

THE APP EFFECT

Jaap Bloem, Menno van Doorn, Sander Duivestijn, Andreas Sjöström



SOGETI

THE APP EFFECT



THE APP EFFECT

Jaap Bloem, Menno van Doorn, Sander Duivestein, Andreas Sjöström

With the cooperation of:

Michiel Boreel CTO Sogeti Group
Arnd Brugman Innovation Consultant Sogeti
Luciano Floridi Professor of Philosophy at the University of Hertfordshire
Hank Greely Director of the Center for Law and the Biosciences at Stanford University
Wim Hofland Mobile Consultant Sogeti
Chris Kelly Former Chief Privacy Officer Facebook
Peter Leyden CEO Next Agenda
Renaud Mouterde CTO Sogeti High Tech
Kia Nobre Director of the Oxford Centre for Human Brain Activity and Head of the Brain & Cognition Laboratory at the University of Oxford
Erik van Ommeren Director VINT USA
Arjan Postma Research Director FreedomLab Future Studies
Chris Riley Former Director of Strategy Apple Inc.
Jonathan Spalter Chairman Mobile Future
Amanda Spink Professor in Information Science at Loughborough University
Linda Stone Former Strategist at Apple Computer and former Director Virtual Worlds Group/Social Computing Group at Microsoft Research

See also THEAPPEFFECT.org



SOGETI



Attribution—Share Alike—3.0—Unported

Second edition, 2012

Copyright © 2012 VINT | Vision • Inspiration • Navigation • Trends

Cover illustration ANP

Production LINE UP boek en media bv, the Netherlands

Design Jan Faber

Printing Bariet, the Netherlands

ISBN 978 90 75414 41 7

978 90 75414 42 4 (*ePub*)

978 90 75414 43 1 (*Mobi*)

Sources of inspiration

This book's trigger came primarily from the many divergent organizations wishing to launch their own mobile apps and develop their own app portfolio. We began by coming together in inspirational strategy sessions. Working through coherent visions based on customer profiles, new business initiatives and scenario planning, we learned first-hand how serious organizations are about display devices and app development. And how right they are! It is abundantly clear that the "new mobile" is the future. This is apparent from all available statistics, indicators and predictions.

Recently, the Sogeti Mobile Lab and the Sogeti Trend Lab vINT (Vision • Inspiration • Navigation • Trends) held literally hundreds of discussions with customers on the topic of app strategy. We distilled this effort into our eight-legged reference model (see page 52).

Our socio-psychological inspiration came from the many specialists in the field of Information Behavior with whom we spoke. In particular, the insights of professors Amanda Spink and Luciano Floridi helped us put digital information behavior into a broader context.

We synthesized all acquired insights in a multi-day scenario workshop conducted in collaboration with Next Agenda and FreedomLab Future Studies. Next Agenda is an American company led by Peter Leyden, the former editor of *Wired* who has worked with scenario-planning guru Peter Schwartz. FreedomLab is an independent research institute and think-tank specializing in *Scenario Based Reasoning*.

In *The App Effect*, we build upon ideas from previous vINT studies. One of these is the new form of collaboration based on crowdsourcing, which developed in the past decade from the *free & open source* communities. This is the subject of our book *Open For Business: Open Source Inspired Innovation* (2006). Of course, we also go into ideas about new social-media behavior, free expression and narcissism, as published in *Me the Media: Rise of the Conversation Society* (2008). Finally, we also explore the vINT investigation *Don't Be Evil: Imagineering 21st Century Business* (2010), which is about the techno-economic paradigm shift that we are experiencing.

Foreword

“We shape our tools and thereafter they shape us.” Never has this been truer than in the present mobile revolution in which we are all participating. That is the core declaration of this book. Although still in its infancy, mobile and social technology is changing people’s behavior to an extent that organizations are compelled to respond. About two years ago, the authors set out on an exploration to find the impact of these technologies on people, organizations and society. This book is a reflection of the emerging insights, and identifies some of the possible effects that this app revolution can have for your organization: the so-called *App Effect*.

We are constantly surprised by what is going on around us. Since the time of Aristotle, surprise or even amazement has invariably constituted the first step toward new insight. Our research into *The App Effect* also began in that way, based on surprise about the way in which new technology has altered our whole style of life. People in transit, at home, at work, or out for the evening: it never takes long before we are reaching for our mobile devices. Everyone is or wants to be on the smartphone and tablet, especially with their own apps as well. All that technology is marvelous: it has never been so beautiful or intense.

Smartphones, tablets and their apps have embedded digital functionality deeper in our lives, even to the extent that the pet name “tech” currently stands for one vast sum — the sum of technology, economics, culture and history. This also allows us a good view of reality and of the future. Billions of apps will be downloaded in the coming years. All our attention, experience and knowledge are captured there. Whatever we can imagine, there seems to be an app exactly for that purpose.

So there it is — the true New Economy founded on the other patent three: the Attention, Experience and Knowledge Economy. It is still insufficient to solve the present-day debt crisis rapidly, but still... All this taken together must enormously surprise everyone or at least have been noticed by everyone, consciously or subconsciously.

This surprising tech-alteration taking place around us is most intriguing, but the consequences of this development represent the real crux of the matter. We refer to this complex of factors as *The App Effect*, after the most striking phenomenon. On the one hand there is a deep crisis, but on the other, there is an explosion of apps on the most powerful and handy small computers ever marketed. In the attention, experience and knowledge combination, deliberately linked to our social nature, plenty of benefits are being realized throughout all businesses.

Seize the opportunity by moving from the social web to Social Business: that is the message. First there was the shift from the e-commerce consumer experience in 1994 to robust e-business in 2002. Social Business is a logical evolution of this. With its focus on people first, engagement and transparency, Social Business dovetails perfectly with the consumer experiments of Web 2.0, which began in 2004. This history of Facebook ran parallel to that. It was founded in 2004, and in 2012 it probably will be the first social media giant to be floated on the stock market. “Social” is thus obviously the new capital!

The radical growth of apps and mobile facilities is in sharp contrast to the gradual growth in large sections of the economy. Nevertheless, *The App Effect* is directive in this context too. Apps and mobile devices mark the growth process in which new structures arise and settle as a foundation for new radical developments in the rest of the economy. At present, the deadwood is being cleared in preparation for the new cycle, thus largely corresponding to the seasonal rotation.

The remarkable tech-character — technological, economic, cultural and historical — of *The App Effect* is also expressed in culture clashes. Such clashes have always existed but are now more intensive than ever before due to digital opinionation and other empowerments such as hacktivism. Counter- and sub-cultures of diverse nature must be accommodated with transparency and engagement. They must be taken on board in the shift to a new Digital Commons situation: to a new Social Society.

Whether you are a business leader, IT executive, practitioner or just interested in where all this magical technology will take us, I do hope this book will inspire you to undertake a personal exploration in order to determine the appropriate *App Effect* for you and your organization. There will definitely be surprises and challenges along the way, but building understanding and insight early on will prove invaluable in drafting a successful course.

Paul Hermelin

Vice-Chairman, Chief Executive Officer of the Capgemini Group



Contents

Sources of inspiration 5

Foreword 6

‘There’s an app for everything.’

1 What’s app ...? 12

- 1.1 The mobile post-PC era 13
- 1.2 Empowerment and business impact 14
- 1.3 The perfect storm, an economic and cultural tornado 17
- 1.4 Information at your fingertips 22
- 1.5 Apple’s success 28
- 1.6 Wrapp-up 29

‘Gadgets are a field of invention and unlimited new business possibilities, always open to the ingenious.’

2 Gadgets Shake Your Business 32

- 2.1 Sensual enticement 33
- 2.2 Ten fundamental app effects 36
 - 1 Surprise: cross-sector innovation 38
 - 2 Immediacy: your responsiveness must speed up 39
 - 3 Empowerment: Digital Subcultures flourish 39
 - 4 Attack: Countercultures starting confrontations 40
 - 5 Gadgets: software updates and disposal on the increase 40
 - 6 Perceptualness: less text, more images and movement 41
 - 7 Addiction: the power of persuasive technologies 41
 - 8 Personalization: digital behavior and misbehavior 42
 - 9 Dependence: our omniscient display device 42
 - 10 Overload: we crave better filters 43
- 2.3 Wrapp-up 43

‘Necessity Drove Mobile Innovation and Reshaped the Web.’

3 Mobile innovation — featuring energy and healthcare 46

- 3.1 App strategy: from branding through to innovation 47
- 3.2 Mobile enticement in the conceptual economy 50
- 3.3 The energy sector as an example 54
- 3.4 The healthcare sector as an example 64
- 3.5 Wrapp-up 78

‘That’s what it’s all about, isn’t it? Our impact on other egos.’

- 4 **Culture clashes in the post-PC era 80**
 - 4.1 Gadgets as a service for rioters 81
 - 4.2 Just how empowered are we? A question of the ages 83
 - 4.3 Crises and post-PC empowerment 84
 - 4.4 Positive attitude required 86
 - 4.5 IT, media and Internet as the new Rock ‘n’ Roll 88
 - 4.6 Toward a Digital Commons situation 90
 - 4.7 The System as a source of alienation 92
 - 4.8 Digital Subcultures: empowered people 95
 - 4.9 Countercultures and their fight for independence 96
 - 4.10 The Digital Commons is not a given 100
 - 4.11 Wrapp-up 101

‘Those who will be able to conquer software will be able to conquer the world.’

- 5 **Software as a Gadget — everyone gets his or her own apps 102**
 - 5.1 Gadgets, widgets and apps 103
 - 5.2 Gadgets through the ages 105
 - 5.3 Four times one hundred and fifty years of science , technology and innovation 106
 - 5.4 From physical gadgets to apps 111
 - 5.5 Wrapp-up 113

‘I would rather try to persuade a man to go along, because once I have persuaded him, he will stick.’

- 6 **Persuasive technologies and addiction 118**
 - 6.1 Charismatic technology 119
 - 6.2 Modern media addiction 120
 - 6.3 The new “smoking” 122
 - 6.4 Persuasive technologies: mobile domain par excellence 123
 - 6.5 Triggers, engagement and enticement 125
 - 6.6 Creating persuasive technologies 126
 - 6.7 Engagement in practice 127
 - 6.8 Wrapp-up 129

‘The World Brain is no Utopian dream. It is an absolutely essential part of the new world community. Something which may even be recognizably in active operation within a lifetime. This consciously and deliberately organized brain for all mankind.’

- 7 **Post-PC behavior — blessing or curse? 132**
 - 7.1 Digital progress 133
 - 7.2 Smarter or dumber? 134

- 7.3 Just look it up 135
- 7.4 Abstractions and the fear of falling behind 138
- 7.5 The app effect on Gardner's intelligence wheel 140
- 7.6 Information Behavior Change Potential 147
- 7.7 Wrapp-up 149

'All media are extensions of some human faculty. Mental or physical. Electric circuitry displaces the other senses and alters the way we think. The way we see the world and ourselves. When these changes are made, men change.'

8 Ap(p)otheosis 152

- 8.1 Grand finale 153
- 8.2 Social Business according to VINT, IBM and Forrester 154
- 8.3 Eleven contemporary dos and don'ts 155
 - 1 Do not be a source of alienation 155
 - 2 Introduce a Digital First strategy 155
 - 3 At the same time, take immediate action with Mobile First 156
 - 4 Fast Forward: keep the tempo high 156
 - 5 Engagement rulez! 156
 - 6 Make a clean sweep through the management layers 157
 - 7 Surprise or be surprised 157
 - 8 Be authentic and transparent 157
 - 9 Focus on the Digital Commons model 158
 - 10 Don't Be Evil 158
 - 11 Be alert for your security 158
- 8.4 The future of Social Business 159
- 8.5 The last wrapp-up 160

About the authors 163

Illustrations and literature 165

Index 169



The website TheAppEffect.org has two interactive lists, one with illustrations and one with the referenced literature. For the illustrations, you will find supplementary information and as many URLs as possible for the illustrations for each page in the book. The illustrations in *The App Effect* are practical in nature and relate directly to the subject matter of the book. Usually the source material is also directly related. This list of illustrations on the Internet offers the reader more added value from graphic source material that provides facts, events and products that by necessity can often only be briefly mentioned in the text of the book. The same applies to the relevant literature. Anyone wanting to propose an addition or change in any of the lists based on the illustrations or the literature may do so via the website TheAppEffect.org.

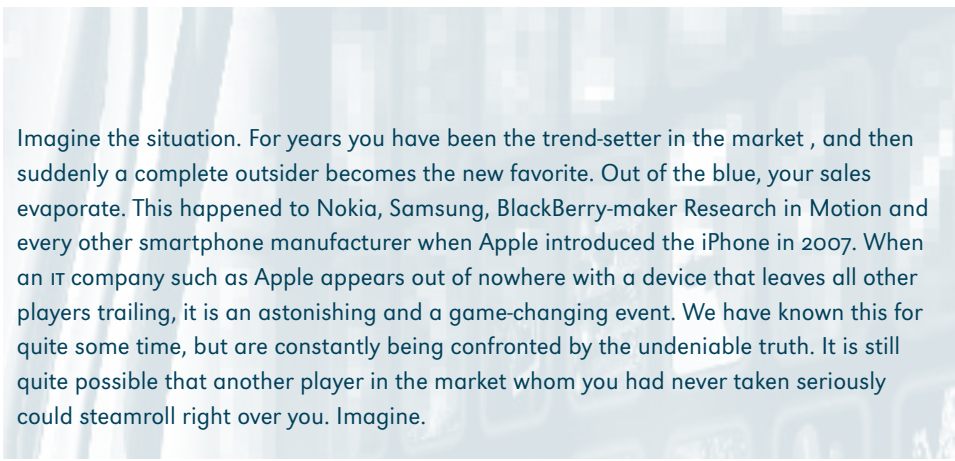
"There's an app for everything."
(Apple, 2010)



1 What's app...?

Table of contents

- 1.1 The mobile post-PC era 13
- 1.2 Empowerment and business impact 14
- 1.3 The perfect storm, an economic and cultural tornado 17
- 1.4 Information at your fingertips 22
- 1.5 Apple's success 28
- 1.6 Wrap-up 29



Imagine the situation. For years you have been the trend-setter in the market , and then suddenly a complete outsider becomes the new favorite. Out of the blue, your sales evaporate. This happened to Nokia, Samsung, BlackBerry-maker Research In Motion and every other smartphone manufacturer when Apple introduced the iPhone in 2007. When an IT company such as Apple appears out of nowhere with a device that leaves all other players trailing, it is an astonishing and a game-changing event. We have known this for quite some time, but are constantly being confronted by the undeniable truth. It is still quite possible that another player in the market whom you had never taken seriously could steamroll right over you. Imagine.

1.1

The mobile post-PC era

Apple had never made a mobile device before it brought out the iPhone. Within four years of its introduction, the company had captured half of the profits in the entire mobile market with its hardware and software. One of the most intriguing aspects of the digital upheaval is why Nokia, Samsung or RIM had not already invented their own version of the iPhone. Mobile operators had a similar experience. The amazingly popular WhatsApp simply appeared out of the blue. WhatsApp is a free app and an alternative to SMS. Before the carriers even had a chance to blink, their SMS business was starting to dry up. The emergence of Skype for voice calls was another hard knock for sales. Within the digital industry, these are all first-order direct effects that occurred when Apple erupted on the scene in 2007. The full-touch display device and apps concept was immediately emulated. History was repeating itself, similar to the *browser wars* and the onslaught of webpages, beginning in 1994. First, we had the web effect and now we have the app effect.

All of a sudden, display devices and apps are the new standard. From one moment to the next, the neatly apportioned mobile sector has been turned upside down. And the advent of the iPad in 2010 settled it for certain. We had entered the long-awaited post-PC era. Apple's mobile revolution had spread into the PC industry. App stores were opened online for both the iPad and the Mac. You can now find apps for everything: puzzles, games, weather, your blood pressure, energy usage, and even business applications such as SAP dashboards and real-time BI reporting. There are millions of apps of all conceivable sizes and types. And billions of apps, both free and paid, have been downloaded, both free and paid.

Apps on display devices are much more than a trend. This was clear from the very beginning. Everyone falls for these irresistible temptations. Are you exploiting these new opportunities? How are apps affecting your IT situation? Does each of your employees bring his or her own device to the office? Just like a few years ago, when we started to use web-based email. “*What’s app...?*” represents the bewildering perplexity that has overcome us. Mobile apps and their conjunction with the web are the icons of a new order. What does this mean? And, what will this mean in the future? The core issue is nothing less than the augmentation and personalization of our own information and how it is accessed — to coin a phrase: “digital information behavior.” And, consequently, the way we do business.

This book is about the app effect. We will, of course, discuss new interfaces, changing behavior, and the coming decade brimming with interactive displays. However, at heart, this book is about the ever-tightening relationship between people and the Internet. And it is also about the new type of relationship we have with each other and with every conceivable form of interactive content. There is a veritable deluge of apps and all kinds of touch screen devices from Apple, Google, RIM, Microsoft, Nokia, Acer, Toshiba, Dell, Samsung, Motorola, Lenovo, Archos, LG, HTC, Sony-Ericsson, HP, etc., etc. This deluge is a new beginning. It is the start of the post-PC era. In retrospect, the web should have been mobile from the very beginning. And it should have been multi-touch as well. “*Swipe me*”: *information at your fingertips*. That is exactly what we now have with the new generation of mobile display devices. And it will keep moving forward from here on out. The handheld computer, mobile phone, Internet, multimedia, social media, GPS, widgets, icon interfaces and touch controls have all been around for quite a while. Finally, these are all combined into one... the display device.

1.2 Empowerment and business impact

We need not concern ourselves with all those millions of apps in themselves. The real value is the decisive success of this development. Considered in the proper light, this is the basis for all “app” effects. On the whole, mobile apps on mobile devices are synonymous with personally selected and physically perceived functionality. The organic and “bionic” (as in *bio*-logy and *electro-nics*) sensation that we experience with an app on a display device or interactive medium is the most obvious reason why the technology is such an extraordinary success. Personal, sensory and bionic, it is a combination that is a prelude to a different kind of interface.

It is called a *Natural User Interface* as compared to the indirect *Graphical User Interface* used in the familiar window, menu, keyboard and mouse setup on the PC. Interfaces that are more natural harmonize so much better with our natural behavior. From the business perspective, it is important to profit from this ergonomic benefit, this key to success, this *Critical Success Factor*, by stimulating and supporting economic activity. Apps on display devices are primarily a new and desirable phenomenon. If set up properly, they also function as a new platform for making economic decisions such as purchases.

Empowerment from all sides

Our business transactions go much further than just commercial endeavors. Consider social and cultural behavior and the corresponding effects within societal and organizational contexts. Apps on display devices are also the heralds, the very icons of this type of app effect. *Empowerment* is key, stimulating and supporting the ability to express ourselves, which has been enabled by the bionic convergence of people and media. It is the enlightened model called the *Digital Commons*, a new digital togetherness in which individuals and organizations meet and converse with each other. While companies are becoming increasingly more social, more authentic and transparent, the medium also stimulates the use of display devices and apps to initiate direct conflict, as we have seen in recent history. The media contains countless examples of freedom fighters and rioters alike making use of their smartphones and social media.

Who is actually *empowered* now? Is it us with our remote control in hand, our *smartphone*? Or is it the companies who are continuously enticing us to buy things? Is it the IT departments that rule the systems within our organization? Or is it the employees that buy apps for their own mobile devices? What will the continuous struggle on the different fronts look like, and where will the new forms of collaborative interactivity flourish? Everyone already agrees that the way we do our work must and will change. Nowadays, it seems almost an established fact that even more control is shifting from companies to employees and customers, and that new forms of collaboration will emerge, evolving toward the Digital Commons.

Creative destruction and culture clashes

This is just the beginning. Current developments will continue but not without some resistance. We can expect quite a lot of creative destruction and, indeed, culture clashes. The culture of the established order, *The System*, will collide with *Digital Subcultures* and *Countercultures* that will continue to prosper. Twitterazzi, WikiLeaks, 2.0 employees and anonymous cyber attackers are the new digital opponents that organizations are already constantly having to cope with. The ideal scenario would be to have these three movements coalesce via a well thought-out, practical system

into the model of a new Digital Commons where new technological opportunities, economic feasibility and the needs of society converge, complement and reinforce each other.

This unique perspective provides us with many new information behaviors. The question is what form this empowerment, which is currently embodied in apps on display devices, will finally assume. In this book, we have worked out an answer for the energy and healthcare sectors. Of course, other sectors will also be affected, such as the automotive industry, and so on. The car is a perfect example. It was literally our very first “mobile”, and has now developed into our *Smartphone on Wheels* complete with special apps. There are many, many such examples within and across other sectors. For example, the intention is that the energy chain should also include electric cars, which may use solar panels to generate electricity.

The scope of IBM’s *Smarter Planet* campaign identifies the following thirteen cross-sector domains: *Energy, Money, Healthcare, Trade, Infrastructure, Oil fields, Government, Retail, Cities, Telecommunication, Traffic, Food and Water*. Naturally, there are Smarter Planet and Social Business apps using multimedia to keep us informed on the progress of all the initiatives being taken. IBM is also using its Venture Capital Group to stimulate start-ups to build content-based Smarter Planet apps.

The imperative of Social Business

The business impact of the central issue of empowerment goes beyond the traditional commercial domain of turnover, profit, and share value. More than ever, business impact is now determined by the individual and by society. This humanization of economic logic by the *hearts and minds* of altruistically empowered individuals, who will not allow their feelings to be brushed aside by numbers, requires a complex form of attention. This is very different from what we are used to, and we must learn to work with it. It requires undivided attention for the combination of authenticity, transparency, engagement, accountability and responsibility, human behavior, awareness of cross-sector chains and networks, and, not least, the ability to deal with criticism and opposition. When we look at increased app empowerment to discuss a new kind of Social Business that is developing, we are not just taking one step beyond the Web 2.0 focus on communication and collaboration using new media. The difference is unmistakable. Mobile display devices and attendant apps in the cross-sector private and corporate value chains are the mainsprings of a new transformation. And organizations must begin their transformation by planning and acting within the context of the impact on their business.

1.3

The perfect storm, an economic and cultural tornado

The post-PC era is characterized by the app effect. First, the impact of mobile apps has affected the products and services of the hardware, software, and telecom sectors, and apps have gained wide acceptance among the public and other industries. Communication, marketing and digital business between individuals and organizations have increased globally. Data traffic for every conceivable configuration has intensified and become more personal. This is a trend we were already familiar with from the Internet. We have already experienced the app effect in recent years through the flood of mobile personal display devices.

Apps bring display devices to life

The apps that we select from an online store bring our display devices to life. They are fast and immediate. It is a considerable shift from the elaborate and time-consuming effort needed to install software on a PC. This new enjoyment is experienced primarily through the use of touch controls, display quality and sensors extending our own perception. Apps are integral to display devices just like the web and the PC. First came the desktop and then the laptop. The laptop is along for the ride in the post-PC era, integrating itself with all the new developments. Even the desktops that remain will work with apps and multi-touch. As will the touch tables and walls that are on the verge of introduction. *Post-PC* is, therefore, *PC-plus*, just as Microsoft correctly concluded. In fact, there will be a much more diverse gamut of devices and the controls will feel much more natural to use. These will harmonize with our senses and also with our higher faculties such as speech and movement. And, eventually, with our subtle body language and thought processes. As we go to press, experiments are being carried out to use a brain interface for our original “mobile” device, the car. Multi-touch is already a killer app. Research performed by Pixar Animation Studios and U.C. Berkeley show that multi-touch is twice as fast as using the mouse to click on menus and windows.

Exactly the bit that we want

The web effect became dominant in the PC era. We carried out small, practical tasks using the mouse and keyboard within comprehensive software application suites. We were able to share our work via email. Web 2.0 brought us communication and task domains, Salesforce, Facebook, Twitter, YouTube, LinkedIn, Google Docs, Microsoft Office 365, and so on. Contact between us became much more immediate. Apps providing practical functionality on mobile display devices intensify our experience and enthusiasm for the app experience. In no time at all, apps and their icons came to symbolize the freedom that we had always wanted with our multimedia toolbox. During the Web 2.0 phase of the PC era, our tools became more accessible, more personal, and increasingly delivered in real time. The web became that platform where

all of today's popular social applications were built. Mobile apps offer us the luxury of sharing a part of our rich digital universe by hitting a button at any time and place we choose. And we are continuously up to date about the state of the world thanks to the newspapers, our Twitter timeline, a SAP dashboard, and so on.

Noteworthy

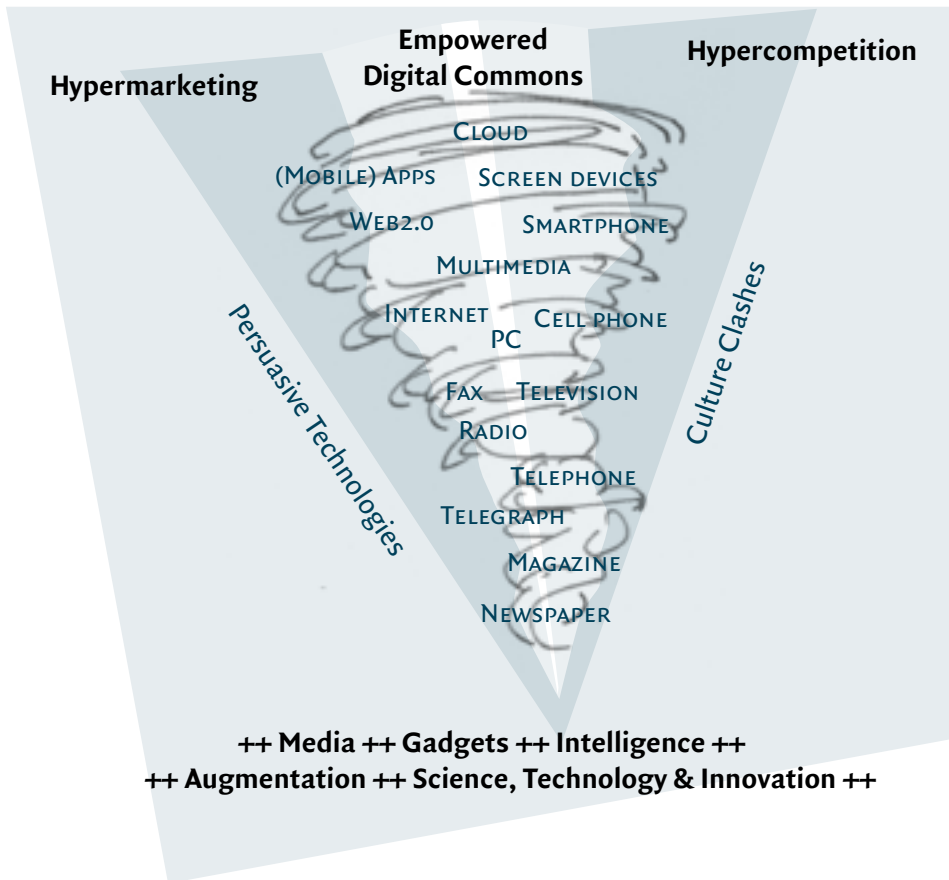
The evolution of the Web 2.0 platform into a combination of platform specific *native* apps and *web* apps can be considered a new dimension in *All Purpose Programming* (what's in a name?). HTML5 is the standard-bearer of this movement and apps can be regarded as nano-platforms. In addition to HTML5, there are many more new, interlocking standards, such as CSS, SVG and WOFF. And these have led to a proposed name for the emerging platform, NEWT, for *New Exciting Web Technologies*.

The evolution of gadgets

The key to the social relevance of the app effect is the personal and social immediacy of mobile display devices, including new devices like Amazon's Kindle Fire, new laptops such as Google's Chromebook, and so on. A lot could be said about the device side of this evolution. In the PC era, we had a desktop or laptop with a mouse and keyboard. Now, in the post-PC era or PC-plus era, we have sophisticated mobile display devices equipped with touch controls and apps, regardless of whether they have keyboards. Remarkable as it may be, what this is really about is the evolution of gadgets consisting of hardware and software that satisfy human needs. At the core of this evolution are two trends that have always existed and have a huge socio-economic and societal impact on the future and therefore require special attention, regardless of the issues of the day.

Persuasive technologies and culture clashes

Let us begin with *persuasive technologies*. These persuade and tempt with tools, technology and media, and may consequently prove to be addictive. These go hand in hand with *culture clashes*. On the one hand, excessive persuasion (marketing, advertisements and peer pressure) will provoke reflection and opposition. On the other hand, persuasive technologies — particularly in the form of Internet gadgets — contribute to personal responsibility and decisiveness, by offering *information at your fingertips*. We can now directly participate in discussions, stand up for ourselves, and organize. The intensification and personalization traits of modern persuasive technologies also turn culture clashes into a common occurrence. And these certainly do not fall neatly within democratic and organizational boundaries. Persuasive technologies and culture clashes go in partnership and are both the result of multimedia-based, intelligent (or *smart*) “augmentation” of human behavior. These fast-moving and continuous developments can be seen as a perfect storm.

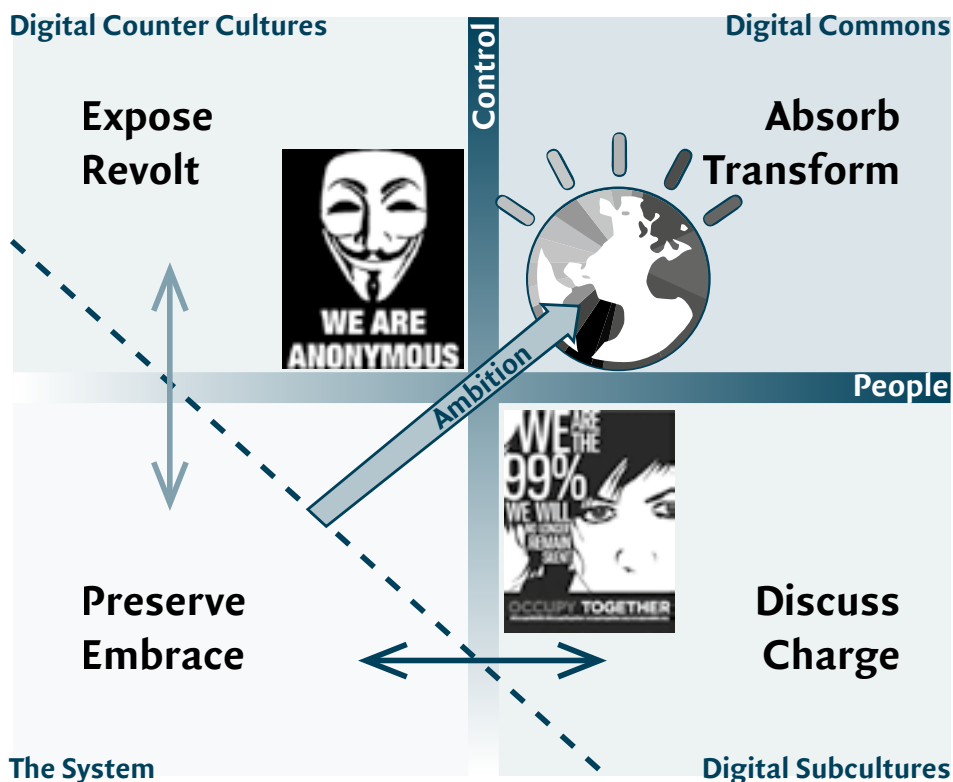


Toward the Digital Commons model

The “tornado” illustrates how persuasive technologies, characterized by hyper-marketing, and cultural clashes, characterized by hyper-competition, arise from the continuous development of media, gadgets and smart applications, and how these generally support human capabilities and appetites (*augmentation*). The basis for this continuous development lies in the powerplay between *Science*, *Technology* and *Innovation*.

The real question is: Which institutions, organizations and sectors are going to realize Digital Commons model via the tornado of tools and technologies currently being nourished by hyper-marketing and hyper-competition? All sorts of entities, at all levels of government, business, groups, private enterprises and so on, will be built up and knocked down in the dynamics of this tornado, all according to their specific convictions concerning our society and economic structures. This is how we will advance, whether we can envision it or not. The status quo will continue to shift regardless.

The following picture illustrates the universal culture clash of our institutionalized *Systems* with the *Countercultures* they provoke and the *Subcultures* that exist. Today, the main ambition is to move the Digital *Countercultures* and *Digital Subcultures* from the existing System toward the new and palatable Digital Commons situation. Consider, for example, digital government, the Smart Grid, and e-Health. In the new digital or *smart* ideal, situations, processes must run like well-oiled wheels, and interests must be managed without any damaging clashes. Chapters 2, 3 and 4 of this book discuss this dynamic from different perspectives.



Post-pc Empowerment 2005 > 2015

From "Smartphones" via Web + Mobile + Apps to Smart Web/App Ecosystems

Web presence becomes app presence

“The Web Effect” was the title of a *Forbes* article about fifteen years ago. It was August 1997, when reaching one million websites made it the breakthrough year of the multi-media PC era. *Forbes* sketched the following portrait of the era:

“Plenty of old media entities are rushing to establish a web presence if they don’t already have one. But the story has other, less obvious dimensions that also merit notice. Money and ideas are not just going from old to new — they’re also flowing back the other way. New media culture, content, and even advertising money are enriching old media. There’s no established way of calculating this flowback dividend, but it’s already huge.”

Read *app presence* for *web presence* and this could describe the reality of today, fifteen years later. All media producers are trying to repeat the same trick using apps on the new display devices. There is a profusion of experimentation with sensory input, context sensitivity, and virtual reality. Hardware, software, content, design, ergonomics, economics, crowds and communities are becoming even more intertwined. But, how exactly? How will the app effect evolve in the post-PC world? How will our information behavior change? The simple answer is obvious... the web effect plus copious additions.

At the e-G8 meeting in Paris in May 2011, McKinsey presented the first quantitative macro-economic web effect analysis. It was titled: *Internet Matters: The Net’s Sweeping Impact on Growth, Jobs and Prosperity*. Clearly, the economic impact of the web continues to thunder on:

“The Internet accounted for 21 per cent of gdp growth over the last five years among the developed countries McKinsey studied, a sharp acceleration from the 10 per cent contribution over 15 years. If measured as a sector, Internet-related consumption and expenditure is now bigger than agriculture or energy. Most of the economic value created by the Internet falls outside of the technology sector, with 75 per cent of the benefits captured by companies in more traditional industries. The Internet is also a catalyst for job creation. Among the 4,800 small and medium-sized enterprises surveyed, the Internet created 2.6 jobs for each one lost to technology-related efficiencies.”

Web effect becomes app effect

McKinsey asserts that the web effect will continue its remarkable expansion on all fronts. This windfall allows us to state with certainty that the immediacy of the app effect will continue to build upon the web effect and that this will proliferate. This will be noticed first by replicating demonstrable web successes into a greatly improved user experience. And this explains the enormous media interest today, much like the situation that *Forbes* documented back in 1997.

Countercultures versus institutions as the norm

In the context of an abundance of *persuasive technologies*, we must take into account the scale and impact caused by the intensification of *culture clashes* in different arenas. In the PC era, the nature of the web effect was primarily economic and social. In the post-PC era, the app effect has taken the lead. Mobile display devices and apps will intensify the economic and social impact of the web and extend it into the organizational and societal front. And this will lead to direct contact with *Systems* and institutions. All established orders will be brought even further into the public eye and be held accountable for their actions. They will be “owned” by engaged individuals and communities. Every issue will be weighed, measured and brought to a head. In today’s post-PC era, transparency and accountability will be elevated even further as the standard way of doing business. Any deficiencies in this light will arouse the fury of *Digital Countercultures* in the form of paralyzing hacktivism. This will occur more and more frequently. Consider, if you will, the attacks by Anonymous on MasterCard, PayPal and Visa, on the Sony PlayStation network by LulzSec (Lulz Security, “the world’s leaders in high-quality entertainment at your expense”), on Google Mail, probably from within China, and the DigiNotar e-certificate scandal.

1.4 Information at your fingertips

New information behavior combined with a hugely improved user experience, better than any PC, has turned the hardware, software and telecom sectors upside down. And all thanks to the mobile aspect of *information at your fingertips*, multi-touch for the masses. The question now concerns the way in which all other sectors can provide attractive propositions and accomplish social and economical gains. This is the challenge for the coming years and probably even decades if the PC revolution that started in 1981 is anything to go by. Thirty years, an average generation, easily passes. The flood of persuasive technologies of display devices in all sorts and sizes — tablets, slates, pads and phones —, combined with practical and appealing apps, is an important key to the more attractive propositions and attendant socio-economic gains.

There can be no doubt that we are smack bang in the middle of the post-PC era. Besides all those physical devices, apps in online app stores have been an important constant up to the present. Mobile apps are increasingly replacing the cumbersome application suites with which we are all too familiar on the desktop and laptop. As you would expect, the laptop is adapting too. It is becoming thinner and lighter, with an increasing number of multi-touch versions and apps. Another important constant is the “cloud”. The Internet is scaling up and hopefully becoming safer at last. It is open and free, pay-as-you-go, and everything in-between. Desktops and private networks

are being ousted by portable mobile devices inheriting the laptop “book” moniker — Chromebook, Ultrabook, and so on. There is the choice of a fixed or detached keyboard, as keyboards are still very handy.

All of these post-PC developments are intertwined and have been a long time coming. And just as in the beginning of the PC era, we can expect many more new developments in the area of “user experience”, which is not at all surprising. In addition to tactile sensors, higher definition images and GPS, the near future will have speech recognition, gesture recognition, NFC (Near Field Communication) and 3-D included as standard features.

Bill Gates’s vision: toward mobile information

The digital convergence predicted for the post-PC era is the essence of Bill Gates’s vision that he presented in November 1994. Distilled to the core message, Gates said:

“At the center of this will be [...] all the information — books, catalogs, shopping approaches, professional advice, art, movies — [...] on demand on a device looking like a tv, a small device you carry around, or what the pc will evolve into.”

With these words, spoken at the Aladdin Hotel in Las Vegas, Gates let the genie out of the bottle. It is the idea that has inspired him since 1989: that the final outcome in the post-PC era will be mobile *information at your fingertips*. This was the leitmotif that Gates borrowed from the Information Industry Association, which used it as its motto in the 1970s. *Information at your fingertips* was the course set by Gates and Microsoft until the departure of the legendary co-founder in June 2008. And this is why it became the slogan of the PC era, even though Gates actually had a different vision in mind.

The iPhone is Gates’s post-PC portable television

According to Gates, the tiny television that you would take everywhere with you would materialize in 2005. In fact, we had to wait until January 2007 when Steve Jobs announced the iPhone. The 3-in-1 device — telephone, iPod Touch, and Internet tablet — actually entered the market six month later. Then the iPhone sounded the death knell for the so-called “smartphones” with their frustratingly awkward little buttons. This newly developed substitute had elegant multi-touch controls. And that was that. Mobile *information at your fingertips*. Literally! Not indirectly by typing on a keyboard and clicking with a mouse, but via finger sweeps on a fast and lucid hand-held display device. Steve Ballmer scorned the iPhone, saying that it was very expensive and was unusable for email without a keyboard. Nevertheless, it is abundantly clear that the iPhone has ushered us into the post-PC era. This was the mini-television that Ballmer’s boss more than twelve years earlier had predicted for the year 2005. All of a sudden,

the convergence and accompanying socio-economic dynamics that Bill Gates had talked about were no longer a vision but a reality that had everyone licking their lips.

Display devices and apps are the new paradigm

Apple had worked on it for seven years. The original plan had been to produce a tablet. When the prototype was ready, Steve Jobs decided it would be a smarter move to reinvent the telephone first. At the same time as the announcement of the iPhone, Apple Computer changed its name to Apple Inc. to signify the dawn of a new era. It heralded a new era not only for the company but, as we now know, also for the entire computer, software and telecom sector. Almost at once, display devices and their apps were the new post-PC paradigm. Thanks especially to the iPhone, iPod Touch and iPad, in conjunction with the Apple App Store that opened in 2008 and subsequently the iCloud platform, Apple made 153 billion dollars in May 2011 and ousted Google as the most valuable brand. At about 400 billion, it became the most valuable company after Exxon Mobil. *Data is the new oil*. This idea, fathered by mathematician Clive Humby and taken up by many analysts, had acquired several extra dimensions. Thirty-five years after its foundation in 1976, Steve Jobs and his Apple, which had also been on the brink of bankruptcy in the past, were wearing the winner's laurels. On the day he died, 5 October 2011, the American President Barack Obama honored Jobs, the committed innovator, with the following words:

“Steve was among the greatest of American innovators — brave enough to think differently, bold enough to believe he could change the world, and talented enough to do it. [...] By making computers personal and putting the Internet in our pockets, he made the information revolution not only accessible, but intuitive and fun.”

From Graphical to Natural User Interface

Where do you want to go today and information at your fingertips? Apple has turned this combination of Microsoft slogans into reality. All of a sudden, display devices and apps have become the new standard. It is not that PCs and laptops are no longer being made. They are no longer being produced in the same quantities. Keyboard, mouse and windows — the WIMP GUI of Xerox from 1973 (*Window, Icon, Menu, Point Device*) — are suddenly experiencing stiff competition from *Natural User Interface* developments that are in the fast lane to the future. And not just multi-touch and speech recognition, there will be movement recognition as seen in Microsoft's Kinect. This device made the Guinness Book of Records after 8 million units were sold in only two months. It tallied an average of 133,333 sales a day. Kinect allows every single body position and movement to operate a control in a digitally created environment... these may be as functional, realistic or as bizarre as one might imagine. It recognizes arm movement, speech and eye gestures, making it a perfect non-interface interface. The first derivative Kinect implementations were medical applications, Facebook ava-

tars and fantasy games. The possibilities are endless, as demonstrated on the website: KinectHacks.com.

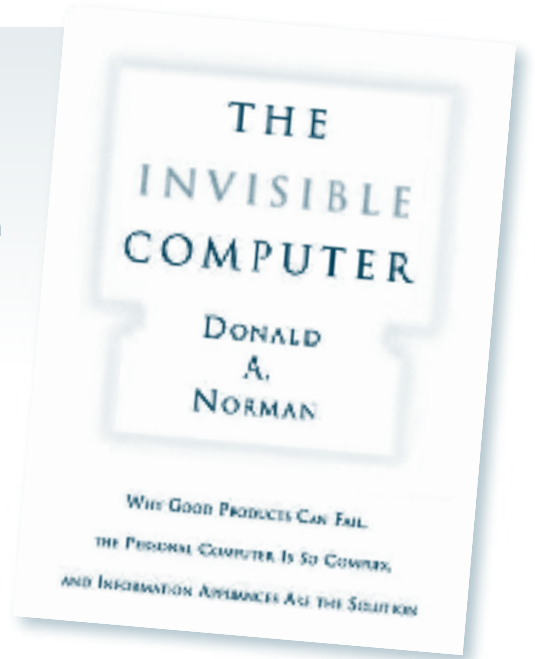
Donald Norman's vision: What is wrong with the PC?

What is wrong in this... Traditional desktops and laptops lack immediacy and are impersonal. The post-PC era is all about interfacing with our senses and higher faculties such as speech, body language, and eventually natural thought. Donald Norman was the first person in the world who could call himself a *User Experience Architect* and he worked at Apple Computer. In 1998, he made a passionate appeal for *The Invisible Computer* in his book of the same name. Norman spared no feelings in describing the PC of that day. His words are too well known and eloquent to not allow them to speak for themselves:

"What's wrong with the pc? Everything. Start with the name. The Personal Computer is neither personal nor is it used to do much computing. Mostly, it is used for writing, reading and sending things to one another. Sometimes it is used for games, entertainment or music. But most of the time it is using us. When I prowls the halls of my workplace, a common sight is that of people on their hands and knees in front of their computer. No, not praying, but installing new things, rebooting, checking the cable connections, or otherwise just plain muttering under their breath."

The PC is a so-called *end-user computing* problem all by itself. According to Norman, the solution is individual elegant *Information Appliances*. We now have a plethora of choices thanks to the enormous number of apps in online shops. Back then you would certainly not want to talk to Donald Norman about PC software. The typical PC application suites with cumbersome word processors, spreadsheets and so on were already absolute anathema to him:

"With today's pc, we buy the hardware, the computer, in order to support computer programs, also known as 'applications.' Applications: what a terrible term. What a terrible concept. Applications have little to do with the tasks that people are attempting to accomplish. Look. We don't do word processing: we write letters, or memos, or reports, or notes to ourselves. Some of us write books. I do not want to go to my computer to do word processing. I don't want to go to my computer at all. What I do want is to be able to write, with a tool that fits my needs."



What we actually want is to carry out a few tasks that are related to each other. Norman's time at Apple was directed toward *Activity Based Computing*. But, said Norman, as far as I am concerned, I prefer it with as little Computing as possible. Try to carry out tasks without using a personal computer. Assume what it is we actually want to do and ensure that the app(pliance)s are built to do exactly that. In fact, the best option is to start all over again because the computer industry, according to Norman, is not able to rise above the level of the PC:

"The computer industry is stuck in a rut from which it can't escape. Its very success has driven it further and further down a path of no return. Its business strategy is caught in the endless loop of added features, continual upgrades, and as a result, ever increasing complexity and every increasing help systems aimed at coping. The only way out is to start all over.

There are many hurdles in the way of information appliances, but the goal is worth it: devices that fit the person, that fit the task. Devices that are easy to use, not only because they will be inherently simpler, but because they fit the task so well that to learn the task is to learn the appliance."

Do away with the traditional PC and with the application suites. Start all over again. At the IIT Design Research Conference of May 2010 and with wry self-mockery, Donald Norman hinted at the successful direction that Apple took after the return of Steve Jobs in 1997:

"You know what Steve Jobs did when he arrived? He fired all of us! And guess what resulted? Better products! Which have revolutionized the way we use machines. And he fired the usability groups as well."

What is wrong with the first post-PC devices?

Apparently, the design and usability specialists at Apple back then were also unable to think outside the box, trapped as they were in the PC paradigm. Does this mean that Norman embraces the current generation of display devices and their apps — the software variants of his Information appliances — as the decisive new step in the direction of his Invisible Computer ideal? Not at all. In fact, just the opposite. Here are a few unvarnished opinions of Donald Norman and Jakob Nielsen who founded the Nielsen Norman Group, dedicated to *usability*, in 1998. In their opinion, we have taken one step forward with the new display devices, but also two steps back.

"The new applications for gestural control in smart cellphones (notably the iPhone and the Android) and the coming arrival of larger screen devices built upon gestural operating

systems (starting with Apple's iPad) promise even more opportunities for well-intended developers to screw things up. [...] There are no standards and no expectations. [...] Gestural systems do require novel interaction methods. Indeed, this is one of their virtues: we can use the body. We can tilt and shake, rotate and touch, poke and probe. The results can be extremely effective while also conveying a sense of fun and pleasure. But these interaction styles are still in their infancy, so it is only natural to expect that a great deal of exploration and study still needs to be done."

So, the display devices are wonderful, but you do need to start out consistently and base your design on a fundamental knowledge of usability. This knowledge is ignored far too often at the moment. This is Norman and Nielsen's message. Contemporary top designers such as Josh Clark adhere to this opinion. The calls for adjusting course are all well and good, but we know from the development of the PC that, in practice, things do not just change all by themselves.

Information at your fingertips and other user experiences will evolve enormously in the coming years. Yet one thing is certain. The iPhone, iPod Touch, iPad, different Android devices, Windows Phone, Windows 8, Kinect and all the clones that can follow such a handsome array of products have walked us definitively into the post-PC era. The movement is from GUI to NUI but preferably without losing the nicer GUI aspects. The first step in this route is multi-touch for the masses, accompanied from the outset by app ecosystems. These are the software variant of the functional Information Appliances that Norman proposed in 1998 to replace the horrible PC experience.

The Long Nose of Innovation

If we characterize the start of the post-PC era as mobile *information at your fingertips*, then we can certainly go back to 1982 to find the roots of multi-touch in digital electronics. For example, we can see it in the dissertation of Wayne Westerman, co-founder of FingerWorks, which was purchased by Apple in 2005. This is the opinion of Microsoft Principal Researcher, composer and multi-touch historian Bill Buxton. In 1984, Buxton and associates developed a digital music touchpad. It was the same year that Apple popularized the Graphical User Interface on the Macintosh. It always takes a few decades before a technology trend makes a breakthrough. Buxton calls this *The Long Nose of Innovation*, and he is not just referring to the passage of time. When Steve Jobs brought out the iPhone in 2007, Steve Ballmer had been just a little earlier with his Microsoft Surface multi-touch table. Leapfrogging over and thumbing noses at each other. And so it will continue — certainly in terms of the hyper-competitive digital innovation in the post-PC era.

1.5 Apple's success

Display devices and apps are all the rage. The app stores are overflowing — especially the Apple store — and every trend-setting platform has a terrific story to tell. Of course, Apple takes the cake with its own formidable ecosystem, whereas back in the year 2000, it only had the Mac. The lateral move of the producer of high-quality PC/OS toward the iPod and iTunes enabled convergence with the computer division in January 2007, resulting in the introduction of the first mobile multi-touch display device, exactly what Bill Gates had dreamed of since the 1990s.

Success then followed for the App Store, the iPad and the iCloud. An app store was also opened for the Mac, while globally hundreds of official Apple stores — or, better said, Mac temples — are opening their doors daily. And this is how the 35-year-old Apple gained its value. It is a brand name and a business. The absolutely biggest company, Exxon Mobil, with a history going back 120 years, is feeling the hot breath of Apple on its neck. On 10 August 2011, both companies even traded places a couple of times on Wall Street. At one moment the market value of Apple was 343 billion, compared to the 334 billion of Exxon Mobil. This bears repeating. If there is one moment in human history where every person on the world could look on data as the new oil, it is this conjunction of events in 2011. And it was of little importance that it was only because the telecom providers had to adjust their rates as a response to the increase in free data traffic, so as not to jeopardize their profitability. And that was not only due to the Apple display devices and free services such as WhatsApp. Everyone was plunging into the market and the frenzy was in full swing.

Some numbers

In May 2011, when Apple became the most valuable brand, the sales of Android smartphones made by different manufacturers exceeded 100 million items. BlackBerry fell behind and Windows Phone was an ambitious newcomer. Microsoft was not aiming at producing vast quantities of apps. In July 2011, the milestone of 15 billion downloads was reached by about 200 million users of the iPhone, iPod Touch and iPad. At that moment, there were about 425,000 apps of which about 100,000 were exclusively for the iPad. After 263 days in July 2011, the Windows Phone Marketplace contained a modest 25,000 apps. This platform distinguishes itself even more due to its *tiles* interface (the trademarked Metro Design Style) and integration with Xbox 360, Facebook, Skype and the new Office 365 in the Azure cloud. In close collaboration with Nokia, the real attempt to catch-up that Microsoft must make has been planned to occur in 2012.

1.6 Wrapp-up

We could continue to stack up more numbers, but the message is clear. Vivid display devices in various sizes, shapes and types, embodying the mobile post-PC television of Bill Gates and multi-touch facilities, have become the normal user experience. The apps form the biggest constant in the midst of all the ferocious competition, and an assured giant cash cow for Apple. Nevertheless, in the context of the post-PC era we want to look beyond *information at your fingertips* and apps as the standard-bearer of the new order. In particular, we want to do justice to further developments in technology and human information behavior. And focus, in particular, on the business impact. This is not as easy as it might seem. At the moment, you could just do a straightforward Google search on “beyond information at your fingertips”. But that search at the time of writing this book surprisingly only provides one significant hit... a blog post by Mark Pesce, Virtual Reality pioneer. It is almost as if, in 2011, *beyond information at your fingertips* did not yet exist. So what should we expect?

Augmented Humanity

The blog post mentioned above is entitled “I Am Not Your Google” and dates from 2006. Eric Schmidt, then Google CEO, probably knew nothing about that post. What we do know is that Schmidt explicitly elaborated on *information at your fingertips* in September 2010 at IFA, the Berlin technology expo, when he welcomed us to the *Augmented Humanity* era. According to Schmidt, *information at your fingertips* was almost a reality at the time. In principle, we are ready to know everything. However, information and knowledge based on Google and Wikipedia are insufficient, just as “I Am Not Your Google” rightly points out. What we need to do is make practical use of both. Only then can we gain a smidgeon of understanding about what the information and knowledge in question is all about. Both must first be transformed into actual behavior.

In 2010, it seems that Eric Schmidt wanted to respond by saying that, in the near future, it will no longer be people that will be searching for information and knowledge. It will take a little while before the roles are reversed, but relevant information and knowledge will ultimately follow people around. Google has grown far beyond raw, unfiltered data. It knows our “context.” The network knows exactly what we do and what we want. And thanks to the soft hand of the information and knowledge that guides our context like a guardian angel, everything that we want and need to do falls into place. Automatically. This is how humanity is augmented. It is the ultimate form of *information at your fingertips*. It is not so much that we want to be herded by technology. No; soon we will take each other by the hand, says Schmidt: “The computer and the human each does something better because the other is helping.” And

then you will see how wonderfully the information overload will sort itself out. Information and knowledge will once again be a blessing, and integrate with our behavior and complement it meaningfully.

Culture clashes

We can make quite a few advances for commonplace situations. Augmented Humanity will be very handy in that respect, as Schmidt stated in his presentation. Schmidt also predicts that there will be quite a few snags to overcome even in commonplace applications, due to privacy issues and sharing of information. However, the greatest advantage is that everyone will benefit. It will not just be the elite. Schmidt is talking about *empowerment* for the masses. Well, yes, but whether everyone will blindly follow Google's *Don't Be Evil* motto is another thing altogether. It is not likely at all. The single thread through our entire history is the clash of cultures, and every new technology has escalated those clashes. In the post-PC era, mobile *information at your fingertips* — our new information behavior via web and apps — contributes to the escalation of old and the creation of new culture clashes. Consider, if you will, freedom fighters and rioting, such as the 2011 Arab spring and the London riots. And that is entirely something else than the commonplace Augmented Humanity. The web and mobile apps have a much, much deeper impact. Hopefully, it will go all the way toward forming virtual ecosystems and exceeding and integrating the economic sectors. And this provides lots of profitable opportunities.

Individuals and groups always find as many ways as possible to get the better of, or guard their valuables from, one another. Competition and coaxing — with persuasive technologies — are in our genes. We look at different things in different ways. It is people power and power play. Constant change, culture clashes. It has always been this way. This dominant theme is why we should look beyond *information at your fingertips* and into the societal and socio-economic issues... of the app effect, including the web.



*“Gadgets are a field of invention and unlimited new business possibilities,
always open to the ingenious.”
(Everyday Science and Mechanics, 1935)*



2 Gadgets Shake Your Business

Table of contents

2.1	Sensual enticement	33
2.2	Ten fundamental app effects	36
1	Surprise: cross-sector innovation	38
2	Immediacy: your responsiveness must speed up	39
3	Empowerment: Digital Subcultures flourish	39
4	Attack: Countercultures starting confrontations	40
5	Gadgets: software updates and disposal on the increase	40
6	Perceptualness: less text, more images and movement	41
7	Addiction: the power of persuasive technologies	41
8	Personalization: digital behavior and misbehavior	42
9	Dependence: our omniscient display device	42
10	Overload: we crave better filters	43
2.3	Wrapp-up	43

The App Effect as the title of a book is a nice example of a provocative foregone conclusion. You can articulate such a challenging statement when you have a watertight case, a case that you can sell and substantiate in a few sentences. Apps on increasingly sophisticated display devices are “merely” the heart of the issue. What really matters is that this irresistible force works to create different information behavior that will turn your business upside down in this decade. The implication is that the new changes in information behavior will leave a lasting mark on our interaction with products and services. In the context of *Social Businesses*, it is the predictable transformation that was initiated with Web 2.0. Thus, we have a foregone conclusion plus simplification, behavior transformation and socio-economic impact. Is speaking of “the app effect”, then, a daring conceit? Or, when all is said and done, will there be a swirling tornado of apps developing in unison on the web? We are convinced it will be the latter.

2.1 Sensual enticement

The central theme of *The App Effect* is the digital behavior of individuals and organizations. We can perhaps best characterize this behavior with today’s app phones and tablets as a new dimension in media addiction. The popularity of handheld display devices that you operate with your fingertips is a golden opportunity to literally get closer to people, perhaps even to get under their skin. Which is also what we experience. The perceptualness of app phones and tablets is a very unique experience. It is not a fad. It is a lasting trend that will keep on growing. This is exemplified in the trend toward speech and movement controls — as long as it matches the behavior we are most likely to exhibit naturally. Bringing apps to life and utilizing them via touch draws digital functionality even more into the human sphere of sensation. This perceptualness clearly goes far beyond anything we have previously experienced. Information has actually come to life in the post-PC era. It is more topical, much more visual, and stimulates our senses more.

Apps on display devices, particularly multi-touch app phones and tablets that are also equipped with cameras and sensors are, to date, the most perfect combination of software, hardware, content, design, ergonomics, economics, crowds and communities. Given such interplay, the primary effect of apps and handheld app devices is two-fold: behavior transformation and economic impact. We contend that the accompanying changes have the potential to affect our entire socio-economic framework. The new generation of app phones and multi-touch tablets, also known as TAFKAPP — *The Apparatus Formerly Known As Phone or PC* — now assumes the role of the main device. Welcome to the post-PC era where sensory and digital behaviors

interact in such a way that each person acts with more intensity and can develop in new directions.



This S-XGen “handtop”, a TAFKAPP design from 2003, entered the market in 2008 as an Ultra Mobile PC (UMPC) with Windows and GPS.

Examining statistics from the revolutionary decade 2000-2010 makes it abundantly clear that something extraordinary is happening. We went from 400 million to 2 billion Internet users and from 1 billion to 5 billion mobile connections. Currently, there are hundreds of thousands of apps available in online stores. In 2020, we expect this number to be 10 million, which is reason enough to call a halt to the counting. IDC predicts that the 10 billion app downloads in 2010 will grow to over 182 billion by 2015.

Display Devices and their apps are irresistible. They are selling like hot cakes, both in the physical stores and via the digital online stores. Apps are flying out of the online stores for next to nothing or for free. When you are done, you close the app box, and open up another one. And life continues to be filled with even more sensual surprises. Vibrant colors on vivid screens. It is all very simple. But it was not possible previously. At least, not for the same price. What could be more beautiful than such a magical device that is chock-full of weightless magic boxes? A swipe across the screen, a tap with your finger and you can instantly do what you had in mind. The trick? It is simply

following along with how we are naturally inclined to act. Basically, apps are virtual gifts with terrific practical surprises. We buy them or get them for free. We shop ourselves into happiness. There is nothing new in this and that is exactly its power.

A new science is dedicated to type of irresistibility. It deals with persuasive technologies, those physical and digital things that we cannot resist. This is particularly significant, of course, because it is exactly those enticing items that we most prefer and use. Those who realize this will immediately see the potential for their own apps on app phones and tablets. And will also see the possibilities for employees, for customers, for advertising goals, for increasing productivity... you name it. Just publish your own apps in an online store. Success guaranteed and it all starts with mobile. And this is exactly the opposite of the past. We were “mobile” when we could easily travel from one place that was distant from another. Preferably, we went by car. Now, “mobile” has come to mean that you do not even have to leave home. Actually, it really means that we can go wherever we want because we can take care of business and our needs via the web on our display devices. Digital has never been this physical.

Above all, this increases our enthusiasm for ourselves. Social media are at the top of the list of media addictions. Any kind of buzz on Facebook, Twitter or other networks is a good reason to pull out your display device again. And you add a couple more other apps to continue entertaining yourself: the newspaper, the weather, the train schedule, an information video, music, and also Office 365 if you have a Windows Phone, or Salesforce results. Apps are enticement boxes and the siren call comes from every direction: business, personal, social, fun, interests and irritations.

Some anticipate a backlash against the app mania because we are getting caught up in a digital world that completely controls our behavior. The fear is that privacy and free will become relics of the past. There is a risk that we overshoot into that doomsday scenario. Utter aversion could make us obstruct the electronic patient file, the smart grid, and maybe even work against online sales in general. Hacktivist *Countercultures* are already globally active and carry out anonymous attacks to punish too much meddling or other perceived misdeeds.

Organizations are being shaken up by the app effect: *Gadgets Shake Your Business*. We see a good example of this happening in the IT departments of businesses that appear to lose control over which devices are used and what runs on which gadgets. In addition to the “*Bring Your Own Device & Apps Consumerization*” of technology, we see empowered customers shaking things up. A good example is the use of Twitter. And companies see numerous opportunities to generate buyer enthusiasm by using clever mobile strategies.

The feasibility and success of a successful app strategy does not depend solely on what we can do with devices. What all the devices and apps are doing — to us, society, how our brains are dealing with it, what we find desirable and valuable — is just as important. We see employee and customer empowerment and the humanization of business processes. Social Business follows as a matter of necessity. However, this is accompanied by the development of situations involving sham intelligence and knowledge, simply because the devices and apps are so “smart”. Technology is capable of increasing competency, but an overestimation of our brain capacity in terms of information processing can lead to dangerous overconfidence. Even so-called “social media” can easily put us on the wrong path, not least because they can often prompt rather antisocial behavior. We are increasingly busy with ourselves, with our devices, with apps and the web, and this is leading us to ignore our environment and the living creatures around us. This is not at all surprising since you can only focus on one thing at a time. Indeed, this is something that should be given a great deal of consideration. And something to be aware of constantly.

2.2

Ten fundamental app effects

The technical tools that man has developed, in conjunction with their costs and benefits, have played a central role throughout history, in what we call “progress”. Technological ability, social desirability and economic feasibility have become increasingly intertwined since the start of the Victorian Internet in 1830. To put it mildly, they were not always relaxed and on an equal footing with each other. Nevertheless, technology, society and economics were an accepted trinity. The same applies to possibility, desirability and feasibility: it is possible, do we want it, what does it cost and what does it provide us with? These dynamics are intensifying and are essentially the defining issue for the success of organizations.

Media development in the twentieth century has magnified life itself. News, engagement, discussion, justice and injustice, entertainment, consumption and globalization have landed in the same crucible. Via the *World Wide Web* this has led to the *Web of the World*, the convergence of information, communication, technology, organizations, individuals, media, things and events. It is a unique experiment in technological capability, social preferences and economic feasibility. IT and the Internet have magnified life even further at phenomenal speed. Suddenly everyone can zoom in, zoom out, focus, pull things out of context, join in somewhere, make money and, of course, lose it.

Interaction, transparency and authenticity came to the fore as the core of a new value system. Bugs, security and cyber attacks acting together became the painful Achilles heel. This dynamic empowers everyone positively, but also feeds subcultures and countercultures on the Internet and on the street. What is the difference today?

The app effect is augmenting the web effect and boosting the intensification and personalization aspects. New mobile display devices and millions of practical apps are the windfall of a new type of *All Purpose Programming*. All parties in this whirlwind in our lives must continually reassess their choices and decide whether these still have any value. Scenarios are constantly changing. Anything is possible from a technological perspective. But at the same time, social desirability has become arbitrarily relative because of engagement, discussion, competition and confrontation. As has economic feasibility. This swirling maelstrom, so characteristic of the current post-PC era, emphasizes the urgent relevance of the old questions. What is possible? What do we really want? What will it cost? And what do we get out of it?

This is the sounding board used in this book to discuss the business impact of the new digital behavior that is currently developing. Which fundamental app effects do we see ahead of us? We have identified the ten following effects based on the intensification and personalization of information behavior. Some are economic in their nature, while others have an impact in the societal, commercial or neurological front. Organizations must take into account the complete material and immaterial scope of all ten to fully capitalize on the app effect. We see how this can work in Chapter 3, “Mobile innovation — featuring energy and healthcare”. We present two concrete and detailed case studies, one concerning the energy sector and the other healthcare.

The ten app effects below are matched up in particular relevance with the contexts of Chapters 3 to 7, respectively. In Chapter 8, we make an overall assessment within the context of the new *Social Business* concept. App effects 1 and 2 are thus particularly relevant to Chapter 3, app effects 3 and 4 are especially tied to Chapter 4, and so on, up to the importance of app effects 9 and 10 within Chapter 7. Surprise! Like a snake biting its own tail, the last effect — overload — reaches back to the very first. Information overload means we cannot see the forest for the trees. It means that we feel that we are being constantly inundated by unexpected, inevitable events and it will not be long before we are overwhelmed or suffer harm as a consequence. This puts the spotlight on the maelstrom in which we have landed in the post-PC era.

App effect 1 — Surprise: cross-sector innovation

This effect is particularly relevant to Chapter 3: “Mobile innovation — featuring energy and healthcare”.

The surprise attack on the mobile phone market by computer retailer Apple and the success of apps are eye-openers with regard to this kind of disruption in other sectors. Apple has introduced an “innovation machine” to which everyone providing an app contributes. Display devices and apps have created a new form of experience for people with interactive media. The iTunes Store, established in 2001, is a central part of this innovation machine. It is a shop in the cloud supplying music downloads. It gradually provided a wider selection of products and increasingly began to play a central role in the game. The Apple App Store is similar but provides apps: executable software with very practical functionality. It was initially available for the iPhone and iPod and then later for the iPad and the Mac. This approach has found many followers. App stores for mobile devices popped up like mushrooms. This includes Android Market, RIM BlackBerry AppWorld, Windows Phone Marketplace, and so on.

Anyone can participate in this new experience of human and interactive media via these online stores and often with simple but enticingly blended propositions. For example, the Pizza Express app allows you to pay with PayPal. Starbucks offers a similar solution using scanning devices in stores. In a nutshell, Apps on display devices are a real boost for mobile commerce and the digital wallet. ZashPay is another example: “send and receive money the easy way”, safely and within one day from one account to another. And, let us not forget the British m-commerce joint venture of Vodafone and O₂.

In addition to digital payment, there are also consumer perks when using digital charge cards. This is how telecom players are simultaneously shifting toward retail and banking. Who will have a better idea of what is in our shopping cart... a bank, a telecom company, or the supermarket? Such an attempt by the telecom companies to become the consumer’s digital wallet could just as likely overthrow the banks as Apple’s entry into the telecom sector. The innovation nurseries of large supermarket chains are vigilantly eyeing new competitors such as Bol.com, Amazon and vendors like Proctor & Gamble that deliver directly to the “always-on” customer. They have the logistical capacity to deliver items to your home, aspire to form new partnerships, and set out on cross-sector ambushes to shake up entrenched markets. Microsoft and Toyota working together to provide energy? It may be science fiction at the moment, but it is quite possible with their new partnership. This Japanese-American duo will own an interesting piece of the new energy ecosystem: an app, intelligent information architecture, and the battery in electric cars.

App effect 2 — Immediacy: your responsiveness must speed up

This effect is particularly relevant to Chapter 3: “Mobile innovation — featuring energy and healthcare”.

Instead of always having to go on the Internet, we now go everywhere and have the Internet at hand. All previously used technology and media have now merged. Mobile access, social media, audio and video, augmented reality, television, radio, books, photography, speech, games — everything is available on the display device we usually take with us and all thanks to apps and the web. We have gone from having to go somewhere to do something, to being able to do whatever we want at any time, because it is immediately available. It can be in the bedroom, while riding a bicycle, in the office, in the car or waiting for a bus. That all this can occur immediately is a huge additional speed up. This app effect undermines slow business processes. The app phone in the hand of every customer is a remote control to immediately change his or her personal experience or to bid on collective Groupon offers, or to vent an opinion via a tweet message using #fail and the name of a recipient. We can instantly take action anywhere at any time. *Where do you want to go today with information at your fingertips?* Several studies show that a large majority of iPad users happily continue their addictive digital behavior in the bedroom. The challenge for organizations is to gain access to the bedrooms and pockets of customers and employees via apps on phones and tablets.

App effect 3 — Empowerment: Digital Subcultures flourish

This effect is particularly relevant to Chapter 4: “Culture clashes in the post-PC era”.

Social media play an important role in relation to apps and society in general. People are and feel empowered and involved because of it. Their opinion matters in our current “conversational” society. They are listened to. They organize themselves into Digital Subcultures or seek like-minded voices and sources of inspiration. Organizations are less able to bypass discussion platforms, twitterazzi, and so on. This is a significant effect because it allows individuals to gain more power, so that businesses lose sway. When empowered people join hands and work together, it has an evident impact on organizations and their role in existing systems. The banks, countries and companies dealing with financial economics are opening our eyes to this every day, and so are the freedom fighters and rioters. Fiascos and abuses are widely publicized and alleged culprits are mercilessly pilloried. Digital applications have made us empowered networkers, and that also allows us to create value in the new systems. A new collaboration economy will partially assume control of existing systems. This direction is becoming increasingly important as shown by civic banking and platforms such as PatientsLikeMe. The energy sector has experienced a steady increase in prosumer initiatives. Numerous examples reflect new ways to create value. And the display device, together with specialized apps, is ideally suited to support and nurture this develop-

ment. Increasingly, this is occurring from the bottom up, socially, in networks, 24/7, across infrastructures and hierarchies, and is based on individual communication in lieu of advertisements, corporate communication, and abstract vision statements. Apps empower the individual and communities as conventional organizations are progressively losing control. This need not be negative. On the contrary, it depends entirely on how you deal with it.

App effect 4 — Attack: Countercultures starting confrontations

This effect is particularly relevant to Chapter 4: “Culture clashes in the post-PC era”.

Even when we track and trace everything and it appears that there are no secrets, there is something more at work. As institutions and systems appear to gain more control over our lives, this feeds not only frustrated subcultures but also ignites counterforces. The best-known example is the whistle-blower organization WikiLeaks. Distrust of the system has led to WikiLeaks collecting huge amounts of confidential information and then disclosing it gradually. The ultimate goal of WikiLeaks is to restore confidence. If we know everything and there are no more secrets, or so it is believed, this creates a much better world, the *Digital Commons*. The WikiLeaks movement is determined to follow its chosen path, while breakaways such as OpenLeaks and militant hacktivist variants such as Anonymous and LulzSec are also on the rise. In Iceland, WikiLeaks is part of the Icelandic Modern Media Initiative. The bill with the same name was submitted to make Iceland a haven for freedom of information, speech and expression. Major themes include an extensive transparency of government, whistle-blower protection and protection of sources. The Icelandic parliament unanimously instructed the government to implement the initiative in more than ten separate laws.

App effect 5 — Gadgets: software updates and disposal on the increase

This effect is particularly relevant to Chapter 5: “Software as a Gadget — everyone gets their own apps”.

The functionality of software apps is so practical that the apps are becoming more and more like digital gadgets. These are useful tools for a versatile range of virtual usage. The use of mobile apps is usually on a trial-and-error basis, testing and discarding. If you like an app, you keep it and it may then undergo several automatic updates via the online app store. If you do not like an app, then it is quite easy to discard it. Another “gadget effect” is that people like to show off their apps to each other. No surprise here. This has been happening for decades with physical appliance(s). We notice that everywhere we go online there is encouragement to imitate behavior. A really good example of this how Amazon instituted reading tips on its webpages. Gadgets have a long history and it was only a matter of time before software fell into this

same category. Software as a Gadget and everyone having his or her own apps constitute a decisive development within the context of intensification, personalization and the desired flexibility of digital behavior. And in this respect, the perceptualness of the interaction plays an important role.

App effect 6 — Perceptualness: less text, more images and movement

This effect is particularly relevant to Chapter 5: “Software as a Gadget — everyone gets their own apps”.

One of the most central aspects of the “upgrade” from web effect to app effect is the step from the graphical user interface to the natural user interface. Naturally, this includes the multi-touch control of display devices. It also includes tap & go payment, Near Field Communication, speech recognition, and the movement detection of the Microsoft Kinect. The laptop is also evolving, including the use of keyboard and GUI. Thanks to tablets and smart phones, it is now a fact that we are more active in our use of videos and photos, and use much less text. The app effect has opened our eyes to seeing new ways of dealing with information. A fine example is the *Journal of Visualized Experiments* (JOVE). Instead of scientific articles that describe exactly how a laboratory experiment is carried out, the Jove website provides video reports. These make it much faster and easier to understand and imitate the experiments. The YouTube-ization of information will continue to increase. And this will accelerate with the development of the touchless movement interface and interaction with multiple screens and devices.

App effect 7 — Addiction: the power of persuasive technologies

This effect is particularly relevant to Chapter 6: “Persuasive technologies and addiction”.

The most striking effect of the new display devices is that it seems as if we cannot do without them. Studies revealing the existence of addictive behaviors such as *smart phone craving* and withdrawal symptoms are piling up. The positive side of the addiction is that people apparently enjoy doing things digitally. *Persuasive technologies* is the new discipline concerned with enticement techniques, tactics and strategies. The social aspects and game elements play a key role in the new insights about behavior and the best way to influence it. Organizations can use this as a foundation for enticement when setting up new initiatives and processes. A major characteristic of the post-PC era is that everyone participates in the media experience. People and their display devices have become a new unit of experience. Friends, acquaintances, television programs, businesses, and government — all are yelling for our attention and we in turn are focusing our attention online via handheld devices that we always have on us. And we keep coming back again and again to see if there is anything to our liking.

App effect 8 — Personalization: digital behavior and misbehavior

This effect is particularly relevant to Chapter 6: “Persuasive technologies and addiction.”

Social media may have humanized our contact to a greater degree, but that does not automatically translate into better social behavior. Anyone who follows messages on Twitter about certain brands, people and events will notice that the language and discussion are not always civil. Humanization means we have to take the good with the bad. The positive, considerate side occurs at times when, for example, public transport is disrupted and we receive or offer a lift via the crowdsourcing application LiftDeck. Twitter hash tags #fail and #help spur webcare teams to jump in and help. This draws attention to the caliber of the *Social Business* of organizations and puts it to the test. And this shifts the focus even further from transactions toward relationships and conversations. Within organizations, the use of tools and devices is subject to the trend we call Bring Your Own Device Consumerization. Employees themselves determine which device and software they use. They do not have to wait for the IT department and can begin work using whatever suits their personal needs as an employee and as a private individual. From a technical and policy perspective, this emancipation requires additional security efforts.

App effect 9 — Dependence: our omniscient display device

This effect is particularly relevant to Chapter 7: “Post-PC behavior — blessing or curse?”

With your app phone or tablet in hand, you are quite the man about town. Point it up at the sky and Flight Tracker will tell you exactly where the airplane above you is going. Take a picture of a mushroom in a forest and it tells you: “Death cap. Do not eat, extremely poisonous.” It seems as if we know more and more. Our external intelligence increases or, better said, our dependence on “omniscient” devices and applications increases. Native apps and web apps exist for everything: calculator, GPS navigation, you name it. With built-in sensors and cameras, our devices become our new senses. We can make better decisions thanks to this ingenuity. We can look ahead and know what lies behind a building or product. Nothing is hidden, as long as we have enough external intelligence in our pockets. Does this make us smarter or dumber, or is that not really an issue? We read a Twitter message while we are in the supermarket about the damaging health effects of cocamidopropyl betaine, so all of a sudden we want to know whether the products contain it. Thanks to social media, everyone has to be “on” all the time. In particular, manufacturers, suppliers and service providers are expected to take responsibility for their products and be entirely transparent.

App effect 10 — Overload: we crave better filters

This effect is particularly relevant to Chapter 7: “Post-PC behavior — blessing or curse?”

People instinctively know how to handle anything they encounter. Not anymore. When all the ambitions of products to end up in the consumer’s digital magic box are added up, the total is... too much. We will either go collectively crazy and spend all our time processing information, or we just turn off. In the worst case, we get brain freeze. So much information enters our brain that it becomes paralyzed, so to speak, and any kind of stimulus to take action can no longer penetrate. From combat situations, we know that an overload of new signals can paralyze the executive function. Even light forms of brain freeze in the workforce or elsewhere are highly undesirable. This has led to endeavors to create better filters so that the right information finds us in our own context rather than us getting lost in the information that we are searching through.

2.3

Wrapp-up

Ten app effects may not seem very prominent against the ten million mobile apps that are predicted for this decade. But we are talking about ten gigantic behavioral changes.

One thing is absolutely clear. Everyone will be using the Internet via mobile devices with small handy applications. Compared to what we see happening now with apps, the transition to what we called “new media” twenty years ago resembles molasses sluggishly dripping off a spoon. We used to have to save up for a new device. Now, you can just walk in to a store and you have one. Technological and economic progress is rapid, even during crises. A significant focus falls upon social and societal factors. Everyone has his or her own media channel and all the knowledge of the world fingertip-close. At any time, we can know anything we want or let the world know what we think about something. We do not need to go anywhere. Not to a store and not to the web. And certainly not to friends and colleagues. You can reach them much quicker online. But, is the quality of the communication and discussions sufficiently effective? We can only wait and see whether or not our ten behavior-changing app effects will end up having negative outcomes. That is the purpose of scenario analysis and a burden to shoulder by someone dealing with future issues. We carried out numerous discussions with companies about their app strategies, and held interviews with behavior experts, technology watchers, and gurus in the area of mobile media. It

was clear in every direction that we are experiencing a transition towards a new era of digital behavior.

Organizations are not giving sufficient consideration to these changes. We prefer to project past trends into the future. But a truly robust strategy takes account of all that may happen and not just with what we consider desirable. This type of “whatever happens” strategy can only be achieved if we consciously look from the outside inwards. We need to find out how people use and want to use information rather than focusing all our attention on what we want to do. The more essential technology becomes, the less helpful is the focus on it. The real app effect lies in how customers, employees, outsiders, newcomers and existing organizations deal with information. Your success in the post-PC era will depend on how you connect with the new zeitgeist.

Most app aspirations for organizations do not go beyond the release of a particular app. If you succeed, that adds spice to the cake. But if the use of the app is disappointing and the app is less appealing than hoped for, the following questions arise. So, what is a good app? Who in our firm has skills in this area? By digging deeper we reach the really fundamental issues. Which type of information is actually needed? Why are our employees changed more than our organization? How loyal are our customers when a new digital player looms up on the horizon?

The mismatch between the new behaviors and the old ones manifests itself in the call centers and the complaints procedures of companies, in schools where teachers can no longer follow their students, in hospitals where the patient is not the focus of attention, in the offices that do not know what to do about The New Way of Working, and in the IT departments desperately trying to keep a grip on which software and devices are used. The collaboration we are looking for, which we introduced earlier, is called the *Digital Commons*. Where old systems and practices have become obsolete, the challenge is not to build a nice app. There is a great probability that such an app strategy relies upon on hereditary methods, which need to be updated or discarded. Mobile innovation and its capitalization cry out for a completely different mindset. And that is a human and behavioral approach.





“Necessity drove mobile innovation and reshaped the Web.”
(Clinton Bonner, 2011)

3 Mobile innovation — *featuring energy and healthcare*

Table of contents

- 3.1 App strategy: from branding through to innovation 47
- 3.2 Mobile enticement in the conceptual economy 50
- 3.3 The energy sector as an example 54
- 3.4 The healthcare sector as an example 64
- 3.5 Wrapp-up 78

To properly capitalize on the app effect, we must take a pragmatic look at functionality and usage. The Internet is now mobile and accessible twenty-four hours a day. What does that mean for our organization? The barrier of making a conscious action to get on the Internet has gone. We can be online at any time and any place. And this contributes to the accelerating change in digital information behavior. Our information addiction can only continue to increase. And this is where everyone is focusing their attention, but attention can only be focused on one thing at a time. Soon, apps will be everywhere: in the television, in the car, and so on. Cheap thin screens are beginning to show up all over the place. The fact that everyone and everything are getting connected via the Internet — the *Internet of Things & People* — has completely transformed the information landscape. The superior user experience of apps has contributed substantially to this development. Websites work ultra-rapidly super-fast on the latest display devices. The look and feel of an app with multi-touch has thus become the norm everywhere on the net. Never before have we experienced the net so intensely or personally. There is still the unanswered question of how we ought to deploy this strategic resource. We will elaborate on this and also on the irresistible enticement of display devices and apps. We will then discuss the emergence of mobile Business Intelligence and follow up with a number of innovative developments in healthcare and the energy sector.

3.1

App strategy: from branding through to innovation

Organizations are looking for the opportunities that will make apps an integral part of the lives of employees and customers. Practical apps strengthen the market position and expedite the transmission of information and knowledge to the right place. It is all about generating new business, strengthening existing business, and the mobile *branding* of your trademark. It was once fashionable to say that you had built an app. Now, it is all about functionality and usage. Preferably, it should be done in a light-footed way, as that works best. Keep the wheel turning: from branding of business services (1) and support for existing business (2) to improvements through spotting and capitalizing on new opportunities (3) and finally to the development of new business (4). This foursome is the formula for success and you have to keep all these balls in the air at the same time. It has always been so, but now it also applies to apps for screen devices, the most direct communication channel ever.

A fine example of an app application with all four elements, from branding to innovation, is made by the pet food manufacturer GranataPet in Germany. The company had placed billboards which actually dispensed dog food after registering at location service Foursquare. Such *hot triggers* provide new opportunities. GranataPet established localized relationships with dog owners and the pets themselves knew exactly



This is the Granata billboard; watch the video at <http://www.youtube.com/watch?v=t8dmjoqOOQo>.

to practical, existing functionality. For example, some organizations provide mobile dashboards for business intelligence. If we go a step further and the app makes use of location services to recognize where it is in a factory in order to provide extra information specific to that location, then we certainly have improved the existing way of doing business. This leads to discovering new opportunities from which to profit.

Take it a step further and there is real innovation. This is how supermarket chain Tesco is testing new mobile concepts in South Korea. People on their way to work on the subway can briefly stop at a completely virtual store that consists solely of photos and QR codes. Orders are loaded into the virtual shopping cart and the groceries are shipped home to the mobile customers the same day. This is a terrific time saver for the customers. What a convenience! Shopping at the last minute with your mobile device for your evening meal, quickly while traveling.

Social desirability

The new digital behavior that has such an effect on organizations comes particularly from the customers and employees themselves. There are many reasons why this social factor is crucial — warming people up for crowdsourcing, for example. Exploiting digital collaboration opportunities is essentially all about empowerment through and empowerment of *Social Businesses*. As far as apps are concerned, the game really begins on the day you publish a new app and users award star ratings. Organizations' apps empower individuals, communities and themselves. If all goes well, the balance is optimal for everyone. Then, the app in question empowers all parties appropriately and that part of the game is under control. Of course, this also applies to the cohesion between all the different elements in the game.

where to lead their owners to find their favorite billboard.

Anything we did on the web, we can now do in a mobile way. Effortlessly gain experience with apps and then piggyback on the popularity of app phones and tablets. If you only need to tap an icon to initiate a service, the web is actually quite cumbersome. It requires effort to get going on the web. But what you actually want is instant service with a simple push of a button. Many apps support the business by providing direct access



We will see the practical aspect of this shortly in Section 3.3, about mobile innovation in the energy sector. The challenge here is to move from a centrally managed system to a decentralized system. Communities must play a greater role and increasingly take digital *Countercultures* into account. Apps acting as remote controls within this power play will immediately provide practical information about and control over specific functionality. This builds on the success of the past and at the same time anticipates desired changes.

Economic feasibility

Technically almost anything is possible, but how feasible is it for a company to come out with thousands of apps? Economic factors then predominate. What are the costs of the processes behind the new digital behaviors and how do we reconcile the business case? What will happen when we focus directly on the end users rather than on the intermediary such as the insurance agent or account manager? Or, what happens when a competitor gets there first? New intermediaries with new models may enter the game. Economist Joseph Schumpeter discusses this situation in terms of creative destruction. The use of technology enables new, cheaper and more efficient business

Tesco's Future of Retail: a store in the subway consisting of photos and your phone is your shopping cart. Everything is delivered to your home on the same day.

models. Those who do not jump on the bandwagon are going to shortchange themselves, suffer, and perhaps even go under. Conversely, those who look at mobile apps opportunities in the right light will sow and reap the rewards.

3.2 Mobile enticement in the conceptual economy

Strike while the iron is hot. This old adage refers to reacting to a specific stimulus at the moment we are most enthusiastic. This is when we are weak and tractable enough to manifest the behavior that the stimulator is looking for. The greatest opportunity arises if we receive the suggestion at an appropriate time. App phones and tablets now make this possible. But it must be done subtly, because the perception of intrusiveness creates aversion. The bombardment of stimuli is making us more discriminatory and idiosyncratic. In addition, we have little time and there is very little that we actually need. This last insight is gaining ground fast, especially in times of economic malaise. So, more often than not, the iron does not go into the fire and there is nothing to strike. Except where display devices and apps are concerned. This combination is more than sufficient to completely fill our days and, as we well know, we are using it more and more often. And thus mobile enticement takes the prize in our so-called *conceptual economy* where creativity, innovation and design largely determine competitiveness.

Guaranteed irresistible

Usually, despite all attempts to warm up our enthusiasm, we are not in the least interested and lack any kind of motivation to respond to the intention of the stimulator in question. We are not interested at all ... But now, despite what some call *the Great Recession*, mobile multi-touch display devices have changed the situation entirely. They are known to be irresistible. They embody a sublime blend of handiness, speed, perceptualness and multimedia communication and interaction. These mobile multi-touch display devices, kaleidoscopic personal mini-windows on the combined real and virtual world, offer an intimacy and a richness that guarantee irresistibility.

And this is mainly because they are the platform for a self-chosen hotlist of recognizable icons that we browse through page after page, swipe after swipe. Only a limited number of desired apps are on our display device by default. The rest we have downloaded for free or paid for. This personal magic box with all the intriguing icons behind which are hidden worlds is the ultimate extension of ourselves; it reflects our own preferences and passions. Ensuring that someone gets a proposition at just the right moment requires first ascertaining that the app gets into his or her magic box. And indeed this magic box is *the* essential innovation that we needed in these lean

economic times. Thanks to Steve Jobs. He presented his iPhone just before the crisis manifested itself. Then our multi-touch display devices became our favorite comfort and toy.

Enticement has never been as effective as this. The multimedia communication and interaction opportunities that mobile apps allow at any time — if we have been warmed up to them — is a golden opportunity for every organization to *engage* the proud owners of multi-touch display devices, to *empower* them with an app, and then *connect* with them in this way. Getting people warmed up is still the biggest *if*. This is the conclusion of every study that has been done on this unique combination of hardware, software, design and economics. Soon, the rollout of display devices in types and sizes will exceed that of the PC. The number of app downloads will soon run in the tens of billions, and once we are under the spell of an app, we spend a lot more time on it than we ever did on the web. Mobile display devices and their apps have thus completely redefined the concept of *gadget*. The advent of mobile apps is taking media, multimedia, hypermedia, new media and social media to the next level, thanks to the unique capabilities of new hardware and software.

Mobile enticement and behavior change

The inducements arising from the digital magic box that is burning a hole in our pockets 24/7 are aptly described in the title of a book Stanford professor B.J. Fogg and Dean Eckles published in 2007 following the first eponymous conference: *Mobile Persuasion: 20 Perspectives on the Future of Behavior Change*. The Apple iPhone had just been announced, and the App Store did not yet exist. Smartphones were already very popular. The potential of these devices to successfully change behavior had already been emphatically affirmed. When Steve Jobs introduced the iPhone 4 in June 2010, he shifted the success of display devices and apps into the combined realms of technology and free science (*Liberal Arts*). The well-known economic concept of *Science, Technology & Innovation* (STI) may be less sexy but nonetheless amounts to the same thing. Jobs articulated Apple's success with devices and software as follows:

"We've always tried to be at the intersection of technology and liberal arts, to be able to get the best of both, to make extremely advanced products from a technology point of view, but also have them be intuitive, easy to use, fun to use, so that they really fit the users — the users don't have to come to them, they come to the user."

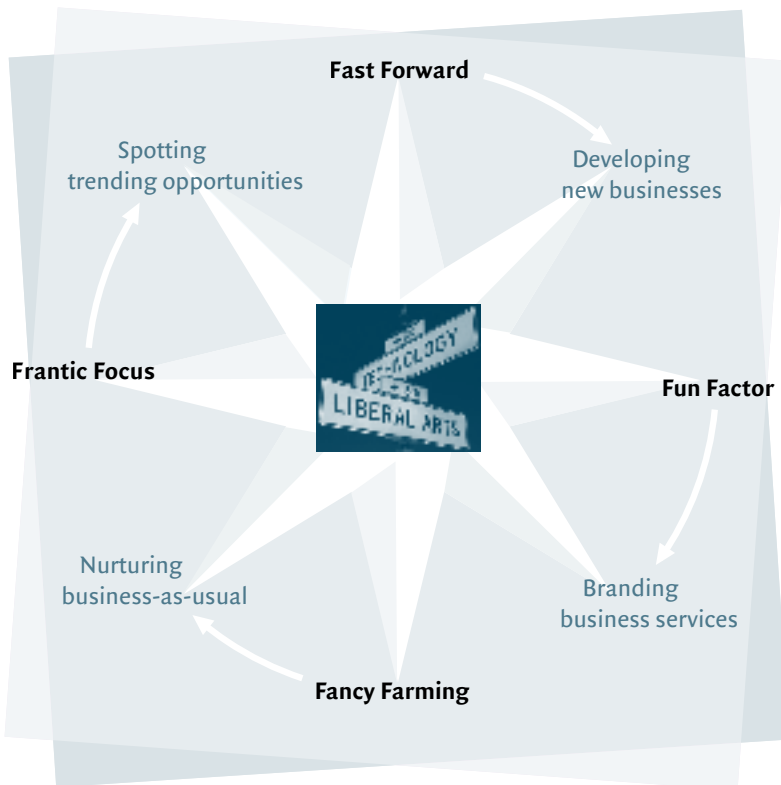
Conceptual economy

Jobs did not say it in so many words, but the right balance of technology and free science is the basis of what has become known as *Conceptual Economy* or *Conceptual Age*. The underlying idea is that the mix of creativity, innovation and design determines the competitiveness of organizations, especially in our globalized world. Once

again, it is Science, Technology & Innovation. In 1997, erstwhile Federal Reserve Bank of America president Alan Greenspan stressed the economic importance of conceptual output. Daniel Pink, in his acclaimed book entitled *A Whole New Mind: Why Right-brainers Will Rule the Future* (2005), described the development of the following six factors critical for success in today's Conceptual Age on the heels of the Information Age. These are: Design, Story, Symphony, Empathy, Play and Meaning.

The Fortissimo Model: Fast Forward, Fun Factor, Fancy Farming, Frantic Focus

VINT has translated these insights into an eight-legged strategy on the intersection of technology and liberal arts as reflected in the illustration below. This model indicates the balls that organizations need to keep juggling when engaging in *Mobile Persuasion* activities and innovation for display devices and apps. The denominators are clockwise as follows: *Fast Forward* (developing new business), *Fun Factor* (using game elements and humor), *Fancy Farming* (supporting existing business in an intelligent manner) and *Frantic Focus* (being intensely focused on new opportunities). Each of the arrows is followed by the activities that go hand in hand with these denominators. These are: building on market leadership (Fast Forward), optimally positioning business services (Fun Factor), keeping existing core business well fed (Fancy Farming), and spotting new, trendy opportunities (Frantic Focus) within the framework of the other FFs.



The eight-legged
app strategy
Fortissimo Model

Eight legs, ten emphases and ten questions

The common English term for innovation focused on and via display devices and apps is *Appification*. Usually the following foursome are mentioned in the same breath, *Socialization*, *Localization*, *Groupification* and not least *Gamification*. Obvious categories that arise by extension are *Monetization* and *Viralization*. With an eye to the future in the context of *Mobilization*, we can add *Ecosystemization* and *Transsectoralization*. And in this manner, we have allowed for ten conceptual emphases in our eight-legged model for the management of mobile app development projects. We must consider everything within the light of proven base models such as the Five Forces and Value Chain of Michael Porter, the Blue Ocean Strategy aimed at sidelining competitors, and not forgetting Six Sigma. This last approach is derived from Motorola, the company that co-innovates under the Google umbrella on Android devices and apps nowadays.

Cross-sector ecosystem innovation, in particular, must eventually play a major role on mobile platforms. Worldwide, there are currently more than eighty national broadband agendas that are being set with the aim of laying down the foundation for sector-crossing societal and economic digital innovations. Naturally, mobility plays a huge role. Many organizations will not wait, and will develop their own strategy for display devices and apps. The following ten burning questions are the current guideline for creating the strategy for development, deployment and support:

- ◆ Is your business/sector model ready for the future?
- ◆ For which digital behavior do you still lack an answer?
- ◆ Is a surprise attack by new market intruders possible?
- ◆ Do you see any profit in a mobile business strategy?
- ◆ What does your customer want to do with your information at different locations?
- ◆ Do you want traffic that is one-way, two-way, or the community way?
- ◆ How “social” is your app strategy?
- ◆ Which partner will strengthen your mobile approach?
- ◆ What happens if you hand over partial control to others?
- ◆ How do your apps get the attention you want?

App overload

The last item in the above list — how to make sure apps get the required level of attention — is especially an issue. Mobile display devices and apps are irresistibly tempting. However, the overload is staggering. There are billions of existing apps and the forecast for app download volume totals 48 billion in 2015, 98 billion, or even more than 182 billion (according to In-Stat, Berg Insight, and IDC respectively). Organizations and individuals will flood the market with apps. Users will download apps for a fee or for free but for the most part they will discard or under-utilize them. Each new development seems to be a bigger digital mismatch between the supply

and demand for attention that accompanies it. In fact, a thousand apps are more than enough to amply provide for any combination of needs we could use our display devices for. So says Harvard Business School professor Thomas Eisenmann. Earlier this year, the inventor of the mobile phone, Martin Cooper, came to this conclusion in a similar manner:

“Health apps are superficial and incomplete. It’s so easy to come up with an app that attacks the surface or the easy stuff. To create something that people will really use is hard. This issue of which platform has got more apps is humorous. This discussion over the hundreds of thousands of apps is a signal of immaturity in the wireless industry. That might apply to telemedicine too. We’re not going to be able to consider that a mature discussion until we can measure an app in order to determine what good it’s doing. If you’ve got 100,000 apps, you know that 99 per cent of them aren’t going to work. And that’s very confusing for consumers.”

We already knew that the Conceptual Economy would bring with it a consumer society with even more superabundance. Yet, it was beyond our imagination that the superabundance of display devices and apps would take its current form. Nevertheless, we have no choice but to go along with the new digital whirlwind of *Engage*, *Empower* and *Connect*. And Martin Cooper and Thomas Eisenmann will have to as well. Moving with the times is not merely an imperative, it is simply a cold hard fact.

In the second part of this chapter, we see how the Conceptual Economy is slowly taking shape in two key economic sectors: the energy and healthcare industries. Health is a lot more personal than energy, which is reflected in the role that mobile apps currently play and will play. This makes the examples very interesting because the app’s content surpasses the pure commerciality and escapism of all the fun apps. Energy and health are issues that have already left behind the gratuitous *proof of concept* phase. These sectors deal with serious *proofs of practice* that, thanks to their social and economic relevance, play a central role in our daily lives.

3.3

The energy sector as an example

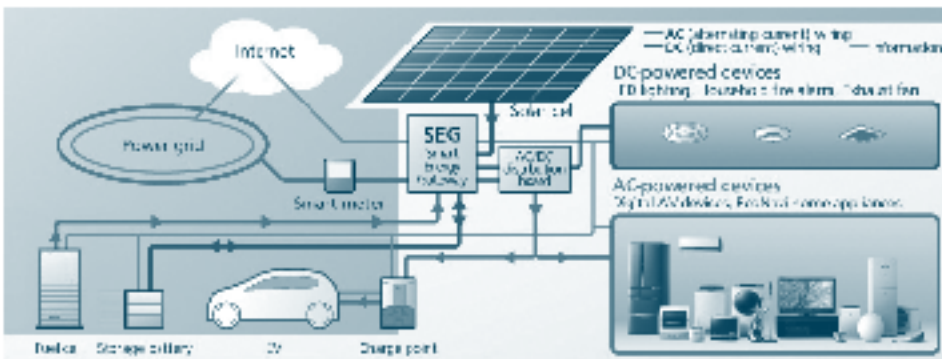
The energy sector example is a weathervane for the way in which digital information behavior may look in the post-PC era. Enormous changes are taking place in the energy sector. Display devices and apps are acquiring a crucial role as a remote control for everything in and around the home. Smart apps must help us be smarter with our energy usage. In particular, we will describe how we can *crowdsource* our energy

supply. We see dark clouds on the horizon (or is it the dawn?), a foreshadowing of the irrevocability of *The End of Oil*. There are also doubts in many other sectors about the sustainability of the existing system. Cost factors usually play a major role; it is clear that community elements and new media use in the old system are not sufficiently developed.

There is a fundamental need for our energy supply to migrate to a new digital partnership, the so-called “smart grid”. This includes a shift of power from a centrally managed system to a distributed system. The current energy system must be structured in a more decentralized manner. Consumers must also take on the role of producer. This will take place based on a *smartening* of the net. The combination of digital smarts and new forms of collaboration is the basis of a *Digital Commons* in the energy sector. It is a revolutionary perspective, in which the way we handle information digitally is a crucial factor. In popular parlance, all these predictions converge in the word *smart*. The electricity technician used to come once a year to record gas and electricity usage. The meter box was the domain of the energy supplier. The energy sector is now no longer in the meter box thanks to the smart grid.

It has to be easy

But the real smart grid will only arise when technology is so smart that a child can use it. And this is where apps come into play. A simple pictogram helps to make it as easy as possible for the user to make this complex transition. This smartening has been worked out in detail by companies such as Panasonic. With a new arrangement of energy, *create, store & save*, Panasonic shows how the electric car, the devices in the home, solar panels and battery storage can work together. Panasonic has brought HEMS, het Home Energy Management System onto the market for this purpose. Panasonic’s strategy is focused on optimizing all devices and sensors by running them via a Smart Energy Gateway.



Panasonic: from home cinema set to home energy set.



Conserve Water
optimize water schedules and durations

iPhone or iPod as remote control for everything in and around the home with PowerLinc, and the Indigo server and client software.



Advanced Lighting Control
create lighting scenes and flexible lighting schedules

Many other parties, such as Perceptive Automation for example, are building apps to run the entire house. Their Indigo/PowerLinc program turns your iPhone or iPod into a remote control for all devices: to turn on and off the lights, the washing machine, operate the garage doors, and so on. It can control anything that is electrical. A system like that requires an app that reads how much available energy there is in the car and knows when the battery needs recharging. If the car is not being driven, the battery can return energy to the home during the day and to a few others in the same street. Part of the generated energy can be used for DC devices such as LED lights. All other energy is fed back into the grid and that means earning money.

It will all be much easier if we take the Kinect technology of Microsoft into account. A finger snap can automatically turn on the TV and dim the lights. And, when you sit down to work, your desk light turns on and the rest of the lights in the room turn off. Call out “warm it up here” or an unhappy “Cold!” and the thermostat reacts. This is all possible with the Center of Gravity feature of Microsoft Kinect. There is an example at nitrogen.posterous.com. Kinect apps are much cheaper than proprietary systems, so this is very promising.

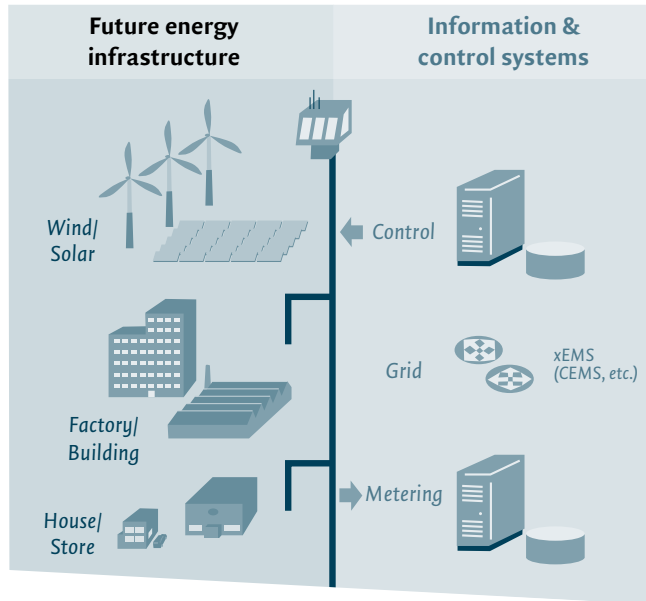
Economic feasibility and necessity

The smart grid needed for this transition makes it possible to have a great improvement in efficiency because the supply is brought completely in line with demand. A large army of small producers and smart control of demand will allow a much better adjustment of the supply. This is called *load balancing*. We can call the matching of supply and demand in a hybrid system where centralized and decentralized generation work together *load balancing 2.0*. The U.S. Department of Energy estimates that optimization of supply and demand would save as much as 75 billion dollars over the next 20 years. And this is just the beginning. In the summer of 2011, Google also concluded that America was losing billions by failing to make the transition.

The Brattle Group estimates that it is possible to save up to 20 per cent on energy — the target of the European Union in 2020 — by introducing smart meters where people can track their consumption. Panasonic is working in Japan with Nissan, Toshiba, Tokyo Electric Power, Tokyo Gas, Accenture and Meidensha on a five-year project that will serve as a standard for smart grids and smart cities in the rest of the world. The goal is to create a new social model of energy generation and to export it to other points on the compass. This was uttered by Mesato Nobutoki, executive director of the Climate Change Policy Headquarters in Yokohama, the city that will serve as an example for the rest of the world.

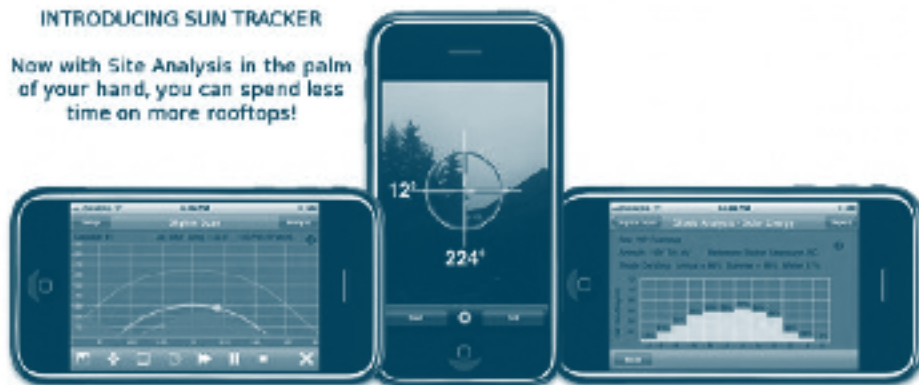
The social desirability of a new economic system and the economic non-sustainability of the old are pushing initiatives toward what we call the *Digital Commons*. This is a new collectivity where industry and the private sector work together, including the customer, including the local community. Home & Community Energy Management Systems (HEMS & CEMS) play an important role. These are extremely important strategic movements for anyone active in this market. It is a question of who will dominate the market. That is far from a foregone conclusion. It could be the energy supplier, or companies like Siemens and Philips, but it could even be Microsoft or Toyota. Such management tools are about controlling the energy in your home and everything related to it. Hitachi, one of the suppliers of such systems, describes it as follows:

“Smart communities are an important element in a sustainable social system for realizing a low-carbon society. These communities use information and telecommunication technologies to link power systems based on next-generation electric power grids called *smart grids*, with transportation systems, sewage and wastewater treatment facilities and other social infrastructure, buildings, homes and other locations. By facilitating optimal overall control in this way, these communities maintain safe, secure and comfortable living spaces for people, while minimizing the environmental burden, such as reducing CO_2 emissions, and maintaining control on overall social costs.”



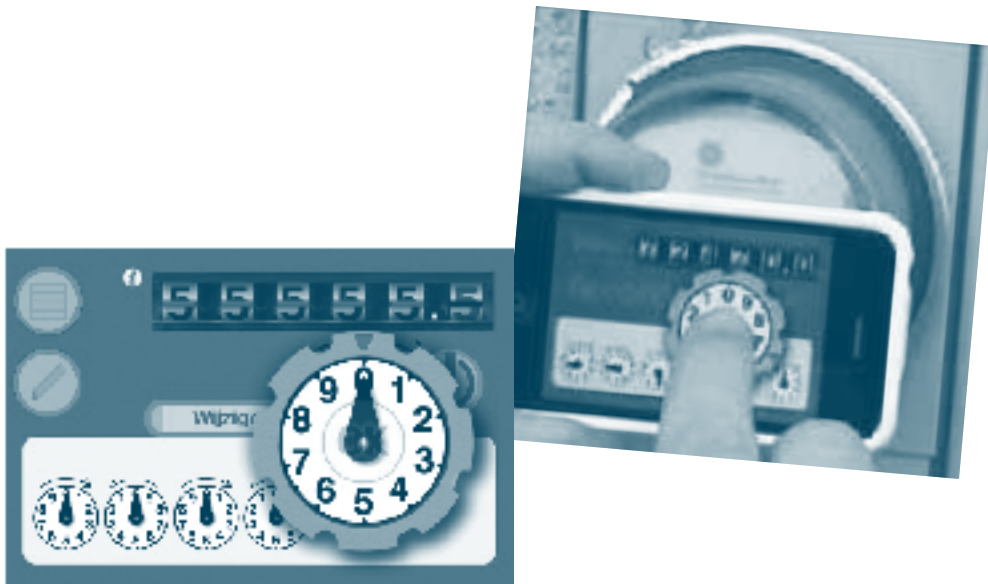
The race for control and domination has begun. Are companies like Panasonic and Philips in the running? They manufacture smart devices such as solar panels, wiring, control software, and so on. We are seeing new products and services being created by companies such as Panasonic, Philips, Alcatel-Lucent, Ford, BMW and KPN that focus on a new *Digital Commons*, where a new mix of information, electricity and devices will determine the final form of the energy sector. This Commons in the energy sector is also being nourished by the car industry. For example, consider the OnStar app of General Motors. It is a mobile key for a car, but also indicates how much energy you have left. The MyFordMobile app does the same. The Leaf app from Nissan can also turn on the air conditioning and jokes: “Now you will be totally cool when you drive off.” BMW has brought out a very special app, the iEV. This app turns your gas-guzzler into a virtual electric car. It allows you to go for a dry run if you will

and see whether you can make it between charging posts without risking an empty battery. And, of course, there is an app for those who want to know where the charging points are. And, of course, there is another app for those who want to know where the sun will be before they start screwing the solar panel onto their roof.



Behavior change preparation

We are slowly being prepared for the behavior change that will lead us to the Digital Commons situation. At present, we see energy companies putting out apps for simple applications, such as reporting your electricity usage. The first apps that hit the market were rather clumsy, such as the MeterRead app for example.



This requested that you go to the meter box to enter the meter levels at fixed times. It only took a little hacking to use a photocell and software to read the old-fashioned energy meter from a distance. The smart meter makes it child's play. It can be read digitally via an app and connects directly to ERP systems such as SAP.

Other savings apps

At the end of June 2011, Dutch energy company Oxxio launched the so-called "BespaarCheck" (SavingsCheck), which is an iPhone app that allows consumers to save on energy consumption and costs in a simple and fun way. BespaarCheck turns economizing into an interactive game. Consumers check off their economizations in the app. Digital trophies can be won for checking off completed actions. These trophies, called badges in the app, can be compared to other economizers in the ranking list. Competition encourages the checking off of economizing actions and economizing even further on costs, also to spare the environment. Users can also compare their energy consumption with that of others in a similar situation. This allows users to know how well they are doing. They can also share their achievements and trophies earned on social networks like Twitter and Facebook to demonstrate to other consumers how much they are saving. Another Dutch energy company, Eneco, does something similar with its Solar Shooter App. It is also aimed at teaching energy conservation and has the same entertaining elements. You can share how many points you have accumulated on Facebook, which provides immediate game recognition to a wider audience. Eneco wants to gain experience now with the relatively simple Solar Shooter game so that it will be easier to introduce and implement more complex applications later.



"Solar Shooter. Eneco's first iPhone app. Free download. Play now."

Other sectors, similar issues

It is remarkable that energy companies are the first to build apps that are geared to teaching us how to be energy-efficient. Who pushes their customers to use their products less? We see the same trend in the healthcare sector. The focus is shifting from managing illness to managing health. Apps and social media programs are

being implemented under the slogan “prevention is better than cure”, as is the case with averting childhood obesity, for example. *Community learning* can no longer be avoided in education. Why settle for second best when you can take lessons digitally from the best professors at Harvard? Costs in other sectors are also rising and social desirability is increasingly moving toward a new system.

Digital dropout behavior: smart grid or smart people?

It is, of course, very practical to build the smart grid if everyone can use his or her smartphone as a remote control for the smart network. Getting to the point where everyone participates must allow for the empowered consumer and digital action groups. The smart grid concept is a fine example of technological positivism that will not work without sociological pragmatism. In the Netherlands, the smart meter initiatives were suspended for a while, but the project has since been given the green light again. The following was contributed by the user named “Factor” on the website Anarchiel.com:

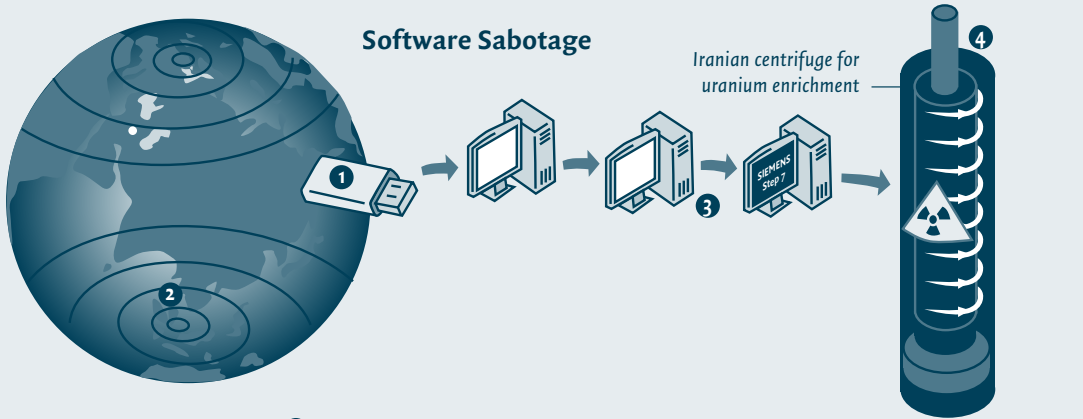
“Wonderful news again. We may actually give or refuse them permission to do something with that thing in your house if it is, um, working. Of course, the ‘guarantees’ and ‘conditions’ do not apply to our esteemed caretaker Big Brother. Undoubtedly, this will be included in the small print in this proposition. It reminds me a little of initiatives like the electronic patient file. Record everything, but don’t ‘activate’ if that is not your preference. But, really, there are no guarantees. You can’t predict the future. The legislation could change at any time so that is ‘legal’ to use the data. I’m gonna puke... again... *sigh*”

Factor is referring to the privacy concerns about the smart meter project, which has better safeguards at this time. Such reactions from individuals must be allowed for. The individual is also empowered, even if it is only to use social media to agitate against something like a smart grid. This project will fail if privacy is not guaranteed. It seems that if there is no privacy, then there is no *Digital Commons*. This also applies to security.

A cyber attack in the making

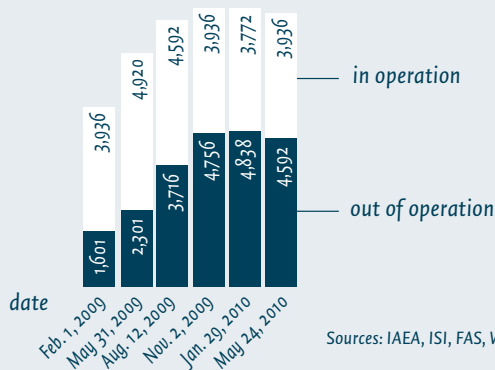
A July 2011 report from U.S. Homeland Security warned of cyber attacks on energy companies. This involved actions planned to occur on the tenth anniversary of 9/11. The danger of such an attack is on everyone’s radar after the Stuxnet assault on the Iranian uranium enrichment plant in Natanz. “It is the first worm to target industrial control systems and grants hackers vital control of public infrastructures like power plants”, said cyber security expert James Lewis, director of the Center of Strategic & International Studies. There is still only conjecture on who was actually behind the attack. Some say Russia, others say Britain and China. The commander of the Iranian army claims that Israel and the U.S. were behind the attack.

Software Sabotage



- 1** The malicious computer worm probably entered the computer system — which is normally cut off from the outside world — at the uranium enrichment facility in Natanz via a removable USB memory stick.
- 2** The virus is controlled from servers in Denmark and Malaysia with the help of two Internet addresses, both registered to false names. The virus infects some 100,000 computers around the world.
- 3** Stuxnet spreads through the system until it finds computers running the Siemens control software Step 7, which is responsible for regulating the rotational speed of the centrifuges.
- 4** The computer worm varies the rotational speed of the centrifuges. This can destroy the centrifuges and impair uranium enrichment.

- 5** The Stuxnet attacks started in June 2009. From that moment on, the number of inoperative centrifuges increased sharply.



How Stuxnet disturbed the Iranian uranium enrichment program

In this context, it is not surprising that the annual network audit at the U.S. Department of Energy at the end of October 2011 provided the following disturbing picture:

“An annual review of the Department of Energy’s unclassified networks revealed a number of security issues, including weak access controls, improper patching strategy and poor employee training, according to a report from the department’s inspector general Gregory Friedman released Oct. 24. Tests at 25 doe facilities, including its headquarters, revealed

32 previously unidentified vulnerabilities, according to the report. The inspector general's audit also found that security problems had increased by 60 per cent in 2011 on doe computer networks, compared with the number found during the 2010 audit. Only 11 out of the 35 issues identified in the 2010 report had been addressed, the report found. Department computer networks are 'routinely threatened with sophisticated cyber-attacks', the report said. In fact, cyber-attacks on federal agencies have increased by 40 per cent since last year, the report found. The report covered the 2011 fiscal year, which ended Sept. 30."

(Source: eWeek.com, 26-10-2011: 'U.S. Energy Department Networks' Weak Security Invite Cyber-Attacks: Audit')

In conclusion: the direction of the energy sector

It is important to note that the focus of the smart grid industry — the *System* — is increasingly coinciding with the desires of the smart grid movement. It is concerned about the development of applications that improve the efficiency, reliability and flexibility of the grid. This is how the energy sector will succeed in getting to a *Digital Commons*. Currently, there are six discernible trends that will steer the development of distributed smart grids in the different global regions over the coming years. These are computerized distribution, data analysis, demand-response, CO₂ management, Home and Community Energy Management, and electric cars. The applications in question must serve three groups, each with its own needs and interests, namely, industrial, commercial and residential customers. The intention is that the understanding, control and optimization of energy consumption will significantly improve one another. Applications will be introduced gradually and will bring new business opportunities for providers of software, systems, devices and services.

For example, the successful U.S. company OPower produces software that provides you with an analysis of energy consumption and proposals for economization. The company has fifty power companies as customers, and covers one third of U.S. households. The website has three meters that show how much has already been saved on energy bills, the amount of reduction of CO₂ and how many kilowatt hours have been saved.

Another example is the U.S. cloud startup GridGlo. It is working with real-time energy apps and a combination of energy data and other *big data* sets. GridGlo looks at the association between data from smart electricity meters with data about the area, content, layout and insulation of buildings, and also with weather data and demographic data, such as the composition of the household. GridGlo offers four services for energy companies: a model that forecasts energy consumption, a demand-response tool, an application that divides households into different consumption categories, and a financial risk tool that analyzes factors such as who can or cannot pay his bills. IT vendors such as IBM, Oracle, EMC and SAP are all working together on

data analysis products for the smart grid. GridGlo is also resolutely working on the next generation of innovative apps that will use game elements and social networks. An example is an app that accurately predicts and thus warns about energy peaks.

3.4

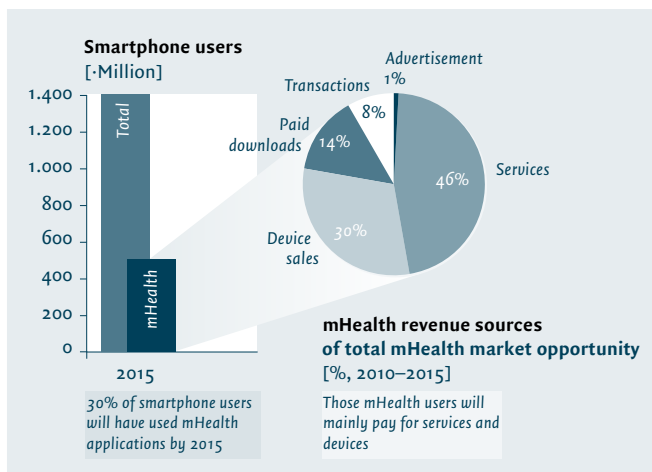
The healthcare sector as an example

Display devices being used as remote controls for everything in and around the home. The energy sector has brought this idea to the fore. We can see the same happening to caregiving and healthcare, but in particular to ourselves. The smartphone and apps are the “digital glue” that brings and keeps everything together. This certainly applies to the healthcare sector as evidenced in the report *202020 VISION* by Ogilvy CommonHealth Worldwide. Nothing could be easier. We only need to take the trouble to tie everything together in the context of the triangle of body, technology and lifestyle. We must not overestimate our technology. It is not without reason that HealthMedia.com has the slogan “Revolutionizing Behavior Change”. *202020 VISION* contains the following seven predictions:

- 1 The healthcare sector will provide much more personalized advice and marketing based on digitally empowered individual behavior.
- 2 Automatic diagnosis will expedite and improve medical assistance. Electronic records will ensure that the medical staff is fully prepared when we arrive.
- 3 Supermarkets will become care centers. Healthy purchasing advice will be given, based on what we tend to buy and what is in our fridge.
- 4 Clinical prognoses will be realistically visualized using personalized videos. Those viewing their prognosis in a lifelike manner will be more inclined to adjust their lifestyle.
- 5 Healthcare tourism will become the most normal thing in the world. It will affect costs and quality and we will travel far to get good care.
- 6 Gaming will be used to help adjust our lifestyles.
- 7 Brain-computer interfaces will be available for the severely disabled. There will be an increasing number of ways to control the environment directly by the brain.

Display mobile devices are not listed here, but will naturally play a major role. This is evident from a study by research firm Research2Guidance that is solely focused on smartphones. In 2015, 1.4 billion people will have a smartphone. More than one third of them — 500 million — will use it within the context of *mHealth*. According to this agency, apps are the killer app for mobile healthcare.

In the traditional mHealth situation, the care recipient paid for the data traffic, special devices, applications and additional services such as remote monitoring and consultations. In the case of mobile care with standard display devices and apps, people will not expect to have to pay for data traffic in 2015. They will of course pay for the device, but they then have a general-purpose tool. They still continue to pay for apps, but not as much as before due to the high sales volume and costs being amply recouped elsewhere. They still pay for monitoring, but it will also be less as it will be mostly automated. The digital information provides a basis to earn extra income via the sale of medicine and medical products. And do not forget advertising. In 2010, earnings came solely from app downloads and subscriptions to services. This does not include adjacent and cross-sector services, but we can well imagine that other aspects are incorporated, such as insurance, loyalty programs, doctor consultations whether remotely or not, care communities, transport and volunteer work. This way, health-care could be functioning as a well-oiled system in a few years. However, we must not forget that the mHealth landscape is incredibly diverse and that healthcare is subject to many laws and regulations due to it being inherently embedded in our lives wherever we are in the world.



mHealth app business model development						
	Connectivity	Device	Application	Additional service	Transactions	Advertising
	• Data traffic charges	• Special handsets • Sensors	• Pay per download • Subscription	• Monitoring • Ad-hoc consultation	• Drug sales • Medical products	• In-app advertisement
Traditional mHealth market	■	■	■	■		
Smartphone mHealth market, 2010			■			
Smartphone mHealth market, 2015		■	■	■	■	■

■ Relevant business model

From his digital perspective, Eric Dishman, mHealth expert at Intel, tempered the indiscriminate enthusiasm that he often observes in his blog post “The Hype and Hope of ‘mHealth’” as follows:

“Another flyer arrives for a seminar on ‘mHealth’ [...]: high-gloss images of mobile phones and heart signals, celebratory claims about how all of this will ‘revolutionize’ healthcare, and liberal use of the words ‘innovation’ and ‘transformation’. [...] Concepts like ‘home health’ and ‘wireless’ and ‘smartphone’ and ‘telehealth’ are being bandied about as if they are all the same thing, under the rubric of ‘mHealth,’ without much distinction between these very different capabilities, value propositions, and markets. Methinks we doth proclaim too much!”

Of course, a lot can change in five years. Science, technology and innovation, hospitals, doctors, insurers, pharmaceutical industry, government, politicians and citizens will all have to join hands and work together. In September 2011, insurance company Achmea in the Netherlands set the right example by establishing an investment fund for innovation in healthcare.

Display devices are also a promising development for medical personnel. Three years before the iPad was announced, companies like Philips and Intel were already collaborating on a Mobile Clinical Assistant, the CliniScope (see illustration). A Medical Tablet War between Apple, BlackBerry, HP, Toshiba and many other players is being predicted for the next few years.



The current healthcare system is on its last legs

Before we get too excited about the possibilities for capitalizing on new mobile business models, we need to take a hard look at the facts. There is always the one burning issue about the *System* having to keep step with the economic outlook. Global health costs are going through the roof, and therefore the number of chronic cases in particular must be drastically reduced. Take the Netherlands, for instance. In 2020, the number of people with diabetes in the Netherlands will have risen to 550,000, an increase of 200,000 in 10 years. The number of people with heart failure will have increased from 102,000 to 150,000. The more than 60 billion Euros that are currently being spent on healthcare in this country will rise to an unacceptable 6,500 per person. Taking the current situation as a basis means that one fifth of the population will be working in the healthcare sector. Therefore it is not surprising that technology and apps are being looked at in order to adopt a fundamentally different approach to the issues. Prevention rather than cure, and more automation when human labor is too expensive.

It should come as no surprise that the prestigious Institute for the Future presents the collapse of the health system as a possible scenario. Their transformation scenario is quite similar to our *Digital Commons*. Other forms of collaboration and behavioral changes are needed to ensure healthcare is affordable. And this is no different than in the energy sector and other sectors. Let us examine the technological outlooks for this issue.

There are no shortages of technofutures in healthcare. Inspired by Kevin Kelly's 1998 classic, *New Rules for the New Economy*, Russell Coile and Brett Trusko outlined how the transformation must take place. "Prosumership" must stand at the center of healthcare. A patient becomes a "partner" and a doctor takes on more of a role of a consultant. This ambition is driven by patient empowerment and is described in the 1999 article "Healthcare 2020: Technology in the New Millennium" by Coile and Trusko. Trusko worked on this scenario with others and elaborated it in the now standard *Improving Healthcare Quality and Costs with Six Sigma* that appeared in 2007. This is exactly the combination that we are looking for: better quality at lower costs and patient-centered.

Twitter consultation

The category of cheaper and modern is illustrated by the story of Dutch physician Bart Brandenburg. He used Twitter to give a diagnosis on a leg wound that was photographed by a twitterer and put online. The wound was caused by an insect bite. This first-ever Twitter consultation resulted in a monthly consultation hour on the Twitter account @tweetspreekuur.

“tweetspreekuur”
(Dutch) means
“tweet consultation”



tweetspreekuur

@tweetspreekuur Nederland

@bartbrandenburg & @janszoon, ook met @filipvandijk |
Health | Zorg | Zorgzeker | Stel een vraag en krijg binnen 24
uur antwoord

The percentages in the illustration below show that more and more physicians are convinced that the Internet can be a vital link in the healthcare system. The app effect builds on this web effect and on the understanding that digital communication is efficient and effective.



ePatient Dave

The story of ePatient Dave illustrates the power of prosumership in healthcare. Dave Debrontart, ePatient, began a search on forums in January 2007. His kidney cancer was in an advanced stage and Dave succeeded where his doctors could not. Working digitally with the help of fellow patients, he found the cure and the medicine that worked for him. Of course, this emancipated action by a patient raises questions. What if every patient starts playing doctor? Debrontart's contention is that not everyone is a doctor, but doctors will miss the boat if they ignore the power of the patient community. The case of ePatient Dave demonstrates that there is a huge surplus of knowledge and willingness to help. Partners in misfortune are often especially motivated to participate.

PatientsLikeMe

One of the new platforms that makes use of patients' knowledge is PatientsLikeMe. People with the same diagnosis convened, making it possible for them to organize direct research with the pharmaceutical industry.



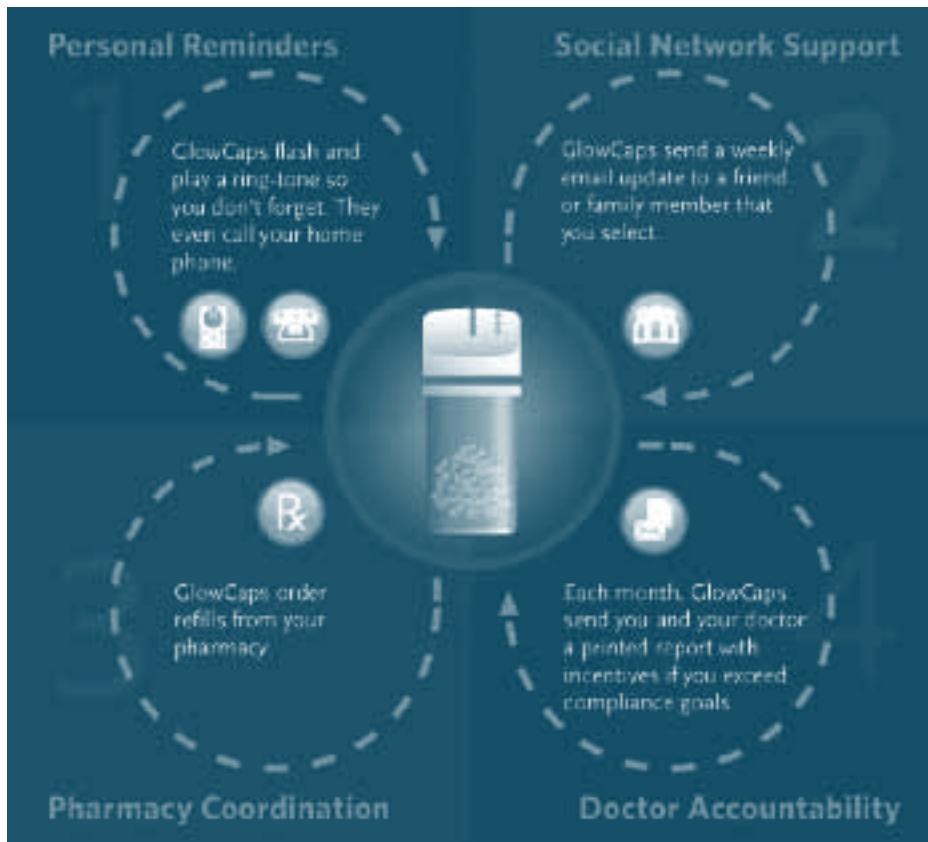
One of these projects investigated the effect of lithium on the lethal muscle disease ALS. PatientsLikeMe was able to perform the largest study ever carried out. Patients could continuously report their condition via the app InstantMe.



GlowCaps

Another interesting ecosystem in healthcare is called GlowCaps. This is a medicine bottle that emits a signal. When the bottle is opened, this is reported. When it is time to take your pills, a lamp on the lid lights up and so does an additional larger lamp that you can place in a wall socket. If you forget to take your medication, the pill bottle sounds an alarm. If that does not work, GlowCaps calls you on your cellphone, or otherwise it calls a family member. In its entirety, GlowCaps is an information ecosystem where pharmacy, doctor, family and patient work together to stimulate the right behavior, namely, *take the medicine on time*. This can be critical; it can prevent

a relapse and the patient having to return to the doctor. If there are no more pills, the pharmacy orders them automatically. The family or those directly involved can receive a weekly report, just like the patient.



There's a hero in all of us...

Another interesting solution is a community app of American fire departments. If you need acute care from a doctor, say for a heart attack, then you are in luck if someone nearby has the fire department app on their smartphone. In 911 cases, the fire departments in the U.S. send out a message that reports the location and the sort of help needed. The chances are higher that someone with first-aid training will respond and get to the location faster than the emergency services. Anyone can be a hero with this app. It is a simple and effective application, utilizing the new features of smartphones.



AliveCor

AliveCor makes use of other specific features in an entirely different way. Under the slogan “mHealth for iHumans”, you can make an ECG with your iPhone.



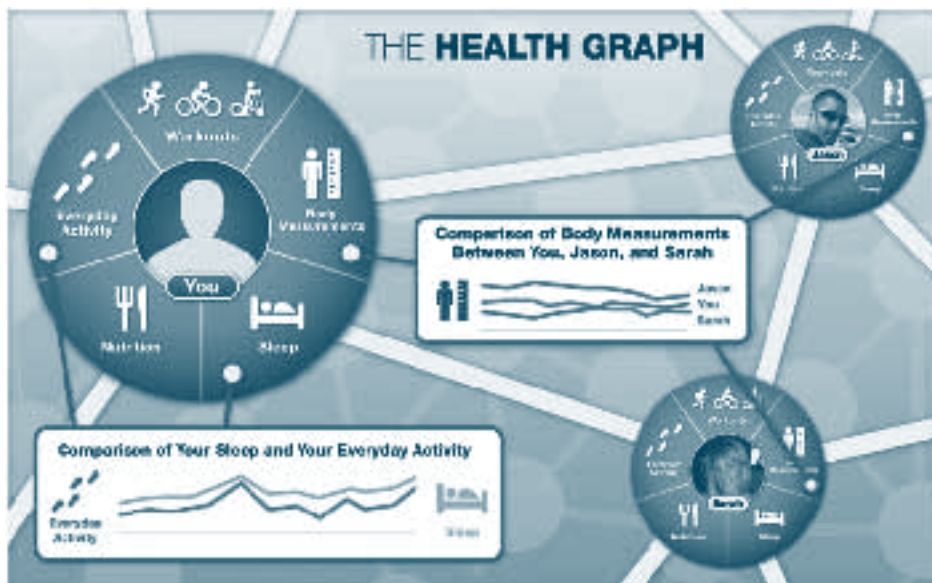
Prevention is better than cure

Devices such as the Fitbit, Philips DirectLife, Zeo Personal Sleep Coach, Gruve, Body-Media Fit Armband, Withings Wifi scale, iPhone app SleepCycle and the RunKeeper have suddenly put sensors into the hands of users who can now record everything, including heartbeat, blood pressure, the number of steps you take, how many calories you burn, how well you sleep, how much you weigh, and how many miles you ran.



This all leads to new insights into people's own lifestyles and so also their own health. The information can be shared online. The application RunKeeper even allows you to take part in a virtual competition. There are also online health coaches who can guide, train and motivate you. Philips, for example, has a special DirectLife coach that helps you make choices that are important to your health. For 12 dollars 95 per month, a few items and the DirectLife app, this Philips startup helps us to live healthier with a personal life coach. This is how new digital services are built on a layer of "measuring is knowing". This is also how we build the business model steps that we have previously mentioned, that is, from app to app + service. HealthGraph and CloudCare are good examples.

The relationship between *improving healthcare and costs*, to repeat the title of Trusko's book, is obvious. Whoever is healthy does not need to see the doctor. There are many apps available in that area. Measuring weight, whether you sleep, eat, live well — all these fall under the heading of "an ounce of prevention is worth a pound of cure". Or, better put, prevention is a necessity because getting the cure from the healthcare providers of tomorrow will be prohibitively expensive.



Personal coaches, supported by an app and all types of trackers, will be offered by companies like CloudCare and HealthMedia. This last example offers customized care in the form of apps and support in the following areas:

- ◆ assessment of health risks
- ◆ fitness coaches
- ◆ stress management
- ◆ back pain
- ◆ cholesterol
- ◆ adolescent diseases
- ◆ diet
- ◆ alcohol addiction
- ◆ insomnia
- ◆ chronic care
- ◆ pain control
- ◆ high blood pressure
- ◆ weight problems
- ◆ stopping smoking
- ◆ diabetes
- ◆ depression
- ◆ hip problems





A number of health apps make use of GPS much like the previously mentioned fire department app. These include, for example, the MOPET (MOBile Personal Trainer) made by the University of Udine. The digital trainer Evita shows you where to go on a fitness trail in the woods, explains how certain equipment works along the way, and encourages you if you have a dip.



On the way to the Digital Commons model

According to experts, advances in efficiency in healthcare are only possible on the basis of an electronic patient record. And... here we go again. In the U.S., a digital record project was brought to a halt due to public resistance. Confidence in government is not that strong and the battle against possible abuse of information can prevent the whole shebang from moving on. The system may not be secure and provides

easy access to digital vandals. There is no central overview of who is authorized to examine a record. It is not clear who the owner is, and this makes it hard to regulate liability. Patients are not able delete incorrect data. And so on. Thus, there is resistance as well as different perspectives and interests.

What will happen in the near future if we start rewarding healthy behavior? What if prevention receives more attention than care? For example, if health providers reimburse the apps of Philips, including the personal coach, where does the data end up? Does it go back to the health provider? Will the improvements you make in your health affect your premium? Some kind of financial incentive would motivate people. This occurs in the energy sector. If the costs of solar panels continue to decrease and the oil price rises further, it will increasingly attractive to make this change. You will feel your energy-usage behavior directly in your pocket. According to the principle “the polluter pays,” we may soon face the possibility that people maintaining unhealthy lifestyles will have to pay for it themselves. And that includes all the misery that you heaped up on yourself. Meanwhile, we see all kinds of apps appearing where you can assess hospitals, surgeons, doctors and speech therapists.



Deel uw ervaring en vind de juiste huisarts of specialist!

worden
gevoel
verloren
duidelijk
weinig
moedijk
slechts
prima
afpraak
sprakeur
tevreden
voldoende
uitlog
vragen
and
vriendelijke
behandeling
doet
ziekenhuis
serious
patienten
praktijk
hardig
luistert
dochter
dochter
dochter

goede patient
specialist
huisarts
dokter

ZoekDokter.nl

Daar wordt iedereen beter van!

Kijk op www.zoekdokter.nl Vraag vragen informatie@zoekdokter.nl

“Share your experience and help find the right physician or medical specialist!”

No hospital was involved in the diagnosis. It comes from a mail order company that sends a self-explanatory packet to your home. Discussing your genetic history with your doctor is no longer science fiction. You can get it for 100 dollars from the company 23andMe.



You can look directly at your own inner molecular database. Is that not the ultimate Natural User Interface? This puts all of the above information about the healthcare sector not only in a different perspective but also under the microscope. Who is authorized to view this information? What does it mean if you have better data about potential health risks than your hospital? ...better than your doctor? How should insurers deal with the information if it is made available to them? Should you share information with your family? All of these are new questions and potential conflicts. In any case, this again underlines the combined message from the report of Ogilvy CommonHealth Worldwide and the predictions of Research2Guidance that we started off with. The combination of display device plus apps is the digital glue that brings and keeps everything together. The real change lies in the behavior that will change due to the way we are served up information, the manner in which we can share it and how we process it.

In conclusion: the direction of the healthcare sector

The difference is clear. Mobile energy apps did not get ten Google hits in the fall of 2011, whereas mobile health apps received almost 700,000. This difference makes it very clear how personal we consider all facets of our health. Applications in this category fit seamlessly with the irresistible enticements from our personal display devices. Our own health is so important to us. This is a hopeful sign because a lot of profit can be made in healthcare sector just like in the energy sector. We can improve

our quality of life and avoid doctors and hospitals by paying attention better and more often. Not to our bodies, but to the apps on our screen device that automatically monitors various functions. Of course, it's possible we may become even bigger hypochondriacs than we often already are. But the benefit is worth it: a better and longer life in good health.

The responsibility for good health that minimizes costs lies primarily with the individuals themselves. It is now a major issue. We will therefore continue to see more apps distributed to hospitals and doctors in the coming years. In particular, this will probably occur via the pharmaceutical industry, Medicaid and Medicare, and private health insurance. For the optimization of drug dispensing, the costs and use of medical clinics, apps on smartphones and tablets will be pre-eminent in directing behaviors for both the demand side and supply side of healthcare. The *Mobile Persuasion* of Professor B.J. Fogg's program is particularly focused on this issue. Taking medicine, measurement of blood levels, and remote interaction with medical personnel are all huge opportunities for mobile apps in the healthcare context. And, whoever learns to monitor their own disparate levels may never need to visit the doctor or talk to his health insurer. This can be expected to avert at least obesity, and lung, heart, and vascular diseases.

The concrete behavior changes desired from mobile apps are catalyzed through Gamification. The behavior of persons involved is guided in the desired direction using a points system, competition and other game elements. All points and high scores can be recorded in a "sporty" Personal Health Record and general Electronic Health Record databases. Note that we no longer use the term "Electronic Patient Record", which in itself is guaranteed to evoke a major depression. Start with nutrition, a good diet, movement analysis for a particular physical build, any diagnoses available and, combined with age and desired exercise programs, these will provide fodder for mobile apps in healthcare prevention programs to avoid visits to the doctor or hospital or delay these as long as possible. Those who want to can add their genome to the data.

3.5 **Wrapp-up**

Mobile, embedded GPS, personal, quick, cross media, practical, perceptualness, it all comes together in display devices and their apps on smartphones and tablets of all shapes and sizes. Looking at the world from the viewpoint of a device is a good starting point to elaborate an innovative app strategy. Some surprising new applications bring a smile to our lips, such as the app that fills the feeder with dog food when you

check in with Foursquare, or the supermarket that is a roll of paper plastered on a wall. It immediately inspires you to draw up your app empowered business strategies that will make the life of the consumer easier and more fun.

The two sectors we zoomed in on above — healthcare and energy — are full of innovative applications. There are apps for everything in and around the home, including the car and managing energy consumption and production. There is an app where you can make an ECG, an app to give you access to everyone with the same disease as you, an app with your own genome, and so on. Who knows, soon we may play a game where we put two smartphones against each other to see the resulting gene combinations. Such forms of cross-pollination give rise to new debates and the beginning of a new behavior that we still find very strange but may soon become the norm. The display devices and their apps are the digital glue that brings everything together, they are the remote control for our lives. We can see one effect already: information behavior is changing organizations.

Whoever looks beyond the horizon will see the outcome as a different form of interaction, a *Digital Commons* situation. It will be a community playing field where everyone can come into his own. Whatever is technologically possible, socially desirable and economically feasible will converge in this field where individuals and organizations find each other with new devices and new functionality. Innovative efforts are focused on a transition from intensive care to preventative care and energy usage to energy generation. These may appear to be viewpoints, but under economic pressure everything will be fluid and all of a sudden we will have a completely different *System* and way of doing things.

What does this mean for sectors and domains other than energy and healthcare? These same forces are also in effect. Here, too, it is about combining the new mobile characteristics with business opportunities within the context of sustainable change. A fundamental change will be that the economic sectors, as we know them, become blurred. The app effect means there will be new forms of collaboration in many areas. Compartmentalized vertical approaches will lose out to cross-sector innovation. For example, Panasonic provides home entertainment and also home energy systems. And there is Philips, which gives you remote access to a doctor. And supermarket chain Albert Heijn, which creates a store by pasting up a roll of wallpaper with QR codes. The question is really about what definition you use for “sector” and how you stimulate or slow down the innovative future of your organization.

*"That's what it's all about, isn't it? Our impact on other egos."
(The Addiction, film, 1995)*



4 Culture clashes in the post-PC era

Table of contents

- 4.1 Gadgets as a service for rioters 81
- 4.2 Just how empowered are we? A question of the ages 83
- 4.3 Crises and post-PC empowerment 84
- 4.4 Positive attitude required 86
- 4.5 IT, media and Internet as the new Rock 'n' Roll 88
- 4.6 Toward a Digital Commons situation 90
- 4.7 The System as a source of alienation 92
- 4.8 Digital Subcultures: empowered people 95
- 4.9 Countercultures and their fight for independence 96
- 4.10 The Digital Commons is not a given 100
- 4.11 Wrapp-up 101

The App Effect is about mobile display devices plus Software as a Gadget, which is the topic of the next chapter. Of course, every display device is itself a gadget, handy, functional, essential, and available in many different models. And that is true for software as well. In 2020, we can expect to choose from over 10 million apps and, according to IDC, the number of app downloads will exceed 182 billion in 2015. This will manifest culture clashes even more in this post-PC era. It will be even more than in the Web 2.0 years. The application of digital technology is increasingly assuming more intense forms than personalize and intensify our life and help us focus strongly on our needs. And not always with friendly intentions, and that is putting mildly. The British riots of August 2011, the worst in 26 years, forced us to face the facts.

4.1

Gadgets as a service for rioters

We really are in a new phase with native and web apps. Apps — what's in a name? — are a new type of *All Purpose Programming* with very specific functionality. Let us begin with a well-worn example of hyper-communication in urban guerilla situations. Of course, the social Web 2.0 functionality is predominant even in this first phase of app and app store development. This includes Facebook, Twitter and BBM, the now infamous BlackBerry Messenger app. BBM was so popular among the British ringleaders because of the secure anonymity and reliability of BlackBerry messaging.



A call was put out in August 2011 on services like BLOTTR, the people-powered news service for Birmingham, Bristol, Edinburgh, Leeds, London and Manchester, to expose the shop vandals in the worst riots in 26 years by putting their images on Facebook and Flickr. They shamelessly stole from stores and in particular from those of the hard-working middle class. The damage from theft, arson and destruction was immense. People were injured and even killed. “Here are the camera images from the British public on the streets. Pick your time to pick out the looters,” was the message. These came via Facebook and Flickr apps on your display devices. Upload information so that these criminal hooligans do not go unpunished. It is rumored that BlackBerry maker RIM collaborated on screening the BBM messages. Shortly thereafter, the official BlackBerry blog was hacked.



This all fits seamlessly with the app effect. And thanks to the additional empowerment of all the stakeholders it also dovetails with the increasing stormy culture clashes that form an integral part of this effect. After the British riots, there was support for our culture clash analysis from Evgeny Mozorov, author of *The Net Delusion: The Dark Side of Internet Freedom*, and Thomas Friedman, author of *The World Is Flat: A Brief History of the Twenty-First Century*:

Evgeny Mozorov in the *Wall Street Journal*: “Technology has empowered all sides in the London skirmish: the rioters, the vigilantes and the government.”

Thomas Friedman in the *New York Times*: “Across the world, a lot of middle- and lower-middle-class people now feel that the ‘future’ is out of their grasp, and they are letting their leaders know it. [...] Globalization and the information technology revolution have gone to a whole new level. Thanks to cloud computing, robotics, 3G wireless connectivity, Skype, Facebook, Google, LinkedIn, Twitter, the iPad, and cheap Internet-enabled smartphones, the world has gone from connected to hyper-connected.”

The purpose of hyper-communication via hypermedia is becoming clear. We have seen and are seeing the same pattern during the development of the Arab Spring through Tunisia to Syria and other dramatic events with different causes. We see a wave of related communication via social media from insiders and outsiders.

4.2

Just how empowered are we? A question of the ages

In this book, our primary focus is not on digitally facilitated revolutions, important as these may be. Those who have an understanding of that specific situation may say that the rebels are socio-economic outcasts. Opponents maintain it is a lack of systemized morals. Both are true, since wealth, health and morals always go hand in hand. And of course: *First a full stomach then the morality*, as Bertolt Brecht noted in his *Threepenny Opera* in the crisis year 1931. The question of whether there will be sufficient consumables for the common people and the public at large — food, work, housing, education, social participation, and so on — has always been *The Story of Mankind*. This question, this story, is about *empowerment*. Namely, is there enough *Food* for the people, so that *Morality* follows and ensures that undesired culture clashes do not flare up?

During the British riots of August 2011, Labour leader Ed Miliband paid attention to the former — Food, and Prime Minister David Cameron to the latter — Morality. Everybody agrees that strong dialogue and a certain degree of animosity is permissible, but culture clashes should not unnecessarily get out of hand. There are thousands of examples similar to those of the British riots of 1381 and 2011. In both cases, the dissatisfaction of the common people had the same roots, namely, a surplus of socio-economic outcasts and feelings of being shut out.

1381 and 2011: one past and one recent example of the riot of the “Common people of England”

June 1381 — *The Commons of England Rebelled against the Noblemen*

There fell in England great mischief and rebellion of moving of the common people, by which deed England was at a point to have been lost without recovery. There was never realm nor country in so great adventure as it was in that time, and all because of the ease and riches that the common people were off, which moved them to this rebellion.

(Source: <http://www.bartleby.com/35/1/301.html>)

The disorderly crowds marched towards London, carrying banners announcing: “*We are the Commons of England now.*” [...] They broke into the houses, looting and burning.

(Source: <http://www.lookandlearn.com/blog/?p=10550>)

August 2011 — *The Facebook and BlackBerry Messenger Riots*

godsboy wrote:

You forget *we are the commons* and are treated by the elite as an under class, dare I say, a sub species to be shown their station in life and always to be kept there.

(Source: <http://forum.davidicke.com/showthread.php?p=1060123071>)

Labour leader Ed Miliband via Twitter:

“Too often we have sent a message from the top to the bottom of society that says: anything goes, you are in it for yourself.”

The feeling of being an outcast has remained a major cause of peaceful and violent protest throughout history. For the most conflicting reasons and to the detriment of each other, groups and individuals strive to gain more control over the complex tissue of need fulfillment, balance of power, and societal values and standards. In short, control of *Food* and *Morality*. Competition, debates, persuasiveness, facts and different perspectives play a major role in these culture clashes. It is a question of the continuous change of *people power* and *power play*.

In all conceivable settings the following players are always active: the *System*, always pushed into the role of being the source of all misery, and then on one side the hardliner *Countercultures* who seek confrontation, and on the other side the *Digital Subcultures*. The last have more of a role as tolerators of the system.

4.3

Crises and post-PC empowerment

Currently, there are two unique culture clash catalysts. On the one hand, we have the societal, financial, economic, and ecological crises that we find ourselves in. On the other hand, we have the combination of web, mobile and apps. This triad caps the whirlwind, the perfect storm discussed in Chapter 1. These now serve as our universal digital *Personal Standard Equipment*.

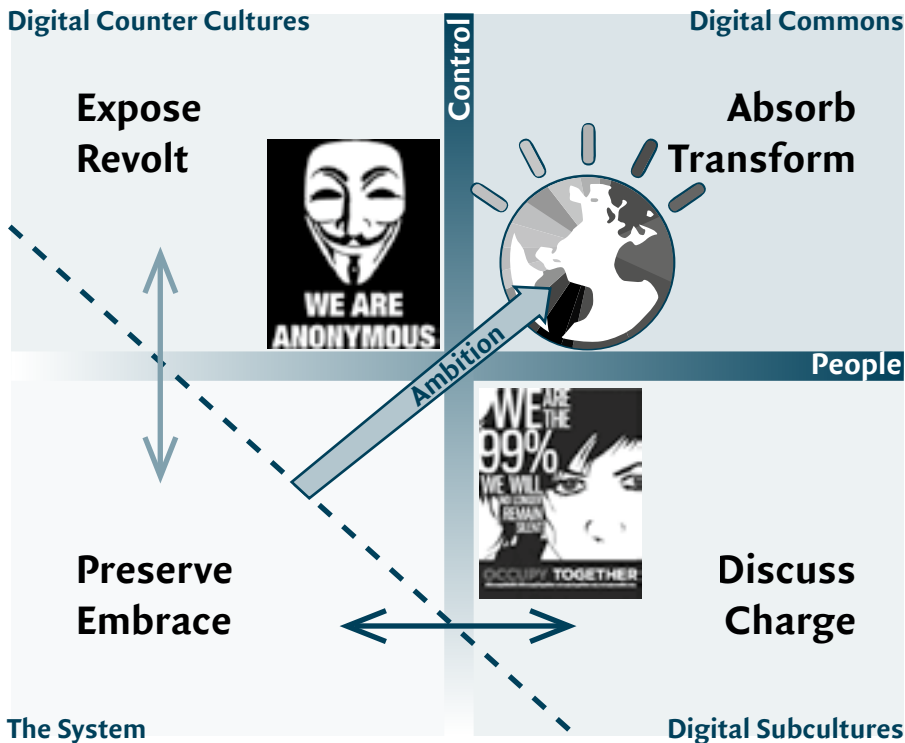
The key question now is: Does this empower us sufficiently in a positive sense? And, in particular, in these times of crisis? Will new digital behavior that is still evolving prevent culture clashes in the post-PC era from spiraling out of control because of the shadow side of the same digital behavior? That dark side always lurks in the background. Consider cybercrime, militant hacktivism from groups like Anonymous and LulzSec, state-directed cyber attacks on military targets, governments and industry, and last but not least, the street riots — rightly or wrongly — of the common people who feel oppressed.

From 2005 to 2015

We understand the post-PC empowerment of 2005 to about 2015 to be as follows: the development of the original *Smartphones* via *Web+Mobile+Apps* into *Smart Web/App Ecosystems* in a positive *Digital Commons* setting. The “Smartphones” were clumsy

miniature keyboard devices that Apple went after and which actually initiated the post-PC era.

The model of the *Digital Commons* is synonymous with the stakeholders in a given situation, namely, the individuals, groups, organizations, and the digital common property that they work with. The following diagram illustrates the post-PC empowerment trend along the culture clash axes of *control* and *people*, together with the roles of the different parties involved. Using these dynamics as a basis, we presented two cases in the previous chapter, namely the energy sector and the healthcare sector.



Post-PC Empowerment 2005 > 2015

From "Smart-phones" via Web + Mobile + Apps to Smart Web/App Ecosystems

- ◆ An adaptive System wants to preserve its achievements, but is also open to change, "Change We Can Believe In".
- ◆ The Digital Subcultures — basically anyone who is part of the System and averse to violence — are focused on change through digital resources and goals. The hotter the debates with this segment, the harder it is to attain the shift to a new Digital Commons.
- ◆ The Digital Countercultures exert pressure by sharply scrutinizing and exposing as many abuses as possible. These hardliners revolt against the system to persuade people that the current state of affairs can no longer continue.

- ◆ Conflicting motives make it everyone's ambition to get out of the old situation and to develop a new *Digital Commons* culture and practices where the system runs smoothly, criticism is absorbed as much as possible, and a transformation has occurred allowing constructive dialogue between all parties.

The System and hacktivist Countercultures contend with each other everywhere. For example, WikiLeaks and Anonymous. The *System* is also engaged in the debate with *Digital Subcultures*, such as bloggers, forums and twitterazzi for example. The ambition is to achieve the *Digital Commons* model in the foreseeable future... 2015... 2020? Then, it is the intention, we will have taken the sting out of many controversies with smart digital applications to restore healthy growth in people's welfare and prosperity.

The entire dynamic continues to be fluid. In certain cases, the *System* will go along with the changes willingly and sometimes even help establish the changes. This will accelerate the transition to a *Digital Commons* situation. In other cases, the trouble caused to the System by *Countercultures* and *Subcultures* may run so high that the counterparts in these cultures will join forces, or at least have sympathy with each other, to bring about change. The militant support from Anonymous for WikiLeaks is a good example. The transparency that post-PC empowerment brings with it will act as a mirror for all involved in the culture clash, even more so than in the Web 2.0 period. This is a trend that must be duly allowed for. Only *Social Businesses* can handle this well and remain successful.

4.4 Positive attitude required

It is sensible to guard against an overly optimistic outlook. Nevertheless, individuals, communities and organizations with intelligent post-PC applications aimed at providing a positive contribution obviously deserve special attention. In the essay "Culture Clash and the Road to World Domination", which appeared in the journal *IEEE Software* in early 1999, author copyright Greg Perkins traced this digital Don't Be Evil attitude back to the values in the open-source movement:

"Open-source pioneer and evangelist Eric Raymond identified the hacker culture at the core of open source as being a 'gift economy' rather than an 'exchange economy'."

Perkins used the following slogan above his essay, a quote he got from the former NEC chairman Tadahiro Sekimoto, who also was president of the Japanese Institute for International Socio-Economic Studies:

“Those who will be able to conquer software will be able to conquer the world.”

That is how it is. Ultimately, it is about empowerment via new and clever digital behavior in these turbulent times that are chock-a-block with culture clash catalysts. Namely, on the one hand there are different types of global crises and, on the other, there are the combination of the web, mobile display devices and apps that help people empower themselves.

Focus on empowerment

The focus question for each unique situation is thus always whether or not the empowerment — that new smart digital behavior — can be realized. And if so, will it bear fruit? Or, will we continue to trail behind? Should we reach the end of this path, eventually even the *Digital Commons* as the new system will be open to criticism. The idea is that the culture clashes should not then get out of hand. But this all remains to be seen.

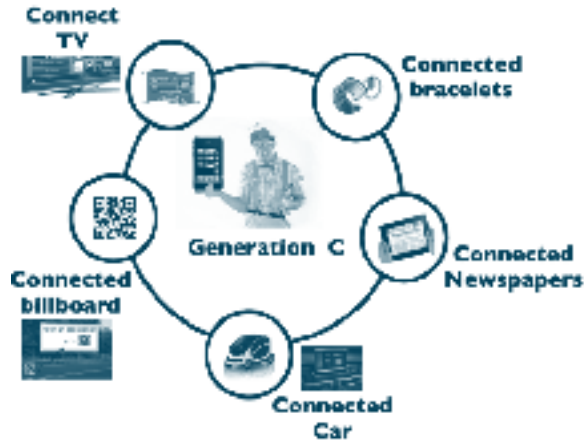
For the *System*, the ideal situation is that the *Subcultures* and *Countercultures* can be combined in a new *Digital Commons* by making the *System* transparent and authentic so that the proper digital behavior will be shown and facilitated. We already see early adopters with this ambition creating initiatives in this direction. For example, we see this in the energy sector and healthcare sector. But if the desired *Change We Can Believe In* takes too long, reputations suffer damages and confidence evaporates.

The most likely and perhaps most desirable scenario is therefore that the four parties chalk up points alternately in the play for power, accepting each other as they are, keeping each other alert. In other words, generate a dynamic equilibrium. Working together in dialogue is important for maintaining a foundation, which then allows differences of opinion. Of course, it is better if these are not fundamental differences, but only concern the realization of goals. This allows willingness to change and potential to change to be tested and new behavior — or not — to continually become the *proof of practice*.

Faster changes will occur in the context of large problems, such as scandals, bankruptcy and successful attacks on digital networks. This may be in line with the desire of *Subcultures* and *Countercultures* and probably also because the *System* deems it necessary. In the end, everyone needs each other. Individuals need a *System* where organizations can operate and organizations need people. In particular, there must also be a very good fit with the zeitgeist.

4.5 IT, media and Internet as the new Rock 'n' Roll

Young generations grow up and the old die off. However, in the post-PC era the distinction between Digital Natives and Digital Immigrants is becoming less and less influential. The *Babyboomers* of Generation X, the *Millennials* of Generation Y and also the *Digital Natives* of Generation C (*Content, Creation, Connect*), did not have all this impressive mobile digital technology. But now, the youngest generation of app phones, tablets and their apps has accelerated the start of real digital behavior. This behavior is what connects all the different generations that are alive today. The real generation differences can be found in the Subcultures and Countercultures. This is just as it has been with all generations in the past.



In the eighteenth century, we had the *Sturm und Drang*. Since the 1950s, we have seen Rock 'n' Roll, Angry Young Men, rebellious students, hippies and anarchist terrorism. All of these expressed themselves in the context of music, literature, politics and lifestyle. The one thing that these groups all had in common is that they would pass away.

How different this is to the fundamental restlessness that we have seen especially since the nineties in all living generations and is now holding sway. It is a new Rock 'n' Roll with a drumbeat based on the growth of IT, media and the Internet. And, music with MP3, Napster and later YouTube, later also video and software, are now all a major part of the shift. But what is really typical of this increasingly “more social” and also more hectic period of digital distraction and economic activity is the need for authenticity, transparency and openness. And it must be across the board. Thus, open-source software, shopping, interacting with organizations, crowdsourcing, and so on. The logical next step is to embrace change and convergence.

A huge game: a great big digital joke

All of a sudden, there is a lot of enthusiasm to shake the tree. Why? Because the new Internet applications and devices make it possible: the multimedia PC, the MP3 player, the laptop, and now the combination of web, mobile and apps. For many, life is a now a huge game, a great big digital joke. It is not without reason that the hackers LulzSec (Lulz Security) have the following motto: “the world’s leaders in high-quality entertainment at your expense”.

The generations of today and the coming decades are connected by the digital media and the advances that they make possible. The majority of the world believes that new natural interfaces such as touchscreens, voice and motion detection will stimulate the economy and improve the quality of life. Microsoft research reveals this segmentation in different leading markets. All scores of the respondents are above 70 per cent when it comes to the relationship between Natural User Interface, a better quality of life and a stronger economy:

A Natural User Interface will help:	US	UK	India	Germany	Brazil	China
improve life quality	84%	77%	86%	79%	74%	72%
stimulate economy	81%	72%	87%	82%	71%	73%

Source: Global Opportunities for Natural User Interface Technology.
Research by Penn, Schoen & Berland for Microsoft, 2011

The clash between cultures is a matter of empowerment. These now occur particularly between digital government and digital citizens, and between digital businesses and digital consumers. Major themes are freedom, individuality, creativity, values and, above all, being able to make your own mark. And this, in the workplace, in the job

market, on the street, on Twitter, in the cloud, anywhere. The clash between different digital cultures is seen everywhere. Organizations are concerned because their dreary business culture is not sexy enough for the job market. More sex appeal means giving in to the digital culture and accepting that things are not as they used to be. Globally, governments are concerned about how they stay in control now that people organize uprisings digitally; they are quicker to compromise politically.

The common thread through all of this is that there is increasingly more information. We have made the world more transparent through social media. Companies create consumer transparency by continuing to improve the ways in which they view search and purchase behavior. WikiLeaks leak gigabytes of information onto the digital commons. Everyone has an interest in increased transparency. How exactly we should go about this is still in the experimental stages. It gives rise to many new issues:

- ◆ Can my boss shadow me on Facebook?
- ◆ Do I really want Google reading my mail in exchange for advertising?
- ◆ What does it mean that consumers have competitive pricing info available when they are in the same store?
- ◆ How much damage can hackers cause our business?
- ◆ May a foreign government request information from Twitter?
- ◆ How do I counter a #fail action against my company on Twitter?

We let people know where we are via Foursquare. We tell each other where bargains can be found and which organizations “suck”. Others take actions by enforcing new privacy laws or leaking company misdeeds. Organizations are profiting from information and the consumer gets better service. All these issues combine to lead to changes in the way of doing business, *Social Business*, and in our culture, including our buying and work behavior. This is the new Rock ‘n’ Roll. Now shake it all up into a new “remix”. This is what makes us more empowered in this post-PC era than ever before.

4.6

Toward a Digital Commons situation

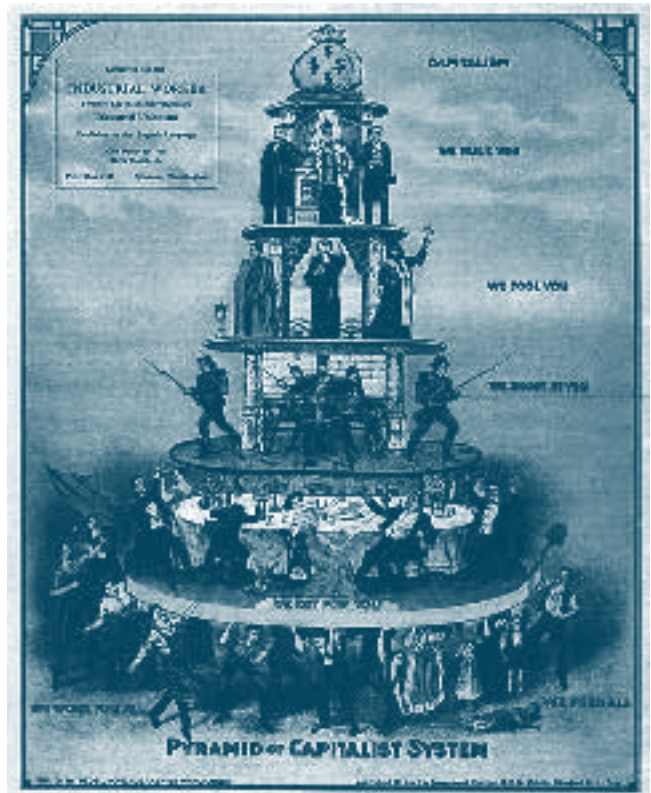
Our name for the new digital collaboration between the *System*, *Digital Subcultures* and *Countercultures* is *Digital Commons*. This is a new landscape in which the economic opportunities of the *System*, the social desirability arising from the various interest groups, and the opportunities offered by new digital tools all converge. The development of the *Digital Commons*, individuals and organizations plus the digital common property that they work with, creates new blueprints. These will rebuild the healthcare sector, energy sector, education, government, retail and every other

economic sector. The *Digital Commons* will connect all sectors at a higher level in a social economic societal plan for people's welfare and prosperity.

This is not about a few improvements in efficiency. This involves a cultural shift in which conflicts and creative destruction are inevitable. The major milestones of this change over the last hundred years have been:

- 2011** Organizations look for new Principles of Scientific Management
- 2010** Transparency as the new standard: WikiLeaks exposes the truth
- 2008** Beginning of the end for the old system: historic crisis in all financial markets
- 2007** Beginning of the post-PC era: Apple releases the iPhone
- 2001** Digital Commons start up: Wikipedia launched
- 1985** Countercultures become active: Free Software Foundation established
- 1970** Moore's Law: computing power doubles every 18 months
- 1911** Installation of The System: Taylor publishes his *Principles of Scientific Management*, and the modern unions arise

It is one hundred years after the publication of Frederick Taylors *Principles of Scientific Management*, an event — as shown in the poster below — that coincides with the great resentment amongst the *Working Commons* of the times. We are ready for a completely new set of principles. The willingness of companies to work on this is greater than ever. Not that they all are jumping for joy. Nevertheless, it has finally been understood that things must change.



See sites like Occupy-WallSt.org and Occupy-Together.org, and also TheZeitgeistMovement.com and ZeitgeistMovements.wordpress.com.



The succession of financial and economic crises that started in 2008 with the fall of Lehman Brothers was the conclusive eye-opener. We are seeing it again with the Occupy Wall Street movement that has fanned out to different cities in the world. The end or the restart of the PC era — it depends on how you look at it — ensures that everyone is now looking at digital applications differently. The question is whether organizations will use the technology to regain trust. Or, whether they will take account of the zeitgeist and the new relationships. Will organization dare to hand over power to digitally empowered communities comprising citizens, consumers, and employees? Posing this question is actually the answer. There is no choice. Oppose and you sign your own death warrant. A *Social Business* approach is imperative!

4.7

The System as a source of alienation

The question marks that we have a tendency to place against the efficiency and effectiveness of governments and state systems are a significant indicator of alienation.

In addition, power and control over digital behavior today is unevenly distributed. The *System* has the least control because the development of digital knowledge, skills and innovations is slower than that taking place externally. The *System* is struggling somewhat to catch up with the developments of the status quo, and is cautious about expansion. If there is a sudden advance it can evoke extreme reactions. Take, for example, the announcement that the American police had bought thousands of iPhones to be used on the street to immediately carry out fingerprinting, facial recognition, and iris scans via the central Moris3 system.



Mindful of the high expectations of the Natural User Interface (see the figures of Microsoft in section 4.5), what we have here is something good for the economy because it makes the administration more efficient. It also increases the quality of our existence because the streets would be a lot safer. Yet there is resistance. The media discuss the privacy outrage. Do we really want that level of monitoring behavior? Do we trust that such an invasion of privacy will only be used to improve our safety? Or are there other more shadowy objectives? Suspicion reigns.

Suspicion in private life

In this context, we are confronted by a study by Retrevo. It proves that we are just as suspicious in our private lives. Married couples sometimes secretly check each other's email or telephone call information (41 per cent of women and 35 per cent of men). It is

also a very high percentage among people who are dating (35 per cent of women and 30 per cent of men). We say, with a wink, that we trust ourselves but not the other. So, we are quick to load the AppLock app onto our Android smartphone, so the device is only unlocked if the camera recognizes the owner's face in front of it.

Digital advances in the *System*, in this case the police, may meet resistance. But real criticism will only happen if the community is not connected. The open-source movement was already aware that *Innovation Happens Elsewhere*. Governing bodies have no choice but to incorporate transformative trends. Not in companies and corporations, but in cooperatives within a *Social Business* situation. The police must thus allow for the sensitivities about privacy and investigate the new digital opportunities. On the website "Police 2.0, the digital revolution opportunities for the Dutch police", we read the following mission statement:

"Together we can make intelligence smart. This community is designed to share knowledge about the police, intelligence and the complex it records. 'We know more than I do' is the motto for everyone participating in this network. We are all knowledgeable and no one knows everything."

The march of the *System* is the participation of customers, citizens and employees growing into a *Digital Commons* situation. A new collective where *Subcultures* and *Countercultures* also have a place. At any rate, they get a voice in the dialogues. In this dynamic, we see the new *proofs of practice* for digital behavior. This is about gearing up and intensification. These are the characteristics of progress. And of personalization. The twittering officer on his beat who is following someone from his area can now appear in the schoolyard before a real problem occurs. Just like in the past, the police officer now knows what is going on in his neighborhood. All that has changed is the technology that turns everyone with a smartphone into an office in the network.

Of course, there are also painful failures, such as the police chief who tweeted that it was probably just a family drama when people had actually died from carbon monoxide poisoning. This led to dismissal and will undoubtedly curb the burgeoning police enthusiasm for Twitter. The *System* is always going two steps forward and one backwards, but there is no way back. The first proofs of practice, such as Police 2.0, arise mostly outside the hierarchy or even in spite of it, which is not surprising. Innovation occurs completely outside the *System* itself or on its fringes.

4.8

Digital Subcultures: empowered people

Organizations do not want to risk been nailed to the post and pilloried. They are no longer dealing with docile individuals, but with empowered crowds and communities, which are real quick to *unfriend*. This makes it more likely that organizations will go all out to answer the call for authenticity, transparency, and an honest human voice. This is because honesty is still the hardest virtue to maintain. In a moral and economic sense, this is a connection that, thanks to IT, media and the Internet, is no longer a contradiction. *Digital Subcultures*, on Google+, Facebook, Twitter, you name it, do all kinds of things via their apps that are invisible if an organization believes that it exists in its own app world. Employees are already grumbling that they are not going to load all the company apps on their display devices, even if the customers do load them all.

The intimate and intense behavioral extensions of mobile app phones, tablets, their apps and the web that everyone can have, provides organizations with an opportunity. Namely, they can be of optimal service to all living generations and subcultures and prove their good intentions. There is no longer any doubt that everyone can have one. In India, the Datawind Aakash multi-touch tablet only costs 35 dollars for teachers and students, and 45 dollars for others. Now that is empowerment.

Extensions of Man

The real extensions to our human faculties, with thanks to Marshall McLuhan, are neatly incorporated into the mobile display devices. First, the object itself. It is a simple high-quality display that is so easy to hold in your hand. Then the camera, the GPS functionality, and the different sensors. These are our new additional senses. These are then also enriched with information and functionality, and thus we are too. We are thus enriched with apps and are ideally in combination with the web. For example, perceptualness is boosted via recognition of shapes, images and sounds. It always involves change and convergence in favor of the individual in the role of consumer. This is how we empower ourselves. We content ourselves solely with significant improvements in our own digital experience as an employee, private person or citizen. There is such a focus on the here and now that *Sturm und Drang*, Angry Young Men and rebellious students now seem like relics from the digital dark ages. It may be too soon to relegate hippies to the museum, for how often are Web 2.0 folks and their progeny compared to them?



What do we do with all those sensory opportunities? Since the advent of mobile devices it was and is increasingly a function of *checking*. Check this restaurant, this product, this person, and so on. You have a SIM checker for when your phone is stolen, a boat checker if you want to know what is sailing by, a face tracker for facial recognition, etc. The most appealing of them all is the price checker of ShopSavvy. It includes the ability to directly order products elsewhere if you are unhappy with the price in the store you are visiting.

We meet the friendly variant of rebellion against the *System* in the *Digital Subcultures* on Twitter, Foursquare and Facebook. Organizations that get involved on these media forms can also reap the rewards. Good ideas for product improvements and service will arrive sooner and more easily at the intended destination in the digital realm. People within the *System* can take up the idea and do something with it. This is the case even if the statements are painful or outright insulting. We meet the less friendly version in the *Countercultures*. They consider the *System* as thoroughly evil and have absolutely no faith in the people who hold the reins of power.

4.9

Countercultures and their fight for independence

It is remarkable how important the *Subcultures* and *Countercultures* of the sixties were for the realization of the personal computer. They were hippies, free spirits, who pursued their PC dream in the computer labs of Silicon Valley. The same people who wanted to build this super personal machine, experimented with hallucinogenic drugs, propagated a liberal sexual morality, and opposed the Vietnam War. This *Digital Subculture* with *Counterculture* tendencies existed at the foundation of the PC era.

The rebels of the current *Counterculture* use digital resources such as leaks and cyber attacks to give weight to their points of view. They say no to the system, yes to privacy, yes to happiness and yes to justice. The adage is: “My life is lived for me, instead of I can live my own life.” The idea of “being lived” and that the system is more important than the person is a significant motivation to take action today, just like it was in the sixties. It becomes an opposition to control, to the loss of individual autonomy; we want to regain control over our own lives.

The basis for the modern digital counterculture was laid down in 1980s. Back then, the digital freedom fighters united into the Free Software Foundation. In our book *Open for Business: Open Source Inspired Innovation*, published in 2006, we describe the importance of defending the freedoms of the individual in the creation of a new *Digital Commons*. As of the establishment of the Free Software Foundation in 1985

and up to this day, we see this new ownership model sweep into many other business areas. Medicines, shoes, T-shirts and even cars or airplanes can now be made collectively using the same principles to build Linux and other software.

One of the founders of the Free Software Foundation is lawyer Eben Moglen. Moglen points out that the individual has never been more under the lash of the *System* than in the post-PC era. The resistance of the FSF focuses no longer just on PC software, but also on all other devices that are or will be connected to the Internet. Moglen has a simple solution, the Freedombox as a safe haven. In June 2011, he spoke about this at the Personal Democracy Forum:

“The Internet is increasingly monitored, measured and patrolled everywhere. The primary problem is that the routing of the network is in the hands of people who have very different intentions than we do. Maybe they want to earn a few cents from the bits and bytes on the net. Maybe they are governments that want to stay in power. We need smarter routers to work for us. This is possible with the Freedombox. It is a box that could save your life if you are organizing a demonstration in countries where you could be shot for doing so. Openness is not the same as freedom. We must embed freedom in everything around us. Without anonymity, the human race is no longer human.”

(See <http://www.youtube.com/watch?v=gornmfpDoak>)

The realization of Moglen’s freedom would put commerce in a different perspective. What would happen to Google’s advertising revenue if we only send encrypted emails via Wi-Fi routers in the meter closet in our homes? Google would no longer know which advertisements to ladle out. And how would the Chinese government react if everyone had such a freedom box in his or her home?

Deeply rooted distrust

This *counterculture* resistance also opposes all kinds of registration databases that must be built to improve the *System*, such as the electronic patient record in health-care and the administration behind the smart meters in the energy sector. Security cameras on the streets interfere with the anonymity that Moglen and kindred spirits find so important to human identity.

Julian Assange, the editor-in-chief of WikiLeaks, puts other resources into effect. His answer is not a freedom box, but, so to speak, to rip the cover off the cesspool so we can take a good look at the whole stinking mess in all its putrefaction. WikiLeaks throwing the spotlight on confidential and secret information has landed us in a new sort of transparency. In one fell swoop it became clear that information can never be kept secret within a *System*. A world of WikiLeaks is what the world deserves in order to achieve the improvements it needs. A transparent world leads to a better



world. That is the slogan. The issue is all the systemic abuses that have surfaced from the financial and economic crisis. As opposed to the economic system of deception and fraud, *Countercultures* such as WikiLeaks offer up extreme transparency.

This transparency is rooted in Iceland. The first leaks about the attacks on civilian targets in Iraq were devised in Iceland. It is not surprising that civil resistance in Iceland against deception and fraud in the financial sector is greater than in other countries. All 320,000 citizens have a colossal debt millstone around their necks caused by bankers' irresponsible behavior, about which no one had any idea!

Important representatives of these Countercultures are Birgitta Jonsdottir and Smari McCarthy. They were in attendance at the

inception of the new laws and regulations of the Icelandic Modern Media Initiative. All international privacy laws were investigated under the microscope and the foremost of these have now been implemented by the Icelandic government by order of the parliament in more than ten separate laws. This has made Iceland a haven for all forms of research journalism and whistleblowers. McCarthy is the founder of the Icelandic Digital Freedom Society and one of the people behind the initiative to establish crowdsourcing and a shadow parliament as a part of democracy.

Organizing in times of empowerment

Alternatives to this type of legislation include Moglen's Freedombox and the high-profile cyber attacks of the militant activist group Anonymous that positions itself as a real popular movement.

For example, this organization stood up for WikiLeaks in actions such as shutting down MasterCard, VISA and PayPal after they had frozen WikiLeaks assets. Anonymous, WikiLeaks and their like do not wait for legislation to be enacted. They take the law into their own hands. In this era of digital empowerment, opposition against the system is flourishing as never before. The result is greater transparency through pointedly hanging out the dirty linen in public.

WE ARE ANONYMOUS. WE ARE LEGION.

Several corporations have now been involved in the censoring of Wikileaks. The censoring of free speech and free information. The censoring of a free world. Amongst these corporations are MasterCard, VISA, PayPal, Amazon - some of the largest corporations in the world. We, the people, will make a stand, no matter how large these corporations are.

We, the people, won't budge for government pressure. We, the people, won't fall for bribery and corruption. We, the people, won't submit to this attempt by our so-called leaders to protect their own interests and power.

We, the people, will fight back. We do not forgive. We do not forget. Expect us.



In July 2011, for example, Anonymous stole the entire source code and internal documents of the Dutch e-chat and VoIP company Nimbuzz. Part of it was put online. According to Anonymous, Nimbuzz is involved in repression of freedom fighters by sometimes turning off instant messaging and VoIP services under pressure from national governments. In the meantime, Anonymous has also set its sights on a business world without political or humanitarian motivation. The website AnonAnalytics.com has the following justification that could not be clearer:

“Anonymous Analytics, a faction of Anonymous, has moved the issue of transparency from the political level to the corporate level. To this end, we use our unique skill sets to expose companies that practise poor corporate governance and are involved in large-scale fraudulent activities. We provide the public with investigative reports exposing corrupt companies. Our team includes analysts, forensic accountants, statisticians, computer experts, and lawyers from various jurisdictions and backgrounds. All information presented in our reports is acquired through legal channels, fact-checked, and vetted thoroughly before release. This is both for the protection of our associates as well as groups/individuals who rely on our work.”

Everyone has been warned!

4.10

The Digital Commons is not a given

The Digital Commons is a self-evident and healthy aspiration. But the road to it is not strewn with roses. Maybe that is not the case in this era of digital uncertainty. The attack by Iranian state hackers on the internationally operating Dutch e-certificate firm DigiNotar was certainly not as advanced as the Stuxnet worm that infected Iranian uranium enrichment plant via Siemens equipment. But, the experts say there are far greater consequences. The possibility that digital certificates can be easily stolen and misused to monitor Internet traffic and to fake certified websites is a fundamental slap in the face of Internet security officers. The overall conclusion was that the monitoring of certificates must improve, but how can we guarantee that? The website CyberInsecure.com provides daily reports about security abuses.

Ideally, the *Digital Commons* is a dynamic set of parties with conflicting interests and visions that keep each other in balance. The goal is to take the sting out of all the culture clashes and not let them escalate. However, without proper security we seem to be very far from that model. The power of sophisticated cyber crime and warfare is a force to be reckoned with.

War on the Internet

The blog post “Never Forget the Great U.S.-China Cyberwar of 2020” deservedly draws the article “Blown to Bits: China’s War in Cyberspace, August—September 2020” by Christopher Bronk to the forefront. Bronk’s extensive article appeared in the spring 2011 edition of *Strategic Studies Quarterly* and sketched a very conceivable scenario. Reportedly, the current situation is as follows:

“The U.S. only recently began ramping up its cyberarmy recruitment, and something as comparatively simple as Stuxnet is still baffling to us in the year 2011. [...] [Cyberwar is] the forever war, maybe a ‘cool war’ between every nation until the end of time.”

Today, when we discuss gadgets, widgets and apps as synonyms and a mix of hardware, software and lifestyle, it is very ironic that, given the above context, the first atomic bomb tested in July 1945 was also called “The Gadget”. The increasing use of sophisticated “digitalia” is accompanied by great challenges. It is up to the existing institutionalized *Systems* to recognize this and take *Subcultures* and *Countercultures* with them to a *Digital Commons* situation. Or, as far as possible in that direction.

4.11

Wrapp-up

Although there have been culture clashes of various types and magnitudes, the past years have shown an escalation thanks to the digital resources available to everyone. In particular, the additional empowerment dispensed by display devices and apps is remarkable. It is digital and mobile. It has paved the way worldwide for people to take action and be independent. In 2011, we have successively seen the Arab Spring, where Facebook and Twitter played a major supporting role, the BlackBerry Messenger riots in several British cities where Twitter, Facebook and BlackBerry were called to account by the government, the new focus of the digital grassroots movement Analytics Anonymous, unstoppable viruses in U.S. unmanned drones and, of course, the occupation of Wall Street. In comparison, this all goes far beyond that of the very modest digital empowerment of Web 2.0. That was, so to speak, a *proof of concept* from which we now see *proofs of practice*, namely, the effects and possibilities of digital and mobile facilities in everyday reality. It is an additional and almost inevitable reason to deliberately strive for what we call the *Digital Commons* situation, namely, the socialization, personalization, smartening and socialization of human interaction. It is a collaboration of individuals, communities, businesses and governments. All in continuous dialogue. It also emphasizes that the four forces that we have identified — the *System*, *Digital Subcultures*, *Digital Countercultures* and *Digital Commons* — precisely delineate the dynamics that we will experience on a far greater scale in the future. And all because of the digital and mobile empowerment that escalates issues such as transparency, authenticity, commitment, accountability and responsibility, and *de facto* assigns them the highest priority.

“Those who will be able to conquer software will be able to conquer the world.”
(Tadahiro Sekimoto, President, NEC Corp, 1997)



5 Software as a Gadget— *everyone gets his or her own apps*

Table of contents

- 5.1 Gadgets, widgets and apps 103
- 5.2 Gadgets through the ages 105
- 5.3 Four times one hundred and fifty years of science, technology and innovation 106
- 5.4 From physical gadgets to apps 111
- 5.5 Wrapp-up 113

Digital do-it-yourself tooling has experienced unprecedented growth. People are buying their own devices and enthusiastically shopping for practical and fun items in a multitude of app stores. Organizations are trying a *Bring Your Own Device* policy to gain more control over this development, but are lagging behind. It is out of control and has lost any grip it had on procuring and distributing; it will not be coming back. The revolution in buying behavior is driven by a new phenomenon: *Software as a Gadget*. Software, now generally called “apps”, has come to refer to gadgets. The essential aspects here are that gadgets are real items that become personalized and that it is the individual who determines what he will buy for a trivial sum. And you can do this in all sorts of online stores... “At last! I can organize my digital life the way I want to.” The Software as a gadget/app economy is strongly associated with cloud development, and is expected to grow explosively. This is a challenge to organizations’ traditional IT departments.

5.1 Gadgets, widgets and apps

For more than ten years in the software world, it has been quite normal to talk about gadgets, widgets and apps, depending on the platform preference (Apple, Facebook, Google, LG, Microsoft, Samsung, Yahoo, etc.). This is how we refer to recognizable and practical functionality and content that are usually initiated by touching a corresponding icon on a device screen. This has made gadgets and apps synonymous in the software world. The gadget concept had been around for a long time before Vista and Google gadgets, Yahoo and TV widgets, or Apple, Android, Windows and Web apps came into existence. We used to experience gadgets in a tangible physical form. And that is still the case. For example, smartphones are usually referred to as gadgets. However, by extension, it has become normal in this digital era to talk about software in terms of gadgets, widgets and apps. In all cases, the reference is to downloadable practical software functionality concealed behind an icon activated by our fingers or a mouse click on the screen of the computer, television, tablet or smartphone. In fact, we are now accustomed to fondly referring to anything that is digital as a gadget if we identify with it and cherish its unique qualities.

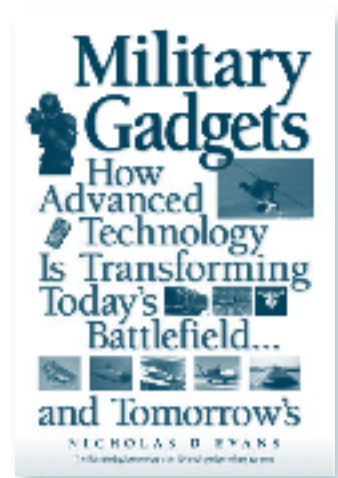
A gadget or widget, synonymous with each other for many years, can be pretty much anything in the conventional sense. Gadgets and widgets have a plethora of characteristics: electrical, electronic, ergonomic, eye-catching, fun, functional, physical, secret, plain, cheap, handy, ingenious, innovative, ironic, small, mechanical, microelectronic, fashionable, necessary, needless, practical, pricey, serious, simple, technically unique, virtual, etc., etc. Strictly speaking, it would not be incorrect to call the latest Ferrari a gadget but, in general, gadgets are relatively inexpensive and provide unmatched value for money. This also applies to a handy kitchen appliance and all kinds of fun



vizio is a good example of the convergence of screen technologies based on apps: “From the big screen to your pocket, vizio Internet Apps Plus bridges the world of entertainment, content and services into one sophisticated and intuitive interface that simplifies the chaos of your connected life.” Intel simply calls this “Continuum”.

or clever accessories. At one time it was the world of espionage and secret agents that excelled when it came to gadgets. Book titles such as, *Military Gadgets: How Advanced Technology is Transforming Today's Battlefield... and Tomorrow's* (2003) and *Gadgets and Necessities: An Encyclopedia of Household Innovations* (2000), which deal the mobile phone in among other items, make it absolutely clear that the term “gadget” is used in many widely different fields. There is no shadow of a doubt that the necessity of gadgets has skyrocketed in both the military and household contexts. The Gadget was also the nickname of the first atomic bomb tested in July 1945. We now encounter the term “gadget” everywhere. For example, GADGET is a simulation program in the field of astrophysics, the term standing for *Galaxies with Dark matter and Gas intEract*.

Everything occurs enormously fast in the digital realm. No one had ever heard of an iPad until 2010, and one year later companies were fully engaged with the official rollout. A few are bought at the top end while huge numbers of the base tablets and smartphones are automati-



cally rolled out. The tsunami of gadgets seems unstoppable. But if you thought that this is all new and unprecedented you would be wrong. Such commotions, such mass adoption of technology, are part of a cycle that goes back to the first scientific discoveries. The products in these periods were tangible, affordable and popular. During the industrial revolution of the 18th century, such products were only for the higher classes. It was only later, particularly after the Second World War, that they became popular and available to the masses. Software as a gadget is a natural next step.

5.2

Gadgets through the ages

The term “gadget” has been used since around 1850 and its synonym “widget” appeared for the first time in 1924. Now that we are seeing an explosion of micro-electronic digital gadgets with the advent of smartphones and display devices, it has raised interest in gadgets from bygone days. The most conspicuous historical perspective was offered by the digital trend magazine *Wired* at the start of 2008, in its article *Gadget Lab*. The so-called “Antikythera computer” from the first century B.C. was probably intended for navigation while sailing. The Baghdad battery of A.D. 250 is an earthen pot containing a copper cylinder and an iron bar in the middle. The pot was probably filled with acid to generate electricity in order to plate metal or suchlike. It is quite conceivable that the pot had been used previously to hold papyrus. In any case, the conclusion is that it would have been called a gadget by today’s measures. In the *Wired* list of *History’s Greatest Gadgets* we also find a globe. Its history dates back to ancient Greece. In the twentieth century, globes were still a possession that fired the imagination and might be found in many a boy’s bedroom. *Wired* considered the sextant, planetarium and pocket watch as important gadgets in the history of man. It is quite easy to miss one of all the gadgets we have had and now have. In 2006, the *medGadget* blog designated glasses as one of the most important gadgets ever throughout the ages. We can add other visual instruments, such as the telescope, the microscope, and the binoculars.

In 2005, the now defunct website MobilePCmag.com published a highly discussed *Top 100 Gadgets of All Time*. It graded all kinds mechanical and electronic apparatus in a review, such as the stapler, Super Scissors, mouth harmonica, Iridium satellite telephone, toys such as Tamagotchi, compact flash card, USB stick, watches, cameras, laptops, PDAs, and so on. The H4 of John Harrison won a prize offered by Parliament in the 18th century in England for determining the degree of longitude at sea independently of referring to the stars in the night sky. Today, a timepiece is a gadget worn on your wrist, hung on the wall, or placed in a cabinet. The time can be checked everywhere, on the TV, on the computer, on kitchen appliances, on the nightstand, and let’s

not forget the mobile telephone. Smartphones and tablets are currently the ultimate gadgets and a clock is one of the most commonly downloaded apps.

In his presentation “The Future of Gadgets”, Professor Albert Pisano, director of the UC Berkeley Sensor & Actuator Center, described the development of gadgets from “ridiculous to revolutionary”. Pisano noted how the first vacuum cleaners — the pride of mothers — required that the father or son manually operate an air pump in a sitting or standing position to keep the vacuum cleaner working. Pisano ended his story at the beginning of the academic year 2005-2006 with the vision of the mobile telephone as the communication medium in an ecosystem of devices, people and appliances. That is now slowly becoming reality, particularly thanks to apps.

The further back in time we look, the more we see that quite some time passed before scientific instruments and technological innovations reached a wider public. For the most part, that does not always occur. However, after the Second World War, opportunities for cheap mass production, applications of new materials and the development of electronics were endless. Today, all advanced and new products are relatively affordable and these are marketed worldwide as a mixture of appliances, toys and luxury items.

It started out with watches, kitchen appliances, cameras, radios, portable televisions, stereo systems, computers, and so on. It is now all about mobile telephones. The iPhone had barely been on the market for a year when the magazine *New Scientist* presented the development of the mobile telephone as the textbook example of the evolution of gadget design.

The new display devices of the post-PC era show us now, more than ever, how intimate the relationship has become between science, technology, innovation (in particular, *Science, Technology & Innovation* intersecting *Technology & Liberal Arts*, just as Steve Jobs presented to us), product development, marketing and consumer behavior. This signals an enormous growth in digital empowerment of individuals and the engagement opportunities for organizations. The hardware, software, ergonomic, economic, social, and societal aspects have made gadgets, widgets and apps even more important than ever before.

5.3

Four times one hundred and fifty years of science , technology and innovation

Carlota Perez, Professor of Technology and Socio-Economic Development, refers to the two hundred years since the end of the 18th century as an era of five “technologi-

cal revolutions". This began in 1771 when the Arkwright textile factory was opened in the British town of Cromford. This event, says Perez, kicked off the industrial revolution. Subsequently, the year 1829 marked the start of the second technological revolution, the steam era, when the Rocket locomotive won the Rainhill Trials with flying colors on the track between Liverpool and Manchester. In 1875, the opening of the Carnegie-Bessemer steel factory in the American Pittsburgh started the third revolution, bringing together steam, electricity and heavy industry. The first Ford Model T leaving the Detroit factory in 1908 introduced the era of oil, cars and mass production. And finally, according to Perez, the 1971 launching of the Intel 4004 microprocessor sparked the fifth revolution, the era of information and telecommunication. Roughly speaking, the two centuries between 1771 and 1971, with intervals of 60, 60, 45, 35 and 60 years, were swept up in technological upheaval. If we keep up this pace then we will see the start of a new revolution in around 2020.

1530 > 1680 > 1830 > 1980 > 2130

Periodization is always open to question. But the fact is that progress in scientific and technological innovations (Science, Technology & Innovation) largely determines how society will evolve. There are high hopes for the corresponding expectations, especially in times of crisis. The socio-economic cum scientific-technological progress of today invariably has a digital heart. This was preceded by network innovations in electrical and electronic technology rooted in science. As of 1530, the start of the 150-year-long Western era of scientific revolution that is generally considered to begin with Nicolas Copernicus and continue up to Isaac Newton appears to maintain the pattern of the development cycles for science, technology, and innovation. Newton stood at the beginning of the *Era of Enlightenment and Reason* (1680-1830). This was followed by the First e-era (1830-1980) and the Second e-era (1980-2130).

Four times one hundred and fifty years of science, technology and innovation

I Era of scientific revolutions

Development of scientific disciplines — accurate clocks

In **1530**, the *De Revolutionibus Orbium Coelestium* of Nicolas Copernicus was only known to a small circle of people. The Copernican revolution is the generally accepted dawn of modern science, technology and innovation.

II Era of Enlightenment and Reason

Systemization and advanced tools — better timepieces and calculators

In **1680**, Isaac Newton focused on astronomy and measuring instruments. In 1687, he published his *Philosophiæ Naturalis Principia Mathematica*.

III First e-era

E-infrastructure and media development — electrical and electronic gadgets

In 1830, Joseph Henry's "ping" was the start of e-message traffic. In 1860, the construction of a transcontinental telegraph line was started from the American side. In 1890, the Victorian Internet flourished. The words "gadget" and "widget" became fashionable. Later, in the 20th century, came the mass adoption of the wireless radio and then television.

IV Second e-era

Convergence and mediatization — digital physical and virtual gadgets

In 1980, the PC/Internet era started with the development of the IBM PC and its launch in August 1981. 1981 is also the year that the term *Internet* was used for the first time. The post-PC era began with the introduction of the iPhone in 2007. Virtual gadgets and the Natural User Interface arrived with multi-touch and movement detection. This is just the beginning. If the tempo that started in 1530 continues, this second e-era gives us until the year 2130. NBIC, the convergence of nano-, bio-, and information technology and cognitive science, will occur in the near future and can be seen as the new revolution that will announce itself in around 2020, according to the systemization of Carlota Perez.

The *First e-era* began in America in 1830 with the first "ping" from the physicist Joseph Henry. Henry was able to ring a bell remotely via a one-mile wire using an electromagnet, which had been invented five years earlier. In retrospect, we can consider this the start of e-messaging. The first Morse code demonstration took place eight years later and in 1860 the Pacific Telegraph Act in America instituted the construction of transcontinental telegraph lines. In 1890, hanging electricity, telegraph and telephone wires filled the streets of New York. The so-called "Victorian Internet" came complete with social networking between the network operators in its heyday.

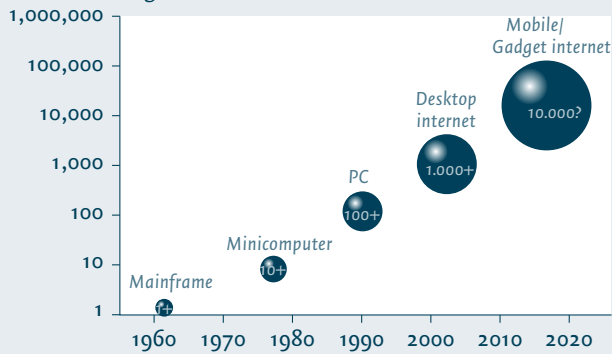
Currently, we are experiencing the *Second e-era*. This era began to reach maturity in around 1980 with the increasingly popular minicomputer. A little later we saw the breakthrough of the PC and now, thirty years later, this development is shifting from the desktop-Internet to the *mobile or gadget Internet* (see illustration).

The S Curve of Science

The observation that Science, Technology and Innovation (STI) develop in a fixed cycle, in periods of 150 years, has already been noted by Elias Zerhoun and Patricia Mabry, among others. Zerhouni was the director of the National Institutes of Health (NIH), the biomedical STI overarching organization of the U.S. government. In 2010, he acted on behalf of the Obama administration as Special Envoy for Science & Technology. In 2001 and 2002, the NIH organized the exhibition entitled *The Once and Future*

New Computing Cycle Characteristics

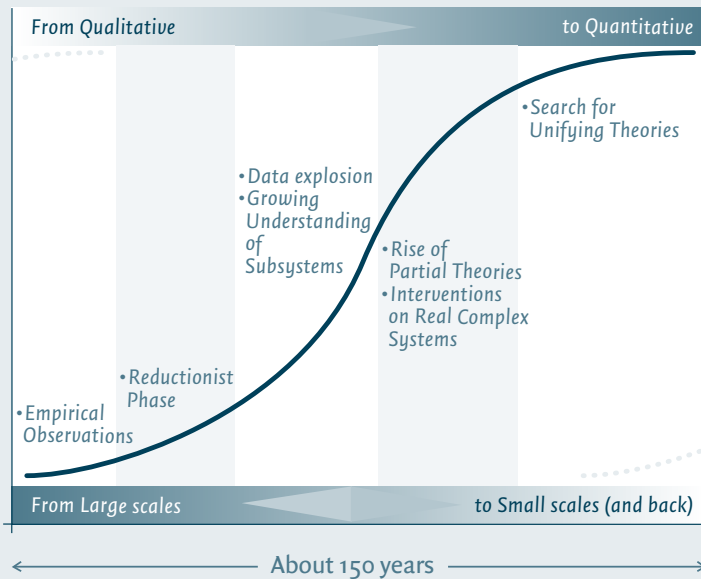
Computing Growth Drivers over Time 1960–2020
[log MMIn Devices/Users]



Note: PC installed base reached 100MM in 1993,
Cellphone/Internet users reached 1B in 2002/2005 respectively

Source: ITU, Mark Lipicis, Morgan Stanley Research

The S Curve of Science



Web: Worlds Woven by the Telegraph and Internet. Remarkable parallels were emphasized between the so-called “Victorian Internet” of the nineteenth and early twentieth centuries and the digital Internet that has developed in recent decades. On closer inspection, these two periods of scientific and technological innovation correspond exceedingly well with our previous descriptions of the periodization of cycles of one hundred and fifty years. We can consider this era as starting at the beginning of modern Western science, the *Era of scientific revolutions*, which coincides with the Copernican revolution. Zerhouni and Mabry are simply talking about the S Curve of Science.

The four periods of 150 years are characterized by their devices, appliances and software apps. These may initially appear to be somewhat insignificant but, on closer examination, these clearly play a necessary and continuously propelling role. Drilling down to the digital core of our current socio-economic cum scientific-technological progress, we find a sequence of the following archetypal gadgets:

- 1 the chronometer
- 2 the calculator
- 3 electrical and later electronic gadgets, such as the telegraph, telephone, radio and tv
- 4 the digital physical and virtual gadgets of today, such as the PC and, in particular, smartphones and tablets, and thus also software gadgets, widgets and apps.

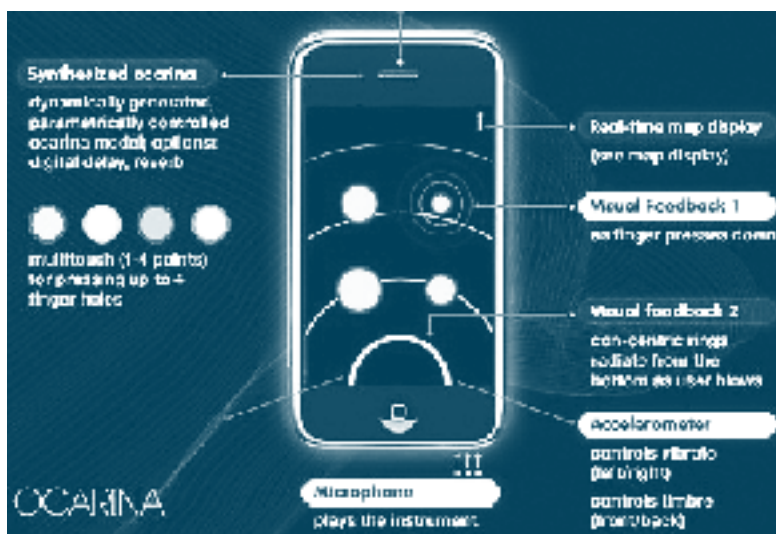
We can and have lived without these devices. However, their absence would make our daily lives more difficult than we would desire or are accustomed to. To put it poetically, gadgets are the lyrical expressions of the periodic cycles of science, technology and innovation. It is interesting that the basic periodic cycle of 150 years is generally accepted in the visual arts and music. The seven periods from 850 to 1900, which collectively cover a millennium, are not something that most people learn about in school, but we do find them under the heading “History of Music”, which can be

Harvard Dictionary of Music —
History of Music

served records. The 150-year periods so derived can be conveniently described by terms long used in the visual arts:	
850: Beginning of polyphony	the Provençal *troubadours (c. 1100–1300), who
1000: Invention of the staff	were followed, half a century later, by the northern
1150: School of St. Martial	French *trouvères (c. 1150–1300) and the
1300: * <i>Ars nova</i>	
1450: Rise of *Flemish school	Early *Middle Ages
1600: * <i>Nuove maniere</i>	Romanesque } Later
1750: Death of Bach	Early *Gothic } Middle
1900: *New music	Late Gothic } Ages
	*Renaissance
	*Baroque
	*Rococo, *classicism, *romanticism
	*Twentieth-century music
It goes without saying that in reality these periods are not as neatly marked off as the table above suggests. However, it does serve as a useful outline.	
German *minnesingers (c. 1150–1350). The latter tradition continued to live in the *Meistersinger (c. 1400–1600), the last representatives of monophonic music, aside from folksong.	

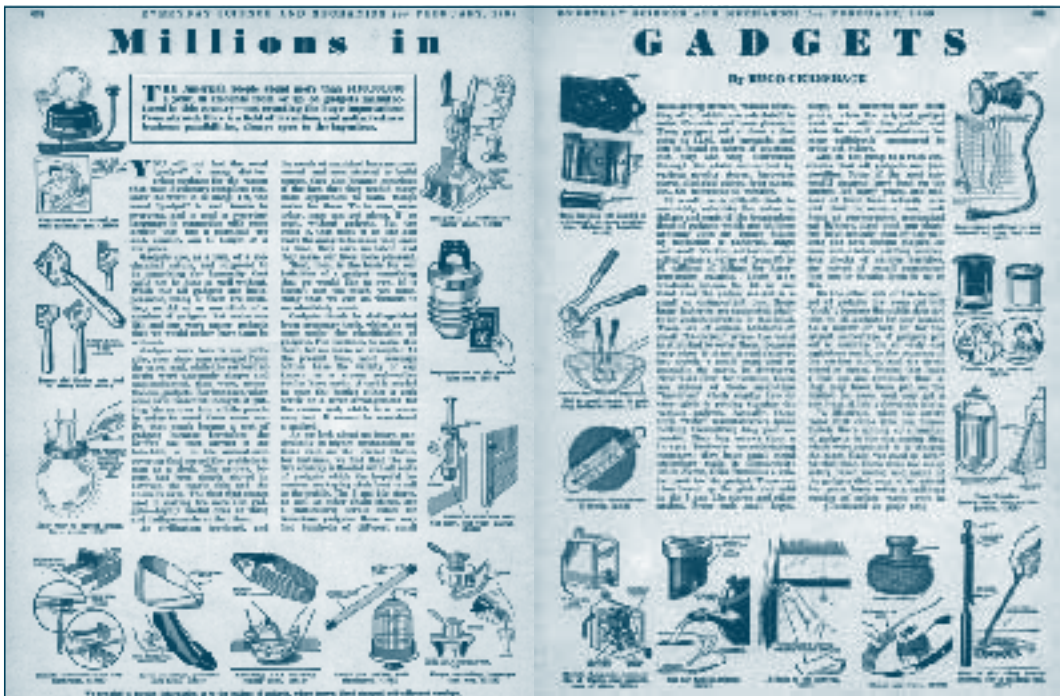
found in the *Harvard Dictionary of Music* for example. This standard has been published in more than twenty editions since 1944 and was edited by the German-American musicologist Willi Apel.

Apel based his periodization in increments of half a century on the Musik Lexikon of Hans-Joachim Moser that came to light in 1935. If the rate noted by both men continues, the expectation is that after 1900 something completely new in the area of music will occur around 2050. One thing is clear. There are plenty of gadget developments in the area of music. We previously mentioned the harmonica. Now consider the famous Ocarina app that is a physical gadget brought to life by software. Apropos of Software as a Gadget, the new ocarina multi-touch display device is both physical and virtual.



5.4 From physical gadgets to apps

The word “gadget” dates from the nineteenth century. Even then they referred it to it as “yet another new thing with a name you cannot remember”. After the First World War, with the heyday of the Roaring Twenties in the offing, the term “gadget” became popular in the United States. In the 1930s, most gadgets were qualified as *cheap, functional, ingenious, physical* and *technical*. As of the 1990s, the prominence of micro-electronics and especially the cellphone has shifted the qualification to *common, complex, ergonomic, expensive, fashionable, fun, functional, handy* (also the German word for cellphone), *ingenious, innovative, micro-electronic, necessary, physical, practical, small* and *technical*. We could argue the details, but it is undeniably by and large the direction in which we are heading. From five to more than fifteen qualities over a period of around sixty years.



A remarkable parallel between then and now is found in the February 1935 issue of the trend magazine *Everyday Science and Mechanics*, especially if we substitute the word *app* for *gadget*.

The difference with 1935 is that the current software gadgets, widgets and apps are increasingly becoming necessities. In reading the article about glasses three quarters of a century later, it is conspicuous that what was happening back then is now happening again. We see the greed for gadgets, the convenience they bring, the economic significance and particularly the great variety of applications in the illustrations accompanying the article. And that is exactly what is happening today with apps.

In 1935, the U.S. spent 100 million dollars on gadgets manufactured domestically. That is about 1.6 billion dollars when converted to today's prices. In 1959, marketing pioneer Paul Converse stated that Americans after World War II were living in an unbridled gadget economy. This explosive growth was already foreseen in 1935 as evidenced in the following quote:



This pales in comparison to the more than 5 billion dollars in sales for mobile apps in 2010 (Gartner), the more than 15 billion dollars in 2011 (Gartner) and the forecast 38 billion dollars in 2015 (Forrester). In all fairness, we should point out that this applies to the worldwide numbers. Software as a Gadget means that everyone gets his own apps, which means that there is an entirely new economy, which means that:

“[Gadgets are] a field of invention and unlimited new business possibilities, always open to the ingenious.”

(Everyday Science and Mechanics, 1935)

The motto for Chapter 2, “Gadgets Shake Your Business”, is there for a good reason.

5.5 Wrapp-up

As Software as a gadget is an inevitable step in the development of science, technology and innovation, this means that we are only at the beginning of the second e-era. In any event, the post-PC phase will be a period with a lot more physical and virtual digital gadgets, which entails empowered individuals. This has direct consequences for the *Digital Commons* situation in which organizations, employees, partners and customers will all collaborate. Software as a Gadget means much more than allowing employees to use their own devices and apps. We must realize that these users are

1 Gadgets, widgets and apps tell our personal story

At the start of 2011, Nokia published the Appitype study conducted by the famous Cornell University professor and sociologist Trevor Pinch on more than 5,200 smartphone users in ten countries: Brazil, China, Germany, India, Italy, Singapore, Spain, the United States, the United Kingdom and South Africa. The conclusion was that gadgets make you a different person and also help us better learn who we are. Gadgets, widgets and apps fit us like a glove and become part and parcel of who we are. We are talking about real interdependence. Our personal collections of apps reflect our needs and interests. Apps bring our devices to life and become our personal magic wand. Apps and how we use them lay bare our souls. They tell our story.

At the start of 2011, Nokia published the Appitype study conducted by the famous Cornell University professor and sociologist Trevor Pinch on more than 5,200 smartphone users in ten countries: Brazil, China, Germany, India, Italy, Singapore, Spain, the United States, the United Kingdom and South Africa. The conclusion was that gadgets make you a different person and also help us better learn who we are. Gadgets, widgets and apps fit us like a glove and become part and parcel of who we are. We are talking about real interdependence. Our personal collections of apps reflect our needs and interests. Apps bring our devices to life and become our personal magic wand. Apps and how we use them lay bare our souls. They tell our story.

[illegible]

In their first steps, organizations focused on devices: *Bring Your Own Device*. However, the app ecosystem that is currently developing is yet to get fully under way. This brings with it a unique dynamics consisting of a combination of market interests and earnings models. Marketing will focus even more on the app-empowered consumer. It is not enough for organizations to rack their brains about devices and apps. They will have to deal with fundamental issues such as the deployment of software, the role of the gadget stores and the cloud where apps are available.

3 Software is a disposable product

A thousand apps are more than sufficient. A thousand apps generously cover all conceivable ways in which we could use our display devices. So says Harvard Business School professor Thomas Eisenmann. Nevertheless, from the marketing perspective, producers pushing their products and the curiosity of new users will ensure that there will always be new apps, while old ones fade away. We now discard software as easily as physical gadgets or we swap old ones for new versions. Apps in business processes will also have a short lifespan. In addition to *Software as a Gadget*, there may also emerge *Processes as a Gadget* with all the attendant architectural headaches.

4 Wanted: jack of all trades with iHand

The job interviews of today often dwell on the company intranet and the business knowledge portals. Yet, it is now more important to ask the empowered employee of today and tomorrow the following: What networks do you bring with you and how strong are your competencies related to searching and information processing? Better yet... let me see your apps and I will tell you whether you fit in with our organization. The iHand approach fits well in The New Way of Working. This disposes of the term *work-life balance* and introduced *integration* as the key word. Work and private life are permanently interwoven.



5 Apps as nanoplatforms

All of us buying apps may be fun, but we actually need to build them ourselves. This is what the future will be, according to commentators such as Peter Friedman. On the *Innovation Investment Journal* blog, Friedman advances apps as nanoplatforms for innovation. The prediction that we will all become app builders has been hanging over the IT market for some time. We are already familiar with this type of *prosumerization* from the open-source communities. But we must in particular be able to build apps without even a hint of programming. That is how gadgets and gadgetization are supposed to be, simple, stylish and cool.

Whatever the case is or will be, digital physical and virtual gadgets in all imaginable shapes and sizes will fill our lives. Look beyond a solitary focus on the apps of today. Everything can be done by bringing together a simple program, Internet connection and a physical device to create new functions and value. It could be anything, bizarre or not, such as an umbrella that knows when it will rain. Today's world is simultaneously physical, mechanical, electrical, electronic, bionic and digital. We, i.e. our behavior, are the biggest unknown factor in the story of technological opportunities, social desirability and economic feasibility.



*"I would rather try to persuade a man to go along,
because once I have persuaded him, he will stick."*
(Dwight D. Eisenhower, 1956)



6

Persuasive technologies and addiction

Table of contents

- 6.1 Charismatic technology 119
- 6.2 Modern media addiction 120
- 6.3 The new "smoking" 122
- 6.4 Persuasive technologies: mobile domain par excellence 123
- 6.5 Triggers, engagement and enticement 125
- 6.6 Creating persuasive technologies 126
- 6.7 Engagement in practice 127
- 6.8 Wrapp-up 129

The millions of apps that will be coming out in the next decade will make it a daunting task to entice consumers and employees to activate particular mobile applications and engage them in desired digital behavior. There are only so many hours in a day. Organizations will have to pull out all the stops. The good news is that the whole world is beginning to become addicted to mobile display devices. We use them at the oddest moments. Studies on this addictive behavior are accumulating, and the results are unequivocal. We cannot and will not do without them. There is no doubt that we have landed in the post-PC era. The mobile device is the remote control for all aspects of life. A day without mobile is a day wasted.

6.1 Charismatic technology

Although the term *persuasive technologies* has not been adopted everywhere, the phenomenon is well known in this age of real-time interaction and engagement. In *Me the Media*, the VINT study on social media published in 2008, we discussed the transition from *ICTech* to *ICTainment*. Developments have shifted into high gear with mobile apps and multi-touch on display devices. It is no longer acceptable to allow a person's attention to lapse. They must be entertained and infotained continuously. The key words here are “fun” and “amusing,” but “relevant” and “to the point” should never be forgotten.

The seductiveness of mobile devices and their apps cannot be denied. They are so enticing that we cannot help but become addicted. We identify with them and cannot live without them. The combination of temptation and processing power has organizations plunging into the double *persuasiveness* of smartphones and tablets. Existing media also play a major role in this framework. One of the app effects is that mobile display devices turn *cold media* into *hot media*. Products, billboards, newspapers, books, magazines, television programs, people — everything is clickable and can be ordered on demand. The challenge is to set up information systems and campaigns that focus on immediacy and perceptualness. Motivating action with QR codes is currently a popular approach to this new reality.



6.2

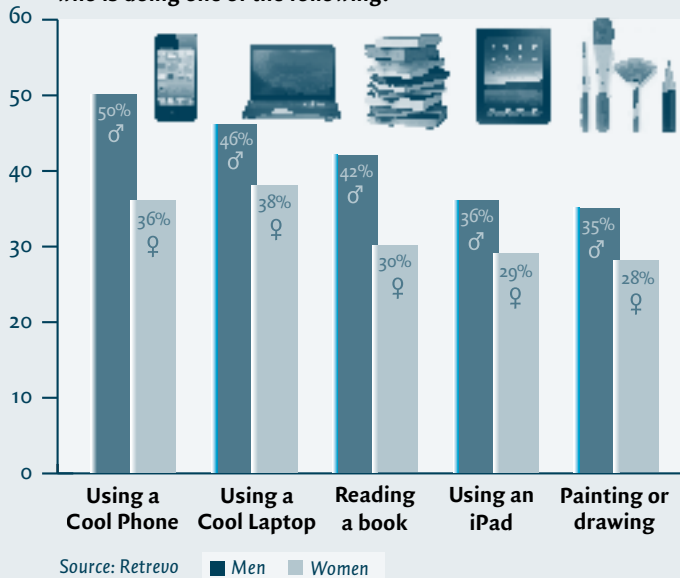
Modern media addiction

There is convincing evidence of our addiction to media as shown in the *The World Unplugged* project of the American International Center for Media and the Public Agenda, in collaboration with the Salzburg Academy on Media & Global Change, in which a thousand students participated from thirteen universities around the world. The subjects had to remain offline for twenty-four hours; thus, no email, Facebook, mobile phones, music, news, television or SMS. Here are the most important results of the survey:

- 1 Media addiction among students shares many traits with actual physical addiction, including depression and withdrawal symptoms.
- 2 The majority were not able to make it through one day without media.
- 3 They indicated that the mobile device had literally become an extension of themselves.
- 4 Their digital behavior was not simply a habit. It was essential to the way they organized their lives.
- 5 Students maintain and use different identities to reach people on different media.
- 6 Being media-less unveils an existential loneliness.
- 7 Many students did not know what to do with their time. They did not know what to do without their media.
- 8 A mobile device is both a Swiss army knife and a security blanket.
- 9 News is anything that has just happened. This applies to the world news as well as what is happening to friends.
- 10 "Getting" the news is a thing of the past; the news now comes directly to the person.
- 11 One hundred and forty characters is enough to communicate meaningfully.
- 12 Television is escapism.
- 13 Music is indispensable. Not just to make it more bearable in the classroom, but also to regulate mood.
- 14 Email is not dead, it is just older and mostly for work.
- 15 There is a way back. Some of the students managed to find another satisfying pastime instead of media addiction.

Collectively, we are addicted to each other and we accept this situation. Colleagues steal glances at their BlackBerry during a discussion, the iPad does uninterrupted service as a multi-tasker, and students Facebook during lessons. The *Retrevo Gadgetology* study shows that half of those under the age of 25 do not mind at all if they get messages during dinner. It is quite normal to get a tweet or Facebook update at night in bed. One fifth of respondents even Twitter or Facebook if they wake up during the night.

Are you more likely to be interested in, or attracted to a person who is doing one of the following?



The BlackBerry launched in 1999, was the first mobile phone that was clearly addictive. Email was checked continuously and the environment was ignored. We have known about media addiction for a long time. Being a bookworm is quite respectable. Our relationship with noise and silence is complicated, but one may conclude that we cannot make do without our media. Everything will converge in display devices and what was expected has also happened. Not only students, but all of us are in the grip of our addictions. Research conducted in August 2011 by the British Ofcom reveals that 75 per cent of adult smartphone users have a severe or moderate addiction. It was less than 40 per cent for the older cell phone. Among young people it is even worse, nine out of ten are smartphone addicts. Twitter and Facebook especially feed the addiction.

A Stanford University study of 200 students also shows that a large number of the iPhone users consider themselves addicted. Ten per cent fall into the highest category of addiction and 34 per cent placed themselves just below that. It is striking that only 6 per cent said they were not addicted at all. One third of non-addicts were concerned that they would eventually be addicted. The majority said that the iPhone is “cool” and “fun”, but also “addictive”, a “fetish” and a “drug”. And, that it also provides a good dose of self-confidence. Some admitted that they sometimes petted their mobile device or

feel that their iPod is jealous of their iPhone. Professor Tanya Luhrmann, who led the study, was struck by the high degree of iPhone users who identify with their device.

6.3

The new “smoking”

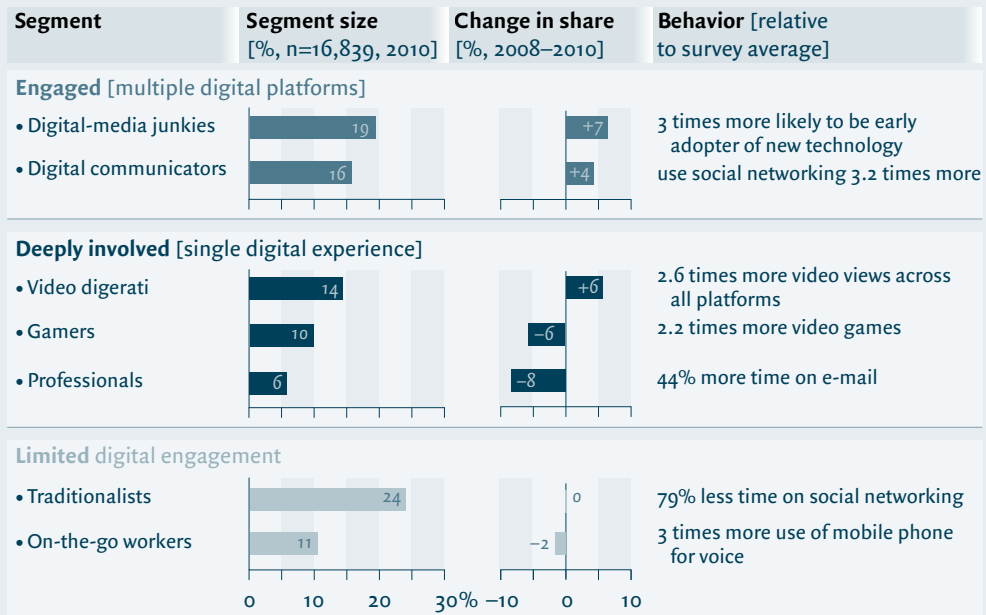
These results are consistent with the outcome of a study performed by the British consumer research organization, Intersperience, where 53 per cent of the 1,000 respondents aged 18 to 65 indicated that they became upset when they had no access to the Internet. In fact, 40 per cent reported themselves lonely, and those denied access to net devices for twenty-four hours experienced it as a real nightmare. The TechCrunch blog summarized the research as follows: “Technology is the new smoking.”



The comparison with smoking has also been made by Martin Lindstrom. He is a neuroscientist known for his research on brand perception. In his studies, he prefers to look directly at the brain using fMRI scanning techniques rather than applying the indirect method of using questionnaires. Lindstrom had already carried out research on smoking behavior and concluded that smartphone addiction now provides a similar picture. Lindstrom calls it mimicking behavior. As soon as someone in a group picks up and looks at their smartphone, so does everyone else. Previously, we saw this behavior with cigarettes. Now that smokers have become the pariahs of society, people are grabbing the more socially acceptable mobile device.

McKinsey also focused on the addictive aspect of new media. The following report appeared in July 2011: *Are Your Customers Becoming Digital Junkies?* The answer is yes. It is particularly striking how quickly this happens.

US Internet users [aged 13–64]*

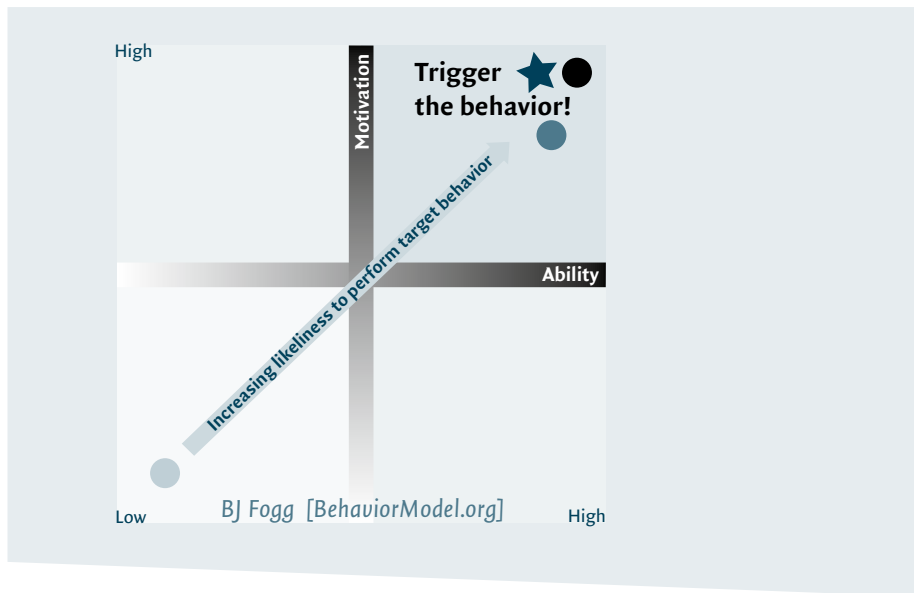


* Source: 2008, 2009 and 2010 McKinsey surveys of ±20,000 US Internet users, aged 13–64

6.4

Persuasive technologies: mobile domain par excellence

In the late 1990s, Professor B.J. Fogg at Stanford University started the Persuasive Technology Lab. He carried out research on *Charismatic Computers*, namely, the seductive power of digital devices. In 2003, Fogg published his book *Persuasive Technologies: Using Computers to Change What We Think and Do*. According to Fogg, the new challenge for organizations is how to participate in the game to persuade and tempt because “machines are designed to manipulate behavior.” We can add media to this mix. In fact, it is true for all the *Extensions of Man* described by McLuhan. Yet digital technology — both hardware and software — tops the list here. Persuasive technologies are, of course, most effective in stimulating behavior when the mood and time are right for people to engage immediately. Only then do they work properly. This aspect may seem the least you would worry about given the proven irresistibility of display devices and their apps. However, you do need to ensure that your apps are conspicuous among all the others. Basically, “putting hot triggers in the path of highly motivated people” is really what it is all about.



Those observing that their blog post has received a reaction will be motivated to look. You do not need to do anything too complicated. In this case, the trigger is a simple email. If the message had been about filling in a survey, the motivation to respond might be lacking due to a shortage of time and the anticipation of a fair amount of effort. But a personal response to your own blog post is a different story. Latent motivation, opportunity and triggers form the golden triangle of persuasiveness. If you want something from someone, you have to steer them in that direction. You see something, read about it, and can take action immediately. With the app phone, that is as easy as can be. People can vote on something, donate money, read something, watch a YouTube video, take advantage of an online offer — all decided and done in the fraction of a second. When we see a billboard with the message “buy our delicious pastas” there is no “buy” button that we can instantly press. This is why the motivator on a billboard is *cold* and the motivator on an app phone is *hot*. The stimulated behavior can be carried out immediately.

The seductive power of apps irrefutably puts them in the top rankings for tempting and manipulating people. The startling number of actual and projected downloads speaks for itself. The question no longer concerns how we are going to store digital information, but rather how we will display the digital information. And, of course, it will be done so that the user cannot escape taking some kind of action. Display devices and apps have dictated that design, marketing and advertisements are more interwoven with IT.

6.5

Triggers, engagement and enticement

Apps or widgets on your TV allow you to participate directly. Thanks to this app effect, traditional media have also become hot in the sense defined by Fogg, and the daily influx of enticements and manipulations to take action are increasing. Those who passively wait for the public to come to them will lose brand awareness and their market position. Today, everything happens in real time. And this includes marketing and advertising in newspapers, magazines and TV programs.

The TV as a hot interactive medium allows immediate reaction, just as if it was an app phone. The friends in our social network appear on our display device and tell us that football has started on the other station. It becomes child's play to find more information about an actor, or perhaps the sofa on which he is sitting. Everything is clickable, readable, accessible and can be ordered. Advertising people understand how important this is. A lot of money is made through billboards in virtual worlds, banners on websites and commercials on TV. Media attention translates directly into dollars. Companies buy "attention" anywhere where there are people. And anywhere can be in the football stadium or at home in front of the television, and so on. At the end of 2011, Google opened an app store for television services. "Once you have Google Television you're not going to be passive, you're going to be very, very busy. It's going to ruin your evening. That's our strategy", according to the former Google CEO Eric Schmidt at the introduction of Google TV in 2010.

You can use your phone to scan a QR code to easily jump from a cold medium such as a newspaper into some kind of action on a hot medium. Beyond ads, other similar codes are appearing, all steering people to special offers and orders. If there is sufficient latent motivation, people will reach for the mobile devices they keep close at hand. Today's image recognition capabilities can work just as well, but a QR code is an attractive trigger that makes it immediately clear that something special is waiting.





If an ad is just too racy to show on the main street, the QR code can take its place. The QR code image in the Uncensored campaign by Calvin Klein takes you to the webpage ckj.mobi/content/desktopVideo.html. A glimpse of a women's breast is revealed near the end of a racy clip. Clearly, the app effect offers many new opportunities.

The idea of having a seducer in your pocket instead of just an app phone may not be so pleasant. We want to make our own decisions

with our own free will. In their book *Nudge*, Richard Taylor and Cass Sunstein make it clear that this idea of free will is rather utopian. We are constantly subjected to temptation and the smartphone is not the only device that does this. There are hidden triggers everywhere that push our decisions in a certain direction. Every number, picture and design has attributes that implicitly influence our choices without our being aware of it. In this context, objective information does not exist. In *Nudge*, Taylor and Sunstein particularly reveal the human defects in our decision-making processes. Many examples come from the 1974 classic *Judgment under Uncertainty: Heuristics and Biases* by Tversky and Kahneman. They describe how people flounder while processing information and how we are influenced by the way in which information is presented to us.

6.6 Creating persuasive technologies

The entire evolution of mobile persuasive technologies is still in its infancy. It is not easy to predict how this will turn out. However, Fogg describes how you can deal with it in his article "Creating Persuasive Technologies: An Eight Step Design Process". Namely, you make simple goals, take small steps and carefully consider your best practices. There are of course textbook examples such as Amazon and Facebook.

Experience has shown that persuasive technology projects are often too ambitious when first introduced. A good example is getting people to stop smoking. For it to be successful, the intermediate steps should be clearly defined. A first step might be to entice smokers to supply their email address and follow up by coaxing them into downloading a health app. Then, get them to tell friends, to admit that they are working on quitting. And so on. Timing is everything in the art of seduction.

- ◆ **Step 1** is obvious: choose and focus on simple behavior. The behavior in question might emerge from a creative session, and naturally has to form part of the larger objective being pursued. So instead of “quitting smoking”, the goal may be to read two pages every day from the book by Nico and Tine about quitting smoking.
- ◆ **Step 2** is to reach the audience that is responsive to the message. This is all about presenting the right triggers to a highly motivated audience. These people do need to be a little familiar with the medium being used. They may arrive at the app for stopping smoking via another health-related app. The Genius feature on iPhone works in this way. People who have downloaded one particular app have also downloaded several other particular apps. Amazon has been doing this for years.
- ◆ **Step 3** revolves around the question of why the target group has not yet exhibited the desired behavior. Is there a lack of motivation because it is difficult — this is related to opportunity — or a lack of well-timed triggers? The above steps are repeated until the desired behavior is achieved.
- ◆ The golden triangle of motivation, opportunity and trigger also helps in **step 4**, namely, the choice of platform, be it game, text message, Facebook, smartphone, and so on. Which one or combination of these are most suitable in terms of simplicity, motivation and the right moment for a trigger? And how they work together? If the necessary iterations are completed for these four steps, the best practices will become apparent. We will go through the steps quickly:
- ◆ Find relevant examples of *persuasive technologies* (**step 5**), imitate these (**step 6**), and implement and test in brief cycles (**step 7**). If this is successful, introduce the expansion phase (**step 8**).

6.7

Engagement in practice

What tone should organizations strike to encourage more customers and employees to become involved? Fogg selects hope as an important motivator: “In my view, hope is probably the most ethical and empowering motivator.” It might just as easily be “sociability”, particularly because Fogg mostly uses Facebook as an example. People are much more interested in themselves and their surroundings than in messages issued by organizations. A third possible starting point is “fun”. In this case, we look to the gaming industry for the knowledge that has accrued in the last decades. The final ingredients are then “location” and “timing”, which equates to: I am motivated to do something, right here, right now. This follows perfectly from the precept of “putting hot triggers in the path of highly motivated people”.

The right time at the right place is important when it comes to motivation. For example, we know from eBay that sales increased significantly because of the iPad. More

eBay shopping is done in the bedroom. The application on which all eyes are now focused when it comes to location and timing is called Foursquare. At one time Yahoo offered 125 million dollars for this simple tool that does not do much more than continue to tell you where you are located. Its slogan is “unlock your city”. As soon as you arrive in a public place — a cafe, office, football stadium — you know let it know where you are. Your friends can then see this or read about it on Twitter. If you do that enough times, say at your favorite pub, you can become its virtual mayor. Foursquare has over 10 million users and reached its billionth check-in in September 2011. The participants enjoy it when the location owners give something back to for all that Foursquare activity, such as a free meal, beer or coffee. In the United Kingdom, Domino Pizza partnered with this location-based games service in July 2010 and reported a sales increase of 29 per cent, more than 25 million dollars. The Foursquare app was the basis for the campaign where people could earn free pizzas or side dishes, depending on the number of messages sent. Soon, when everything is integrated and everything runs smoothly via the payment function of the phone, it may be an entirely different game. Then, digital payment will be linked to checking in, badges and may-orship, and become a huge pulsing and motivational media experience.

The power of gamification

It is thus a matter of fun, hope, sociability, mobile device and location. But there is more to it. Checking in at Foursquare earns you points and status. You can become the mayor of a location. Being a virtual boss, even if means little in the real world, gives you get a sense of authority and standing. It is exactly these factors that are examined in the very young discipline called gamification. Gamification is a concept in which the basic elements in these games that make them fun and engaging are applied to things which are not a game. Gamification is a new term for the older term *serious games*. The *serious* part had to go because that gave exactly the wrong impression. *Serious* must become *fun* and that is pretty easy. “Anything can be fun if it is designed well”, says gamification guru Gabe Zichermann, such as saving for your retirement, going to the dentist, making a hairdressing appointment, and so on. Anything can be jazzed up by means of gaming principles. This leads to greater involvement. In his book *Game-Based Marketing: Inspire Customer Loyalty through Rewards, Challenges, and Contests*, Zichermann says that any games and rewards to increase loyalty must be based on SAPS: *Status, Access, Power* and *Stuff*.

Zichermann states that if you create a *player journey* such that it rewards people with status, additional access, extra stuff, or more authority, then you have added significance to the mechanism. This could be an app on a smartphone. The player journey in this case is the digital customer experience, and the journey that the customer takes can be seen as the story, the game. Rendering this into a concrete product, we have

the example of a frequent flyer card that gives you access to many unique extras and privileges, especially if you are platinum member for life.

It is quite logical that Customer Relationship Management is an area where engagement based on these principles will catch on. Salesforce has exactly this type of product. It is called iActionable, putting the “I” into action. Salesforce states that this is the first *gamified* CRM system that makes sales and maintaining customer relationships a game. It is a cross between Facebook, Hyves and LinkedIn. Sellers score KPI points to achieve new levels. This also allows you to integrate the subgoals that are orphans in most CRM systems. The action of giving a status update about your customer after the conversation that you just had with him is often skipped. However, if this earns bonus points and can be added easily, it becomes the default action. The Salesforce app strategy is worth noting. Apps in Salesforce’s online store can be voted upon as part of the AppQuest game. The top four are put into production.



6.8

Wrapp-up

Although mobile devices are best suited to pushing information, it is the users who select the apps to download, the QR code to scan, what they allow to trigger them, and which triggers they themselves pull. In this chapter, we have described the ability to entice and persuade, especially from the perspective of the *System*, the organizations that consumers and employees want to draw more within their sphere of influence. In a *Digital Commons* situation, everyone contributes to this game of seduction. Perhaps the most popular app will be built by a customer or a party outside your line of business, such as Greenpeace introducing a “sustainable fish checker”. Price checkers like ShopSavvy are already there. What does that do to your price policy?

The two new fields of persuasive technologies and gamification emphasize the stimulation of desirable behavior. For example, it might be to encourage young people to eat healthier, people to kick smoking, or to help people to live more energy-efficiently. When the engaged perspectives are disclosed, we may soon all be programmed into exemplary global citizens. This is a serious ambition, which is elaborated upon in the

book *Reality Is Broken: Why Games Make Us Better and How They Change the World*, by Jane McGonigal. She is the creative director for the company Social Chocolate, which they themselves say is the maker of “world-changing games powered by the science of personal and social well-being”. The high-profile study by McGonigal shows that we can build stronger communities and can work together by playing bigger and better games. That is, *Social Business* with an irresistible chocolate sauce. And we can do that using games, display devices and apps.

On the opposite side are the companies that promote more consumerism. This interplay of steering behavior and letting it be steered is certainly pivotal in organizations’ app strategies. But what does it do to us when we are continually subjected to attacks by digital utopians and businesses that want something from us? What happens when books start talking back, billboards become hot media, and even a quiet evening in front of the television becomes a thing of the past? What happens when everything around us screams for attention and the addictions work overtime? Will we really become better global citizens? Will we learn something from this? Will we become smarter? Or will we become blunted and antisocial?



“The World Brain is no Utopian dream. It is an absolutely essential part of the new world community. Something which may even be recognizable in active operation within a lifetime. This consciously and deliberately organized brain for all mankind.”
(H.G. Wells, 1937)



7 Post-PC behavior— *blessing or curse?*

Table of contents

- 7.1 Digital progress 133
- 7.2 Smarter or dumber? 134
- 7.3 Just look it up 135
- 7.4 Abstractions and the fear of falling behind 138
- 7.5 The app effect on Gardner's intelligence wheel 140
- 7.6 Information Behavior Change Potential 147
- 7.7 Wrapp-up 149

The immeasurability and intelligence of our ever-rapidly expanding digital world has not gone unchallenged. And not only because of our own excessive digital behavior that accompanies it. Is it really improving our lives? In the final outcome, will all the frenetic activity make us lose essential human skills, perhaps resulting in hereditary weakening of the brain? Laziness appears to be the lesser evil. When we want to know something we simply look it up. And not in a book, but on the web. The Internet is the largest encyclopedia and database that has ever existed. It is a kind of collective global brain. Even typing is less necessary as the sensors of our post-PC devices automatically acquire images and sound. All data are automatically analyzed and interpreted. Location and movement can be correlated with high accuracy and with all information on the Internet. Humanity has never encountered this in the evolutionary process. We have a primitive sense of time and direction, and a small amount of memory and recall. The development of knowledge and science was laborious. And that is about it — leaving psychic ability to one side. Moreover, all of our innate abilities and intelligence appear to have remained at the same level for several thousand years. And so, we can be grateful for the digital technology of today. We have thus resolved all human handicaps. Or have we?

7.1 Digital progress

Information is now analyzed in real time and matched against the vast and increasingly sophisticated database called the Internet. We receive neatly structured results with all the desired details, tips and links. It is an unprecedented wealth of knowledge and recollection. Along with it comes the digital brain activity of a collective global brain. The evolution of this combination is startling in contrast to our own personal innate capacities. In the late nineties, the joke was that, on the Internet, no one knew that you were a dog. Now we wonder how it is that Google and Facebook and other organizations know us so well. And there is no end in sight. New techniques and algorithms are performing analyses and predictions based on so-called *Big Data*, data stores containing petabytes, exabytes and soon even more. This is an example of what is supposed to help us move forward to meet the many fundamental challenges of the 21st century.



2000

'On the Internet, nobody knows you're a dog.'



2010

'How the hell does Facebook know I'm a dog?'

7.2 Smarter or dumber?

The digital power we have developed accelerates growth toward a *Smarter Planet*. This is occurring on several fronts, according to various sources including IBM. The scope of IBM's *Smarter Planet* campaign identifies the following thirteen cross-sector domains: *Energy, Money, Healthcare, Trade, Infrastructure, Oil fields, Government, Retail, Cities, Telecommunication, Traffic, Food and Water*. But how are we really doing?

Malfunctions seem to be getting the upper hand on all sides. We are less able to focus. We continuously divide our attention between digital stimuli. This is mostly due to the impressive range of social media combined with perceptual enticements presented by mobile display devices. Today, it appears normal to have digital distractions, and apps make it even easier. They act as neon signposts beckoning us to exactly that part of the digital universe we crave. Chat, news, Twitter, Foursquare, Facebook, Google+, Scrabble, Sudoku, sport, sex, shopping, photos, video, you name it. Moreover, we would rather be lazy than tired, a habit we have not unlearned throughout our whole evolution.

If the proverb "Why do it the hard way?" leads to fancy new inventions that is all for the good. But if the rest of the world then spends half the day as a consumer, that raises troubling questions. Attention scatters in all directions. Proactive preparation of knowledge noticeably declines. Addictive behavior increases. And worst of all, we satisfy ourselves with the most ostentatious and sensually stimulating superficial displays. Superficial communication is normal, yet the group feeling we experience online is intense. This results in us living in our own lavish digital funfair where we continually exclude our immediate vicinity. We also ignore anything that demands a little extra focus and intellectual effort.

It was and is no different than television, portable music players and computer games. But now, in the post-PC era, this euphoria that is experienced on such a personal level may be adopting very disturbing forms. Apps and display devices are the new beads and baubles with which our physical, mental, social and intellectual vanity can be measured and permanently satisfied. All four are dulled because of a lack of focus. This makes the average person on earth a caricature of themselves. We will become even lazier and are in continuous danger of giving our attention to the wrong things. If this goes too far, we will be given a prescription for ADD or ADHD, such as Ritalin. This is also quite popular as a party drug. In popular parlance, Ritalin is often jokingly called "Vitamin R". The fact that this is meant as a joke speaks volumes. It seems perfectly acceptable that the social individual is actually becoming increas-

ingly more antisocial. And, perhaps he is also becoming dumber. (Wikipedia devotes considerable attention to this discussion on the webpage en.wikipedia.org/wiki/Is_Google_Making_Us_Stupid.)

Nicholas Carr breathed new life into the topic in 2008 in his article “Is Google Making Us Stupid? What the Internet is Doing to Our Brains”. Or maybe we are becoming addicted even faster to anything that comes our way via the social media, as shown by recent research on American teenagers aged 12 to 17 years by CASA, the Center for Addiction and Substance Abuse. Do these addictive associations arise from an overabundance of inappropriate examples? Or is there a profounder reason? The social surrogates you use and apparent losses in sham intelligence do not make you look that bright. Some people point to MRI scans of our brains to make the warning more forceful. How did we end up in this post-PC era with all those extra beads and baubles? And how justified are the concerns in this regard? Brain activity is raised and lowered and brain segments shrink and grow. What does that really mean?

7.3

Just look it up

At this point, we can demonstrate how simple it is to answer the first question. How exactly did we end up in this post-PC era? Which historical trend applies to this development? A clever bit of surfing leads us to the Web History class that you can take at the UC Berkeley School of Information. Unfortunately, practical and tenacious research has become a dying skill and that is probably exacerbated by apps and *information at your fingertips*. We do not want search engines. We want search services. This is in itself quite logical, except that the current services excel mostly in common or garden variety information. In any case, we can now answer the first question about how we have ended up with these digital anxieties and landed in a debate about becoming smarter or dumber. Erik Wilde and Dilan Mahendran provide us with the following from their Web History class. Of course, it should just be some general and ready knowledge that everyone knows at this particular juncture. Unfortunately, academia is lurching blindly along and trailing behind the historical turning points.

The history of the web in a nutshell

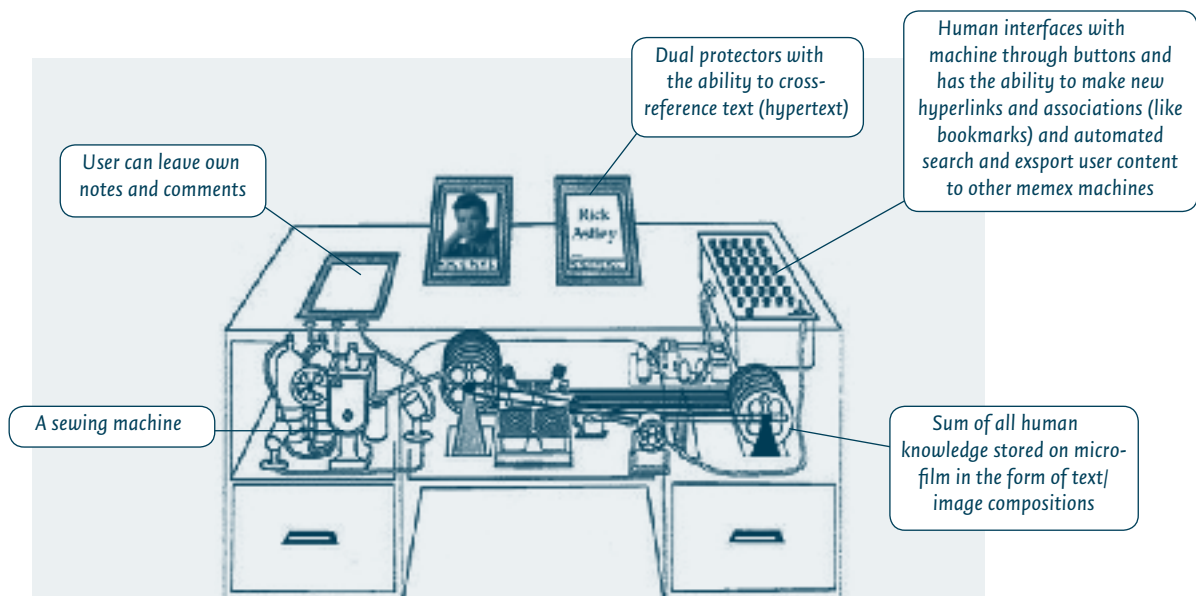
Although we can thank Tim Berners-Lee, the inventor of the Internet, for our current *Global Information Space*, the idea is at least a century old. There is no continuous line through the events since that time because the details of what happened as the years passed were unknown or simply forgotten. And not all of it is exciting. It is simply a matter of describing, recording and utility of human knowledge and experience. We should really

start with the ambition of Denis Diderot and Jean d'Alembert for their *Encyclopédie*. The first part appeared in 1751 at the end of the European Enlightenment. The purpose of this *Encyclopédie* was simply to present the order of and associations within human knowledge and more specifically the general principles for any science and practical discipline plus the key facts and events.

Wilde and Mahendran then jump more than one hundred years. In 1895, Paul Otlet began work on the *Mundaneum*, his world knowledge repository that he described as “a kind of artificial brain”. He made more than 12 million cards that served as part of a physical “hypertext” system before the term even existed. By 1934, Otlet was already thinking about electronic implementation. And thus, he followed in the footsteps of Wilhelm Ostwald. In 1909, using the money Ostwald retained from his Nobel Prize in Chemistry, he continued to finance Die Brücke, an international institute for the organization of intellectual work. Ostwald was aiming at a “world mind” that greatly resembled the aspirations of Otlet. In 1937, H.G. Wells published his article “World Brain: The Idea of a Permanent World Encyclopaedia” as a contribution to the new *Encyclopédie Française*. Wells ardently believed that the entire corpus of human knowledge would soon be accessible to everyone across the world. Not only science, but also the common man would be able to find what he needed:

“There is no practical obstacle whatever now to the creation of an efficient index to all human knowledge, ideas and achievements, to the creation, that is, of a complete planetary memory for all mankind. [...] It can be reproduced exactly and fully, in Peru, China, Iceland, Central Africa, or wherever else [...] It is a matter of such manifest importance and desirability for science, for the practical needs of mankind, for general education and the like, that it is difficult not to believe that, in quite the near future, this Permanent World Encyclopaedia, so compact in its material form and so gigantic in its scope and possible influence, will not come into existence.”

In 1927, Emanuel Goldberg had built the first electronic document retrieval system. You could key in a number, then press a button and three minutes later the desired microfilm document appeared. Wells had thought up the same idea for his World Brain as did Vannevar Bush for his Memex, the *memory extender* he described in 1945. The following Memex illustration shows remarkable resemblances to the tablet display devices of today.



The Memex machine

From 1960, progress started to move quickly. In that year, Ted Nelson got the first computerized hypertext project called Xanadu under way. In 1974, he inspired many digital pioneers with his book *Computer Lib/Dream Machines*. NLS became the first working hypertext system: the oN-Line System of Doug Engelbart and his Augmentation Research group. They also invented the mouse and window concept. These initiatives grew into NoteCards created by Xerox Parc in 1984 and HyperCard created by Apple Computer in 1987. In 1980, Tim Berners-Lee built the hypertext system ENQUIRE, named after a reference work in the Victorian period. Four years later, it was suitable for multiple computers and in 1989 Berners-Lee presented the Distributed Hypertext System. It was intended to be flexible and intelligent. It supported different computers and operating systems, automatically recognized patterns and gave the latest status update through so-called *live links*. We had arrived in the PC era and Web 1.0. Web 2.0 followed at the turn of the millennium. We are currently in the post-PC era with an increasing number of display devices. They are becoming cheaper and more powerful. They have a Natural User Interface (NUI) instead of a window-mouse interface (GUI) and we can choose from millions of apps.

It is that simple. We have summarized 33 slides into less than 700 words and a picture. Is your interest sufficiently aroused to want to know more? In that case, you... look it up. For example, you could search for the YouTube video about how Paul Otlet proposed his Mundaneum in 1934. Wikipedia has many comprehensive articles. Leave Facebook and Twitter alone for a few moments and focus your undivided attention on a topic that you have chosen and that truly gets you going.

7.4

Abstractions and the fear of falling behind

Blessing or curse? This kept the Egyptian king Thamos busy when the god Thoth offered him the alphabet as a transition from prehistory to history. We know of Thamos's fear through Socrates and Plato. The king's fear was that recording our business in writing would make us permanently forgetful. This monarch would certainly have restricted the Internet.

Our memory is very precious to us. This is timeless and it has nothing to do with Alzheimer's. Michel de Montaigne was also concerned about his bad memory in the sixteenth century. Of course, that is befitting for the father of skepticism. De Montaigne methodically asked himself what he actually did know. Before Plato, the Roman poet Simonides of Ceos noticed that mnemonics using places and positions helped fallible human memory perform significantly better. Simonides laid the foundation for the *Ars Memorativa*, the art of remembering. In our time, an ordinary American young man Joshua Foer, journalist and author, is living proof that the so-called *memory palaces* of Simonides and other such tricks can work exceptionally well. The examples mentioned above are from his book, which appeared in early 2011 under the title *Moonwalking with Einstein: The Art and Science of Remembering Everything*. The book is about Foer's experiment in training his memory. Eventually, he was able to remember things so well that he won the annual USA Memory Championship in 2006. His performance is so remarkable, especially in this age of digital distraction, that the book is being adapted to film by Columbia Pictures.



Notwithstanding Foer, there is still a gnawing concern. “Internet Alters Memory” was the headline in *The Slate* in the summer of 2011. This was the result found in recent research from Columbia University, entitled “Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips”. It is so enticing to keep overdoing it. What is actually changing? Is it physiological? Is the brain that is changing? Is it our memory that is changing? Are there structural changes in the use of the human memory and processing faculty? Or is it just about how we do things when we get the chance? It may be the first expression of the capacity to adapt. The Internet is right there, so just look it up. The assumption being that everything will still be there tomorrow, namely, the search facility and the results. It is no wonder that we rely so heavily on this Google effect. And now, over and above the app effect, we also rely on the presentation of information and knowledge in bite-sized chunks that we do not even have to search for anymore.

Unlike the suggestive headlines in *The Slate* and other publications, the researchers spoke circumspectly about changes in the processes of human memory. In any event, what will change or maybe the only thing that will change is our behavior. Maybe the Google effect is also a prelude, as suggested by Betsy Sparrow, to understanding and associating things in a larger structural context: “perhaps those who learn will become less occupied with facts and more engaged in larger questions of understanding.” This sounds bombastic and hardly scientific.

Quoting with approval, Nicholas Carr, author of the Pulitzer Prize nominated book *The Shallows: What the Internet Is Doing to Our Brains*, ends his blog post with a final note about the study by Sparrow and her team, on the issue of loss of concentration and intense experience. He comments:

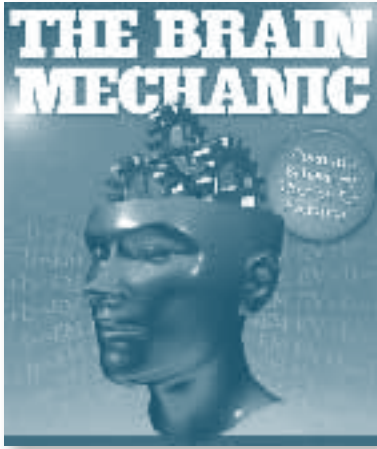
“We are becoming symbiotic with our computer tools, [...] growing into interconnected systems that remember less by knowing information than by knowing where the information can be found. [...] We must remain plugged in to know what Google knows.”

This is clearly factual, but not in any way earth-shattering. Nor is the title above his blog post, “Minds Like Sieves”, a groundbreaking insight. Simonides of Ceos was already aware of this and the life’s work of internationally renowned Professor Willem Wagenaar was about our memory being like a sieve. The abstract cliffhanger that Carr ends his blog post with is revealing:

“As memory shifts from the individual mind to the machine’s shared database, what happens to that unique ‘cohesion’ that is the self?”

Memory, the brain, mind, and now “the self”, which is some kind of soul and relic from psychoanalysis and *Gestalt* therapy. Do we need such antiquated abstractions like this to shed light on the discussion in 2011?

The same can be said for the analogies that have motivated the smarter-dumber and memory debates for centuries. We still occasionally use terms like brain-busting when a lot of mental concentration is needed or the archaic expression “machinery of the mind”. The mechanical was followed up by the computer and then by the notion of artificial intelligence. We have always believed that digital technology would surpass our own intelligence. For many, this became reality when the IBM computer Deep Blue defeated world champion Garry Kasparov at chess in 1997. Despite all that, we know the question as to what intelligence really is remains unanswered. One of our cumbersome abstractions may in fact provide the best answer. We have taken to the MRI scanner to explore our world of analogy. We can now observe what is happening in our brains. We can see it working at the neuronal level. However, we still have

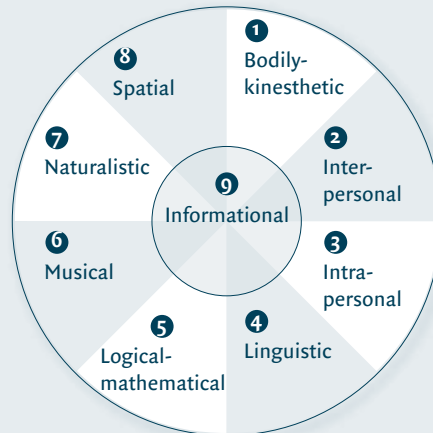


little idea of how these really correlate with our favorite abstractions, memory, mind, spirit, self, soul, intelligence, smart and dumb. And that is putting it mildly. A multi-faceted examination will break down such discussions into something that is much more easily understood.

7.5

The app effect on Gardner's intelligence wheel

It is an interesting exercise to see how the various applications on smartphones, PCs and tablets correlate with the eight different types of intelligence that psychologist Howard Gardner published in 1983 in his book *Frames of Mind: theory of Multiple Intelligences*. The topic of intelligence, the discussion whether someone is smart or dumb, is much more nuanced than the average IQ or EQ test can show. The range of cognitive skills is very broad. The pragmatic value of Gardner's theory has brought him much acclaim. In 1981, he received a MacArthur Fellowship for his work, an award also known as the Genius Award. Below, we associate different aspects of the app effect with the nine qualitative intelligence domains classified by Gardner. There are apps that map into every domain and, in that context, make us "smarter".



Gardner's intelligence domains

Bodily kinesthetic

This relates to the control of bodily movements and the ability to use things.

Not quite ten years ago, RSI was a modern computer illness. Any company that had anything to do with computerization was affected by it. One solution was a program that interrupted your work every so often. Work was automatically suspended and you had to perform certain exercises in order to prevent RSI.

In November 2006, the Nintendo Wii arrived on the market, a new type of joystick that acts as an extension to your hand. All of a sudden, it was possible for you to play tennis in your living room almost as if you were really on a court. Nintendo exploited this even further with the introduction of the Wii Balance Board to accompany games like Wii Fit. This was the gamification of fitness in the living room, and also the opportunity to improve your balance in games for skiing and skateboarding.

At the end of 2010, Microsoft introduced the Kinect for the Xbox 360. The device recognizes your physical movements, which allows you to control a game without a manual controller. Three hours after its launch, the Kinect was cracked. Worldwide, developers began to build inventive applications. Initially Microsoft resisted this effort, but finally decided to accept the *fait accompli* and to allow in creativity from the outside. The following is a very useful hack for the Kinect from the medical world:



Herein lies the power of Kinect. Information can be manipulated using gestures. It is no longer necessary to make indirect contact via keyboard and mouse. Information can respond to your body, as shown in films like *Disclosure* and *Minority Report*. Those were science fiction. Science and fiction have now met. And it has been accomplished by using technology and innovation to map normal human behavior. Technology is starting to act like us.

If you have ever remained standing while playing games with a motion capture interface, you will remember exactly how much physical exertion was actually involved. Muscle pain from gaming is hard to forget. Another remarkable form of fitness is to train the eye muscles in order to read faster. *A Sharp Eye (Fast Reading Training) HD* uses a number of colored balls that the eye has to follow on an iPad display while the rest of the body, including the neck, remains still. This trains the muscles in a variety of tempos to improve reading speed.

Interpersonal

This involves how you deal with and interact with other people.

The most successful applications on the smartphone are Facebook and Twitter. Always having your friends in your pocket is an idea that really appeals to most people. A push on the button lets them know what you're doing. Many other social networks have a link with Twitter and Facebook so you can give status updates. Four-square allows you to indicate where you are and what you are up to. Many people use GetGlue to share favorite books, movies and other hobbies. When we want to share more than a short note, we use DropBox for documents and other files.

We can also add new people to our network with apps like Bump to exchange business cards. Using Hoccer you can slide or throw *ad hoc* files to a person or group without exchanging contact information. The natural interface for throwing and catching makes this application very intuitive.

Intrapersonal

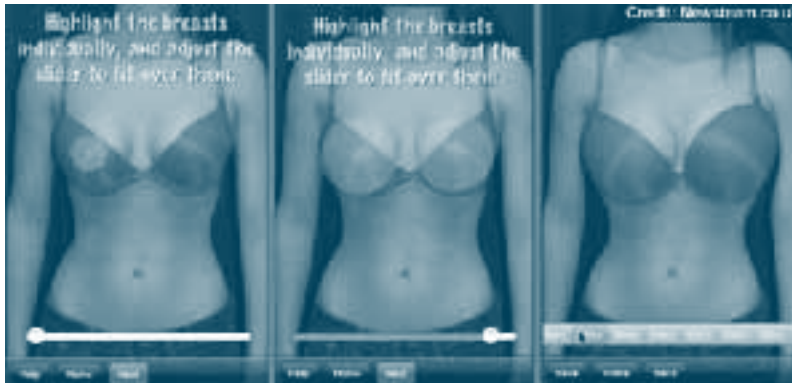
This involves our introspective and self-reflexive skills.

Smartphones are increasingly being used to measure the condition of the body. Applications such as RunKeeper and SportyPal keep track of the distance you run, the duration, the number of calories you have burned, and your heart rate. You can then share your performance online so you can run together virtually, or make a training schedule, or set dates for yourself such as running ten times in four weeks.

There are applications specifically for diabetics that track blood sugar levels, eating habits, movement patterns and insulin delivery.

There are also applications that measure your heart rate or blood pressure. After pressing your finger against the flash of your camera, the device registers the miniscule differences in colors in your fingertip. Another application you place next to your pillow. The app keeps track of how you sleep, including whether you have snored a lot and how long you remained in REM sleep.

Also interesting are the applications that show you what happens to your body if you do something to it. What must we make of the app built on the advice of Dr. Elizabeth Kinsley, iAugment? Women can take a picture of themselves and then see the effect of breast augmentation.



The trend to measure ourselves and our behavior is rising. It can involve anything, including medical data, the amount of coffee you drink, the number of traffic lights you encounter going to work, and so on.

Linguistic

This involves spoken and written language skills.

On most phones, “on” is the standard setting for AutoCorrect. So, no more spelling errors. Even better, you can enter the first letters of a word and your phone will fill in the rest of the word. There is no longer a language barrier thanks to the smartphone. Why should we type if it is much easier to speak into our device? Dragon makes this possible. And not just to enter short commands, but to convert entire sentences into written text.

Google goes even further. If you are standing in China and want to know where the nearest baker is then you say that into your phone in your own language. The question is then played back on the phone speaker but now in perfect Chinese, with the translated text on the display.

Or, maybe you are sitting in a restaurant in a foreign country and do not understand the menu, so you use Google Goggles to translate it. There are even applications that can project the translated text onto the menu, so it appears as if the menu had been made especially for you.

Logical mathematical

This involves logic, abstractions, reasoning, and number skills.

It is impossible to imagine our lives now without a calculator. Mental arithmetic is no longer necessary. It is much easier and more precise to use an app for this purpose. And for the more complex mathematical formulas you can turn to WolframAlpha. Enter your query and the app returns a well-formulated answer complete with visual corroboration.



A lot can be obtained from the training apps. Super 7 HD and Elevens Gems are fun apps where you play with numbers to keep your math skills sharp. UntangleMe is a puzzle where you undo knots, which trains you to think ahead. These kinds of games, as well as Tetris, Tangram, Memory and Bejeweled, apparently keep Alzheimer's disease at bay.

Musical

This involves our active and passive sense of sound, rhythm, tone and music.

There are numerous apps for musical intelligence. The best known is probably Guitar Hero, which is currently present on almost every platform. The more numbers you play, the higher your score. You learn to play a musical instrument effortlessly. This principle obviously has potential for many other applications.

One of the most remarkable musical iPhone apps is the simulation of the ocarina, an old type of wind instrument. You blow into the microphone and work the four keys that the app shows on the display and you produce beautiful melodies. People all over the world are actively sharing their sheet music for this application. YouTube has many videos of people playing this instrument.



GarageBand is an app for the Apple Mac and iOS devices which enables you to make your own musical compositions by combining tracks of several instruments. You can of course play instruments and thus improve your skills. One of the most attractive features of this app allows you to take lessons and so actually learn to play guitar or keyboard, or improve your skills.

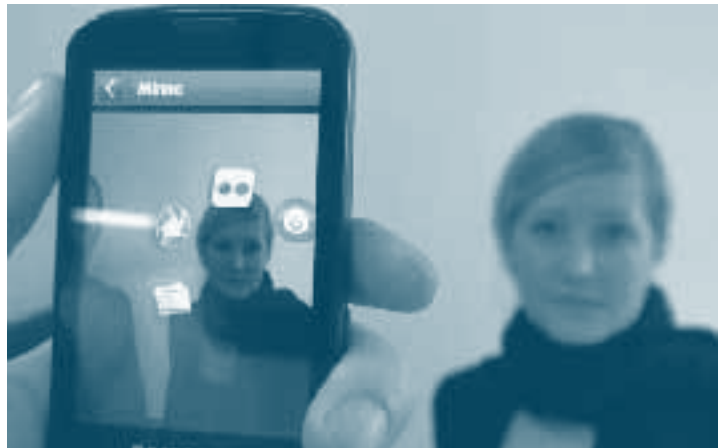
Ever listen to a song on the radio and wonder what it was called? Let Shazam listen to the song for twenty seconds and it will tell you what song it is. Even whistling or humming a melody can be enough for SoundHound to recognize which song it is. Naturally, you can buy this song straight away.

Naturalistic

This involves how we relate information to our physical environment.

The capacity to recognize objects, buildings and people will soar in leaps and bounds in the next few years. Computer algorithms and filters are becoming more sophisticated and stimulate the growth of applications. One of the most well-known applications is face recognition. Recognizr is now able to recognize faces of people and link them to their social network.

Another application for searching visually is Google Goggles. Take a picture of an object and its visual properties are combined with GPS position. This is used to determine whatever is near you be it a monument, billboard or brand name. A shopaholic can go



shopping just using photographs. Imagine that you have a picture of something you want to buy, say the shoes of a movie star, then you can go to Like.com to find out where you can purchase that particular pair and how much that will cost. Or, you are already in the store and you ask yourself whether there is really as much discount as the salesperson claims. You then check the details using your own bar code scanner on ShopSavvy.

The famous Dutch augmented-reality company Layar really knows how to capitalize on the place where you are. Their smartphone application adds an information layer to the world around you. They call it a reality browser. Are you looking for the nearest ATM? Hold your cell phone up, turn around and it shows you where the nearest cash machines are. Is there a house for sale? Use Layar to retrieve the details from the real estate databases.

Spatial

This involves spatial awareness and the capacity to manipulate objects in your mind.

Previously, we had to lay out roadmaps on the table to plan our route. Now, we have moved on to online route planning or even just set out on our way. Our navigation app provides the quickest or shortest route, even taking into account delays and road closures.

It has been raining applications ever since cellphones were capable of using satellites to determine our exact location. One of the best known is Foursquare, where you can share your location with your friends. Companies have jumped on this. They can send you a special offer when you check in at a location. For example, you could get a tenth hamburger for free.

There are apps to improve your driving habits. And, starting with your first lesson, you can be accompanied by a virtual instructor who will monitor your progress on various fronts, make notes and provide tips and comments during your driving lessons in the virtual world.

Informational

This involves information skills, such as searching and acquiring knowledge. This “informational” category is our adaptation of “existential” intelligence. This is not a Gardner category. It involves how we deal with abstractions.

Information gathering and filtering is becoming increasingly difficult. This has led to all kinds of applications allowing us to find the right items in the Gordian knot of information. For example, Last.fm recommends music that fits a particular musical

preference. Of course, Amazon has been doing the same for years with its recommendations for books.

The assessment of others is also important for separating the wheat from the chaff. Consider selecting a hotel, restaurant or a movie. Social rating is an important way to get recommendations. All you need to serve this need is the abstraction “a good book” or “good music”.

You can issue a spoken command to digital assistants like Siri such “this afternoon to Paris for three days”. Siri books your train ticket at the airport, buys a ticket for the plane, and when you leave the departure hall of Charles de Gaulle airport, there is the taxi driver waiting to take you directly to the hotel that has already been booked for you.

7.6 Information Behavior Change Potential

Cognitive Surplus: Creativity and Generosity in a Connected Age by Clay Shirky appeared shortly after the publication of the book *The Shallows* by Nicholas Carr. The Internet, says Shirky, makes us smarter not dumber because there is a huge potential that we can tap into to change the world. Together, we can think of clever ideas and share them via the web and apps. It is the collective acumen sought by H.G. Wells and crowdsource enthusiasts. The real potential lies in all those hours that we are accustomed to watching TV. That must be significantly reduced and it is indeed happening now that we are engaging more in digital media.

The time that we no longer spend in front of the tube thanks to the Internet is now often being spent usefully. Shirky cites the example of Wikipedia that, thanks to the free time of hundreds of thousands of people, has become a huge source of knowledge. And LOLcats are also an example. The fact that people commit their spare time to add funny text to a picture of a cat to bring a smile to the lips of many must therefore be seen as a meaningful contribution. A price tag cannot be hung directly on an Internet product. The opportunity to help another person is payment enough. Shirky is one of the people with whom we also spoke on the topic of information behavior in the post-PC era.

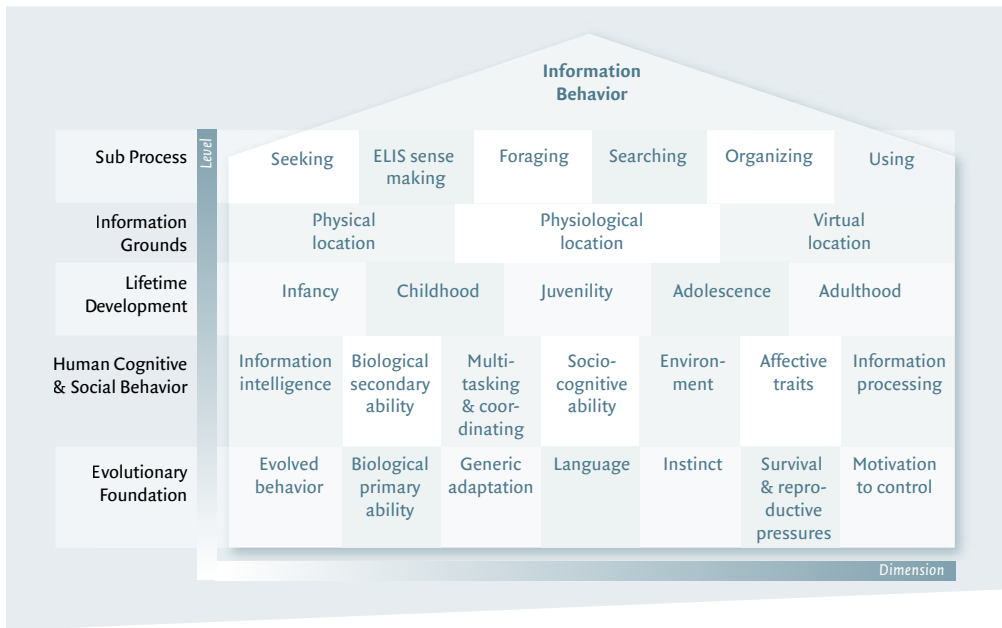
Shirky insists that we will collaborate differently with each other in a *Digital Commons* situation. This *participatory revolution* makes us smarter. As a group we know more and we can share all our knowledge. In another sense, we may become blunter

because we no longer think so deeply. We are becoming smarter and dumber at the same time. We are busy with ourselves via others.



To understand how we can study information behavior, see the *Information Behavior Model* created by Amanda Spink, Professor of Information Science at the British Loughborough University. She is a leading authority in the field of information behavior. Just like Gardner with respect to intelligence, Spink classified different aspects to provide a foundation for understanding the concept.

- ♦ *Evolutionary Foundation* — The most significant mirror that Spink holds up to us is at the fundamental evolutionary level where we want to be *in control*. This urge is one of our most important innate motivations.
- ♦ *Human Cognitive & Social Behavior* — The layer above it involves our cognitive and social behavior. This is about how we are influenced by advertising, media addiction, the limits of our capacity to process information, our own filtering mechanisms, the importance of emotions in information processing and all social processes involving information behavior.
- ♦ *Lifetime Development* — The next level higher is the life-cycle perspective. What changes in our information behavior during the different phases of our life? The effect of apps on a child's brain or an elderly person can be very different. There is still much to discover: for example, can particular brain training avert Alzheimer's disease?
- ♦ *Information Grounds* — This layer is concerned with the location of information. Is it in our head, in the GPS device, or in our environment. There is also a major shift here. More information has been virtualized and localized. This also involves emo-



tion. Previously, children could do mental arithmetic and had to remember things. Now, we can look everything up.

- ◆ *Sub Process* — The top layer is the most useful in terms of understanding. It is a pragmatic process description of our information behavior. What do we actually do? We put out our antennae, we dice up the information, we forage within it so we can keep searching and organizing, and then finally we can use it.

Spink directly places our fairly immutable cognitive and social behavior at the level of evolutionary development. This is followed by the stages of human life, and for these, she makes distinctions by location. A lot has changed in this area over the centuries, especially in the last 100 years. Finally, we take a close look at our everyday behavior. With regard to information, this has undergone a spectacular transformation. The app effect firmly continues that trend.

7.7 Wrap-up

At some point we may have concrete proof that brain changes have also helped form the desired new *Digital Commons* situation. In any case, we have the potential to do more now that we are online everywhere and can create and share our information. The participation society has a promising future that encourages organizations to get

people more involved. Crowdsourcing and co-creation are the buzzwords in this area. *The New Way of Working*, *Life-long Learning* and the new *Social Business* concept fit seamlessly. If we keep going in this direction, we will become more isolated when we are together physically and more virtually together when we are alone. This may lead to some gloomy scenarios. Nicholas Carr conjectures that the era of profound thought is over. In the new *Digital Commons*, we are constantly surfing on the surface of knowledge, but we are unable to really understand something. We may end up in a world full of people with ADD and ADHD. The pharmacy may profit, but what are we buying into?

Perhaps we should just let go of such ideas and simply accept the fact that we have definitely arrived in a different era. In the post-PC era, our everyday lives are becoming increasingly digital in their nature. Yet, it is becoming more and more obvious that people and the information world surrounding them are not as different as we originally thought. We have concluded that intelligence and information can be located anywhere and that we are not as unique as we think. The ones and zeros that make up computer programs are also contained in us. The things around us are constructed via information, just like we are. This is the picture that information philosopher Luciano Floridi paints. He calls what modern Western science has given us the *Fourth Revolution*. It is the computer revolution of Alan Turing following that of Nicolas Copernicus, Charles Darwin and Sigmund Freud.

The ultimate effect app is not all the activities that we can do in the world using digital devices, but what the world has become thanks to what such activities have done to us. The conclusion that we are not as special as we think has previously led to major changes in society, and this will happen again. Copernicus, Darwin and Freud were the cause of the three previous revolutions. The societal, economic and social changes of the world views that they introduced were far-reaching. We now accept that humankind has a subconscious and certain drives. The advertisement industry made good use of this in the 20th century. Freud was at the forefront of this revolution. What are the consequences if we accept that mankind is not smarter than a chip, that a cell can be programmed, and that bits and bytes of program code can connect everything together? We will probably soon consider post-PC behavior not in terms of the fierce debate of blessing or curse, but as perfectly ordinary and human. We will look back and wrap it up as follows: “So, that was the app effect, the laurel on Floridi’s Fourth Revolution.”



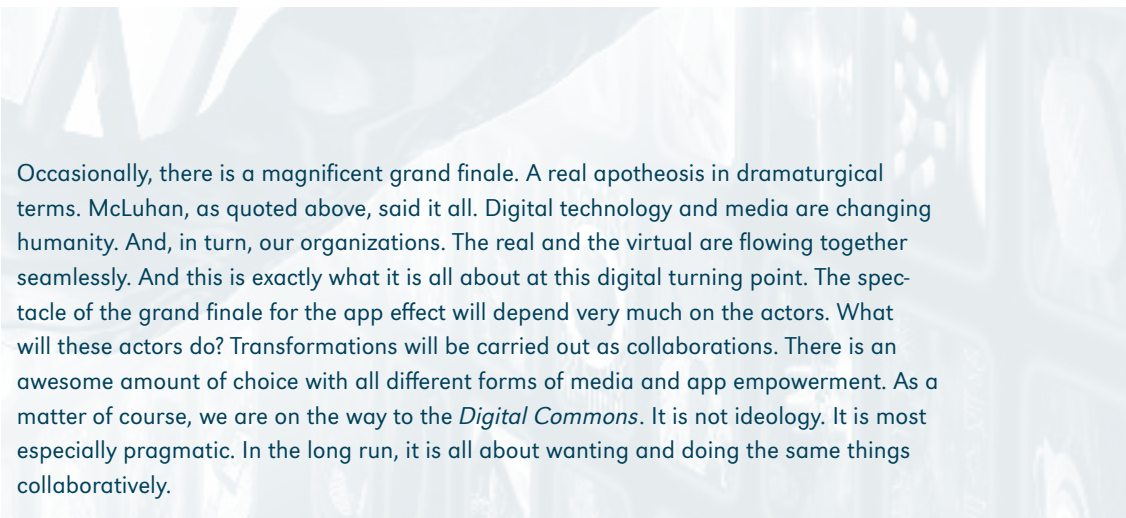
"All media are extensions of some human faculty. Mental or physical. Electric circuitry displaces the other senses and alters the way we think. The way we see the world and ourselves. When these changes are made, men change."
(Marshall McLuhan, 1967)



8 Ap(p)otheosis

Table of contents

8.1	Grand finale	153
8.2	Social Business according to VINT, IBM and Forrester	154
8.3	Eleven contemporary dos and don'ts	155
1	Do not be a source of alienation	155
2	Introduce a Digital First strategy	155
3	At the same time, take immediate action with Mobile First	156
4	Fast Forward: keep the tempo high	156
5	Engagement rulez!	156
6	Make a clean sweep through the management layers	157
7	Surprise or be surprised	157
8	Be authentic and transparent	157
9	Focus on the Digital Commons model	158
10	Don't Be Evil	158
11	Be alert for your security	158
8.4	The future of Social Business	159
8.5	The last wrapp-up	160



Occasionally, there is a magnificent grand finale. A real apotheosis in dramaturgical terms. McLuhan, as quoted above, said it all. Digital technology and media are changing humanity. And, in turn, our organizations. The real and the virtual are flowing together seamlessly. And this is exactly what it is all about at this digital turning point. The spectacle of the grand finale for the app effect will depend very much on the actors. What will these actors do? Transformations will be carried out as collaborations. There is an awesome amount of choice with all different forms of media and app empowerment. As a matter of course, we are on the way to the *Digital Commons*. It is not ideology. It is most especially pragmatic. In the long run, it is all about wanting and doing the same things collaboratively.

8.1

Grand finale

Let us begin with the “drama.” The doom scenario is that organizations are not ready to adapt to the changing behavior of clients and employees. And that organizations are not able to satisfy new expectations. Customers go elsewhere, employees quit, and new business models take over. The culture clash is in full swing. In this case, we are not talking about an apotheosis, but an apocalypse. How do you stop that downward spiral when you feel it taking hold?

The simple answer is to transform the organization into a *Social Business*. That sounds simple enough, but it certainly does not mean that the business itself will operate that way. What we need to know is: what is a Social Business, what does it do, and how is it different from any other form of business that we already know? Social Businesses are organizations that prosper when acclimatizing to app effects. These are organizations that flourish in a *Digital Commons* situation. Maybe the real question is: To what extent we can still speak of organizations in the traditional sense? The goal of the *Digital Commons* is for the concepts of “organic” and “organization” to reflect each other as much as possible. This is not an intellectual exercise.

It is easy to answer the question about who will provide shining performances in a Social Business grand finale. It will be all the empowered individuals, groups, communities and organizations. It will be groups such as PatientsLikeMe, communities like Yelp, the Facebook-ers, the Groupon-ers, and all the others in the maelstrom who know how to position themselves and hold their own in the new ecosystem. With all

their post-PC apps, people swim in this flow like a fish in water, making them so much better informed in their lives; they “know” more, thanks to their mobile apps. These are people who also get more information from their social networks. Particularly when they need it, such as when they want to buy something, go to the doctor, or decide whether or not to apply for a job.

Even the WikiLeaks and Anonymous are empowered and flourish in the development toward the *Digital Commons*. A Social Business is an organization that perceives all this empowerment as an opportunity for growth. We are already moving in this direction. It is about time that it happened. Social Businesses are organizations that understand us like no other, that understand how technology can repulse and entice, and that effortlessly capitalize on it. These are companies that understand that people believe transparency is better. Social Businesses understand that the personalization caused by mobile apps is opening up new frontiers. The gap between media at a distance and nearby, between consumer and producer, between business processes and personal processes, and between private individual and employee, is shrinking. Social Businesses understand that the app effect is about a post-PC era as well as a pre-human era. The personalization and socialization of all business and market processes is what propels a Social Business. Organizations can only continue to be successful by doing justice to empowered interest groups, by standing squarely in the midst of society, and by pulling together in the direction of the *Digital Commons*.

8.2

Social Business according to VINT, IBM and Forrester

Our formulation of what a Social Business is and how to become one builds on the earlier research of VINT. We have followed the developments of the Internet since the establishment of VINT in 1994 and have described the possible outcomes. In the last few years, we have paid particular attention to the socialization effects of the Internet, the opportunities arising from crowdsourcing (*Open for Business*, 2006), the new media empowerment of the individual (*Me the Media*, 2008), and the research on the disruptive power of the current complex of crises (*Don't be Evil*, 2010). We are not unique in our description of the impact. Other research institutes and thinktanks are drawing attention to the same movement. Forrester Research and IBM are two examples of companies that also see socialization of organizations as an important strategic direction. IBM uses the same term as we do: *Social Business*.

In fact, it is the next step after their *E-Business*. This is based on a certain vision, and naturally includes the technical tooling to reshape existing organizations into Social Businesses.

The term Social Business is fluid and will remain so due to its very nature. But the contours have already been sketched out and, as you would expect, not only by IBM. Ted Schadler, Principal Analyst of Forrester Research, sings the praises of the Social Business concept and specifically understands this to mean *Empowered*.

8.3

Eleven contemporary dos and don'ts

Here, we describe what we understand Social Business to mean in eleven contemporary questions. In this we have been inspired by the books *Empowered* by Ted Schadler (Forrester) and *Get Bold* by Sandy Carter (IBM). We add our own viewpoint based on all the trends we have followed intensively in the last few decades.

1 Do not be a source of alienation

“Culture eats strategy for breakfast”, says Peter Drucker, one of the most discussed organization experts in history. Drucker would have whole-heartedly confirmed that statement's relevance to the present time. There is no safeguard against culture and certainly not against today's revolutionary Internet culture. Hence the following advice: align your organization with culture to ensure that your strategy is not ground up and eaten for breakfast by the market.

Culture is not a *smorgasbord* where you can choose what appeals to your appetite. Culture is a given. It is the new behavior that you cannot maneuver around. You cannot fight against it or halt it. You can only go along with the music and strike the right chord if you expect to profit from it. The alternative is to resist a foregone conclusion. That attitude will make you a source of alienation until you become the object of derision.

For example, we have encountered doctors who state that people giving their unvarnished opinions about their treatments on social sites like Yelp leads to unacceptable oversimplification. This is criticism from an elite unaccustomed to the straight-shooting conversation that characterizes the new digital behavior. They would be better advised to anticipate such discussions and be ready to carry these out properly.

2 Introduce a Digital First strategy

The mobile Internet has gone mainstream and technology is now a fashion accessory. People want it. People can get it. People use it. *En masse!* The discord between the physical and the digital has largely disappeared. As has the discord between digital and social. Digital is social. The argument that real contact between people is always better than virtual contact no longer holds water. A *Digital First* strategy means that

all issues that come up and can be anticipated are first dealt with via digital channels. This approach is always the fastest and most transparent. And, it is what everyone currently expects. If you have not yet caught the train, this change in mindset will certainly help you to consciously get on the road to Social Business and the inevitable evolution toward the *Digital Commons*.

3 At the same time, take immediate action with Mobile First

Naturally, just like eBay, you want to profit from the fact that people now relax in bed with their iPad to do some shopping. Actually, you want to get your share whenever people are in a mood to buy something. The same goes for the mood to acquire some information, such as managers longing for a dashboard while at a work site, or contact with other groups that you could reach during the day. In this respect, a *Mobile First* strategy accelerates the way in which you will be successful. This requires at least two reforms. First, all issues that arrive on your desk must be translated into a mobile solution. Second, you must shine an analytical light on all existing processes to create an action plan in the context of mobile apps.

This business mobilization can be carried out in the name of improvement. How do I add value to existing processes and services using specific mobile apps such as location recognition? Mobile First can also mean that you take a more serious approach to interaction design, gamification and groupification. And this is *Mobile Persuasion* in its entirety. With Mobile First, you are saying goodbye to the past and accelerating this farewell for as many employees and consumers as you can.

4 Fast Forward: keep the tempo up

The immediacy quality of mobile and digital increases the pressure on all fronts. Consumers and employees rapidly become accustomed to the ability to know and do something quickly. How fast is your organization, the processes, and your services? What is needed to make the most of these? Speed of service has been well known as a differentiating factor for quite some time. But what if the time-to-market and time-to-respond put pressure on “time-to-survive”? There is only one remedy. Deal with troublemakers and get rid of dawdlers.

5 Engagement rulez!

Social CRM, Social Collaboration, Social Innovation, Social Production, Social Procurement, Social Shopping — the opportunities are endless. Our advice here is the same as for Mobile First and actually also for Digital First. Thoroughly map out your processes and services to discover opportunities for socialization. Here, the changing role of IT is to capture the hearts and minds of society. The role of IT must consciously change from the existing *Systems of Records* focused on recording, storage and processing, into *Systems of Engagement*. Facilitate co-creation and crowd-

sourcing at different levels with employees, partners and customers. Social Business strengthens existing business, expands your business outwards, and opens the door completely to new business. Social Businesses are ready to take in innovation from the outside, are better able to understand what their customers want, and are able to increase engagement along the entire production line. In brief, the entire organizational structure takes on more added value.

More and more companies are actively engaging their employees to use the social media to help customers with their problems. For example, KPN employees solve problems in this way without managers needing to be involved.

6 Make a clean sweep through the management layers

When Digital Immigrants make decisions about digital strategies, we need to be alert because it can probably be done better. The leap into Social Business under the leadership of people who barely know anything about Facebook or Twitter, or those who scratch their heads at the term Social CRM, is very much a losing proposition. It may seem hard-nosed, but it is absolutely necessary to bring in fresh blood and get rid of the old. This is why Forrester Research advocates for a veteran CIO and a young-blood as CEO. Furthermore, all business executives must also have a business-technologist profile, so they harmonize resources and behavior from within and without, in continuous iterations.

7 Surprise or be surprised

The transformation to Social Business is eminently suitable for making excursions into other markets and arenas where there are opportunities... to surprise. There are plenty of examples. Microsoft made excursions into the energy market, Philips into being a health coach, and so on. A Social Business is ready to take a new position in the market and to collaborate across sectors in new ecosystems.

This app effect only comes to life when you begin to see the cross-sector opportunities. A “surprise effect” is possible if you use apps as in the cases we have described in the energy and healthcare sectors. Apps are the glue between old and new processes and drive personalization, socialization and momentum. The cross-sector aspect is critical. You must collaborate effectively with new partners. “Be surprised” means that you can also expect a “surprise attack” from other players. If new business models hit your market, if unexpected interlopers turn up, you may already be too late.

8 Be authentic and transparent

The more virtual the world, the more important authenticity becomes. Authenticity speaks volumes about trustworthiness. People will know what they are getting. They will know your true character. Openness helps. Making information freely available

is the heart and soul of transparency. Are you going to do this yourself or will you wait for some else to do it? This is the new trend that arose from the *Digital Counter-culture*. “A transparent world is a better world” goes the WikiLeaks maxim. “Better” in the sense that self-improvement can only begin by sharing information. But this blade is double-edged. For example, sharing business information with customers can provide a new foundation for all kinds of self-service ideas. It may provide a way to share knowledge that was previously revealed in a complicated and expensive manner. *Open Data* is becoming a trend in government circles. This allows all kinds of new services to emerge.

9 Focus on the Digital Commons model

The economic feasibility of the energy and healthcare sectors, among others, is being brought under the microscope. Social Businesses are better equipped for dealing such issues. They build sustainable systems and engage their employees and customers with challenges. Together they collaborate in their aim to reach the *Digital Commons* model. So, in a digital sense, “socialism” appears to be the new “capitalism.” Digitalization in many cases can provide solutions that make it possible to achieve many different forms of sustainability.

10 Don't Be Evil

Are you ashamed of anything? Are there any skeletons in your closet that will cause a riot if brought out into the light? The *Don't Be Evil* concept is the outcome of the fast-growing and uncompromising urge for transparency. Everything we do is visible or made visible. Consider, if you will, the new service, Anonymous Analytics. It is a site where people can anonymously reveal their concerns about your business. Hackers then start digging together to see if they can find more information about the issue. Similar crowdsourcing activities are just as important for the future of organizations as the steps organizations are taking to set up crowdsourcing themselves. The first company that came to the attention of Anonymous in this way, a criminal organization from China, has already vanished out of existence. You should make the assumption that all information that can be exposed will be exposed. Don't Be Evil and transparency are inseparably intertwined. If you have nothing to fear, you can be open on all fronts and profit from sharing with others as a Social Business.

11 Be alert for your security

Where hackers hack, sparks will fly, which is why you ought to have a sound security system and several emergency failover plans ready at hand as a matter of course. Whether it will be enough remains to be seen. So, always be continuously alert on the process and technical fronts. More and more people will be leaving their data lying around, both yours and theirs. This is inevitable due to *Consumerization of IT*, *Software as a Gadget* and *Bring Your Own Device*. This situation galvanizes hackers as

it could lead to even more information to pilfer. Every Social Business can be attacked via employee social media outlets. A Social Business and its employees are aware of this and are properly trained to prevent breaches arising. They also know what to do in the undesired event that they are victimized.

8.4

The future of Social Business

The German Fidor Bank is a company that gets a high score on our Social Business checklist of recommendations and needs. It is an organization positioned in the middle of society, has a Digital First approach, allows its customers to participate in creating value, and wants to deal with all matters in a mobile fashion. So far, there are few companies like them. It is the first bank that allows people to pay with money that they have earned playing games. This bank allows people to lend each other money. You can carry out transactions in gold. You can send an amusing message in a digital card along with every transaction because no one has ever said that handling money has to be boring. A financial service provider such as Fidor is a source of inspiration. As is Panasonic, which is working hard on the prospect of making our houses more intelligent and uses smartphones and tablets as remote controls.

The Dutch Telegraaf Media Group (TMG) is also an inspiration. It founded Relatieplanet, a digital marketplace for people seeking a relationship with a new partner. Previously, this occurred in the physical world, in a bar or at the theater. Now, it is completely normal to do this digitally. Even though people take the Digital First approach to find partners as a given today, many companies doubt whether this approach will work for them. This may be because their upper management are old-fashioned. TMG is interesting as a Social Business on many other fronts. They offer, via the digital brand GeenStijl (Tasteless), a platform for leaking, as they say, “biased, baseless and needlessly hurtful information.” This is also possible via Dumpert, a kind of media version of WikiLeaks for the common man. This is how TMG makes hay from criticisms and counteractions. The TMG strategy is a causeway to the new culture. And this is also true of the social network Hyves and the children’s community Habbo Hotel. These are all services where value is created by the people that the company serves. And they are doing this more often with display devices and apps.

What we can learn from Fidor Bank, Panasonic and TMG is that building a Social Business is an exciting endeavor. We can say with certainty that these organizations realize that technology ensures that we are on the way toward the *Digital Commons* model. How far organizations want to go and how quickly they want to get there and

continue growing is dependent on the analysis and decisions that must be made with a full awareness of the facts and developments at hand.

8.5 The last wrap-up

It may be surprising, but *The App Effect* is not about how smartphones and apps have developed on different platforms in recent times. Instead, we have presented the lasting effects of these new IT achievements. The first thing everyone noticed is the popularity of multi-touch screen devices and their apps. Steve Jobs spoke proudly and earnestly about the post-PC era that we had entered with the arrival of the iPhone and iPad. Others prefer to talk about PC plus because, apart from the mobile touch screens, the traditional laptop and desktop are being succeeded by advanced thin Ultrabooks. In fact, in the coming years we will see more and more multi-touch, sensors, motion interfaces, speech recognition and vividly sharp screens. These Natural User Interface developments will provide a wider variety of, and much more immediate, controls than the graphical interface and keyboard with which we are familiar.

In particular, this will intensify and personalize contact between people and their virtu-real environments. This is how we will swallow mobile technology, media and software functionality in small sips until it eventually comes to embody our underlying interactions. This is the basis for far-reaching socialization and communalization and all that comes along with it, all the wonderful opportunities and all the darker aspects that we can imagine. The combination of gaming, social media and audio-visual temptation makes it easier for us to work and play together more efficiently. It may happen for economic gain or for fun, but it is equally effective for riots or struggles for freedom. All apps on our display devices provide us with the opportunity to answer back, to break down the walls of privacy, to take action, and to organize at any time and place of our choosing. Organizations have already experienced this ever since Web 2.0 appeared on the scene, and it goes a whole lot further with mobile apps. In addition to extra security, the rise of *Social Businesses* is a significant app effect. The blending of modern mobility and *Social Business* signals the entry into the following phase of development that organizations will go through. It will be based on the intensification and personalization of virtu-real inter-individual behavior.

Sogeti and VINT have written this book to draw your attention to all these manifestations of the app effect and to provide you with the opportunity to benefit within social and commercial contexts. Together with our last three publications, *The App Effect* completes our four-part series. If we start with the most recent VINT investigation, these are respectively: *Don't Be Evil: Imagineering 21st Century Business* (2010),

Me the Media: Rise of the Conversation Society (2008) and *Open For Business: Open Source Inspired Innovation* (2006). The PDF versions for these books can be downloaded from <http://www.TheAppEffect.org>.

About the authors



Jaap Bloem and
Sander Duivestijn
are senior
analysts at VINT.



Menno van Doorn
is the Managing Director of VINT.



Andreas Sjöström
is the Global Mobility
Practice Director
at Sogeti.

All four authors provide advice on a wide variety of IT issues, speak at conferences, and provide organizations with guidance on how to develop their mobile processes and media strategy in relation to technology goals and business objectives.

VINT, the Sogeti Trend Lab

Vision • Inspiration • Navigation • Trends

THEAPPEFFECT.org

Illustrations and literature

The website TheAppEffect.org has two interactive lists, one with illustrations and one with the referenced literature. For the illustrations, you will find supplementary information and as many URLs as possible for the illustrations for each page in the book. The illustrations in *The App Effect* are practical in nature and relate directly to the subject matter of the book. Usually the source material is also directly related. This list of illustrations on the Internet offers the reader more added value from graphic source material that provides facts, events and products that by necessity can often only be briefly mentioned in the text of the book. The same applies to the relevant literature. Anyone wanting to propose an addition or change in any of the lists based on the illustrations or the literature may do so via the website TheAppEffect.org.

Apel, W. (1944), *Harvard Dictionary of Music*.

Bernoff, J. and T. Schadler (2010), *Empowered: Unleash Your Employees, Energize Your Customers, Transform Your Business*.

Beschizza, R. (2008), 'History's Greatest Gadgets.'

Bizer, C., T. Heath and T. Berners-Lee (2009), 'Linked data — The Story So Far.'

Bonner, C. (2011), 'How Necessity Drove Mobile Innovation and Reshaped the Web.'

Brignull, H. (2010), "'Design thinking is a nonsensical phrase that deserves to die" — Don Norman.'

Bush, V. (1945), 'As We May Think.'

Buxton, B. (2008), 'The Long Nose of Innovation.'

Byrne, M. (2011), 'Never Forget the Great U.S.-China Cyberwar of 2020.'

Carr, N. (2008), 'Is Google Making Us Stupid? What the Internet is doing to our brains.'

Carr, N. (2010), *The Shallows: What the Internet Is Doing to Our Brains*.

Carr, N. (2011), 'Minds like sieves.'

Carter, S. (2011), Get Bold!.

Carter, S. (2011), 'Insights from IBM: Sandy Carter and Social Business Adoption.'

Center for Addiction and Substance Abuse (2011), National Survey of American Attitudes on Substance Abuse xvi: Teens and Parents.

Coile, R. and B. Trusko (1999), 'Healthcare 2020: Technology in the New Millennium.'

Conceptual economy: http://en.wikipedia.org/wiki/Conceptual_economy.

Converse, P.D. (1959), *Fifty Years of Marketing in Retrospect*.

Cusano, D. (2011), 'The ATA 2011 virtual conference report.'

Datawind Aakash: [http://en.wikipedia.org/wiki/Aakash_\(tablet\)](http://en.wikipedia.org/wiki/Aakash_(tablet)).

Diderot, D. and J. d'Alembert (1751), *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers*.

- Dishman, E. (2010), 'The Hype and Hope of "mHealth".'
- Dolan, B. (2011), 'Interview: Cell phone inventor on mobile health.'
- Dolan, B. (2011), 'The Coming Medical Tablet War.'
- Evans, E.D. (2003), *Military Gadgets: How Advanced Technology is Transforming Today's Battlefield... and Tomorrow's.*
- Favole, J. (2011), 'Obama: Jobs "Brave Enough to Think Differently".'
- Figallo, C. (2011), '"Culture Eats Strategy for Lunch": An Interview with IBM's Sandy Carter.'
- Floridi, L. (2009), 'The Fourth Revolution.'
- Foer, J. (2011), *Moonwalking with Einstein: The Art and Science of Remembering Everything.*
- Fogg, B.J. (2009), Creating Persuasive Technologies: An Eight Step Design Process.
- Fogg, B.J. (2010), *Persuasive Technology: Using Computers To Change What We Think And Do.*
- Fogg, B.J. and D. Eckles (2007), *Mobile Persuasion: 20 Perspectives on the Future of Behavior Change.*
- FreedomBox: <http://freedomboxfoundn.mirocommunity.org>.
- Friedman, P. (2011), 'The future of apps is not apps: it's nanoplatforms.'
- Friedman, T. (2005), *The World Is Flat: A Brief History of the Twenty-First Century.*
- Gannes, L. (2010), 'Eric Schmidt: Welcome to "Age of Augmented Humanity".'
- Gardner, H. (1983), *Frames of Mind: The Theory of Multiple Intelligences.*
- Gartner (2011), 'Gartner Says Apple Will Have a Free Run in Tablet Market Holiday Season as Competitors Continue to Lag.'
- Gelsi, Steve (1997), 'The web effect.'
- Gernsback, H. (1935), 'Millions in Gadgets.'
- Gossmann, C. (2011), 'Study Shows Internet Alters Memory.'
- Ha, P. (2010), 'All-TIME 100 Gadgets.'
- Halliday, J. (2011), 'Facebook and Twitter fuel iPhone and BlackBerry addiction, says Ofcom.'
- Hayward, B. (2010), The Future of the Australian ICT Industry.
- IBM (2011), Building a Smarter Planet: <http://www.ibm.com/smarterplanet/nl/nl/>.
- IDC (2011), 'IDC Forecasts Nearly 183 Billion Annual Mobile App Downloads by 2015.'
- Institute for the Future (2009), U.S. Health and Health Care 2020 Alternative Futures: <http://hc2020.org/scenarios>.
- International Center for Media & the Public Agenda, Salzburg Academy on Media & Global Change (2011), 'The World Unplugged: Going 24 Hours Without Media.'
- Intersperence (2011), 'Majority of Brits feel "upset" without Internet connection.'
- Is Google Making Us Stupid?: en.wikipedia.org/wiki/Is_Google_Making_Us_Stupid.
- Iwiula, K. (2010), '"Culture eats strategy for breakfast!" — Peter Drucker.'
- Kin, K., M. Agrawala and T. DeRose (2007), Determining the Benefits of Direct-Touch, Bimanual, and Multifinger Input on a Multitouch Workstation.
- KinectHacks.com.
- Lindstrom, M. (2011), 'Are You A Victim Of Phantom Vibration Syndrome?'
- Luhrmann, T. (2010), 'What students can teach us about iPhones.'
- Mabry, P.L. (2004), 'Opportunities for Systems Science in Health Research.'

McFedries, P. (2009), 'Information at Your Fingertips.'

McGonigal, J. (2011), *Reality Is Broken: Why Games Make Us Better and How They Change the World*.

McKinsey (2011), 'Are Your Customers Becoming Digital Junkies?'

McKinsey (2011), Internet Matters: The Net's Sweeping Impact on Growth, Jobs and Prosperity.

McLean, P. (2010), 'Inside the multitouch FingerWorks tech in Apple's tablet.'

McLuhan, M. (1964), *Understanding Media: The Extensions of Man*.

McLuhan, M. (1967), *The Medium is The Massage: An Inventory of Effects*.

Meier, J.D. (2010), 'Trends for 2011.'

Microsoft (2011), *Global Opportunities for Natural User Interface Technology*.

Microsoft Research (2008), *Being Human: Human Computer Interaction in the Year 2020*.

MobilePC Magazine (2005), 'The Top 100 Gadgets of all Time.'

Moglen, E. (2011), 'The Alternate Net We Need, and How We Can Build it Ourselves.'

Mozorov, E. (2011), *The Net Delusion: The Dark Side of Internet Freedom*.

Nakano, C. (2010), 'The Social Web in 2011 and Beyond.'

National Library of Medicine (2002), 'The Once and Future Web: Worlds Woven by the Telegraph and Internet.'

Nokia (2011), 'What's Your Appitype?'

Norman, D.A. (1999), *The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution*.

Norman, D.A. and J. Nielsen (2010), 'Gestural Interfaces: A Step Backwards In Usability.'

Numbness: <http://csmt.uchicago.edu/glossary2004/numbness.htm>.

Ogilvy CommonHealth Worldwide (2011), *2020 VISION*.

Page, C. (1992), *A History of Conspicuous Consumption*.

Palmer, M. (2009), 'Data Is the New Oil.'

Palmisano, S. (2010), 'Welcome to the Decade of Smart.'

Perez, C. (2003), *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*.

Pesce, M. (2006), 'I Am Not Your Google.'

Pink, D. (2005), *A Whole New Mind: Why Right-brainers Will Rule the Future*.

Pisano A. (2006), 'The Future of Gadgets.'

PROJECT XANADU, Founded 1960, The Original Hypertext Project.

Rashid, F.Y. (2011), 'U.S. Energy Department Networks' Weak Security Invite Cyber-Attacks: Audit.'

Reisinger, D. (2011), '98 billion apps to be downloaded in 2015, study says.'

Reisinger, D. (2011), 'Study: App downloads to hit nearly 48 billion in 2015.'

Retrevo (2011), *Gadgetology Study*.

Shirky, C. (2010), *Cognitive Surplus: Creativity and Generosity in a Connected Age*.

Sogeti/VINT (2006), *Open For Business: Open Source Inspired Innovation*.

Sogeti/VINT (2008), *Me the Media: Rise of the Conversation Society*.

Sogeti/VINT (2010), *Don't Be Evil: Imagineering 21st Century Business*.

- Sparrow, B., J. Liu and D.M. Wegner (2011), *Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips.*
- Spink, A. (2010), *Information Behavior: An Evolutionary Instinct.*
- Stanford Persuasive Tech Lab: <http://captology.stanford.edu>.
- Stross, R. (2011), 'Microsoft + Nokia = a Challenge for Apple'
- Swan, G. (2011), 'sxsxw: Demystifying Online Privacy and Empowering the Digital Self'
- Taylor, R. and C. Sunstein (2009), *Nudge: Improving Decisions About Health, Wealth, and Happiness.*
- Thomas, M. (2010), 'The Intersection of Technology and Liberal Arts, or: Why Apple Is So Successful'
- Trusko B. et al. (2007), *Improving Healthcare Quality and Cost with Six Sigma.*
- Tversky, A. and D. Kahnemann (1974), *Judgment under Uncertainty: Heuristics and Biases.*
- Victorian Internet: http://en.wikipedia.org/wiki/The_Victorian_Internet.
- Wu, V.K.Y. (2010), 'Mobicase 2010 — Keynote 2: Marc Davis from Microsoft'
- Web, P. and M. Suggitt (2000), *Gadgets and Necessities: An Encyclopedia of Household Innovations.*
- Wells, H.G. (1937), 'World Brain: The Idea of a Permanent World Encyclopaedia'
- Wilde, E. and D. Mahendran (2011), 'Web History'
- Wright, A. (2008), 'The Web Time Forgot'
- Zichermann, G. and J. Linder (2010), *Game-Based Marketing: Inspire Customer Loyalty Through Rewards, Challenges, and Contests.*

Index

A

addiction 41, 118, 120, 135
Alembert, Jean d' 136
alienation 92
AliveCor 71
All Purpose Programming 18
Anonymous 22, 86, 98
Apel, Willi 110
app effect:
 characteristics 17
 fundamental app effects 36
app overload 53
app stores 38
app strategy 47
Appitype study 114
Apple 13, 24, 38
 success 28
apps 103
Assange, Julian 97
attack 40
Augmented Humanity 29
authenticity 157

B

Ballmer, Steve 23
BBM 81
behavior, post-PC ~ 132
behavior change 51
Berners-Lee, Tim 135, 137
BespaarCheck (Oxxio) 60
BlackBerry 81, 121
BLOTTR 82
BMW 58
brain freeze 43
Bring Your Own Device
 Consumerization 42

Brücke, Die 136
Bump 142
Bush, Vannevar 136
business impact 14
Buxton, Bill 27

C

Carr, Nicholas 135, 139
Carter, Sandy 155
CliniScape 66
cloud 22
CloudCare 72
Coile, Russell 67
Conceptual Age 51
conceptual economy 50-51
Cooper, Martin 54
Copernicus, Nicolas 107
Countercultures 15, 40, 85, 96
 ~ versus institutions 22
creative destruction 15, 49
crises 84
culture clashes 15, 18, 20, 22, 30, 80
 catalysts 84
cyber attack 61

D

Debronkart, Dave 68
dependence 42
Diderot, Denis 136
DigiNotar scandal 22, 100
Digital Commons 15, 19, 90, 100, 158
Digital First strategy 155
Digital Subcultures 15, 39, 85, 95
DirectLife (Philips) 72
Dishman, Eric 65
Distributed Hypertext System 137

distrust 97
Don't Be Evil 158
DropBox 142

E

eBay 127
e-era, First and Second~ 107
Eisenmann, Thomas 54, 115
Elevens Gems 144
empowerment 14-15, 39, 83-84
Eneco 60
energy sector 54
engagement 125, 127, 156
Engelbart, Doug 137
ENQUIRE 137
enticement 50, 125
ePatient Dave 68
Evita (digital trainer) 74
Extensions of Man 95

F

Facebook 142
Fidor Bank 159
fire department, American ~ 70
Floridi, Luciano 150
Foer, Joshua 138
Fogg, B.J. 126-127
Fortissimo Model 52
Foursquare 47, 128, 142, 146
Fourth Revolution 150
Free Software Foundation 96
Freedombox 97
Friedman, Peter 115
Friedman, Thomas 82

G

gadgets 18, 32, 40, 103
 from ~ to apps 111
 history 105
 Software as a Gadget 41, 102
gamification 53, 78, 128

GarageBand 145
Gardner, Howard 140
Gardner's intelligence wheel 140
Gates, Bill 23
General Motors 58
generation differences 88
GetGlue 142
GlowCaps 69
Goldberg, Emanuel 136
Google 144
Google effect 138
Google Goggles 144-145
Google TV 125
GranataPet 47
Graphical User Interface 15, 24
GridGlo 63
Guitar Hero 144

H

healthcare sector 64
HealthGraph 72
HealthMedia 73
Hitachi 57
Hoccer 142
Home Energy Management System
 (Panasonic) 55
HyperCard (Apple) 137

I

iAugment 143
IBM 16, 134
Iceland 98
Icelandic Digital Freedom Society 98
Icelandic Modern Media Initiative 40, 98
iEV (BMW) 58
immediacy 39
Indigo 56
information at your fingertips 22
Information Behavior Change
 Potential 147

Information Behavior Model 148
innovation, cross-sector ~ 38
interface:
 Graphical User Interface 15, 24
 Natural User Interface 15, 24, 89
Invisible Computer 25
iPad 13, 28
iPhone 13, 23-24, 28, 121

J

Jobs, Steve 24, 51
Jonsdottir, Birgitta 98
JOVE (Journal of Visualized
 Experiments) 41

K

Kinect 24, 57, 141

L

Last.fm 146
Layar 146
Leaf (Nissan) 58
LiftDeck 42
Like.com 146
Lindstrom, Martin 122
LulzSec 22, 89

M

Mabry, Patricia 108
Mahendran, Dilan 135
McCarthy, Smari 98
McGonigal, Jane 130
media addiction 120
Memex 136
memory 138
MeterRead 59
mHealth 64
Mobile First strategy 156
mobile innovation 46
Moglen, Eben 97
Montaigne, Michel de 138

MOPET (MOBILE Personal Trainer) 74
Mozorov, Evgeny 82
multi-touch 17
Mundaneum 136
MyFordMobile 58

N

Natural User Interface 15, 24, 89
Nelson, Ted 137
NEWT (New Exciting Web
 Technologies) 18
Newton, Isaac 107
Nielsen, Jakob 26
Nimbuzz 99
Nintendo Wii 141
Nissan 58
NLS (oN-Line System) 137
Norman, Donald 25-26
NoteCards (Xerox Parc) 137

O

Ocarina 111, 145
Occupy Wall Street movement 92
OnStar (General Motors) 58
OPower 63
Ostwald, Wilhelm 136
Otlet, Paul 136
overload 43, 53
Oxxio 60

P

Panasonic 55, 57, 159
PatientsLikeMe 39, 68
PC, defects 25
PC-plus era 17
Perceptive Automation 56
perceptualness 33, 41
Perez, Carlota 106
Perkins, Greg 86
personalization 42

persuasive technologies 18, 35, 41, 118-119, 123
 creating ~ 126
Philips 72
Pink, Daniel 52
Pisano, Alfred 106
post-PC behavior 132
post-PC era 13
PowerLinc 56

R

Recognizr 145
revolutions:
 Fourth Revolution 150
 industrial revolution 107
 technological ~ 106
riots:
 British ~ (1381) 83
 British ~ (2011) 81, 83
RunKeeper 72, 142

S

S Curve of Science 108
Salesforce 129
Schadler, Ted 155
Schmidt, Eric 29, 125
security 158
Shazam 145
Shirky, Clay 147
ShopSavvy 146
Siri 147
smart grid 55
Smarter Planet (IBM) 16, 134
Social Business 16
 definition 154
 dos and don'ts 155
 future 159
 transformation to ~ 153
Software as a Gadget 41, 102
Solar Shooter (Eneco) 60
SoundHound 145

Spink, Amanda 148
SportyPal 142
strategy model, eight-legged ~ 52
Stuxnet 61, 100
Sunstein, Cass 126
Super 7 HD 144
surprise 38, 157
suspicion 93
System 85
 ~ as a source of alienation 92

T

Taylor, Frederick 91
Taylor, Richard 126
technological revolutions 106
Tesco 48
TMG (Telegraaf Media Group) 159
transparency 157
triggers 125
Trusko, Brett 67
Turing, Alan 150
Twitter 42, 142
Twitter consultation 67

U

UntangleMe 144

W

web, history 135
Web 2.0 17
web effect 17
 ~ becomes app effect 21
Wells, H.G. 136
WhatsApp 13
widgets 103
Wii 141
WikiLeaks 40, 86, 97-98
Wilde, Erik 135
WolframAlpha 144
working class riots, British ~ 83

X

Xanadu 137

Z

ZashPay 38

Zerhouni, Elias 108

Zichermann, Gabe 128

THE APP EFFECT is a post-PC book about the effects caused by our new mobile information behavior. It became clear soon after the introduction of the iPhone that the information age had entered a whole new phase. The deciding factor is not just our newly acquired mobility. It has a great deal to do with the world falling head over heels for the allure of Software as a Gadget. This book provides a solid foundation for anyone wanting to orient themselves toward an app methodology.

THE APP EFFECT describes how social and economic factors lead to unavoidable digital culture clashes. These clashes all have the appearance of stimulating the eventual development of a new Digital Commons situation. In this situation, organizations will only be successful if they take seriously the empowerment of digital subcultures and countercultures.

The app effects that we describe accompany the noticeably accelerating pace that media revolutions always bring with them and the new power groups that can be formed by organizations across sectors. The effects also work hand in hand with the new opportunities to entice consumers anywhere and at any time.

In addition, this book asks fundamental questions. Who is actually empowered? How will the brain be affected? And, what will be the outcome of the addictive behaviors and “sham” intelligence of the new information behavior in the coming decades?

About Sogeti

Sogeti is a leading provider of professional technology services, specializing in Application Management, Infrastructure Management, High-Tech Engineering and Testing. Working closely with its clients, Sogeti enables them to leverage technological innovation and achieve maximum results. Sogeti brings together more than 20,000 professionals in 15 countries and is present in over 100 locations in Europe, the US and India. Sogeti is a wholly-owned subsidiary of Cap Gemini S.A., listed on the Paris Stock Exchange. For more information please visit www.sogeti.com.

About Capgemini

With more than 115,000 people in 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2010 global revenues of EUR 8.7 billion. Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model. Learn more about us at www.capgemini.com. Rightshore® is a trademark belonging to Capgemini.

WWW.THEAPPEFFECT.org

About VINT

It is an arduous undertaking to attempt to keep up on all developments in the IT field. The state-of-the-art IT opportunities are often very far from the workings of the core business. Sources that provide a deeper understanding, a pragmatic approach, and potential uses for these developments are few and far between. VINT, a Sogeti research institute, provides a meaningful interpretation of the connection between business processes and new developments in IT.

A balance is struck between factual description and intended utilization in every report drawn up by VINT for the investigations it carries out. VINT uses this approach to inspire organizations to consider and use new technology.

VINT | Vision • Inspiration • Navigation • Trends



ISBN 978-90-75414-41-7



<

>