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**NAVIGATING IN THE
DIGITAL AGE**

Agile Delivery in Finance IT



Institute of Information Management



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Why we wrote this report

IT in financial services is being squeezed from all directions. Companies go to great lengths to guarantee data security and data protection, even at the expense of usability and efficiency of their IT systems. Regulators scrutinize the banks' core IT systems, in some countries asking for access down to source code level. Following several rounds of cost cutting the share of outsourced IT capabilities has reached all-time highs. Diligent audit trails ensure that nothing is changed without a clearly articulated mandate, starkly reducing the appetite to change anything at all. And to top it all off, customers are lured by "Fintech" start-ups, who provide better value at lower cost and do not struggle with legacy technology.

The IT department is at the verge of marginalization, or at least it seems so. And yet, digital technologies never mattered more. Our society undergoes a transformation that will digitize all aspects of our lives. What makes this fundamental shift appealing is the way it is done: leading organizations put their customers and employees center stage, modeling their enterprise around them.

All this has implications on how the IT department can and should be organized in order to create sustainable value. The core mandate of IT delivery remains the same: plan, change, and operate the IT landscape to the benefit of customers and employees alike. But the way this mandate is fulfilled changes: technology cycles become shorter, layered IT architectures popularized by "the cloud" become the norm, and users are involved in IT processes much more intimately.

A common theme underpinning these observed changes is agility, the ability to sense external change and respond adequately time and again. With this report we put agility into the greater context of digitization and collect practices of "agile delivery." It is not our ambition to develop a comprehensive reference model for the IT department. But we do hope to inspire thought about the role of IT as a nimble and valuable partner on the route to a digitized world.

I would like to express my gratitude to all contributors and to UBS for providing financial support.

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At a glance

Digital transformation captures the imagination of both optimists and pessimists. To the first group, digitization provides unparalleled entrepreneurial opportunities. To the latter, it breaks proven business models apart and erodes established revenue bases. Regardless of the perspective, to thrive companies need to sense unpredictable environmental changes and respond to changing customer needs – or, in short, exhibit agile behavior.

In Part I of this report, we make the case for contextual agility, or the ability to apply different agility modes depending on the circumstances. We develop the Contextual Agility Matrix to present four such modes: entrepreneurial (exploration focus), strategic (organizational change focus), core (operational excellence focus), and support (local autonomy focus).

Expanding the role of agility in digital transformation, we formulate four key decision alternatives that each CIO needs to take: Be a digital leader or follow the market? Embrace digital transformation or encapsulate digital initiatives? Rely on an agile workforce or on an agile technology base? And lastly, strive for organizational agility or software development agility?

With Part II of the report, we present four principles and eight associated practices of agile delivery that we unearthed through inquiring the IT departments of six financial services companies. We sought for insights that complement widespread agile delivery frameworks such as Scrum in IT project management and XP in software engineering.

The Agile Delivery Playbook describes ways to strengthen contextual agility capabilities (P.1), explores practices to improve organizational execution (P.2), presents approaches for decreasing engineering ramp-up effort (P.3), and offers suggestions for building IT capabilities outside the IT department (P.4).

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Agility & digital business



Digitization - the new strategic imperative

Across industries, pervasive digitization is a strong transformative source of business change¹. This trend is not new. Popularized as business process redesign², large parts of the value chain have been streamlined and automated through extensive technology investment during the last couple of decades. In the course, a large share of business processes were commoditized, which increased competition and lowered the barrier for new entrants. At the same time progress in IT continues to provide an increasing number of products and services with digital elements, which is a great source of innovation. Therefore, digitization affects businesses in two ways: it intensifies competition through commoditization, but it simultaneously enables unprecedented rates of innovation by cleverly combining digitally-connected resources.

This trend has strong implications for business strategy and how it translates to IT strategy. Traditionally, the imperative of business-IT alignment prevailed³, i.e. aligning IT strategy, IT competencies, and IT assets to suit business needs. Nowadays companies think about their digital business strategy⁴, or how they can reap benefits from a world that is interconnected through technology.

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- 1 Fitzgerald et al. (2014)
- 2 Davenport and Short (1990)
- 3 Henderson and Venkatraman (1993)
- 4 Bharadwaj et al. (2013)

CUSTOMER CENTRICITY - THE NEW NORMAL

Propelled by digitization, a change from product centricity towards customer centricity⁵ is visible, and this leads to a shift from managing singular customer transaction to managing the customer experience.

This notion is imperative for businesses that pledged to outperform their competitors in markets which become increasingly transparent and where switching costs for customers decrease.

....
5 Shah et al. (2006)

As a consequence, many companies do not regard their customers as the passive recipients of their products and services at the end of the value chain; they become the point of origin for any value proposition and an active part in the innovating⁶.

The key metric for lasting market success turns from "to how many customers can we sell our products profitably" towards "how much value can we create for the customer and profit from it".

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6 Brenner et al. (2014)



EXHIBIT 1 product centricity vs. customer centricity

Digitization exposes the IT department in new ways: The perception shifts from being a cost factor towards being a source of competitive advantage. And as a consequence of increasing customer centricity, it gets into direct contact with a company's customers. Both bolster the status of IT within a company, but only if the homework is done. The IT department must accumulate competencies to generate digital assets⁷ as they are required, especially under states of uncertainty. As we argue with this report, through increasing their agility, IT departments become fit to fulfill their newly found position at the heart of company success.

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7 A digital asset is an asset that is created fully or partially with digital technologies.

FROM DEVELOPMENT AID TO PROFITABLE BUSINESS

INSIGHTS

Scope change

Conceived as a development aid, applied as a profitable business.

Implementation change

Intended as core banking component, implemented as independent solution.

Leveraged capabilities

Instead of charging and exchanging pre-paid air time, Safaricom customers charge and exchange money. The same mechanics and exact same distribution system are leveraged with local agents such as newsstands.

When it comes to digital business, Kenya is an unlikely leader. Nevertheless the incumbent mobile telecoms firm, Safaricom, managed to disrupt banking business with M-PESA, a money payment service based on SMS messaging⁸. Of Kenya's 25 million mobile phone users, over 18m are M-PESA customers – compared to 21 million deposit-account holders.

The service started with two basic offerings targeted squarely at the unbanked: peer-to-peer money transfer via SMS and money deposit and withdrawal via local agent outlets⁹. Safaricom has since expanded the service to make M-PESA useful in diverse scenarios, such as salary disbursement and paying bills, with the latest addition being a true mobile banking service¹⁰.

Through Safaricom's parent company Vodafone, M-PESA also expanded geographically, now operating in Kenya, Tanzania, South Africa, Egypt, India, and Afghanistan. With its launch in Romania in March 2014, M-PESA finally arrived in Europe.

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8 Most information presented here is taken from Omwansa et al. (2012).

9 See 2011 advertisement: <http://youtu.be/J1pb7PVuw5U>

10 M-PESA keeps track of its milestones: http://www.safaricom.co.ke/mpesa_timeline/timeline.html

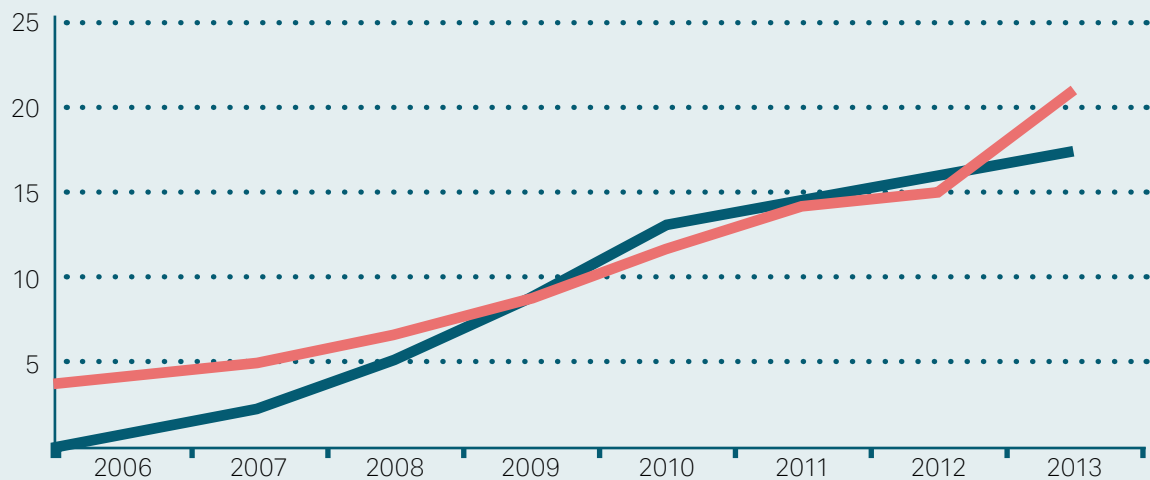


EXHIBIT 2: Kenyan M-PESA customers and deposit-account holders, in million¹¹

Although M-PESA eventually turned out well, its success was far from certain when it was conceived in 2003 by Nick Hughes, then Head of Social Enterprise at Vodafone. He proposed to leverage mobile phones as a platform for micro-loans and was granted a budget of around £ 2 million to develop and test a working prototype in 2004. After a series of workshops with different stakeholders in Kenya, involving NGOs with experience in micro-loans, local banks, and regulators, the technology approach supposedly became clear. The new mobile platform should be developed as a component of the Commercial Bank of Africa's core-banking system.

However, Hughes had the impression that projected development costs were too high and the system could become too rigid. Instead of pursuing the initial plan he appointed Sagentia, a medium-sized Cambridge-based product development agency, to develop an independently working mobile payment system. A pilot was set up with 500 trial customers in Nairobi in late 2005 with unexpected results. Instead of sticking to the

designed-for use case of micro-loaning, customers were finding innovative uses for the new M-PESA system. For example, people deposited money at one local agent, only to withdraw it later that day in another location, hence minimizing their risk of robbery while travelling.

As a consequence of the pilot results, the project team refocused the scope of M-PESA from micro-loans to what later culminated in the product launch slogan "send money by phone."¹² After a series of negotiations at Vodafone and Safaricom, they decided to launch M-PESA in Kenya with a launch budget near US-\$ 30 million. The pilot system had to be redesigned completely, not only to include the pilot findings, but more importantly to increase security measures and comply with regulations, e.g. implement anti-money laundering controls.

M-PESA was introduced with a large marketing campaign in March 2007 and became an instant hit. Over the first year, more than 2 million customers – ten times the internally projected number – signed up for the service. A project that started as a development aid in 2003 turned into a lucrative business in the course of four years.

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11 The Economist (2014)

....
12 2007 launch advertisement: <http://youtu.be/nEZ30K5dBWU>

The cyclical nature of digital business strategy

The mechanics of digital business strategy are very similar to traditional strategies, in that they have four fundamental attributes¹³:

DELIBERATE: decide on a clear vision and agree upon a high-level plan for implementation

REALIZED: induce organizational change through carrying out all or intermediate implementation steps

EMERGENT: adapt vision and/or high-level implementation plan through learning from organizational changes and from sensing market changes

CONSISTENT: over time, a common pattern is observed that in sum defines the strategy

One main defining quality of digital business strategy is that implementation is coupled with creating and making use of digital assets, which usually involves changing the existing IT landscape. Changing IT in the correct way and at the right time puts the IT department in the limelight of both strategy making and strategy implementation¹⁴. To fill this stage, appropriate capabilities on different levels of the organization need to be acquired and nurtured. With Part II of this report, we present a collection of these capabilities we encountered in practice with particular focus on changing IT systems.

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¹³ Mintzberg and Waters (1985)

¹⁴ Arvidsson et al. (2014)

Translated in a process model, each attribute discussed above can be tied to a process step, and digital business strategy becomes a cyclical, self-regulating system, see Exhibit 3. Regarded from this vantage point, the probability of success increases with the speed and dexterity with which each loop is traversed – or put differently, with the agility that is exhibited.

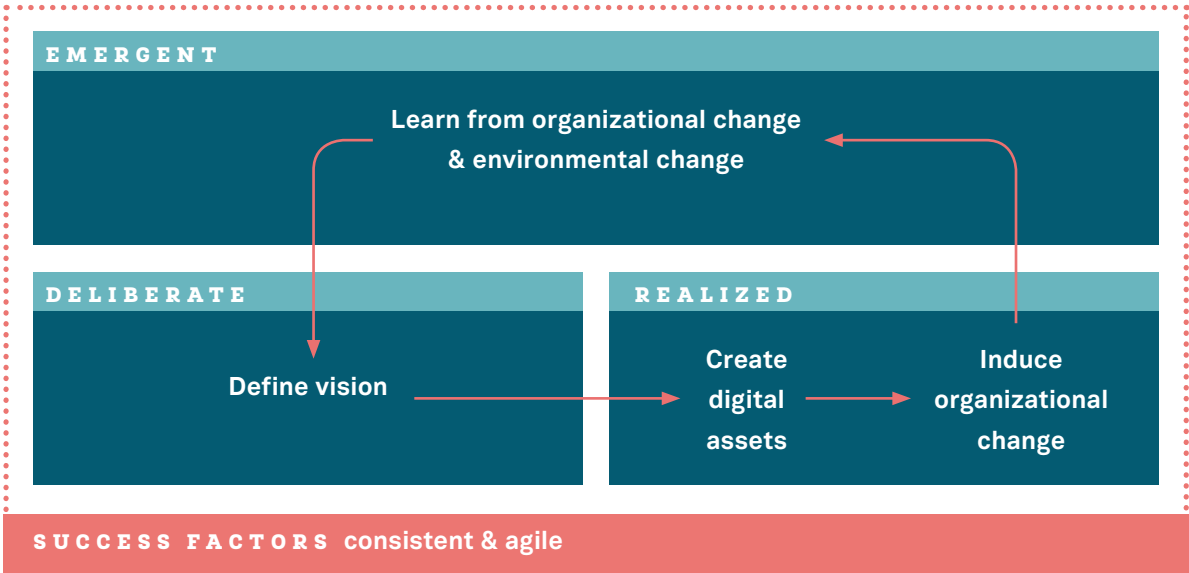


EXHIBIT 3: digital business strategy

These fundamental mechanics are at work on any organizational level¹⁵, from company-wide all the way down to individuals. That is why similar patterns can be observed at different places and in different contexts.

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15 Henfridsson and Lind (2014)

Agility as means to success in the digital age

Sensing environmental change timely and responding adequately¹⁶ – a basic definition of agility – highlights two formative and reinforcing elements of the construct, namely sensing and responding. From an organizational perspective agility is a dynamic capability¹⁷, meaning that a company becomes more agile the more sensing and responding behavior it exhibits. Agility is employed both with reactive and entrepreneurial intent, that is either as means to detect and avert external threats or as approach to discover and seize market opportunities. Because of this ambivalence, agility aligns well with digitization, which on the one hand threatens existing business, but on the other hand offers plentiful opportunities to those who are prepared to seize them.

Typically, companies who seek to become more agile emphasize the responding component, evident in statements such as:

“My understanding is that we can react fast and targeted on changes, be it induced by customers, markets, or regulation.”

IT SEGMENT LEAD, FINCORP A

Reflecting this perception, this report focuses on the responding element of agility because we encountered most practices in this area.

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¹⁶ Goldman et al. (1995)

¹⁷ Teece (2007)

But sensing capabilities are equally important¹⁸ as they allow identifying environmental change and putting those changes in their own organizational context. With under-developed sensing capabilities, external threats are identified relatively late thus creating immediate pressure to react hastily and leading to suboptimal results. Likewise, market opportunities are regularly missed and exploited by competitors. Sensing, therefore, has a lot to do with timely knowledge acquisition and assimilation, while responding is associated with performing the act of innovating, which requires compatible work processes.

The IT department as a digital assets generator contributes substantially to company-wide agility¹⁹, especially in the financial services industry with its large share of IT and even more so in the digital age in which both technology and customer needs change fast.

There is a more mundane part of digital technologies, though. Financial services are a highly regulated business and one that depends on flawlessly working IT systems. Typically, it is this part of IT that consumes most resources. What's more, the industry currently undergoes a phase of major regulatory scrutiny, which absorbs a large share of budget that would otherwise go into exploring business opportunities. Across all case companies, we observed a 70-20-10 split: 70% goes into maintaining current systems, and 20% goes into coping with regulatory change, with just the residual 10% available to invest into innovative solutions. Depending on the company's situation, a fourth component might be necessary: investments in IT capacity for scaling the business or for consolidating acquired entities.

Knowing this budget allocation, it becomes evident that IT departments cannot confine their agility capabilities exclusively to those cases in which they are able to invest in innovation. Otherwise any improvement on the agility front will have only marginal overall impact. Organizations that separate "innovative" from "operational" units mostly fail exactly for this reason. A more nuanced approach – one that differentiates through context, not through structural separation²⁰ – is required.

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18 Overby et al. (2006)

19 Chakravarty et al. (2013)

20 Birkinshaw and Gibson (2004)

Contextualizing agility

There are different understandings of what the goal of being agile should be. Three representative statements illustrate the spectrum:

“Agile means being quick or going live fast. If business has some needs, IT should answer that timely.”

IT PROJECT MANAGER, FINCORP B

“It’s the possibility to play with ideas and innovations in an 80/20 manner, going forward and making progress.”

MANAGING DIRECTOR, FINCORP C

“How fast can an organization appropriate important new topics and strike a new path?”

PROJECT MANAGEMENT LEAD, FINCORP D

While all three quotations emphasize the necessary speed element in agility, there are striking differences. In the first case, no strategic intent is visible, and chaos might abound when speed is the only goal. The second quote aims at exploring opportunities without making a fuss about it. And the third statement targets a situation when the organization at large is being transformed.

A main difference between pragmatically toying with ideas and venturing into new topics hands down is the organizational exposure. In the first case, it might be sufficient to assemble a small circle of experts to explore an idea. In the second, a considerably larger part of the enterprise is involved in the process.

Exhibit 4 structures this observation into a two-dimensional map. This Contextual Agility Matrix, as we call it, characterizes four types of digital assets in terms of their organizational exposure and the level of agility throughout the delivery process. Digital assets come in many forms:

algorithms, data structures, simulation models, software components, applications, interfaces, IT architectures, etc. Their commonalities are their digital nature and that they are of value to an organization. With Exhibit 5, we further present possible decision points for determining when it makes sense to deliberately move a digital asset from one quadrant into another. In practice, we observed that such a move commonly entails a re-implementation with different technology. To keep the exhibit accessible, we do not regard the possibility to remove assets altogether in each quadrant.

I ENTREPRENEURIAL

Assets in this quadrant are in a high agility mode and with a low level of exposure. Starting with an initial idea, the potential and boundaries are tested systematically, typically employing few resources. A main focus is exploring the user needs, which typically results in prototypes²¹. Additional technical capabilities might be acquired, but only to the extent necessary to validate the strategic potential. This is the natural place for exploring new things.

A decision point occurs when the strategic potential becomes clear: if it is high, it becomes a worthwhile option to employ and a move upwards becomes viable. If the strategic potential is low but there is still some value to extract, the asset might move to the Support quadrant.

EXAMPLES: novel asset valuation algorithm, predictive analytics, quantum computing.

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21 Brown (2008)

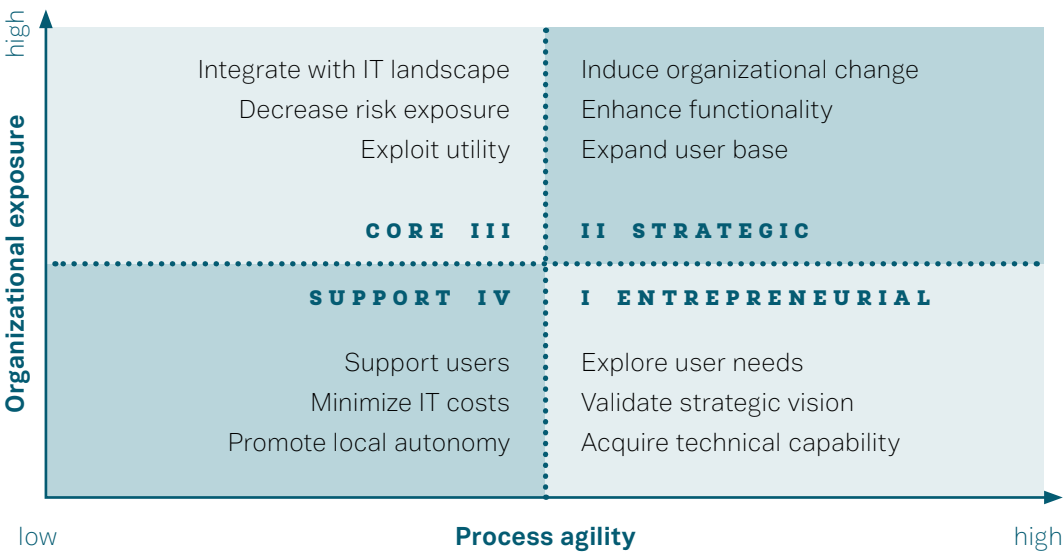


EXHIBIT 4: the Contextual Agility Matrix

APPLYING THE MATRIX

Because design assets can be complex and any situational context is hard to define in advance, the characterization in this chapter tells just a few of many possible stories. For a particular company, it might make sense to classify their digital assets differently or regard different decision points for design moves. But the overall messages remain intact:

- » IT departments need skills, technologies and processes to cover different configurations of delivering digital assets.
- » There must be routes put in place to ensure transitions.
- » IT assets are not created in singular projects but nurtured over time.

II STRATEGIC

Assets in this quadrant are in a high agility mode and exposed throughout the organization. They are positioned with the intent to induce organizational change and thus regarded as strategic. An agile environment is required because the outcome is unknown from the outset and complexity is high²². The value of those assets is increased step by step. A main concern is achieving acceptance in the organization, e.g. through expanding the user base. While not seeking to reap considerable profits yet, digital assets in this quadrant become a main source of competitive advantage.

When the intended organizational change has been brought by this asset, e.g. through a re-configuration of a value chain, it makes sense to decide on deeper integration into the IT landscape. On the contrary, if organizational fit has not been achieved it might be sensible to go back to the drawing board with a move into the lower quadrant.

EXAMPLES: mobile payment, multi-channel banking platform, cloud-based IT architecture.

III CORE

Assets in this quadrant are in a low agility mode while organizational exposure is high. These are the “bedrocks” of an enterprise on which a large part of business operations rely. Typically, these assets are sophisticated, useful, and highly integrated, while intricate technical and organizational dependencies make changes cumbersome²³. In addition, processes enabled or supported by these assets are quite stable over time. Because of these characteristics, building capabilities for short-term responses would be wasteful and at times counter-productive. Consequently, a lot of up-front planning goes into any adaptation endeavor. Legacy systems from which an organization continues to extract substantial rents are also within this quadrant.

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²² Little (2005)

²³ Weill and Ross (2005)

Technological change, mounting technical debt,²⁴ or other factors can increase the desirability of renewing an asset in this quadrant. Such an endeavor is likely complex and its outcome uncertain, therefore a move towards a higher agility mode can be sensible. A move downwards is akin to releasing the asset from central to local supervision, which might make sense if the economic benefit diminishes.

EXAMPLES: customer relationship management system, core banking platform, data warehouse.

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24 Kruchten et al. (2012)

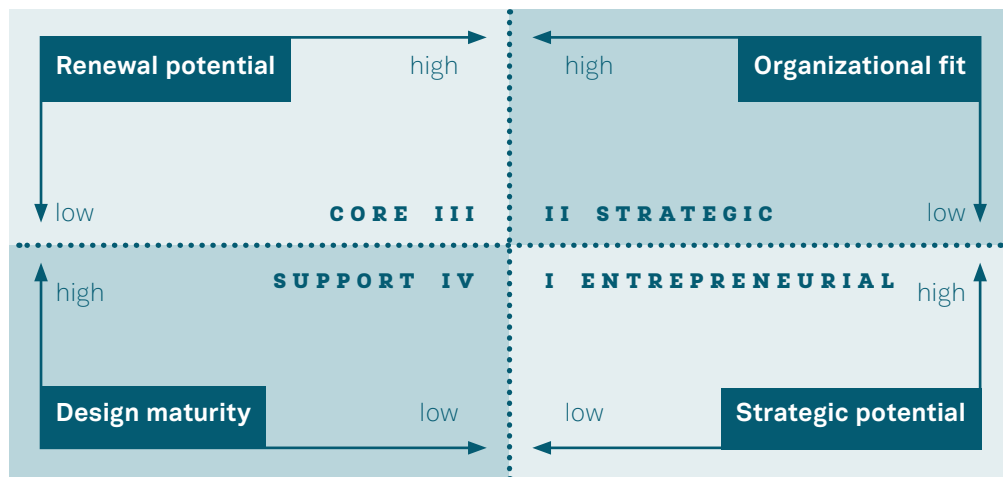


EXHIBIT 5: exemplary decision points and asset moves

IV SUPPORT

Assets in this quadrant are in a low agility mode and organizational exposure is also low. Usually they are created with little involvement of the IT department and suit local needs²⁵. Taken together these assets might still create significant value, therefore user support should be ensured. Those who profit from such assets might perceive their creation as agile, but their “free-style” characteristics do not match with a strategic view of agility. Also assets that have become insignificant for the larger organization fit into this quadrant.

These assets can be cleverly designed and very valuable. If the benefit associated with them can be scaled beyond the initial scope, a move upwards might make sense. If design maturity is low, however, a move to the right and more experimentation would be more advisable.

EXAMPLES: spreadsheet models, reporting dashboards, legacy software.

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25 Behrens (2009)

HOW FIVE ENGINEERS RE-IMAGINED RETAIL BANKING

INSIGHTS

Through focusing on a few differentiating features, a small engineering team was able to go to market within a year.

Disintegration of value chains through commoditization of many business processes was the foundation of Simple – ten years ago their business would not have been feasible.

Simple (previously BankSimple) started with the idea to create an on-line banking experience that is superior to existing offerings²⁶ through clever usage of technology. Setting up saving goals (e.g. for a vacation) and letting the software automatically deposit a varying daily amount that is “safe to spend” towards meeting this goal is one of the most popular features amongst its customers. Incorporated in July 2009 in New York City, the company has been opening bank accounts on an invitation-only basis since August 2010, after just one year of product development. Currently, Simple has attracted over 100,000 customers, with many more on the waiting list.

Initially, the customers were required to use a smartphone app for accessing most functionality. Differentiating only through its customer-facing applications, Simple contracted a retail bank for FDIC-insured deposit-holding and a separate company for transaction processing. During the first year of development the core engineering team consisted of roughly five people. Currently Simple employs a staff of 100 or so, most of which are customer support. The company raised US-\$ 18 million over several funding rounds and was acquired by BBVA of Spain for US-\$ 117m in February 2014. It operates now as separate business unit.

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26 Most information presented here originates from the Simple company blog: <https://www.simple.com/blog/>



Four decisions each CIO should make

In the previous chapters, we discussed digitization, the nature of strategy-making, and the role of agility. Reflecting and expanding on these themes, here are four key decisions that an IT leader should make.

BE A DIGITAL LEADER OR FOLLOW THE MARKET?

The most fundamental decision revolves around the path that the company chooses with its digitization strategy: either be a digital leader, constantly seeking opportunities to explore, or closely follow the market, exploiting innovations only after they have proved to work²⁷. Each approach has its merits and disadvantages. The digital leader will strive to be first to market and aggressively employ the latest technology. But potential benefits must be weighed against cost intensity, risk of failure, and constant organizational unrest. The digital follower will scrutinize any innovation carefully and emphasize operational excellence. On the downside, crucial opportunities might be missed and compromise long-term firm success.

Depending on the chosen path, the meaning of agility is different. For the digital leader, being agile translates to exploring frontiers and innovating. The focus within the Contextual Agility Matrix is therefore on quadrants I and II. The digital follower interprets agility as a means to rapid and nimble execution, which emphasizes the importance of agility in quadrants III and IV.

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27 Chen et al. (2010)

EMBRACE DIGITAL TRANSFORMATION OR ENCAPSULATE DIGITAL INITIATIVES?

From an outside view, customer-centric digitization of financial services equates to creating customer-facing applications, in particular mobile phone apps. But true digital transformation is decidedly more expansive. Technology platforms must be adapted or exchanged, and internal processes have to be remodeled to embrace digitization and customer centricity. Leaders have to decide when the time has come to put the organization under such great stress. In a more conservative approach, digitization efforts are limited in scope or encapsulated from the mainstream organization altogether. While valuable experiences are collected, parallel structures and diverging cultures might result, which hampers the ability to leverage knowledge collected in experimental environments.

In a hybrid approach, a Chief Digital Officer (CDO) is in charge of strategizing digital channels and other digitization efforts. The CDO also drives implementation in tandem with business and IT functions. In many cases, it is the stated mission to render the CDO role redundant within a few years through promoting digitization competencies throughout the company.

In the context of the Contextual Agility Matrix, the transformational approach relates to placing large investments in quadrant II and ensuring a smooth transition towards quadrant III. The encapsulation strategy relates to carrying out experiments within quadrant I and contemplating subsequent transition towards quadrant II.

RELY ON AN AGILE WORKFORCE OR ON AN AGILE TECHNOLOGY BASE?

There are two basic lines of attack when it comes to promoting agility, namely relying predominantly on an agile workforce or relying on an agile technology base. These approaches are not mutually exclusive and indeed depend on each other. But there are many contexts when a decision is made to favor one approach over the other.

A preference for workforce agility is rooted in a deep trust that employees act in the best interest of their company and do not misuse freedom granted to them. In an extreme example, access to confidential data is not restricted by technical means but sanctioned through individual judgment. Tolerance for errors is generally high, for example resulting in bringing software into operations that is just 80% finished and has known errors. Finally, such an approach promotes the formation of a large base of generalists who are able to assume different roles depending on the challenge at hand.

Technological agility has a lot to do with investing in modular enterprise architecture²⁸ and gaining the ability to reconfigure digital assets according to business needs. Approaches like SOA²⁹ and technologies such as virtualization afford organizations with capabilities to respond to environmental change more readily. Opposed to the employee-centric approach discussed above, necessary capital expenditures are considerably higher but in many cases indispensable, be it for regulatory reasons or due to firm size.

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²⁸ Ross (2003)

²⁹ Joachim et al. (2013)

STRIVE FOR ORGANIZATIONAL AGILITY OR SOFTWARE DEVELOPMENT AGILITY?

The quest for agility has been popularized by so-called “agile” methods in software development³⁰. In 2001, the “agile manifesto”³¹ established a de-facto standard for how digital assets were supposed to be created. However, the scope of agility is considerably greater, which is also a common thread throughout this report. Decision-makers need to take a stance on whether they strive for organization-wide agility or agility in the narrow sense of software development. IT leaders that experienced positive effects in their field of responsibility may choose to become agility evangelists, nudging the rest of the organization towards greater agility.

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30 The term “agility” is also popular in manufacturing industries, focusing there on production and supply chain challenges.

31 Fowler and Highsmith (2001)

Embarking on digital transformation is a great journey on untested waters and with an unknown destination. In financial services, regulatory scrutiny throws additional turbulence into the mix. For firms to navigate securely, they need great leadership and a crew that is empowered to respond competently to whatever challenge they encounter.

The Agile Delivery Playbook



PLAYBOOK OVERVIEW



The Agile Delivery Playbook

On-site observation, analysis of company material such as project documentation and in-depth interviews unearthed a number of practices that financial services companies apply to achieve agility. We also discovered a set of principles that underlie these practices.

The Agile Delivery Playbook is a condensed collection of four agile delivery principles and eight accompanying practices that have proven to work. We regard the Playbook as complementary to popular models such as Scrum³² or XP³³ and upcoming frameworks such as Disciplined Agile Delivery³⁴ or the Semat Kernel³⁵.

This collection is not comprehensive in a sense that it strives to solve all agility needs of an IT department. But it provides guidance for enterprises that are willing to start the agile journey and may serve as a benchmark for those who already apply agile practices. In this sense, the Agile Delivery Playbook is a discussion facilitator and serves to identify fields of action. Its open structure allows for extensions as additional relevant practices and principles are identified³⁶. For example, we argued that sensing capabilities are important to achieve true agility, but weren't able to operationalize them with practices yet.

With Part I of this report, we presented the Contextual Agility Matrix to sharpen the different flavors of agility that a truly agile IT department is able to handle competently. Living up to the expectations of each quadrant and each arrow from one quadrant to another means putting adequate competencies in place. The following building blocks may help in this avenue.

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32 Beedle et al. (1999)

33 Beck and Andres (2004)

34 Ambler and Lines (2012)

35 Jacobson et al. (2013)

36 Perroud and Inversini (2013)

PRINCIPLE Contextual agility capabilities

AGILITY CONTRIBUTION Contextual agility brings flexibility in the type of projects that IT departments can handle efficiently, ranging from ad-hoc business support with focus on execution speed to projects that transform the whole organization in the process.

MOTIVATION & DESCRIPTION IT departments need to acknowledge that there are different modes of agility. Simply introducing agile project management with Scrum or agile coding practices with XP is not sufficient. Depending on the type of delivery project at hand, the IT department has to offer distinct agile configurations, ideally with a coherent underlying logic.

Mature organizations already introduced holistic frameworks such as RUP³⁷ and CMMI³⁸ that in principle can be tailored according to such needs. However, these frameworks have usually been implemented with full sophistication as regular case in mind. IT departments find it hard to strip down these models subsequently. Common agility blockers are elaborate sign-off procedures at the end of iterations and a multitude of documentation requirements that were designed for a waterfall-like approach to systems delivery.

SUCCESS FACTORS Support different agility modes across several layers, from technology and processes up to governance and customer collaboration.

Reconciliation with established company standards, such as CMMI maturity levels or RUP organizing logic.

Establish a continuous improvement process – the journey never ends.

CHALLENGES & RISKS Over-engineering the set of rules to decide which agility mode is adequate or when a switch from one mode to another is in order.

Resorting to an inadequate agility mode just because it seems to be convenient or is the one that employees on the IT or business side feel most comfortable with: agility starts in the minds of every person.

Processes on which agile delivery depends are ineffective or lengthy, for example budgeting processes.

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³⁷ Kruchten (2004)

³⁸ CMMI (2010)

PRACTICE Process model for contextual agility

GOAL & PURPOSE Implement the process capabilities to carry out different modes of agile delivery, depending on the project requirements and circumstances.

Achieving contextual agility is a tall order. While technology capabilities such as virtualized hardware are commonly readily available, process capabilities are often not developed sufficiently.

DESCRIPTION Traditionally companies strived to implement a standard process model in systems delivery. Albeit often flexible in principle, contextual tailoring is seldom observed in practice.

Easy-to-handle approaches to process tailoring are required. IT departments which have identified this challenge tackle it in one of three ways: implement different patterns to choose from, introduce a traditional and an agile route, or keep teams and their domain constant and let them figure out the best configuration over time.

With the pattern approach, a project is categorized according to different dimensions, and for each combination a particular pattern is recommended. Common dimensions for categorization are: team size, project cost, project risk, co-location possibilities, and outsourcing share.

Another possibility is to separate agile delivery from traditional delivery. This approach is implemented rather easily, which is a main advantage. But it has several drawbacks: First, there is just a binary choice to make. Second, a switch from one mode to another is nearly impossible. And third, this approach lacks consistency.

The third approach is suitable for larger programs where specialists work together for an extended period of time, typically years. When team composition and the general scope remain constant, the team will most likely adapt the delivery process and develop their own variant. On the downside, their findings will not be available to the larger organization.

A solid foundation for any of those approaches requires establishing a generic high-level process with common milestones. Models such as RUP or Prince2³⁹ provide sensible starting points for defining them.

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39 OGC (2009)

VARIATIONS Because no generally accepted practice exists, we found it appropriate to incorporate the main variation points in the description above.

SUCCESS FACTORS Achieve a high share of common elements for each process configuration. Having process experts, a project management office, or similar resources in place that are competent in guiding the process when needed.

CHALLENGES & RISKS Half-hearted implementation of a flexible process model, strongly favoring one configuration over another.

Introducing too many configurations or possibilities to tailor the process. What is meant to add flexibility ends in confusion and additional overhead. Few but well-curated options are a better approach.

P.1.2

ACTIVE CUSTOMER COLLABORATION

PRACTICE Active customer collaboration

GOAL & PURPOSE Get the customer involved in the delivery process early on and – more importantly – steadily.

An agile approach requires feedback loops that are in synch with the delivery cycle. Asking for a requirement document up-front and for a sign-off after the fact is not sufficient.

DESCRIPTION One of the largest challenges that IT departments have when it comes to increasing their level of agility is the availability of competent counter-parties on the customer side, which can be internal or external to the company.

For illustrative purposes we focus on the internal customer in a slightly exaggerated manner: the business side came to learn that their job is writing requirement documents to the best of their knowledge, handing them over to the IT department, and reviewing the results after implementation. The IT side realized that feature creep⁴⁰ and other unpleasant disturbances occur when they ask for feedback.

Despite all its drawbacks, a regular exchange between those who use or are dependent on a digital asset and those who create it is vital to achieve agility.

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40 Elliott (2007)

VARIATIONS Institutionalizing customer collaboration happens in many forms, which we structure along the three dimensions proximity, granularity and periodicity.

Proximity: collaboration happens directly with the customer or indirectly through a proxy. To benefit from the advantages of either type, some companies advocate a mixed approach, relying on the proxy most of the time but holding regular events to identify true customer needs and validate assumptions.

Granularity: collaboration can be confined to a singular project or cover a broader portfolio. A proven means to discuss portfolios is establishing process circles or other cross-disciplinary and domain-specific forums.

Periodicity: unpredictable ad-hoc requests may cause stress. A better approach is to agree on regular periods for collaboration. Bi-weekly or monthly intervals are the most common ones observed.

SUCCESS FACTORS Create a constructive atmosphere with each collaboration occasion. Develop empathy for the counter-party, and always strive to balance the interest of all stakeholders.

Provide the organizational slack required for effective and sustainable collaboration. Do not confuse it with task forces and firefighting.

Keep collaboration stringent; prevent a degeneration to blabber rounds without true insights.

CHALLENGES & RISKS Collaboration grows with consistency. Erratically changing the composition of process circles or other forums is counter-productive.

Mistrust and political power play usually undermine any collaboration endeavor.

PRINCIPLE Improve organizational execution

AGILITY CONTRIBUTION Levers to increase agility do not exist only between IT and business functions, but also within the IT department. A streamlined value chain across all disciplines fosters internal collaboration and decreases coordination effort.

MOTIVATION & DESCRIPTION Not least because IT is deeply embedded in everything financial institutions do, their IT departments are usually complex. On the infrastructure side, technology silos are usual, for example those specializing in mainframe systems or databases. Organization-wise, completely different operating models between business units or regional entities are a common phenomenon. Additionally, roles and responsibilities are often divided in a way that impedes day-to-day collaboration.

A lot of these structural shortcomings are historically grown. For example, in a pre-cloud and pre-virtualization era, technology silos made sense, and organizational differences may have been due to fundamentally different market demands or because of prior acquisitions.

Blurring these boundaries is a large part of digital transformation. More and more companies reconfigured their IT departments along the plan-change-run process and tore down divisions between domains, in a pledge to improve their execution capabilities.

SUCCESS FACTORS Provide a common target vision on how the IT department should operate and which capabilities it should acquire.

Take the vantage point of your customers when strategizing about re-configuration of the IT value chain.

CHALLENGES & RISKS “Too-big-to-fail” regulations must be adhered to, which may impede simplification efforts across business units or regional entities.

Cultural differences play a big role in any reconfiguration effort.

Legacy infrastructure may require workarounds which counter efforts to improve organizational execution.

PRACTICE Plan-change-run operating model

GOAL & PURPOSE Increase the transparency of IT value creation through decluttering and focusing on core competencies.

DESCRIPTION IT infrastructure convergence and commoditization have created scope for consolidating the IT department along their three main processes plan, change, and run. Additional separation along technology silos become less relevant and even a hindrance to designing digital offerings across multiple channels.

The plan-change-run operating model offers a unified view of the IT department that the business side understands: “plan” is concerned with managing the customer relationship and portfolio of digital assets; “change” subsumes all competencies necessary to create and alter digital assets; and “run” ensures smooth operations and provides customer support. In addition, it is common to provide a set of overarching shared services such as IT controlling or project management. Also regional differentiation is typically encountered, for example through regional coordination boards.

While not revolutionary, a plan-change-run operating model builds the foundation for digital transformation. The more streamlined the IT department operates, the more time it can spend to create business value. As a side-effect, simplification of the operating model increases the scope for outsourcing, for example of the first level support functions in the run organization.

VARIATIONS Countless adaptations to idiosyncratic organizational structures exist, of which we highlight just two: localization and layering.

Localization: any enterprise that operates in more than one jurisdiction faces decisions around local adaptations, ranging from different languages to incompatible regulations. A lightweight approach is establishing regional coordination boards without genuine IT resources. Another possibility is to localize some parts of the IT value chain (e.g. run) and keep the remainder central. Finally, entirely independent IT organizations are encountered.

Layering: depending on company heterogeneity, it may be sensible to layer the IT functions and increase business autonomy with each layer. The lowest layer provides basic services that are centrally managed and possibly outsourced. On the top layer, highly customized digital assets are created and maintained, usually under full accountability of business functions.

SUCCESS FACTORS Step-wise transition towards a more coherent operating model with a multi-year planning horizon.

Leverage technology advancements such as cloud technologies effectively.

Balance local needs and simplification targets.

CHALLENGES & RISKS Creating unintended bottlenecks at the interfaces, for example through under-staffing demand management.

Emphasizing cost reduction considerations over execution improvements.

P.2.2

CONTINUOUS DELIVERY CAPABILITIES

PRACTICE Continuous delivery capabilities

GOAL & PURPOSE Minimize the effort for delivering a digital asset after the first iteration. A key metric is the time required to push an insignificant change (e.g. one altered line of source code) into productive environments.

Automate as many steps as possible which simultaneously reduces costs and errors and increases delivery speed and traceability.

DESCRIPTION Continuous delivery is a practice where developers integrate and test their digital assets frequently, with the possibility to deploy into productive environments. A prerequisite is an infrastructure with the following features: central source repository, automated compilation, integration and testing, and push-button deployment into test or productive environments.

Traditionally, development, integration, testing, and deployment were kept separate for two main reasons. First, in a sequential delivery model, transition points are rare and far in between. And second, strictly segmenting the process steps enforces a segregation of duty⁴¹, meant to safeguard from unauthorized changes.

With the need to increase the rate of iterations, process automation and collaboration between the different IT roles becomes indispensable. Leading companies invest heavily in continuous delivery capabilities and find that automation is compatible with segregation of duties because every action is documented and access authorizations can be tailored.

VARIATIONS As main variation dimensions for continuous delivery we identified: automation, testing, target environments and production access.

Automation: maturity of continuous delivery capabilities can be assessed by the level of automation. Companies typically start with a central source repository and automated integration and take it from there.

Testing: apart from the sophistication of testing suites tied to continuous delivery, there are different strategies to handle encountered errors. In a Jidoka⁴² approach errors are dealt with right away. Other approaches include prioritizing error-handling along with other tasks, or delegating them in independent work streams.

Target environments: considerable variation exists in the breadth of available target environments. The more fragmented a firm's technology base, the harder it is to establish comprehensive continuous delivery. Some companies are able to target several platforms from a unified source base.

Production access: usually developers are barred from productive environments, except in case of emergency. Some companies grant their developers direct access to productive systems, if sensitive data is not an issue. Alternatively, the testing environment mirrors the productive environment, with just the data being obfuscated.

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41 ISACA (2012)

42 Danovaro et al. (2008)

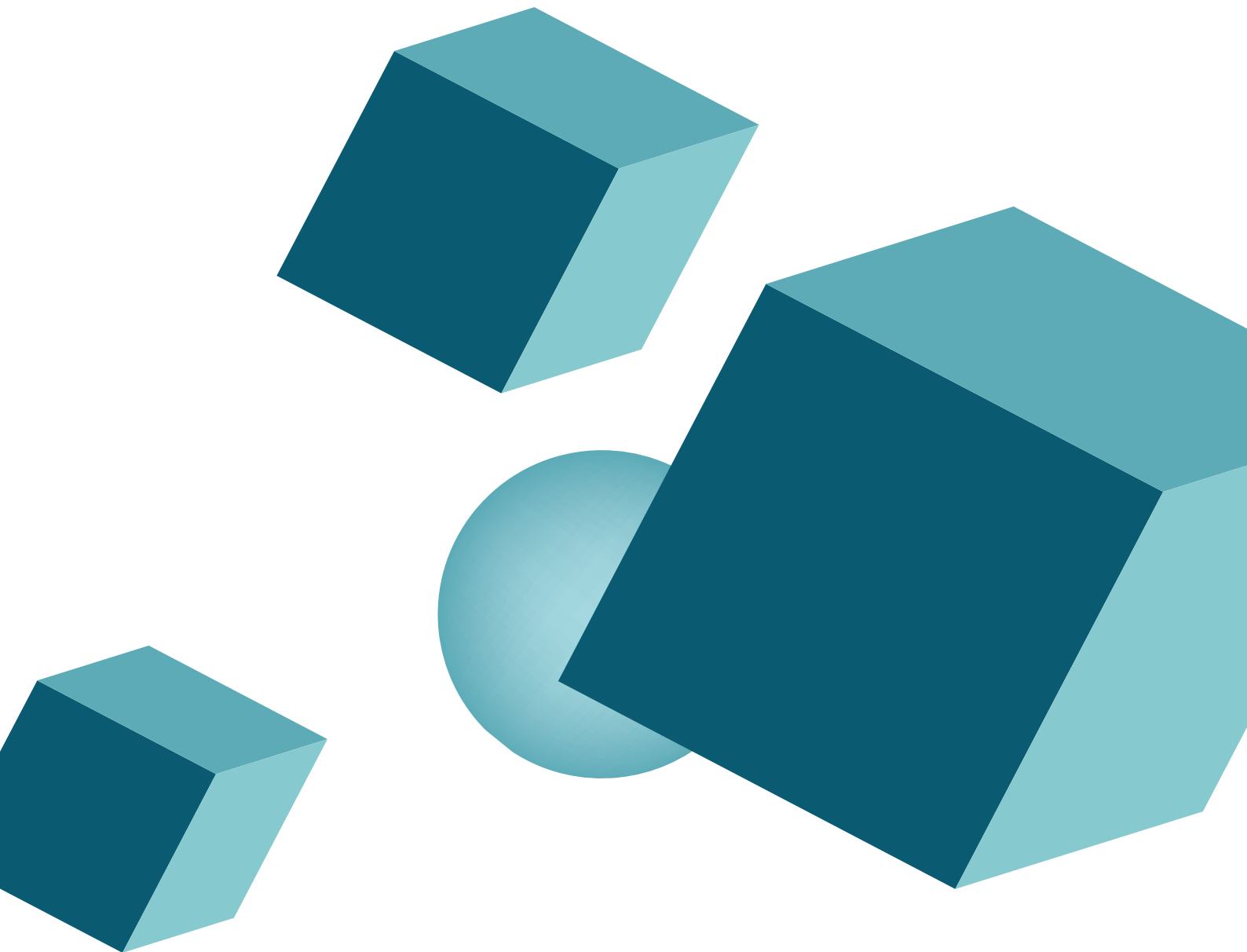
SUCCESS FACTORS Reconcile segregation of duties logic with continuous delivery capabilities.

Unlock collaboration between all involved IT functions.

Provide an infrastructure that is trustworthy and usable.

CHALLENGES & RISKS Heterogeneous IT infrastructure increases the complexity of continuous delivery.

Automation can potentially be exploited maliciously. A series of safeguards are required, e.g. triggered sign-off requests.



FAST ENGINEERING RAMP-UP

PRINCIPLE Fast engineering ramp-up

AGILITY CONTRIBUTION Reducing the effort needed to initiate an engineering task increases responsiveness of the IT department.

MOTIVATION & DESCRIPTION Organizations that embark on the agile delivery bandwagon commonly realize that it takes too long until productive work effectively starts, which diminishes potential returns in agility increase. Thus building capabilities for fast engineering ramp-up is a crucial puzzle piece. There are two main areas of action: decision-making processes and infrastructure provisioning.

To diligently match incoming requests against business priorities, the project agenda of IT departments is typically set on a yearly basis. To counter flexibility loss, many companies plan with contingencies to react outside those planning cycles. However the decision-making process is often perceived as inefficient.

Developers regularly complain about the time required to procure necessary infrastructure, for example virtual collaboration spaces or test environments. Assuming a traditional yearly planning cycle, procurement processes are tuned to cost-efficiency. Lead times of several months are commonplace.

SUCCESS FACTORS Invest in self-service capabilities, for example service catalogs.

“Plant the seed” instead of “cover your ass”⁴³: Experiment and fail rather than spend the same amount of resources on planning and numerous sign-off cascades.

CHALLENGES & RISKS Without regular consolidation, fast engineering capabilities may weaken the overall enterprise architecture due to over-reliance on quick-fix initiatives.

Suitable controls should be put in place to minimize the chance of wasting resources on pet projects.

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⁴³ The authors thank two interview partners for coming up with these terms.

PRACTICE Self-service infrastructure provisioning

GOAL & PURPOSE Simplify provisioning of necessary IT infrastructure to initiate a project. By offering a range of standard configurations that are well-defined, complexity of the IT landscape is reduced.

DESCRIPTION How fast a delivery project can start is determined also by how fast the engineers are able to procure their required infrastructure. As a consequence of widespread adoption of sophisticated service management frameworks such as ITIL⁴⁴ most organizations already introduced service catalogs, for example comprising numerous server hardware configurations with various service levels. But piecing the individual parts to a full “bill of material” is time-consuming, error-prone and involves many manual steps. Provisioning lead times of several weeks or even months are not uncommon.

A few companies have invested in self-service provisioning capabilities akin to online stores⁴⁵. By following a structured order form, engineers configure their required infrastructure and get access to it within minutes. Self-service offerings may comprise not only development and test environments, but also additional tools and services such as online collaboration spaces.

Cloud technologies and continuous delivery capabilities are beneficial to realize self-service stores, because the same infrastructure can often be leveraged to automate provisioning processes.

Complementary to online stores, software templates decrease the ramp-up effort. They provide preconfigured environments to which in the best case just business logic is added. Templates integrate commonly used services such as authentication and authorization or interfaces to back-end systems.

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44 OGC (2007)

45 These stores are comparable to Amazon Web Services, <http://aws.amazon.com/>

VARIATIONS Just a few companies develop the capabilities described above because the requirements are quite steep. Virtualized hardware, cost transparency, and a high level of automation are just a few. For this reason, we were not able to observe any meaningful variations in practice.

SUCCESS FACTORS Actively curate the service catalog and adapt it to changing needs.

Increase the level of automation and sophistication step-by-step but avoid becoming trapped in legacy technology.

CHALLENGES & RISKS An enterprise architecture that consists of heterogeneous or highly customized infrastructure can hardly be made accessible.

Adding too many bells and whistles – offering fewer options decreases investments and increases robustness of self-service provisioning.

P.3.2

DISCRETIONARY BUDGET FOR SMALL PROJECTS

PRACTICE Discretionary budget for small projects

GOAL & PURPOSE Making discretionary budget available to execute small projects on short notice facilitates maneuvering through unpredictable times and unlocks resources for experimentation.

DESCRIPTION Some companies that have rigid planning and decision-making processes in place acknowledge that they must provide more flexible means to initiate projects. An obvious way to implement flexibility is through earmarking discretionary budgets for small projects.

Simply allocating a budget lump sum is not sufficient, however. Also, decision-making and the organizational structure must be aligned. This means that sign-off procedures can be passed within hours or days, not weeks or months. And the IT department must provide the necessary slack to execute these unpredicted projects. After all, it is no use if financial backing is secured but qualified people are not available.

VARIATIONS We encountered variations mostly in three areas: budget allocation, locus of decision-making, and slack.

Budget allocation: quite a few variants exist regarding how discretionary budget is made available. A global lump sum that is spent on a first-come, first-served basis is one option, but has its drawbacks. Another way is to earmark a fixed share of business-held budget for discretionary IT spending which each team lead manages autonomously. A third variant is to create several “strategic buckets” that can be tapped, usually with the purpose to innovate. Irrespective of the model, a strict, usually five-digit, spending limit per project is typically enforced.

Locus of decision-making: the trade-off to be made when designing the decision-making process is obvious: either let individuals decide with the risk of duplicating efforts and other wasteful behavior, or go through lengthy sign-off rounds which costs time. Some companies favor the first approach when accompanied by a low spending ceiling.

Slack: the seemingly easiest way to assure a certain amount of slack is relying heavily on contractors. Because onboarding external engineers is time consuming, long-term agreements are crucial for this model to work. Other organizations operate dedicated rapid respond teams that are usually familiar with one set of technologies but are able to provide services across many domains. A third option is to plan with contingencies and thus grant all teams a certain amount of slack.

SUCCESS FACTORS Lower bureaucracy considerably compared to usual demand management project.

Afford the IT department some slack to gain ability to execute promptly.

CHALLENGES & RISKS Striking the right balance between funding ceilings, overall budget allocation, decision-making bureaucracy, and organizational slack is a constant struggle.

Safeguards must be put in place to detect unintended exploitation, for example when several small projects are truly one larger project which has been split to fit the funding scheme.

IT CAPABILITIES OUTSIDE THE IT DEPARTMENT

PRINCIPLE IT capabilities outside the IT department

AGILITY Through nurturing IT capabilities outside the traditional IT department, companies unleash previously untapped sources of ingenuity and reduce the overhead required to create digital assets.

CONTRIBUTION

MOTIVATION & DESCRIPTION Digital transformation blurs the line between IT and business functions. What's more, commoditization of IT services drives an increasing share of value creation to outsourcing providers. The IT department needs to react to both trends by facilitating collaboration with internal and external partners.

If the IT department does not lower the barrier to collaborate, business functions will simply bypass the sanctioned channels, as the seemingly ubiquitous phenomenon of "shadow IT"⁴⁶ demonstrates.

Similarly, capabilities to efficiently collaborate with outsourcing partners are dearly required; otherwise the expected cost, flexibility, and skill advantages will not materialize.

SUCCESS FACTORS Regard collaboration with internal and external partners as an opportunity in the digital era, not a threat.

Promote cross-functional career paths to grow the understanding of business and IT needs.

Discuss openly and communicate clearly the boundaries of IT capabilities outside the IT department.

CHALLENGES & RISKS Allowing too much freedom may lead to various unintended consequences, such as integration or compliance issues.

Quality of digital assets might decrease due to sub-standard or amateurish asset creation.

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46 Behrens (2009)

OUTSOURCING COLLABORATION ZONE

PRACTICE Outsourcing collaboration zone

GOAL & PURPOSE Provide an environment to collaborate with outsourcing partners with the aim to adhere to company standards and decrease friction in delivery projects.

DESCRIPTION Offloading IT competencies and capacities has become the norm also in systems delivery. However, most companies continue to enforce their company standards, be it with regard to technologies or engineering norms. It is also common that internal and external IT specialists work side by side. Secure collaboration zones facilitate collaboration through an encapsulated work environment and provide interfaces into company-internal IT infrastructure. Some of these environments are integrated in the continuous delivery tool chain.

VARIATIONS Two fundamental variation points were observed: sophistication and physical location.

Sophistication: in its most basic form, the “collaboration zone” is just a company workstation that the outsourcing partner may utilize on-site. More sophisticated solutions replicate parts of the internal infrastructure safeguarded by firewalls and other security measures.

Physical location: when creating custom software (as opposed to adapting off-the-shelf products) most companies require any company-external personnel to be on-site. Source code, data, etc. may never leave company territory. Just a few organizations invest in remote collaboration capabilities that allow them to share intellectual property and other confidential data securely.

SUCCESS FACTORS Long-term relationship with outsourcing partners is paramount to offset the necessary investment and ultimately profit from the setting.

Achieve full compatibility with company-internal infrastructure to avoid unpleasant surprises.

CHALLENGES & RISKS Changing the outsourcing partner usually entails elaborate training and other onboarding efforts.

If the collaboration zone is not fit for purpose, other (usually less secure) means of collaboration will be employed.

PRACTICE Shadow IT support

GOAL & PURPOSE The business side must be able to create digital assets on their own – so provide tools and know-how to support them. Monitor the prevalence of shadow IT and ensure controls are put in place.

DESCRIPTION Most IT experts would agree that without shadow IT, manifest in countless spreadsheets, local databases, and other digital assets no financial institution would survive. In addition, shadow IT can serve as working prototype and help to shape requirements.

IT departments recognize that it is better to embrace than inhibit shadow IT and deliberately provide infrastructure to enable autonomy of business functions.

VARIATIONS Three main areas for variation exist: technology, personnel, and monitoring.

Technology: officially sanctioned technology range from spreadsheet calculators and workflow engines to development suites for browser-based applications.

Personnel: some IT departments have dedicated teams for assisting business functions in shadow IT development. Other firms place such support roles directly in the business organization, entirely sidestepping the IT department.

Monitoring: driven by regulatory pressure, companies go to great lengths to ensure that risk controls are functional, for example proper versioning or access control. While real-time monitoring is unusual, cataloging the shadow IT landscape in yearly cycles is commonplace.

SUCCESS FACTORS Align shadow IT support to business needs.

Implement pragmatic risk controls in order to achieve high compliance.

CHALLENGES & RISKS Shadow IT is a double-edged sword: while it increases ability to cater to local needs it also introduces additional security risks.

Proliferation of shadow IT might compromise the IT landscape in terms of consistency and quality.

The practices collected with the Agile Delivery Playbook provide first-hand insights on what it takes to establish agility capabilities within the IT department. But this is just the launch pad – setting sail commences with reasoning about applying these insights to their own organizational context.

How we collected data for this report

CASE SELECTION

- » Active in wealth management, asset management, or investment banking
- » Managed assets € >25 billion
- » Located in Germany or Switzerland

INTERVIEWEE ROLES

- » Business Analyst Lead
- » Chief Information Officer
- » Head of Application Management
- » Head of Business Processes
- » IT Project Manager
- » IT Segment Lead
- » Project Management Lead

Research leading to this report was conducted by senior researchers at the chair of Prof. Dr. Walter Brenner, Institute of Information Management, University of St. Gallen. The project was funded with financial support from UBS.

We collected data from six German and Swiss financial services companies in two waves: First, we performed a pilot study at one of the case companies, as a means to uncover relevant research themes. Equipped with this insight we then interviewed senior experts or managers in all organizations, surrounding the topic of “agile delivery” with various contexts and from different angles. Most interviews were recorded and transcribed; notes were taken where recordings were not possible.

Typically, we performed 3-5 interviews per company, including at least one business representative. In addition, we were granted access to relevant company-internal material, such as process models and IT architecture landscapes.

We would like to thank all participants for their commitment and for having shared information about their practices in agile delivery.

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