogs

Blogs are web engines specialized in taking the hassle out of setting up and publishing on the web (or intranet). In addition to providing the ultimate **authoring** affordance, blogs also provide all the other SLATES affordances. In a sense, blogs provide the archetype for many of the more specialized web applications listed below.

Microblogging

Posting two-line messages on a widely accessible web page. 140 characters, no more. Utter simplicity. How can that *possibly* be useful? But it turns out this is a game changer. Microblogging combinates **authoring** and **signals** affordances with hash **tagging**, resulting in an emergent real-time news platform.

Activity Streams

Activity streams integrate microblogging with other sources of event updates into a single time-centric dashboard. Leveraging social network connections and hash **tags** as filters, activity streams provide rich and dynamic information spaces that have a very high **signal** to noise ratio – enabling you to stay on top of a wide range of trends and activities without getting overloaded.

Social Networking

Social networking provides a low-friction way to stay in touch with your "weak contacts" network – those people outside your circle of direct collaborators, who you know but meet only infrequently. Staying in contact with your extended network provides a stream of ideas and resources that helps you work more productively, and makes the organization as a whole more cohesive.

Extensions are recommendations made by the software based on your network connections and interests. By knowing who you are connected with, the software can filter activity stream **signals** and provide social **search**.

Q&A – Question & Answer

"Increasing speed of access to experts" ranks in the top-3 of productivity improvements that organizations gain by using Enterprise 2.0 technologies (Jacques Bughin, Manyika, and Miller 2009). Question and Answer forums deliver on that promise by enabling employees to reach out across the whole of an organization for help in solving difficult problems. The anwers often come from unexpected sources (Mcafee 2012).

Beyond directly providing answers, Q&A forums can be used by employees to quickly locate and connect experts elsewhere in the organization, which may provide breakthrough support on thorny issues. Q&A forums function as a social network **extension** recommender based on subject area **tags**. This again shows how the social aspect of Enterprise 2.0 systems is more important than the information technology aspect.

Social Bookmarking

Traditionally, you could "bookmark" a website in your browser – saving the link locally. Social bookmarking differs from that in two important aspects. As the name implies, social bookmarking is *social*: your **links** are saved on a web page that is shared with others. Additionally, social bookmarking uses **tagging** to group links by topic. This results in social tagging platforms which crowdsource folksonomies on document collections. Crucially, you don't need write access on a document to apply a tag to it. Additionally, your social bookmarks and tags collections are yours – you can structure them any way you want.

Social Search

Social search is "normal" search with a twist: it uses your social network connection graph to filter or prioritize search results. When used as a filter, you can limit the search results to resources shared within your social network. When used as a relevancy sort, social search uses your social network as an extension system to prioritize results recommended by people you know and trust.

This results in an emergent platform for collaborative filtering of huge information spaces, combating information overload.

Semantic Search

Semantic search is another search variation: instead of filtering and sorting search results by your social network, like social search does, semantic search filters and sorts by your *interest* network, the tags you're interested in.

The system derives your interests from your social bookmark tags and the hashtags in your microblog signals. Additionally, it knows about the social bookmark tags applied by others to documents you authored, bookmarked or shared.

Combining social search with semantic search, the system could even refine your interest profile by also weighing the interest profiles of the social network you're interacting with.

Mashups

Mashups are light-weight integrations between independent application silos. This is the essence of the Internet and Web protocol suites: allowing heterogeneous computing systems to interoperate. The same goes for an Enterprise Service Bus. Web-enabling your legacy applications exposes them as a web service, opening up a world of opportunities by leveraging the rich integration toolkit developed for the web.

Providing a deep **linking** capability is the key affordance needed to make your systems play nice with web architectures. Once your database records can be deep linked, all the other Enterprise 2.0 affordances can be brought into play: employees can **tag** them, your **search** engine can index them, and activity streams can incorporate **signals** of important events across the enterprise and provide conversations about operations.

Conversely, if you do not mashup your legacy systems, you deprive the social layer of much of the mission-critical business context needed to fully unlock the benefits Enterprise 2.0 can offer.

Social Spaces

Social spaces are virtual meeting places for **people** in the Digital Workplace. We can distinguish between two classes of social spaces: projects, and communities. This reflects the distinction between strong ties and weak ties in interpersonal networks. (Granovetter 1973; Mcafee 2007)

Projects and Teams

Projects and teams are closely-knit groups of professionals trying to get things done together. Information sharing is goal-oriented. Information is shared between colleagues who usually have a strong working relationship with each other in the context of operational **processes**.

The appropriate keyword for this is: collaboration.

Projects and teams will usually require strong access controls on their virtual spaces, to protect confidentiality of documents and information shared within the team. Membership will be tightly constrained and managed.

Communities

Communities of interest, on the other hand, are bound together not by a common *goal*, but by a common *interest*. These are usually larger groups with weaker ties between members. Members join a community not to reach a joint objective, but to share with and receive knowledge from other people which may be quite "far away" in the organizational structure. The binding factor is a shared interest in similar topics of **information** and knowledge.

The appropriate keyword for this is: cooperation. (Sennett 2013)

Communities usually have more relaxed access controls, with membership open to all or most employees of an organization that wish to share knowledge about a particular topic, unless the topic is of a sensitive nature e.g. because of a close relationship with R&D performed in the company.

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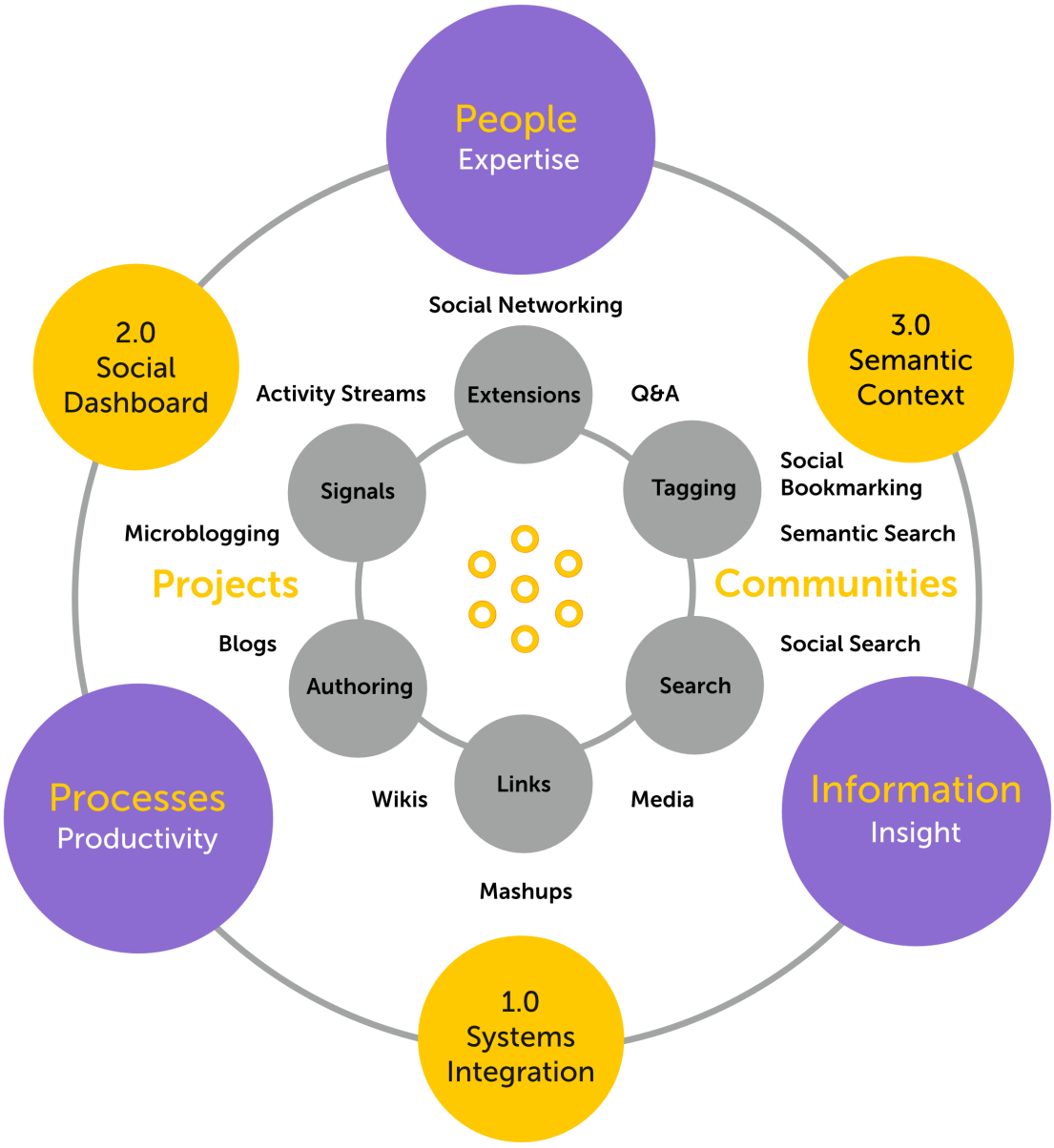

People
Expertise
2.0
Social
Dashboard
3.0
Semantic
Context
Social Networking
Activity Streams
Extensions
Q&A
Signals
Tagging
Social
Bookmarking
Microblogging
Semantic Search
Projects
Communities
Blogs
Social Search
Authoring
Search
Processes
Productivity
Links
Wikis
Media
Information
Insight
Mashups
1.0
Systems
Integration

Stacked Paradigms

To help make sense of the array of Digital Workplace technologies, it is helpful to introduce three focal points that:

- group affordances and applications into coherent sets,
- bridge organizational perspectives,
- define interaction interfaces, and
- correspond with distinct and well-known web technology paradigms.

These focal points embody the following paradigms:

web 1.0	web 2.0	web 3.0
systems integration	social dashboard	semantic context
content management	social networking	semantic web
publish + read	read/write	linked data
document tree	activity stream	digital workplace
place-centric	time-centric	meaning-centric
global shared state	personalized	context adaptive
top-down control	bottom-up sharing	machine learning
deterministic	emergent	evolving
transactions	relations	knowledge
systems of record	systems of engagement	systems of intent

The important thing to note is, that these paradigms do not simply replace each other. Rather, the more advanced technology paradigms build on the foundations provided by earlier technologies. This evolutionary, temporal dimension is what makes the model useful as a roadmap. Also, it provides a connection between the model presented here and other Digital Workplace models based on capability maturity. (Intranet Benchmarking Forum 2010)

Web 1.0: Systems of Record

The Web 1.0 paradigm is concerned with connecting heterogeneous technology resources into an inter-operable computing network that performs as a single integrated system. As SUN's slogan used to say: *The Network is the Computer*. Distilled to it's essence, it's about the ability to execute transactions across multiple systems, reliably and at scale.

Enabling access to, and integration with, these *Systems of Record* (Moore 2011) is key to unlocking the added value that social and semantic technologies can realize. It's all very nice to microblog about a customer interaction, but the true potential is only realized if such conversations link to the customer's file in the CRM system, and show up as part of the customer's CRM file as well when the next call comes in.

Systems of Record are silo-ed and highly resistant to change. (Bartis and Mitev 2008; Meissonier and Houzé 2010; Klaus and Blanton 2010) It's tempting to not take on this challenge and just "go social" by deploying a social layer that is not integrated with legacy systems. While this may be a valid short term strategy, in the long run those organizations that succeed in opening up their legacy silos will enjoy significant competitive advantages over those that skip this battle.

Systems Integration

The **Systems Integration** focal point represents the challenge to connect the emerging Digital Workplace environment with the installed base of massive, mature, mission-critical, database-centric enterprise information systems.

Digital Workplace integration of Systems of Record can be realized on top of a Service Oriented Architecture, by providing web-enabled Application Programming Interfaces into these systems while maintaining security and integrity controls.

Key Digital Workplace affordances and applications relating to Web 1.0 are Links, Mashups and Search.

- Links is the ability to treat any legacy data as a web URL. It's a simple but profound affordance: being able to hyperlink into any file, from any context. All it takes is a URL-enabling of data access.
- Mashups take this one step further by constructing web applications that extend and leverage legacy data systems via web APIs, in effect constructing new web applications on top of existing legacy applications.
- Search builds on Links: if an information resource is web-addressable, you can index it and include a pointer to it's web URL in search results.

Systems Integration connects the Processes and Information perspectives on the Digital Workplace. It leverages the vast information resources stored in, and business process knowledge encoded in, existing enterprise software. The goal is not to abolish or replace traditional ERP, CRM, HRM and what have you systems. The goal is, to overcome fragmentation and access the wealth of information and process resources managed by such systems from a single, unified interface: the Digital Workplace.

Web technology has "been there, done that": it has been designed and engineered to take on precisely this challenge of connecting heterogeneous IT resources. Developed at blistering speed in a ferociously competitive global environment, scrutinized in open review by the world's brightest, and deployed at truly massive scale: web technologies provide a rich collection of well-supported, vendor-neutral integration architectures and tooling options.

Web 2.0: Systems of Engagement

The Web 2.0 paradigm is all about conversations between people, conducted in public and at huge scale. Facebook, Twitter and a myriad of other social networks support what is in effect a single new global medium in which billions of people share their thoughts, dreams and concerns with each other, and with the world.

Yes, it's a gossip factory and a time sink. But it's also a source of revelation and inspiration. Social networking taps into a deep human desire to connect, to share, to belong, to engage with each other.

Moving from Systems of Record to Systems of Engagement, is a shift that takes an organization from the industrial age into the twenty-first century. It transforms employees, suppliers and clients from "resources" into human beings and partners. It changes "our people are our most important asset" from a hollow slogan into a living practice. (McDonald 2011; Hinchcliffe and Kim 2012)

Web 2.0 changes the rules by providing friction-free social platforms where everybody can express themselves and exchange views with their peers. It's a peer-to-peer system for making sense of the world.

The key characteristic, the single most important thing you need to consider about web 2.0 is: emergence.

Social platforms provide very simple, basic tools and affordances in the form of posting status updates and leaving a response. Yet from this simplicity emerges a highly complex conversational and social dynamic in the form of collective information behaviors. What you see (simple tools) is not what you get (social dynamic). It's not the features that matter; it's what people will do when given those features.

The emergent dynamic that unfolds itself on a social platform is self-organizing and self-sustaining. In a technical term: autopoietic. (Morgan 2006) It takes on a life of it's own.

While this may sound risky, in an enterprise environment, it hardly is. Establishing some basic rules in the form of ensuring equitable participation and common courtesy provides the basis that allows interesting and engaging conversations to emerge. Again: simple rules, complex behavior.

Social Dashboard

In the Digital Workplace Technology Roadmap, a **Social Dashboard** provides the focal point where all social interactions surface into a single unified user interface.

The **Social Dashboard** connects the **Processes** and **People** perspectives. It provides a time-centric, activity stream driven view on the organization that connects "what" needs to be done (processes), with "who" is working on that (people).

The Social Dashboard is deeply personalized. It leverages each user's social network connections into a semi-intelligent filter to provide a high signal, low noise overview of activities in "my network". By tailoring their social networks and interest profiles, users customize their social dashboards to only show high-relevancy updates. From this overview, people can either zoom out to explore the whole of activities ongoing in the organization, or drill down into specific topics or projects.

In addition to being time-centric and personalized, the Social Dashboard is also – *surprise, surprise* – intrinsically social. Each status update shows the name and portrait of it's author, which quickly conveys a perception of who is working on what, and with whom. The networks of social relationships surfaced by colleagues reveal actual organizational structures, as distinct from the "on-paper" hierarchy, and enable users to quickly locate and access relevant experts and resources.

Beyond the technical and user interface aspects, this is a profoundly empowering experience. The values encoded in these technologies go way beyond the technical. By providing a social platform and stepping out of the way, an organization acknowledges that it's employees know perfectly well what needs to be done, are perfectly capable of getting it done by themselves, and can be trusted to do it right given the right tools.

Such systems are called Systems of Engagement for a reason. They're capable of unleashing levels of passion, commitment and creativity that were sorely lacking in many of yesterday's organizational cultures.

Web 3.0: Systems of Intent

Systems of Intent anticipate your needs, before you even articulate them.

> *"By the time you search, something's already failed"* [1]

Google Now knows your calendar and your GPS location, and combines these with local weather and traffic conditions to proactively alert you when you need to leave, in order to get to your next appointment in time. Here's the route, and please note the detour that avoids a traffic jam that has just formed.

The web has out-innovated the enterprise, and Google is at the head of the pack. We can see the outlines of the future of enterprise IT by taking a close look at Google's technology strategy.

> The future is already here, it's just not very evenly distributed. [2]

Google is in the business of predicting what you want. Predicting it better than you yourself are able to articulate what you want. Predicting it before you may be even be consciously aware of what is is you want.

Why? The answer is pretty simple. It's kinda sad. Google is developing the technological equivalent of magic mind-reading in order to... sell more advertisements. That sell more stuff.

1 http://www.nytimes.com/2013/07/30/technology/apps-that-know-what-you-want-before-you-do.html?pagewanted=all&_r=0

2 http://en.wikiquote.org/wiki/William_Gibson

> *"The better we can provide information, even without you asking for it, the better we can provide commercial information people are excited to be promoting to you,"* [1]

Your boss may get all "excited" by that. For those of us who are not in marketing, it sounds like a pretty lame excuse to develop artificial intelligence. Say again? Yes, artificial intelligence (see side box: Big Data Artificial Intelligence).

Beyond "social", a new "big data" computing paradigm has emerged centered on machine learning. (Rajaraman and Ullman 2011; Silver 2013)

At the supply side, this is driven by ever-cheaper processing power, ever-lower storage costs and ever-larger data sets, culminating in the availability of web-scale "cloud" computing platforms based on parallel map-reduce architectures.

On the demand side, the main driver is the fast adoption of mobile devices, which have to satisfy tight constraints on screen size and user attention, but also provide expanded sensor data opportunities (GPS location, motion, camera).

At the confluence of cloud computing and mobile, machine learning approaches originally developed to provide personalized search results and optimized advertisement placements in those results, can now be leveraged to proactively provide real-time context sensitive information.

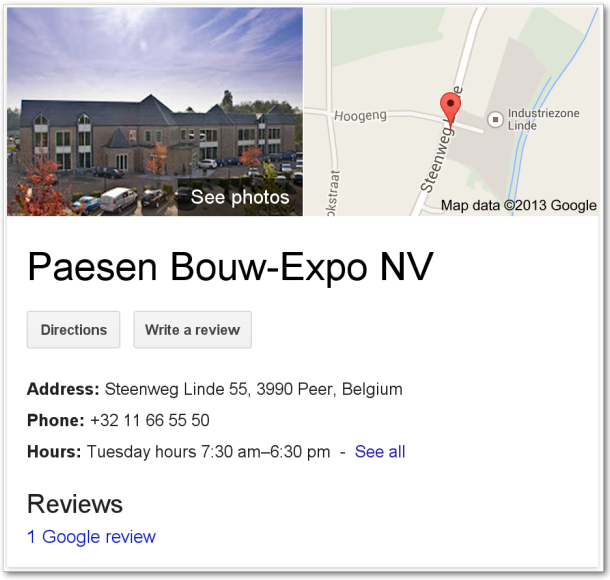
Both Google and Facebook are using semantic web technology to build knowledge bases that are not just "buckets of pages" but powerful conceptual models of the world, enabling machine reasoning.

1 http://www.nytimes.com/2013/07/30/technology/apps-that-know-what-you-want-before-you-do.html?pagewanted=all&_r=1&

> *"We're trying to map what the real world looks like onto Facebook so you can run really expressive and powerful queries."* [2]

Early results of this approach are already visible not just in Google Now, but also on Google search. For an example, a search for the single word "weather" will give you a local weather forecast, even if you're surfing anonymously, based on your network location.

Another example is the screen shot below, presenting an information card summarizing a business presence. It lists only opening hours for Tuesday - the day this screen shot was taken. If you search on a Saturday it will show you the Saturday hours.



Such cards are fast becoming the dominant presentation format to provide semantically derived context information in an compact, integrated presentation.

2 http://www.fastcompany.com/3006389/where-are-they-now/entity-graph-facebook-calls-users-improve-its-search

Side box: Big Data Artificial Intelligence

As you may or may not know, the field of Artificial Intelligence (AI) has been around since the late fifties of the twentieth century. At the time, it was expected to yield revolutionary results in the sixties. In the sixties, that got postponed to the seventies. And so on. Predictions for AI have always been "ten years from now" for more than half a century. So people stopped paying attention. Except Google's Page and Brin.

For Google, Artificial Intelligence is just another big data problem.

> *"Not so much clever algorithms. Just a lot of computation."*
>
> *"The ultimate search engine would understand everything in the world. It would understand everything that you asked it and give you back the exact right thing instantly."*
>
> *We have some people at Google [who] are really trying to build artificial intelligence (AI) and to do it on a large scale. It's not as far off as people think."* [1]

And then something happened which made people sit up and take notice (Brynjolfsson and Mcafee 2012). Google-engineered self-driving cars appeared on the roads, driving more safely than the average human. Now, if I ask you to envision a self-driving car you may think of a robot, and a car. Why would Google want to be involved in either robots, or cars? The answer is: Maps.

> *"If you look at the offline world, the real world in which we live, that information is not entirely online. [...] Increasingly as we go about our lives, we are trying to bridge that gap between what we see in the real world and [the online world], and Maps really plays that part."* [2]

To improve Google Maps, the company sends out the infamous Street View cars to GPS-track roads and photograph the surroundings. Autonomous cars just take this concept one step further. Google, the web-crawling company, is now crawling the real world.

Photographed street signs and destinations are computer-read and attached to navigation instructions. A massive human-powered operation then error-corrects and improves the routing logic and geospatial database.

> *"We're able to identify and make a semantic understanding of all the pixels we've acquired. That's fundamental to what we do."* [3]

Big data is refined into information so meaningful ("semantic") that it powers the snap-second in-context decision making required to safely drive a car.

Forget about the car. Big data, semantic reasoning, real-time context: there's the future of enterprise IT for you.

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1 http://www.esquire.com/features/75-most-influential/larry-page-sergey-brin-1008

2 http://www.theatlantic.com/technology/archive/2012/09/how-google-builds-its-maps-and-what-it-means-for-the-future-of-everything/261913/

3 ibid.

Google's vision for the knowledge graph is more ambitious than showing nicely integrated info cards.

> *You could ask hard questions like, "What are some of the lesser known causes of the Civil War?" Or queries where you have to join together data from lots of different sources. Like "What's the Google engineering office with the highest average temperature?" There's no web page that has that data on it. But if you know a page that has all the Google offices on it, and you know how to find historical temperature data, you can answer that question. But making the leap to being able to manipulate that data to answer the question depends fundamentally on actually understanding what the data is.* [1]

Crucially, machine reasoning is used to extract and combine maximally relevant information from a large-scale background knowledge database into a minimally-disruptive and compact snippet of information that fits into the specific situation the user is facing, now.

I'm calling these systems, Systems of Intent, because for a system to offer maximally relevant information at a specific point in time, it has to align with, hence predict, the user's intent from her past history and present context.

Only if a system guesses correctly what the user is trying to achieve, her intent, can it offer the precise package of information that satisfies the user's current need.

Following the law of requisite variety, such systems will tend to evolve towards ever higher levels of intelligence and complexity, in order to better model the intelligence and complexity of the living human mind whose intent it is trying to predict and align with.

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1 http://www.bizjournals.com/seattle/blog/techflash/2013/08/google-scientist-jeff-dean-on-how.html?page=all

In the long term (decades), researchers anticipate the emergence of a "Hypercortex" (Pierre Lévy 2011) or "Global Brain" (Heylighen) where machine reasoning across vast interlinked semantic networks in tandem with human participation enables the emergence of collective intelligence (Malone 2010; Benkler and Masum 2008; P Lévy 2010) at a global scale.

Before you discard that as science fiction, take a fresh look at your smart phone. That's what science fiction used to look like, not too long ago. (Dourish and Bell 2011)

Semantic Contextualization

Knowledge work in the digital workplace cannot escape the impact of these trends.

Already, the search experience offered by Google has become the benchmark against which most intranet search capabilities are found to be sorely lacking. This discrepancy in user experience and user expectations is likely to escalate, as innovation on the open web continues to forge ahead at speeds that many enterprises will not be able to match.

Customers, employees and partners will grow accustomed to interactions with intelligent adaptive systems on the web, whose interface experience can best be summarized as mind reading. In contrast, traditional enterprise IT interfaces will appear to grow more and more stupid each year.

Something's gotta give, and those organizations who first figure out how to integrate semantic capabilities into their enterprise architectures, will gain important competitive advantages in the race to delight customers, engage employees and leverage value creation networks.

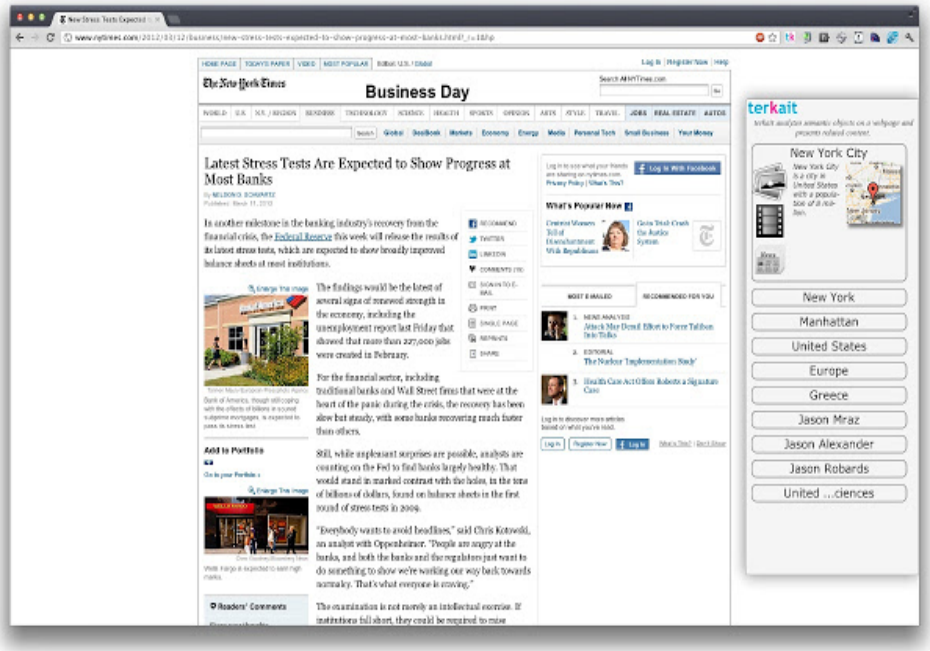
The challenge in this is, that enterprise IT deployments lack some of the key elements that are used to make web services so compelling. The reason that intranet search is so disappointing compared to Google search, is that the internal network has no equivalent of the rich link structure prevalent on the open web used by Google to derive it's Pagerank relevancy rating.

However, organizations have a secret weapon to compensate for the lack of web scale in their operations. Instead of relying on breadth of scale, they can work from a position of depth of understanding. There's a wealth of customer-relevant information stored in your CRM and played out in the personal interactions of your front-office employees with your clients. Likewise, deep knowledge of your operational processes is encoded into your ERP system and enacted daily by your back-office staff and supply chain. There's lots of raw value waiting to be harvested by an appropriate integration.

The semantic technologies described here can be used to drive such an integration. Developed for the ruthless interoperability requirements of the open web, semantic web technology can bridge between application silos to create an enterprise-wide, machine-reasonable concept network that maps the organization's world. This private knowledge graph can link to web-wide semantic networks in a secure way that protects proprietary information.

The basic principle is to build a map of the organization's world, which is then combined with a conceptual model of a user's preferences, interests and behavior, to yield a maximally relevant information stream that supports the user in her task execution.

In a user interface, such contextually relevant information can be placed in a sidebar as shown in the screen shot below, showing the Terkait system. (Germesin and Romanelli 2012)



Here, the "terkait" column at the right presents the results of analyzing the main text for concepts, looking up those concepts in a knowledge graph database and then presenting the most relevant concepts in a compact reference card format.

The Stanbol[1] technology powering this provides a *semantic lifting* service (Marinchev 2012) that can be integrated with any information source (Christ and Nagel 2011). It offers natural language processing of source documents, reasoning about concepts extracted, and creation and maintenance of knowledge models.

Semantic lifting transforms the document graph, the collection of documents, into a topic graph: a network of concepts. Semantic lifting already offers a powerful form of semantic contextualization (Warren, Davies, and Simperl 2011; Jiang, Leung, and Ng 2011) where the current context of a user is deeply understood in the form of underlying concepts.

1 http://stanbol.apache.org

The next step is for a system to understand a user's preferences both long-term and for specific tasks. This can be derived by analyzing a user's information behavior in the system: which documents the user created, visited, commented upon; what is the social network of this user and which customers and processes is this user involved with.

This combines the construction of interest graphs modeling personal topic affinity, with social network analysis to generate maximally effective relevancy rankings for personalized user interests across the whole information space of documents, topics and social peers.

Ideally, such long-time personal relevancy rankings are adjusted for short-term task-specific behaviors, to provide very focused session-aware context information assisting with the execution of the task at hand.

Systems of Intent integrate a deep understanding of the information context a user is accessing, with a thorough model of a user's preferences and behavior, in order to proactively and intelligently adapt themselves to a user's current needs and goals.

Systems of Intent anticipate your needs, before you even articulate them.

The Social Semantic Web

Tim Berners-Lee, the inventor of the World Wide Web, outlined his vision for the Semantic Web already in the early 2000s (Berners-Lee, Hendler, and Lassila 2001). While generating a lot of interest, the concept failed to gain much traction in practice and was swept aside by the Web 2.0 social media revolution that dominated the web over the past decade.

However, the idea of a machine-readable web of linked data is now poised for a comeback, because of several interrelated trends. At the confluence of these trends, social and semantic go hand in glove and give rise to the social semantic web paradigm which I've called Systems of Intent.

Moore's Law

First of all, the computing revolution is still in full swing. Processing power, memory capacity, network bandwith and storage are still expanding at exponential rates.

Moore's Law and it's siblings like Metcalfe's Law have been operating for half a century now, yet the cumulative impact of year-on-year exponential technical improvements somehow remains too big to easily fit into human intuition.

> *"In 1978, a commercial flight between New York and Paris cost $900 and took seven hours. If the principles of Moore's Law had been applied to the airline industry the way they have to the semiconductor industry since 1978, that flight would now cost about a penny and take less than one second."*[1]

That quote is from 2011. In the mean time, computing performance per dollar has more than doubled again.

1 http://aviationhumor.net/if-the-principles-of-moores-law-had-been-applied-to-the-airline-industry/

As a result, more data is produced each year while processing that data becomes cheaper by the year. This makes a machine-readable web of linked data both more necessary (more data) and more feasible (cheaper processing).

Information Economy

Secondly, the effects of ever-cheaper computing are truly transformative. (Brynjolfsson and Mcafee 2012; Ford 2009) The trend towards zero information cost causes a massive shear between the digital sector, moving at light speed productivity doublings about every two years, and the rest of the economy which is effectively standing still.

One can argue that "digital" is encroaching on traditional sectors, but it's more useful to adopt a *digital native* perspective wherein everything partakes in the information economy already and the relevant questions are: how fast are you innovating, and can't you go any faster?

Social Networking

Finally, social networking both produces huge amounts of data and also creates the need to dervive meaningful personalizations from those data. The corporations running these social networks are some of the biggest companies in the world, operating the world's largest computing centers. They employ the brightest minds and run on business models predicated on maximally harvesting and refining personal data, to provide both optimal relevance (for the user) and optimal targeting (for their advertisers).

Social networks provide extremely valuable opportunities for semantic data mining. At the same time, the social networking user experience can be significantly enhanced by using machine reasoning powered recommendation engines. This creates a self-reinforcing loop which largely coincides with, and is financially powered by, the data collection / personalization loop of targeted advertising.


People
Expertise
2.0
Social
Dashboard
3.0
Semantic
Context
Social Networking
Activity Streams
Extensions
Q&A
Signals
Tagging
Social
Bookmarking
Microblogging
Semantic Search
Projects
Communities
Blogs
Social Search
Authoring
Search
Processes
Productivity
Wikis
Links
Media
Information
Insight
Mashups
1.0
Systems
Integration

Conclusion

This roadmap has outlined how organizations can integrate disruptive knowledge technologies in a consistent way, by connecting social and semantic web technologies with each other and with legacy systems.

Integration is not achieved by focusing on technicalities and protocols connecting various applications. Rather, the starting point should be the user experience.

On the inside, the six Enterprise 2.0 affordances Signals, Links, Authoring, Tagging, Extensions and Search form the core of a cohesive user experience canvas.

On the outside, the business context is provided by the Processes / People / Information knowledge cycle. The corresponding 1.0 systems / 2.0 social / 3.0 semantic paradigms provide the technical context.

Applications mediate between core affordances and context paradigms. Mapping an application portfolio against the model provided here exposes overlaps, contradictions and gaps. Such a mapping can be used as a cohesive framework to improve alignment and integration.

This is not an exhaustive framework, of course, nor can it be fully consistent. In addition to the full references listed below, I'd like to draw your attention to some specific sources offering alternate perspectives that contast with the approach presented here in interesting ways.

(Murray 2011) provides a strong catalogue of interaction design affordances. (Stacey 2009) offers a critical perspective on managing complexity. (Schillerwein 2011) articulates a digital workplace vision and the IBF (Intranet Benchmarking Forum 2010) presents a capability maturity model. Online, the LinkedIn groups Worldwide Intranet Challenge[1] and Intranet Professionals[2] are great places to be. See you there!

1 http://www.linkedin.com/groups?gid=2289431
2 http://www.linkedin.com/groups/Intranet-Professionals-113656

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