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Article

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Athens journal of business & economics

Provided in Cooperation with:
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Reference: Brecht, Patrick/Faßbinder, Jörn et. al. (2023). Rapid platform exploration : a sprint to discover and design digital platform business models. In: Athens journal of business & economics 9 (1), S. 27 - 44.
http://www.athensjournals.gr/business/2023-9-1-2-Brecht.pdf.
doi:10.30958/ajbe.9-1-2.

This Version is available at:
http://hdl.handle.net/11159/631130

Athens Journal of Business & Economics –
Volume 9, Issue 1, January 2023 –Pages 27-44

Rapid Platform Exploration – A Sprint to Discover and Design Digital Platform Business Models

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In recent years, the significance of digital platform business models has been increasing. This growth creates an increasing demand for tools that companies and startups can apply to find and develop sustainable platform business models. Today, various platform design tools are available to help companies and startups in the platform development. Previous research by Brecht et al. (2021) on the validation of platform business models has provided methods requiring, amongst others, a discovered and verified business model. However, there is a lack of research in establishing guidelines on how to reach this verified state. By applying the Google Sprint, a popular method to quickly generate insights into a variety of problems and enriching it with platform design tools, this research creates the Smart Platform Design Sprint (SPDS). The SPDS provides a solution to discover and obtain a verified business model. Its novelty lies in incurring the speed of the Google Sprint and incorporating the expertise of platform design tools. Through a series of expert interviews, the SPDS is improved, and its necessity verified. In future research, the SPDS awaits application in a practical setting showing its feasibility.

Keywords: *platform design tools, business model, exploration, google sprint, smart platform experiment cycle*

Introduction

In the last decades, radical technological progress led to the rise of innovative digital platform business models (Täuscher and Laudien 2018). While traditional pipeline business models focus on creating a product or service, digital platforms aim to orchestrate an infrastructure to facilitate interactions and exchange between external producers and consumers (Parker et al. 2016). The Interbrand Report 2020 highlighted the growing presence and relevance of digital platform business models: Apple, Amazon, Microsoft, and Google, four of the most valuable companies in the world, incorporate digital platforms in their business model (Interbrand 2020).

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https://doi.org/10.30958/ajbe.9-1-2 doi=10.30958/ajbe.9-1-2

There are many reasons for the growing dominance of digital platform business models. For instance, they can be deployed quickly and are highly scalable due to the high amount of accessible potential customers over the internet. Additionally, offers and content can be individualized (Parker et al. 2016). On the downside, there is a high risk of platforms failing before reaching a relevant status (van Alstyne et al. 2016). In this light, previous research on the validation of platform business models suggested investigating how digital platform business models can be designed and verified when no initial concepts exist. It is essential to generate and verify an initial concept before investing money to validate and scale the platform (Brecht et al. 2021). Practice has used frameworks such as the Google Sprint by the venture capital firm Google Ventures to prototype, test initial concepts, and verify them (Nashrulloh et al. 2019). The Google Sprint is a structured framework that can assist the user in generating an initial idea for a business model, including a first verification at the end of the five-day process (Knapp et al. 2016).

To date, the Google Sprint has been used and investigated in the scientific literature for specific purposes such as designing software products in startups, assessing innovation techniques in small and medium-sized companies, and in educational settings to enhance a user-centered design course for university students (Nashrulloh et al. 2019, Martins et al. 2020, Larusdottir et al. 2019). However, to the authors' knowledge, no research has been conducted to investigate the use of the Google Sprint for designing digital platform business models. This research builds on the Google Design Sprint 2.0 to create a new framework, which delivers a verified digital platform business model. Therefore, it focuses on the use case of designing a digital platform business model from scratch. It incorporates the unique features and characteristics of digital platform business models that differ in many aspects from the logic of traditional pipeline business models (Brecht et al. 2021). Consequently, this research is concerned with answering the following research question:

> RQ: To what extend can the Google Sprint be adjusted and used to discover and design digital platform business models?

This exploratory research proposes the Smart Platform Design Sprint for the specific use case of designing and verifying a digital platform business model. More precisely, the Google Design Sprint 2.0 is used as a basis and augmented with platform design tools. After designing the first iteration of the Smart Platform Design Sprint, it was verified through a series of expert interviews. With this feedback, the researchers created a new and improved version of the Smart Platform Design Sprint.

The qualitative research design generates actionable insights for practitioners to be more successful in designing a platform business model. Results suggest extending the Sprint to a five-day process to incorporate the activities more efficiently and to include an onboarding event to align the team's mindset. Furthermore, the moderator leading the team through the Sprint must be knowledgeable and skilled in transferring this knowledge to the team. Also, it is recommended to add the Minimal Viable Platform (MVP) Canvas to improve the

categorization of platform assumptions. Lastly, reordering the sequence of specific activities improved the speed of the Smart Platform Design Sprint.

This paper is structured as follows. The next section explains relevant theoretical concepts to increase the understanding of the research context and derives the hypothesis of this research. The third section describes the methodology, including the research design choices, the expert interviews, and the qualitative content analysis. Section four present the results by showing how the Smart Platform Design Sprint is constructed and iteratively enriched with expert knowledge. In section five, a general discussion is given, followed by theoretical and practical implications. This section continues with insights into the limitations encountered during this research and suggestions for future research. Finally, this paper ends with concluding remarks.

Literature Review

Business Model Exploration

The notion of exploration in the (platform) business model setting is defined as the quest of transforming business ideas into value propositions relevant to customers, which are "embedded in scalable and profitable business models" (Osterwalder et al. 2020, p. 9). In essence, exploration is finding and creating comparative advantages over the company's competition (Thomke 2014).

Exploration comprises the steps (1) discovery and (2) validation. The goal of discovery is to gain insights and gather data to determine whether the general direction of the business model is correct (Aulet and Ursache 2017). Meeting this goal involves a range of activities such as applying theory, creating tools, or conducting experimentation (Kulkarni and Simon 1988). As discovery ensures that value is created for the customer (Bland and Osterwalder 2020), discovery activities run under the premise of verification. Verification ensures that the conditions imposed at the beginning of the development process are satisfied at every development stage (IEEE 1990). Therefore, verification occurs internally and determines whether the business model was designed correctly. Upon completing the discovery step, a verified business model is extracted, and investigated further in the second step of exploration, validation.

Generally, validation assesses whether the specified requirements are satisfied, and the output fulfills its purpose in the target environment (Engel 2010, Albers et al. 2010). Thus, validation occurs externally and can be done during or at the end of the development process (Engel 2010, IEEE, 1990). In business model exploration, validation entails a more advanced and robust gathering of evidence and further evaluates the findings of the discovery stage. The focus lies on conducting authentic and real experimentation investigating customer behavior (Bland and Osterwalder 2020). The findings will be used to confirm or redesign the business model and the value propositions (Osterwalder et al. 2020).

As an example, for the validation of a digital platform business model, Brecht et al. (2021) developed the Smart Platform Experiment Cycle (SPEC). It is a five-

step process designed to validate digital platform business models through business experiments with customers. The SPEC aims to achieve validation by spending limited time and money. Possible outcomes of the process are a (in)validated hypothesis about the platform business model that initiates either a new iteration of the SPEC or a decision to pivot or stop the activities subjected in the hypotheses (Brecht et al. 2021). However, a prerequisite to starting the SPEC is a verified platform business model.

The Google Design Sprint 2.0

The Google Design Sprint 2.0 is a four-day process that enables a team to answer vital questions by testing and prototyping initial ideas with customers (Knapp et al. 2016). The Google Design Sprint 2.0 is an advancement of the Google Sprint, created to tackle various problems. The problems solved by the Sprint ranged from the development of an online shop to software-specific issues (Knapp et al. 2016). For example, the original Google Sprint was used for the development of Google Hangouts.

The Google Design Sprint 2.0 requires several steps as preparation before the actual sprint. Sprints target primarily crucial problems to justify the resources the company invests into the sprint. Consequently, before running the Google Design Sprint 2.0, the problem should be well defined (Knapp et al. 2016). Up to seven or eight people are selected to form the sprint team, thereby a moderator and at least one decider are chosen (Sutton 2014, Knapp et al. 2016). The moderator leads the team through the planned exercises and is responsible for the organization of the sprint, including the location and materials necessary to complete the sprint (Knapp et al. 2016). The decider has the authority to make decisions during the sprint week (Knapp et al. 2016).

The sprint participants must understand the scope of decisions they make. It is essential when deciding how to monetize the platform since monetization affects a platform's network effects (Parker et al. 2016). Thus, one might consider the following hypothesis:

> H1: *Before the sprint, the sprint team should participate in a Massive Open Online Course (MOOC) or some event to gain a basic understanding of platform business models. Alternatively, a platform expert could be part of the team to provide the necessary platform-specific knowledge in the team.*

One of the sprint's objectives is to be fast and efficient; time is limited during the sprint week. Therefore, the team should be familiar with the canvases before starting the sprint, resulting in saving time during the sprint week. This can be formulated as a second hypothesis:

> H2: *There should be a workshop before the sprint week in which the participants get to know the canvases used in the sprint.*

On Monday, the sprint starts with an exercise called "Ask the Experts". The moderator asks the team a series of questions regarding, for example, a product

description, the product users, and which problem the product is trying to solve. Answers are collected by all team members. The team categorizes all notes and votes which categories are prioritized. The decider's opinion has additional weight (Courtney et al. 2021). After completing the interviews, the long-term goals and sprint questions are targeted. For this purpose, every team member anticipates the best possible outcome for the problem at hand and writes it down. As in the previous exercise "Ask the Experts", the answers are collected, and the team votes on a joint goal (Courtney et al. 2021). Next, the sprint questions are deduced from the long-term goal, with the team thinking about the most significant obstacles they must overcome to achieve the long-term goal determined previously. The collection and voting process from the previous exercises are applied again (Courtney et al. 2021). Afterward, a map is created to support the activities of the following days. It visualizes a process, for example, a customer journey (Knapp et al. 2016). With the creation of the map, the basis for the sprint is completed. Now, the team shifts its focus to finding solutions, starting with an exercise called "Lightning Demos". Team members receive time for researching and finding solutions, followed by a short presentation (Knapp et al. 2016). In the next step, all team members sketch eight variations of their best ideas in eight minutes (Knapp et al. 2016). In the last step of the solution sketching process, the team creates a solution sketch. Every team member keeps their sketch anonymous, gives it a title, and makes the sketch self-explanatory (Knapp et al. 2016).

On Tuesday, the team decides by vote which solution sketch is prototyped in a *User Test Flow*. To create the *User Test Flow*, the team members work individually on the definition of six action steps. One action step could be, for instance, an individual click (Courtney et al. 2021). After the results are presented, the team votes on the preferred *User Test Flow* (Courtney et al. 2021). Next, the storyboard is created building on the *User Test Flow*.

On Wednesday, prototypes are built. The key is to build the prototype as lean as possible without wasting time but to a sufficient extent to test the idea (Knapp et al. 2016). For prototyping, team members take on the roles of interviewer, makers, writer, asset collector, and stitcher. The interviewer prepares a script for the interviews, while the makers create the components of the prototype. The asset collector collects or provides the makers with necessary materials, like photos, logos. The stitcher combines the parts building the prototype and presents it to the interviewer (Knapp et al. 2016). The interviewer is the target for the trial run as the interviewer did not participate in the prototype's building process. Thus, it is most likely to spot any inconsistencies or flaws the team should fix before the user tests (Knapp et al. 2016).

On Thursday, the team conducts five user tests with customers, which are sufficient to identify 85% of usability problems (Nielsen 2000, Knapp et al. 2016). For the interviews, the team occupies two rooms. In the first room, the interviewer conducts the interviews with the users. The interviewer gives the customer open-ended tasks and asks questions (Knapp et al. 2016). In the second room, the rest of the team watches a live stream of the interview and takes notes regarding the customers' reactions while handling the prototype (Knapp et al. 2016). The team tries to identify patterns in the customers' reactions and determines whether these

patterns are significant (Knapp et al. 2016). At the end of the sprint, the team refers to the goals set on Monday and decides how to follow up (Knapp et al. 2016).

Platform Design Tools

Platform Design Tools have been created to support the development of digital platforms. To provide platform-specific expertise, specific exercises from the Platform Design Toolkit 2.2 by Boundaryless S.r.l. (2019) are implemented. In the following, a set of canvases and tools used in this research are presented.

The following tools are used on Monday in the Platform Design Sprint: In the *Ecosystem Canvas*, stakeholders such as external stakeholders, peer consumers, peer producers, partners, and platform owners are identified with a focus on the entities participating in the interactions (Boundaryless S.r.l. 2019). In connection with this canvas, the *Ecosystem Entity-Role Portrait Canvas* is used to analyze each entity's assets, capabilities, performance pressures, current goals, and the gains the entity expects from its participation in the ecosystem (Boundaryless S.r.l. 2019). Since every platform starts with one core interaction between producers and consumers, this interaction forms the core relationship. Successful platforms scale by designing new interactions around a core interaction during the lifecycle of a platform (Parker et al. 2016). The main tool to consider for this decision is the *Ecosystem's Motivation Matrix*. It displays the current and future potential of the identified entities to exchange value comprised in a matrix (Boundaryless S.r.l. 2019). Additionally, the team determines a core entity, which is one entity of the core relationship. This core entity has priority when designing the platform (Boundaryless S.r.l. 2019). These tools support the team's understanding of the platform's ecosystem. Thus, the following hypothesis is derived:

> H3: *The canvases implemented on Monday afternoon provide a good basis to understand the platform's ecosystem. This knowledge enables the team to find the fitting platform solution.*

The *Transaction Board* is a tool to list transactions and interactions between the entities of the core relationship. The goal is to establish an understanding of existing transactions and channels, assess how they need to be improved, and what additional components must be created to facilitate their scaling potential (Boundaryless S.r.l. 2019). The *Learning Engine Canvas* allows the team to understand the challenges different entities face on the platform in different phases of their customer journey. It is done by stating these challenges and highlighting available tools to solve these challenges (Boundaryless S.r.l. 2019).

In the Platform Design Toolkit 2.2, the *Ecosystem Entity-Role Portrait* is the consecutive exercise after the entities in the ecosystem were identified. According to this order, the *Ecosystem Entity-Role Portrait* is applied to every entity. However, since one of the main characteristics of the Google Sprints is speed and efficiency, doing the *Ecosystem Entity-Role Portrait* for every entity is not feasible in a sprint. Thus, the order of the exercises is change to maintain the sprint's efficiency. The *Ecosystem Entity-Role Portrait* is the exercise done after the core relationship has been chosen. This reordering reduces the workload from creating one canvas for

every entity to just one or two canvases. The final number of canvases depends on whether the team does the *Ecosystem Entity-Role Portrait* only for the core entity or both entities forming the core relationship. Therefore, H4 states*:*

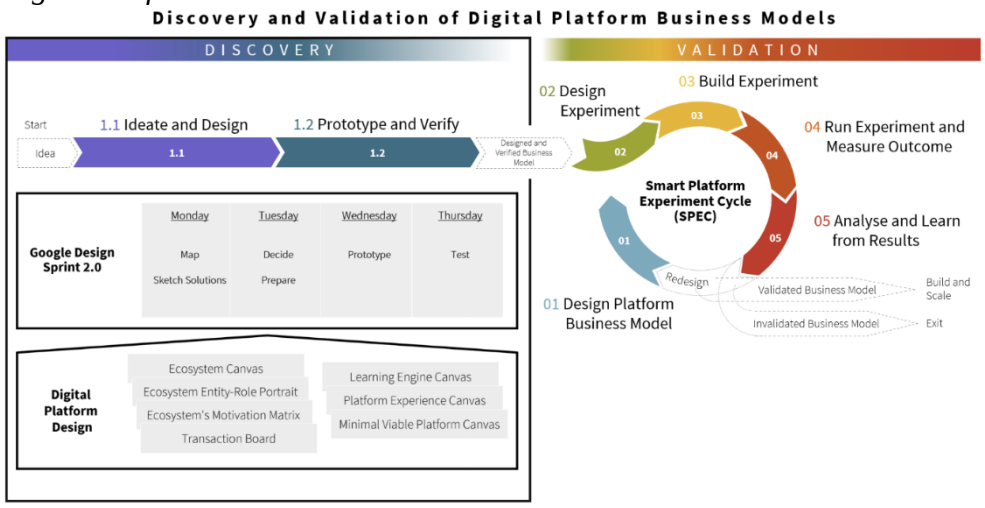
> *The canvas portraying the Ecosystem Entity-Role in detail should be postponed until the core relationship and core entity have been defined.*

The MVP Canvas splits the designed platform business model into three elements: desirability, feasibility, and viability. Achieving an appropriate balance of these elements is crucial as only a balance creates long-term sustainability (Brown and Katz 2019, Digital Ahead UG 2021). The three major sections for desirability, feasibility, and viability are further divided into key assumptions and hypotheses. They show how each is tested and what criteria are used to determine whether an assumption is (dis)proven (Digital Ahead UG 2021). Thus, H5 claims:

> *The MVP Canvas used on Wednesday shows a split into desirability, feasibility, and viability. Categorizing the assumptions about the platform into these three categories is advantageous for testing the prototype.*

Figure 1 shows how the sprint process aims to cover the steps necessary for the discovery of a business model before its validation with the SPEC (Brecht et al. 2021). Furthermore, the tools used for the creation of the design sprint for platforms are displayed, namely the Google Design Sprint 2.0 and the chosen tools for digital platform design.

Figure 1. *Overview of the Discovery Concepts and the Validation Process of Digital Platform Business Models*



Source: Based on Brecht et al. (2021).

Methodology

The exploratory nature of this research focused on the specific use case of digital platform business model design with the framework of a Google Sprint. Therefore, a qualitative research design was selected as mostly non-numeric data was collected (Creswell and Creswell 2018). A qualitative research design can help gain a deep understanding of the problem at hand and allow the researchers to gather contextual data and understand decisions and actions (Myers 2019, Jamshed 2014). Additionally, this qualitative research design led to more flexibility in collecting data and provided an improved basis for conclusions grounded in the experience of practitioners (Lowder 2009).

To create the sprint for platform business models, the researchers designed a first process iteration, combining the Google Design Sprint 2.0 with platform design tools. Based on assumptions made during the design phase of the sprint, the hypotheses were formulated. Five semi-structured expert interviews were conducted to verifty the process and to corroborate or refute the formulated hypotheses. Each of the interviews included a set of nine questions. After the expert interviews a qualitative content analysis investigated the hypotheses. Furthermore, additional feedback from the experts was collected, categorized, and then prioritized. With the information gathered from the expert interviews, an improved sprint iteration was created.

The purpose of this research is to generate findings, which support practitioners in designing platform business models. Hence, industry experts with experience in designing platform business models were selected for the interviews. Three out of five experts had a background in innovation coaching or worked in innovation labs of different companies. A fourth expert was a consultant specializing in digital transformation. The last expert worked in an innovation-focused research facility. The interviews were designed as semi-structured interviews to allow the experts to state their opinion on the presented hypotheses as freely as possible. With the COVID-19 pandemic and contact restrictions in place, interviews could not take palce in person. Therefore, the interviews were held through video calls with one expert at a time. The interviewer presented a series of PowerPoint slides to the expert explaining the designed process. At the corresponding time, the questions noted in the interview guideline were posed to the interviewee. The questions were open-ended and close-ended, depending on the topic. While sometimes a quick "yes" or "no" was deemed sufficient, other questions were designed to spark discussion and extract more of the experts' knowledge. The interviews took place from December 16, 2020, to January 4, 2021, lasting between 50 and 70 minutes.

For data analysis, the researcher conducted a qualitative content analysis according to Mayring (2014). The main characteristic of qualitative content analysis is that it only considers characters relevant to answering the posed questions (Mayring 2014). In the first step, the transcription software MAXQDA transcribed the interviews to create a first written draft of each interview. The transcription errors of the software were then corrected manually. The final transcriptions of the interviews were analyzed to extract the answers given to the questions from the interview guideline, aimed at answering the hypotheses formulated at the end of

the literature review. This analysis entailed creating a code in line with the formulated hypotheses and extended by feedback repeatedly given by the experts. The knowledge extracted from the interview transcriptions was prioritized according to how unanimous the expert answers were. Additionally, anecdotes were also categorized and prioritized according to the frequency of commenting on a specific topic and its valence (positive or negative). Topics adressed by only one expert were excluded from the analysis.

Results

Results Regarding the Hypotheses

Table 1 displays the answers given by the experts concerning the stated hypotheses. Some experts signaled indifference towards some of the hypotheses. These indifferent answers were not tallied in the table, as they did not add any value to corroborate or refute a hypothesis.

Table 1. *Overview of the Formulated Hypotheses and Responses from the Experts in the Interviews*

		Responses	
Hypothesis	Subparts of the Hypothesis	Positive	Negative
Before the sprint, the sprint team should participate in a MOOC or some event to gain a basic understanding of platform business models. Alternatively, a platform expert could be part of the team to provide the necessary platform specific knowledge in the team.	Necessity to teach	4	
	Teach in a workshop	3	
	Teach with a MOOC		1
	Include a platform expert		1
There should be a workshop before the sprint week in which the participants get.			4
The canvases implemented on Monday afternoon provide a good basis to understand the platform's ecosystem and this knowledge enables the team to find the fitting platform		5	
The canvas portraying the Ecosystem Entity-Role in detail should be postponed until the core relationship and core entity have been defined.		4	
The MVP Canvas used on Friday shows a split into desirability, feasibility, and viability. Categorizing the assumptions made about the platform into these three categories is advantageous for testing the prototype.		5	

Source: Interviews.

H1 concerned whether it was necessary for the team participating in the workshop to be taught the basics of platform business models before the sprint. The hypothesis further stated different options of how this knowledge was taught to the team. As can be seen in Table 1, the experts almost unanimously agreed on the necessity for the team to be taught the basics of platform business models. The options stated in the hypothesis for this knowledge transfer were to do a workshop, a Massive Open Online Course (MOOC), or include a platform expert in the sprint. Here, the MOOC and the inclusion of a platform expert received negative feedback, while the workshop format drew positive responses. The expert responding negatively to the inclusion of a platform expert argued a platform expert might destroy the team's dynamic. In contrast, the experts supporting the

knowledge transfer through a workshop stated this workshop offered an opportunity to onboard the team before the sprint started.

H2 questioned whether the team should be introduced to the incorporated canvases beforehand. The experts refuted this hypothesis by stating it would be sufficient if the moderator introduced the canvases in the corresponding exercises. However, this decision required that the moderator could explain the canvases in an adequate time and had the knowledge to answer any questions the team might have regarding the activities.

H3 stated that the platform design tools chosen for the Smart Platform Design Sprint comply with the requirements to provide the team with a profound understanding of the platform's ecosystem. Thus, it enables the team to find a fitting platform solution. The choice of platform design tools is an essential part of this research, and the interviewed experts unanimously support the tool choices as fitting for the stated requirements.

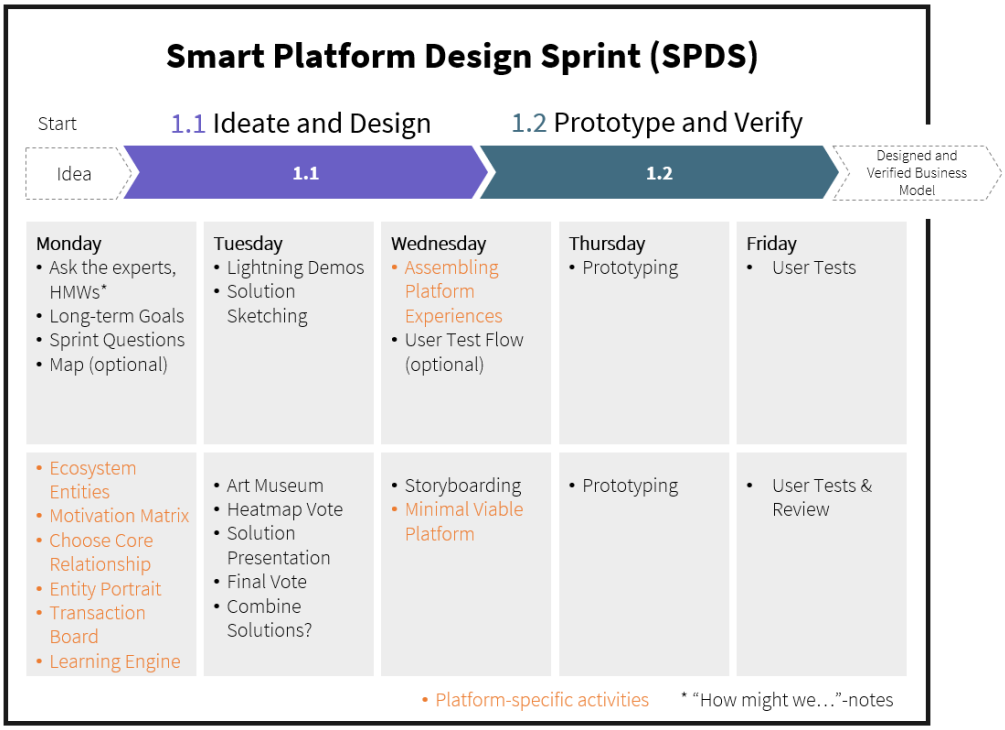
H4 corroborated through the expert interviews aimed to change the order of the exercises. This idea stemmed from a time-saving aspect, which was supported by four out of the five experts.

H5 assessed the choice of using the *MVP Canvas* from a different platform design tool. The *MVP Canvas* categorizes assumption into desirability, feasibility, and viability. The expert unanimously supoorted the use of the *MVP Canvas*.

The Smart Platform Design Sprint

The Smart Platform Design Sprint (SPDS) discovers and verifies platform business models. It implies that the team already knows that the sprint result is a platform. The premise of knowing that the solution the team works towards is a platform solution was stressed by some experts. The platform-specific activities of the SPDS are implemented on Monday afternoon and Wednesday morning. Monday afternoon's exercises focus on understanding the platform's ecosystem, using the *Platform Ecosystem Canvas, Ecosystem Entity-Role Portrait, Motivation Matrix, Transaction Board,* and *Learning Engine*. On Wednesday, the team uses the *Platform Experience Canvas* and *Minimal Viable Platform Canvas* to elaborate on the chosen solution(s) or solutions and make them more tangible in addition to the storyboarding exercises.

Figure 2. *Activities Throughout the Smart Platform Design Sprint*



Source: Based on the Google Design Sprint 2.0.

Figure 2 shows an overview of the exercises and their order in the SPDS. The orange highlighted bullet points show the added platform-specific activities. Since executing these exercisesrequire one additional day, the SPDS was extended to a five-day process. The Google Design Sprint 2.0 is a four-day process.

Preparations

In addition to the preparations necessary for any design sprint, the SPDS includes an onboarding workshop before the sprint week. The onboarding workshop is a result of the experts' responses to H1. The goal of the onboarding workshop is to teach the team about the particularities of platform business models. Furthermore, the onboarding workshop provides room for any questions the team may have about the sprint week. According to the experts, enabling this interaction is essential if this is the first sprint run in a company. Adding this workshop might lower the resistance within the team to the SPDS.

Monday Afternoon: Understanding the Platform's Ecosystem

After defining the goals for the sprint, the team then moves on to exercises, which revolve around understanding the platform's ecosystem. Compared to the Google Design Sprint 2.0, it means the *Lightning Demos* and *Solution Sketching* are moved to Tuesday morning. Subsequent exercises are also done at a later point in time due to the inserted exercises on Monday afternoon.

The exercises are precisely structured that the team first identifies entities present in the ecosystem before becoming more detailed, focusing on only one or two entities by the end of Monday. This approach is consistent with the platform

architecture by Parker et al. (2016), who suggested focusing on a single core interaction when building a platform and then adding new interactions around this core interaction.

In the first step of understanding the platform's ecosystem, the team identifies the entities present in the ecosystem using the *Platform Ecosystem Canvas*. After identifying the entities present in the ecosystem, the team analyses how and what value is exchanged between the entities or within the same entity. The tool applied for this analysis is the *Motivation Matrix*, which displays the value exchanges on a single page. Following this exercise, the *Motivation Matrix* provides the information needed to decide the platform's core interaction. Because the following exercises mainly revolve around the entities forming the core relationship of the platform, the team evaluates the motivation of these entities to participate in the ecosystem. It fosters a better understanding of the essential roles to consider when designing a platform.

In the next step, the team lists the different transactions already happening or could happen in the core relationship in the *Transaction Board*. The last exercise aims at understanding the platform's ecosystem and entails the creation of the *Learning Engine Canvas*. This exercise again includes all entities identified in the *Platform Ecosystem Canvas*.

With these exercises, the team has a general understanding of the entities in the platform's ecosystem and the entities forming the core relationship of the platform. This understanding allows the team to find a fitting platform solution on the following day.

Tuesday

Tuesday only changes due to the insertion of exercises on Monday afternoon. In the SPDS, the team does the *Lightning Demos* and S*olution Sketching* on Tuesday morning, followed by the selecting the best solution in the afternoon.

Wednesday

From the previous days, the team understands the platform's ecosystem and designs a winning sketch(es) for the platform solution. The next step is to consolidate the information from all previous exercises in one comprehensive knowledge point. This consolidation is done by creating the platform experience for the core entity, using the *Platform Experience Canvas*.

With the knowledge collected and displayed in a single canvas, the team shifts its mindset from finding a platform solution to prototyping and testing this solution. Thus, the team and the moderator might create a *User Test Flow* as a basis for the storyboard. The *User Test Flow* is optional as the *Platform Experience Canvas* might already display the information needed for creating the storyboard.

From the final storyboard, the team deducts all the information needed to build the prototype on Thursday efficiently. In the last exercise for Wednesday, the team also creates an *MVP Canvas*. While the storyboard shows how to build the prototype, the *MVP Canvas* displays what and how to test the elements of the prototype. The importance of defining measures before the user tests regarding the exact time to corroborate or refute assumptions comes from the team's tendency of

building an attachment to their prototype. This attachment results in continuing with the development of the product, even though, in some cases, it should not (Viki et al. 2019).

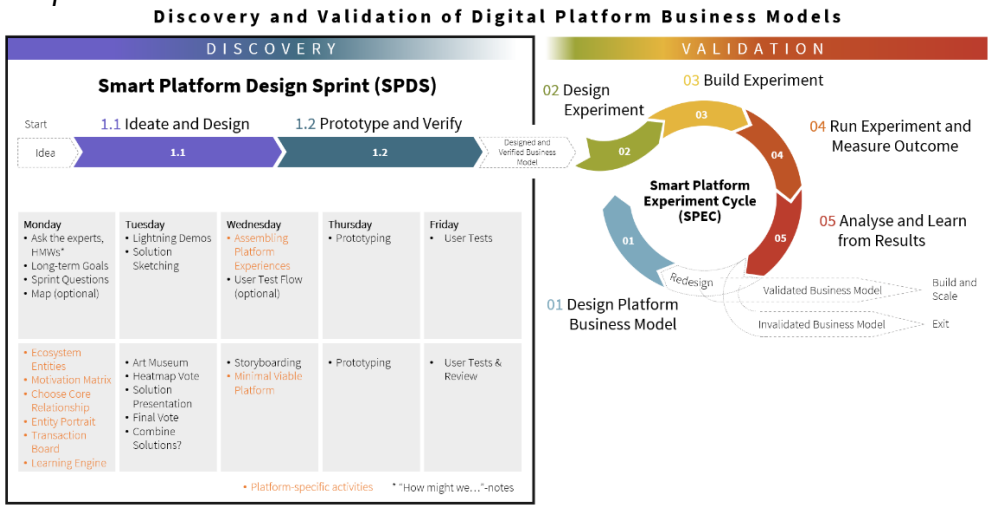
Thursday

The exercises on Thursday do not differ from the prototyping processes described in the original Google Sprint and Google Design Sprint 2.0. However, since new exercises are added to the process, the prototyping takes place on Thursday instead of Wednesday. Since the team builds a platform, the team can use software to create mockups, simulating clickable areas such as buttons. In the expert interviews, one question was whether the experts have used similar software, what it was, and whether they would recommend it. Four of the experts recommended the software Marvel for the creation of a mockup.

Friday

With the platform specific exercises added into the sprint, the sprint has a duration of five days. The process of testing the platform prototype remains unchanged and does not differ from the execution described in the Google Design Sprint 2.0.

Figure 3. *Overview of the Discovery and the Validation Process of Digital Platform Business Models*



Source: Based on the Google Design Sprint 2.0 and Brecht et al. (2021).

Figure 3 shows how the Smart Platform Design Sprint (SPDS) and the Smart Platform Experiment Cycle (SPEC) combined can be used for the platform business model exploration. The SPDS shows the fast discovery of verified platform business models, while the SPEC is responsible for validating the discovered platform business model.

Discussion

This research was set out to design a process that advanced a rapid platform exploration intending to retrieve a verified platform business model. The solution was found in the Smart Platform Design Sprint. It is a process model that combines the steps of the Google Design Sprint 2.0 with the knowledge of platform design tools to discover and design a platform business model. The Google Design Sprint 2.0 is characterized as fast and efficient in the areas of ideation, designing, prototyping, and testing of the solution to an identified problem. The platform design tools are helpful components to consider in the creation of digital platform business models. Moreover, the results of expert interviews verified the SPDS itself.

The interviewed experts unanimously described the developed Platform Design Sprint as a tool that can be valuable to anyone looking to discover and design a platform business model, verifying the process. Another essential objective to fulfill when constructing the sprint was the duration. Knapp et al. (2016) indicate a loss of continuity when a sprint extends five days. One of a sprint's main characteristics is its speed and efficiency. Thus, with a loss of continuity comes a loss of efficiency. With the SPDS being a five-day process (including an onboarding workshop), the SPDS can retain the efficiency of the original Google Sprint. In addition, this research revealed low costs and short commitment requirements for the sprint. The costs origintate from employees being kept from their day-to-day tasks and their salaries being paid. Salaries and opportunity costs are the main cost drivers of the SPDS. Additional costs only accrue for the required office supplies, catering, possibly the room for the sprint, and lastly, the software used to create the platform prototype. Since the main cost drivers are salaries and opportunity costs for lost business, the SPDS is attractive for start-ups. Salary costs are likely lower in a startup environment compared to a corporate setup. Even more so when the start-up is recently founded and still searches for a profitable business model to scale (Blank and Dorf 2012, p. 20).

Regarding the mechanisms of the SPDS, the first set of platform-specific exercises on inserted Monday afternoon. Here, the team aims to understand the platform's ecosystem using a variety of tools displayed in Figures 2 and 3. The solution sketching process moves to Tuesday morning, and subsequently, selecting the best solution to Tuesday afternoon. After Tuesday, the exercises remaining from the Google Design Sprint 2.0 revolve around the storyboard, the blueprint for the prototype. Since the prototype requires a whole day to be built, it must be moved to Thursday. It results in available time for additional exercises on Wednesday, which is used for the *Platform Experience Canvas* as the first exercise of the day and the *MVP Canvas* as the last exercise done on Wednesday.

Furthermore, some of the exercises are marked as optional, as displayed in Figures 2 and 3. The choice to define these exercises as optional is based on redundancy. Creating a map on Monday morning helps align the team's views and work towards the goal. However, the information displayed in the *Map* is likely to be depicted similarly to the *Platform Experience Canvas*, scheduled for Wednesday morning. Doing the *Map* helps the team to align their views but is still marked as

optional. A team might already be aligned about the challenge and could save time by skipping the exercise.

Similarly, the *User Test Flow* does most likely not display any information that the *Platform Experience Canvas* does not already show. However, the *User Test Flow* has been developed specifically to prepare the team for creating the *Storyboard*. Along the same lines explaining the *Map*, the team can skip this exercise if it feels all the information necessary for the *Storyboard* is included in the *Platform Experience Canvas*. Alternatively, if the team likes to prepare the information more precisely for the *Storyboard*, the team can do the *User Test Flow* before creating the *Storyboard*.

Moreover, the platform prototype is coherent with the platform architecture by Parker et al. (2016), who suggest establishing the platform for one core interaction and then adding interactions around this core interaction over time. For new platforms, the exercises for Monday afternoon guide the team from identifying the entities in the platform ecosystem to choosing a core relationship and a core entity within the core relationship to build the platform. However, if the team wants to add a new interaction to an existing platform, the SPDS can be used similarly. When choosing a core relationship on Monday afternoon, the team could select the new interaction and add it to the existing platform.

As an alternative to teaching the team fundamentals of platform business models during the onboarding workshop, the team could also do a MOOC on this topic. Free MOOCs are available on different platforms like edx.org, where people can enroll in the offered courses. With MOOCs, participants can flexibly choose when and where to study the course material (MOOC.org 2021). One of the experts refuted using a MOOC to teach the team the basics of platform business models. However, due to the additional flexibility, using a MOOC to educate the team is not ruled out for the SPDS. If the MOOC is chosen, there should be a time slot in the onboarding event for asking questions a Q&A concerning the MOOC learnings.

Additionally, two experts stressed the importance of a debriefing exercise at the end of each sprint day. Although debriefing is not explicitly mentioned in the Google Sprint methodologies, the experts expressed debriefing as an essential component for the moderator to cater the sprint to the team's needs.

According to the interviewed experts, the SPDS should incorporate a mechanism similar to the Scrum framework's "Sprint retrospective". These are meetings used to reflect on past sprint days, allowing the moderators to collect feedback to improve the sprint in the subsequent days and align the team. The two Scrum retrospective exercises the moderator can use are, for example, the "KALM, Keep, Add, Less, More"-retrospective or "Liked, Learned, Lacked, Longed for"-retrospective (Caroli 2021, Richterich 2021).

Limitations

Even though the design of the process is a overall success, as indicated by the positive feedback of the experts during the interviews, there are aspects of the SPDS that cannot be controlled by process design. The SPDS requires a competent

moderator to guide the team throughout the week. By using various canvases throughout the sprint week, the team relies on the moderator to introduce and explain the canvases appropriately. If the moderator lacks necessary competencies, the sprint might fail. The experts also emphasized the moderator's significance during the interviews.

Another limiting factor for the SPDS are cultural differences. The original Google Sprint was developed in the United States of America (USA) and thus, reflects the American culture. However, business is conducted differently in other countries and culture varies across companies. One expert addressed how cultural differences may limit the SPDS. While the original Google Sprint aims for a realistic prototype, one expert experienced that Germans, at times, provide unjustifiable positive feedback on prototypes. This behavior is based on the tester not wanting to give negative feedback on a prototype someone has spent a lot of time and effort developing.

Generally, it should be emphasized that the SPDS should only run if the team knows they are working towards a platform solution. If this is unknown before the sprint, a potentially better solution might be discarded. Furthermore, the SPDS has not been verified beyond the expert interviews. Multiple experts stated the importance of testing the Platform Design Sprint in practice. Including experience from applying the process will elevate the SPDS's status from being a verified theoretical concept to a validated process applicable by startups and companies in their business model exploration activities.

Outlook

The Smart Platform Design Sprint described in this paper applies the platform design tools. However, with new platform design tools being released in the future, there may be more suitable tools available to incorporate in the SPDS. An example of a new tool is the new iteration of the Platform Innovation Kit, the Platform Innovation Kit 5.0.

Other components to consider in future research are canvases featuring additional elements essential in the platform business model, such as filters. Filters can facilitate high value by enhancing the interaction between consumers and producers. Including an activity dedicated to a platform's filters would add further value to the SPDS.

Lastly, the SPDS has not been tested in practice yet. Applying the sprint in a real-world scenario would provide more valuable insights into its applicability in real-life settings. This experience will reveal whether the constructed process works as intended. With the knowledge gained from applying the SPDS in practice, an advanced iteration of the SPDS can be developed, incorporating learnings from applications.

Conclusion

The Smart Platform Design Sprint is an innovative tool enabling a start-up or established company to design and verify a platform business model within one week. Combining the Google Sprint 2.0 with platform design tools, the SPDS inherits the speed and efficiency of the Google Sprint. The SPDS also transfers the necessary platform-specific expertise for the design and verification of a platform business model. The new process was developed iteratively and further enriched with expert knowledge. It results in a tool applicable in the digital business model exploration focusing on extracting a verified business model by completing the discovery step, which is required to enter the second validation step.

References

Albers A, Behrendt M, Ott S (2010) Validation-central activity to ensure individual mobility. In *Proceedings of FISITA 2021 World Automotie Congress*. Budapest, Hungary.

Aulet B, Ursache M (2017) *Disciplined entrepreneurship workbook*. Published by Chris Snyder. Hoboken, New Jersey: Wiley.

Bland D, Osterwalder A (2020) *Testing business ideas*. Hoboken, New Jersey: John Wiley & Sons, Inc.

Blank SG, Dorf B (2012) *The startup owner's manual: the step-by-step guide for building a great company*. Pescadero, CA: K&S Ranch Press.

Boundaryless S.r.l. (2019) *Platform design toolkit 2.2: the user guide*. Boundaryless S.r.l. Retrieved from: https://stories.platformdesigntoolkit.com/releasing-platform-design-toolkit-2-2-b99b6a4c776d. [Accessed 12 November 2020]

Brecht P, Niever M, Kerres R, Ströbele A, Hahn C (2021) Smart platform experiment cycle (SPEC): a process to design, analyze, and validate digital platforms. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 35(2): 209–225.

Brown T, Katz B (2019) *Change by design: how design thinking transforms organizations and inspires innovation*. Revised and Updated Edition. Harper Collins.

Caroli P (2021) *KALM – Keep, add, more, less*. Retrieved from: https://www.funretrospectives.com/kalm-keep-add-more-less/. [Accessed 2 February 2021]

Courtney J, Scarano D, Knapp J (2021) *Design sprint masterclass by AJ &Smart*. Retrieved from: https://ajsmart.clickfunnels.com/home-page1963344716019121719 48. [Accessed 24 June 2021]

Creswell JW, Creswell JD (2018) *Research design: qualitative, quantitative, and mixed methods approaches*. 5th Edition. Los Angeles: SAGE Publications.

Digital Ahead UG (2021) Minimal viable platform canvas - Part of the platform innovation kit. Retrieved from: http://platforminnovationkit.com/pik4/#overviewkit. [Accessed 24 January 2021]

Engel A (2010) *Verification, validation, and testing of engineered systems*. Hoboken, NJ: Wiley.

IEEE (1990) *IEEE standard glossary of software engineering terminology: IEEE Std 610.12-1990*. IEEE Xplore. IEEE. Retrieved from: https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=159342. [Accessed 28 January 2021]

Interbrand (2020) *Report on best global brands 2020*. Retrieved from: https://interbrand.com/best-global-brands/. [Accessed 21 November 2020]

Jamshed S (2014) Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy* 5(4): 87–88.

Knapp J, Zeratsky J, Kowitz B (2016) *Sprint: how to solve big problems and test new ideas in just five days.* First Simon & Schuster Hardcover Edition. Simon & Schuster.

Kulkarni D, Simon HA (1988) The processes of scientific discovery: the strategy of experimentation. *Cognitive Science* 12(Apr–Jun): 139–175.

Larusdottir M, Roto V, Stage J, Lucero A, Šmorgun I (2019) *Balance talking and doing! Using Google design sprint to enhance an intensive UCD course*, 95–113. Cham: Springer International Publishing.

Lowder BT (2009) Choosing a methodology for entrepreneurial research: a case for qualitative research in the study of entrepreneurial success factors. *SSRN Electronic Journal*.

Martins N, Silva S, Alvelos H, Barreto S, Chatterjee A, Santiago E, et al. (2020) Design of a digital platform for the preservation and dissemination of Portuguese handicraft products. In *2020 15th Iberian Conference on Information Systems and Technologies (CISTI)*, 1–5.

Mayring P (2014) *Qualitative content analysis: theoretical foundation, basic procedures and software solution*. Klagenfurt.

MOOC.org (2021) *Welcome to Mooc.org*. Retrieved from: https://www.mooc.org/. [Accessed 25 February 2021]

Myers MD (2019) *Qualitative research in business and management*. 3rd Edition. Thousand Oaks, CA: SAGE Publications.

Nashrulloh MR, Setiawan R, Heryanto D, Elsen R (2019) Designing software product with google ventures design sprint framework in startup. *Journal of Physics: Conference Series* 1402(Dec): 022084.

Nielsen J (2000) Why you only need to test with 5 users. Retrieved from: https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/. [Accessed 17 February 2021]

Osterwalder A, Pigneur Y, Etiemble F (2020) *The invincible company*. Hoboken, New Jersey: John Wiley & Sons, Inc.

Parker G, van Alstyne M, Choudary SP (2016) *Platform revolution: how networked markets are transforming the economy - And how to make them work for you*. 1st Edition. W.W. Norton & Company.

Richterich J (2021) *Ziele der Retrospektive in SCRUM*. (Objectives of the retrospective in SCRUM). Retrieved from: https://www.online-projektmanagement.info/agiles-projektmanagement-scrummethode/ scrum-meetings/retrospektive/. [Accessed 2 February 2021]

Sutton B (2014) *Why big teams suck*. Retrieved from: https://www.linkedin.com/pulse/20140303152358-15893932-why-big-teams-suck/. [Accessed 17 February 2021]

Täuscher K, Laudien SM (2018) Understanding platform business models: a mixed methods study of marketplaces. *European Management Journal* 36(3): 319–29.

Thomke S (2014) Accelerating learning by experimentation. In O Gassmann, F Schweitzer (eds.), *Management of the Fuzzy Front End of Innovation*, 125–140. Springer International Publishing.

van Alstyne M, Parker G, Choudary SP (2016) *6 reasons platforms fail*. Harvard Business Review.

Viki T, Toma D, Gons E (2019) *The corporate startup: how established companies can develop successful innovation ecosystem*. GLOBAL PUBLISHER SERVICES.