Deutsche Bank Research

The digital society

New ways to more transparency, participation and innovation

August 1, 2011

Digital structural change. The increasing use of modern network technologies is changing people's daily social and economic lives. Today, anyone and everyone can engage interactively in digital spaces. This is giving rise to both new forms of participation and new patterns of value creation, accompanied by a shift in power towards citizen and consumer sovereignty. Digital structural change is encouraging the following open source movements in particular:

(Corporate) Social Media. Social networking platforms are penetrating all spheres of life. At the corporate level this is redistributing control over communications towards the internet community. Whilst businesses and organisations can benefit from the powerful 'recommendation web', they are also losing some of their control over customers and their communication sovereignty. This is making corporate communications more authentic and informal.

Open Innovation. Interactive value creation can make companies more innovative by integrating external specialists' and communities' knowledge and creativity into internal processes. The more external ideas that are incorporated, the greater are the potential combinations to create something new. But open innovation also involves risks because classic value creation patterns have to be broken up and modernised with new strategies and, most importantly, with new interaction competencies.

Open Government. Political institutions and government agencies are likewise opening up to increased civic engagement. The public data made available can give rise to new applications and business models. Where interaction takes place and government receives external feedback, new collaborative and participatory models are able to evolve between government and citizens. Democracy enjoys greater transparency and becomes more active as a result.

Open Access. User-friendly internet technology has fundamentally improved the dissemination of scientific information. An active open access policy can spread knowledge more efficiently and economically, enhancing the economy's innovation potential.

Open/Free Culture. People are also reaping the rewards of the digital age in the creative sphere. More know-how is offered in virtual forums, people are encouraged to participate and interaction is actively sought with peers. By making the various projects, construction plans, compositions or blueprints accessible and adaptable it is hoped to introduce positive spillover effects into the innovation process.

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1. Digital structural change

From passive to active

Gone are the days when people caught up on the latest events only through such classic media as TV, newspapers or the radio. Nowadays, fast-expanding and user-friendly network technologies and the viral dissemination of digital content enable everyone to report to their own internet community that an aircraft has just made an emergency landing in the Hudson River, for instance. In no time at all competition has sprung up for many news agencies. Millions of people are turning into (mostly unprofessional, but authentic) spare-time news correspondents; dotted all over the globe, they send and comment on news locally, without guidance and in most cases with no monetary incentive. For all those who wish to exercise control over information flows that is a problem.

From push to pull strategy

Gone are the days when marketing departments needed to rack their brains over the choice of advertising strategy with which to court customers with new products or services. For meanwhile, on a whole host of Web 2.0 blogging platforms beyond the reach of official websites, consumers or experts will already be critically (and, once again, authentically) discussing and rating the merits or otherwise of the performance that the company is advertising.

From closed to open innovation

Gone are the days when businesses developed new products, services and processes only within their own organisation's four walls. People across very different regions, with very different backgrounds and background knowledge, and driven by very different incentives, now take part voluntarily in open innovation processes. This gives companies and organisations access to outside ideas and additional stimuli. The more external ideas they receive, the greater the potential for combination with their own ideas. An extra innovation tool is evolving here (particularly) for small and medium-sized (SME) businesses.

From supplier to consumer and citizen sovereignty

Gone, too, are the days when the political powers that be could adopt laws, regulations or ordinances without running the risk of encountering a civic headwind. As soon as the political will has been announced, e-petitions are signed to mobilise, protest and mount opposition. The new network technologies may not necessarily reduce disenchantment with politics, but they do enable people to organise themselves swiftly and locally into a mouthpiece whose importance should not be underestimated and that then often assumes a global context. That way, politicians can be made to change tack, or political debate at least placed on a more nuanced (balanced) basis, as demonstrated by the discussion on Germany's recently overturned Access Impediment Act (ZugErschwG).[1] This makes "top down" democracy more difficult, whereas "bottom up" democracy can be vitalised and, above all, made more transparent and fair.

New patterns of value creation

Digital structural change also implies power shift

Digital – and cultural – structural change is aiding the shift of power from producers to consumers and to a more self-assured and self-assertive (internet) citizen. Rather than unhinging the forces of the free market system, this power shift is redistributing power. The internet is becoming a technical and social platform for everyone.

[1] Many opposition movements can be observed on the internet, such as the debate on ancillary copyright, the Stuttgart 21 rail project, nuclear energy and the clashes and ongoing political unrest in the Arab world.

Network technologies heighten problem resolution potential

In the digital age the highly networked internet citizen ('netizen') can participate interactively and collaboratively in social and cultural developments and value creation processes. This gives rise to new value creation patterns and new business models with more flexible and transparent workflows in industry, science, education, politics, society and culture. On the one hand this change implies greater sovereignty and possibilities of civic engagement. But on the other it commits each individual to more personal responsibility. Digital footprints cannot be covered entirely on the internet. Diary entries open to scrutiny by a public audience, for example, may have negative repercussions for jobseekers. Keeping sensitive information confidential is becoming increasingly difficult (Wikileaks, OpenLeaks, whistle-blowing) and data security and storage present a constant challenge. Moreover, insensitive attitudes on the part of some organisations / institutions towards critical citizens or consumer opinion can tarnish their own reputation quite severely.

The wisdom of the crowds

Internet compels everyone to take more personal responsibility

Any innovation process revolves around creativity and the relevance of and respect for knowledge. Through open innovation and value creation processes millions of people's knowledge, abilities and skills can be accessed, delivering an additional tool to innovation agents along the value chain with which to generate new ideas, irrespective of the branch of industry and form of organisation within which they operate. But value creation processes are not just being opened up in the corporate sector, they are also becoming more important in all technical, social and economic spheres of society. Besides Open Innovation (Crowdsourcing), open processes can also be observed in politics and government (Open Government), Science (Open Science, Open Access), society and culture (Open/Free Culture, Social Software, Open Design/Music).

Open processes are interactive and participatory

It is important to note that all digital open processes are based on the same features: the people involved engage in relatively *non-hierarchical communication* and they *integrate* and *participate* of their own *free will*.

Analytical approach

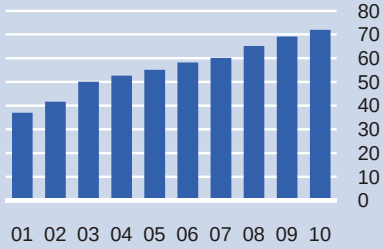
The following chapter examines how social media can be used and shows the ways in which virtual platforms serve as a useful communications infrastructure to stimulate open innovation and value creation processes, describing how the potential of an expanding fan community of internet-savvy users can be channelled in a work environment. The advent of young generations with an affinity for technology provides an opportunity to transform what have so far tended to be 'fun networks' into avenues of economically relevant value creation.

Chapter 3 focuses on the upsides and downsides of open processes in a corporate context (Open Innovation). Drivers, opportunities and instruments, as well as risks and limits to the integration of external knowledge carriers, are identified and subjected to critical analysis.

Chapter 4 offers insights into the Open Government movement and picks out the central aspects of open processes in political institutions and government units. The MOGDy pilot project recently launched by the Bavarian state capital Munich is presented as a practical example in an interview.

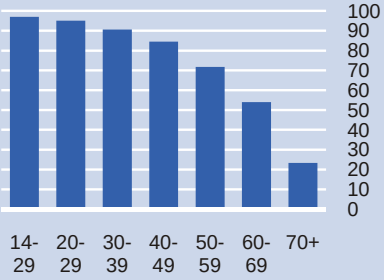
The focus in Chapter 5 is on open processes in science, society and culture. These already-established open phenomena also offer

German internet users
Percentage of the population from age 14



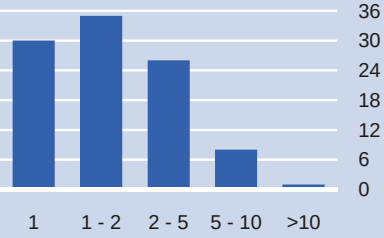
Source: (N) Onliner Atlas 2010 1

Internet use by age
Percentage of the population from age 14, 2010



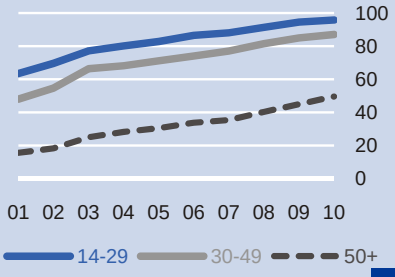
Source: (N) Onliner Atlas 2010 2

Surfing the internet
Number of hours on the net (>14-year-old German pop.)



Source: BITKOM 3

Internet surfers by age cohorts
Percentage of the respective population from age 14



Source: (N) Onliner Atlas 2010 4

participatory opportunities and yield, among other benefits, efficient knowledge and technology transfer as a means of sparking innovations.

The study closes with specific recommendations for decision-makers in industry, society and politics on how to handle new network technologies.

2. Social media conquer the world

Social media serve as the communications infrastructure for internet users and are intensifying the shift in power towards increasing civic engagement and sovereignty discussed above. Small interest communities make the most use of social media on the internet. Status updates, microblogs, social bookmarks, video sharing, photo commentaries and other recommendations stimulate niche markets, a large number of which are dotted all over the net.[2]

More and more Germans are using the internet. On average, in 2010 every German aged 14 and over surfed the web for 100 minutes a day.[3] Almost 50% of over-50s and fully 23% in the 70+ age cohort regularly spend time on the internet. The ability to be contacted anywhere in the world is taken just as much for granted as exchanging large volumes of data at low cost. The parameters for all active internet users are short communication channels, the rapid viral spread of information, the decentralised organisation of collective mobilisation, and a wide range of options to participate in many spheres of everyday life. The technical means for people to create digital content themselves are becoming increasingly user-friendly, meaning that professional firms are no longer the only ones to offer digital content. As consumers evolve into 'prosumers', growth in the amount of user-generated content[4] is unstoppable and networking is becoming ever more closely knit to span the globe.

Not all digital content is of (economic) value, however. There is a greater danger of information being misinterpreted because it often appears out of context. Comprehension in pattern form, i.e., following and understanding topics, trends and discussions, is easier in specific communities in which people work selectively and collectively on information. The consequences of this growing network density and the flow of real-time information in constantly new contexts are also apparent in rising degrees of complexity, reduced scope for control and rapid rates of change for business and society.[5]

Issue responses are also playing an increasingly important part, i.e., the crucial factor is no longer who provides the information but how internet users react to it. As soon as digital content captures a wide audience, information can spread in next to no time and create a mood in any direction whatsoever.[6] We are seeing a marked rise in this kind of spontaneous web activity because suddenly lots of people are able to respond immediately – by retweeting, for

2 Qualman, Erik. (2010). Socialnomics.
3 In a press release on April 13, 2010 the Federal Association for Information Technology, Telecommunications and New Media, BITKOM stated that this represented a 14% increase on 2009. And under-30s spend almost 200 minutes online.
4 User-generated content is created not by the producer but by users, e.g. in blogs, Wikis, YouTube videos.
5 Kruse, Peter (2010). Next practice. Erfolgreiches Management von Instabilität. Veränderung durch Vernetzung.
6 By way of illustration: http://de.guttenplag.wikia.com/wiki/GuttenPlag_Wiki.

Box 1: Facebook Facts

In just 20 minutes on Facebook

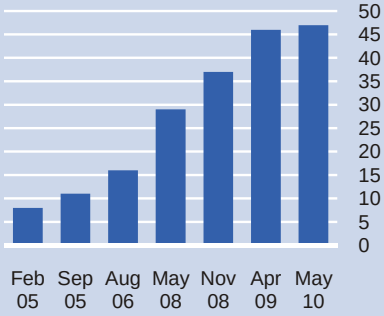
- 1 million links are shared,
- 1.3 million photos tagged,
- 1.9 million friend requests accepted,
- 2.7 million photos uploaded,
- 4.6 million messages sent,
- 10.2 million comments posted.

Of interest for socio-economic studies:
In 2010

- 43 million members set their status on "Single",
- 28.5 million on "In a relationship" and
- 36.7 million on "Married".

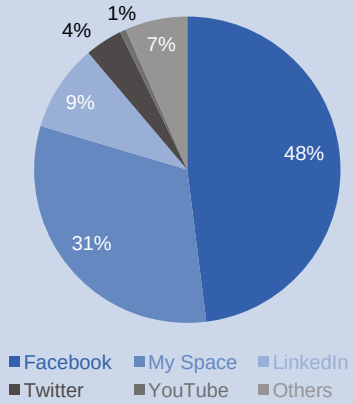
Source: Facebook

Use of social media
Percentage of US population aged 18 and above, N=1,698



Source: Pew Research Center 5

Which platform rocks?
Percentage of US population aged 18 and above, N=680



May 2010, multiple counts possible

Source: Pew Research Center 6

example[7]. Social platforms such as Twitter, YouTube, LinkedIn, Facebook and Xing are instrumental here by stimulating rising demand for communication, interactivity (spontaneous activity) and participation (web traces). There is constant overlap between the professional and private sphere since social media have firmly enshrined both categories in people's everyday lives.

Everyday use of digital network technologies

"…I'll just check my personal messages on my smartphone. Maybe someone on the net has left a comment on my recent blog. My post was to find out whether any of my friends knows which notebook is the best value for money or whether I should buy a tablet PC. In the meantime I could do a bit of research for my homework and see what Wikipedia has to offer on the subject of patent protection. In the register of source material there's an interesting link to a scientific study in the Massachusetts Institute of Technology OpenCourseWare.[8] It's even freely available under a Creative Commons Licence.[9] As well as interviews, YouTube features some recordings of recent lectures on intellectual property rights (IPRs). I'll pass that on to my community via Twitter and my blog …"

This is what a brief excerpt of a technology-savvy internet citizen's daily routine could look like. Many people are used to free (open) internet access and prove accomplished in handling social network technologies. Tech-savvy (young) people are networked, prefer non-hierarchical forms of communication and flexible ways of working in the digital world, and best develop their potential in autonomous rather than regimented structures.[10] Particularly for a country like Germany, which has few natural resources but is very knowledge-intensive, a good command of digital goods can constitute a valuable resource.

Social media are not hype…

Since February 2005 the number of social media followers in the US has soared from 8 to 47%. In America most people use Facebook, followed by My Space and LinkedIn. Official membership statistics from social software providers are rare, but the Facebook community is estimated at more than 550 million meanwhile.[11] Facebook has thus reached a size equivalent in terms of the number of its members to the third largest country on Earth (after India and China) and representing a network within a network as a digital continent.

… but the result of technological progress

Because of their special characteristics, digital information goods are available to all internet users simultaneously, 24/7 and all over the world.[12] People's increasingly close digital networking enables them to upload and download, exchange, and remix digital content.

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7 The term retweet was coined in the context of the Twitter service and denotes the uncommented, word-for-word repetition of a short update (tweet).

8 The MIT's OCW provides free, open course material for educators, students and interested visitors. No registration is required: http://ocw.mit.edu/index.htm.

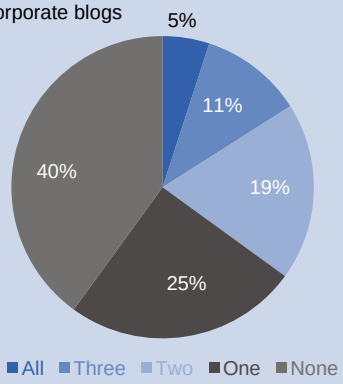
9 See http://de.creativecommons.org/.

10 Buhse, W. and U. Reinhard (2010). DNAdigital. Wenn Anzugträger auf Kapuzenpullis treffen. Die Kunst aufeinander zuzugehen.

11 Social Media Revolution → http://www.youtube.com/watch?v=2_Ig0ClYlmM. The English version at → http://www.youtube.com/watch?v=sIFYPQjYhv8 is not available from Sony Entertainment for copyright reasons.

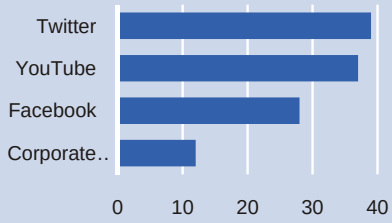
12 Many digital goods (such as information) cannot be excluded from consumption as a rule (except from access to the net itself) and are considered non-rivalling. See Benkler, Yochai (2006). The Wealth of Networks.

Social media services
Percentage of the 100 biggest German brands, 2009
Services: YouTube, Facebook, Twitter, corporate blogs



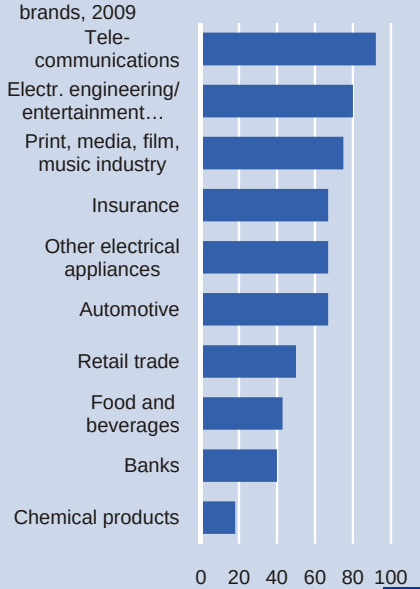
Sources: Uni Oldenburg, construktiv GmbH 7

Social media use by platforms
Percentage of the 100 biggest German brands, 2009



Sources: Uni Oldenburg, construktiv GmbH 8

Social media use by sectors
Percentage of the 100 biggest German brands, 2009



Sources: Uni Oldenburg, construktiv GmbH 9

Many people spend several hours a day using digital technologies and combine their experiences from school, job training, study, and professional and private life. No clear distinction is made between the online and offline world. The practised use of Wikis, blogs and other social software has become part of their daily routine.

Forces driving social media

But social media are more than the outcome of technological progress. They are driven above all by people's urge to communicate and to form and cultivate relationships. Networking and the human need for social connectivity act as the driving forces.

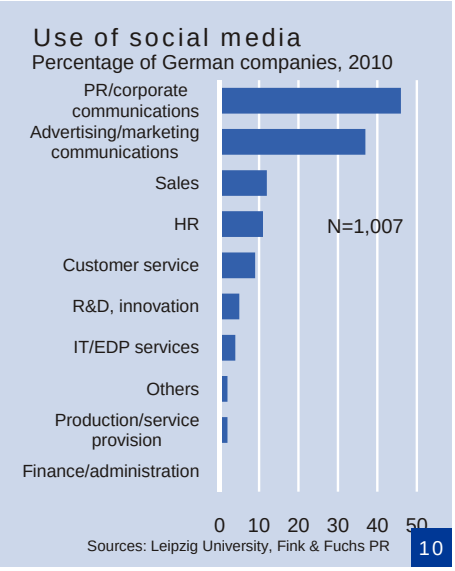
The use businesses make of viral communication services

Social media are also seriously shaking up the business world. In many cases companies are practically being compelled to rethink their existing business models. Across all sectors we are seeing more strategic changes of direction towards greater transparency and stakeholder participation. A quarter of the hundred biggest German brands use at least one social platform from which to address the internet community. Only 5% of the companies surveyed in Germany regularly tweet, youtube, facebook and blog. The Twitter service plays the leading role, followed by YouTube, Facebook and other corporate blogs. A glance at the sectoral distribution of the 100 biggest German brands reveals the telecommunications industry, electrical engineering and entertainment electronics, and the print, media, film and music industries as the major social software users. Banks still pay relatively little attention to social media, and chemical products come in at bottom of the list. This may be because the public at large finds it easier to relate to consumer goods such as electric toothbrushes, cars or chocolate bars than to complex forward transactions or chemical surface coatings. At the individual company level, social media are currently used most in public relations and advertising, followed by distribution and human resources.[13] Firms are (too) hesitant about using social communication platforms as an additional means of actively involving external innovators in innovation processes (idea generation or research and development) out of a (still) strong fear of losing control.

Global advance of Twitter services

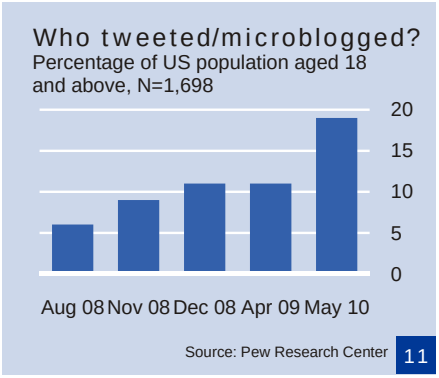
Microblogging platforms like the US provider Twitter have gained enormously in popularity. In 2010 their fan communities almost doubled in size year on year. Whereas blogs and podcasts are comparatively expensive, the free Twitter service allows users a maximum of 140 characters to say what they are currently doing. Microblogging should not be underestimated because the variety of real-time messages is enormous, as are the ways for people to organise themselves de-centrally. Internet users get information faster via Twitter than through conventional media channels. Microblogging sites have become a new mouthpiece of the masses, be it for breaking political news, scandals or progress reports on combating environmental disasters. A particular advantage of Twitter is that users can filter by preferred topics or individual members (to obtain specific information that is considered relevant or can be used for personal purposes). The key factor is the usefulness of this

[13] Fink, S and A. Zerfaß (2010). Social Media Governance 2010.

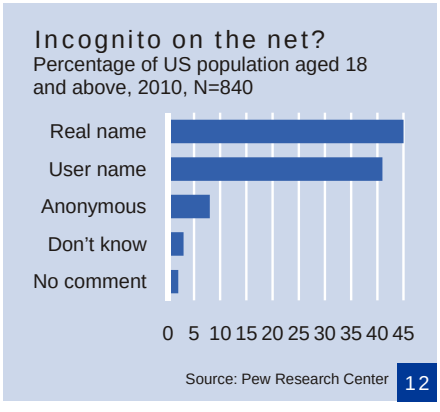


Social media influence elections…

... and help mobilise



Grapevine goes global



information for third parties and the issue response. New business ideas and innovations can evolve from this.

However, digital content does vary quite considerably in terms of its creativity and quality. This ranges from trivial private comments through links to video clips and websites to high-quality journalism in the form of investigative background reportage. Scientists and experts from many fields are using the growing momentum of microblogging services as a means of quickly creating awareness of their subjects and making them available to the public. This raises public access to new (scientific) findings and fosters the transfer of information and technology in the innovation process.

The potential of collective networks was illustrated by Barack Obama's presidential campaign in the US. Using network technologies in combination with open government, it was possible actively to engage the people. Locally organised communities' participation arguably helped Mr. Obama capture the presidency.[14] As well as activating large numbers of campaign helpers, substantial donation amounts were collected for the election campaign through remittances of small individual sums.[15] That network technologies play an important part in local mobilisation of the masses is further demonstrated by recent events in the Arab world.[16]

Personal reputation as an 'internet currency'

Reputation is becoming an increasingly important factor on the net. A survey indicated that 45% of the American population over the age of 18 are present online under their real names; 41% act under a user name and 8% opt for anonymity.[17] So transparency and openness are not just empty rhetoric. There are, however, understandable grounds for internet users to visit certain special information platforms such as medical advice websites under the cloak of anonymity.

While some internet users are embracing an open approach to sharing their personal data, others are being more vigilant about their digital footprint on the net. In May 2010 57% of over 18-year-old Americans regularly looked up information about themselves on the net. In the age cohort of 18 to 29-year-olds 47% deleted comments that others had left on their profile. 65% also changed the privacy settings to limit what they share with peers online.[18] This may be because the social media providers' presets are geared to maximum transparency and visibility of user profiles and postings.

The power of the 'recommendation web'

At present social media provide the most powerful recommendation websites in the world. As a result of viral dissemination, and above all the response to recommendations through links, blogs, tweets etc., digital content (even of questionable quality) is gaining

[14] Swire, P. (2010). It's Not the Campaign Any More. How the White House is using Web 2.0 technology so far.

[15] Whereas President Obama has posted tweets ever since taking office, thereby providing the internet community directly with information, Germany's government spokesman only started using this social media channel at the end of February 2011.

[16] YouTube videos from civic society were quoted as sources and aired on conventional TV news channels.

[17] Thomas de Maiziére's criticism in the fifth thesis of his "*14 Thesen zu den Grundlagen einer gemeinsamen Netzpolitik der Zukunft"* that free citizens should show their faces, state their names and have an address is therefore a controversial topic of debate.

[18] Madden M. and A. Smith. 2010. Reputation Management and Social Media.

relatively rapidly in importance. People trust recommendations from their network communities more than (professional) comments on commercial recommendation platforms. Not only do they have more faith in their own friends, they also trust their friends' friends more, and so on. This generates hype-up effects that can have both positive and negative impacts on the supplier of a product or service (in terms of sales and/or reputation). Mass endorsements in the form of a simple ("I like" or thumbs up) can trigger severe short-term fluctuations in individual companies' turnover or put their reputation under pressure for seriously long periods.[19] Pressure can be brought effectively to bear through recommendations or ratings. Digital customer reviews reduce information asymmetries between suppliers and customers and heighten credibility and transparency.[20]

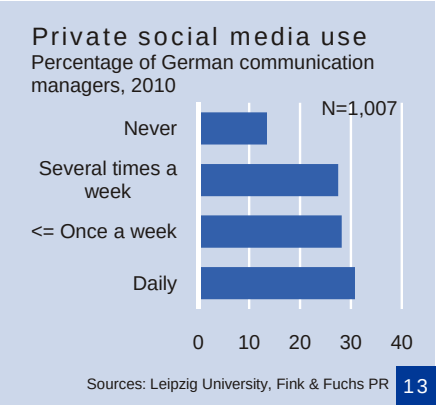
Customer control more difficult in Digital Age

It is becoming increasingly difficult for producers to exert the same control over customers that they wield in the analogue world. The loss of a customer can potentially also mean the loss of that customer's friends and friends of friends.

Internet users are also making more use of social software as a search engine to find out about new products, services or topics such as health, travel and events, and about (unusual) hobbies. Traditional search engine providers are feeling the pinch of this migration in declining traffic on their websites.

Voluntary engagement with company performance

Internet users' voluntary (emotional) engagement with various issues or company performance through customer reviews and/or recommendations is putting suppliers in a convenient position. Expensive, elaborately staged marketing campaigns become less attractive if consumers exchange critical reviews of business performance within their own networks anyway, beyond the confines of suppliers' websites. The internet has added a digital recommendation platform to classic word-of-mouth advertising. Marketing departments are seeing a shift from traditional push to pull strategies, with the added advantage that all companies need do is ask for the relevant information interactively in internet forums – treading carefully in the process – or simply read the posts to find out more.



By also using special tracking algorithms to keep a statistical record of user behaviour and the traffic on their own websites (as Amazon, Ebay and Google do, for example), companies can conduct parallel internal market research analysis (without seeking permission) that previously had to be purchased from external market research agencies. The money they save on this can now be channelled into other parts of the company. It is, however, a source of concern that some providers record internet activity and/or establish locations covertly by GPS, something that internet users would hardly want to see happen.

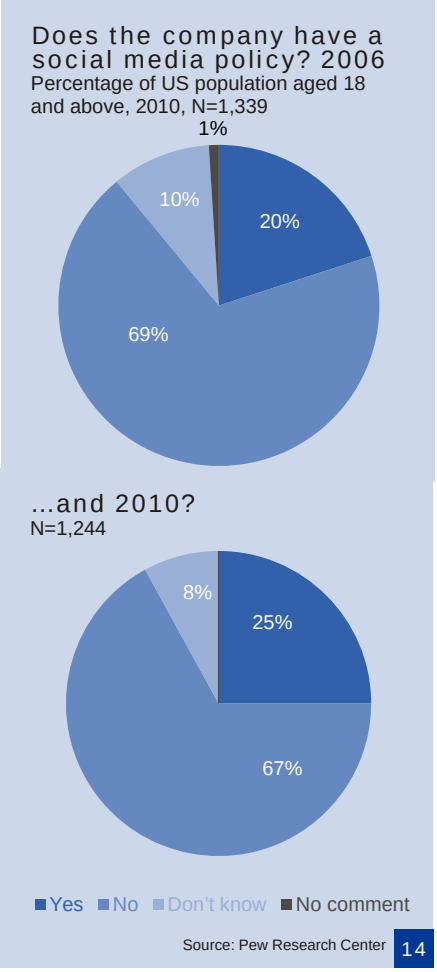
Web 2.0 is watching you

Companies are well advised to use social media to pursue push strategies for themselves and actively seek to engage with internet users. Reading blogs and posting their own comments, learning to embrace what people want, responding circumspectly (even when the criticism is harsh) and putting external ideas into practice is more impactful and cost-efficient than mounting expensive advertising campaigns or ignoring criticism and the onset of smear campaigns or reacting to them too late. The latter causes situations

[19] Dell hell, see Jarvis, Jeff (2009). What would Google do? Further examples: http://dellhell.net/ or http://www.dell-hell.blogspot.com/.

[20] For example, the Nestlé palm oil debate triggered by a Greenpeace campaign turned into a social media disaster for the producer.

to escalate, triggering a spiral of negative press and uncomfortable image problems. Admitting mistakes and honesty and transparency can help regain the public's respect.



14

Technology-savvy people in Enterprise 2.0[21]

What significance does the market entry of technology-savvy (young) people have for the corporate world? Younger generations' network affinity and their need to demonstrate knowledge, ideas, abilities and skills within such networks offers companies a valuable pool of potential employees who can be assigned a wide range of different tasks. Firms can deliberately employ young workers in network-related positions, appointing an experienced member of staff as their mentor. The friction that this causes can encourage innovation-stimulating lateral thinking. To curb the danger of information being disseminated too liberally, especially sensitive corporate data, strict bans on the use of social software are not the best option inasmuch as they also undermine the networking philosophy. Instead, more attention should be paid to in-house corporate communication addressing the opportunities and risks of the relevant networking tools.

Social media governance reduces uncertainty

Areas of responsibility are often not clear-cut; the skills, strategies, governance guidelines and staff for internal and external communications are inadequate. Only 30% of German communication managers have private experience of social media. In total, a social media competency index assigns 16.8% of German communication managers high social media skills, 41.9% exhibit average skills and 41.3% low skills.[22] An American survey showed that in 2006 only 20% of the population aged 18 and above had a social media policy in their company. By 2010 this figure had risen five percentage points. The introduction of a social media strategy and social media governance (communications guidelines) reduces uncertainty and enshrines the long-term practice of participatory online communication in the company, both internally and externally. A (crisis) communications strategy and a dedicated department can help reduce bad press and prevent the company from being inundated with criticism.

The risks of social media

For all the merits of digital structural change, the risks and much-vaunted networking effects of social media must not be forgotten either. Digital content, once uploaded, can no longer be controlled on the internet. Social platforms create greater susceptibility to breaches of data protection and data security legislation.[23] There is no predicting today what the management of Facebook, Apple, Google and Co. will get up to tomorrow with the mega amounts of internet users' personal data. As a rule the companies concerned are out to make a profit, constantly in search of new sources of revenue and service offers.

The internet is not beyond the law!

What is more, many copyright infringements on social media platforms come about due to a lack of sensitivity among younger generations in particular to the fact that digital content can come with a price tag.[24] As the boundaries between private and

[21] Stobbe, A. (2010). Enterprise 2.0. Wie Unternehmen das Web 2.0 für sich nutzen.
[22] Fink, S. and A. Zerfaß (2010). Social-Media-Kompetenz-Index. Social Media Governance 2010.
[23] http://www.zeit.de/2011/20/Facebook-Freund.
[24] Dapp, Thomas (2010). AICGS. Soziale Medien und die Urheberrechtsproblematik.

professional issues blur, network technologies seem to be increasing the compulsion to be online 24 hours a day. The rise in virtual communication can affect real face-to-face communication skills and personal social contact. What is more, the way that some internet users deal with intimate and personal information on network platforms, photo sites and in web logs remains amazingly permissive. Our experience with social media encompasses only a limited period due to the novelty of the medium, and this limits empirical findings from long-range research. Every internet citizen, be they producers or consumers, is constantly learning more about how to handle what are as yet relatively uncharted social media. Moreover, firms lack suitable evaluation tools to estimate and assess the impact of social media on their revenues, workforce and competition. Some risks can undoubtedly be reduced through education and sensitisation. One way of achieving this is by embedding digital, network-related issues in existing education.

Using external resources

Embed network-related issues in education

3. Open innovation

Innovation processes are problem solving processes, i.e., innovations come about through trial and error, the targeted development of new knowledge and/or the (re)combination of existing knowledge companies that concentrate exclusively on their own innovators for this are restricting their scope. By opening existing processes to external knowledge carriers, however, the risk of a flop can be reduced while at the same time potentially increasing the speed, quality and possibility of combining existing knowledge in new ways. **Open innovation (OI)** or interactive value creation is a deliberate decision on the collaborative division of labour between a company's own staff and external knowledge sources. External inputs can come from experts, customers (trendsetters, so-called lead users), contractors, partners, authorities, research institutes or competitors. In idea management OI can result in incremental innovations as well as radical inventions and give the company an information edge. It is not necessary to hold all stocks of ideas and knowledge available in-house, the important thing is to tap into external resource networks in a way that is profitable to the company. The trend towards mining information and knowledge from different sources is growing in many innovation processes. Driven by relentless international pressure to keep up with the competition and innovate, by shortening life cycles and more exacting customer requirements, as well as the negative impacts of demographic change, innovating is becoming an increasingly challenging task.

Opportunities of open innovation

Generally speaking, the integration of external know-how is possible at any stage of the value creation process. Outside sources of knowledge can be used both in idea generation, for example in research and development, and in operational areas such as marketing (market launch), sales or public relations. The OI approach makes companies more dynamic and flexible because their collaboration with outside innovators is often only temporary and project-specific, lasting no longer than necessary. Increasingly flexible forms of organisation are emerging between companies, customers, rivals and independent partners in response to ever more closely-knit global business networking. Experimentation with new cooperative models is on the rise because it enables

Box 2: Idea management systems

Internal idea management draws partly on the Japanese philosophy of Kaizen.* What is meant by this is continuous or incremental improvements proposed, introduced and implemented by employees and management. In keeping with the philosophy of Kaizen emphasis is therefore placed not on breakthrough improvement through innovation but rather a gradual process of perfecting or optimising the tried and trusted. In the western industrialised countries, continuous improvement processes (CIP) derived from Kaizen were integrated into existing organisational structures. In addition to the optimisation of products, services, processes or structures, they also aim to have staff take ownership for their work and identify more closely with their organisation.

But sooner or later in-house expertise will have been put into practice and knowledge becomes constrained by the gradual onset of blinkered attitudes that fail to appreciate the need for out-of-the-box, lateral thinking in innovation processes. Ideas can then come from different sources; ideas for companies/organisations can be submitted from inside or outside. In both cases this involves deliberate, labour-sharing collaboration between companies/organisations and their staff and/or external agents. A particularly important feature is the active and above all voluntary way that the contributors engage with idea and innovation management.

*Loosely translated from Japanese kai means change and zen for the better.

companies to adapt more flexibly to rapidly changing market and competitive conditions. What is more, the fusion of internal and external knowledge increases the possibilities of risk diversification as the stock of knowledge becomes more interdisciplinary and problem-solving capacities can be expanded. In addition, synergies can be achieved through cost-cutting potential. For example, companies can reduce their transaction and search costs when they receive the information they need from external sources in response to an open invitation on the internet instead of having to carry out their own research. However, this does add evaluation costs because all the external contributions must be analysed.

(Digital) modernisation of existing business models

The Mittelstand sector is the backbone of Germany, where 99.7% of companies are small and medium-sized enterprises (SME). Roughly half of German companies do not use open innovation, nor do they have any clear strategies on the use of Social Media.[25] But the innovation potential being released is there for the taking. The trend to more transparency, open corporate cultures and external participation in value creation processes will increase. The future will show that by opening up the innovation process more value can be created without the strict enforcement of property rights – not only in the software industry.[26]

Are intellectual property rights in danger of being lost?

The enforcement of copyrights may hamper innovation

Of course ideas and products must continue to enjoy protection, with guaranteed enforcement of this right. Fenced-in gardens with valuable contents, proprietary databases, and software whose source code is not publicly licensed naturally serve as sources of corporate revenue. At the same time, however, this kind of closed attitude restricts collaboration and the exchange of information with peers.[27] Interactive value creation also works within our traditional understanding of intellectual property rights. But the basis of OI is the generation and exchange of information and knowledge, the premise being that with open protection and licensing models the open innovation approach becomes even more efficient.

It is possible to work collectively on the source code for a particular piece of software because it is based on an open source licence that makes it available for decentralised use. We will also increasingly discover that monetary incentives are not absolutely crucial to collective work on all projects.[28] Both phenomena will presumably become more evident in areas containing digital and virtual value creation and in work processes that can be executed through the wide use of network technologies.

Box 3: The Wealth of Networks by Yochai Benkler*

"Free software projects do not rely on markets or on managerial hierarchies to organise production. Programmers do not generally participate in a project because someone who is their boss told them to, though some do. They do not generally participate in a project because someone offers them a price to do so, though some participants do focus on long-term appropriation through money-oriented activities, like consulting or service contracts. However, the critical mass of participation in projects cannot be explained by the direct presence of a price or even a future monetary return."

*Yochai Benkler is a professor of law at the Harvard Law School and author of the book *The Wealth of Networks*. (Quote, p.60)

Open innovation in practice…

Exploit cross-industry synergies

Companies channel OI by addressing an open invitation on the internet to a wide, undefined network of agents, enabling external knowledge carriers to participate interactively in internal development projects. This external pool of knowledge and ideas is far greater than the limited number of minds available within a single company. Introducing external resources in the form of ideas and

[25] Social Media Governance 2010.
[26] (E.g. FOSS [Free and open Source Software]).
[27] Tapscott, D and A. Williams. (2007). Wikinomics. How Mass Collaboration Changes Everything.
[28] Benkler, Yochai (2006). The Wealth of Networks.

technologies (some of them from other sectors)[29] does not only boost the innovative potential of the company itself. It also gives companies a better chance to multiply internal abilities and skills. This way, proprietary technologies, patents, products, services and processes can also be turned to account outside existing corporate boundaries to generate additional sources of revenue.

Box 4 illustrates how companies (on virtual platforms) tap into external knowledge and use it for their own research and development purposes.

Box 4: InnoCentive – The virtual marketplace for ideas

"Solvers Wanted – We have thousands of Challenges that need your brainpower and companies that are willing to pay you to think. Get in on the action."

This invitation welcomes internet users to the InnoCentive homepage, calling on them to contribute their ideas to solve specific problems. The American intermediary's business model that has operated successfully since 2001 is relatively simple but extremely efficient for the purposes of open innovation, and above all profitable for both the seekers looking for problem solutions and the problem solvers with the answers. What paid in-house researchers and developers may not achieve in months of work is solved de-centrally and interactively by individuals or amateurs, usually working from home, in a comparatively short time. InnoCentive handles all the coordination and administration work this involves. Working on the market principle of the efficiency of supply and demand, interactive value creation solves the problem of companies' local search for answers.

Companies can post their problems and development assignments on InnoCentive's Challenge Center internet portal, for which they are charged a fee, issuing an open invitation to a global, undefined solver community. In the hope that someone somewhere in the world will have the expertise to solve the specific Challenges that companies face, Awards ranging from $5,000 to $1,000,000 are offered for solving these tricky problems. In its corporate statistics InnoCentive quotes the number of Solvers at 200,000 from all over the world. So far the knowledge community has submitted roughly 19,346 solutions to some 1,044 Challenges posted, with an average success rate of 50%. In total winnings of $5.3 million have already been paid out for Challenges awarded.

At present a solution is sought for the following development assignment in the discipline [Global Health, Business/Entrepreneurship, Public Good, Food/Agriculture, Computer Science/Information Technology, The Economist, Life Sciences, Ideation]: *"The Seeker desires a communication platform to connect vulnerable communities with climate change solutions."* (Challenge ID: 9932695; duration: 60 days; deadline: June 12, 2011)

112 Solvers are currently engaged on this project, each of whom hopes that their solution submission will ultimately be realised and that they will receive the scheduled USD 10,000 Award. For further details visit: https://www2.innocentive.com/

Corporate information needs

To enable external knowledge to be channelled successfully into new products, services and processes, the company needs two kinds of information from the agents:[30]

— Information on what is needed

The focus here is on the needs and preferences of customers. Both qualitative information (what benefits is the innovation supposed to have?) and quantitative data (number, relevant market and assortment) can enter into the process. Taking account of information on what is needed early on in the value creation network reduces the flop rate of new products, services or processes. The main sources of information on what is needed are customers and upstream and downstream business partners.

— Information on solutions

Information on solutions tends to be focused, technical knowledge, i.e., how can a specific problem be solved or a need satisfied. Additionally, this kind of information delivers intelligence on the optimum use of resources and the optimum input combination for the value creation process. As a rule information on solutions comes from the organisation, i.e., from the research, development and planning departments, but it can also be delivered by external experts.

[29] What is meant here is the transfer of analogies or overlapping of cross-industry innovation to the company's own application context (cross-Industry innovation).
[30] Reichwald, R. and F. Piller (2009). Interaktive Wertschöpfung.

Self-motivation, self selection and self organisation

Granularity and modularity of individual work stages

How the division of labour is organised plays a decisive role in the open innovation process, with voluntary engagement (self-motivation, self-selection and self-organisation) by external innovators taking the place of hierarchical, top-down assignment of work and performance controls. Depending on how granular definition of the assignment of subtasks in the innovation process is, open invitation on the internet permits simple self-selection by outside sources of knowledge.

They can opt to work on subtasks that suit their motivation, knowledge, abilities and skills. So the more successfully a company can break down the relevant stages of the work process into independent processing modules the sooner external problem solvers can assess how the workload matches up with their personal skill set. Subtasks should therefore be fine links in the value chain, small in size and heterogeneous, so that an ideally large number of external innovators can make the best choice and contribution. Subtasks or work stages that can be described in virtual three-dimensional spaces with the aid of network technologies are the most suitable.[31]

No science fiction. This is reality!

Imagine a virtual platform that makes it possible to project a technical invention graphically as a 3D hologram. All the components/parts of the invention can be taken apart and altered in the hologram so that it is possible to experiment virtually with new ideas by trial and error. Each external agent can install the (ideally open) software (known as the toolkit) at home and then tinker on the development process in real time. With this kind of interaction differences in time and place are of no matter because the innovation takes place directly on the development in a virtual space.

Voluntary engagement a valuable driver

Voluntary engagement in the interactive value creation process therefore manifests itself in three factors. Collaboration on and co-shaping of the joint project is driven by *self-motivation*. Participation takes place through the choice of finely partitioned subtasks in a process of *self-selection*. And a desire to network with peers by sharing information and solution knowledge satisfies the *self-organisation* criterion.

External innovators driven by different motives

People join in interactive innovation processes for all sorts of reasons. Their motives range from intrinsically guided incentives such as hobbies, enjoyment and idealism to extrinsic monetary inducements in the form of payment, discounts, career prospects, bonus programmes, free products and other perks. Many companies rely comparatively little on monetary inducement mechanisms. But it is only a matter of time until the agents involved realise the value of their contributions to companies and start to expect appropriate compensation (also of a monetary nature) if their idea is adopted. An initially euphoric phase – “They’re really interested in my ideas” – can soon turn into disillusionment – “They’re just exploiting me”. Crucially necessary to the sustained integration of creative minds into the innovation process are new incentive systems.

Euphoria vs. disillusionment

Open innovation strategy requires management skills

New interaction competences needed

Interactive value creation cannot be managed as a sideline. In addition to a new corporate philosophy, businesses must devote

[31] Benkler, Yochai (2002). Coase’s Penguin, or: Linux and the nature of the firm.

greater attention and more resources in the form of time, money, personnel and new management tools such as interaction competences or a selection of incentive mechanisms.[32] Once modular and granular division of the individual stages of the work has successfully been accomplished, a public invitation is posted on the internet. This should contain information on the problem to be solved, the time frame and the award or compensation. Solutions submitted are evaluated by an internal assessment team or team of experts and the potential for implementation examined. External agents can also post online idea reviews or recommendations using an "I like" button. Where a manageable number of ideas are submitted, evaluation by a team of experts may still be workable, but with several thousand submissions this becomes problematic in organisational terms, making mutual idea evaluation by the expert community more appropriate. Adequate assessment and evaluation methods on this scale are still lacking.[33]

Open innovation instruments

Integrating external innovators interactively into complex innovation processes can have a positive impact on corporate innovation rates.[34] The instruments used to channel outside sources of knowledge discussed in the following demonstrate how creative minds can be recruited.[35] In addition to the lead user method and toolkits, (virtual) innovation contests and idea competitions are also presented. Viewed in isolation, these instruments may not really be all that new (e.g., lead users or innovation competitions), but the headlong pace of technological progress and the potential offered by network technologies are adding a new dimension to their impact. For a long time the instruments have worked very well in many companies. Social media communication channels are a suitable complementary avenue through which to establish contact with outside innovators.

a) Lead user method

In a closed innovation system, conventional marketing tools (primary and secondary market research) or in-house R&D efforts power the search for new ideas. But opening up (individual) value creation processes to participation by outside innovators increases the potential to develop breakthrough innovations in the early stages (phase I and II) of innovation processes (see Box 5) as a means of capturing higher market share, for example. Lead users may be just such innovators. Their forecasts of user needs run ahead of mass market requirements.[36] Motivated by their own dissatisfaction with companies' existing output, these trendsetters anticipate benefits from adapting products or services to their own needs and often act as innovative customers with "specialist knowledge."[37]

Besides the usual information on customer needs, lead users also possess hard and fast information on solutions. The trendsetters

Box 5: Stages in the innovation process

Literature on the subject generally makes a rough distinction between the following value creation stages:

— Stage I

Generation and assessment of ideas

— Stage II

Scoping and product planning

— Stage III

Development, drawing up a concept

— Stage IV

Construction of prototype, pilot application, trialling

— Stage V

Production, market launch and roll-out

The early stages I and II in particular are hardly structured at all and proceed dynamically. This is because a fairly high degree of uncertainty still attaches to the market environment and technology in comparison to later stages. In these early stages engaging with users and customers can usefully leverage the success of the innovation and lower the company's flop rate.

Involving lead users in this way is far more advanced than previously assumed in many fields such as sport (Kite Surfing Community), Software (LINUX), textiles (T-shirts: Threadless) and consumer goods (Procter & Gamble: Connect + Develop).

[32] This also applies to companies' social media features.
[33] Reichwald, R. and F. Piller (2009). Interaktive Wertschöpfung.
[34] For example Procter & Gamble advertises the fact that more than 50% of product initiatives come about through partnering with outside innovators. See http://www.pgconnectdevelop.com.
[35] Reichwald, R. and F. Piller (2009). Interaktive Wertschöpfung.
[36] Their interactive intervention in the innovation process makes them what are known as prosumers. See von Hippel (1986).
[37] Lead users differ from early adopters in that they are innovatively active long before commercial solutions are brought to market. In contrast, early adopters are the first to embrace a product when it becomes available on the market. See Rogers, E. (1995). Diffusion of innovations.

who have already developed concepts and plans of their own are especially useful for companies. Concepts that they have designed independently can lead to crucial product improvements in the relevant market segments. But engaging with innovative customers makes enormous demands of the management of new product development processes, which often entail considerable time and staff inputs. The knowledge delivered from outside must be transferred into the company's own operational and organisational structure and integrated into problem solving expertise. What is more, adequate reward models are necessary, and these can involve higher costs.

The following example illustrates the potential advantages of equipping lead users with special development software, or development toolkits.[38]

b) Toolkits as illustrated by Lego (Digital Designer[39])

Using Lego Digital Designer software, Lego lead users can create new models interactively in a virtual workshop. The toymaker provides innovative customers with software enabling them to use all the Lego bricks virtually that are available in-store. There are practically no limits to their creativity. Users wishing to make a real model of their work can order the construction kit complete with instructions. Third parties can also access the new ideas, build them for themselves and order them in the dedicated gallery. In parallel to the virtual building process Lego stores the instructions on how to replicate the users' designs. If they wish, Lego fans can post their models in an online community for review by other users; in doing so they agree that all the rights to their development shall pass to Lego. An idea competition and peer recognition act as the incentives for this. And Lego obtains valuable insights into trends and the structure of its customers' needs.

c) Innovation competitions and idea contests

Competition is one of the pivotal economic principles that shape day to day economic performance.

Competition as a means of discovery

Together with Adam Smith,[40] who interpreted the efficiency-boosting effect of the division of labour as the result of better use of knowledge, in 1945 Nobel Laureate Friedrich von Hayek[41] also characterised competition as key to the discovery of new knowledge and transposed the concept of achievement through competition as a basic principle into many spheres of life in which people demonstrate creativity and innovativeness.

Idea competitions are nothing new and are familiar to us all from music and science, with Germany's youth science and music competitions "Jugend forscht" and "Jugend musiziert" as examples. Thanks to modern network technologies idea contests can be implemented very well as digital communication platforms in open innovation processes. Many virtual competition platforms have since been established on the internet.[42] People are invited to enter their ideas on packaging, products, services, advertising, design and even business models. Besides fostering and encouraging

[38] Electronic data processing toolkit or toolbox.
[39] http://ldd.lego.com/.
[40] Smith, A. (1776).The wealth of nations: An inquiry into the nature and causes of the wealth of nations.
[41] Von Hayek, F. A. (1945). The use of knowledge in society.
[42] Examples: http://interior-ideacontest.bmwgroup-cocreationlab.com/, www.jovo-to.com, www.innocentive.com, www.crowdspring.com, www.threadless.com, www.openinnovators.de.

innovation, idea contests also help cast businesses in a positive light with the public. New customer relationships can be established and trends and lead users identified.

Limits to open value creation

Fear and risk aversion as barriers to entry

Traditional companies, and here in particular (family-managed) SME firms, often have difficulty opening up their value creation processes to admit ideas from outside agents into the interactive development of new or improved products. Until now, many company executives have seen the path from closed laboratories to (virtual) open innovation arenas as a risky process dogged by the threat of loss of control and management, particularly with regard to the enforcement of intellectual property rights. But the procurement of ideas and resources is becoming increasingly collectivised and multi-institutional, taking place more frequently in virtual spaces.[43]

Open corporate cultures spur experimentation…

Change processes depend on how openly and tolerantly corporate cultures are practised. Are employees allowed sufficient scope for personal enterprise? Does management practise the openness to change that it preaches? Are people allowed to make mistakes, and can they communicate frankly and openly? This calls for new rules of play and management strategies. Traditional patterns of thought must be revisited to ensure that both in-house employees and external suppliers of knowledge are given the space to unfold their creative talents. Besides the transparency of individual workflows and processes, this also presupposes the implementation of an error (management) culture. Open corporate and communication structures foster creative dynamics, spur enthusiasm for experimentation and boost problem-solving capacities. Networking may possibly lead to a loss of customary responsibilities as external knowledge carriers suddenly start questioning core competencies.

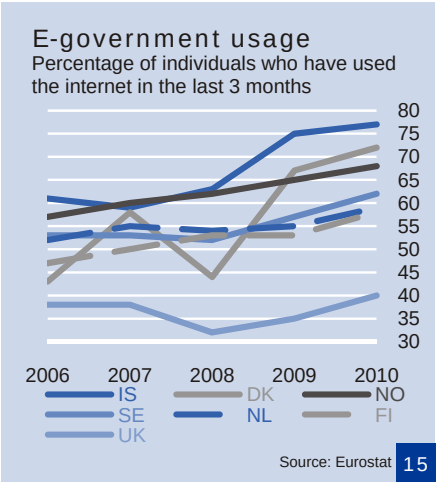
... and boost problem-solving potential

Greater system complexity

Another consequence of open value creation is that (digital) networks with outside agents are becoming more closely knit and hence more complex. Expanded external networks of specialists or customers mean heightened communication and interaction streams, which must be managed and evaluated. There is also a growing likelihood of unforeseeable action and reaction.[44]

Open processes in the public sector

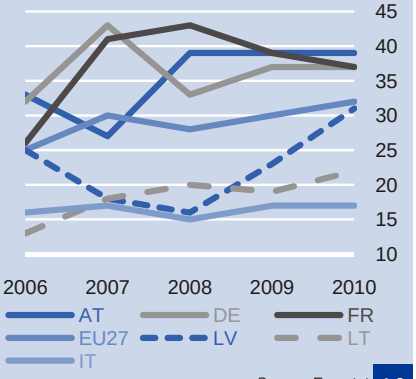
The public sector, too, is gradually opening the door to civic/consumer involvement in value creation processes. In the context of public administration and government, business-related open innovation metamorphoses into open government.



4. Open Government

Open government aims to give citizens and businesses greater access to politics and government, for which three aspects play an instrumental role: *collaboration*, *transparency* and *participation*. Collaboration means government authorities working together with citizens and business; transparency opens government activity to public scrutiny; and participation implies the involvement of citizens and business in government decision-making. Transparency has already been implemented step by step in German legislation through I*nformationsfreiheitsgesetze*[45] (IFG – Freedom of

[43] Prahalad, C. and M. Krishnan (2009). The New Age of Innovation.
[44] Kruse, Peter (2010). Next practice. Erfolgreiches Management von Instabilität.
[45] The law grants everyone unconditional legal entitlement to access official information from Federal agencies. To do so they do not need to submit evidence of legal, economic or other interests.



Information Laws). At the local government level, too, new forms of civic engagement have already been introduced. Parts of what the Federal Government has included as a central area of activity in its government programme "Networked and Transparent Governance,"[46] which it plans to implement strategically by 2013, have been reality since December 2010 in the Bavarian state capital Munich.

Distinction from E-Government

Open government means more than the wholesale digitisation of government value chains, which is basically what e-government is all about. It goes farther by opening these value chains to the people, other government agencies and the business community. Greater transparency is the first objective. Government opens up unilaterally to its citizens, often by improving the provision of information and more recently also by making data available (Open Data). The next stage is mutual opening, with citizens also providing feedback to government as the basis for new models of collaboration and participation between the two. Since 2006 the Scandinavian countries and Iceland in particular have registered a significant rise in inquiries from citizens through e-government channels. Germany is a midfielder in this respect, but above the European average. The relatively low profile of e-government in Italy could be due to the fact that the density of internet connectivity, broadband penetration and spending on information and communications technologies as a percentage of GDP in Italy are similarly below the European average.[47]

Economic benefit of open government

When government processes are opened not only in one direction but enable genuine interaction, this basically paves the way to leveraging potential comparable to that into which businesses tap through their open innovation concepts: the value chain can be designed more intelligently by introducing far more abundantly available quantities of expertise from outside the organisation. This can make government processes speedier and cheaper, an effect that would be felt economy-wide through the reduction in transaction costs once open government is introduced on a larger scale.

Open Government as a locational asset

From the perspective of local government, merely offering digital services will soon no longer confer a locational edge, because many local authorities are doing the same thing. Open government, on the other hand, offers added long-term competitive advantages: processes that dovetail better with the needs of the people and businesses; new process designs in which the community and government provide services cooperatively, making them faster and cheaper and potentially leading people to identify more closely with their "collaborative city." Munich has set itself the goal of becoming the first capital of a German state to open its doors to active digital civic participation, towards which end the pilot project "MOGDy"[48] was set up. Its successful introduction in Munich underscores that open politics and government is not just a political aim but increasingly what communities and businesses also expect to see. However, open government should not simply be reduced to the aspect that citizens are given deeper insight into political and

[46] Federal Ministry of the Interior. 2010 Government programme: Networked and Transparent Governance. See: www.verwaltung-innovation.de.
[47] Eurostat.
[48] The **M**unich **O**pen **G**overnment **D**a**y** – abbreviated to MOGDy ([mog'di]) – is a project marking the city's entry into the Open Government and Open Data arena.

government activity and obtain a hearing for their concerns more easily through electronic access.

Open to experimentation!

The real purpose of open government will emerge farther down the line, as internet users engage with new experimental forms of participation. For one, opening up government databases and stocks of information (open data) could drive innovation in industry enabling the development of new business models that also reveal potential savings in administration and government. And for another, social networks can make communication easier, which would have a positive impact on government administrative work in key areas.

In the following interview Dr. Marcus Dapp[49] from the City of Munich talks about the background to the "MOGDy" project.

City of Munich: ***Dr. Dapp, what is behind the "MOGDy" project?***

DB Research: MOGDy is a two-part online process with two main aims. During the winter months 2010/2011 the residents of Munich were invited to express their ideas on a future "Digital Munich." On an open website[50] ideas were cooperatively gathered, discussed and evaluated. This list of ideas was finalised at a two-day camp and officially presented to the city as input for its e-Government strategy. Lots of ideas refer to offering the population modern ways of interacting with their city. The second stage in spring 2011 consists of a programming competition called Apps4cities (see Box 6). For the first time the city placed municipal infrastructure data in the public domain as open data and invited interested developers from open source communities to take part in a contest to write useful mobile or web programmes (applications, or "apps") for the people of Munich on this open source data structure. The aim is to offer the population value added digital content from municipal data in a new, community-based approach.

Box 6: Apps4cities programming competition

apps4cities takes its lead from the apps4democracy contests run in the United States and is an open source programming contest staged by the City of Munich inviting developers to write useful programmes for the community. For this purpose the city released various "open data" and offered prizes in different categories. As part of the contest a "MOGDy Hackday" was held in collaboration with Munich University of Applied Sciences.

*http://www.muenchen.de/apps4cities

What part do citizens have to play in the open government process?

In an openly organised administrative system the community assumes a more active role than at present because citizens can engage more directly in value creation processes, service provision and decisions. The extent to which such involvement is aspired to is a political issue that will presumably be revisited repeatedly in the coming years. Interesting in the context of community-based decision-making is the open source software used in the MOGDy project: Adhocracy implements a novel concept called Liquid Democracy (see Box 7). Modern internet technology has enabled for the first time a dynamic system that can move fluidly between an entirely representative and an entirely direct process of democratic decision-making, depending on the context and the issue at stake.

Box 7: "Adhocracy" and "Liquid Democracy"

Liquid Democracy is a new concept and democratic voting method that can switch flexibly (the 'liquid' part of the name) between direct and representative elements. Because of its complexity and dynamic, it requires IT support. The open source tool Adhocracy implements the Liquid Democracy approach and is administered by the eponymous association. It is also the software that the MOGDy project applied for the online platform (but using only a fraction of the functionality). Visit: http://liqd.net/

What role do social media play in the open process?

In terms of their concept, social media will play an increasingly important role. Easy to use tools enabling mass communication and cooperation are needed to realise open government. For the first time in history the internet has made it possible for large masses of people to work together on something, with Linux/Open Source

[49] Marcus Dapp has worked since mid-2009 on the City of Munich's IT strategy. In addition to Open Source he also deals in Munich with issues relating to Open Government/Open Data. In this capacity he was the project manager behind the launch of MOGDy. Previously Dr. Dapp carried out research at the Swiss Federal Institute of Technology Zurich, where he wrote his doctoral thesis on the influence of software patents on open source innovation.

[50] http://www.muenchen.de/mogdy.

Software and Wikipedia and also YouTube and Facebook as prime examples. Only with social web-based tools at its disposal can a municipality like Munich even start to think about launching open online processes in which a significant part of its roughly 1.3 million inhabitants would take part. The opportunity – and the danger – lies in the networking effect, or crowdsourcing: users graduate towards where lots of other users already are until ultimately practically all are gathered together in just a few networks. It is at this point that the issue of who controls these networks become essential. Whilst it is a good thing that as many people as possible engage with open source or Wikipedia, as community-led initiatives, we would all tend to take a sceptical view if we were to hear that only Facebook or YouTube and the like were being used, because we know that those networks are not used by a diverse community but controlled by powerful internet players pursuing their own particular agendas. Even if that was precisely what MOGDy was also doing in the pilot project, from the point of view of a public administrative authority I consider it dubious to establish a Web 2.0 domain as an important civic communication channel that is controlled by one single company. More open and above all community-based solutions must be found for this. There are open source projects that address the issue of social networks, such as elgg.org and Diaspora.[51] We need more of these.

What role do intellectual property rights play?

Box 8: Open (Government) Data

The basic idea behind the open (government) data movement is that the potential benefits slumbering in government data can be released all the more effectively, the more people have access to and can make use of the data and the fewer restrictions that are imposed on them. To guarantee this, ten principles were formulated that must be met before data can be declared open. They include primacy (i.e., the data should be primary source data), machine readability, non-discriminatory (in terms of who may access data), in open formats, freely licensed etc.*

*http://de.wikipedia.org/wiki/Open_Government_Data

With open government this issue arises in relation to data (open data). Public authorities as a whole are still at the beginning of the process. Merely making data available online is still far removed from open data (Box 8). Pivotal aspects such as machine readability, open licensing or open formats must be satisfied before collaborative value creation can even begin. In my opinion the traditional mechanism of intellectual property rights tends to act as a constraint to collaborative approaches. The basic utilitarian premise – creativity is concerned with the individual, who has legal rights deserving of protection and needs motivation in the form of monetary incentives – is too seldom questioned in an environment of such new phenomena as Open Source, Creative Commons, Wikipedia & Co. Going forward, if more branches of industry and government at all levels make their innovation processes more open we can expect to see more brain power and know-how in these processes. The number of innovations could increase, they could come about faster – and possibly at lower costs than today. Of course not everything would be premium quality, but that's not the case now either.

Are there any international attempts at harmonisation?

The EU is acting consistently inasmuch as it has set out various framework conditions conducive to open processes. There are the PSI Directive and the INSPIRE Directive.[52] PSI stands for public sector information and is synonymous with open government data. The Directive removes barriers to enable new business models to be created on the basis of data from the public sector. It is implemented into national German law by the *Informationsweiterverwendungsgesetz* (Information Reuse Act – IWG). The INSPIRE (Infrastructure for Spatial Information in the European Community)

[51] The new social (open source) software Diaspora, which is currently at programming status, holds out the prospect of an open, decentralised network structure. See the link: http://www.diasporaforum.org/.

[52] To read the directives search under 2003/98/EC and 2007/2/EC.

Directive sets out to create a European geodatabase with integrated spatial information services and to make digital geodata available for this purpose. The EU is thus putting in place the institutional framework to make open government possible in the long run.

What might a successful open strategy look like in 2030?

The long-term challenge lies in getting three different cultures to work together productively. The starting point is a hierarchically organised system of government that has codified processes through an extensive set of rules that cannot simply be set aside from one day to the next. In the most frequent case this culture is encountering an audience growing increasingly accustomed to organising its private and professional affairs and receiving services etc. online. This is making new demands of administration. And in the rarest but very worthwhile case government encounters the IT-savvy part of the population that moves productively about the web: from open source developers through the blogosphere to web designers. For cultural reasons this interaction is not easy, but it harbours enormous potential as far as open government is concerned. The challenge for government is to expose itself to the new culture, which is characterised by latent chaos, high speed and a "do it first then check it out" attitude and to open up sufficiently to permit cooperation satisfactory for both sides. So the open part of an open government strategy begins already with its authorship – it cannot and should not be developed by government officials alone.

Box 9: Fact and figures on the MOGDy idea competition:

In the roughly seven weeks during which it ran 371 people took part, contributing 130 ideas, posting 675 comments and voting roughly 4,400 times to create the final list of ideas. Assuming – and this is a very conservative estimate – that each one spent an average of two hours of their spare time, together they delivered nearly five months' voluntary work. At little expense – the budget was in the low tens of thousands – the City of Munich received high-quality input for its work and gained a motivated MOGDy community that aims to be involved in future too and from whose expertise the city is only just beginning to benefit. And given that the aim is to put ideas into practice, the time donated will be to the advantage of everyone in the community.

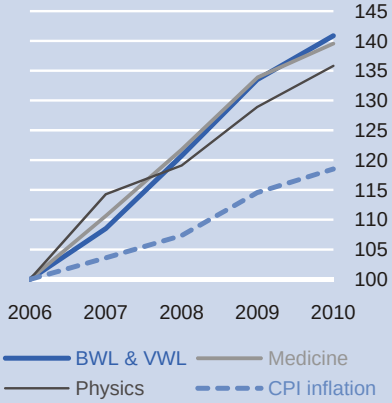
5. Other open phenomena

Open Access

Knowledge is becoming ever more important to societal and personal development as internet technology has radically improved the dissemination of scientific findings. Another open process has been apparent in the academic world for years now. Some scientific and academic literature is publicly available on the internet. Open Access has long since gone beyond the realm of arcane debate, with the Berlin Declaration[53] of 2003 placing it on the European agenda. The Berlin Declaration was accepted and signed by a host of research organisations, funding institutions, libraries, archives and museums.[54] Its central aspect is the area of tension between copyright and intellectual property rights on the one hand and unobstructed access to education and scientific and academic literature in a digital information society on the other.

Behind the open access debate is the fact that as a rule research at public universities is funded by the public sector, and this naturally ratchets up the socio-political responsibility to put the outcomes of academic work at the universities into the public domain free of charge. For the most part, however, research results are published in scientific journals that charge people wishing to use them. This tends to restrict access to knowledge even though it is by and large a public good. To make matters worse, university libraries are warning that price increases for scientific and academic literature

Development in price of scientific literature
2006=100



Source: Library Journal, Periodicals Price Survey 2010

[53] Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities.

[54] Signatories are reputed research organisations and universities such as the DFG German research funding organisation, the Swiss National Science Foundation (SNF), the FWF Austrian Science Fund, the Rectors' Conference of the Swiss Universities (CRUS), the HRK German Rectors' Conference, the Max Planck Society and the Helmholtz Association.

are curtailing the supply of information. Debate is raging over whether the results of academic work should be made available free of charge. There is no question that free access to information improves educational opportunities and spurs innovation. But where the quest for knowledge is privately funded and promoted, the creator has a justified interest in the commercial exploitation of scientific research results.

Pursuit of an open access policy leads to more rapid and cheaper dissemination of knowledge, which in turn boosts innovative capacity. A parallel consequence of open access is that the ability to source the latest research is no longer dependent on the respective institution's financial means. Increased use of free licensing models (Science Commons[55]) safeguards individual copyrights better while at the same time reducing uncertainty over how internet users handle digital goods.[56] As a result internet users enjoy greater liberties while creators retain all their rights and determine what happens with their work.

Open/Free Culture

Join in and share!

Open processes can be observed in many creative industries, be it open music, open design, open architecture or free publishing (blogs). The combination of new network technologies and modern and flexible ways of working enables people to organise themselves into peer communities to generate values together and at the same eye level without the enforcement of intellectual property rights taking a front seat.[57] Lessig speaks in this context of digital "capturing and sharing."[58] People offer their expertise in virtual spaces, invite participation, and actively seek interaction with peers to enable all sorts of projects, construction plans, works and blueprints to be viewed and altered. The free software scene with its open source codes and free licences serves as a model here. Lessig goes a step farther when he argues: "And as that creativity is applied to democracy, it will enable a broad range of citizens to use technology to express and criticize and contribute to the culture..."[59] Possibilities for civic engagement such as open innovation and open government demonstrate the success of this movement. Peer-to-peer (production) models are more efficient in certain tasks because they make use of participants' self organisation and are not executed hierarchically and under supervision. Wikis[60] are ideal for this because anyone and everyone can join in. The voluntary exchange of ideas and knowledge with peers and the desire to learn are the main drivers of this new, open form of organisation and offer the chance to leverage innovative potential in the form of new business ideas and models.

Peering as a new form of organisation

"… open to a large contributor base," the Wikipedia[61] website announces. Wikipedia is likewise the result of an open process and is read, quoted and passed on daily by millions of people via links. The product of mass cooperation, this non-commercial free

Wikipedia

According to the Wikipedia website over one million authors are registered internationally – more than 6,700 authors work regularly on German content (as per October 31, 2009, http://de.wikipedia.org/wiki/Wikipedia). As a result, since May 2001 more than 1.8 million articles in German have been published on geography, history, society, art and culture, religion, sport, technology and science. The content in the free online encyclopaedia is freely available to everyone. Provided the authors and free licence are quoted, all content may be freely copied and used. This is guaranteed by a Creative Commons licence (CC-BY-SA)* and the GNU Free Documentation Licence under which the authors publish their articles. Wikipedia is financed by donations from private individuals and companies. Google, for example, paid $2 million to the Wikipedia Foundation in 2010. In fiscal 2008/2009 the Foundation's expenditure totalled roughly $470,000 per month. 40% of this went on salaries for the roughly 30 employees and about $70,000 on internet hosting.

*The Licence Deed permits peers to remix the content at will and also to distribute it commercially providing the conditions of the licence are complied with and the content is published again under the same licence.

Source: http://de.wikipedia.org/wiki/Wikipedia.

[55] Science Commons is a Creative Commons project for designing strategies and tools for faster web-enabled scientific research. It attempts to lower barriers to research in the form of legal obstacles. The goal of Science Commons technologies is to help make it easier to find and use data and material more easily in research.
[56] Dapp, T. (2010). The pirate inside us. In the depths of copyright.
[57] Dapp, T. and Ehmer, P. (2011). Cultural and creative industries.
[58] Lessig, L. (2005). Free Culture. The Nature and Future of Creativity.
[59] Lessig, L. (2005). Free Culture. The Nature and Future of Creativity.
[60] A Wiki is a website that allows anyone to edit content via a web browser.
[61] The name Wikipedia is a portmanteau of the words wiki, which is Hawaiian for "quick", and pedia, which is short for encyclopaedia.

encyclopaedia consists of free content in more than 200 world languages. Anyone can collectively contribute their knowledge. However, Wikipedia's open and democratic structure also makes it a target of criticism. Its detractors object to the fact that the openness of the encyclopaedia leads to unreliability and a loss of confidence. However, a study was able to demonstrate in 2005 that Wikipedia contained no more errors than other reference works (Encyclopaedia Britannica).[62]

6. The dawn of the digital economy

The transformation in structure and value creation patterns described, driven by digital network technologies, has only just begun. The stages of development ushered in by the advent of the commercial internet in the 1990s are massive, as the digital age holds out a broad spectrum of opportunities for everyone. Profound changes wrought by the network technologies are impacting all economic and social spheres. In the digital economy anyone can assume an active role and become involved. New, low-priced infrastructure tools such as free internet telephony, open access, open source software, social media and virtual idea platforms are making project based collaboration possible. Going forward, more common and project-related value creation will take place without the enforcement of copyright. Value creation networks can operate more successfully when knowledge, costs, risks and subtasks are shared among (global) networks working on the principle of commons-based peer production.[63]

Interactive collaboration and decentralised self-selection

Huge dynamics and growth potential

But mass cooperation and open innovation and value creation processes are not a panacea; they are additional tools embedded in existing innovation systems to generate (sustained) economic growth. They are taking place not only in the realm of pioneering software but also in areas such as music, design, architecture, science and other markets for consumer and industrial goods. This process is giving rise to a sovereign 'internetizen' savvy enough to exploit the new rules of engagement.

More freedom and equal opportunity

Driven by future technological advances, the dynamics of the digital society will gain further force. In the long run, existing and newly created knowledge will lead to greater freedom and equal opportunities – the world over.

Recommended action: There is a lot to do for…

… businesses and organisations:

— Tailor corporate culture to fit in with the digital world

— Permit error culture, acquire interaction competence

— Open up the value creation process and integrate outside knowledge

— Introduce social media strategy and communication guidelines (governance)

— Experiment with new forms of online engagement

[62] 50 experts each checked one article from their area of specialisation for errors in both works. With an average of four errors per article Wikipedia was only just behind Britannica, where an average of three errors was found.

[63] The term, often used interchangeably with the term social production, was coined by Yochai Benkler and is understood as a new information economics model.

Box 10: Network neutrality

All bits are equal!? As part of an open internet architecture, network neutrality (also net neutrality, internet neutrality) denotes the neutral, non-discriminatory communication of data on the net. In principle data packages should be transmitted at the same speed irrespective of where they come from, what they contain and who they are being sent to. Attempts by data network operators to warp network neutrality to enable them to charge different data transfer prices would lead to privileged treatment on the net for those who pay more – in other words, a two-tier service.

Network neutrality has so far been considered an essential feature of the internet. But with growing data volumes, technical feasibility and, above all, economic interests increasingly jeopardising this principle, the need to codify network neutrality is being debated in Germany, across Europe and in the United States. However, this puts policy-makers on the horns of a dilemma. Politicians are eager to enjoy the benefits of an open net yet at the same time data network operators should ideally be given free economic rein.

— Use open technology standards[64]
— Develop expanded incentive and compensation systems
— Identify lead users, offer intuitive toolkits
— Assess/evaluate the use of network technologies

… political decision-makers:

— Adapt regulatory framework (e.g., intellectual property rights) to enable open processes
— Enshrine network neutrality (Box 11) in legislation if necessary
— Integrate network-related issues into education programmes
— Experiment with new forms of online participation
— Enable access to public infrastructure data (not personal data) in machine-readable form
— Include communities, NGOs, interested citizens
— Use open technology standards

New value creation patterns need new rules of play

New economic principles

In 2030 people will look back to the beginning of the 21st century and be able clearly to identify the structural shift to a digital society. Entry into the digital society rests on new (economic) principles, rules of play and collaborative and business models. Given a broader spectrum of resources inside and outside corporate and organisational boundaries, new innovation potential can be freed up and higher rates of growth achieved, with a parallel improvement in the transfer of knowledge and technology. Enterprises and organisations will (have to) learn how to collaborate with a dynamic and increasingly digital network of peers and how to engage in joint production without possessing the control and communication sovereignty to which they have traditionally been accustomed. Producing knowledge and innovating will become a cooperative activity in a digital society in which more and more people want to participate and are able to do so.

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[64] Open means that the technical documentation is not controlled by one firm and can be implemented freely by all interested users, i.e., accessibility for everyone, no restrictions on sourcing and maximum interoperability.

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