Content

Introduction

Employees in the year 2011, work wherever, whenever and with whom they wish to work with. They use their own hardware: laptop, iPad, Smartphone, it does not matter what, as long as it allows them to work from home, flex location, en route, on the train or from the airport. The applications they use are obtained from the cloud. Sometimes these are their employee's applications, sometimes they use their own Google account and they exchange large files using Dropbox or similar services.

They do not read the news on websites but on various apps on their iPad or via RSS in their mail. They do still use email but they prefer to keep in touch with their colleagues and friends via Twitter, Linked-In and countless other social media networks.

Do they come up against a problem they cannot solve? As little as twenty years ago, their 1990 equivalent would have gone to the company library or would have walked over to a senior employee to find the solution. Employees in 2011 put the question to one of the relevant network they take part in and they will no doubt have the answer back within the hour from someone who could very well be at the other end of the world.

Handy, quick, modern, and how wonderful to be able to work like that. But what does this mean to employers of these 24/7 flexworkers? Acting on presence has been impossible long since but is not even the main problem. Because how do you manage the knowledge available in your business, when this knowledge flows in and out of the door as flexible as this? And how do you ensure that your company continues to be a challenge to modern man?

Not a minute to soon for the theme 'People, employees and competencies'. The feature entitled 'Social Media and Social Companies' offers a macroeconomic perspective on modern employees and their impact on organizational configurations and cooperation. Furthermore, we give attention to sub subjects like continuous learning, social technologies and the relationships with customers and even include what the 'networked society' means to the development of humanity. It will at least provide you with something to ponder on under the Christmas tree...

Cindy Curré
Editor IT Management Select

EDITORIAL COMMENT

In this article, van der Reep argues the need for a new architectural principle when designing software systems. The Internet and its capacity to provide social media technology is creating a new P2P networked economy. An economy based around people working together and which will have a major impact on the corporate structure and its business models. However, most of the current software, e.g. ERP or supply chain management systems, support organizational fragmentation where people are treated just like "nuts and bolts". This will have no future and a shift should be made to a more human centric architecture where 'lean and mean' is replaced by 'lean and meaningful'. Van der Reep calls this architectural principle 'Recursion', where any subset of the system contains all the functionality of the complete system.

Frits Bussemaker

Author

Frans van der Reep

	Business	Information systems	Technology
Strategy	▒		
Organization	■		
Operation			

Social Media and Social Companies

ABSTRACT

The Internet is changing the way we organize work. It is shifting the requirements for what we call the "schedule push" and the hierarchical organization that it implies, and therefore it is removing the type of control that is conventionally used to match resources to tasks, and customer demand to supplies and services. Organizational hierarchies have become too expensive to sustain, and in many cases their style of coordination is simply no longer necessary. The cost complexity of the industrial complex starts to outweigh the benefits, and the Internet is making it redundant. The question I put forward in this Article, after a short description of how I envision "the change," is what new requirements should be met by software in order to meet the requirements of the networked economy. Business will develop from Business-to-Consumer (B2C) to Consumer-to- Business (C2B) to People-to-People (P2P), customers more and more taking control over business activities, overhead being replaced by customer focus. This is also a new reality for the software world.

First, I give a brief discussion of what change is going on in the various domains of business, politics, and society (Figure 1). From this development I propose the 3C model as a taxonomy from which we can look at organizations from various viewpoints (Figure 2). As the Internet, social media, and the resulting P2P networked economy will have a major impact on the corporate organization and business models, I pose the question: What impact will this have on software development as well? What requirements will have to be met for software to be robust in the P2P networked company, basically driven as a community, and from the viewpoint of technology, meaningful work, and the organization of work?

From Schedule Push towards Reality Pull

My expectation is that within five years this trend towards the P2P networked economy will have a major impact on the corporate organization. Jobs will be lost from the hierarchy and its related well structured environment, basically putting people in a reactive mode. The jobs that remain, and new jobs, will be very different, less structured, and will put people much more in the driver's seat than we were used to in our jobs in the last decades. Instead of reacting ("schedule push"), you should behave as an intrapreneur ("reality pull") and act from your own creative viewpoint. Instead of more ERP-supported supply chain management, employees and, eventually, customers will be therefore more and more the project managers of their own work – a concept I call "reality pull."[i] Big organizations only survive in a dynamic market by redesigning at least the organizational front-office into small autonomous units that can quickly react to volatile customer demand. Small cells can quickly respond to the market, but they use the big corporate database and expertise.

They combine the advantages of a big company with the advantages of a small company[ii].

This is where social media and corporate social networking enter the picture and ERP ('enterprise resource planning') and workflow management applications should be repositioned. Of course, Twitter and Twitter lookalikes such as Yammer are not only tools. They are concepts. They are open source, asynchronous means to make the world much more transparent in terms of knowledge transfer and finding your pals – Who's your *pal*? What's your ability to pool, ally, and link? – These tools allow you and me, at an even lower price, to find our peers and pals, enlarging our ability to pool, ally, and link, thereby enhancing our capability to create goal- oriented communities, networked organizations, and focused action. Moreover, Twitter allows for "the real-time Internet," beating search engines by days in terms of quick, real-time response capabilities[iii]. Such technologies create flexible networking organizations where ERP systems will have difficulty as they force the organization into rigid structures.

P2P banking, like Zopa or smava, may serve as an example for this development towards networked centered, barter oriented social companies[iv].

An example for the real-time Internet: For traditional newspapers, Twitter may serve as a new and cheap alert system for breaking news for their subscribers – just a tweet. In the Netherlands, noppes. nl may serve as an example of the return of barter, using the LETS as a social currency. It's all there, mirroring the future as I see it.

What is then the basic shift companies have to make to become a viable 21st century company? My informed guess is that where cooperation in the 20th century basically was a non-personal top- down, management driven calculation (stemming from "scientific management"), the driving-force of cooperation will evolve into a bottom-up personal decision. Lean and mean will become lean and meaningful. ICT will become human centered ICT, allowing for meaningful jobs for all involved, e.g., allowing appreciation of the individual contribution to the big picture.

The web will also provide for RRR parameters, referring to ratings, rankings, and reviews, creating even more transparency in the networked economy[v]. That's another world than fixed career perspectives and job descriptions from the reactive world[vi].

Survival of the most cooperative

The game will be more and more about personal presence and personal branding. Not about the ego driven, "I'm special," but about fostering the "I'm unique" attitude. Not about scheduled push mass solutions but about reality pull, personalized solutions appreciating diversity[vii]. The non- personal top-down planning and strategy approach will be at least partially replaced by personal and continuous prototyping and "perpetual beta," thereby, turning each of us into an action driven entrepreneur of our own talents and forcing us to leave our safe job titles – be willing to experience (See Figure 1 below): From survival of the fittest towards survival of the most cooperative.

Compassionate capitalism

Social media facilitate corporate social networking and accelerate this development towards a value-based network-centric attitude. It will force companies to become even more networked and therefore more human centered as this co-operational attitude fiercely reduces business operating costs[viii]. Big corporate companies will probably in the short run evolve into financial holdings, enabling 21st century human centered social companies that create a personal age for its members, thereby, I hope, establishing a compassionate capitalism instead of a piranha economy, all eating each other without any human respect, and thereby combining the best of both worlds of continuity and flexibility.

Of course, one of the challenges is to relate this 21st company to the existing arena and not to start a new "unrelated" clan or tribe or your own youtopia. The game is about rebalancing various experiences and appreciating and building sustainable diversity. There is much to learn from the 20th century company as well.

In society, politics, and business, top-down management is being replaced by bottom-up, peer-to- peer-driven action and P2P quality review, at least in our European region: the pat on the back from your peer – nothing is more motivating. The roughly 1 million Soho (sole traders) now operating in the Netherlands are a reflection of this movement towards peer-to-peer network based operations in this personal age. Figure 1 describes this evolution towards distributed teamworking and distributed power.
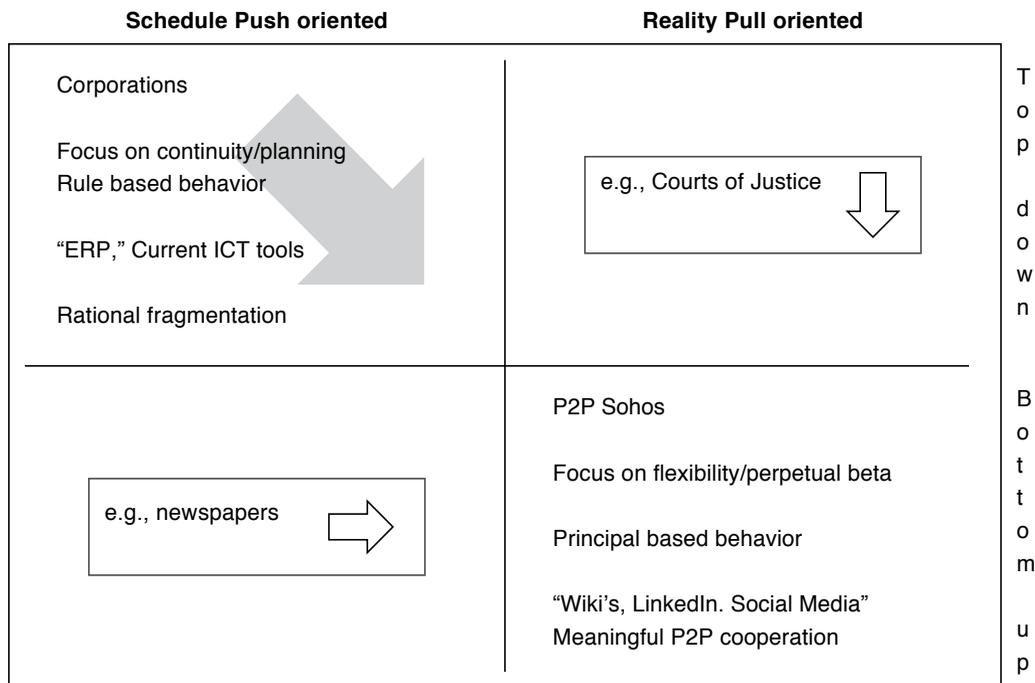
The new "Condition Technologique" leads to

Schedule Push oriented	Reality Pull oriented	
Corporations Focus on continuity/planning Rule based behavior "ERP," Current ICT tools Rational fragmentation	e.g., Courts of Justice	T o p d o w n
e.g., newspapers	P2P Sohos Focus on flexibility/perpetual beta Principal based behavior "Wiki's, LinkedIn. Social Media" Meaningful P2P cooperation	B o t t o m u p

Figure 1   What's Happening

Lean and meaningful

I personally hope that this trend may lead from "old thinking" to "new thinking." From lean and mean business focus, people being treated as "nuts and bolts" in a mechanical systems approach, to lean and meaningful business, providing meaning to people, planet, and profit.

Whatever happens, there is a lot of leadership, transformational change, and understanding of what's really changing needed to really build new and sustainable business. Not really understanding the change usually leads to doing nothing and waiting, which would not be a good starting-point to build new earning power.

So, this article does not only analyze and summarize the results of research. It also reflects my hope, based on 35 years of working experience.

The Courts of Justice and the newspapers seem to be influenced by this development from top- down towards bottom-up, as expressed in Figure 1. They also tend to shift towards the South East box of the Figure 1. As citizens become more empowered, or at least less disempowered, they seem to have more influence on justice being doneix. If that's OK, I

don't know. It just is as it is. One may hope that medieval lynching doesn't return as common social practice, and that too much subjectivity will not occur.

The newspaper is also heavily impacted by social media – I mention it in Figure 1 – as it is at least partly being replaced by "blogging" and "civil journalism."x

Architectural changes allowing for meaning

What is the big difference in comparison to the present day? And, will there be a difference? My opinion is that future organizations and the business tools used have to provide for meaning. The lean and mean has to change into lean and meaningful for all involved. The question is what architectural principle should be introduced and implemented to bring meaningfulness into the business realm. My claim is that, within a few years, a new set of human centered business (ICT) tools will occur that foster, or at least do not spoil, "meaningfulness" for all involved.

Having outlined the way Internet is changing the way we work, we will now deal with the specific

requirements that current and future organizations and software packages must meet in order to be robust in the light of this development from top-down to bottom-up shaped business operations. The currently used software packages and organizational hierarchy based structures favor organizational fragmentation and are in drastic contrast with building businesses by building communities driven by self-organization. They mainly support the "scientific management" ideologies stemming from the early 20th century. ERP applications like Peoplesoft, SAP, Oracle, and others, showing synchronous communication properties, force employees into the "right" job descriptions and the "right" company practices – "this is the way it is" – and then into rigid company organization structures where only coded information is valid, thereby ignoring the value of tacit knowledge and P2P networking[xi]. ERP approaches the optimal shaping of cooperation in explicit business processes as a rational calculation, usually with the help of optimizing spreadsheets, lots of parameters, and solidified in manageable organizational structures and formal job descriptions.

That may be a good way of problem solving in a material, "nuts and bolds" business like oil refinery or manufacturing cars, but it may cause problems if applied to humans[xii].

Cooperation should not be perceived as the outcome of a rational computation but also as a personal decision of those involved. E.g., If you look at someone through the eyes of his or her job description you may easily see just 20% of his or her individual business potential as this description doesn't catch all the rest.

Business organization consultants and software designers should therefore pay more attention to human aspects of the organization structure and the software in order to create meaningful business. Organizations and software packages should allow for or even support this paradigm shift from top-down schedule push management – defining cooperation as the outcome of a spreadsheet – to bottom-up reality pull community building where the willingness to cooperate roots in a personal decision.

I think that every software package or organization that, basically, reduces people to "nuts and bolts" in a closed, mechanical systems approach, has no chance of surviving. In this type of workflow with non-human centered software, as they now fit together, work is fragmented, and people are removed from the context of their work by compartmentalizing the work into various silos, hard coded in the software, and called departments, each separately managed and usually driven by short-term targets. This combination of using ERP software and topdown management disconnects the soul from the work and makes real commitment to business goals impossible[xiii].

Fragmentation as an architectural principle works fine for the material business, production plants, etc., with their standardization and economies of scale, and also for activities where strong formal and legal requirements seem to be necessary so long as we do not trust the wisdom of the crowd, as in, for example, various formal compliance procedures like Sarbanes Oxley, and in certification procedures. But in other places it is a bad idea. People lose their sense of meaning and commitment if they do not understand, and often haven't been told, their contribution to the total picture.

Where people lose sight of the context they are operating in, distrust emerges, and this distrust puts controllers into power. Where a sense of significance disappears, distrust enters the scene, and top-down management with a strong control attitude becomes a necessity.

In general, I find the developments within organizations shouldn't differ too much from what seems to be happening in society and the political realm where the referendum, grass root democracy, and the wisdom of the crowd becomes more and more popular in this global region.

An organization that develops into an anachronism will not survive.

So, again, what requirements would a future-proof organization and software package have to comply with? What is wise practice and what should be prevented? What could be done to postpone or at least reduce the feeling of being separated from ourselves in our jobs?

We need solutions that no longer lock us into our job descriptions and that make it impossible to see our contributions to the broader system. Separation from the sense of contributing to something bigger deprives us from having meaning, which is also probably not very healthy. ERP-like fragmentation as an architectural solution principle leads to such a

"nuts and bolts" approach and leads into the inhuman, to quote Kierkegaard.

Recursion

For the ICT domain I expect a shift towards human centered ICT, a class of ICT tools which do not reduce me to an element in a complex system but that allow me to perceive my contribution in a broader context. I expect that ICT tools will come up that allow for presencing as Peter Senge, et al., define it: understanding your action in a broader context[xiv].

As a requirement, I introduce "recursion," as described, e.g., in the famous "Droste effect"[xv]. From anthropology we have learned that a social system is viable only if it satisfies the requirement that all its subsystems encompass basically the same functionalities as the whole. All essentially viable social systems are recursive. So let's adopt the consilience principle here, and let's assume that organizations as social systems, indeed, should obey the same requirement as stated by anthropology for viable social systems.[xvi]

It is to be expected that these class future tools then will be recursive in architecture. Recursion means that a subset of the system still contains all functions of the system. Anthropologists define recursion as one of the main properties of all viable social systems: non-recursive social systems are not viable. Networked organizations are recursive. Each node has all properties of the whole thing. Network supporting applications like LinkedIn are, in principle, recursive as well: The template for one individual to be filled in is, in principle, the same as the template for the group. ERP systems are not recursive. In an ERP environment, as it works now, the user doesn't get information of the context of his task on the screen: one user doesn't get and isn't meant to get the full picture. This fragmentation harms meaning and will presumably not last very much longer as it deprives many of us working in such an environment from the feeling that we make a difference and have real significance. Perhaps "role based ERP use," as it now becomes available, will soften this problem as ERP then serves the organizational role you have and not merely the job description. Whether ERP will really meet the recursion requirement is not clear yet. But let's wait and see. To me, SharePoint as a tool for intranet communication within the organization seems to be sufficiently robust to func-

tion in a network centric context. However, many top-down, management driven organizations don't choose to use it as a network in a principle supporting system, facilitating the organization as a community.

My feeling is that recursion may also be an architectural principle for the ICT domain in order to provide not only for a lean and mean but, more importantly, for a lean and meaningful task for those involved. More and more companies will focus on flexibility rather than continuity. Many companies will therefore have the character of temporary projects, creatively destructing themselves.

My opinion is that operating within a recursive system provides for context and meaning for each connected individual being a node in the network[xvii].

We need human-centric systems, both organizational and ICT, that will make our entire competency set available to the group or to the market of our choice. LinkedIn is such a recursive example. Social media are. Usually this class of applications is asynchronous in character. You define yourself within your own group. And that group may define itself in an even broader context with exactly the same template. ERP, on the other hand, is not recursive; Workflow Management systems are not, in principle, recursive either. If you know examples of this class of tools, please let me know!

The old thinking, based on Taylor, scientific management, and the division of labor, defines and treats everyone as an element in a mechanical system leading to lean and mean performance, supported by ERP applications but depriving someone from meaning as he or she lacks context. Organizational structures based on recursion, on the other hand, to put forward the new thinking, makes it possible to *close the circle of (business) life* for all involved and is much more a basis for engagement and meaningful jobs.

The trend in the labor market towards organizing itself as a number of individual entrepreneurs, using communicational excellence and finding their *pals* (your ability to pool, ally, and link is a core competence here) to do business together, even in a temporary setting, makes basically every colleague a recursive node in the network. Such an individual Soho runs a full company from marketing to collecting. But the group, of which the Soho is a part, is also a company with the same functionality: networks are in principle recursive.
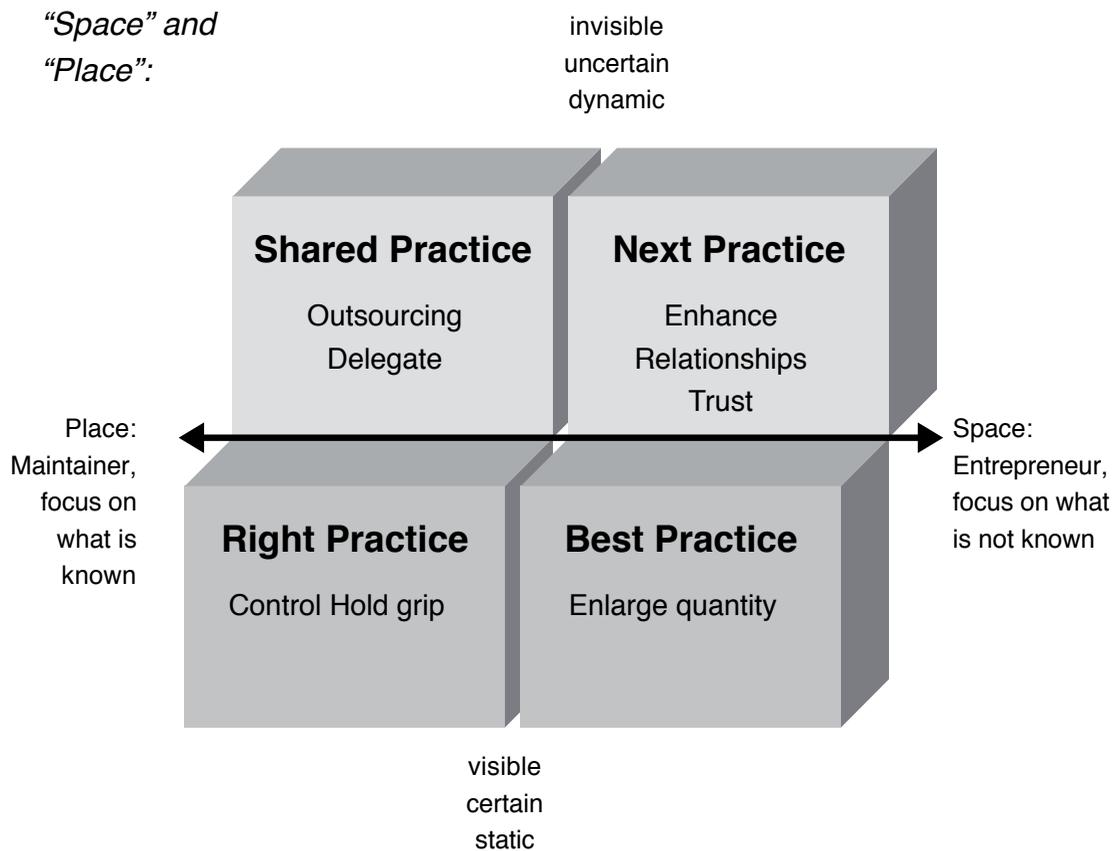
"Space" and "Place":

invisible
uncertain
dynamic

Shared Practice

Outsourcing
Delegate

Next Practice

Enhance
Relationships
Trust

Place:
Maintainer,
focus on
what is
known

Space:
Entrepreneur,
focus on what
is not known

Right Practice

Control Hold grip

Best Practice

Enlarge quantity

visible
certain
static

Figure 2. Space and Place

Of course, in society we cannot do without some "right practices." Each society needs top-down structures in order to define what is legal and what is not, to keep record of ownership, land registry, etc. And, of course, in the material businesses there will occur a lot of "right" and "best" practices as well, as they are the heart of the matter there. But where business value comes from human cooperation, I feel one should adopt shared and even next practices based on recursion.

The Quest for Meaning Will Require New ICT and Organizational Architectures.

In the same vein, I expect, as a trend, that where we first looked at the Chief Operational Officer to improve our businesses, and where the attention is now on the Chief Learning Officer, in a few years from now, attention will shift towards the "*Chief Meaning Officer*" as its successor. His or her contribution will be directed toward detecting whether

communicational excellence is being replaced by control excellence for short-term reasons. and to assuring that enough space remains for meaningful work for all engaged. Compliance in the 21st century: Chase the vision, not the money...

The quest for significance will drive many of us away from the big corporations with their rigid structures and will lead to finding meaning in value based networking.

Each tool and structure used in this future business environment should allow for P2P networking, as well, and should, therefore, be recursive in character. Figure 2 sets the stage and serves as a taxonomy. Right practices are driven by control excellence and often supported by ERP systems. Best practice are driven by operational excellence. Shared practices are driven by core excellence: You need to know exactly what you are good at. Next practices are different in nature and are shaped by communicational excellence[xviii].

To give you some data: In the Netherlands, 65% of the companies run on "command and control" based right practices.

As pointed out in Figure 2, we should find a new balance between the non-recursive right practices and related control excellence, the best practice approaches focused on operational excellence, and the shared practices on the basis of core excellence. In a few years, we will embark on the recursive next practices based on communicational excellence providing for personal meaning for all connected, the "ego system" being ruled (out) by the chief meaning officer[xix.].

In my opinion, non-recursive software developments and organizations, no matter how nice and cloudy we call them, have no chance, over time, because they do not give context and meaning to those who are using it. They will vanish in the cloud. Software packages and network organizations that support recursion will not only provide for lean and mean but also for lean and meaningful business operations. This will shift our focus from survival of the fittest to survival of the most cooperative.

There are lots of adventures out there. Find them. Enjoy them. Be willing to experience.

And have fun, much more fun – probably much more money. Are you "in"?

About the author

Frans van der Reep is a visionary practitioner – known as researcher, trendwatcher, writer, regular speaker, and entrepreneur. He is Senior Strategist at Getronics Consulting and Professor at the Dutch INHolland University of Applied Sciences.

References

i   I consider the quick rise in the number of SOHO entrepreneurs in the Netherlands, up to approximately 1 mio, now as a reflection of this development.

ii   The organizational impact of the Internet and the way the Internet changes the organization of work has been further explored in Van der Reep, F (2005), "from schedule push to reality pull," European Retail Digest, Oxford University, issue 48, Winter 2005, page 33-37, reprinted in IT Management Select, Volume 15, Winter 2009-2010, pages 36-41.

iii For example, Hans Kooistra quotes in his Telecommerce columns various sites reflecting these social media developments. As an example he mentions twitter.com/zappos, with 1.3 mio followers, with each month 4000 new followers. More examples on http://wiki.beingpeterkim.com. Kooistra, Hans, http://ht.ly/2dfbu

iv   The Internet impact is well described in, e.g., Applegate, M, et al., *Corporate Information Strategy and Management*, McGraw-Hill (2004), sixth edition. The aspect of recursion I am pointing at in this paper is not mentioned in this book and as far as I know not in business literature. High level impact of the Internet impact on individuals, business, and society is described in Van der Reep, F (ed) and P van den Heuvel (ed), *About an Analogous Life in a Digital World, How Cyber Commotion impacts your Business and Private Life*, Rotterdam, 2005

v   Kooistra mentions in the Telecommerce columns I referred to earlier, among others, www.glassdoor.com, www.bby.com, and www.odesk.com as examples from RRR mania. Http://tweetpsych.com and http://socialmention.com enable you to profile someone on the basis of his tweets. Unfortunately, social media also accelerate bashing, a very nasty thing.

vi   One might say that the Internet enables the personal age for everyone. This view is expressed, for example, in Gerritsen, Mieke (ed) and Geert Lovink (ed) , *everyone is a designer in the age of social media*, Amsterdam 2010

vii In the Netherlands there are nowadays tests with trains travelling between Amsterdam and Eindhoven so frequently, not using fixed schedules anymore, that the train almost becomes a reality pull driven public transport like a taxi.

viii In my own research I systematically find double digit cost reduction where individuals shift perspective from survival of the fittest to survival of the most cooperative, too, and really start to cooperate instead of acting from parallel self-interest. What really makes this so difficult from a standpoint of transformation management is that real cooperation makes both dependent and invisible. As being independent and being visible are, for most of us, survival strategies with which we were raised, this shift in perspective is not trivial. It means letting go one of our basic ideologies.

ix   Shirky, Clay,, *Here comes everybody, Revolution doesn't happen when society adopts new technology,it happens when society adopts new behaviors*, New York, 2008. In the Netherlands, e.g., Peter R. de Vries is an example of this development towards bottom-up action focused civilians taking over the court of justice. Whether this is OK or not OK is up to you to decide…Scientific reflection on this development may be found in R.J. In 't Veld (ed.), *Knowledge Democracy. Consequences for Science, Politics and Media*. Berlin/Heidelberg: Springer, 2010.)

x   The "traditional" Western newspaper seems to become more and more the source code for social media users and the platform for communicating expert views. On the other hand, newspapers my have additional value in widening the scope in terms of showing and pinpointing to its readers new viewpoints from new combinations in our "connected future."

xi   The 3C model is further explained in Van der Reep, F and P van den Heuvel, 3C, "internet dynamics and retail, towards a new market segmentation?" (in) European retail Digest, Oxford

University, Spring 2006, issue 49, pages 55-60

- http://www.inholland.nl/NR/rdonlyres/6C17C1F7-DE1D-4996-9015-1276FF083C24/0/ITManagementSelectwinter20092010FvdR.pdf - http://www.inholland.nl/NR/rdonlyres/15533E4E-DB16-4D3C-937E- FFB667B8175A/0/EuropeanRetailDigestOxfordUniversityjuli2006.pdf

xii A discussion of the impact of social media on logistics may be found on http://www.logistiek.nl/blogs/artikelen/id328- Gaan_social_media_de_logistiek_veranderen.html?nb=logistiek&editie=12%20juli%202010&link=Gaan%20social%20media%20de%20logistiek%20veranderen?&WT.mc_id=mail_logistiek_12%20juli%202010

xiii Mark Govers, who wrote his PhD on this theme, states that the necessary variety in process output as a result of business dynamics needs a variety in management as well. His finding is that, in practice, ERP forces business process too much on standards, neglecting vital differences. His suggestion is to use various ERP systems for various business process groups.

xiv Senge, P, et al , *Presence, An Exploration of Profound Change in People, Organizations an Society*, Doubleday, 2005

xv For further explanation: http://en.wikipedia.org/wiki/Recursion

xvi http://en.wikipedia.org/wiki/Consilience . "Consilience" states that generalizations arrived at in one scientific area have often helped in understanding other areas. The fact that all different areas of research are studying one real, existing universe is an apparent explanation of consilience. Here I apply the concept by assuming that requirements for social systems arrived at by anthropologist will also be valid in the business system environment, usually called organization.

xvii Of course, we have to tackle the problem of the infinite loop that is often related to recursive structures, creating memory overload. But I'm sure that's a solvable problem.

xviii "Right practices" are usually the domain for ERP systems (SAP, Peoplesoft, Oracle). Perhaps Apple comes closest to really supporting communicational excellences in their concept that each user should create his own, customized ICT environment by downloading the applications he wants to use. However, that implies that the Apple concept should allow downloading, in principle, any application in the Apple environment. In terms of Figure 1, the Apple user community shows a lot of bottom-up, reality pull community driven application development, leading to a perpetual beta and, perhaps, recursion avant la lettre.

xix Lineke Sneller and Peter van den Heuvel have found in recent research that in terms of the 3C model (Figure 2), all types of activities mentioned there are currently being supported by ERP systems in the Dutch market with the "next practices" as an exception. The drivers for implementing ERP are different in the three boxes. What the 3 boxes have in common is that optimizing is driven by best practice focused fragmentation leading away from recursion. The next practice box doesn't show ERP use

for general management. Sneller, L. and Peter van den Heuvel (2010), 3C en ERP; het verband tussen marktsegmentatie en informatievoorziening, (in) *Weven en Waven, Op naar Digitopia?* Pages 156-168, Rotterdam, 2010

EDITORIAL COMMENT

In the fall of 2010, MIT Sloan Management Review published a list of 10 observations and questions about analytics-driven management 'that have popped out of research and interviews so far' and that they will explore in more detail in future reports and issues. It is only a first glance but we did not even want to keep this first exploration of the theme from you. It is simple, straightforward and terribly useful and all about change and how organizations and managers are able to cope with the changing world of today.

Authors

Michael S. Hopkins, Steve Lavalle and Fred Balboni

	Business	Information systems	Technology
Strategy	███	▓▓▓	
Organization		▓▓▓	
Operation			

10 Insights:
A First Look at The New Intelligent Enterprise Survey

ABSTRACT

How do you win with data? SMR surveyed global executives about turning the data deluge and analytics into competitive advantage. Here's an early snapshot of how managers are answering the most important question organizations face.

Last May, at the MIT Sloan CIO Symposium main-stage discussion on "Emerging Stronger from the Downturn," one panelist listened with a growing private smile as his fellow speakers described example after example of how technology-driven information and analytics applications were transforming their companies. The stories were of data and analysis being used to understand customers, parse trends, distribute decision making, manage risk; they foretold of organizations being reinvented and management practice being rethought. They told of change, basically. A lot of it. Driven by ever-emerging technology and the new things it could do. That was the point at which the panelist, a multinational industrial COO, turned to the audience and unofficially summarized, "So, the lesson: If you don't like change, you're going to like irrelevance even less."

He's right. Change is here. Failure to adapt means irrelevance. Time and progress march on, but at a Moore's law pace instead of a clock's.

However, the focus on exactly what's changing can be misplaced. For all the swiftness with which technology is shifting — getting smarter, more powerful, more cognitively "human" — it's sometimes true that the attention we pay to the next new technology is a distraction. It distracts us from the changes that organizations could make with no more new

The leading question

What do surveyed executives say about how they compete on data and analytics?

Findings

Executives name innovation their top business goal.

There is a striking correlation between an organization's analytics sophistication and its competitive performance.

The biggest obstacle to adopting analytics is lack of know-how about using it to improve the business.

technology at all — the changes organizations could achieve just by capitalizing on how current technology can enable them to capture, analyze and act on information. (Though the "just" in that sentence may be ill-advised.)

MIT Sloan School's Erik Brynjolfsson, director of the MIT Center for Digital Business, talked about that kind of change in an interview with SMR (find the edited interview at sloanreview.mit.edu/x/51330):

"Although most of what I've been talking about has focused on changes in the technology, I think the biggest changes are going to be in the way the companies use the technology. If some catastrophe hap-

pened and technology just froze for the next couple of decades, I believe the pace of organizational change would continue just as rapidly, because we have so much catching up to do. Specifically, I think this cultural mentality of using data more effectively, running experiments and responding to the environment and replicating it is something that is going to happen regardless of what additional advances we see in the underlying technology. A decade from now, I expect companies to be far more responsive, far more innovative, far more analytics-minded." Brynjolfsson gave experimentation special emphasis, but his observation fits other information-enabled practices found under the big tent of analytics. The technology is here. The data are available. How will companies use them to win? To answer that question, *SMR* has teamed with the IBM Institute for Business Value to build a new innovation hub and research program called "The New Intelligent Enterprise." Through the *SMR* and IBM IBV collaboration, The New Intelligent Enterprise aims to help managers understand how they can capitalize on the ways that information and analytics are changing the competitive landscape. What threats and opportunities will companies face? What new business models, organizational approaches, competitive strategies, work processes and leadership methods will emerge? How will the best organizations reinvent themselves to use technology and analytics to achieve novel competitive advantage? How will they learn not only to be smarter, but to act smarter? In the months ahead, this inquiry into the makeup of The New Intelligent Enterprise will consist of survey research, indepth interviews with thought leaders and top corporate executives worldwide and the most relevant academic research and case study work in the field. The next few pages contain (very) early returns on that research — especially on the first annual New Intelligent Enterprise Survey, a global survey of nearly 3,000 executives who told us about their top management goals, their uses (and misuses) of information and analytics as they attacked those goals and the management practices in play in their organizations. In both this article and "10 Data Points," which follows on page 28, we call out some of what we're learning. The articles have been coauthored by core members of The New Intelligent Enterprise team: Steve LaValle, IBM Global Strategy Leader for Business Analytics and Optimization; Nina Kruschwitz, *SMR* Special

Projects Editor; Rebecca Shockley, IBM IBV Global Lead for Business Analytics and Optimization; and Fred Balboni, IBM Global Leader for Business Analytics and Optimization. Please note: What's here is only preliminary — a true "first look" at the themes, bench-marks and questions that are surfacing. Next on the schedule: conclusive analysis of the survey and stage-one interview findings will be published in a New Intelligent Enterprise Special Report on October 25. Selected interviews will be published online through early winter. And in late December, the Winter issue of *SMR* will include further exploration of the key ideas in October's Special Report. Please visit sloanreview.mit.edu for updates and publications. For now, though, consider the following notes — and the survey statistics in "10 Data Points" — as a collective reminder to reexamine your own practices and plans. As the gentleman said, If you don't like change, you're going to like irrelevance even less.

Here are 10 observations and questions about analytics-driven management that have popped out of research and interviews so far, and which we'll be exploring more deeply in the major reports ahead.

1 The Big Picture: Make It New (Or, the Innovation Imperative)

What's the challenge that information and analytics need most to help solve? Innovation, say New Intelligent Enterprise Survey respondents. They named "innovating to achieve competitive differentiation" their top business challenge (see "Innovation Is the Top Business Challenge," p. 28), significantly ahead of runners-up "growing revenue," "reducing costs" and "acquiring customers." Top performing companies put an even higher premium on innovation than lower performers did. Innovation's dominance as a strategic need may explain a lot about the current management emphasis on data exploitation in general and analytics in particular. Think of Thomas Malone on aggregating insight via collective intelligence, or Andrew McAfee on informing human intuition with the rigor and insight of machines. Or think again of Brynjolfsson and his observa tion about the underlying catalytic force of measurement alone, which is just one of technology's innovation-enabling traits:

"What we're going to see in the coming decade are companies whose whole culture is based on continu-

ous improvement and experimentation — not just of specific processes, but of the entire way the company runs. I think this revolution can be fairly compared to the scientific revolution that happened centuries ago. Great revolutions in science have almost always been preceded by great revolutions in measurement. Management historically has not had that kind of careful measurement or experimentation." Now it does. Or it could, at least.

Next question: What specific ways are companies inventing to aid and abet innovation with analytics?

2 Analytics = Performance?

Correlation is not causality, but results from The New Intelligent Enterprise Survey support anecdotal reporting and interviews by revealing a striking connection between organizations with high analytic sophistication and top performance, relative to industry peers. Top performers are three times more likely to be sophisticated exploiters of data and analytics than lower performers.

Thought leaders who were interviewed noted that productivity studies also offer support for viewing analytics as a key performance driver, showing that as organizations increase their leveraging of technology and information, they recognize disproportionate productivity gains.

Whether causal or just correlative, the link is strong enough to have bred one of several storylines being explored in ongoing survey analysis: the notion that one sure journey a company can take toward competitive outperformance of its peers is the journey from analytics "starter" to analytics "sophisticate."

That leads to the next questions: What are the mileposts on that journey? What organizational characteristics need to be either nurtured or pruned in order for a business to advance along those steps? What processes are critical to install, and at what points?

3 You Can't Graft Analytics on to Your Business Without Modifying Its Culture, Too

Turns out it's wishful thinking to expect that inserting analytics into a business is like adding a room to a house — a move requiring no structural changes elsewhere in the operation. Culture (and talent, see below) is among the less well understood impediments to comprehensive analytics adoption. (See "Sophisticates Welcome Challenges to the Status Quo," p. 31) for a glimpse of just one way in

which advanced analytics users are different from the norm. Compared to many companies, they're both paradoxically more distributed (information, decision making and experimentation all need to happen close to the ground) and more centralized (data has to be governed in order to be shared). Traditional 20thcentury organizations find none of that easy.

Question: Which culture attributes need to be developed first?

4 Help Wanted (The Analytics Talent Challenge)

Survey results, expert interviewees and field commentators all suggest that there's a gap between the size of the analytics opportunity and the amount of talent needed to seize it.

The gap is created by the peculiar requirements of the ideal analytics-driven managers. They have to combine expertise in statistics, experiment design and interpretation and analytics with fundamental business knowledge and acumen. These analysts need the ability to ask the right questions and pose the right hypotheses. They need to know how to get data to tell them the things that matter (and not the things that don't).

Question: Given the shortage of such individuals, can organizations structure analytics management and execution so that individuals with some of the needed talents can work together to complement each other and constitute an effective whole?

5 Where in Organizations Is Analytics *Done*?

Three shorthand points:

- Both the survey and field research show that IT departments aren't leading the analytics charge but are integral to its success.
- Back to the story of analytics-sophistication evolution: It appears that analytics typically take root at point of need when companies begin the sophistication journey. Point-of-need applications remain present in about the same quantity, but as companies evolve, they first grow additional analytics capabilities at the unit or line-of-business level and finally at the central enterprise level.
- Several interviewees have suggested that a dedicated executive role may emerge — a "Chief Analytics Officer."

6 **Where Are the Leaders Going?**
The leaders — the top performers, the analytics sophisticates — are going further, as fast as they can. The survey reveals that despite already being ahead of the pack as data-driven organizations, they disproportionately feel pressuretocapitalizeonanalyticsevenmore;improving their information usage is a higher priority than for non-leaders; and they are more likely than less sophisticated businesses to look outside their walls for benchmarks and lessons.
A case of: The more you know, the more you know you want to know more. (Also, see #7 — Seeing Is Believing.)

7 **Seeing Is Believing (and Understanding, and Using, and Collaborating)**
One more place the leaders are going: toward methods of making information come alive for users throughout their organizations — methods of making information real. Data visualization and simulations and scenario development are just some of the ways companies are trying to turn information into an active, rather than a passive, engagement. (See "What Matters Is Changing," p. 30.)
A research question: Which will work best?

8 **Strategy: Plan Less, Experiment More**
Almost all thought leaders — and many executives — cite the rise of experiments and the necessity for the analytics capabilities that underpin them. Practitioners use terms like "test and learn" and "sense and respond" to describe an approach that at its most rigorous includes a hypothesis and a control group, and at its least rigorous still demands an information sophistication not all companies have. Experiments can be large and organization-wide or tightly targeted and miniscule (which they more often are). Either way, they can powerfully supplant traditional methods of plotting a business's course. Survey respondents may have had that supplanting in mind when placing "strategy and business development" significantly behind only "financial management and budgeting" as the business activity to which they apply analytics.

9 **Analytics Plays No Favorites**
There's a conviction that the analytics-driven company does best in a consumer-facing game — or even better, in a born-digital, consumerfacing game (prototypically, Amazon). The survey results say otherwise, suggesting that organizations in any industry can and do use analytics as a competitive differentiator.

10 **Experts vs. Executives — The "Ideal State" Assessment Gap**
Among the questions asked of both thought leader interviewees and executive survey respondents was: "Imagine an organization transformed by better ways to collect, analyze and be prescriptively guided by information. How close are you to that ideal? Please rate on a scale of 1 to 10, where 1 = Not at all close, and 10 = Very close."
This self-assessment question was one of the revealers of analytics "sophistication." And the answers in aggregate, averaged, suggested how far the corporate world believes it has already come along the evolutionary path to being sophisticated about exploiting technology and data — and presumably to being rewarded with the competitive benefits that seem to attach. The average answer? About 4.5 on that scale of 10.
We asked the same question of interviewees — scholars and professional thought leaders who were asked to grade corporations as a whole — and got average answers 50% lower. Why? It could be testament to unduly high self-regard on the part of executives or unduly low critical assessments on the part of experts, but we think it's something else. We think it's about a sense of possibility — a differing notion between experts and executives of where the ceiling is. It's not that the interviewed experts denigrate the corporate world's progress to date; it's that they know enough to envision just how far that progress might extend.
We think the experts are right.

EDITORIAL COMMENT

In today's ever-changing business world, employee competence at continuous learning is becoming increasingly important to organizations, to managers and to career success. Maurer and Weiss explored this theme further by asking questions such as 'What aspects of work are associated with a need for competence at continuous learning and development?' and 'Do some dimensions of work demand competence at continuous learning while others do not?' This results in easy-to-read and well-documented research that identifies an important pattern of prediction for age and experience.

Source

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	Business	Information systems	Technology
Strategy	■		
Organization	■		
Operation	▨		

Continuous Learning Skill Demands: Associations with Managerial Job Content, Age, and Experience

ABSTRACT

Purpose: Given that competence at continuous learning is increasingly a key part of successful work, we investigated which aspects of managerial work are associated with a need for competence at continuous learning. Also, given the aging work force, we investigated whether age or experience is associated with reported need for continuous learning competence for effective performance.

Design/Methodology/Approach: Using job analysis surveys in a large sample from 50 jobs, we explored which dimensions of managerial work are associated with reported continuous learning skill demands (the latter operationalized as a combination of scholastic aptitude, self-objectivity, a development orientation, and inner work standards).

Findings: Job content dimensions particularly associated with a need for continuous learning were as follows: dealing with information, subordinates, technical problem-solving, and company service and networking. Managerial experience was a unique predictor of continuous learning skill requirements when controlling for age and job, but age was not a unique predictor when controlling for experience and job.

Implications: These results identify characteristics of managerial work that may demand continuous learning of incumbent managers, and also suggest that there are no differences associated with age in a perceived need for continuous learning that cannot be accounted for by experience.

Originality/Value: This moves prior research from more abstract and general characteristics of jobs likely to be associated with learning skill requirements to specific task dimensions in managerial work. Also, this identifies an important pattern of prediction for age and experience.

Introduction

Employee competence at continuous learning is becoming increasingly important in organizations. In a study of human resource executives from 400 organizations (AARP 2000), respondents judged the importance of 29 employee qualities for their organizations. Ranking in the top 15 were "flexible in doing different tasks," "will participate in train-

ing programs," "try new approaches," "up to date skills," and "learn new technology." Not surprisingly, the ability to learn and develop one's skills is quickly becoming a core career competency (Hall and Mirvis 1995). Individuals are increasingly responsible for their own career paths, often spanning several different career lines and organizations (Hall and Mirvis 1995). This shift means that the ability to continuously gain new skills and develop professionally is essential to career success. Continuous learning has benefits in the short term, such as knowledge acquisition, selfawareness building, and perspective change, as well as in the long term, such as skill development and behavior change. These ideally will lead to increased productivity and enhanced ability to meet organizational goals (Van Velsor 1998). Further, having an organization in which learning, development, and growth are parts of existing jobs can help in retention of employees (Kaye and Jordan-Evans 2000), a key issue given the current labor market.

Given that competence at continuous learning is increasingly a key part of successful careers and effective organizations, this raises important questions. What aspects of work are associated with a need for competence at continuous learning and development? Do some dimensions of work demand competence at continuous learning while others do not? Might characteristics of workers such as age or experience make a difference in whether continuous learning competence is considered necessary for effective performance on the work dimensions? The current study employed a job analytic approach to examine managerial job content dimensions (cf. Borman and Brush 1993) that are associated with the need for competency at continuous learning. It also examined age and experience in relation to these issues.

Competence at Continuous Learning Defined

Literature on employee learning and development suggests that being competent at continuous learning involves a combination of several things. First, continuous learning involves having a "development orientation" or "learning orientation." Having a development orientation means that one tends to pursue developmental activities and endeavors that are important to him/her. A person with a development orientation has the desire to expand his/her skill or knowledge base beyond current levels (London 1983). Similarly, individuals with a learning orientation (Dweck and Leggett 1988) view challenge as an opportunity to learn new things and they seek out learning. Therefore, to be competent at continuous learning, one will likely need to possess a development orientation.

Second, being competent at continuous learning involves inner work standards. Individuals with high inner work standards will strive to do their best, even when a lesser level of performance would be acceptable. This refusal to accept mediocrity is important to development because developmental experiences stretch a person to their limits, bringing them out of their current mode and level of functioning to a place where they must think and act in different ways. If one has inner work standards that involve a constant striving to be the best one can be, then stretching the limits is a staple of their professional existence (Ohlott 1998). Maurer (2002) echoes this notion by proposing a model in which employee learning and development orientation within an organization is the result of a chronic discrepancy between actual and possible selves (Markus and Nurius 1986; what one sees himself/herself as being versus what one sees himself/herself as capable of becoming). In the pursuit of a smaller gap between these conceptions, the person is constantly striving to better him/herself.

The third component of competence at continuous learning is scholastic aptitude or the ability to learn new things readily. This component could be considered the raw ability one inherently possesses to learn. According to a meta-analysis performed by Hunter (1986), general ability serves as a very good predictor of performance in training.

The fourth and final component of competence at continuous learning is self-objectivity or the ability to recognize one's own strengths and weaknesses. This is critical for continuous learning, because it enables the individual to realize that he/she has areas of weakness that would benefit from development. Being objective about one's career-related abilities may help the employee gain knowledge of the 'big picture' of his or her current career situation that lets him/her see the need for improvement in specific areas as a way to reach relevant goals. This general type of career insight was found to be related to past participation and current interest in development activity (Maurer and Tarulli 1994). Similarly, self-

perceived need for development (Noe 1986; Noe and Schmidt 1986; Maurer and Tarulli 1994) has been shown to be related to past participation in and current interest in development activity (Maurer and Tarulli 1994).

The review mentioned earlier illustrates that competence at continuous learning should include possessing a combination of (1) a development orientation or the tendency to pursue developmental activities and endeavors that are important to oneself, (2) inner work standards or the tendency to strive to do one's best, even when a lesser level of performance would be acceptable, (3) scholastic aptitude or the ability to learn new things readily, and (4) self-objectivity or the ability to recognize one's own strengths and weaknesses. Although these four component dimensions are distinguishable, in the current study, it is the combination of these four constructs that together make up the construct of competence at continuous learning. Work that demands these skills requires competence at continuous learning. While we might have simply measured continuous learning skill demands using a global measure and asking respondents to rate "continuous learning skill demands," this would leave the definition relatively open to interpretation and might mean different things to different people. In the present study, we instead made the definition more concrete and specific by employing four key skills from the literature and asking respondents to rate each of them. This had the effect of removing some of the subjectivity and variability across respondents in defining continuous learning skill and tied it to valid constructs from the literature.

It is important to know that this study employed both an analysis of the worker attributes required to perform a job and an analysis of the task dimensions that make up the task content of the job. Both analyses focused on the job requirements and demands, although the former focused on the individual attributes required of an incumbent to perform the work while the latter focused on the work itself. Both reflect on the nature of the work: what is required to perform the work from a human individual difference point of view as well as what comprises the work from a task content point of view. Both are important approaches to job analysis. The prior section dealt with worker attributes required

to perform the work while the next section of the paper addresses task dimensions in detail.

Task Dimensions and Continuous Learning Skill Demands

The activities that a worker performs on the job can have a large impact on his/her professional development. While the sources of data, information and experiences aiding or leading to one's professional development can come from many sources, such as other people, hardships, and training (McCauley 1986), on-the-job development is one of the most important sources. Informal on-the-job learning (McCauley et al. 1994) involves gleaning practical managerial skills and knowledge from job experience. The importance of on-the-job learning is not overlooked by managers themselves, who view on-the-job experiences as some of the most valuable learning experiences (Broderick 1983; Davies and Easterby-Smith 1984; Digman 1978; McCauley 1986; Hunt 1991; Keys and Wolfe 1988; Wexley and Baldwin 1986; McCall et al. 1988; McCauley et al. 1994).

Job assignments play a large role in development of managerial skills. Job assignments that push an individual out of his/her comfortable area of expertise may involve roles that are not well defined, and usually some elements that are new to the person. These kinds of assignments place people in a challenging situation of problems to solve, dilemmas to resolve, obstacles to overcome, and choices to make under conditions of risk and uncertainty (Ohlott 1998). On-the-job learning is most likely to occur when managers are faced with challenging job situations as mentioned earlier (Berlew and Hall 1966; Bray and Howard 1983; Davies and Easterby-Smith 1984; Kelleher et al. 1986; Margerison and Kakabadse 1984; McCall et al. 1988; Wick 1989; McCauley et al. 1994). Thus, certain qualities of a job (challenge, uncertainty, etc.) seem likely to have a substantial relationship with the continuous learning skill demands of those in the job.

Though we know that these qualities or experiences are particularly developmental, little or no research has examined which dimensions of managerial work content from a task or job analysis perspective are associated with the reported use of continuous learning competencies. In this study, we will attempt

to identify which work duties or tasks are associated with continuous learning skill demands.

Job analysis research has revealed certain dimensions that seem to be stable components of managerial work (Prien 1963; Morse and Wagner 1978; Luthans and Lockwood 1984; Campbell et al. 1993; Maurer and Tarulli 1997; Borman and Brush 1993; Sanchez and Fraser 1994; Schippmann et al. 1991). Dealing with subordinates, resource procurement and management, organizational service, professional socialization, information gathering, synthesis and dissemination, decision-making, planning and organizing, technical tasks and specific knowledge, and personal attributes are common dimensions found across many studies of managerial work. Some of these dimensions of managerial work may demand more competence at continuous learning than others. Therefore, in going beyond the notion that certain qualities, experiences or events associated with work lead to development, the current study examines managerial work content from a task-analytic perspective. The current research extends prior work on developmental job assignments and managerial task analysis by examining the intersection of (a) specific managerial job tasks and (b) continuous learning skill demands.

In addition to examining the intersection of these two lines of research, there are several other differences between previous research and the current project. Previously, research has asked people to identify particular experiences that have led to the greatest learning. This helps identify those parts of work that people label as developmental. However, it does not address whether specific learning-relevant skills are being used. That is, when asking people directly whether they learned a lot or from which things did they learn the most, the prior research did not examine learning skill demands from a more inductive, analytic perspective. In order to do this, the present study first identifies key skills that are needed for development and continuous learning, and then analyzes the extent to which those skills are required to perform the work. This is more of a "bottom up" approach determining the degree to which a job requires the person to utilize continuous learning skills, and provides more direct data on the learning skill requirements associated with various dimensions of work.

Also, the previous research has focused more on episodes, events, or qualities of work that were most demanding. This has been helpful to identify "maximal" learning situations. That is, research focused on the discrete happenings within the person's job experiences that promoted the most growth. However, another important question is the degree to which all job dimensions, irrespective of the degree of demand they put on the person, are associated with the use of learning skills. This includes a more "typical" performance perspective, allowing for analysis of all aspects of the work. In the current study, there was no attempt to only identify those job dimensions that were most challenging or demanding. Rather, a complete picture of the various work dimensions was taken, and the degree to which each dimension was associated with learning skill demands was assessed.

Role of Age and Experience in the Relationship Between Work Content Dimensions and Continuous Learning Skill Demands

Literature suggests that older workers may be less oriented to learning and development (Cleveland and Shore 1992; Maurer 2001; Salthouse and Maurer 1996). Older workers may experience a decline in training performance with age (Kubeck et al. 1996) and may also experience reduction in their learning-relevant abilities. Some older adults show deficits in selective attention (Rabbitt 1977; McDowd and Filion 1992), learning new associations (Salthouse 1994), and various aspects of memory performance (Craik 1977; Kausler 1982; Salthouse 1982), all of which are abilities relevant to learning. Research shows that older adults may require more help (Czaja and Sharit 1993; Elias et al. 1987) and more time (Sieman 1976) and may benefit from having a less stressful environment in which to learn (Jamieson 1969). Older workers are sometimes perceived to be slower, less creative, less flexible, more resistant to change, and disinterested in training when compared to their younger counterparts (Doering et al. 1983; Rhodes 1983; Stagner 1985). Research also suggests that older workers are often regarded as persons lacking a desire to develop or even as persons resisting development efforts (AARP 1995; Capowski 1994; Institute of Personnel Management 1993). Therefore, if changes in learning-oriented abilities and motivation occur with age, perhaps older workers will report less continuous learning skill demands, because they are less inclined

to engage in learning. Alternatively, if older workers have reduced ability and inclination to constantly learn new things, they may perceive any existing continuous learning skill demands as very challenging. Therefore, they may report that the job requires more continuous learning than their younger counterparts, who do not perceive the learning demands to be so great. Therefore, while the present study examined the relationship between age and reported continuous learning skill demands, the direction of the relationship is uncertain based upon prior literature and logic, and therefore a directional hypothesis was not offered.

The role of experience in continuous learning skill requirements also needs to be considered. To the extent that one has greater experience with a set of job tasks or content dimensions, they are less "new" and less challenging—the person has been doing them for a longer time. Therefore, they are less developmental, because the person has had a chance to master them. Job performance is related to the amount of experience one has on the job (Schmidt et al. 1986). Therefore, if a person performs work that requires continuous learning, but has been doing the work for a long time, it is possible that he/she will not need to engage in learning to the same extent as an inexperienced person. Alternatively, a more experienced person may know the work in greater detail and may recognize the need for continuous learning in order to be an effective performer on the various components of the work (e.g., the more you know, the more you realize you don't know). Therefore, as in the case of age described earlier, while the present study examined the relationship between experience and reported continuous learning skill demands, the direction of the relationship is uncertain based upon prior literature and logic, and therefore a directional hypothesis was not offered.

Methods

Participants

Participants (N = 906) were from a large telecommunications company and were incumbents in 50 different managerial jobs in six separate functional areas (distribution, business, residence, switched services, comptroller, and operator services). Table 1 displays the demographic data for the sample. The

Table 1 Demographic data for sample

Gender
597 Men
309 Women
Race
821 Caucasian
85 African-American
Age
Range = 23–67
M = 43.21 (SD = 7.95)
Education level (number in each category)
8th Grade or less: 1
1–4 Years of high school (no diploma): 5
High school diploma: 333
Formal vocational or technical school program: 42
Completed 1–4 years of college work (no degree): 204
Graduated from 2 year college: 63
Graduated from 4 year college: 157
Completed some graduate training: 46
Completed masters degree or higher: 44
No report: 11

data were obtained from a large-scale job analysis (Lykins 1987). Maurer and Tarulli (1997) conducted research in this setting to explore a different issue—construct validity of Holland's vocational dimensions in managerial work.

Measures

We used two separate measures in this study. Items dealing with work activities (tasks), and management skills/personal characteristics (including the continuous learning skill demands measures) were contained within the survey.

Work Activities

The "work activities" measure contained 236 items, each of which described a work activity/task (See Table 2 for examples). Following each description, participants were asked to rate the activity on importance (1 = not a part of my job, 5 = of critical importance) and frequency (1 = very infrequently or never, 5 = very frequently), as it related to his/her job.

Continuous Learning Skill Demands

Within the "management skills/personal characteristics" measure, participants read the brief descriptions of the items that comprised the continuous

learning skill demands scale. Respondents rated the importance of each in performing their job successfully.

We used a combination of rational and empirical approaches to construct a measure of continuous learning skill demands from the items. We constructed it rationally based on the four-part definition of continuous learning skill requirements described previously. The four items included in the composite can be found in "Appendix 1", and include development orientation (pursuing developmental activities in endeavors that are important to you), inner work standards (striving to do your best, even when you could get by with less), scholastic aptitude (learning new things readily), and self-objectivity (recognizing your own strengths and weaknesses).

We also used empirical results in creating the composite following a factor analysis: These four items were loaded on the same factor. Ratings were done on a scale of 1 (definitely not important) to 5 (of critical importance). The continuous learning skill demands scale had an alpha reliability of .75. The scale score was created by averaging the four items. In the present sample, the mean was 4.2 and standard deviation was .60, with a range of 1.5–5.0.

Age and Experience

Age was defined as the participant's chronological age as reported in the course of the job analysis ("What is your age (rounded to the nearest year)?"). Experience was defined as the number of years the participant had spent in his/her present job ["How long (rounded to the nearest year) have you been on your present job?"].

Analysis and Results

Data Reduction/Scale Construction

Task Frequency and Importance

We factored the 236 items comprising the "work activities" measure using principal axis factoring and direct oblimin rotation. The final solution was based on frequency ratings data because there has been some controversy over the use of importance ratings in factor analysis (i.e., there may not be actual true score variability in importance ratings in that importance should be a constant; Cranny and

Doherty 1988). Therefore, we constructed the scales based on the factor loadings of the frequency data by averaging the ratings for each item found to load on a factor. We chose oblique rotation over orthogonal because dimensions of interest to psychologists, as in the present study, are not often dimensions we would expect to be orthogonal. In the present study, some of the dimensions studied are conceptually similar, although distinct from other dimensions addressed. To the extent that they are somewhat related conceptually in terms of job content or worker attributes required, it should be expected that they will co-occur in jobs (i.e., if one dimension is present, then a similar and related dimension may also be more likely to be present). If the latent variables are, in fact, correlated, then an oblique rotation will produce a better estimate of the true factors and a better simple structure than will an orthogonal rotation (Fabrigar et al. 1999).

We retained a nine factor solution for these data based on examination of the scree plot, percentage of variance accounted for, similarity to factors found in previous work on dimensions of managerial work, and evidence from prior research by Maurer and Tarulli (1997) using the same set of items. Items loading under .30 were not included. The nine factors, and a few representative items from each, are as follows: (1) *Information Gathering and Synthesis; Decision-Making* (Contact members of other departments to obtain information; Reconcile information from a variety of sources; Gather information by asking questions); (2) *Dealing with Subordinates* (Monitor subordinates; Establish performance goals with subordinates; Encourage your subordinates to be creative, to solve problems, to make decisions); (3) *Meeting the Needs of Customers/Clients* (Deal with customer-related problems; Follow up with customers/clients to ensure satisfaction with quality of product, service, or system); (4) *Dealing with Resources and Budgets; Planning* (Formulate long-term plans, e.g., force requirements, project and budget plans; Prepare a budget for your work group or department; Formulate short-term plans, e.g., force requirements, project and budget plans); (5) *Procuring Resources* (Order materials, supplies, or equipment; Allocate equipment or materials; Make field visits to determine whether an operation or system is functioning properly); (6) *Context Monitoring and Company Representation* (Monitor economic, technological, or demographic trends that

Table 2 Content matches between the current study, Borman and Brush (1993), Cooke (1989), and Maurer and Tarulli (1997)

Current study	Maurer and Tarulli (1997)	Cooke (1989)	Borman and Brush (1993)
Information gathering and synthesis; decision-making	Making decisions/solving problems	Identifying problems Making decisions	Collecting and interpreting data Decision-making/problem-solving
Dealing with subordinates	Dealing with subordinates	Delegating Building teams Evaluating performance Developing subordinates Managing conflict	Guiding, directing, motivating subordinates Training, coaching, developing subordinates Maintaining good working relationships Delegating Communicating and keeping others informed
Meeting the needs of customers/clients	Meeting the needs of customers/clients		
Dealing with resources and budgets; planning	Dealing with resources/ budgets	Planning effectively Organizing	Monitoring and controlling resources Planning and organizing
Procuring resources	Procuring resources		
Context monitoring and company representation			Representing the organization to customers and the public
Technical, problem-solving	Technical tasks		Technical proficiency
Analysis and market awareness			
Company services and networking	Networking		Representing the organization to customers and the public
			Selling/influencing

may affect the company; Monitor changes in domestic or international cultural, social, and political climates); (7) *Technical, Problem-Solving* (Perform detailed analyses of operational problems; Verify or revise procedures, standards, manuals, or guidelines; Write guidelines, practices executive instructions, etc.; Apply advanced techniques and knowledge to address issues and questions in areas where very few people have expertise); (8) *Analysis and Market Awareness* (Address problems by applying advanced principles, theories, and concepts from more than one specialized field; Perform systems analysis and design, identifying assumptions, constraints, and objectives.; Monitor competitors); (9) *Company Services and Networking* (Serve on task forces/ committees; Serve as the chairperson of task forces or committees; Write business correspondence). Items included in each of the nine resulting scales can be found in "Appendix 2". Overall, correlations between the factors were fairly high and positive. The mean correlation among frequency scales was .48. The mean correlation among the importance factors was .50.

The factors retained in our solution have content similar to those from other studies on managerial work content. For a comparison of our dimensions with dimensions from Borman and Brush's (1993) taxonomy of managerial work, scales from the Management Effectiveness Profile System used by Cooke (1989), and scales derived from a subset of data obtained from the same setting as this study (Maurer and Tarulli 1997; Table 2).

Regression Analyses

In the regression analyses reported here for job content, we used hierarchical regression to predict the criterion of continuous learning skill demands. We controlled age, years on the job, and actual job occupied by the participant to avoid contamination of the results by differences in age, experience, or the nature of the job (for e.g., differences caused by hierarchical systems, departments, or location within the organization). We controlled job using the dummy coding system recommended by Cohen and Cohen (1983). In this case, 49 (k-1) dummy variables were created and were entered as a block into the hierarchical regression.

Task Content

Both frequency ($R^2 = .293$, $p < .001$) and importance ($R^2 = .336$, $p < .001$) composites were significant predictors of continuous learning skill demands. The job content frequency factors are highly intercorrelated, as were the importance factors. High intercorrelations among predictors can lead to instability in regression coefficients, making positive or near zero coefficients become zero or negative. This can make accurate interpretation of results difficult.

To aid in the interpretation of the relationships between work content composites and reported need for competence at continuous learning, we computed partial correlations between the work content composite variables (taken one at a time) and continuous learning skill requirements, controlling for job, age, and years of job experience (see Table 3). Upon examination of these partial correlations, it is apparent that all of the dimensions are positively and significantly correlated with continuous learning skill requirements, but some are more highly correlated than others.

For both frequency and importance composites, "information gathering and synthesis," "dealing with subordinates," and "technical, problem-solving," designs were the three dimensions most highly correlated with need for competence at continuous learning. "Procuring resources" and "Analysis, market awareness" were the two least correlated with that variable.

Age, Experience, and Continuous Learning Skill Demands: Main Effects and Polynomials

We used regression analysis to examine the effects for age and experience in predicting continuous learning skill demands. We used power polynomials (x^2, x^3) in examin-ing age and experience in relation to continuous learning skill demands in case there were any curvilinear effects involving these two variables.
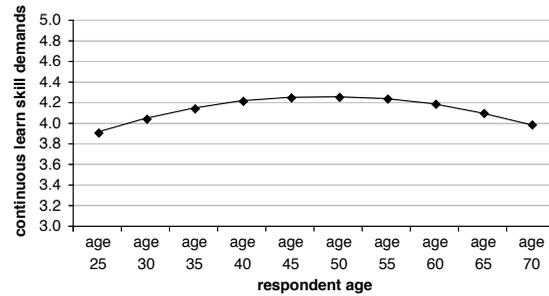
Figure 1: Age and age-squared as predictors of continuous learning skill demands

Age

Uncontrolled for the effects of other variables, age alone (R^2 = .005, $p < .05$; β = .072) and age-squared (ΔR^2 = .006, $p < .05$; β = -.716) significantly predicted continuous learning skill requirements (Fig. 1), but these effects became nonsignificant ($p [05$) once experience and job were controlled for. We also conducted additional analyses to explore whether age moderated the relationships between task content dimensions and continuous learning demands described earlier, but none of these analyses were significant.

Experience

Experience alone (R^2 = .016, $p < .001$; β = .125) was a significant predictor of need for continuous learning competence, and there were no curvilinear effects. These effects remained significant once age ($R2$ = .011, p<.01; β = .114) or job ($\Delta R2$ = .008, p<.01; β = .100) were controlled for, and it remained significant when both job and age were

Table 3 Standardized regression coefficients and partial correlations (controlled for job, age, and experience) of frequency and importance composites predicting continuous learning skill demands

	Frequency		Importance	
	Standardized beta coefficients	Partial correlations	Standardized beta coefficients	Partial correlations
Information gathering and synthesis; decision-making	.31***	.42***	.41***	.48***
Dealing with subordinates	.41***	.40***	.37***	.43***
Technical, problem-solving	−.03	.33***	−.00	.36***
Company services and networking	.07	.33***	.09	.37***
Meeting the needs of customers and clients	−.01	.30***	−.10	.30***
Dealing with resources and budgets; planning	−.14*	.30***	−.20**	.33***
Context monitoring and company representation	.08	.28***	.08	.32***
Procuring resources	−.06	.28***	−.03	.32***
Analysis and market awareness	.05	.27***	.08	.29***

* Significant at $p < .05$

** Significant at $p < .01$

*** Significant at $p < .001$

controlled ($\Delta R2 = .006$, p < .05; $\beta = .089$). We also conducted additional analyses to explore whether experience moderated the relationships between task content dimensions and continuous learning demands described earlier, but none of these analyses were significant.

Discussion

Although all job task dimensions were positively correlated with continuous learning skill demands, some were more positively correlated than others. In particular, dealing with information, subordinates, technology and company service and networking seem particularly associated with high need for continuous learning competence. This suggests that work involving these types of tasks is likely to be associated with a continuous learning skill demands, providing some information to organizations desiring information on characteristics of managerial work that may demand continuous learning of incumbent managers. This is increasingly important because the need to continuously gain new skills and develop professionally is essential to career success and organizational success, and having an organization in which learning, development, and growth is part of existing jobs can help in retention of employees (Kaye and Jordan-Evans 2000), a key issue given the current labor market.

The relationships among age, experience, and continuous learning skill requirements are interesting. Age, uncontrolled for job or experience, is a significant predictor of continuous learning skill requirements, but when job and experience is controlled, it loses it's predictive power. Experience is also a significant predictor of continuous learning skill requirements when age and job are not controlled, but it remains significant even after age and job are taken into account. This means that experience is a unique predictor of continuous learning skill requirements, but age is not. Perhaps, experience was positively correlated with continuous learning skill demands, because as managers become more experienced, they increasingly recognize the need to develop skills and learn new knowledge and information (i.e., the more you know, the more you realize you don't know). Perhaps, they have come to realize the importance of these types of continuous learning skills for success. Further, this result suggests that there are no differences associated with age in a perceived need for continuous learn-

ing in managerial jobs that cannot be accounted for by experience. This is notable because changes in learning-oriented abilities and motivation may occur with age, and there might be reason to believe that older workers will report that continuous learning skill demands are different from that reported by younger workers. But that result was not observed here when controlling for experience. Additional research on this issue might be warranted.

Several of the findings regarding association between work content dimensions and continuous learning skill demands in the managerial work domain follow logically from previous literature on development and technical updating. Gathering and disseminating information generally requires a variety of skills in many areas. Communication, interpersonal skills, language skills, reasoning, and others are all involved in effectively presenting or gleaning information. People and situations vary greatly, thus creating a dynamic and flexible environment in which to complete these tasks. Research has shown that a work environment that is complex, dynamic, and changing demands more emphasis on development (Kaufman 1974, 1978; Shearer and Steger 1975; Thompson et al. 1974; Kozlowski and Farr 1988).

In the qualitative study done by Kelleher et al. (1986), managers who participated in more learning activities were also more likely to report that communicating and dealing with others were important parts of their job. The chance to interact with knowledgeable peers has also been shown to be associated with work environments that facilitate development in technical jobs (Kozlowski and Farr 1988). This previous research lends support to our conclusion that interpersonal duties (e.g., dealing with subordinates, networking) are associated with continuous learning skill requirements in managerial work. Dealing with others requires sensitivity and the ability to be flexible. It is also possible that staying in contact with knowledgeable others calls attention to opportunities for development or to areas in which one needs improvement. Communication and collaboration with others may also allow individuals to share knowledge with each other.

The current finding that technology (e.g., technical, problem-solving) plays a role in continuous learning skill requirements for managers is interesting, given that a substantial amount of research done on training and updating behavior by technological profes-

sionals has shown similar results. Kozlowski and Farr (1988) report that a high level of technology in the workplace facilitates development. Technical environments change often and require the use of a diverse body of knowledge, making them particularly conducive to development.

In summary, the research presented in this paper examines the intersection of several dimensions of work and their relationship to reported continuous learning skill requirements. It adds to previous research by looking in more detail at the content of work and the kind of workers that are likely to have high continuous learning skill requirements. The effects are fairly clear, the sample size is large, the number of jobs is notable as is the diversity of job content and functional area. A limitation of this study is that all the data were collected in a single organization using job analytic survey methodology in the late 1980s. This may limit generalizability somewhat and method variance could be having some influence on results. Additionally, our measure of perceived continuous learning skill demands, while providing reasonable coverage of important constructs related to continuous learning, is only one measure. Conceivably other measures could be explored in relation to this general issue. Despite these limitations, this piece of research adds incremental and useful information to the existing literature on jobs, age, experience, and continuous learning.

Our research adds to this existing body of knowledge by moving from more abstract and general characteristics of jobs to specific task dimensions in managerial work that are likely to be associated with higher continuous learning skill requirements. Further, we operationalized continuous learning here specifically as a combination of four key constructs, providing a concrete measure of continuous learning skill demands. The present study provides some construct validity data for this scale. Also, this research adds to the literature by identifying an important pattern of prediction for age and experience. The data suggest that the differences in perceived continuous learning skill requirements can come with time on the job, independent of age, but not vice versa.

Appendix 1: Items Included in Continuous Learning Skill Demands Scale

Read the name and brief description of the skill or personal characteristic. Then consider how impor-

tant it is relative to other skills or personal characteristics to perform your job successfully. Use the importance scale given below:

Definitely not important
Of minor importance
Of moderate importance
Of substantial importance
Of critical importance

Development orientation: pursuing developmental activities in endeavors that are important to you.
Inner work standards: striving to do your best, even when you could get by with less.
Scholastic aptitude: learning new things readily.
Self-objectivity: recognizing your own strengths and weaknesses.

Appendix 2: Items Included in and Reliabilities of Work Content Dimensions Scales

Reliabilities are reported for both frequency (F) and importance (I), respectively, in parentheses after the name of the scale.

Information gathering and synthesis; *decision-making (.89, .91)*: Contact members of other departments to obtain information; reconcile information from a variety of sources; gather information by asking questions; consider information from many different sources before making a decision; make decisions with less information that complete data; analyze information and apply it to job operations; explain the rationale for your decisions; analyze situation to identify critical issues or concerns; compile or coordinate the collection of information; consult with administrative or technical staff for help in making decisions; gather information from written documents; forward work to other units; verify the accuracy and completeness of documents; record and file information relevant to your work; make decisions in new or unusual situations without clear guidelines on the basis of precedent or past experience; communicate via phone with others; make decisions that will have impact beyond your immediate department; keep up-to-date in your area of specialization; Encourage feedback and clarification from others; review/analyze computer printouts; determine whether information is relevant for pending decisions; solve problems or situations that are very abstract or unstructured in nature; take

calculated risks in making decisions as opposed to wafting for a "sure thing".

Dealing with subordinates (.98, .98): Monitor subordinates; establish performance goals with subordinates; encourage your subordinates to be creative, to solve problems, to make decisions; arrange for subordinates to receive appropriate training; provide performance feed-back to subordinates; complete performance appraisals on subordinates; provide on-the-job training to subordinates; work with subordinates to improve job performance and facilitate their development; prioritize subordinates; interact face-to-face with subordinates; provide guidance to your subordinates on the basis of your understanding of the company; monitor subordinates; follow union contract agreements or personnel policies in supervising subordinates; provide the resources necessary for subordinates to perform their work; ensure that subordinates are alert to problems that need attentions; forward job-department-, and company-related information to your subordinates; provide detailed instructions to subordinates when giving assignments; schedule or prioritize subordinates; integrate subordinates; distribute work to subordinates as appropriate; follow-up on assignments with subordinates to ensure needed actions have been taken; represent subordinates to higher level management; use your authority to assist your subordinates in accomplishing important tasks; discipline subordinates; monitor your work group; explain policies, issues, or changes to your work group; involve subordinates in planning for and implementing change; advocate subordinates for advancement; give direct orders to others; implement changes in your work group/ department; allocate manpower to specific or tasks; establish planning guidelines for your work group or department; interpret and administer personnel practices (e.g., payroll changes, company benefit plans, vacation policy, affirmative action); resolve problems escalated by subordinates; delegate work to others; make decisions that direct affect the careers of others; identify planning needs for your work group; interpret and explain how practices and procedures relate to your job; coordinate planning activities in your work group; deliver formal training to other employees; communicate changes to the people that will be affected by them; establish annual performance objectives (e.g., production, service, revenue, expense, profit of a work group/department); keep people informed about

your company; make decisions or issue instructions in accordance with policy and procedures; conduct meetings or briefings; ensure that operations planned by superiors are executed; identify areas requiring or providing opportunities for change in your work group/ department; recommend or develop operational policies and procedures under which employees are expected to perform; develop implementation methods and procedures to meet objectives established by others; track productivity, quality assurance, or service effectiveness; handle administrative paperwork; keep up with changes in company standard practices; listen to other people; establish internal control/auditing systems for your work group, department, or company; decide when issues are to be escalated to higher management; represents your work group when solving problems within the company or department.

Meeting the needs of customers/clients (.87, .87): Deal with customer-related problems; follow up with customers/ clients to ensure satisfaction with quality of product, service, or system; resolve customeror client-related problems in a way that preserves or enhances the company image; demonstrate or explain to a customer or client how a product, system, or service works; sell products, services, or systems; promote the company; interact with irate business contacts, such as customers, clients or vendors; resolve operational or customer problems by using your own department; recommend specific systems, services or products to address customer or client needs; make decisions that have a significant effect on customers/clients; assist sales people in securing or maintaining important accounts; interview people to assess their needs or determine the nature of a problem; ensure the products and services comply with tariffs, contractual agreements, or other legal restrictions; communicate with shareowners, customers, or community agencies to foster company relations; respond to the questions asked by individuals or organizations outside the corporation; serve as a subject matter expert to people outside your company; considers legal or ethical constraints as well as company policy or goals in making decisions; monitor product, service, or system.

Dealing with resources and budgets; planning (.90, .91): Formulate long-term plans, e.g., force requirements, project and budget plans; prepare a budget for your work group or department; formulate

short-term plans, e.g., force requirements, project and budget plans; monitor and control budgeted expenses; forecast future personnel, materials, or equipment requirements; negotiate for limited organizational resources (e.g., personnel, facilities, funding); initiate requests for capital expenditures; develop guidelines for preparing budgets; develop plans to phase out or improve the efficiency of facilities, equipment, or systems; evaluate the costs and benefits of alternative solutions to problems; define areas of responsibility for managerial personnel; make decisions which could result in the savings or loss of a large amount of money (i.e., $100K or more); make decisions that have long-range implications; perform analyses of data that are more complex than calculating averages and percentages; make recommendations for future action based on analyses of data; monitor the financial performance or trends of the department, including its revenue and expenses; translate long-range plans into short-range operational objectives; evaluate the structure of organizations to determine the best allocation and utilization of resources; establish planning guidelines which others must follow.

Procuring resources (.89, .90): Order materials, supplies, or equipment; allocate equipment or materials; make field visits to determine whether an operation or system is functioning properly; develop schedules for installing equipment, facilities, or systems; authorize the requisition of materials equipment, or services; recommend the requisition of materials, equipment, or services; monitor and control the size of equipment or product inventories; develop contacts with people outside your work group who provide you work or services (e.g., purchasers, suppliers, consultants or inspectors); set schedules on the basis of availability money, materials, or human resources to ensure project completion or contract fulfillment; Coocrdinate with other groups to meet established schedules; develop cost or time estimates for producing or delivering products or services; evaluate products and services offered by vendors; establish agreements with other dealers, distributors, or vendors; review records on projects, personnel, costs, schedules, or equipment; follow up with superiors or coworkers to ensure timely completion of projects; keep current with technical specifications for products or services; keep detailed and accurate records on projects, personnel, costs, schedules, or equipment; participate on a team with company

and vendor representatives to install, implement, or modify a system or service.

Context monitoring and company representation (.86, .87): Monitor economic, technological, or demographic trends that may affect the company; monitor changes in domestic or international cultural, social, and political climates; Monimtor money market conditions and indicators; monitor proposed legislation, judicial rulings, or government agency decisions that might affect the company; monitor the company; Monitor imnternational politics that may affect the company; Monitomr the financial performance of the corporation; keep up with market changes and trends that might have an impact on your company; join boards, clubs, or other organizations which might provide useful, work-related contacts; attend social functions as a representative of your company; promote the company by participating in local or civic or service clubs, schools, or other community organizations; gather information about trends in other departments in your company; read job-related materials (e.g., newspapers, professional and trade journals, technical reports).

Technical, problem-solving (.85, .85): Perform detailed analyses of operational problems; verify or revise procedures, standards, manuals, or guidelines; write guidelines, practices executive instructions, etc.; Apply adavanced techniques and knowledge to address issues and questions in areas where very few people have expertise; analyze the effectiveness of ongoing operations or systems; introduce new techniques, methods, and technology to the organization; prepare reports on complex matters so that persons without specialized knowledge of the subject can understand them; recommend that activities or solutions be implements; design computer programs given system requirements, problem definition, and system specifications; brainstorm with subject matter experts to develop creative solutions to unique problems; suggest improvements in department products, services, or operations; write computer code/programs; provide assistance and consultation in troubleshooting problems; devise measures of productivity, quality assurance, or service effectiveness; utilize and integrate technical research and data in your work.

Analysis and market awareness (.78, .78): Address problems by applying advanced principles, theories, and concepts from more than one specialized field; perform systems analysis and design, identifying

assumptions, constraints, and objectives.; monitor competitors; develop and write sales or project proposals; identify and develop new markets for company products or services; anticipate and respond to new or changing demands for products, services, or systems; develop a product communication strategy; keep up with rapidly changing technology. *Company services and networking (.89, .90)*: Serve on task forces/committees; serve as the chairperson of task forces or committees; write business correspondence; prepare speeches, briefings, or presentations; attend social functions to keep up your contacts; represent your work group in interdepartmental meetings to resolve problems; preside at meetings as a representative of your company; advocate the company; negotiate with representatives from other companies (including auxiliary/vending companies; serve as a subject matter expert to help solve problems in other work groups or departments; develop and maintain contacts with key people outside your company; make formal presentations; negotiate with other managers in the company to reach acceptable solutions to problems; develop new contacts by answering requests for information; develop and maintain contacts with key people in your company; assist in resolving deadlocks or problems between key individuals or groups in the organization; refer problems that affect units outside your department to appropriate levels of management.

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EDITORIAL COMMENT

Already read a lot of articles, white papers or other publications on WEB2.0, HNW and all the wonderful tools to support these? And you still wonder what all the fuss is about? Then read this article!

In this clear and elegant article, Acedevo presents an understandable framework to position the Network Society in the context of human development and social capital. Based on this, he describes an outline for rearchitecting a development project as a network by way of an example and gives a few recommendations.

I'm convinced the presented framework leads to a better understanding of possibilities of networked ways of working, will help you formulate a vision on the subject and makes it possible to prioritize these kinds of development within your own organization.

Erik van Geel

Author

Manuel Acevedo

	Business	Information systems	Technology
Strategy			
Organization	■		
Operation			

Network Capital:
an Expression of Social Capital
in the Network Society

ABSTRACT

This article deals with an emerging type of social capital which is labeled as 'network capital'. It is formed from collaborative practices emerging from e-enabled human networks. It is proposed that network capital is a specific type of social capital in the Network Society, and that it holds significant value for the advancement of human development around the world.

Social Capital and Human Development

According to Amartya Sen, 'human development' refers to the expansion of choices (i.e. freedoms) for people to live better lives. This concept has universal application, so it is not only valid for under-developed nations (the global 'South'). Many factors play into human development, among them the inclusiveness of a society.

There is mounting evidence showing that social cohesion is critical for advancing human development. Participation, trust, solidarity and reciprocity, grounded in a shared understanding and a sense of common obligations, are mutually reinforcing values at the heart of good governance and proper citizenship.

The challenge resides in characterizing and measuring the effects and impacts of social cohesion. Robert Putnam, in his landmark 1993 book "Making Democracy Work" started to provide some empirical evidence for what is now called 'social capital' when he examined development levels in different parts of Italy. He concluded that variances in performance among different parts of the country could be largely accounted for in terms of social capital, characterized by participation in voluntary associations, or "horizontal networks of civic engagement".

Social capital is a measure of social cohesion, and one of the indicators of the overall 'wealth' of a country/society (together with financial, human, natural and physical capitals). The World Bank defines it as "the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions. (…) . Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together."

Another definition for social capital, this time in relation to networks, is as "the networks of social interaction and the norms of reciprocity that allow the individual and the community to assume a habit of civic collaboration aimed at common goals" [UNV 2000]. This definition has the double advantage of treating social capital as a network concept and it introduces the fundamental element of 'commonality' which puts it in the sphere of public goods.

We can thus appreciate the inherent policy dimensions of this new indicator of wealth: "The networks of social capital that exist below the waterline of public visibility are an indispensable component of any strategy aimed at promoting social integration, poverty reduction and sustainable development" [UNV 2000]. Governments and other governance actors will be wise to consider ways to promote and invest in social capital because it is a cost-effective asset for human development processes. And it comes with positive externalities like the decentralization of initiative-taking and the spreading of responsibilities in a more democratic and participatory governance structure.

Social capital in the Network Society: towards the notion of "network capital"

People have a timeless tradition of cooperating to achieve common results. There may be something genetic in our ability to pool together for common goals, as well as in being shaken by others' suffering. Despite issues of competition (sometimes taken to appallingly cruel extremes), persons have been helping other persons (beyond family or professional contexts) throughout history.

It is relevant to discuss social capital in the new context given by the emergence of a new phase of history, the Information Age, and its functional structure, the Network Society. Wellman writes that "the transformation of national and global societies into 'network societies' suggests the usefulness of thinking of social capital as a product of personal community networks as well as of formally institutionalized groups." It is well beyond the scope of this article to try to explore social capital in this new social context. Rather, our focus here is merely one aspect of it, which can be named 'network capital'.

Communities are no longer defined only by place, but also by interest, becoming organized into social networks. When the interaction takes place among members of an electronic network, which are likely loosely-knit in geographic terms, the resulting social capital is network based. **Network capital** could then be understood as a measure of the differentiated value in the Information Age that communities structured as social networks generate on the basis of electronic (digital) networks for themselves, for others and for society as a whole.

In this context, network capital can become a valuable asset for human development for two main reasons. First, because of the earlier mentioned importance of social capital for human development – and network capital being but one expression of social capital in the Information Age. Second, because development cooperation is meant to be an accelerator of human development processes, and the generation and investment of network capital has the potential to significantly contribute to renewed models of development cooperation in the Network Society.

There is insufficient treatment of this particular aspect of social capital in the literature, perhaps because it is only very recently with the mediatic rise of the Web 2.0 phenomenon that it is approaching enough of a critical mass to make a difference. Wellman describes network capital as the form of social capital that makes resources available through interpersonal ties. He writes that it consists of "knowing how to maintain a networked computer, search for information on the Internet and use the knowledge gained, create and sustain online relationships, and use these relationships to obtain needed resources, including indirect links to friends of friends." [Wellman 2001] and that it can be measured by "the frequency of social contact with friends, relatives, and workmates." While these are indeed elements of network capital, they clearly do not sufficiently explain it.

Community Informatics (CI) is a field that draws closer to the idea of network capital. Simpson [2005] refers to social capital constructed via CI, clearly making use of ICTs but not entirely due to ICTs and e-networks. CI-generated social capital indeed has some elements of network capital (see listing ahead) – we could say it is 'ICT-aided' social capital. Network capital, on the other hand, is 'ICT-enabled' social capital [Van Bavel et. al. 2004], admittedly an elastic differentation and one to further explore. But one that points at social capital created almost exclusively through electronic networks, plus it is not bound by physical location as often occurs in CI. In Castells' terms, network capital is the social capital of the space of flows.

While it is arguable that the accelerated emergence of Web 2.0 applications may radically transform

the use of Internet over the next 10-15 yrs., it has undoubtedly already provided the necessary e-tools for communities that form social networks to elevate their interaction by quantum leaps. There are 2.0 tools for weaving social networks (personal or professional), to support collaboration (such as wikis, content aggregators, groupware, mapping, tagging) or to simply facilitate content sharing (videos, photos, RSS feeds, podcasting or the ubiquitous blogs). They are being used in waves by a generation that grew up with video games and PCs, at such a scale where it may soon deliver significant effects, in social as well as economic terms.

This massive and current instance of technological social absorption provides a powerful added stimulus to advance the analysis of network capital, so we can better understand the nature of interaction, trust and collaboration over the new global digital layout. Such improved understanding will serve various purposes, whether in promoting its positive outcomes (e.g. to defend human rights or provide income-generation opportunities) or preventing/correcting pernicious consequences (such as criminal activities or the spread of intolerant social values).

Network capital may be characterized through a combination of attributes, only some of which may normally be manifested concurrently in a given community:

- It is a result of cooperation via electronic networks, and in turn fosters the habit of such cooperation. This cooperation includes sharing of information and the use of computer-mediated-communications but it goes further towards group work, the creation of specific products, and the achievement of set objectives.
- It is largely produced by volunteer action and contributions (though not exclusively, as it can be operationalized within organizations like companies).
- It is created by communities of interest, where membership is based on personal interest, skills, background/experience and sharing of a common purpose. While network technologies allow for anyone in the world with Internet access to take part (in fact many virtual communities are geographically disperse), physical

proximity may be a factor as well, as evidence by local community/citizen networks, as Gurstein [2000] has shown.
- It is generated by people organized as a virtual community who share a communal 'cyber-place'. This may be a simple e-discussion list, a suite of groupware applications, or sophisticated 2.0 virtual environments like Second Life.
- It is largely produced from asynchronous communications which provide greater flexibility for the human nodes of the networks and allow them to take advantage of the 'timeless time' features of the Network Society [Castells 1998].
- It has often stressed knowledge generation, and thus adds particular value in knowledge-intensive processes (like those related to scientific, R&D, policy-making or technical cooperation).
- It favors the expanded participation of people in matters of common interests, by facilitating the logistics and dynamic of such involvement. It thus opens up a wider array of possibilities for individuals to behave as 'global citizens', becoming involved in actions and issues not bounded by their physical location.

An early and still paradigmatic example of network capital comes from the creation of Free/Open Source software (FOSS). People from different locations, who may not ever see each other, use Internet and net-based tools to exchange information, generate knowledge, work collaboratively and develop well-defined products, 'all for the love of it'. These people consider themselves as software artists (even activists), and participate on a voluntary basis. They meet at specific cyberplaces, eg. distribution lists, extranets or project management applications, and sometimes in person as well, at conferences or other public events.

FOSS communities have crafted a culture of sharing and solidarity which not only makes their processes sustainable, but is a reference for others to also pursue electronic-based collaboration. The 'Open-Source' approach is becoming known for its methods and philosophy in fields outside software production, as a collaborative methodology. Their collaboration helps the individuals who take

part in it, and their products help specific personal/institutional users, as well as large sectors of society who have additional software choices available – in a good example of knowledge as a global public good. FOSS packages like GNU/Linux, Apache, Perl, Firefox, OpenOffice, MySQL or PHP have become an intrinsic part of the digital environment.

Let us now illustrate some possibilities for the generation and usefulness of network capital in development cooperation, by looking at one of its most basic elements, the 'development project'.

Putting Network Capital in action: re-architecting the development project as a network

Let us take the traditional 'development project' (ie. in health, education, employment, environment, etc.) in countries in the South as an item/model which can change significantly from the generation of network capital. Traditionally, a development project is defined by a set of objectives/expected outcomes, a given timetable, a budget, an array of inputs and some methodologies. It involves its staff, local counterparts, the sponsoring agency, and often some short-term outside 'expert' assistance.

In the context of the Network Society, development projects can be seen in a different light as 'network entities'. The project network would be part of the architecture and processes of the project, where a number of networked nodes with well-defined individual and collaborative tasks provide the inputs and resources to achieve the project's objectives. Benefitting from the Internet, neither distance nor time constraints irrevocably limit the involvement of a significantly wider group of participants, many of whom may do it on a voluntary basis. This innovative approach of 'the-project-as-a-network' can increase the engagement of people and institutions by orders of magnitude, and provide more opportunities of involvement of the 'global citizen'.

Figure 1 illustrates a collaborative network which can be set up for a development project. The diagram shows the types of institutions and individuals that can become involved (whether formally or informally). The diagram is not meant to illustrate an entire project network; that would require to picture in additional inter-relations and participants

(eg. project staff, implementing organizations, donor agency). Most of the relationships pictured would be of a voluntary nature – eg. collaboration between peers in development agencies working on similar topics. In the graph, examples of secondary or indirect collaborations are hinted at, the possibilities are more extensive and would make for a convoluted graphic representation. The types of involvement are outlined as follows :

- staff from a few related projects which could establish a collaborative relation with this project;
- members of some NGOs with thematic expertise or other direct interest in the issues dealt with by the project;
- online volunteers performing acivities tasked to them by project staff;
- onsite volunteers supporting the project;
- companies interested in the project area, possibly under their RSC line of activities;
- individuals participating in a virtual community of practice linked with the project thematic area;
- students and professors of a university that are studying and researching the issues dealt with by the project; and
- staff from a different development agency than the one supporting the project.

Network capital would emerge from this approach in various ways. Adequate network dynamics and tools would be needed for a relatively large number of individuals and institutions to become involved in effective and efficient fashion. This human network, this larger project (and largely virtual) community would only coalesce for the purposes of the project, because it would be created and tailor-designed for that purpose. The collaborative working methods are sure to resonate with some of the people involved, who would apply them later in other spheres. Some of the relationships initiated by the projects would become lasting human bonds, either for professional or personal purposes. The results and outcomes of the project would arguably prove to be, to a significant extent, a consequence of the network capital formed during its implementation.

Some considerations that emerge when examining this networked approach to project implementation:

A NETWORK PROJECT DIAGRAM

Direct collaboration with project - primary node

Indirect collaboration with project - secondary node

Joint collaborative action for the project
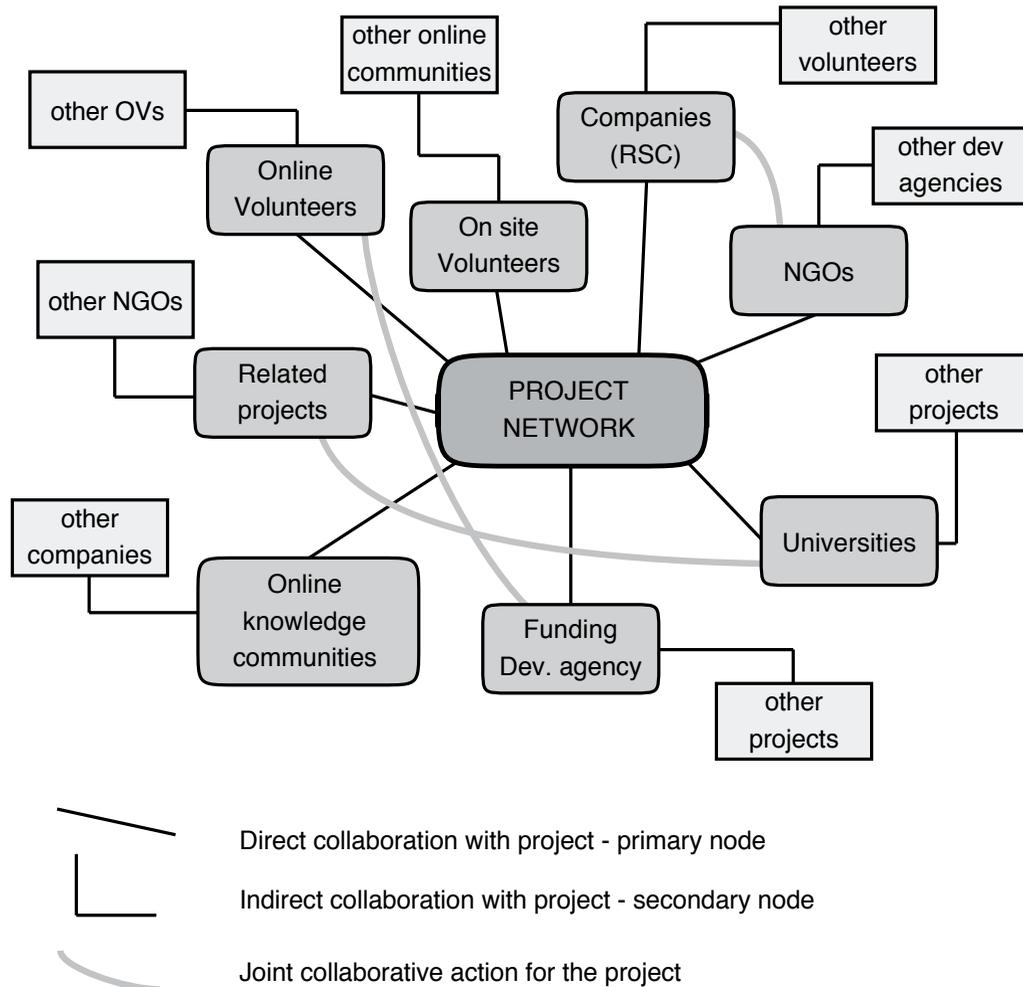
a. The role of a 'project network architect' as part of the project staff would be recommended. The design, construction, 'caring' maintenance and motivation of such a network will not happen in an ad-hoc fashion and will take considerable effort and dedication.

b. Variable network geometries with different configurations and densities can be established, with an essentially infinite set of combinations. Any given project can set up a tailor-made collaborative network.

c. The project would need to be designed with network structures permeating its formulation, strategy, methodology, institutional arrangements, and monitoring & evaluation.

d. Participation by individuals through this type of project architecture diminishes the exposure to the 'network fatigue syndrome', since tasks would be specific and time-bound, and collaboration would not be open-ended and ad-hoc.

Further Research for network capital

Much more research is required to clarify and characterize both the concept and the methods of network capital. Indeed also to advance in relation to social capital and its evolution in the context of

the Network Society. Some of the lines of work on which purposeful research could be conducted are suggested as follows:

• Methodologies of measuring social capital based on diverse interpretations of the concept, and comparative analysis of the presumably diverse results.
• Quantitative and qualitative differences among actions of groups/communities that have absorbed the use Internet and other ICTs (in issues like gender equity, human rights, environmental protection, etc.), in comparison with others whose ICT use is markedly lower. What are the differences also in terms of results and the impacts of those actions?
• Differences between geographic zones with differing levels of social capital and integration in the Network Society, controlling socio-economic factors and calculation methods.
• Comparison between results emerging from social action oriented towards the generation of public goods based on 'weak links' vs. 'strong links' (in reference to Wellman's work).
• Characterization of 'social cohesion' and what quantitative/qualitative indicators are more suitable for its analysis. Relations between social cohesion and weak/strong links.
• Results of political actions and decisions aimed at promoting the creation of social capital and network capital in diverse geographical areas.

Conclusion

The emergence of the Information Age brings about a related new paradigm in the Network Society. Social capital, which acts as a glue that keeps societies together, will have new manifestations in such an environment. One of them, which was labelled as 'network capital' in the article, is characterized by the distributed methods and electronic technologies which are inherent to networked operations in our days. Network capital is 'ICT-enabled' and will be a measure of how people collaborate through electronic networks for personal, communal and even global benefits. In other words, it is the social capital of the 'space of flows' described by Castells.

The Open Source movement provides an excellent example of network capital. Software programmers, organized through virtual communities of practice,

are creating both important network 'value' (good software products) as well as 'values' (the principles and the practice of tight collaboration on a specific technical area).

Network capital holds important potential for human development and specifically for development cooperation, where global and local issues mix fluidly in the processes leading to greater options for people and improved conditions of life. The global citizen will have more possibilities to become involved in social causes, with lesser constraints of place or time. This is particulaly relevant in the Web 2.0 era. We have shown one example, a networked project, where the conceptualization of a project as a network implies a wider map of relationships by people and institutions.

Policy implications related to fostering and expanding social capital, eg. via legislation related to the support of volunteer action, should also factor in network capital. Such policies ought to include (i) support to organizations that are already active in creating social capital so they can become extend their activities online, (ii) provision of the necessary network infrastructure for social/development purposes, and (iii) research into how network capital is created and how it can be promoted and harnessed in the wider contexts of governance and human development. Ultimately, network capital is a social asset which often will appear spontaneously. But as a public good, it will grow better if adequately fostered and stimulated, in turn increasing and spreading its benefits.

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EDITORIAL COMMENT

Many of us are overwhelmed by the broad array of possibilities to connect with others as offered by current times; facetime, twitter, facebook, linked in, just to name a few. As the relationship with our customers is more and more also defined by our use of social media, new skills and indeed new jobs are being defined. This article enables you to update yourself regarding the job of ringmaster; a spider in the web when it comes to marketing, branding and social media.

Petra van Spronsen

Source

Author

Patrick Spenner

	Business	Information systems	Technology
Strategy	■		
Organization	■	▓	
Operation			

Why You Need
a New-Media "Ringmaster"

ABSTRACT

Social technologies are helping—if not forcing—brands to form new kinds of relationships with customers. The problem is, traditional brand-management models aren't up to the task, for two reasons: They're designed for an outdated organizational structure and depend on people with the wrong skill sets.

Most companies separate the essential activities of communicating and fulfilling a brand promise into different functions, each of which has its own channels. Marketing communication articulates the promise. Corporate communications manages the brand's reputation. Customer service handles inquiries and customer problems. Other functions, from product development to frontline retail operations, play important roles in delivering on the offer. But this fragmented approach can't begin to present a coherent voice for the brand or support the relationship building that customers have come to expect in a hyperconnected world. Neither can the conventional brand manager, who typically is hired for skill at strategy and planning, talent at turning insight into innovation, and the ability to manage people and large budgets against business objectives. Though necessary general-management skills, these are not sufficient for the online age's branding tasks.

Brand marketers today need an updated model that features a new type of executive who has digital savvy and is skilled at coordinating a variety of marketing and customerfacing activities—someone who functions like a circus ringmaster, expertly choreographing talent in real time to engage the audience in a seamless, interactive experience.

What Makes a Ringmaster?

Although the role of this new executive is not yet fully formed, my colleagues and I have developed a composite picture based on a study of more than 40 midsize and large companies that are leading the charge in social media marketing. Ringmasters have three capabilities in particular that distinguish them from classic brand managers.

Integrative thinking. Ringmasters obviously are at home with social technologies but also have a strong understanding of brand mechanics and communications. They know how to combine the old with the new and harness the latest technologies to achieve brand objectives. And they can envision how those tech nologies can create fundamentally new types of value.

Consider how automobile brands such as Mini and Ford Fiesta are creating communities of enthusiasts who derive emotional value from connecting with one another. Social media are dramatically expanding the perimeter of these communities. Fiestamovement.com, for instance, has facilitated a "content creation factory" in the words of Jim Farley, Ford's CMO. The site encourages enthusiasts to create and share video, blogs, and other original material that attract new members to the community. An investment of less than $5 million in Fiestamovement has achieved the same level of awareness that would

be generated by a traditional media strategy for an auto launch, which typically costs tens of millions of dollars. Ringmasters like Scott Monty, Ford's head of social media, are crucial in positioning organizations to capitalize on these sorts of value-creating opportunities.

Lean collaboration skills. Ringmasters start with far fewer resources than brand managers do. They must therefore rely on persuasiveness and charm to beg, borrow, or otherwise co-opt people from across the organization and get them to work together on initiatives. This requires unusually high emotional intelligence, among other attributes.

At H&R Block, Zena Weist, the company's newly hired social media director, sits inside the communications function, yet spends half of her time promoting cross-enterprise collaboration. Her brand experience (acquired in a previous job at Sprint) and strong people skills enable her to lead a virtual team composed of employees from customer service, marketing, and corporate communications.

When Weist landed at H&R Block, she quickly saw the need to enhance the company's presence and responsiveness on social platforms. Recognizing that her small team wasn't equipped to close the gap on its own, she collaborated with her peer in Client Service. Together, they built the case to "carve out" five personnel from the service organization to be a virtual extension of Weist's team, with a set of mutually agreed-upon behaviors and metrics. Ultimately, the combined team cut across multiple functions, closed the responsiveness gap, and established a very positive social media presence for H&R Block.

High speed. Classic brand managers operate on medium to long decision cycles, crafting strategies to guide activities and investments over years. Ringmasters, by contrast, work with short time frames, sometimes with daily cycles. They excel at using social technologies to detect emerging opportunities or threats and respond rapidly to them.

Jeanette Gibson, Cisco's social media marketing director, set up her team to scan and react daily. In one recent product launch, the team identified key online gathering places for target customers, spotted and engaged with the discussion leaders there, and helped Cisco's own subject-matter experts establish a presence in the dialogue, nudging the conversation toward the problems that the new product could address. The team closely monitored these exchanges, looking for keywords and rapidly cycling them

into Cisco's search-marketing efforts. Ultimately, the social team positioned the new product for one of the most successful launches in the company's history.

Given these three required capabilities, what kind of background must ringmasters have? Beyond a clear passion for and knowledge of social technologies, they need an ear for stories that will play well, an instinct for developing external relationships, and a holistic sense of the enterprise's communication priorities. Previous experience in corporate communications or marketing is a must; it gives ringmasters an appreciation for speaking with one brand voice, an understanding of how to best allocate marketing investments across touch points, and knowledge of techniques for measuring marketing effectiveness. A background in customer service, new product development, and even frontline operations can also be valuable, providing a broadened perspective that's useful in understanding customers and promoting internal collaboration.

In a ringmaster, ultimately you are looking for an enterprise player, a catalyst for change, and an orchestrator who, by championing social technologies, will help you deliver the greatest show on earth—or whatever may be your own brand promise.

About the author

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Knowledge Management

Legacy

Maintenance (see at 'Control')

Measurement System

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