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Agility Areas of Action in Finance IT – a Memorandum

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4 things to remember

1. Agility is more than Scrum

An agile company habitually scans the environment, interprets incoming signals, acts upon decisions, and moves faster than the competition. While Scrum, XP, and other “agile” delivery approaches incorporate these four defining components of agility, there is much more that IT departments can do to become agile. We regard stakeholders, culture, spaces, IT architecture & processes, and employees as crucial agility areas of action.

2. Engage with your stakeholders

Companies increasingly rely on external value chain partners to offer great services and to run their business processes efficiently. What is more, employees demand consumer-grade simplicity for the tools they use. And finally, your customers expect powerful software and capabilities that previously were confined to a select few. Truly engage with your stakeholders and open up your IT systems to cope with this new reality.

3. Any change runs deep and needs space

Putting desks on wheels does not make your workforce more agile. To instil sustainable agility – that is, to become more outside-oriented and structurally flexible – you need to understand the organizational culture and tackle strategies, goals, norms, and rules associated with it. Still, networked businesses that draw from constantly changing resources from within and outside, need effective physical working spaces more than ever.

4. Invest in infrastructure and people

Systems delivery and operations is the home turf of any IT department. Shamelessly copy from leading cloud providers when streamlining your IT architecture, and confidently capitalize on the wisdom of your employees when redesigning your technology stack and processes for increased agility. Also, invest in your people and listen to their needs.

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Introduction

Digitization is a powerful agent of change: everything that can be digitized will be digitized¹ - one business process at a time. The physical glue that held companies and value chains together is dissolving relentlessly², ever more parts of the value chain become virtualized, commoditized and tradable on the marketplace. Online retail bank Simple³ is a case in point: in 2010/2011 it managed to establish its offering from zero, employing just a handful of engineers. It now has over 100,000 paying customers, with many more eagerly waiting for an invitation to join. Simple managed this feat by contracting other banks and service providers to take care of virtually all backend processes. And there is Bank X (name anonymized), which employed the full arsenal of commoditization, ranging from outsourcing staff to nudging customers on online channels, in order to cut costs.

"Everything that
can be digitized,
will be digitized."

"Everything that
can be automated,
will be automated."

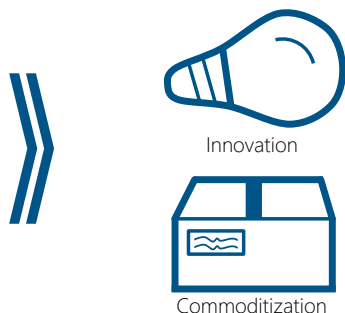


Fig. 1: Consequences of digitization

Digitization also creates tremendous opportunities to those clever and inventive enough to seize them. It is companies like Fidor Bank, who open their core banking systems and expose APIs, or Avaloq⁴, who thrive in business process outsourcing through constant improvement and innovation as means of cost-cutting, that lead by example. What unites Simple, Bank X, Fidor Bank, Avaloq, and other companies is their ability to scan the environment, interpret incoming signals, and act upon decisions fast, time and again – even if it means to do business differently than they did before. In other words, they behave in an agile way⁵, either to defend their turf or to capture opportunities⁶.

Banking in five years from now will be a distinctively different experience than it is today, and IT will play a big role in it⁷. The share of digital processes and digital products will increase and unlock new ways to do business and engage with customers⁸, this is for sure. What is uncertain, however, is whether the IT department in a bank will increase in importance or drive into marginalization. (There are strong signals that the latter will not happen - witness all those often internally developed mobile apps that each bank offers today.) But this is not the important question to ask. Ultimately it is about whether those who have a deep understanding of the technology side of digitization are

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⁴ <https://www.avalog.com>

⁵ Goldman et al. (1995)

⁶ Chakravarty et al. (2013)

⁷ Möwes et al. (2011)

⁸ Lyytinen and Yoo (2002)

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¹ Lemke and Brenner (2014)

² Fitzgerald et al. (2014)

³ <https://www.simple.com>

able and willing to guide the company at large going forward.

one thing to remember, it is this: Scrum¹⁰ and XP¹¹ are not the end of the road. Actually they are just the entry into a wealth of agile possibilities.

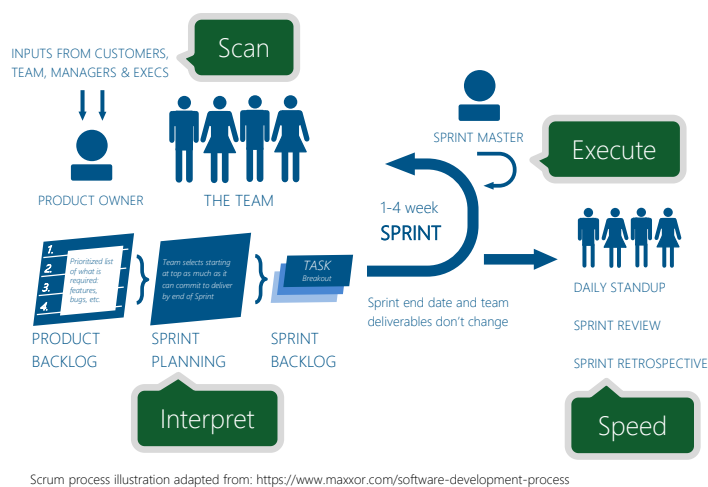


Fig. 2: Scrum is one of many means to become more agile

This memo is structured as follows. First, we lay the groundwork by taking a deeper look at what agility is and how it is enacted in a company, and by giving a primer on the areas of digital business. With these concepts in mind, we will then go through five areas that we believe can be redesigned to the better when regarded with an agile imperative. These are stakeholders, culture, spaces, IT architecture & processes, and finally employees. For every area we ask

why it is important to be regarded and give examples that we think show strong agile behavior.

With this memo we would like to shed light onto some areas of action that IT can influence directly⁹. Because the world tends to be complex, we do not claim that the descriptions we make are exhaustive, nor that the solutions we propose fit every company, nor that the examples we chose are the most representative ones. But if there is

One word of caution is in order here: The approaches we present stem from solid research, but they are not to be taken as cooking recipe. They are simply a means to facilitate fruitful (controversial, that is) conversations within your company, raise awareness and questions. Accordingly, they should be regarded as such.

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⁹ Wade and Hulland (2004)

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¹⁰ Beedle et al. (1999)

¹¹ Beck and Andres (2004)

Agility

Agility has become so ubiquitous its meaning has stretched beyond recognition. To some, agility is “candyland” for grown-ups: if I want something by tomorrow and I get it despite all checks and balances that usually apply to a demand, then I witnessed agility. Others regard a getting-things-done attitude as agile behavior. And there are those strategists who want to take on new (ad-)ventures whenever the opportunity arises.

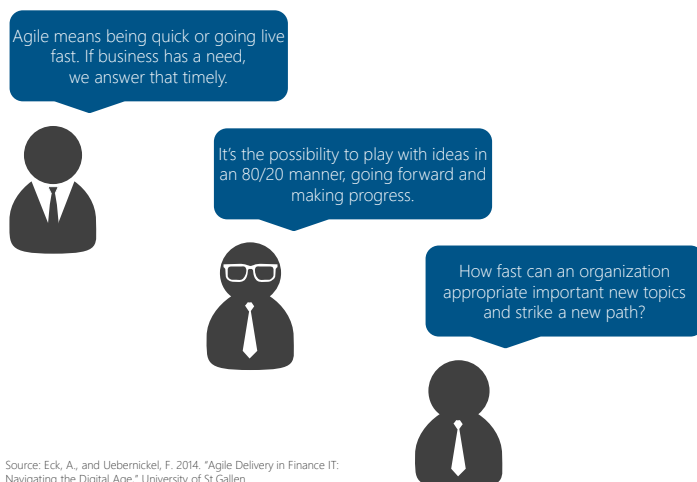


Fig. 3: Three opinions on what agility means - who is right?

It might be scary, but actually all those views are in some way correct. It is just a matter of framing, and making sure as a company that the correct mode of agility is applied to the right situation. We will come to that in a moment. First we need to

understand what the nature of agility is, seen as a process.

When a company showcases agile behavior, it is doing a competitive move, with speed and assertion, on a regular basis¹². To perform a competitive action, three things need to be done¹³. First, the outside environment has to be scanned for signals of change, with the aim to detect both potentially

threatening changes as well as potential business opportunities. Next, these incoming signals need to be interpreted, that is a meaning must be assigned to these signals: are they relevant or irrelevant, are they a threat or an opportunity and so forth. The outcome of sense-making is a decision what the right reaction to these interpreted change signals should be and a plan on how to do it. And lastly, the organization mobilizes the resources necessary to execute against the plan. It cannot be assumed that those resources are readily avail-

able – perhaps assets need to be acquired or capabilities need to be built up¹⁴. But to an agile company, this is just part of execution and not an insurmountable challenge. The faster an organization is able to loop through this process – without

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¹² Goldman et al. (1995)

¹³ Seo and La Paz (2008)

¹⁴ Sambamurthy et al. (2003)

rushing through, but rather with assertion and precision – the more agile it behaves.

It is worth mentioning that agility is relative to the competitive environment an organization operates in. In wealth management services for a saturated market, for instance, change signals are rare and far in between. It might be that businesses have to think one generation ahead, which is 20 years from today. They have plenty of time to make sense of detected change signals and also to act on these expected changes. Agility in this environment means staying fresh and relevant for the next generation of customers. Compare this with crowdfunding¹⁵ business, to pick a contrasting example. The concept that a large number of individuals invest small amounts of money and collectively fund a venture is rather new. Naturally there is a wealth of unknown variables in how to turn this idea into a profitable and sustainable business, and the marketplace is “crowded” with new entrants that experiment in an area that many expect to last. Against this backdrop, an agile organization is very sensitive to where the competition is heading and is able to change directions extremely fast to get ahead of the curve. The no-

tion of agility in terms of required speed of action and magnitude of change incorporation therefore differs from one market to another.

$$\text{Agility} = (\text{scan} \times \text{interpret} \times \text{execute})^{\text{speed}}$$



Fig. 4: The four components of agility

Nevertheless in any organization there are challenges which allow a (relatively) long-term approach and others that must be dealt with immediately¹⁶. Also there are topics which are rather reactive (fending off threats), while others are proactive (seizing opportunities). In all of these cases, organizations may take an agile stance, but the goals, mechanics, and assumptions are different.

For example, when BlackRock¹⁷ cut the prices of its ETF (exchange-traded funds) products in June 2014, the company responded to preceding price cuts of its competitors with a relatively simple-to-implement move. In a market environment in which the least expensive product gains the highest market share, BlackRock had to react speedily and apply a quick fix to stay in business. While in the long-term this move might pay off by driving

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¹⁵ Belleflamme et al. (2014)

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¹⁶ Pavlou and El Sawy (2010)

¹⁷ <https://www.ishares.com>

out competitors, the immediate benefit – remaining competitive – was of prime importance. On the other end of the spectrum, AIB¹⁸ (Allied Irish Bank) launched a digital transformation program in 2012. In the course of this program, AIB introduced new mobile offerings and established over a dozen social media channels. In an effort to remain open to external signals and internal learnings, the company opened a concept store to experiment with digital services.

Scan the environment: With its social channels and the “Lab” concept store, AIB put two powerful sensory systems in place to scan the environment for change signals.

Interpret incoming signals: This part of the process is hidden to an outside observer. But given the scale of the digital transformation program – touching all areas of business and affecting both revenue and cost dimensions – we can assume that AIB has been able to evaluate and take decisions on a large scale rather fast.

Execute against the plan: Digital transformation at AIB is visible and tangible. Among others, the bank closed a quarter of its branches, introduced new mobile services, and increased automation of its processes.

Speed: This component is hard to assess because speed is to be seen relative to one’s competitors. Again we interpret some indications. The company was awarded “best banking app” two years in a row, indicating that it remained ahead of the competition with its product. AIB also brought IT and business teams physically closer together, which should have strengthened its ability to speed up the cycle from scanning through interpreting and executing.

To summarize, we have developed a toolset to assess the agility level of a company on a change

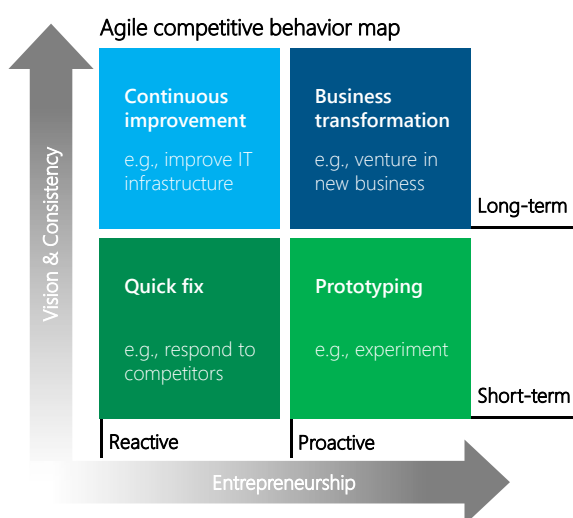


Fig. 5: The agile competitive behavior map

What exactly qualifies these examples as being agile? To answer this question, we check the AIB example against the four elements of agility introduced before:

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18 <https://www.aib.ie>

initiative level: first, identify the type of competitive behavior on the “entrepreneurship” (reactive / proactive) and “vision & consistency” (short-term / long-term) dimensions. Next, assess the change initiative according to the four-criterion framework (scan, interpret, execute, speed) relative to other initiatives in the same quadrant and relative to observable competitors’ moves. A truly agile organization will have change initiatives in all four quadrants and compare favorable to competitors in the scan, interpret, execute, and speed dimensions. Hence, an organization that subscribes to the agile

imperative is able to detect signals of change and respond adequately, with speed and dexterity. It is also capable of a range of competitive behaviors, from reactive and short-term quick fixes all the way to a proactive and long-term business transformation.

In the beginning of this memo we postulated that digitization is the main force behind the push to become more agile. So let’s continue with analyzing how digital business is manifested and how this affects the IT department.

Business transformation

Long-term
Proactive



In 2012, AIB launched a digital transformation program. Some results to date: The company opened “The Lab”, a concept store to experiment with digital services. The number of active customers increased by >15%, mostly driven by new mobile offerings. And social media response time averages <1h.

Prototyping

Short-term
Proactive



M-PESA is a Kenyan money payment service based on SMS, which was conceived as micro-loaning platform. In a field trial its customers utilized the early prototype for other purposes, effectively inventing its killer apps: P2P money transfer and money deposit and withdrawal via local agent outlets.

Continuous improvement

Long-term
Reactive



Bank X

Bank X achieved remarkable results. Standardization reduced the number of different products from >100 to <20. Investing in digital channels decreased over-the-counter transactions by >80%. Most processes were automated. And the number of IT applications went down from >350 to <100.

Quick fix

Short-term
Reactive



In June 2014, BlackRock initiated another round of price cuts in the European ETF market. While in 2012 total expense ratios of 0.5% were common, they have now come as low as 0.05%, due to aggressive competition by Amundi and Vanguard.

Fig. 6: Some examples of agile competitive behavior

Digital business

In a business environment that becomes increasingly digital, customers get more intricately and intimately involved with those who serve them. A shift happens from product orientation ("To how many customers can we sell our products profitably?") towards customer orientation ("How much value can we create for our customers and profit from it?")¹⁹. In effect, the vector of value creation turns around: the customer is not the last element in a value chain but the starting point²⁰.

are designed and operated in the customers' best interest. Delighting the customer is the top priority here – usually, efficiency gains come "for free" with digitization. For example, German SWK Bank²¹ introduced personal identification via webcam in 2014. This digitized the authentication process necessary for opening a bank account, effectively getting rid of the analog and lengthy "PostIdent"²² process. Obviously, the customer was happy, acquisition rates increased, which increased revenues, and also costs went down.

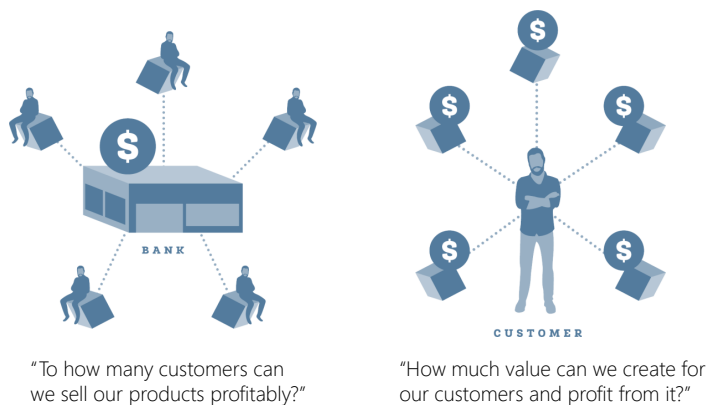


Fig. 7: From product orientation to customer orientation

Naturally the IT department should take notice that both product offerings and value creation processes become digital. When going digital it is good advice to take care that customer-facing systems

For offering customer-centric products and creating a great customer experience organizations increasingly rely on collaborating with external value chain partners²³. Today, business processes typically span several organizations. The push into cloud computing²⁴ and a still-increasing share of outsourcing²⁵ are all but two exemplars showcasing this development. Companies engage in a constant series of temporary value-creation networks, with the double-aim

to drive down costs and combine business processes in ways that lead to innovative products.

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²¹ <https://www.swkbank.de>

²² <http://www.postident.de>

²³ Grover and Kohli (2012)

²⁴ Mell and Grance (2011)

²⁵ Dibbern et al. (2004)

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¹⁹ Shah et al. (2006)

²⁰ Brenner et al. (2014)

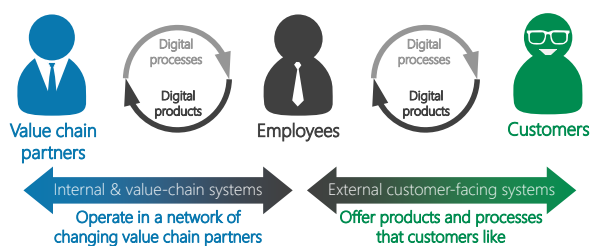


Fig. 8: Value chain systems differ from customer systems

Consequently the IT department needs to evolve their internal systems into “value-chain-facing systems”, which emphasizes the significance of IT modularization, service-orientation, and resilience. Some companies invest heavily in becoming more receptive for value chain partners. For instance, Fidor Bank, a German online retail bank, exposes many of its core banking functionalities for external parties to use²⁶. With the ambition to wrap an API around any technical service, the company hopes to lower the barrier for collaboration considerably and tap into the ingenuity of others.

To summarize, we can distinguish digital business along the dimensions digital processes / digital products and customers / operations, where each resulting quadrant presents a different set of challenges and offers a different story to tell. For instance, online retail bank start-up Simple focused

exclusively on creating a great mobile app when it entered the market. As a somewhat established player, it now invests in its own core banking capabilities in order to strengthen its position in the value chain, i.e. it now invests in value-chain-facing systems and associated capabilities.

Digital business map

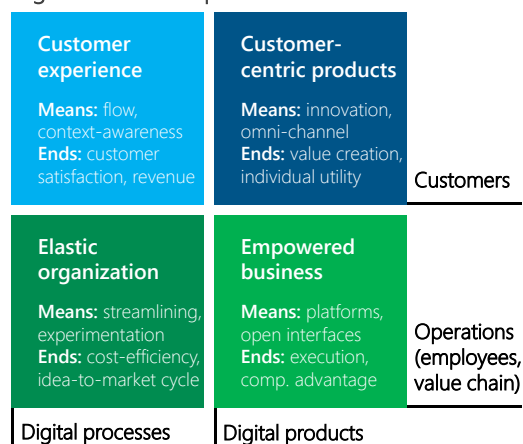


Fig. 9: The digital business map

The digital business map is also useful when assessing the strategic positioning of complex offerings, i.e. offerings that cut across customer segments and that incorporate both product as well as process dimensions. Single Dealer Platforms²⁷ (SDPs) are good showcases of such complex of-

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²⁶ <https://developer.fidor.de>

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²⁷ Smyth and Wetherilt (2011)

ferings, and getting them competitive across all four quadrants of digital business is a challenging task. To pick an example, there are areas in which DB Autobahn²⁸ leads the pack and others in which UBS Neo²⁹ has an advantage. The point is: an IT department must acquire capabilities both in processes and products as well as in serving external and internal customers.

Creating the link to agility is fairly straightforward. Towards customers, organizations need to innovate and keep pace with the market. Towards value chain partners, organizations need to make most of their possibilities and source outside resources flexibly. Digitization creates a turbulent environment in which any competitive advantage is temporary³⁰. The best companies can do is being aware of and able to change, i.e. being sustainably agile.

Customer-centric products

Customers
Digital products



In 2010, Simple went to market with a [mobile-centric retail bank](#) offering developed by 5 engineers in less than a year. It focused squarely on the [customer-facing product](#) and contracted other companies to handle all [back-office services](#). It continues to innovate with products that its customers like.

Customer experience

Customers
Digital processes



Since 2009, new domestic customers can [open a savings account](#) online in about 10 minutes.

In 2014, SWK Bank introduced [personal identification via webcam](#), providing an alternative to "PostIdent" in Germany.

Empowered business

Operations
Digital products



Fidor is opening a set of [core banking APIs](#) for external parties to use. By striving to become the [most accessible bank for developers](#), the company hopes to tap into the ingenuity of others and creating an [ecosystem for collaboration](#).

Elastic organization

Operations
Digital processes



Capital One is renown to [change rapidly](#) – e.g., channels used, products offered, customer segments served. It has institutionalized [continuous organizational change](#) in several ways, one being a standard way to [experiment](#), drawing conclusions, and applying them in operations fast.

Fig. 10: Some examples of digital business

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28 <https://autobahn.db.com>

29 <https://neo.ubs.com>

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30 D'Aveni and Gunther (1994)

Agility areas of action

Getting an organization to a sustainable level of agility in order to cope better with digitization is a transformation in its own right, which touches upon many areas³¹. From the viewpoint of an IT department, we regard these five dimensions as paramount to improve towards increased agility:

Stakeholders: there are several customer groups with different, even contrasting needs

Culture: be aware of your organizational culture and embrace it for effective change

Spaces: engage in physical spaces to bring business and IT closer together

IT architecture & processes: learn by example and optimize towards higher agility

Employees: understand that the skillset of your workforce has changed already

Typically, IT departments place a high priority on IT architecture and processes. This is displayed in initiatives such as establishing “agile” delivery process models³² like Scrum or the evaluation of cloud computing architecture³³. But organizational infrastructure is equally important³⁴, of which

physical spaces are direct manifestations. In many organizations we observed how effective it is to design working spaces consciously – despite a proliferation of outsourcing. Regarding any change initiative through the lens of the organization's cultural fabric³⁵ helps in tailoring and setting realistic roadmaps. Finally, with an increase of digital touchpoints³⁶, customers and value chain partners come into direct contact with a financial organization's IT assets and capabilities, which also mandates different skills than in previous times. In the following chapters we elaborate on each area in greater detail, albeit by far not exhaustively.



Fig. 11: Five agility areas of action

....
31 van Oosterhout et al. (2006)

32 Roche (2012)

33 Wenge et al. (2014)

34 Melville et al. (2004)

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35 Schein (2010)

36 Rigby (2014)

Stakeholders

IT departments have always been serving two broad groups of stakeholders: internal customers and external customers. This distinction largely holds in the digital age, but the challenges are more pronounced.

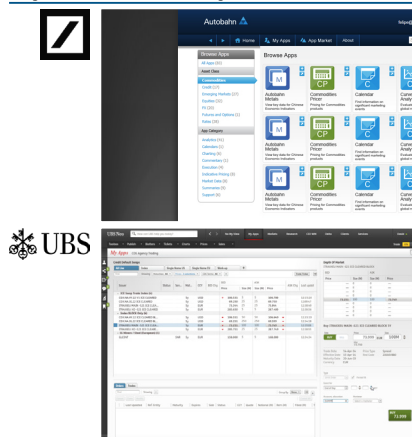
The internal customer, aka employee, is suddenly not dependent on company-provided IT systems³⁷. There is a host of cloud-based offerings to choose from, and consumer-grade hardware and software rival the capabilities of company-sanctioned infrastructure and systems – consumerization³⁸ and shadow IT³⁹ are realities that will persist. In addition, the “internal” customer now extends to company-external value chain partners⁴⁰. And with an increasing share of business activity moving into the digital sphere, customer-facing IT systems have become paramount for overall company success⁴¹, and are not merely a nice add-on any longer.

ers the exact same tools that previously only employees had access to. One such example is the UBS Neo suite of integrated investment banking platform that the bank launched in 2013. It collects all individual tools and features which a professional investor needs, e.g., market data, order management, settlement, and risk analysis. UBS analysts and other company-internal professionals utilize the same platform, meaning that investment banking customers are first-class citizens when it comes to tool access. In addition, social-media ingredients allow customers to “follow” analysts and connect with them in various ways, which increases stickiness. UBS Neo is a prime example of designing a complex suite of tools around the customers' workflows. The development team was heavily influenced by user experience (UX) leadership, employing many UX practices to achieve a more usable, better-looking product that supposedly sets it apart from the competition.

What is more, customers expect very powerful tools, fueling the self-service culture⁴² of the internet age. Some companies have taken this development as a motivation to serve their custom-

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- 37 Behrens (2009)
 - 38 Niehaves et al. (2012)
 - 39 Györy et al. (2012)
 - 40 Rai et al. (2012)
 - 41 Xu et al. (2013)
 - 42 Meuter et al. (2005)

Single Dealer Platform offerings



Selected features

- Customers / product:** Full breadth of features on desktop, selected (but growing) functionality on mobile
- Customers / process:** Tailored processes for different roles, app logic impedes end-to-end workflows
- Operations / product:** Autobahn platform is a mature technology platform, known to employees and partners
- Operations / process:** App market allows to introduce new functionality unobtrusively (>170 apps to date)
- Customers / product:** Integrated offering on multiple end devices, from market intel to risk management
- Customers / process:** End-to-end workflows, high stickiness by social features (e.g., “follow” an analyst)
- Operations / product:** Internal and external platforms are identical, role-based access for differentiation
- Operations / process:** Agile delivery teams across the board to increase experimentation level and speed

Fig. 12: A comparison of DB Autobahn and UBS Neo

Fulfilling stakeholders' expectations is a top priority for IT departments. The most basic and simultaneously most difficult part is getting into the internal and external customers' seats and developing a deep understanding of their needs. There is just one way and no shortcut to it: engage with them⁴³. Many viable and systematic approaches to achieve this feat exist, of which design thinking⁴⁴ is all but one example. It is a phased and iterative way to define the problem space, identify needs, develop ideas, flesh them out with prototypes, and test the solutions. This process cycle is inherently agile, because it promotes all four components of agility, namely scanning the environment, interpreting change signals, executing on decisions, and being fast.

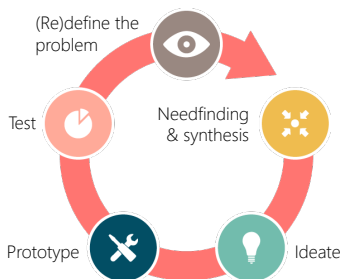


Fig. 13: The design thinking micro-cycle

The challenge: Redesign the overdraft event management software application to increase process quality & efficiency

3 site visits for user research
6 site visits for usability tests

12 prototypes in 13 weeks
6 PM total effort

1 functional prototype, thoroughly tested

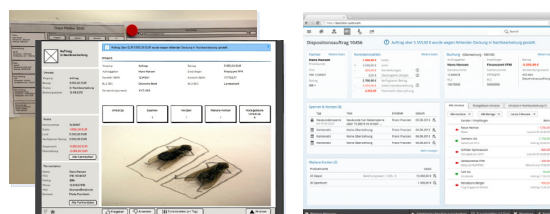


Fig. 14: Results brief of a Bank Y project in 2013

However, the true juice of design thinking and similar approaches to capture the hidden needs of customers and translating them into product design does not lie in following some steps, but in mastering the various and varied tools and methods within each step⁴⁵ – and above all just “doing it” and “getting it done”. In a 13-weeks / 6 person months project at Bank Y (name anonymized) in 2013, the team of 4 engineers had 9 visits to different stakeholder sites for user research and testing. In the course of the project they created 12 prototypes in total before converging to the final, functionally complete and customer tested prototype. This output is even more remarkable considering that about 40% of the effort was spent for training measures with a methods coach.

....
43 Uebersnickel et al. (2015)
44 Brown (2008)

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45 Hassi and Laakso (2011)

Culture

As famous Peter Drucker supposedly once said “culture eats strategy over breakfast”⁴⁶. And indeed there is no shortage of management articles emphasizing how important it is to instill “the right” organizational culture for any positive change to happen⁴⁷, and that leaders must walk the talk⁴⁸. Managers as Brian Pitman, CEO of Lloyds Bank from 1983 to 1997, are routinely mentioned as resounding examples for heading an organization into a new direction⁴⁹, in his case for changing the top success measure from the then-trendy “firm growth” dictum to a rather unknown paradigm of “maximizing shareholder value”. In the process, Lloyds Bank shaved off many of its less profitable branches and pursued to outperform its peers for many years to come. Indeed, Lloyds Bank weathered the banking crisis of 2008/2009 comparatively well (but still was a major recipient of UK government-backed capital infusion).

What is often neglected, however, is that cultural change is idiosyncratic and needs time⁵⁰. There is no generic ten-step plan⁵¹ that can be ticked off within a year. And the challenge is steep. Organizational culture runs deep and must therefore be tackled across all areas of doing business, not as isolated project in itself.

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46 There is no direct proof that he did say it, but Drucker is commonly associated with this statement.

47 Roberto and Levesque (2005)

48 Groysberg and Slind (2012)

49 Kelly (2004)

50 Schein (2010)

51 Kotter (1995)

According to a widely accepted definition⁵², culture is a set of taken-for-granted assumptions that served the organization well in the past and is therefore shared by all organizational members as the right way to perceive the world, to think, and to act. These assumptions create a mental map of fundamental issues of time, space, reality, and human nature. They are preconscious, cannot be influenced directly and are practically invisible to an observer, even within the organization.

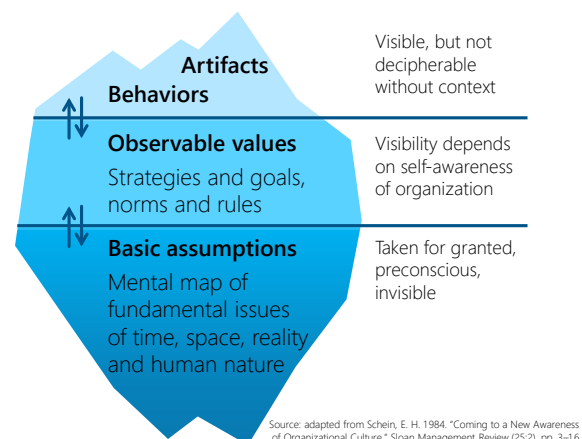


Fig. 15: The three layers of organizational culture

Luckily there are two levels of visible cues that reflect hidden taken-for-granted assumptions. These are the levers that can be influenced and changed⁵³. On the lower level we find observable values, which are articulated strategies and goals – such as the “maximizing shareholder value” example from above – and implicit norms and rules – such as believing deeply that individual well-being

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52 Schein (1984)

53 Schein (2010)

is more important than a harmonious collective, or that the better argument always trumps hierarchical status.

Visibility of such values depends on the self-awareness of an organization. Companies that are said to have a “strong corporate culture” reflect intensively on what is important to them and articulate these values as self-enforcing signaling instrument. Fabrics manufacturer Gore, for instance, displays posters of its articulated “Gore Culture” in every meeting room.

decision, nor a shortlist to choose from. This example is a specific organizational behavior that can be explained best by the underlying norm that every individual should have an equal say in company affairs. Such behaviors are the most visible cues of organizational culture, as are company-specific artifacts. Valve Corporation, an entertainment software company of around 400 people, put every desk on wheels so that employees can easily arrange temporary team spaces. At this company, movable desks are not a useless gimmick, but a regularly used convenience. The organization is proud of its rule that teams have to form on their

own initiative and work under self-imposed supervision. Whenever the company has new joiners, nobody tells them what to do the next day – they have to figure it out by themselves.

To summarize, organizational culture is a pattern of taken-for-granted assumptions that cannot be influenced directly. These assumptions are reflected by observable values which are manifested in strategies, goals, norms, and rules. And these values in turn lead to very visible behavioral patterns and specific artifacts.

When leaders want to tackle organizational change, their gut feeling usually is to go for the middle layer, that is the set of observable values⁵⁴ – and they



Fig. 16: Excerpt from the Valve New Employee Handbook

The company has become famous for pioneering unconventional management practices, such as letting its employees nominate and vote who should become CEO in 2005 – there was no board

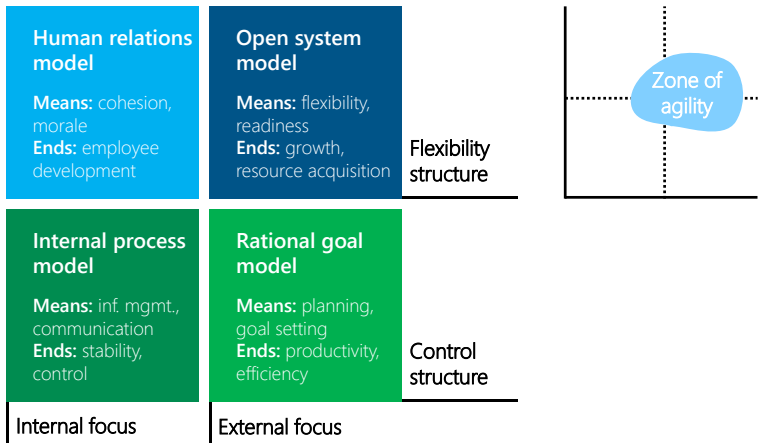
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54 Charan (2006)

are absolutely right! Just putting desk on wheels and hoping for a self-governing workforce similar to Valve's would be futile. Behaviors and artifacts follow corporate values, not the other way round. Organizational leaders must be very conscious of the value system they want to instill.

and makes suggestions which means and ends fit a given combination best. For instance, an externally focused organization with flexible structure is supposedly best suited for growth and acquiring new skills and capabilities. As is true with any model this clear separation is an unfair simplification of reality. In fact, any organization must balance flexibility with control and an internal focus with an external focus, and be able to apply each combination simultaneously. But the framework helps to think in alternatives and to facilitate decision-making towards emphasizing one organizational model over another.

Competing values framework



Source: Quinn, R. E., and Rohrbaugh, J. 1983. "A Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach to Organizational Analysis," Management Science (29:3), pp. 363-377.

Fig. 17: The competing values framework

A useful tool for analysis and discussion is the "competing values framework"⁵⁵, because it visualizes basic organizational dilemmas very concisely. The framework separates organizational models on a structural dimension – flexibility or control – and on a focus dimension – internal or external –

value system that is outside-oriented (scan the environment and interpret incoming signals) and promotes a flexible structure (execute with speed). The farther away an organization currently is, the more painful an accentuation of outside-orientation and structural flexibility becomes.

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55 Quinn and Rohrbaugh (1983)

🔍 Bank Z

3 years ago we started with agile software development in our team. Now we have “infected” other teams to work likewise. This is a cultural change which needs a lot of time! No matter how good our concepts are, in order to achieve our goals we need to convince our people – Business and IT – to throw away old habits and acquire better ones. Too often there have been great concepts and strategies, which have never lived up to their promises because the necessary cultural change did not happen.

– K. L., Project Manager, 2013

Fig. 18: On the importance of cultural change

When Bank Z (name anonymized) introduced iterative and incremental software development methods on the request of some of its software engineers in 2010, the pioneering teams were first met with ignorance. What is more, they operated in an environment which did not have any supporting behaviors or artifacts. The officially sanctioned

processes for developing software were milestone-oriented and effectively sequential. Naturally, all supporting tools and infrastructure were designed to fit the status quo. For example, there was no official way to allocate small budgets for proof of concepts in between two budget planning cycles.

Also, it was usual that a testing environment took several weeks to procure, which in the old model was sufficiently fast, but stifled effectiveness of iterative and incremental processes. It took several years and a great deal of individual initiative emanating from various directions to gradually create an organizational “milieu” that values greater agility in its processes.

Spaces

It might seem paradoxical to talk about physical working spaces – that is, functions of buildings and configurations of offices – in a digitized world. But promoting agility is about providing the right environment for people to work and make use of their potential, and architecture can play a crucial role. As we argued before, value creation increasingly happens in networked operations within and across companies that are reconfigured as needed. What is more, designing products that customers like and creating a pleasing customer experience typically requires involvement of experts from different parts of the organization. UBS Neo, the integrated suite for professional investors, replaced 94 individual tools and introduced workflows that cut across several organizational units. It is hard to image that the project team succeeded without recruiting supporters and collaborators from all over the company. To generalize and oversimplify, modern organizations move away from the “centralized hierarchy” set-ups from the past and subscribe to the model of creating “loosely coupled networks”⁵⁶, in which temporary strong informal lines of communications are crucial.

This development has been touted, observed, and described since the 1980s⁵⁷, but it came into true

fruition with the likes of Amazon, Apple, and Google. It is no coincidence that these are the companies that many regard as role models on how to design modern offices⁵⁸. And they invest heavily in their physical workspace infrastructure – just take the new Apple headquarters as prominent example, which is about to be completed by early 2017⁵⁹.



Fig. 19: Office space at Telco X, 2014

Physical spaces reinforce how people interact and how they work, they are a mirror of social behavior and organizational structure. There are two main reasons why this is the case. First, a particular space design supports or stifles a particular way of working⁶⁰. It is hard to concentrate deeply in an open office space, where there is always some-

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56 Allen and Henn (2006)

57 van Alstyne (1997)

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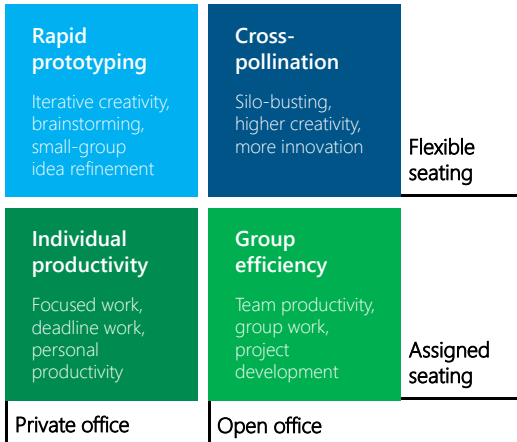
58 Elsbach and Bechky (2007)

59 <http://cupertino.org/appleconstruction>

60 Congdon et al. (2014)

body talking. Similarly, when employees check in at their assigned desk in the morning, close their single office doors and check out in the evening, the physical atmosphere does not invite spontaneous group collaboration. There is a stark contrast between the affordances of a private office and an open office. Likewise, flexible seating options have strengths which are complementary to assigned seating arrangements. Combining the two dimensions of private / open office and flexible / assigned seating provides us with a useful

Office space design map



Source: Waber, B., Magnolfi, J., and Lindsay, G. 2014. "Workspaces That Move People," Harvard Business Review (92:10), pp. 68–77.

Fig. 20: The office space design map

categorization of possible office space designs and their intended comparative benefits⁶¹.

While many companies offer all four configurations, it is a rather intricate task to turn them into

61 Waber et al. (2014)

true working spaces – offices that are captured by employees and used productively – and not mere vanity galleries – offices that just look nice. Telco X (name anonymized) learned it the hard way. It took the company several shots before settling on an office design that works for them. They learned that observing how their employees work and implementing many small innovations (e.g., repurposing shower curtains as flexible room separators) gradually led to good results.

The second reason why office designs determine the pattern of interaction has to do with the old saying “out of sight, out of mind”. The “Allen curve”⁶² illustrates the empirically discovered correlation between physical distance and number of interactions between individuals. Since its original publication in 1984 the main result has been confirmed over and over again⁶³: the farther away two people work, the less they communicate face-to-face. A threshold seems to exist around 50m distance, when on average less than one interaction per week happens. Interestingly, the same pattern can be observed when e-mail or phone communication is measured⁶⁴. We can therefore assume that when people need to collaborate closely, they have to be within short walking distance on a regular basis.

62 Allen (1984)
 63 Fabbri and Charue-Duboc (2013)
 64 Waber et al. (2014)

IT architecture & processes

Ensuring cost-efficient delivery and operations of IT infrastructure, applications and support services is the natural home turf of any IT department. This is the domain which rightfully lies at the core of any push to become more agile in IT matters⁶⁵. It is worth noticing that agility should not be confined to change projects, but rather expanded to all areas of business in an IT department. Typically, IT departments in financial services spend around 70% for operations, 20% on system adaptations to cope with regulatory change and just the residual 10% on business-driven changes⁶⁶. Therefore it wouldn't be efficient to concentrate exclusively on a minor slice of the cake.

stitutes rely heavily on outsourcing⁶⁷. These deals usually specify quite exactly what a service provider has to deliver at which costs, and terms are fixed for a number of years. Hence the first challenge is to instill agility in outsourced services. Numerous factors are to be considered when setting up cost-efficient outsourced operations, of which we pick just one: the ability of an outsourcing partner to behave in an agile way. When core banking software provider Soft X (name anonymized) entered the business process outsourcing (BPO) business in 2011, it established a mechanism to spread local innovations to all of its BPO clients in short time. To make this happen Soft X introduced

a common codebase for all of its client installations, so that any improvement can be shared without much rework. Because this means imposing standard business processes across all clients, there remains a challenging trade-off between standardization and client-specific differentiation on a business process level.

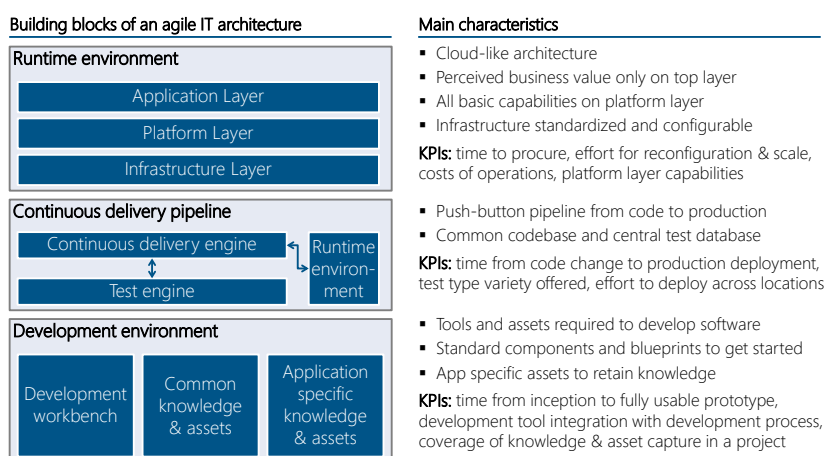


Fig. 21: Building blocks and characteristics of an agile IT architecture

In a pledge to reduce the share of budget spent on operations, i.e. to cut costs, most financial in-

A complementary strategy is reducing the absolute number of technology platforms and applications⁶⁸. The idea is strikingly simple: on the technology side, make use of hard-

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65 Tallon (2008)
66 Eck and Uebernickel (2014)

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67 Zelt et al. (2014)
68 Ross (2003)

were commoditization of recent years and get rid of heterogeneous hardware infrastructure. On the applications side the story is a bit more complex, but simplification of the application landscape is the overall goal.

How should an overall IT architecture look like that is standardized on the one hand but allows for constant adaptation on the other? We found that three logical blocks are required⁶⁹.

First, the IT stack on which applications run must be built in a “cloud-like” way. That is, there are three modular layers with defined interfaces between them⁷⁰. There is an infrastructure layer which provides computing, storage and network capacity. This part is arguably the one which can be standardized rather easily – it doesn’t matter which specific hardware runs below a virtualization layer, as long as it is capable to execute the commands. Second, we have a platform layer that encapsulates all basic functionality, such as operating system, application and database servers, data feed connectivity and messaging, identity management, and other things. This is the layer that literally makes or breaks the whole IT runtime stack. Therefore a lot of thought should be invested into its design and the long-term implications it will have on the

IT capabilities at large. Companies will find that they need several platform layer designs that run in parallel, as there are always technology choices to make. The platform layer is also the one which enables to create integrated but modularized tool suites, if required. And on top we have an application layer which provides perceived business value, as this is the place where all the business logic goes to. Such architecture is agile because it standardizes at the right places and is change-friendly where it needs to be.

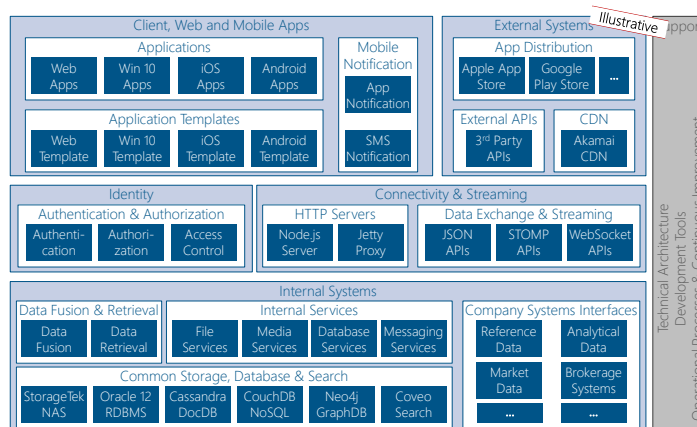


Fig. 22: Illustrative platform layer architecture

The second block is a continuous delivery pipeline⁷¹ for getting source code frictionless into test and productive systems. The principle is to put all source code into a common codebase, have it compiled, integrated and deployed into a test environment and run automated tests. When software is proved to work, deployment can be routed on productive systems with the same mechanisms.

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69 Eck et al. (2014a)

70 Mell and Grance (2011)

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71 Humble and Farley (2010)

The third block has to do with providing the IT workforce with the right tools for development. There should be some kind of development workbench which provides tool support along the software development cycle, from business modeling and requirements engineering all the way to integration and testing. Next there are templates, architecture patterns, blueprints and components that more than one software project can use. These artifacts represent accumulated knowledge about how to work with the runtime environment best, and provide means to kick-start a project. Having such artifacts in place is also paramount for being able to try out new things fast. Lastly there are application-specific artifacts which are such things as design documents, meeting minutes, test cases, source code, and other information chunks associated with a particular application.

To illustrate how a platform layer could look like in practice, on the previous page we assembled a stylized architecture of a possible platform layer⁷². We can see that the platform layer example mixes some elements which logically belong into other categories that we introduced above, e.g., development environment or application layer. This was done in order to show that real-world architecture usually is messier than abstracted high-level conceptualizations are.

To provide another example, this next illustration shows the building blocks of a fictional continuous delivery pipeline and which tools might be used for each element. There are numerous lessons to be taken from setting up continuous delivery⁷³, of which we emphasize just two: first, it takes a firm understanding of the various technology options available on the market and how to assemble them together to achieve best performance. Two main objectives are automating as much as possible and devising an architecture that scales to cover thousands of source code repositories simultaneously. Second, once the pipeline has been put in place, maintenance, operations and continuous improvements can be performed with very little personnel (think 1-2 persons serving a group of 1000 developers), as several industry practitioners credibly argue.

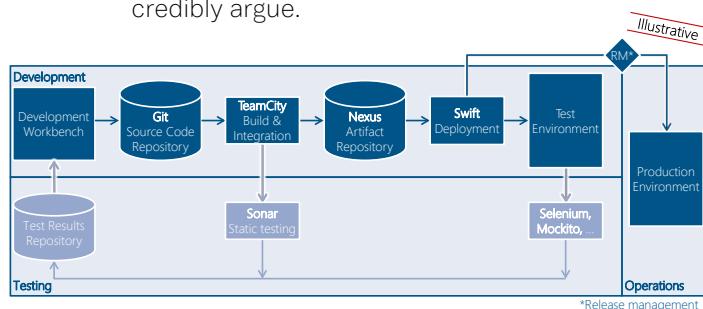


Fig. 23: Illustrative continuous delivery pipeline

Next, processes. IT professionals have long been striving for more “agile” processes in software development (e.g., Scrum, XP) and operations (e.g., DevOps⁷⁴). Because these concepts have arrived

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72 Albeit inspired by a number of existing architectures, please note that this illustration is purely fictional.

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73 Eck et al. (2014b)
74 Debois (2011)

in the mainstream in the last couple of years⁷⁵, there are many people in IT departments who have at least tinkered with agile processes. Driven by a push from their workforce, most companies in financial services now seek to overhaul their processes towards agile methodologies⁷⁶.

Illustrative

	Overarch	Incep	Constr	Trans	Prod
03 Dedicated project management role					
Short description	A project (or program) manager shields the delivery team from external influences. He also ensures that all team-external stakeholders are communicated with in a "traditional way", i.e. not in the agile development logic.				
Examples from company landscape	- Rapid Solutions Task Force (Asset Management) - Small Applications Initiative (HR Services) - Single Dealer Platform Program (Investment Bank)				
Impact* on...	Speed* ++	Costs o	Scale +	Risk +	
Additional considerations	- "It is important that the project management role shifts towards enabler and gardener" - "Depends on PM's competencies. Must be able to delegate and also handle multiple projects." - "Depending on how many teams the PM supports, cost impact may become negative."				

* ++ very positive
 + somewhat positive
 o no impact
 - somewhat negative
 -- very negative

* Explanation of dimensions:
 - speed: speed of project execution (e.g. time from idea formulation to initial production release)
 - costs: costs of project execution and costs during application production
 - scale: capability to scale the application, according to functional and/or non-functional requirements
 - risk: operational risks related to application use (not project or technology risks)

Fig. 24: Collecting and condensing local knowledge

All these developments put companies in a relatively comfortable position when it comes to processes. To capitalize on local skills and knowledge⁷⁷, a viable approach consists of assembling a small cross-functional and cross-departmental team of experts who have advocated agile methods in their local work environment. This team can then pursue to collect good practices from all over the organization, systematize them and create a company standard⁷⁸. The so-created agile delivery standard should then be promoted by top manage-

ment as alternative to more traditional methods.

If an organization lacks local experience about agile delivery methods, it can tap into external sources in the form of agile process consultancies and import agile methodologies in this way.

Finally, if a majority of software delivery has been outsourced, a third approach is possible: adapt outsourcing contracts to fit the agile paradigm. For example, more wiggle room should be allowed in the exact specification of a software product⁷⁹. This goal could be reached, for instance, by setting the broad project scope, budget and timeline, and let the project team then specify the exact product features iteratively. For such an approach to work a high level of trust

towards the outsourcing partner is required, however.

To sum up, IT architecture and processes are the core of any IT department. There is a lot of individual and local knowledge available. When a company is capable of capturing this potential systematically (sensing), picking the good parts and making the right calls for the company (interpreting), and constantly striving for leaner operations and higher maneuverability (acting), it has achieved a deeper level of agility than just letting some guys tinker with Scrum, possibly without folding this experience back into the larger organizational fabric.

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⁷⁵ Dingsøyr et al. (2012)

⁷⁶ Eck and Uebernickel (2014)

⁷⁷ Zollo and Winter (2002)

⁷⁸ Woodward et al. (2010)

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⁷⁹ Cottmeyer (2008)

Employees

Musing about technology, methodology, architecture, and the like, lets us easily forget that IT business is ultimately a people business. An excellent programmer is about 10x more productive than an average programmer⁸⁰. This has to do with the fact that software engineering is a design discipline and involves very complex problem-solving⁸¹ compared to, say, building a car on an assembly line.

mediate automated testing is a core component of this pipeline, and for this test cases must be written. A traditionally-trained programmer would just write the productive code, hope that it will work as expected and not even think about test cases. A TDD-trained programmer would in contrast formulate the acceptance criteria first, which gives him or her very specific goals against which the

productive code can be devised. What is more, no matter whether this portion of the code will be changed in the future, the test cases will always show whether any change introduced an unintended error.

When considering agility in IT, there is more to it than programming. Another example is the technology landscape. Never has there been more movement in IT than today, and the pace of change

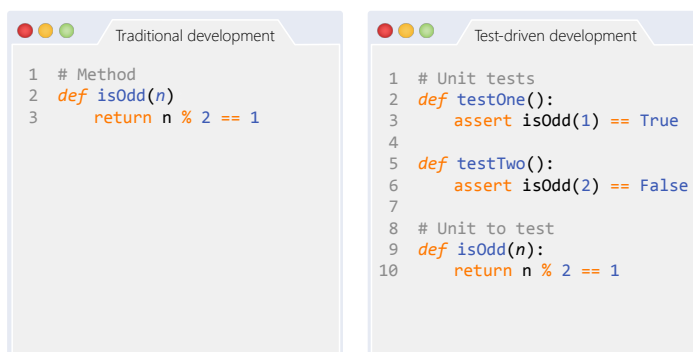


Fig. 25: Traditional and test-driven development

The people required to get the job done in an agile project have starkly different skillsets compared to those that have been socialized with waterfall approaches⁸². Take the practice of test-driven development (TDD) as an example⁸³. In TDD, the developer first formalizes the acceptance criteria before writing any productive code. This practice can be regarded as one success factor of getting a continuous delivery pipeline work well. After all, im-

will accelerate for years to come. Just keeping track of relevant developments in the Java world, to pick an example, requires an overview of several dozen different tools and open source projects⁸⁴ and acquiring knowledge about how to assemble them to work optimally together. Over the last 24 months or so, for instance, companies started to take notice of “NoSQL” databases⁸⁵, mostly driven by the hype of “Big Data”⁸⁶. But which particular

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80 Glass (2003)

81 Brooks (1995)

82 Conboy et al. (2011)

83 Turhan et al. (2011)

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84 White (2014)

85 Chang et al. (2008)

86 McAfee and Brynjolfsson (2012)

database to take, and how to embed it into the overall company IT architecture? Getting and re-maining knowledgeable requires much experimen-tation and above all personal curiosity of the ex-perts in charge.

Even if an IT department has steered away from internal development and relies on outsourcing for much of its project work, there is no way around having skillful personnel on board. Companies need to have persons who know exactly how to piece the different offerings on the market together, in a way that maxi-mizes utility for the company but does not resort to attempting to fulfill every whim of the business.

Another relevant development is the insurgence of cross-disciplinary teams. In a competitive environment that be-comes more complex by the day and that moves faster than ever, tackling projects in cross-disciplinary teams has become common-place. When the IT department of Bank X char-tered how to run projects in the future, it mandat-ed to staff team members from various disciplines and have their customers be integrated into pro-ject teams by default.

These three spotlight examples lead us to the question what IT organizations can do to manage their workforce better. The short answer is: take your colleagues from human resources seriously!

The longer answer is: measure where you stand now (to gain transparency) and act on selected ar-eas (to improve). Employee surveys have been a staple of HR practices, and ultimately it is not im-portant which exact approach is chosen – just that it is systematic. For example, one could translate the “E3 model”⁸⁷ into a survey instrument, which proposes that a productive workforce is energized, enabled, and engaged.

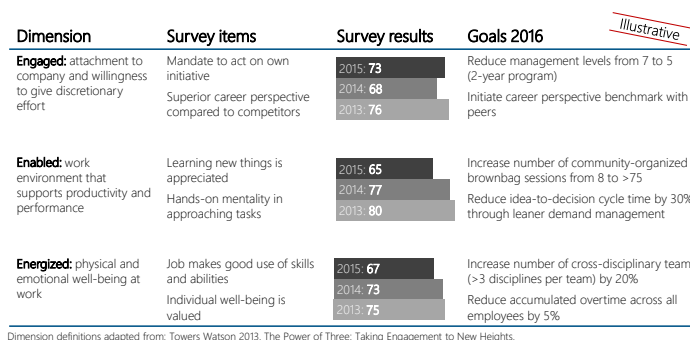


Fig. 26: An illustrative employee action plan

Holding regular surveys and really understanding them is a powerful preparation to devise targeted actions and getting improvements done. The whole point in such exercises is to instill agility in HR processes: put sensory systems in place (employee surveys), interpret their meaning (understand the results and devise action plans), act upon those learnings, and find ways to increase the rate of such feedback loops.

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87 Towers Watson (2013)

How do we get there?

	Description: Redesign the software delivery process to dramatically increase customer involvement Approach: Customer-centered process improvement: high emphasis on understanding the customers' needs, prototypical implementation and evaluation in small-scale setting Deliverables: Customer-approved process model, evaluated prototype
	Description: Develop a strategic roadmap to increase IT agility while retaining cost efficiency Approach: Strategy development with a twist: emphasis on shadowing and workshops to unearth cultural drivers and inhibitors of agility Deliverables: Validated strategic roadmap towards agile IT organization
	Description: Redesign office space around the needs of a representative, interdisciplinary team with collaborators in other locations Approach: Experimentation/prototyping with self-diary and tracking devices for data collection Deliverables: Evaluated office space design and high-level implementation/ roll-out plan
	Description: Design, implement and test an agile delivery process and supporting technology stack Approach: After initial input collection & conceptualization, prototypical implementation and evaluation in a real/realistic project setting Deliverables: Expert-validated concept document (phase 1), evaluated prototype (phase 2)
	Description: Elaborate a "team agility readiness index" as benchmarking tool Approach: Concept and measurement model development according to academic standards, sanitization/validation and pilot tests with selected teams Deliverables: Validated conceptual model of agility on team level & tested measurement instrument

Fig. 27: Some ideas for research projects

After this short tour into some agility areas of action the pondering question is how to get active, how to start the journey towards increased agility. There is no easy answer to this question. The most productive way surely is to take this memo as inspiration, assemble a workshop, discuss each area and agree on one or several change projects. As researchers, we would love being part of this discussion. Why is this? Simple: we are interested in understanding and explaining how companies work. And to borrow the words of Kurt Lewin, the grand seigneur of change management, there is no way to understand a company until you try to change it⁸⁸. Above is a list of project ideas for each area where we believe we could bring something meaningful to the table. There are many more pos-

sibilities and directions that we could take together. Our modest requirement is just being allowed and able to collect some data for later academic investigation of agility in the IT department.

In this spirit: let's get to work!

Finally we would like cautioning that our stance throughout this memo has been to regard everything through the lens of agility. Agility surely is no silver bullet to every possible challenge that companies face, and at times this lens could even be harmful. Still we are convinced that it is a great way to provide some – albeit limited – guidance in a world that becomes fully digitized and in an industry that currently undergoes a transformation that is hard to predict.

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⁸⁸ Schein (1996)



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