Mobile Business Study

December 2017

AGILE INNOVATION FOR NEXT GENERATION MOBILE BUSINESS

Vanessa Guggisberg & Prof. Dr. Andrea Back, IWI-HSG
During summer 2017, we explored the design of very recent «Digital Innovation» in 9 incumbent firms in the DACH-region (Germany, Austria, Switzerland).

More than 30 interviewed innovation executives and project managers gave insights into whether and how their principles, methods and tools are different for innovation projects in the digital age. Researching their development of digital products and services, we a) proof that a Agile Innovation is evolving and b) present Next Generation Mobile Business Use Cases from the latest digital technology.

In this study, we are excited to use the data collected in these interviews to present our analysis and results focused on methods and tools for digital innovation from three perspectives in current digital innovation projects:

- Software Dev (Agile methods)
- Design (Design Thinking)
- Start-ups (Lean Start-up)

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University of St. Gallen (HSG)
This study covers two perspectives:

1. **AGILE INNOVATION**
   (Principles, methods, and tools for digital innovation projects)

2. **NEXT GENERATION MOBILE BUSINESS**
   (5 current innovation use cases from BSH, Bühler, SBB, Schweizerische Post, and Schindler)

**Why should I read this study?**
Incumbent firms are starting to use new methods and tools for their innovation projects, which have often been used already in different settings, such as in start-ups, design, and software development. In this study, we will specifically look at concepts from Lean Enterprise/Start-up, Design Thinking, and agile methods (Scrum) to see how they can be applied to the innovation approaches of incumbent firms today.

**The key ingredients for Agile Innovation:**
1. Shed design pattern: Taking the traditional funnel design further by continuously opening up for new insights (“letting in light”) that will allow firms to fully capitalize on use, user, and utility centricity.
2. Team structure is based on small, cross-functional teams staffed with internal and external team members.
3. Sprints are done iteratively, building only what proves valuable through user testing, rather than building all the features at once using predefined requirements.

**Where do I start?**
In order to adapt to new innovation logics, change management and agile transformation must go hand in hand. Start small; do not over-engineer the process from the start. Use “agile” not only for software development projects, but also for innovation processes. Put team members over processes. It is more about team spirit, respect, and appreciation. «Just do it» seems to be the governing motto.
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DID YOU KNOW?

Switzerland scores **1st place** in both, «the WEF Global Competitiveness Index 2016–2017» and in its sub-ranking “innovation and sophistication factors”, but when looking closer at relevant factors for digitalization, Switzerland scores only moderately (rankings):

- **#56** time to start a new business (10 days)
- **#18** Internet users (in %)
- **#14** Availability of scientists and engineers
- **#10** Internet access in schools

### March 2017: MISQ Special Issue on «Digital Innovation»


### IMD Digital Competitiveness:

**214’000 vs 29’400’000**

Google Search: Innovation AND “stage gate*”: 214’000 results. Innovation AND iteration*: 29’400’000 results.

**Switzerland ranked **13th** in the IMD World Digital Competitiveness Ranking 2017 in the sub-ranking “Future Readiness” (2016: 10th).**

**Relevant sub-factors for digital innovation management in “Future Readiness”**

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<thead>
<tr>
<th>Sub-Factor</th>
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<tr>
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<td>IT Integration</td>
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### “NEW” ROLE: CHIEF INNOVATION OFFICER


Es muss eben nicht nur so aussehen wie bei Google oder Facebook, es muss sich auch so anfühlen. Am Schluss geht es nämlich nicht darum, was man genau entwickelt, sondern wie man es tut.

(Innovations-Coach Mark Zawacki in an interview with Aargauer Zeitung, 20.11.2017)
How does the new agile innovation model look like that…

… incorporates new management principles
… offers methods & tools for designing Next Generation Mobile Business?

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
Incumbent firms are starting to use new methods and tools for their innovation projects, which have often been used already in different settings such as in start-ups, design, and software development. In this study, we will specifically look at concepts from Lean Enterprise/Start-up, Design Thinking, and agile methods (Scrum) to see how they can be applied to the innovation approaches of incumbent firms today. The managers and seniors leading innovation units are especially interested in new, up-to-date tools and methods that will shape and lead innovation projects successfully in the (near) future and speed up time to market.
RESULTS FROM EMPIRICAL DATA ON AGILE INNOVATION

JUNE – SEPTEMBER 2017
9 INCUMBENT FIRMS
FROM SWITZERLAND, GERMANY & AUSTRIA
PRIMARY DATA: >30 INTERVIEWS
SECONDARY DATA: FURTHER DOCUMENTS,
STRUCTURED LITERATURE REVIEW
## SOME INTERESTING FACTS ABOUT THIS STUDY

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<td>Authors of the study</td>
<td>Incumbent firms participated in our study</td>
<td>Interviews conducted by the authors</td>
<td>Coffees during data collection phase</td>
<td>Minutes we spoke to study participants</td>
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STUDY PARTICIPANTS – 9 INCUMBENT FIRMS IN DACH

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<th>INCUMBENT FIRMS</th>
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<tr>
<td>BÜHLER</td>
<td>5 Product Owners</td>
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<td>Audi</td>
<td>2 UX Designer</td>
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<td>ABB</td>
<td>11 Inno Mgr</td>
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<tr>
<td>SBB CFF FFS</td>
<td>2 Agile Coach</td>
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<td>zumtobel group</td>
<td>3 Head Inno Culture</td>
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Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
Conclusion from our findings

AGILE INNOVATION MODEL © IWI-HSG

On the next slides we are introducing a generic model (generic in terms of cross-company applicability) on today's agile innovation process that has been built from insights from the full data collection for this study.
COMPANY PROPOSITIONS:

- Brand / DNA
- Business Strategy
- Experiences
- Technology Advancements

AGILE INNOVATION MODEL - © IWI-HSG

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
The overall structure starts with a divergent and convergent thinking process, which was derived from the "Double Diamond Model" by the British organization Design Council. They developed the model in 2005 and it has since become a key pillar in Design Thinking (Übernickel et al. 2015).

Discover
Identify, research, and understand the initial problem.

Define
Limit and define a clear problem to be solved.

Develop
Focus on and develop a solution.

Deliver
Test and evaluate until the Proof of Concept (PoC) is ready.

From funnel to shed design pattern
This movement is not only apparent in design, but also in architecture. We were inspired by the Gummiband Fabrik in Gossau, Switzerland, which was designed and built by architects Danzeisen & Voser, St. Gallen and Engineer Heinz Hossdorf, Basel in 1945. The idea was to let light in through the full length of the building. They called this design "Shedhalle."

PoC = Proof of Concept
MVP = Minimal Viable Product
(For a definition of these terms, see Slide 18)
We will later introduce certain methods and tools that can speed up time to market, but it is important to first develop a certain rhythm. This can be achieved by sprints originally introduced in software development projects. Sprints, which are iterations of work during which an increment of product functionality is built, help to transform unpredictable incidents into predictable ones.

Practically speaking, this means a shorter time horizon until you get valuable feedback from stakeholders. Therefore, the overall time frame of innovation projects can be reduced in absolute values. Uncertainty will decrease over the project time as incidents become more and more predictable.

A sprint also brings along a very structured way of working: Each sprint lasts a specific number of days (by the book, a sprint lasts max. 30 days) and includes several traditions. Namely, each sprint starts with a one-day sprint planning meeting and ends with a sprint review meeting, followed by a sprint retrospective meeting. For results, advantages, and challenges working with sprints, please see the dimension Methods and Tools in this study.

One of the key concepts from Eric Ries’ seminal book, The Lean Startup (Ries, 2011), is the “Build-Measure-Learn-Loop”. This means that rather than delivering projects in a sequence, organizations should build by a small increment, measure behavior and its demand, learn from those measurements, and then loop back and build again (i.e. extend or change the increment). This concept is considered circular, which is where it differs from the agile movement (Agile Manifesto): Agile doesn’t say anything about learning and looping back; instead, it just says to keep building in short sprints. However, results show that new innovation models need both, iterative with short sprints and circular with its learning included.

Each circle starts with a hypothesis: “We hypothesize …”, which is then built and tested. “We learned that… so we have a new hypothesis that…”, and so on.
THE ACTIVITY THEORY FRAMEWORK STRUCTURES OUR RESEARCH AND STUDY

The activity framework offers six dimensions that can be used to dig deeper into the set-up of innovation projects in the digital age. Throughout our study, we include practical examples of good practices from the 9 incumbent firms that we selected as study participants. These practices are rooted in state-of-the-art methods and tools from software development, design, and start-up principles. We focus on two key research questions for this study: WHAT are exemplary current use cases? HOW are these innovation projects set up and managed?

THE 6 DIMENSIONS OF THE ACTIVITY THEORY FRAMEWORK

1. Methods & Tools (Software Dev, Design & Start-ups)
2. Governance, Rules & Norms
3. Community (Partnerships internal & external)
4. Team Structure (Division of labor)
5. User as subject
6. Technology → 5 B2E Use Cases for the fieldworker

THE 6 DIMENSIONS INFLUENCE EACH OTHER – WE WANT TO SHOW HOW AND WHY

Basic structure of an activity system adapted from Engeström and Sannino (2011)

EMPIRICAL DATA COLLECTION
June-September 2017
METHODS & TOOLS

We refer to methods and tools from software development (e.g. Scrum, SAFE, Agile Manifesto), design (e.g. Design Thinking) and Lean Start-up (e.g. iterations with Learn-Build-Measure-Loops).
CHALLENGES COMPANIES ARE DEALING WITH

PROOF OF CONCEPT VS MINIMAL VIABLE PRODUCT
What is actually the difference between a PoC and MVP?

BREAK DOWN YOUR IDEA INTO SMALL INCREMENTS
How do you break down an idea into small increments?

FROM AN IDEA TO A FIRST PITCH
How do you find a project team, define an initial backlog and design a first pitch?

SPEED UP BY SPRINTING
What are the specifics and traditions of sprinting in agile innovation projects?

BOOST CAMP
What is a Boost Camp and what do companies use it for?

EXPERIENCE LAB
What is an Experience Lab and what do companies use it for?

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
**PROOF OF CONCEPT VS MINIMAL VIABLE PRODUCT**

What is actually the difference between a PoC and an MVP?

During our conversations, we realized that there are different definitions for the terms: **Proof of Concept (PoC)** and **Minimal Viable Product (MVP)**. So, we collected our study partner’s definitions and saw how they applied the two concepts in their projects. By analyzing the projects and the definitions used by the firms, we can present the most common understanding and apply the concepts of PoC and MVP to our agile innovation model @IWI-HSG.

An MVP is that version of the product that enables a full turn of the Build-Measure-Learn-Loop with a minimum amount of effort and the least amount of development time” (Ries, 2011, p.77).

Before an MVP is set in place, it is crucial to have tested the problem-solution fit previously with a PoC. Only with a successful PoC, or else with feedback implemented on a PoC, is it worth investing money for a real implementation focused on good quality code/manufacturing (so called “late delivery”). The MVP lacks many features that may prove essential later on, as it is for testing the product-market fit.

A PoC is a way to validate the problem-solution fit on a shoestring budget (a very limited budget). Before making a larger investment in time, effort and money on high quality code or manufacturing (implementation phase), validating the assumptions that users actually need the product/service is crucial. “Discovering a problem that your idea will solve is easy, finding a solution people want is what you have to validate” (Thomas, 2015).

"We use PoCs in a very small setting, maybe one station with 10 bulbs with integrated sensors to test and verify specific scenarios and their value. It is important for us to have defined KPIs (the value we want to measure with a PoC) before running a test phase in order to validate the impact of the PoC. After a successful PoC, we think about a MVP on a bigger scale with more specific KPIs, especially regarding marketability. Using this procedure, we save money: Of course we are investing money in the beginning, but over time uncertainty is reduced through continuous testing and a later business plan for the implementation (MVP) then shows the future potential of the solution.”

Innovation Facilitator, Zumtobel Group
BREAK DOWN YOUR IDEA INTO SMALL INCREMENTS

How do you break down an idea into small increments?

Continuous feedback and learning: Findings about the business case, as well as the feasibility and value proposition of ideas, are highly important because they help to save money and time, which can then be invested in the most promising projects in the longer run. However, the learning process is not successful when delivered towards a finalized product/service in a business plan to start with. This is why research shows that breaking down the product/service idea into smaller increments is crucial for continuous improvement, not only in the development phase, but already right from the start when the idea is presented for the first time. Iteration Zero, Boost Camps, and Experience Labs (see next slides) all incorporate this mindset.

A vision document shows the full idea stock of features.

**Epic hypothesis statement**

<table>
<thead>
<tr>
<th>For</th>
<th>&lt;customers, users&gt;</th>
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<tbody>
<tr>
<td>Who</td>
<td>&lt;do something&gt;</td>
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<td>The</td>
<td>&lt;solution&gt;</td>
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<td>Is a</td>
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<tr>
<td>That</td>
<td>&lt;provides this value&gt;</td>
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<tr>
<td>Unlike</td>
<td>&lt;competitor, current situation&gt;</td>
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Outcomes hypothesis: • …

Leading indicators: <early innovation accounting measures>

FROM AN IDEA TO A FIRST PITCH

How do you find a project team, define an initial backlog, and design a first pitch?

When analyzing frameworks that incumbent firms use to overcome silo thinking in innovation projects, interview results show that the starting point is all about getting a project started with a cross-functional team.

An agile project, following Scrum guidelines, focuses on the development of a proof of concept or an MVP with an already set team, product vision map, and first release plan on how to develop. However, agile innovation starts even earlier (see below: agile innovation model – Gate 0). When interviewing project managers and agile coaches, we became aware of the importance of bridging the time from an idea to a first pitch when following agile methods. SBB showcased a framework that follows up on the missing pieces between Gate 0 and Gate 1 (from an idea to a first pitch) called Iteration Zero.

**Purpose of Iteration Zero:**
Create a pitch to get a budget for prototyping (Gate 1)

**Tools:**
A first pitch (one pager), Product Vision Map, High Level 1-2 Release Plan, common language, culture of debate ...

**To do’s:**
Formulate epics and user stories, develop team roles, coach the Product Owner for required skills, provide training by agile coaches ...

For more information see Agile Transformation @ SBB, Slideshare, Agile Breakfast Luzern, 17.08.2017
SPEED UP BY SPRINTING

What are the specifics and traditions of sprinting in agile innovation projects?

**Time-boxed**
A sprint is a time-boxed short time frame. It is best if sprints have the same time frame to hold on to over the project.

**Artifact-driven**
The sprint outcome by the end of the predefined time is to be completed (e.g. a prototype, a release plan, a proof of concept of a feature). A sprint outcome is also called a "potentially releasable feature."

**Time-out possible**
A time-out between two sprints is possible (perhaps for budget reasons or due to missing team resources), since the previous sprint ended with a completed usable artifact.

**Shape a solution, shape the people**
A sprint not only helps you to focus on the realization of an innovation project, but also helps you to engage in "agile innovation" as a company. Team members gain a sense of achievement and talk about it. For more information on the implementation of agile innovation, see dimension governance.

**Sprint Meetings**
The work to be performed in the sprint is planned at the sprint Planning meeting. This plan is created through the collaborative work of the entire Scrum Team. Questions to ask: What can be delivered in the Increment resulting from the upcoming sprint? How will we achieve the work needed to deliver the Increment?

The Sprint Review is held at the end of the sprint in order to inspect the increment and adapt the product backlog if needed. Attendees include the Scrum Team and key stakeholders invited by the Product Owner. This is the moment when the team "presents" the increments and "celebrates" its achievements.

The Sprint Retrospective occurs after the Sprint Review and prior to the next Sprint Planning. During the Sprint Retrospective, the team discusses: 1) What went well in the sprint, 2) What could be improved, 3) What they will commit to improve in the next sprint. This could also be an "I wish, I like-Framework", as proposed from Design Thinking.

Each iteration starts with: "We hypothesize ...". During the sprint, this hypothesis is then built and tested. The outcome of the sprint delivers input for the next sprint: "We learned that... so we have a new hypothesis that...", and so on.
BOOST CAMP

What is a Boost Camp and what do companies use it for?

Incumbent firms have been introducing “Boost Camps” to encourage more radical ideas, especially in cases where customer preferences and solution options may change frequently and problems may be complex, solutions unknown and the scope not clearly defined. But what are the characteristics of a Boost Camp based on our discussions with innovation managers?

- Focus group: Made up of the Product Owner and the team that developed a specific product idea and defined the respective target group.
- The project team gets 6 full, consecutive days to develop a first PoC (sprint 1 during the prototyping phase, option 1) or to implement feedback from a PoC (option 2).
- Start-up like feeling: The Product Owner gets support from experts at Innoarchitects for UX-design and development.
- Minimum two testing iterations with real customers/users
- Release plan for implementation phase, including budgeting and time resource planning
- The business case, feasibility and value propositions gets enhanced throughout the Boost Camp in order to later pitch for them for the implementation budget

Post, together with Innoarchitects, launched a Boost Camp for projects that passed gate 1 in order to get full-time focus on the innovation project for 6 consecutive days. At the camp, the solution is continuously enhanced on the basis of the feedback provided by various stakeholders, in particular customers, as well as lawyers, brand managers, and IT architects. The Build-Measure-Learn-Loop is performed several times during the Boost Camp.

At the end of the Boost Camp, the business ideas are validated. The team recognizes which solutions can meet the identified customer needs and what steps are required to come closer to market success. Or, they realize over the course of the week that their business idea is only interesting to a few customers, or is too expensive to implement. Either way, these findings are all important.

More information:
Swiss Post Boost Camp
Innoarchitects
Audi launched their Experience Lab three years ago (see characteristics on the left). Every two weeks, a committee of representatives from business units gets together and evaluates idea pitches, a one-pager, and selects the most promising ones (no fixed number). The representative of the respective business unit becomes the supervisor. The team, however, is self-organized. From Audi’s experience, idea-pitches with no fully dedicated team represented are more prone to fail than the ones where the team has organized itself before the pitch was delivered. The team members, however, stay in their organizational business unit for the 6 months. They are not transferred to a specific “innovation unit”. Team members are all equally eligible to make decisions. No leading person is appointed but there are spokesperson(s).

Besides Boost Camps, incumbent firms have also been introducing “Experience Labs” in order to generate more radical ideas, particularly for cases where customer preferences and solution options may change frequently, problems may be complex, solutions unknown and the scope not clearly defined. But what are the characteristics of an Experience Lab based on our discussions with innovation managers?

EXPERIENCE LAB
What is an Experience Lab and what do companies use it for?

6 months in an Experience Lab

- Radical ideas and customer value are not defined from the beginning
- New to the organization in 2 perspectives: product idea and organizational structure
- 6 months time
- % of dedication of team members: individual, usually not 100%, rather staffed 40-70% on the project
- Self-organizing team: Free to staff personnel internally or externally
- >100’000 € per team, from centralized innovation budget @AudiHQ
- Team is free to choose its team space (e.g. IoT-Lab@Audi for prototyping)
- Every two weeks: teams get together, compare and discuss their status-quo
- Agile coaches assist in methodological questions (OCI - Open-Course Innovation@Audi)
KEY TAKE-AWAYS AND OPPORTUNITIES FOR THE INNOVATION METHOD & TOOL ASPECTS

Innovation culture looks different in incumbent firms. Hence, different methods and tools are used.

A proof of concept and a minimal viable product are two different concepts. Learn more on when to use what.

A proof of concept is problem-solution oriented, while a minimal viable product verifies the solution-market-fit.

Sprints are not only important for a software development project, but are also a crucial method for structuring innovation projects during the process.

A sprint in time-boxed short time frame not only helps to develop a product but also develops the team and gives room for improvement.

Companies are introducing different concepts to help speed up iterative work, whether by developing a pitch or a high-fidelity prototype.

There is no right or wrong in agile innovation, but we introduce Iteration Zero, Boost Camp and Experience Lab as three possible concepts to try.
GOVERNANCE, RULES & NORMS

External rules or internal governance are shaping how projects are set up. Regarding digital innovation, this can refer to the decision-making and approval process on resources, degree of freedom for project teams, or structure and content related mechanisms.

Findings from our data on the dimension

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CHALLENGES COMPANIES ARE DEALING WITH

2 ROUNDS OF BUDGET: PROTOTYPE & IMPLEMENTATION
Why are two rounds of budget important for the success of an innovation project?

IDEA KILLERS – SOME PHRASES
With a pinch of humor – what are the worst idea killer phrases?

HAND-OVER TO BUSINESS UNIT FOR SCALING UP
What are indicators for a successful hand-over to the business unit?

THE POWER OF WORD-OF-MOUTH
Why does «big-bang» not work for an agile innovation culture?

DEALING WITH FAILURES
What does an appropriate culture for dealing with failure look like?

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
2 ROUNDS OF BUDGET: FOR PROTOTYPING & FOR IMPLEMENTATION

Why are two rounds of budget important for the success of an innovation project?

### Prototyping
- A prototype allows the innovation team to get feedback early on from different stakeholders, and especially from potential users. A first prototype does not require an intensive budget but can bring highly valuable insights to the attention of the innovation team.
- There are different fidelity levels for prototypes (ranging from low to high). This might involve a simple drawing in the beginning (low-fidelity), and then a "clickable prototype" to a computer-based interactive representation of the product in its closest resemblance to the final design (high-fidelity).

### Implementation
- Of course, it would be easier to hand over a project budget just once to the team. However, the two rounds of budget can have a psychological effect (and can help save money if the project is killed after the prototype): For prototypes, the project team invests in "low-quality code" in order to run it cheaper and faster, and so the team needs the further budget to invest in "clean and high-quality code" for the implementation phase. Otherwise, the team would try to run the prototype as if it was the final solution.

### ADVANTAGES OF THE ITERATIVE FUNDING MODEL
- 2 rounds of budget increase the visibility and transparency of the innovation project.
- Time-boxing: continuous improvements make added value stable and plannable.
- 2 rounds of budget means 2 pots of money. While round 1 is usually seed money from a specific pot (centralized innovation budget), the business unit should "buy-in" for round 2.

### DISADVANTAGES OF THE ITERATIVE FUNDING MODEL
- Numbers count: Management is used to thinking about a business plan with tangible numbers first and then about the solution design (feasibility).
- Prototyping is a cost driver with highly uncertain results in the beginning. Usually, this mix does not make managers very happy. But what if it is the next big thing?
IDEA KILLERS – SOME PHRASES

With a pinch of humor – what are the worst idea killer phrases?

In the interviews we heard a broad range of idea killer phrases. Usually there are lots of excuses for employees neither to talk about their initial idea nor to start developing it. However, we would like to encourage organizations to overcome the obstacles. A good starting point could be raising awareness of what are innovation killer phrases. We would like to share the most well-known ones here:

- It’s not part of your job
- That’s not our problem
- It’s against the company policy
- We don’t have the resources, it will cost too much
- Our customer’s won’t like it anyways
- The boss won’t go for it
- Why hasn’t someone else suggested it before already?
- The old timers won’t use it
- The bigger the size of the bubble, the more well-known the phrase
- Let’s form a committee first
- Let’s make a survey first
- Let’s make a survey first
- The old timers won’t use it
- The bigger the size of the bubble, the more well-known the phrase

Where to start after having identified idea killers? Besides a self-organization movement for project teams, a clear structure of defined parameters, such as “innovation budget”, KPIs and required documentation (e.g. 1 pager pitch), decision making processes and decision hierarchies (level dependent decisions) needs to be set-up, however we recommend not to start everything at the same time right from the very beginning of agile innovation as you will read on the next slides.

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
HAND-OVER TO BUSINESS UNIT FOR SCALING UP

What are indicators for a successful hand-over to the business unit?

Our analysis shows that innovative solutions, whether they are incremental improvements or radical changes, benefit from a fully dedicated project team – the innovation team. But any project aimed at implementing an innovative solution needs to be handed over to the operating team in the business unit at some point. We often heard from interview partners that the right moment of solution hand-over is not easy to determine. There is no right or wrong way to determine this moment, but certain indications can help in finding the suitable circumstances for a project.

1. Demand for scaling & maturity of solution
   To facilitate a successful hand-over to the efficiency-driven business unit, this unit must be prepared to invest in continuous development of the solution. The business unit is usually interested in scaling the solution. When testing a proof of concept (PoC), the value of the solution is measured by previously defined KPIs. First and foremost, the importance lies in enabling the business unit to continuously improve the product/service after a successful hand-over. There are 2 strategies when to hand-over: after PoC, or after MVP.

2. Efficient delivery
   Efficiency of the solution delivery to the business unit is another though nut to crack: The typical business unit should be present during the last sprint(s) with the project team in order to guarantee a smooth hand-over. Furthermore, support must be organized and personnel authorized for operation afterwards. «DevOps» is a new term that refers to the collaboration between the development and operation team to ensure continuous improvement (especially for software solutions).

3. Queuing for technical implementation
   Even though the innovation team might have an agile mindset, it is still dependent on up/downstream departments and external partners that are only indirectly involved with the team. Implementation often can stagnate if the innovation team has worked under reduced governance up to the hand-over. Decisions made by the team under reduced governance need to be followed up immediately before or during the hand-over (e.g. software APIs, legal aspects). These dependencies on other departments can cost time and can throw out the team of its rhythm.

2 strategies for project hand-over to the business unit (operation)

1. Hand-over of the solution after evaluation of KPIs from a Proof of Concept (PoC)
   Hand-overs after a proof of concept (PoC) are considered early hand-overs. Our interview analysis shows the importance of a successful PoC measured by the predefined KPIs, if the solution is handed-over in an early stage. However, if there is an indication of major changes to the POC, a hand-over after an MVP is suggested. Otherwise, media might hype a solution too soon, causing expectations to rise. Then the business unit might fail under pressure because usually the focus of a business unit is on efficiency in operations, not on continuous development in incumbent firms (DevOps).

2. Hand-over after the development of a Minimal Viable Product (MVP) that has been tested with users
   Furthermore, results show that if the solution is handed-over too early, the initially open mind of the project team might be negatively influenced by the operations team in favor of existing products that the organization already offers on the market (cannibalization). In this case, a healthy distance between the project team and the business unit during the development phase (including an MVP) is important.
THE POWER OF WORD-OF-MOUTH

Why does «big-bang» not work for an agile innovation culture?

Large companies typically go about transforming themselves in waterfall fashion. They expect everyone to “go big or go home”. They hold conferences, launch training programs and create a blizzard of memos, Gantt charts and templates. They dot the hallways with posters and the desks with slogan carrying Lucite blocks.

(Rigby et al. 2017, p. 8)

AGILE INNOVATION ASKS FOR AGILE TRANSFORMATION

In order to adapt to new innovation logics, change management and agile transformation must go hand in hand. In interviews, we often hear something like: We are currently not only digitalizing our product and service portfolio, but are also transforming our company in terms of how we work. Within teams, agile methods seem to be understood quite well already, but we still need to process structure as well as to clarify responsibilities in steering committees to define which projects to support financially.

Of course, not every incumbent firm we have spoken to is at the same maturity level of «agile innovation». But our analysis has resulted in a few recommendations as good starting points:

LEARNING CURVE
Using MVP helps to create products/services as well as to test ways of innovating. Start small; do not over-engineer the process from the start. Use “agile” not only for projects, but also for innovation processes.

INNO CULTURE
Put team members over processes. It is all about team spirit, respect and appreciation.

FIND YOUR RHYTHM
«Just do it» seems to be an important motto. Do not over-engineer before starting a sprint.

WHO MAKES DECISIONS?
Even though we emphasize reduced governance, what needs to be defined from the beginning is the clarification of decision making. Which decisions are to be made by the team, and which ones by the manager?
DEALING WITH FAILURES
What does an appropriate culture for dealing with failure look like?

Killing ideas and solutions is never easy, but it can be managed in different ways. For example, the SAFE framework, an approach to developing complex systems in a «lean-agile» manner, proposes that we split an idea into smaller increments in order to make decisions on specific requirements instead of on one big challenge. But what does this tell us regarding go/kill decisions exactly?

The smaller the increments, the «less» it hurts to kill them if it turns out there is no demand for those particular increments. Our analysis shows that incumbent firms are starting to break down their digital solutions (products and services) into smaller increments. The SAFE framework offers 3 different levels on which to make go/kill decisions:

- Epic: A vision document shows the full idea stock of features.
- Feature: An epic is a container for a solution development initiative.
- User Story: A feature is a valuable functionality/requirement.

As we have seen with the SAFE framework, reducing the size of the increments can help in making go/kill decisions more manageable. This is particularly useful when dealing with technology risks. For instance, the SAFE framework suggests splitting an idea into smaller increments to make decisions on specific requirements instead of on one big challenge. This approach helps in reducing the pain of killing ideas if they prove to be unnecessary.

How to deal with technology risks

«Dealing with technology risks is an important aspect for us. We should not try to make the perfect plan, neither for the solution outcome itself nor on how to deal with technology risks. What really helps us are fast iterations and quick learnings.»

Service Innovation Consultant, Siemens Corporate Technology

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
KEY TAKE-AWAYS AND OPPORTUNITIES FOR THE INNOVATION GOVERNANCE ASPECTS

Project teams are only as successful as a company’s frame allows them to be.

Agile does not work with big bang – use the power of word-of-mouth within your organization.

Reduced governance for innovation projects increases the speed and reduces time to market.

Learn when projects are ready to be handed-over to the business unit for scaling up.

Agile innovation only “rules” when it is lived. This all starts with simply applying cookbook style guidelines and then sharing experiences.

Explicitly state which decisions are going to be taken on a meta-level. A methodical design of an innovation governance is a must.

We can only provide indicators, but catching the right timing strongly depends on learning experiences within a company.
In the dimension community, we look at the social context in which an innovation project is embedded, affiliated internal/external partners and respective structure, and collaboration mechanisms.
CHALLENGES COMPANIES ARE DEALING WITH

**USER, USE & UTILITY CENTRICITY**

Why is it critical to integrate the user and how can we do it?

**TYPES OF COOPERATION**

What type of cooperation best suits my innovation project?

**AGILE COACHING TEAM**

What does an agile coaching team (ACT) do and what skills are required?

**COMMON LANGUAGE & CULTURE OF DEBATE**

How do we develop a common language within our innovation team?

**INNOVATION LABS**

What is the magic with innovation labs for corporates?

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
USER, USE AND UTILITY CENTRICITY

Why is it critical to integrate the user and how can we do it?

The new field of user, use & utility research requires a re-thinking and further development of this line of inquiry by putting the digital user and his or her data, usage behavior, and perceived utility, at the center of study. The consequences for IT strategies, processes, systems, and management are that they must be derived by starting with the study of the user. The value chain itself is being reconfigured. Until recently, the user stood at the very end of the process, but this order is now being reversed.

(Brenner et al, 2014, p. 56)

Many interview partners have focused on user centricity as an important factor, since the user experience (UX) encompasses all aspects of the end-user’s interaction with the company, its services, and its products. The importance lies in physically bringing in users during innovation sprints, not just making assumptions in the workshops about what the users might feel or say. Some “how to” questions here to address are:

**User**
- How can we meet demands and satisfy user needs with new digital products or services?
- How does the product/service need to be designed in order to satisfy our users’ needs in various contexts/usage categories?

**Use**
- How can we increase utility for a specific user group with specific needs?

**Utility**
- How can we increase utility for a specific user group with specific needs?

Below, we show possibilities of user integration into our agile innovation model and list the tools for a 3U-centric approach that were mentioned most often in the interviews:

- **Focus on exploration:**
  - Define persona
  - Clarify value proposition chain
  - Draw user journeys

- **Focus on evaluation:**
  - Business Model Canvas
  - Testing-Grids
  - Experience talks...

- **Focus on creation:**
  - Product vision map
  - From MVP Vision to User Stories
  - Release plan...

User as passive consumer
User as point of origin and active participant
TYPES OF COOPERATION WITH EXTERNAL PARTIES

What type of cooperation best suits my innovation project?

4 different types of cooperation were present in existing innovation projects according to our interview research, from clear-cut assignments to real co-innovation. We present anecdotal information on the four types of cooperation below.

Contractual Basis

Contractual cooperation is successful when assignments (tasks) are crystal clear, and after the partner’s skills have proven them capable of performing the task (this can be based on previous partnerships, referrals, portfolios, etc.). The contracting entity defines the assignments and time frame, and checks quality after completion. Meetings and arrangements either take place when needed or are predefined. This cooperation type usually does not work for methodological skills (agile/lean coaching) and is rather content-driven.

Corporate venture capital initiatives

Corporate venture capital initiatives are investments made directly by an incumbent firm in start-ups relevant to its operations. Mostly, such investments not only involve financial resources, but also refer to internal specialists and prototyping/testing facilities. This kind of partnership allows incumbent firms to exploit new technologies (mostly radical changes to a core business) and invest in a long-term partnership by strengthening their capacity for innovation with targeted investments in start-ups.

Development partnership

For a rather specialized product/service, a development partnership can be established with the first customer as a development partner. In this case, the customer and incumbent firm define the requirements, followed by iterative testing and defined tasks together as arranged. The partnership officially ends or is revised to a running business cooperation after the initiated development. After development, it is up to the partnering organizations to set the scope of a continuous partnership (e.g., further co-innovation).

Co-Innovation

In order to run a truly collaborative innovation partnership with an external party, the financial stake must be large enough for all partners to be financially motivating. Furthermore, partners must be willing to run intensive innovation sprints together at one location (the ingredients of physical presence and time, see Slide 38) in order to build team dynamics and gain speed. The organizational structure still stays the same. Of course, not all team members are staffed internally; certain roles are filled by external partners. However, the team itself should not feel the difference between internal and external team members after a successful team on-boarding session.

Our recommendation: Think about your internal resources before defining a suitable cooperation type. Are you lacking in skills, resources, ideas or time? A clear understanding of your internal resources will help you to choose from the four types of cooperation with an external party. Speak openly about your interests and define the conditions beforehand, while still keeping the project content open enough to increase the project team’s agility.

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
AGILE COACHING TEAM

What does an agile coaching team (ACT) do and what skills are required?

WHAT DOES AN AGILE COACH DO?
An agile coach helps to identify any shortcomings at a very early stage, such as problems in the team and project set-up, and moderates the solution finding. He/she further assists in fostering a common language and advises in how to kill/accelerate ideas quickly.

SKILLS REQUIRED – WHO DO YOU HIRE FOR THIS ROLE?
✓ ICT know-how: technical background in IT/business requirements engineering
✓ Some background in social skills, such as coaching, group dynamics, teaching
✓ Didactics: look for a diversity in didactic styles in your agile coaching team members, so that coaches can complement and learn from one another
✓ Agile competencies: Scrum or Kanban or any other agile methods
✓ Mindset: customer-centric, UX-focused

Above all: tough, resistant “elephant skin”

THE AGILE COACHING TEAM AT SBB
SBB set up an Agile Coaching Team (ACT) to moderate project teams in their Iteration Zero mode (see dimension team structure). We spoke to the two founders of the ACT, who said that its underlying purpose is to generate learning situations for the team so they can experiment and learn how to kill and accelerate ideas. ACT makes learning on the project feasible without planning ahead with extensive in-house training and heavy initial project staffing.

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
Throughout our analysis, we discovered that having a specific room and time for collaborative work during innovation projects is highly valuable for developing a common language and a culture of debate, especially in the beginning. Debates within a project team often arise due to ambiguities based on a lack of common understanding. This not only applies to the project vision, but also to team structure, division of labor, and governance questions. Questions such as "How do you define ‘done’?", and "What does XY mean to you?" are very important in the early phases of an innovation project.

2 important ingredients

**ROOM**

**TIME**

**WHY PHYSICAL PRESENCE IS NEEDED**

Nonverbal communication is defined as the non-linguistic messages that are consciously or unconsciously encoded and decoded through various mediums such as facial expressions, body language, gestures, space, touch, eye contact, time and tone in the environment in which the people communicate.

(Priyadarshi, 2017)
INNOVATION LABS
What is the magic with innovation labs for corporates?

The 20th century approach to innovation and R&D was typically to develop isolated, closed-door labs that were secretive, well-funded, and impermeable. Think of a castle surrounded by a moat. But most companies have begun taking a new, open approach to innovation when they open innovation labs. This shift away from the hermit-like “Everything Must Be Invented Here” approach has yielded a more permeable 21st century corporation — one that interacts more openly with startups, entrepreneurs, accelerators, academic researchers, and even nonprofits and government agencies.

Our interview results show that innovation labs come in different models in terms of strategic and physical presence. Innovation labs are often closely tied to the core business not only from a mindset perspective, but also physically. Close innovation labs are therefore suitable for incremental innovations. On the other hand, innovation labs that are a bit more distant (strategically and physically) serve better for disruptive ideas.

From a strategic perspective, the distance from the parent company strongly implies how much a business unit is involved in the innovation process. We realized that some interviewees were referring to the difficulty of cannibalization of existing business if a business unit was being onboarded too early (e.g. in a brainstorming – diverging phase).

But who is the right person to lead an innovation lab? During the interviews, attributes such as “trusted”, “respected”, and “deeply connected to others in the building/company” were listed as the most important characteristics of an innovation lab manager.

MUST-HAVES FOR A SUCCESSFUL PARTNERSHIP WITH EXTERNAL PARTIES

An innovation lab also offers space and time (two key ingredients for building a common language, see previous slide) to a cross-functional team staffed with internal and external team members. But what are the must-haves for a successful partnership with external parties? Here we present the top 3 must-haves from our interviews:

- The pie must be big enough so that all parties have a financial incentive to co-innovate.
- There must be a good gut feeling in the team: chemistry, group dynamics, trust in the partnership.
- There must be clarity about the focus and distance from the parent organization: Do we aim for incremental or disruptive innovation?

Schindler is redesigning one of its historic buildings in Alt-Mariendorf, close to Berlin, into a “Digital Innovation Hub” until 2020. Teams will be able to focus aside from their existing teams on innovation on digital services for Schindler’s core businesses.
### KEY TAKEAWAYS AND OPPORTUNITIES FOR THE INNOVATION COMMUNITY ASPECTS

Innovation project teams should be not only internally staffed but also skilled with external partners.

<table>
<thead>
<tr>
<th>“One solution fits all” does not exist: There is no ideal innovation cooperation type that will suit every project.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To successfully run agile innovation, an agile coaching team is recommended to be set up internally.</td>
</tr>
<tr>
<td>Think about your resources: Are you missing any skills (e.g. technical, methodological)? This will help you identify a suitable cooperation type.</td>
</tr>
<tr>
<td>Mastering agile innovation is about generating learning situations for project teams so as to iteratively develop skills.</td>
</tr>
<tr>
<td>To engage with a suitable culture of debate, the team should first be enabled to speak a common language.</td>
</tr>
<tr>
<td>A common language is not about “coding” languages; it is much more about definitions and building common ground to flourish together.</td>
</tr>
</tbody>
</table>

Vanessa Guggisberg & Andrea Baack, IWI-HSG, 2017
Findings from our data on the dimension

TEAM STRUCTURE

DIVISION OF LABOR

This dimension refers to the team structure, roles and responsibilities in digital innovation projects (roles such as project owner, developer, user experience designer, business analyst, scrum master), initial team setting, its development over time, including interrelations with the organization’s departments.
CHALLENGES COMPANIES ARE DEALING WITH

TEAM SET-UP
Who is a part of the project team and what skills are required?

RELATIONSHIP BETWEEN TEAM AND MANAGER
Why is management support crucial for the success of an agile innovation project?

IDEA PITCHES FAIL EARLY WITHOUT A COMMITED TEAM
Why is a committed team so important for passing Gate 1 “the pitch”?

IMPORTANCE OF C-LEVEL MANAGEMENT IN ROLLOUT OF AGILE INNOVATION
If big bang does not work for agile innovation, what role does C-Level play?
**TEAM SET-UP**

Who is a part of the project team and what skills are required?

Our study results show that even though staffing an innovation project may be a challenge for incumbent firms, it is still one of the most crucial factors for a successful development. Interview partners defined a committed team as one of the key factors in three settings: 1) passing the first gate to acquire the budget for prototyping (SBB), 2) applying for an experience/innovation lab (Audi) and 3) getting your PoC or MVP ready in a Boost Camp (Post). **Thus, all settings used for agile innovation build on an initial dedicated team as the fundamental base for a successful project.**

### AGILE INNOVATION TEAM – ROLES

**Product Owner**
Idea owner, responsible for backlog, usually the spokesperson of the team

**UX Designer**
Responsible for overall User Interface consistency across interaction models and visual styles

**Business Analyst**
Manages the requirements analysis and business processes

**Scrum Master**
Facilitates sprint planning, review & retrospective, finds roadblocks & works on them alongside the sprints

**Dev Team**
Responsible for code: fast, crappy code for prototyping, clean code for implementation

**IT-Architect**
Responsible for end-to-end cross-functional system design and communication

**Testing Team**
User-Champions who test the solution throughout the project, not all done through the same people

**Other stakeholders**
Challenge current state of the product/service from different perspectives (e.g. legal)

**Operations team**
To successfully hand over a project, an operations team must be ready to take over. This works well if they are taken on board during the MVP phase.

---

**THE ROLE “PROJECT OWNER”**

The majority of our interview partners acknowledged the interdependence between the physical presence of team members, especially the project owner, and the success of the project itself. Incumbent firms staff their teams differently. While a few staff project owners below 40% of their time on one project, others staff between 80-100%. However, the majority of projects are staffed with a project owner between 60-80% of the time.

**Physical presence**

- Less than 40%: not enough
- 60-80%: good balance
- 80-100%: ideal
THE RELATIONSHIP BETWEEN TEAM AND MANAGER

Why is management support crucial for the success of an agile innovation project?

We observed that for the majority of incumbent firms, team members kept their organizational structure during innovation projects. Especially in organizations where the Product Owners are usually project managers in an ICT-related function (e.g. digital project manager), the remaining team members from different business units, if cross-functional, stay within their actual organizational department when being staffed on the innovation project for a defined time only. This brings a challenge in “agile” architecture:

Employees can have multiple managers, but decisions should only have one.

These findings are consistent with the results from our qualitative analysis of the interviews: Success is more likely when it is clear who selects and replaces team members during projects, who appoints team leaders, and who approves decisions if they are not within the competence of the team.

This leads us to the success factors we identified for the relationship between a team and its manager based on our interviews:

- **Appropriate metrics:** Put team results (business outcomes & team happiness) over individual trackable outputs
- **Room for continuous learning:** Iterations not only increase the success of the project outcome, but also allow the team to improve in each sprint - support from the manager is highly appreciated.
- **Extraordinary respect:** Respect should be a matter of course and not specific to agile projects. Yet, our analysis shows that agile teams need extraordinary respect and room for creativity from managers to innovate.
IDEA PITCHES FAIL WITHOUT A COMMITTED TEAM

Why is a committed team so important for passing Gate 1 “the pitch”?

Usually we have pitches, where an idea owner pitches and introduces the initial team at the same time. Or an idea owner pitches and states who he/she wants in the team. If cross-functional teams are required then the manager adds the missing skills with suitable team members. However, idea owners without an initial team, an idea about who could be in the team, or at least what skills are required, very often face difficulties right from the start. I can’t think of any successful idea without an initial team right now.

Why is a committed team so important for passing Gate 1 “the pitch”?

Director of IT-Innovation and IT-Predevelopment
Audi AG

Team building aspects right upfront

Even though teams clearly focus on building a consistent pitch during the first sprint to pass gate 1, the team building aspect is one of the most critical factors, besides content-driven outputs, of this phase. Usually, the initial team setting is not a fixed one that stays the same until the project is handed over to a business unit. Our results from the interviews show that whenever a new member joins the team, team building is necessary for a successful onboarding, especially in terms of developing a common language and a culture of debate (see dimension community for more information).

Typical team size in agile projects: 7.5 members

1-4 8%
5-9 77%
10+ 15%
(Scrum Alliance 2017, p. 22)

The use case portfolio we analyzed in 9 incumbent firms showed similar results: typically, agile projects were staffed with 5-10 members. Each team member was specialized in one area, but in most projects analyzed, a general level of skills in the other areas was beneficial. A good team member is T-shaped, both a specialist and a generalist capable of taking up challenges for the betterment of the team.
IMPORTANCE OF C-LEVEL MANAGEMENT IN THE ROLLOUT OF AGILE INNOVATION

If big bang does not work for agile innovation, what role does C-Level play?

Tensions between agile and non-agile teams

Every year, Scrum Alliance releases interesting numbers and facts about agile projects from around the world. In previous reports (2014-2016), the authors noted a quite high percentage of respondents that reported tension with other parts of the organization that were not using Scrum or any other agile logics (2017: 69%, 2016: 73%).

Even though tension went down due to a higher level of acceptance and awareness, 70% of respondents this year named as the primary cause for this tension the retention of a top-down management approach (Scrum Alliance, 2017).

These numbers correspond to our qualitative interview results, too. Most interview partners referred to the command-and-control approaches of the management. Thinking in inflexible stage-gate models (traditional innovation models) still seems to be present, since these models allow for quantified statements on the potential of an idea at the very beginning. Management is used to taking decisions based on these numbers in order to allocate budget to the innovation projects.

Based on these results, a new agile innovation process is needed. In the dimension «governance, rules & norms», we cover why big bang for agile innovation principles does not work. But if so, where do companies start adapting?

Within teams, agile principles seem to be understood quite well already, but we still need process structure and clarification on steering and evaluating projects to define which ones to support financially.

We first had to finish a few successful agile innovation projects and spread the word about its advantages. Now C-level management is convinced about the importance of continuous testing, developing and fully dedicated teams. And now top-management is pushing for process structure and defined “agile” as the new default from Jan 2017 onwards.

Based on the insights from the interviews conducted, we see 3 different approaches that management could apply in terms of how to train and educate internally.

1. Agile coaches

Agile coaches are consultants on agile principles, methods and tools, who teach on the job, e.g. in an Iteration Zero or a Boost Camp.

2. Courses in the regular catalogue

Teams have the chance to book courses on the regular course-menu open to anyone in the organization. This way, no extra courses would need to be set up.

3. Use external partners to bring knowledge on agile projects

Another model involves increasing skill sets internally by bringing in methodological knowledge from external partners (e.g. Scrum Master).
KEY TAKEAWAYS AND OPPORTUNITIES FOR THE INNOVATION TEAM STRUCTURE ASPECTS

Roles and responsibilities in digital innovation projects and in the initial team setting.

The physical presence and time of the team members for intensive innovation sprints are key.

Employees can have multiple managers; decisions, however, should only have one.

Big bang for agile innovation principles does not work. But if so, how do companies start adapting in order to go “agile by default”?

Methods used for agile innovation build on an initial dedicated team as the fundamental base for a successful innovation project.

Team members should keep their organizational structure during innovation projects since they are mostly temporary in nature.

There are 3 different approaches that management can apply regarding how to train and educate internally: agile coaches, regular courses, external partners.
CONCLUSION: HOW IS AGILE INNOVATION DIFFERENT?

1. COLLECTION OF KEY COMPONENTS
2. COMPARISON: TRADITIONAL INNOVATION – AGILE INNOVATION
COLLECTION OF KEY COMPONENTS OF AGILE INNOVATION

1. SHED DESIGN PATTERN
   Lets in “light” (diverging, opening up) not only in the beginning, but also throughout the project in order to fully capitalize on use, user and utility centricity.

2. TEAM SET-UP
   Made up of small, cross-functional teams staffed with internal and external team members, depending on internally given resources and what is lacking.

3. CUSTOMER, BUSINESS INVOLVEMENT
   Makes use of continuous instead of intermittent collaboration at specific touchpoints (traditionally: in the beginning and/or at the end).

4. SPRINTS
   Done iteratively, building only what proves valuable through user testing, rather than building all features at once in following predefined requirements.

5. TESTING AND INTEGRATION
   Involves continuous user testing with real users throughout the full project phase, rather than integrating features after development has been completed.

6. DELIVERY
   Involves continuous development instead of large, infrequent releases delivered by the business unit after a successful hand-over from the innovation team.
HOW IS AGILE DIFFERENT?

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Agile innovation</th>
<th>Traditional innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market structure</td>
<td>Customer preferences change frequently, and technology advances fast.</td>
<td>Market conditions are stable and predictable. However, this is not the case with digital innovation.</td>
</tr>
<tr>
<td>User centricity</td>
<td>There is collaboration with users, who are seen as a source of origin and invited to participate actively. Rapid feedback is feasible. Business engineers learn from user needs.</td>
<td>Customer requirements are clear and stable throughout the process. This only works when the requirements are also known in detail by the development team.</td>
</tr>
<tr>
<td>Innovation focus</td>
<td>The organization faces complex problems and unknown solutions with a scope that is not clearly defined. Time to market is highly important as user needs may change fast with ongoing technology advancements.</td>
<td>Similar activities have been done before and the focus of innovation remains on incremental innovation with detailed product specifications and work plans that are forecasted up-front.</td>
</tr>
<tr>
<td>Modular work set-up</td>
<td>Sprints are time-boxed and increase motivation for the team members, since sprints are also output-driven. Work can be modularized and conducted in predefined cycles. Late changes are thus manageable.</td>
<td>Late changes are not only expensive but also very time-consuming, and sometimes even impossible. Testing is not feasible before the development process is finished. An MVP does not exist, since the first release is the fully completed product.</td>
</tr>
<tr>
<td>Culture of failure</td>
<td>Interim mistakes provide valuable learning opportunities. Killing ideas is never easy, but more manageable and easier to digest if done in small increments.</td>
<td>Failure and mistakes have negative consequences internally and can have grave results.</td>
</tr>
<tr>
<td>Supportive corporate culture</td>
<td>Culture is team-oriented and collaborative, and team members are &quot;early adopters&quot; themselves. However, agile innovation needs the buy-in from C-Level management.</td>
<td>Culture has a top-down direction and functional specialization or silos. Mutual trust is one of the bigger concerns, as it is rather low. Single projects follow agile methods, but up- and downstream business lines follow traditional methods.</td>
</tr>
</tbody>
</table>

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
How to enable an augmented worker (business-to-employee)

**NEXT GENERATION MOBILE BUSINESS – 5 CURRENT PROJECTS**

We selected five use cases to present as ongoing or recently rolled-out solutions that have enabled fieldworkers in their daily business (with a focus on business-to-employee innovation).

We define fieldworkers as employees without a fixed desk who work on after-sales tasks for service delivery (e.g. repair work, maintenance, up/cross selling).

<table>
<thead>
<tr>
<th>App</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>SBB CFF FFS</strong></td>
<td>The recently rolled-out KULT-App for the train and station fieldworkers in case of a disruption</td>
</tr>
<tr>
<td><strong>DIE POST</strong></td>
<td>Hololens-Prototype for mail delivery preparation tasks</td>
</tr>
<tr>
<td><strong>B/S/H/</strong></td>
<td>App-Family with continuous development for a fully mobile and integrated work place for technicians</td>
</tr>
<tr>
<td><strong>BÜHLER</strong></td>
<td>Industry 4.0 and its influence on the work place. First prototypes of the smart assembly line</td>
</tr>
<tr>
<td><strong>Schindler</strong></td>
<td>Sensors and the partnership with Apple for FieldLink</td>
</tr>
</tbody>
</table>
USE CASE 1 – KULT-APP AT SBB

COMPANY DESCRIPTION
SBB is the backbone of the Swiss public transport system, and day-to-day rail operations are the basis of what they do. With their SBB strategy 2020, they want to shape the mobility of the future – by adding a digital layer to make it simple, personal, and connected.

CONTEXT AND INTRODUCTION TO THE USE CASE
SBB had been using different sources to inform relevant stakeholders of a disruption, and hence was unable to inform passengers immediately from one source. Instead, customer advisors at the stations were mobilized via phone or messages in a rather time-consuming process. Therefore, two individual ideas popped up in the business line passenger service at the same time:

1) Immediately available information for passengers on the disrupted train, as well as for potentially affected trains at the location of disruption; train managers that are able to provide further information on disruption management, consequences, and connecting train options for passengers.

2) A live ticker acting as an immediate alarm, providing information and coordination to service employees at the stations so as to manage the flow of people during a disruption. Throughout the innovation process at SBB, the potential of combining these two projects was recognized by the steering committee and so they were merged into one project: KULT-App.

ORGANIZATION
Product for business unit passenger division. Project performed by agile innovation/implementation team

INDUSTRY
Passenger service information and communication in disruption management

USERS
SBB-train managers, train station knowledge workers, service employees

GEOGRAPHY
Successful field test with 400 employees. Rollout of MVP in Switzerland in Q4 2017

CHALLENGES AND THE SOLUTION OF THE KULT-APP
The biggest challenge, according to the project owner, was merging the two ideas and teams. When they merged, the final team was missing a common language that first had to be developed. Furthermore, a product vision would have been beneficiary for the merged team in order to elaborate and define the priorities of features.

Solution
As a Proof of Concept, the team decided to go for a bigger field test with 400 passenger service employees (user testing) in order to identify user acceptance and the prior-defined KPIs of the features. Within 6 sprints, the team was able to prioritize features and iterate on existing and new ideas. This resulted in an MVP that focused on a first set of features without geolocation or other “fancy” features, but served as a starting point to serve as a live ticker and communication channel to passenger service employees.

The KULT-App was recently released nationwide to all passenger service employees. There will be a manager dedicated to development of additional features throughout the solution-lifetime.

INTERVIEWED EXPERTS AT SBB FOR THE STUDY
Head of Innovation Management – UX Designer – Project Owner KULT-App – Agile Coaches (2x) – Project Owner Reiseplaner

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
USE CASE 2 – HOLOLENS AT SWISS POST

COMPANY DESCRIPTION
Schweizerische Post AG is the national postal service of Switzerland. As a public company owned by the Swiss Confederation, it is the country’s second largest employer and has three subsidiaries: Post CH Ltd, PostFinance Ltd, and PostBus Ltd.

CONTEXT AND INTRODUCTION TO THE USE CASE
Post is testing smart glasses for the mail delivery preparation process. Specifically, the business line Postmail is experimenting with Holelens in augmenting employees in the mail delivery preparation by adding information of a letter on the user’s field of vision. These kinds of mixed-reality smart glasses facilitate the sorting system and provide increased flexibility in terms of task and geographical region. Recipients’ street addresses and location are not displayed physically on the sorting rack anymore, but are instead added to the user’s sight as a digital layer. This allows users to fill in letters in alphabetical order. Without knowing the specific route of a delivery tour, an user is enabled to sort letters alphabetically for the sorting racket. The task becomes transferrable and does not purely rely on tour knowledge anymore.

ORGANIZATION
Innovation by the business unit Postmail, led by a Product Owner and interdisciplinary team

 USERS
Employees in the mail delivery preparation process

INDUSTRY
Clear focus on fieldworkers that are augmented by mixed-reality smart glasses (specifically Hololens)

GEOGRAPHY
Ongoing testing with lead users, called “champions.” Agile product development based in Switzerland (Bern/Zurich).

INTERVIEWED EXPERTS AT POST FOR THE STUDY
Head of Innovation Management — Project Owner Hololens Use Case – Head of Innovation Culture

CHALLENGES AND THE SOLUTION OF HOLOLENS AT POST

First, the team was challenged by the variety of potential use cases for the Hololens mixed-reality technology. Once they were able to identify the specific use case of mail delivery preparation process and its potential improvement in quality and flexibility, the team realized the importance of the definition of a suitable device (testing results) as the second step.

Throughout the innovation process, the project team first focused on the problem-solution-fit phase (refers to gate 1), where they were able to elaborate on use cases in a brainstorming workshop and then validate their ideas with first prototypes (from low-fidelity to high-fidelity) in a one-week rapid prototyping session. They have now passed “gate 2 – focus on product-market-fit” in the Post innovation process, where they needed a financial buy in from the business unit. The next step will be to go live for a longer period of time in order to assess and test the usage over full shift periods.

The Hololens use case nicely shows a tangible use case where smart glasses could act as human augmentation, although the technology still demands a highly time-consuming back-end data population and high up-front investments on the hardware itself.

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017
USE CASE 3 – MOBILE WORK PLACE AT BSH

COMPANY DESCRIPTION

BSH Home Appliances GmbH is the largest manufacturer of home appliances in Europe. The BSH product range includes large home appliances for cooking, dish-washing, and laundry, as well as a multitude of smaller appliances, such as floor care and hot water appliances (consumer products).

CONTEXT AND INTRODUCTION TO THE USE CASE

BSH’s Product Division «Customer Service» takes care of all after-sales processes. In this regard, the team enables its 5000 fieldworkers worldwide for customer service and repair tasks on home appliances through an app family “mobile work place” in order to increase consumer satisfaction. Before fieldworkers faced a rather high volume of administrative tasks in their daily work (e.g., billing or search for repair documentation) that took time and was either set up manually or supported by an old-fashioned software solution. Therefore, BSH developed and is continuing to develop an user-friendly tool that enables its fieldworkers to focus on their value-generating core tasks (core tasks are transforming from purely repair to up/cross-selling at the customer’s point of sale) and allows them to follow up on administrative work with a quick and intuitive solution. Hence, customer satisfaction increases with both the more efficient and productive repair operations and higher quality perception.

ORGANIZATION

| Project owner at the Product Division Customer Service, Business Unit: Business Services |

USERS

| Fieldworkers/ Field Service Engineers (tasks shift from pure repair to up/cross-selling at POS) |

INDUSTRY

| Clear focus on fieldworkers that are augmented by a continuously improved app family solution |

GEOGRAPHY

| Worldwide, 5000 fieldworkers at BSH for different brands (e.g., Gaggenau, Siemens, Bosch, Neff) |

APP-FAMILY

CHALLENGES AND THE SOLUTION OF THE APP-FAMILY

The whole project started with a long period of need-finding, a process analysis in six countries, and benchmarking on existing solutions in other companies. This strategic analysis brought up many areas for improvement – but where to start? In multiple Design Thinking workshops, the project team set out to identify the most critical needs together with fieldworkers from different brands.

BSH then continued with a typical PoC, which the operating team now has been continuously improving with new features for their internal stakeholders, the fieldworkers. Within six weeks (two sprints), they came up with a prototype, which was then used for the MVP. The variety of household appliances on the market makes it particularly hard for fieldworkers to be experts on each one. Therefore, the next features will include expert integration, either through an intelligent software with a chatbot or through a social collaboration software, which would allow fieldworkers to talk to an expert right when they need to.

When the project team first started evaluating the current state of the art on how fieldworkers run their repair jobs, the team planned a long-term waterfall project. After 1.5 years, the team shifted to “agile”, which was the starting point to shorten time to market. «Champions» (the identified test users) were tightly integrated into the project, which made the roll-out much easier.

The variety of household appliances on the market makes it particularly hard for fieldworkers to be experts on each one. Therefore, the next features will include expert integration, either through an intelligent software with a chatbot or through a social collaboration software, which would allow fieldworkers to talk to an expert right when they need to.

INTerviewed EXPerts AT BSH FOR THE STUDY

Project owner (App-Family for Fieldworkers) – Innovation Manager (Head of Product Extensions) – Innovation Process Manager (Corporate Innovation Process)
**USE CASE 4 – INDUSTRY 4.0 AT BÜHLER**

**COMPANY DESCRIPTION**

Bühler Holding AG is a globally active solutions provider for the industrial manufacturing of food and advanced materials. With its industrial process technologies and solutions, Bühler sets its focus on food security and safety. Bühler positions itself at the forefront of the accelerated transformation towards the Industrial Internet of Things (IIoT).

**CONTEXT AND INTRODUCTION TO THE USE CASE**

In 2015, Bühler had plans to digitally transform the process of pre-assembly. The transformation started in the warehouse where all the needed parts are stored and picked for the production orders. At the end of the assembly, the machines are mounted completely and readied for shipment to customers worldwide. Bühler started to build a prototype of the future workplace with various devices and technologies built in. They used a digital transformation platform called “Simplifier”, developed by iTiZZiMO, in order to create user-friendly processes and interconnect their own and external IT-systems. Simplifier applications can be built in a very short time and therefore evaluation could start earlier than before.

Right now, the value stream manager and his team are evaluating the MVP with its built in features – for more information, see here: https://www.itizzimo.com/en/itizzimo-realizes-industry-4-0-buehler-ag/

**ORGANIZATION**

Workplace, process optimization, integrated project team in business unit

**INDUSTRY 4.0**

**INDUSTRY**

Assembly workforce, apprentice future workplace

**GEOGRAPHY**

Prototype workplace at the time of our study was only installed at the headquarter assembly site

**USERS**

Assembly workforce, pains are known, apprentices have their own lab

**CHALLENGES AND THE SOLUTION OF INDUSTRY 4.0 AT BÜHLER**

Pains regarding efficiency and quality have been identified over the last few years. Since the value stream manager (the project owner in this use case) is directly involved in the business unit, he brings along a good understanding of what the real pains are. As they did not have the resources for project management in-house, Bühler partnered with various external parties.

These partners included iTiZZiMO for the digital platform, Marktgut for the implementation of the applications and project management, SFS for the specific mechanical fastening system, Phoenics Mecano for electronics, among others. Within a short time frame, the project team created applications for several devices that could exchange information and digitally connect the complete assembly process. A few of these included: smart glasses to identify items and increase quality in picking, integrated beacons to quickly retrace the exact location of transport boxes, and error detection (e.g. torque values of screws) to lower costs in the quality control process.

With this kind of digital support, Bühler machinery will be delivered faster to the customer, but the prototype work space is still under evaluation. Bühler literally lives the “just do”-spirit as they do not over-engineer the innovation process upfront, but rather start with exploration and first prototypes. They furthermore integrate partners into their co-innovation team setting.

**INTERVIEWED EXPERTS AT BÜHLER FOR THE STUDY**

Value Stream Manager (Project Owner Industry 4.0) — Corporate R&D Manager

— Senior Process Manager R&D

**Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017**
USE CASE 5 – FIELDLINK AT SCHINDLER

COMPANY DESCRIPTION
The Schindler Group produces, installs, maintains and modernizes elevators and escalators in many types of buildings including residential, commercial and high-rise ones. Schindler has shifted its focus to predictive maintenance in its digitization efforts.

CONTEXT AND INTRODUCTION TO THE USE CASE
Schindler Digital cooperates with Apple to enable fieldworkers (maintenance service employees) to localize problems on elevators faster with the digital tool-case FieldLink. Together with Apple, Schindler specifically developed apps on the iOS operating system with meticulous plans for the service deployments. After screening, analysis, and processing, there is an automatic notification sent to a fieldworker’s iPhone about the problem along with repair suggestions. On site, a fieldworker can use the iPhone to test the elevator, inquire error record, and make a quicker fix. But apps alone do not enable the fieldworker to do a quicker fix. A great number of sensors are built into the elevators that enable remote monitoring and continuously measure critical data such as elevator routes, speed, and temperature. All information units are transmitted to a platform where they are analyzed and translated into service jobs.

ORGANIZATION
Schindler Digital AG. After roll-out, a manager was recruited for the continuous development of the FieldLink app family

INDUSTRY
Clear focus on service technicians running the maintenance of existing installation services

USERS
Fieldworkers (technicians) get supported by the FieldLink apps for service deployments (error inquiries, repair)

GEOGRAPHY
Worldwide roll-out is currently Schindler’s focus point. FieldLink has already been rolled out in US, GER, CH, CN

INTERVIEWED EXPERTS AT SCHINDLER FOR THE STUDY
Digital Innovation Manager – Operation project manager for continuous development (Ops Product Owner) – VP Digital Innovation

Vanessa Guggisberg & Andrea Back, IWI-HSG, 2017

CHALLENGES AND THE SOLUTION OF FIELDLINK

Challenges
Schindler’s long-term objective is to integrate all stakeholders into the «Internet of Elevators». Thinking towards the Internet of Elevators, Schindler now uses cloud services for FieldLink data. Early in the development process of FieldLink, they integrated different stakeholders, with fieldworkers as the future users leading the way.

Solution
Based on the data collected and transmitted on the platform, FieldLink technicians receive a work list on their FieldLink app in the morning, combined with suggestions for the best routes between the service deployments, and a list of spare parts that will most likely be needed for the tasks of the workday. Employees can not only check on the status of the job, but also order spare parts directly on the app. Upon deployment, the FieldWiki app helps to read through repair instructions. Since the early start of FieldLink, the project team has added new features on a continuous basis to the Internet of Elevators.

Schindler Digital also lives the “just do”-approach as they do not over-engineer the development process nor the operations before working on digital projects. This increases learning and speeds up the time to market for new releases.
THEORETICAL BASICS USED FOR THIS STUDY

1. ACTIVITY THEORY FRAMEWORK
2. INTERVIEW QUESTIONS
The activity theory framework helps to understand the **set-up of innovation projects**. It is considered as a meta-theory and aims at understanding the object-oriented and tool-mediated interactions between humans.

Within **strategy research**, activity theory model has proven to be well suited to investigate "micro-practices" in strategy in order to **reveal strategic practices** (Jarzabkowski 2003). Another relevant aspect of activity theory is that it includes different organizational actors and their collective intentions and thus allows managers to recognize tensions and dilemmas in the relation between different activity systems when **translating a strategic vision into practice** (Blackler & Regan 2009).

### ACTIVITY THEORY FRAMEWORK

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description and application in this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>User as Subject</td>
<td>The subject is referring to a user (in our use cases, we look at fieldworker), tool-mediated towards reaching the objective.</td>
</tr>
<tr>
<td>Technology for B2E Use Cases</td>
<td>As object, we refer to the objective of the activity. In our research, this is the digital technology of the outcome (B2E processes for fieldworker and new service offering).</td>
</tr>
<tr>
<td>Methods &amp; Tools</td>
<td>In this research, tools are artifacts, methods and instruments such as a specific location (e.g. innovation labs), methods from software development (e.g. Scrum, Agile Manifesto), design and user centricity (e.g. Design Thinking), Lean Start-up (e.g. Learn-Build-Measure-Loop).</td>
</tr>
<tr>
<td>Governance, Rules &amp; Norms</td>
<td>External rules or internal governance are shaping how projects are set-up. Regarding digital innovation, this can refer to the decision-making and approval process on resources, degree of freedom for project teams and structure and content related mechanisms.</td>
</tr>
<tr>
<td>Community</td>
<td>The social context, in which the project is embedded. It refers to internal/external partners, its structure and collaboration mechanisms.</td>
</tr>
<tr>
<td>Team Structure (Division of Labor)</td>
<td>This refers to the team structure, roles and responsibilities in digital innovation projects (team roles such as project owner, developer, user experience designer, business analyst, scrum master etc), initial team setting, its development over time and dependencies on related departments within the organization.</td>
</tr>
</tbody>
</table>

Basic structure of an activity system adapted from Engeström and Sannino (2011)
### INTERVIEWFACTS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Interviews with Product Owners</th>
<th>Interviews with corporate roles</th>
<th>Interview minutes in total</th>
<th>Average duration (min) of an interview</th>
<th>Questions asked in an interview on average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing innovation methods and process at the incumbent firm</td>
<td>5</td>
<td>26</td>
<td>1'723</td>
<td>55</td>
<td>48</td>
</tr>
</tbody>
</table>

### Excerpt of our interview questions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing innovation methods and process at the incumbent firm</td>
<td>Is there an innovation process defined at your company? Are there different gates (phases) in the innovation process? How is a decision made on a “gate” from one to the next phase? Maybe you could tell us a bit more about the specifics on each phase? Did/do you work in sprints? What does iterative work mean to you?</td>
</tr>
<tr>
<td>Methods &amp; Tools</td>
<td>When are prospective users involved and on which purpose? How do you value prototypes? Do you use prototyping; When and how? How does testing look like? With whom do you test? Is there a group of testers you can reach out to? How do you communicate with testing users? How do you implement the learnings from testing? What software do you use for your organization of user stories and testing?</td>
</tr>
<tr>
<td>Governance, Rules &amp; Norms</td>
<td>Who takes decisions regarding go/kill for resources (financial, personnel, team)? How often does the committee take decisions? What are killer criteria to stop an innovation project? Under what circumstances are these decisions made? How does such a meeting look like?</td>
</tr>
<tr>
<td>Community</td>
<td>Do you involve external parties in your innovation projects? If yes, for which tasks and when? How do you structure the work with them? (e.g. responsibilities, task allocation, team members)? What value does the collaboration have? From your experience, what are three must-haves of an external party to create a successful partnership?</td>
</tr>
<tr>
<td>Team Structure (Division of Labor)</td>
<td>Who works in the project team? How do you structure the work tasks internally? What roles are involved in the project? Where is the project team allocated in terms of organizational structure? Are team members involved in other projects/daily business when they are allocated to a innovation project team?</td>
</tr>
<tr>
<td>User as Subject (only for project owners)</td>
<td>How does a user’s usual day look like? How does this solution change the way a user works? How much influence do your employees have in terms of workplace design (e.g. technology, use case)? What helps/would help when you face this challenge? What does not work? What role do change agents play? In what situation are they important?</td>
</tr>
<tr>
<td>Technology for B2E Use Cases (only for project owners)</td>
<td>What &quot;problem&quot; are you focusing on when developing your solution? For which employee role? Which improvement does the solution provide? What are the benefits? What technologies and devices have you considered throughout the project? What technologies and devices did you finally chose and why? What are the challenges you are facing when implementing this solution in terms of technology acceptance/change for the employee?</td>
</tr>
</tbody>
</table>
REFERENCES AND SOURCES

1. THANK YOU WORDS TO OUR STUDY PARTNERS
2. THE AUTHORS OF THIS STUDY
3. REFERENCES
4. PICTURE SOURCES
THANK YOU WORDS TO OUR STUDY PARTNERS

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