Designing software product with Google Ventures design sprint framework in startup

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Abstract. Startup is becoming a trend in Indonesia. Various success stories from local startups such as Gojek, Tokopedia or Bukalapak, has become trigger for the emergence of new startups. The potential of internet users in Indonesia which is increasing from year to year is also a catalyst for establishing a startup. At an early stage, startup must identify user experience priorities and problems in developing software product phase. This chapter describes work in progress on a shortened version of Design Sprint approach, and its application to designing Software product in Startup. Google Ventures initially introduced Design Sprint to tackle critical business problems and come up with viable solutions within five days.

1. Introduction
Many research has been done on enterprise software development [1,2]. However, research on software development activities at startup is still rare [3,4], whereas the existence of startups currently greatly influences life, with the rapid development of information technology habits and human behavior began to be affected, starting from lifestyle, way of learning, buying goods and more [5,6]. Nowadays many people set up startup with the aim of creating innovative and high-tech creative products, and growing aggressively to reach a broad global market [7,8]. Startup has extremely limited time and resources to build the product [9,10], so that startups need effective practices to solve those challenges [11,12]. Some people think that startups can find market segments that are very profitable to innovate without the need for large investments, but the competitive market makes most of startup fail [13,14]. The product that market oriented is important for startup but profitable, sustainable and globally is the next phase for startup growth [15,16].

Kotakery is startup company in Indonesia which has an idea to create crowdfeeding and food selling platform based on mobile devices and web, in order to make kotakery product market oriented, the right method to design the software product is needed [17,18]. Google Venture Design Sprint is Design Sprint is a five-day process to helps startup answering crucial business question and problems by creating prototypes and testing them with targeted customer segment [19,20]. There are three things that need to be considered before the beginning of design sprint, Firstly, specific challenges must be recognized and understood by the team. At Google Ventures, startup is recommended to use it design sprint to solve the most critical problems in the company, because the ideas of solving is very important issues that makes team members motivated and eager to solve the problem rather than having to finish regular day-to-day questions. Secondly, a team to run a sprint must be formed. It is recommend that the team should not be more than 7 people because of the fact that with the larger numbers of participants it is difficult to make everyone efficient and focus on work. What's more, teams must be cross-functional and mixed, and there
must be experts on specific topics that are present during the sprint. This Because people from different backgrounds working together in a sprint can provide valuable insights and help see problems from various perspectives. In addition, a facilitator must be chosen, who will guide entire team through the sprint, arrange time, discussion, and summarize the results. Finally, time and space for the sprint must be arranged. A team must focus and prioritize sprints from another jobs, present on time from Monday to Friday starting at 10 am until 5 pm, this proves that duration of five days in design sprint is the most efficient among all other options, like ten days, one month, etc., because five days give a sense of urgency, but at the same time they are give enough time and resources to get through a sprint and solve the challenge [21].

2. Methodology
In this study, the method used in designing software product based on the Design Sprint Framework developed by Google Ventures. The sprint is a five-day process for answering critical business questions through design, prototyping, and testing ideas with customers. The five-day process or five-phases are understand, diverge, decide, prototype and validate [22].

Figure 1. 5 Phases of design sprint [22].

Figure 2. The sprint gives teams a shortcut to learning without building and launching [22].

The five-day design sprint process is the following:

- Monday: long-term goals regarding specific problems chosen, and mapping all challenges that are made in the team so that everyone has share a vision about the problem. Then, company experts on certain topics share their knowledge and opinions, and the target sprint is selected for what really needs to be solved in these five day, and what are the challenges involved. The whole process is documented on the board and on sticky notes.
- Tuesday: On this day, the solution to the problem is made. Firstly, all team members conduct research on existing ideas and case studies. Next, everyone comes with their own ideas about potential solutions to this problem and anonymously sketch limited time period. All sketches were collected and left untouched until the next day.
Wednesday: team members provide feedback and criticism on sketch solutions that have been made before. Finally, the solution is chosen, and the solution to work further is selected by decider. The ideas of the selected sketch are taken as a basis for prototype, and it was also enhanced by ideas from other sketches. Based on these ideas, storyboards for prototypes are made.

Thursday: on this day, realistic prototypes are made using Wednesday storyboard. It can be made on screen, on paper, in the form of text with actors, in the form of physical space, 3D printed objects, etc.

Friday: the last day of the sprint is reserved for testing the created prototype by interviewing targeted customer segment and observing their reactions to the prototype. This allows the team to look at their ideas through the customers’ reaction and show them the problems that can't be seen as a predicted internal in a team [22].

3. Result and discussion
At this stage, Design Sprint implemented to design platform of food trading and crowdfeeding at Kotakery company, the sprint member are one person of facilitator, one person of decider, three person of Sprint member from various field of expertise and three-person expert.

3.1. Understand
On the first day, facilitator introduce briefly about sprint and first day agenda to sprint members. The agenda are long-term target setting, sprint question, make a sprint map on the board, ask the expert, compiling HWM notes, voting and defining the target. Figure 3 shows the Sprint map of food trading platform.

![Figure 3. Result of first day sprint.](image)

3.2. Diverge
On second day, the team searching a rapid solution for the problem, action on this day are choosing part of the problem, take notes, mind map, crazy eight, storyboard, silent critique, three minute critique, supervote. Figure 4 shows the result of second day.
3.3. Decide

On the third day of sprint design, it has been explored in such a way as to the problems that exist with structured, systematic and massive studies, then many ideas and solutions are conveyed and contained in paper and sticky notes. Now it's time to choose and decide which solution is the best for prototype. The action on this day are search for conflicts, best shot or battle royale?, test assumption and storyboard. Figure 5 shows the result of third day.

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**Figure 4.** Result of second day sprint.

**Figure 5.** Result of third day sprint.
3.4. Prototype
On the fourth day of sprint design, designers have greater responsibility because of the ability to design components. On this day, designer have to create high definition prototype. Action to take are Devide and conquer, focus on creating prototype and review. Figure 6, 7 and 8 shows prototypes as the result of fourth day.

![Figure 6. Prototype A.](image1)

![Figure 7. Prototype B.](image2)
3.5. Validate
On the last day is validating the product by testing the prototype to real user. Action to take on this day are listing key question, preparing observation room, test audio/video live streaming and recording when user test, assign court report and scoreboard

4. Conclusions
This research resulted in the Designing software product using Google Ventures Design Sprint which had the advantage of being able to accommodate very rapid user validation based on user needs by involving whole startup team. Beside that, the advantages of design sprint is making guide artifacts for software development, after the sprint design, the team can implement the product prototype, so it will save a lot of time writing specifications and reducing risks in product development.

Acknowledgments
Thanks to Sekolah Tinggi Teknologi Garut which inspiringly support the publication of this article.

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