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# **Hackathons for Corporate Innovation – a Longitudinal Study**

**Master's Thesis (30 ECTS)**

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## **Hackathons for Corporate Innovation – a Longitudinal Study**

### **Abstract:**

Hackathons are increasingly popular means for fostering corporate innovation. Despite abundant research on hackathons, outcomes of corporate hackathons are not as well understood. We studied 2 editions of a multi-site internal corporate hackathon series to find aspects affecting project continuation in a corporate setting using observations, surveys and interviews. The study also explored differences between the 2 events and their effect on the projects and teams. The research studied connections between project continuation and team member's location in the context of cross-site teams. We found multiple aspects that possibly affect project continuation, including preparation, projects relation to existing assets and delivering functional prototypes. We also saw some changes between the hackathons affecting project continuation and participant's perception of the event. Finally, we found indication that having a multi-site hackathon team may not influence project continuation.

**Keywords:** Hackathon, Innovation, Corporation

**CERCS:** P170 Computer science, numerical analysis, systems, control

## **Häkaton kui ettevõtte innovatsiooni edendaja – pikiuuring**

### **Lühikokkuvõte:**

Häkatone kasutatakse aina sagedamini innovatsiooni edendamiseks ettevõtetes. Kuigi häkatone üldiselt on palju uuritud, on vähe teadmisi ettevõttesiseste häkatonide kohta. Me uurisime kahte häkatoni ühest mitme toimumispaigaga ettevõttesisesest häkatonide seeriast leidmaks asjaolusid, mis mõjutavad häkatoni projektide jätkumist pärast häkatoni, kasutades selleks vaatluseid, küsimustikke ja intervjuusid. Lisaks uurisime erinevusi kahe häkatoni vahel ning nende mõjusid projektidele ja võistkondadele. Samuti uurisime häkatoni hajususe nurga alt, leidmaks seaduspärasusi võistkonnaliikmete asukoha ja projekti jätkumise vahel. Tuvastasime mitmed asjaolud, mis võivad mõjutada projektide jätkumist ettevõttesise häkatoni järel. Lisaks leidsime mõned muudatused häkatoni korralduses, mis võivad mõjutada projektide jätkumist ja häkatoni osalemiskogemust. Viimaks nägime, et võistkondade hajususel ei tarvitse olla otsest mõju häkatoni projekti jätkumisel pärast häkatoni.

**Võtmesõnad:** Häkaton, Innovatsioon, Ettevõte

**CERCS:** P170 Arvutiteadus, arvutusmeetodid, süsteemid, juhtimine

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# 1 Introduction

The age of innovation requires ever larger leaps in knowledge and capabilities to serve constantly changing needs of mankind. Under increasing competitive pressure, companies need to deliver value to the customers ever faster – products must be released earlier and new ideas presented constantly. To manage the pace of innovation, companies try to adopt different approaches to gain an advantage over their rivals.

An increasingly popular method of overcoming this hurdle is arranging internal corporate hackathons. Hackathons are events where people from various fields of expertise form spontaneous teams to intensively work on a project in a limited amount of time [1]. The assembly of teams that usually do not work together helps to create a new working environment, where daily responsibilities are put aside in order to come up with a solution that could be the next breakthrough. It is used as a means for boosting innovation in many companies, including software giants like Facebook, Google and Microsoft [2]–[4].

Although there is a general abundance of research on hackathons, corporate hackathons in general are understudied. Existing work mostly focuses on single events and the hackathon itself, like reasons to arrange such an event [2], [5]–[8] and how to organise corporate hackathons [1], [7], [8]. Reasons for the different outcomes of hackathon projects are not as well understood [3]. Continuation of the projects though is important to generate tangible value for the company. As it is not well understood what contributes to project continuation in a corporate context, we address the gap by answering the following question:

**RQ1:** What team, project and organisational aspects affect project continuation?

The team aspects in this context are the activities and the structure of the team, while the project aspects are the characteristics of the project itself. By organisational aspects we understand the factors introduced by the company and the organisational side of the hackathon itself.

In some companies, hackathons are regular events and part of the internal culture [2]. Pipedrive is among them, attempting to foster innovation and establish an organisational culture with the help of hackathons, having organised in total four editions of their internal hackathon from 2017 until 2019. Research discussing such hackathons from a longitudinal perspective is limited. In the context of different editions of internal hackathons, it is not

well understood how iterative changes in the organisation of a hackathon affect the participants or the hackathon itself. Existing research discusses the ways of how to use different organisational approaches to meet specific goals of corporate hackathons [1], but it has not been shown in practice how changes introduced between two editions of a hackathon prepared by the same entity affect the participants or the outcome of the hackathon. It is also not clear how team changes, given the same team leader participates in at least two editions of a hackathon, affect project continuation. Knowing that existing research typically discusses solitary events, we address the gap in research by answering the question:

**RQ2:** How do changes between two editions of a hackathon affect the outcome of the hackathon?

By changes we understand organisational changes like time of the week, structure and prizes of the hackathon, and changes within teams led by the same person over two hackathons.

Additionally, companies are becoming increasingly distributed in structure, having multiple small offices across the world. This forces the hackathons of such companies to adapt as well, if they seek to assemble as many people as possible. Current research suggests that going for the remote hackathon approach is suboptimal, hindering the participant's goals of learning and also possibly innovation [9]. The process of bringing people together to a single location can directly contribute to closing the gap between people with different professional backgrounds [10]. This research however assumes that the main motivation for the hackathon participants is learning. It is unclear how remote participation in a hackathon affects people with other motivations, for example getting something done and using their existing skills instead of learning new abilities, and how the prospect of continuing hackathon projects changes in that context. It is also not known how the remoteness aspect affects corporate hackathons since the existing studies discuss public or civic events. This opens the following question:

**RQ3:** How does having a multi-location team affect hackathon project continuation?

Multi-location teams are understood here as teams, who have members participating from at least two different sites of the same hackathon.

This thesis describes a study conducted on Pipedrive's Back2Garage hackathon's May and November 2019 editions, addressing the gaps in the research described above. The paper will present the study and its findings along with the analysis and discussion of possible implications of the results.

## 2 Background

Companies are not always able to harness the individual employee’s creativity under normal corporate circumstances. There is a lot of potential to be unlocked by simply fully utilising creativity of the people already working at the company. This bottom-up ideation could be supported by organising a hackathon, which is becoming an increasingly popular approach to foster innovation in corporate environments [2], [4], [5], [11].

Defining the word “hackathon” is not trivial – there is no definition that is generally agreed upon [2]. There are however commonalities between definitions of hackathons such as being limited in time, having participants in teams and they do not only discuss but develop tangible outcomes [12]. In this study, we use the following definition: a hackathon is a time-bound event where people from different fields of expertise form ad-hoc teams to intensively work on projects [1]. Some definitions also specify other traits of a hackathon, such as (but not limited to) collocation [13], participants [10], [14], types of projects [15], activities to be conducted [9], [16] and goals of the event [15], [17].

### 2.1 Corporate Hackathons

Studies have provided indication that having a hackathon in company settings helps new ideas to be born. A key factor in this are the new interdisciplinary teams formed for the hackathon. New people to work with and the flexible environment allows people to try out technologies or approaches that would otherwise not be possible. Additionally, the hackathon setting can help attendees achieve personal goals like obtaining skills or establishing social connections. All this is possible in this short, less than a week timeframe thanks to the passion the team members have for the chosen topic and the focused nature of the event. Achieving similar results with a corporation’s established workflows may consume far more time and resources [1], [2], [4], [6], [7].

### 2.2 Continuation of Hackathon Projects

Current research on hackathon outcomes focuses mainly on civic, student, entrepreneur or other public hackathons [17]–[21]. Existing research suggest that up to 97% of the projects become inactive within 6 months after the hackathon [22]. Another paper suggests that there is a discrepancy between the continuation intentions of the hackathon participants after the hackathon and the actual continuation of the projects. While more than 80% of participating teams had continuation intentions, the study saw that only about 20% of the participating

teams had eventually continued working on their projects when asked months after the hackathon [23]. The reasons for project discontinuation may vary between the different types of hackathons, ranging from lack of interest, motivation and time to devote to the project [21] to insufficient support from potential stakeholders [23], [24]. According to another study, the latter could be caused by the relatively resource heavy follow-up activities compared to the hackathon itself [14].

One more factor that could also be more relevant to corporate hackathons is how the hackathon project fits within the frame of existing projects [25]. Additionally, research suggests that hackathon projects need capable and motivated personnel working on the project after the hackathon to be continued [20]. It has also been noted that preparing for hackathons in advance contributes to more efficient time usage at hackathons [13]. Prior work on internal corporate hackathons has found multiple activities contributing to project continuation, like career oriented leadership of teams and project-focused preparation [3], but existing knowledge on corporate hackathons is still relatively limited. This study will address gaps in the research discussing the continuation of corporate hackathon projects in the context of an internal hackathon.

### **2.3 Location of Hackathon Participants**

An emerging trend is to allow remote participation in a hackathon. This is especially true with the situation humanity is dealing with in the beginning of 2020, where direct interaction between different individuals is discouraged. Research suggests though that having a remote hackathon is hindering the participant's goals of learning and, as a result of this, possibly innovation [9]. Previous work also agrees that bringing people together to a single location can help close the gap between people with different professions [10] and could make coordination and communication among team members easier [26]. It has also been noted that collocation in hackathons improves relationships between team members and increases team performance [26]. These studies though are based on scientific and public events, meaning that they may not be applicable in a corporate setting.

A study found that forcing collocation in a corporate hackathon may bring better results, but could as well cause problems in finding participants, especially if the hackathon is in a remote location [27]. Knowledge on other effects of remote hackathons is scarce, especially in the context of distributed teams working on the same project from multiple locations.

### 3 The Setting of the Research

To answer the three research questions, we observed an internal corporate hackathon series over two different editions, which permits assembling multi-site teams. The selected events were the Pipedrive Back2Garage hackathon’s May and November 2019 editions. This chapter introduces the company and the event on which the study was conducted.

#### 3.1 Pipedrive

Pipedrive is a software development company providing an eponymous customer relationship management tool. It was founded in 2010 in Estonia. As of November 2019, Pipedrive had about 610 employees in eight offices: Tallinn, Tartu, Lisbon, London, New York, Prague, Dublin, and St. Petersburg (Florida) [28]. At the time of the research, the author was employed as a software engineering intern at Pipedrive’s Tartu office.

Pipedrive is a software as a service (SaaS) customer relationship management (CRM) tool built for salespeople to manage and visualise sales processes, plan activities, and monitor deals. “Making sales success inevitable”, its development has been inspired by proven sales methods, helping salespeople learn and focus on their most effective sales process [29].

Pipedrive uses its in-house developed agile framework for its development process. An illustration of the framework can be seen in Figure 1.

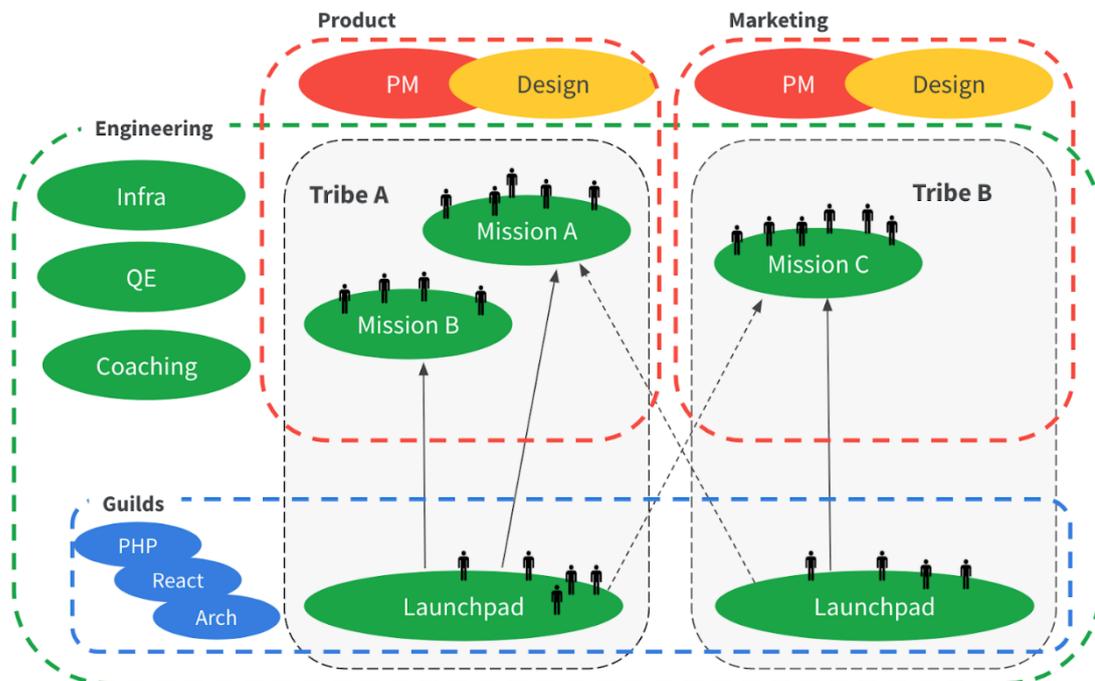


Figure 1. Structure of the Pipedrive Agile Framework [30].

As part of the framework, the largest subdivision of Pipedrive Engineering is a Tribe, that is essentially a development team that assembles several engineers along with product managers, who are responsible and hold expert knowledge of a specific product area. The Tribe is divided into the Launchpad and Missions. The former is a support unit within the Tribe, which helps prepare future Missions and help improve the quality of the current product. People from the Launchpad can embark on Missions, that are smaller teams working on delivering a single business goal, and return to the Launchpad upon completion, or Landing, of the Mission. Tribes are supported by services required by all Tribes, like Coaching, Quality Assurance, and Infrastructure [30].

### **3.2 Back2Garage Hackathons**

The Back2Garage is an internal hackathon organised by Pipedrive. As the driver of hackathon culture in the company, the event aims to allow teams of voluntary Pipedrive employees from all areas of the company to ideate, develop, and present prototypes of features for Pipedrive within the scope of the pre-announced hackathon topic. It has been held since 2017 for a total of four times.

In 2019, the hackathon was held twice – in May and November – and on both occasions across all the offices of Pipedrive at the same time. The hackathon permits the assembly of cross-office teams – meaning that a team can consist of people participating from any office of Pipedrive – of three up to six people. The top three teams, selected by a jury of company officers and stakeholders of the selected area of the product, are handed various benefits for their efforts, like training budget allowances or material prizes. The company also promises the eventual implementation of the winning team’s project.

The hackathon lasts for about 48 hours over 2.5 days. The first day starts in the evening with the pitching of the ideas presented by the participants. A pitch is a two-minute introduction of the proposed solution with the help of a single presentation slide. After the conclusion of pitching, the event continues with the assembly of teams for the pitched ideas. Teams can be both preassembled or formed on the spot and every participant can join the team of their choice if it will not exceed six members. The participants can proceed working on the project as soon as the teams are registered unless the team fails to reach three members. The teams can work on the offices’ premises all around the clock for the duration of the hackathon.

The second day is meant for rapid prototyping, during which checkpoints are to be reached. Checkpoints are meetings with mentors (consisting of stakeholders, organisers, and senior

employees), where at least one representative of each team gives an update on the progress of the project and where mentors can ask questions from the team or vice versa. Also, during the hackathon, the mentors can visit each team to learn of their progress, give advice and answer questions.

By the first half of the third day, the teams are required to finalise the prototypes and start working on the demos – three-minute presentations of the projects demonstrating the expected functionalities and benefits of implementing the feature. During the demos, only the display of the prototype of the proposed solution is permitted. In the second half of the day, two iterations of practice demos are executed with the supervision and feedback of the mentors. This is followed by the final demos of the projects at the end of the day in front of an audience of company employees. After that, the judges have a closed meeting and declare the winners of the event and present the prizes.

### **3.3 Back2Garage May 2019**

The third edition of Back2Garage was held on 23<sup>rd</sup> – 25<sup>th</sup> of May 2019. It was the first event in the hackathon series permitting the participation from all seven Pipedrive offices. Previous editions of the hackathon were all organised in the Tallinn office only, requiring participants from other offices to travel to Tallinn. The topic of the hackathon was “Growth loops - what could we build that would directly bring new signups to Pipedrive”.

During the hackathon:

- 15 ideas were pitched;
- 10 teams were formed with 51 participants in total (~10% of all employees);
- 4 out of 10 teams were cross-office, one of those across 3 sites;
- participants from 4 out of 7 offices took part: Tallinn, Lisbon, Tartu, New York.

The hackathon’s prizes were:

- 1st Place: Trip to Web Summit 2019 and a dedicated mission to finish the project;
- 2nd Place: Bose Wireless Headphones for the team;
- 3rd Place: Amazon Gift Cards for the team;
- Special Award “Product Ready to Launch”: Spa Gift Cards for the team;
- Special Award “Best AI Feature”: Google AIY for the team.

Given the positive feedback, Pipedrive organised a second hackathon in the same year.

### **3.4 Back2Garage November 2019**

The fourth edition of Back2Garage was held on the 20<sup>th</sup> – 22<sup>nd</sup> of November 2019. It was the second hackathon to enable participation from all eight Pipedrive’s offices and the first time two Back2Garage editions were held in the same year. The topic of the hackathon was “Community and Learning - how could we help salespeople globally learn from each other in order for them to become better Sales craftsmen”.

During the hackathon:

- 14 ideas were pitched;
- 12 teams were formed with 67 participants in total (~11% of all employees);
- 6 out of 12 teams were cross-office, all of those were across 2 sites;
- participants from 6 out of 8 offices took part: Tallinn, Lisbon, Tartu, Prague, St. Petersburg (FL), and London.

The hackathon’s prizes were:

- 1st Place: Each member of the winning team will receive an additional 1,500€ personal training budget for 2020 + pre-agreed team will take the winning idea into focus during Q1 2020;
- 2nd Place: New headphones of their choice for each member of the team (up to 300€ per pair);
- 3rd Place: 100€ Spa Gift Cards for each team member;
- Special Award “Audience favourite”: 100€ Amazon Gift Cards for each team member.

The change in prizes was made based on the feedback received from the previous hackathon.

### **3.5 Differences Between May and November Hackathons**

There are a few differences between the hackathon editions, including changes made for the November 2019 hackathon based on the feedback received for the May 2019 hackathon. An overview of these changes is presented in Table 1.

Table 1. Summary of differences between two editions of the Back2Garage hackathon.

<b>Aspect</b>	<b>May 2019 Hackathon</b>	<b>November 2019 Hackathon</b>
<b>Teams / Ideas</b>	10 / 12	12 / 14
<b>Participants</b>	51	67
<b>Offices</b>	4: Tallinn, Lisbon, Tartu, New York	6: Tallinn, Lisbon, Tartu, Prague, St. Petersburg (FL), and London
<b>Cross-office teams</b>	4, one across 3 sites	6, all across 2 sites
<b>Execution of winning project</b>	Allow winning team to organise implementation of the project as they see fit.	Pre-agreed tribe will implement the project.
<b>Post-hackathon feedback</b>	Brief words for awarded teams during award ceremony, approach mentors for additional feedback.	Dedicated feedback sessions for all hackathon teams
<b>Time of week</b>	Thursday – Saturday	Wednesday – Friday

The first change is concerning the execution of the winning project – a pre-agreement was put in place with the tribe responsible for the area of the product, that would be affected by the projects initiated during the hackathon, instead of leaving the organisation of the project delivery for the hackathon team. The selected tribe would bring the winning idea into their focus in Q1 of 2020.

The second change is related to giving feedback on the projects – the mentors scheduled meetings with each team after the conclusion of the hackathon and gave personal feedback for each team and elaborated on why the team did or did not get an award at the hackathon. Previously, the teams had to approach the mentors themselves in order to get more in depth feedback about their performance, which was difficult for remote teams and team members.

Thirdly, the time of the week when the hackathon takes place was changed. In the November 2019 edition, the hackathon was entirely carried out during workdays, from Wednesday evening till Friday evening. In previous editions, the entire hackathon or the final day was carried out during the weekend.

## 4 Research Approach

The data collection for the research was done using three different methods for both hackathons – survey, interviews, and observations of hackathon activities at the Tartu office of Pipedrive. The timeline of the research activities is presented in Figure 2.

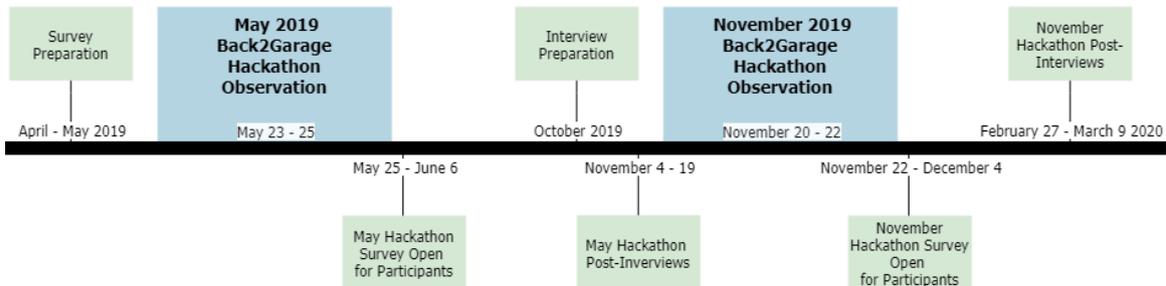


Figure 2. Timeline of research activities of the study.

This chapter gives a brief overview of the selection of study participants and a description of each data collection method used in the study.

### 4.1 Selection of Teams and Participants

In order to answer the research questions and to get the broadest picture of the hackathon outcomes, we selected a subset of participating hackathon teams that represented all the possible results of the hackathon: teams that were either recognised or unrecognised (i.e. received an award) at the hackathon and had their projects either continued or discontinued after the hackathon. We expected the leader of the team to have the most knowledge about the project and activities related to it both prior and after the hackathon. Due to this, we tried to get the perspective of at least the team leader and additionally the other team members if possible. This leads to the following participant selection criteria:

- The person participated in one / both Back2Garage hackathons.
- The person's team either:
  - was recognised at the hackathon;
  - had its project continued or selected for development during the study or;
  - had members in addition to team leader volunteering to take part in the study.

These criteria ensured that all the recognised teams, all teams with continued projects and a few unrecognised teams with discontinued projects had at least the team leader responding to all data collection methods. After the team selection, we sent invitations to participate in

interviews to team members who had filled in the survey and indicated willingness to continue participating in the study.

## **4.2 Observations**

We performed observations of the hackathon at the Tartu office of Pipedrive, the internship site of the author in order to answer both RQ1 and RQ3. Observations were chosen as a data collection method to identify activities during the hackathon that could have influenced the winning prospects of the participating teams and to find teams of interest for the study. Previous research has also successfully applied the same technique [3], [5]. The observer was at the office every day of both hackathons visiting teams located at the Tartu office (RQ1), team members remotely participating in teams located at other offices (RQ3) and observing hackathon activities broadcasted in the company's internal communication channels. The study also includes analysis of some documentation about the hackathon, like the hackathon organisation and feedback.

The observed activities include:

- pitching of ideas – all broadcasted ideas;
- team assembly – local, team-building tool and internal chatroom activities;
- development/prototyping – local activities;
- checkpoints – joining the conference call as an observant;
- practicing demos without and with mentor's supervision – local and broadcasted;
- final demos – all broadcasted demos;
- announcement of winners – all broadcasted announcements.

The author also occasionally helped the local office assistant in organisational activities for managing the hackathon, for example preparing the presentation of prizes for members of recognised teams located in the office.

## **4.3 Survey**

The second data collection method was a post-hackathon survey for the hackathon participants. The 10-minute survey consisted mainly of multiple-choice questions based on 5-point Likert scales [31] with the ability to add options on free-form fields. The November hackathon survey can be found in Appendix II.

The survey was used as a data collection method to gather data from as many team members as possible in order to answer RQ1 and identify volunteers for interviews. The participants could offer themselves for future research activities within the survey, easing the process of team selection across multiple hackathon sites. Using surveys is also a method that has been applied extensively in previous studies on the topic [3], [15], [21], [32].

The questions of the survey were based or derived from the findings presented in previous research [3] [33]. The survey asked the participant to reflect on the following aspects:

- reasons for participating in the hackathon (RQ1);
- activities before the hackathon (RQ1);
- activities during the hackathon (RQ1);
- means of communication used during the hackathon (RQ1);
- assessment of the usefulness of the project (as multi-item scales) (RQ1);
- assessment of the team's work process (as multi-item scales) (RQ1);
- assessment of the outcome of the project (as multi-item scales) (RQ1);
- intentions on continuing with the project (as multi-item scales) (RQ1).

In addition to these items, the survey also asked for open-ended feedback on the multi-site format to answer RQ3 and the organisation of the hackathon to respond to RQ1. The survey polled idea owners separately on the activities completed and planned after the hackathon with regards to the project.

To pre-test the length and questions of the survey, 3 test participants not related to the company were asked to fill in the survey. The survey was also reviewed by a representative of the organising committee of the hackathon.

The same survey was used for both hackathons with minor changes based on feedback or results from the first round in order to keep the results comparable for answering RQ2. The survey was announced after the final demos and before the declaration of the results of the hackathon. The announcement was made by the event's host on the main stage in the Tallinn office and shortly after that, the author posted a request for participation in the company's internal communication channels. Participation in the survey was voluntary and responses to the survey were accepted for up to 1.5 weeks after the hackathon.

## 4.4 Interviews

The main sources of data for answering RQ1 of the study were the post-hackathon interviews. The 20-minute semi-structured interviews focused on understanding the following topics:

- Reasons for participation and personal goals (*Why did you decide to participate in the hackathon?* RQ1);
- Preparation activities (*How did you prepare for the event?* RQ1);
- Team assembly (team leader) or team selection (team member) (*How did you form your team?* RQ1);
- Project goals (*What were the goals of the project?* RQ1);
- Teamwork / Work process (*How did you work together as a team?* RQ1);
- Feedback received on the Project (*What types of feedback did you receive on your project?* RQ1);
- Project continuation (*Did you continue working on the project after the hackathon?* RQ1);
- Intentions on participating in the next Pipedrive hackathon (*Do you plan to attend future Pipedrive hackathons?* RQ1);
- Multi-site format and team (*What do you think of the global format, that the hackathon is over multiple sites?* RQ3);
- Feedback on the Hackathon (*Could you give any suggestions about what to change for the next time?* RQ1).

Additionally, the interview was adjusted to each respondent to clarify findings or feedback from the survey or the previous interview, if applicable. Participants of the November hackathon interviews were also asked to compare the latest event to the May hackathon to get insights for answering RQ2, if they participated in the May event. Sample interview guides for both May and November hackathons can be found in Appendix III and IV respectively.

A test interview was conducted to check the questions and conformance to the expected time constraints. The test subject was an employee of Pipedrive who reflected on a recent participation in a public hackathon with colleagues.

The interviews with the May hackathon participants were carried out six months after the hackathon – in November 2019 – to leave enough time for projects initiated at the May

hackathon to be developed further and concurrently have the interviews completed before the November hackathon. For the November hackathon, the interviews with the participants were carried out three months after the hackathon, at the end of February till the beginning of March 2020. The shorter period between the November hackathon and the interviews was needed to ensure timely completion of the study.

## 5 Analysis

This chapter provides an overview of the data collected during the study followed up by the analysis of the data.

### 5.1 The Hackathons

During the study, we gathered a total of 68 survey responses and conducted 25 interviews with participants from 12 teams. A breakup of general pointers of the data collection methods over two hackathons can be found in Table 2.

Table 2. General information about the survey and interview responses.

Aspect	May 2019 Hackathon	November 2019 Hackathon
<b>Survey turnout</b>	31/51 (~60.8%)	37/67 (~55.2%)
<b>Surveyed teams</b>	10/10	11/12
<b>Survey responses per team</b>	m=3.1 / SD=1.22	m=3.4 / SD=0.98
<b>Interview turnout</b>	12/13	13/14
<b>Interviewed teams</b>	7/10	5/12
<b>Interviews per team</b>	m=1.7 / SD=0.70	m=2.6 / SD=0.49
<b>Total recordings</b>	4 h 10 min	4 h 56 min
<b>Mean interview length</b>	20 min 52 s	22 min 45 s

In the teams selected for the study, 13 people participated at both May and November 2019 editions of the hackathon, from whom eight were interviewed at least once. A total of five from these eight people were interviewed twice, both after the May hackathon and after the November hackathon. The remaining three were interviewed once – one only after the May hackathon and the others after the November edition.

In order to tie the survey and interview responses to the specific teams in the analysis, we assigned identifiers to the individual participants. The responses will be the basis for answering the research questions. A breakup of all the selected teams grouped by the corresponding hackathon and the respective study participants is presented in Table 3.

Table 3. Breakdown of selected teams in both studied hackathons. **Bold** – contributed to the study with both survey and interview. *Italic* – did not participate in the study.

<b>ID</b>	<b>Size</b>	<b>Location</b>	<b>Hackathon Result</b>	<b>Continued</b>	<b>Member IDs</b>
<b>A</b>	6	Tartu	1 <sup>st</sup> place	Yes	<b>A1 lead, A2, A3, A4 lead, A5, A6</b>
<b>B</b>	6	Tartu, New York	2 <sup>nd</sup> place	No	<b>B1 lead, B2, B3, B4, B5 B6</b>
<b>C</b>	5	Tallinn	3 <sup>rd</sup> place, “Best AI feature” award	No	<b>C1 lead, C2, C3, C4, C5</b>
<b>D</b>	5	Tallinn	“Product Ready to Launch” award	No	<b>D1 lead, D2, D3, D4, D5</b>
<b>E</b>	6	Tallinn	None	Yes	<b>E1 lead, E2, E3, E4, E5, E6</b>
<b>F</b>	5	Lisbon, Tallinn, New York	None	No	<b>F1 lead, F2, F3, F4, F5</b>
<b>G</b>	4	Tallinn	None	No	<b>G1 lead, G2, G3 lead, G4</b>
<b>K</b>	6	Tartu, Lisbon	1 <sup>st</sup> place	Yes	<b>K1 lead, K2, K3, K4, K5, K6 lead</b>
<b>L</b>	5	Lisbon, London	2 <sup>nd</sup> place, “Audience favourite” award	Yes	<b>L1 lead, L2, L3, L4, L5</b>
<b>M</b>	6	Tallinn, Tartu	3 <sup>rd</sup> place	Yes	<b>M1 lead, M2, M3, M4, M5, M6</b>
<b>N</b>	5	Tallinn	None	No	<b>N1 lead, N2, N3, N4, N5</b>
<b>O</b>	5	Tallinn	None	No	<b>O1 lead, O2, O3, O4, O5</b>

The responses to scales of the May and November hackathon surveys can be found in Table 4 and Table 5 respectively. Due to the possible difference in perception of the hackathon between team leaders and regular members [3], we present their responses separately. We report the means and standard deviations only if there is more than one data point available.

Table 4. May hackathon teams' responses to scales. Note: Teams A and G had 2 leaders.

ID	Perception of work process	Project usefulness	Project outcome	Project continuation intentions
<b>A lead</b>	m=3.88 / SD=1.24	m=4.75 / SD=0.35	m=5.00 / SD=0.00	m=4.50 / SD=0.71
<b>A team</b>	m=4.50 / SD=0.66	m=4.17 / SD=0.72	m=4.00 / SD=1.00	m=3.67 / SD=0.67
<b>B lead</b>	4.00	4.75	4.00	3.67
<b>B team</b>	m=4.00 / SD=0.82	m=4.56 / SD=0.52	m=4.19 / SD=0.55	m=3.75 / SD=0.69
<b>C lead</b>	4.50	4.25	4.25	4.00
<b>C team</b>	4.25	3.50	4.00	3.67
<b>D lead</b>	4.50	5.00	3.00	3.33
<b>D team</b>	4.75	5.00	4.50	3.33
<b>E lead</b>	2.25	4.75	3.00	3.67
<b>E team</b>	m=3.67 / SD=0.80	m=3.58 / SD=1.38	m=3.83 / SD=0.76	m=2.89 / SD=1.26
<b>F lead</b>	5.00	4.50	5.00	3.67
<b>F team</b>	m=4.75 / SD=0.35	m=4.38 / SD=0.18	m=5.00 / SD=0.00	m=3.83 / SD=0.24
<b>G lead</b>	m=4.63 / SD=0.18	m=1.50 / SD=0.71	m=3.88 / SD=0.53	m=4.33 / SD=0.94
<b>G team</b>	m=3.75 / SD=0.35	m=2.00 / SD=1.41	m=3.63 / SD=0.53	m=3.50 / SD=0.24

Table 5. November hackathon teams' responses to scales.

ID	Perception of work process	Project usefulness	Project outcome	Project continuation intentions
<b>K lead</b>	5.00	5.00	5.00	3.33
<b>K team</b>	m=4.19 / SD=0.75	m=4.00 / SD=1.24	m=3.81 / SD=1.03	m=3.08 / SD=0.42
<b>L lead</b>	4.75	4.75	5.00	4.00
<b>L team</b>	m=5.00 / SD=0.00	m=4.50 / SD=0.71	m=5.00 / SD=0.00	m=4.00 / SD=0.47
<b>M lead</b>	4.00	4.25	5.00	4.00
<b>M team</b>	m=4.08 / SD=0.80	m=3.67 / SD=1.01	m=4.17 / SD=0.76	m=2.33 / SD=0.58
<b>N lead</b>	4.25	4.25	3.5	4.00
<b>N team</b>	m=5.00 / SD=0.00	m=5.00 / SD=0.00	m=5.00 / SD=0.00	m=3.67 / SD=0.00
<b>O lead</b>	4.25	3.50	5.00	3.00
<b>O team</b>	m=2.92 / SD=1.26	m=3.00 / SD=1.64	m=3.58 / SD=0.80	m=1.89 / SD=0.84

The data in the tables above will be discussed alongside the interview responses in the following sections describing the hackathon teams.

## 5.2 Teams Only in the May Hackathon

The following sections will present a description of each team of the study. The descriptions are the basis for the comparison of teams, which will help us answer the research questions. First, the team's structure and location along with the team member's reasons for participation, prior work and social connections are presented. Then the preparation activities and plans for the hackathon are provided, followed by activities executed by the team during the event. This is followed by the assessment of the hackathon project's outcome and continuation intentions, after which the team's hackathon result and project continuation are discussed. Finally, the team member's attendance in future Pipedrive hackathons is presented.

The teams are presented based on the participation in the hackathons. Teams whose leader participated in one of the studied hackathons are discussed first, followed by teams whose leaders participated in both Pipedrive hackathons of 2019. The teams described in this section participated only in the May hackathon.

### 5.2.1 Team A

Team A was an on-site hackathon team based in the Tartu office, comprising of team leaders A1 and A4, a product manager and a lead product manager at Pipedrive respectively. A1, who was “*quite reasonably new in Pipedrive*” (A1) at that time, saw the hackathon as an opportunity to learn about the company and colleagues (“*It was like a team building event [...] it was about getting to know the product*”, A1). The hackathon was also a way to “bring value to the company” and to “advance my career” for A1 (both 5.0). The prospect of “winning prizes” and “getting something done” were also additional motivators for the leader (both 5.0). The team members A2, A3 and A5 were mainly motivated by the prospect of “bring value to the company” (m=4.0, SD=1.0) and “get something done” (m=3.67, SD=1.53). A2 pointed out that they participated because they “*Just thought it might be fun*” while A3 hoped to “*Improve my skills in problem solving*”. All the members of the team were working in the same tribe (“*we knew each-other, we've worked before*”, A3). The project of the team was not related to the day-to-day work of any of the team members (“*the topic that we were working on is not in our responsibility area*”, A1).

Before the hackathon, the team leaders had brainstormed and refined the idea in an Exploration Lab that the product team in Tartu regularly organised for rapid prototyping of ideas. Based on the results of the lab, they had a “*example preliminary Marvel prototype*” (A1) of

the feature which was used as a basis for the first user interview before the hackathon (“*having a mock-up, we even did the first user interview already to get preliminary feedback*”, A1; Leaders: “Discussing the idea”  $m=4.5$ ,  $SD=0.71$ ). By the time of the hackathon, they “*booked some additional meetings as well with potential users or customers of this solution*” (A1). The team leaders started assembling the team upfront (“*[we] already asked whether the designer is available and whether there is some potential front-end developer available*”, A1) because they “*knew that it’s [the project] a frontend heavy stuff*”(A1), eventually completing the team before the start of the event (“*all of them were actually agreed on upfront*”, A1; A4 “assembling the team” 5.0). The team had also “planned hackathon activities” in advance (A4: 5.0; “*We had planned ahead*”, A1).

Once the hackathon started, the team “*immediately went for a team building meeting*” (A1) in order to get “*to know each other*” (A1) and learn of each other’s limitations in terms of attending the hackathon. This helped them to hit the ground running at the beginning of the hackathon (“*we were able to start working efficiently right away*”, A1). The team members indicated that they chose their tasks mainly based on their skills ( $m=4.33$ ,  $SD=0.58$ ; “*everybody knew their part*”, A2), whereas the team leaders chose their tasks based on their interest ( $m=5.0$ ,  $SD=0$ ). The team leaders were happy about the cooperation saying that “*It was amazing. We had very good teamwork*” (A1) and that they “*we were very well aligned with the timeline, or how we planned to have the things happening*” (A1). Team members gave high scores for the team’s work process ( $m=4.5$ ,  $SD=0.6$ ). A2 agreed by describing the group’s work process as “*very agile*”. The team was able to finish their prototype early on the last day, refine it and focus entirely on practicing the final demo, asking feedback from local personnel and mentors.

The team was able to create a working prototype, just as they planned (“*We agreed that when we couldn’t actually implement the solution in a real way then we would just fake it. But [...] we actually managed to create what we wanted to.*”, A2). There was a discrepancy in the intentions of continuing working on the project after the hackathon though, the leaders being more eager to continue than the team members (Leaders:  $m=4.5$ ,  $SD=0.71$ ; Members:  $m=3.67$ ,  $SD=0.67$ ). A1 wanted to continue working on it because “*it is an impactful feature, I’m confident that clients would use it, I’m confident that it’s useful for Pipedrive.*”, while A2 was not that willing to participate in the follow-up, citing lack of emotional connection to the project and other work (“*The idea was not that high priority for me. There was like... yeah, that project is done now. [...] I have no emotional attachment to the idea itself.*”, A2).

Team A won the hackathon. A2 said that *“The panellists thought that it was the most promising idea. It fit the theme of the hackathon, it would be most beneficial for Pipedrive to focus on this type of growth cycle and it would offer them the most value to our customers.”* Though at the same time, A2 thought that *“the final results were not really transparent. Yeah, we won, but why? It was really vague.”* A3 added that the judges *“said that we’ve done a huge research with actual numbers, what it will bring to Pipedrive. So that was the main factor maybe why we won”*. This meant that the team was entitled to have a dedicated mission to complete the project. That had not happened at the time of the interviews. A1 told that the project had not been continued because of project topic and Tartu tribe responsibility alignment (*“the topic that we were working on is not in our responsibility area meaning that Tartu is not responsible for that”*, A1). The team had 3 options to proceed with the project according to A1:

1. Build the project with the same team and then hand it over to the responsible tribe for maintenance. The team did not like the approach because of the high engineering effort caused to the receiving tribe (*“the most likely solution, i.e. result of this, is that they [the tribe] either will have to rewrite it or change a significant amount of it”*, A1). Also, A1 indicated that the Tartu tribe did not prioritise the project, effectively ruling out developing the project themselves (*“We could have still gone with the first option, but we didn’t prioritise it on our side.”*, A1).
2. Combine the teams – build the project with people partially from the hackathon team and partially from the responsible tribe. This was the preferred option of the team (*“We obviously like the second one the most – seemed the most reasonable.”*, A1).
3. Give the project away to the responsible tribe – present the idea, propose ways to implement the project and then ask the responsible tribe to develop it.

A1 indicated that they had been in talks with the responsible tribe, but they learnt that the responsible tribe did not have enough resources to take the project further (*“We had several discussions with the [responsible] team as well. But as they had other priorities or vacations, lack of resources, changing the office location [...] it got postponed till further notice basically from their side”*, A1). The team leader also indicated at the time of the interviews that there was a very slight chance of the project continuing (*“I still imagine it to happen... I think the likelihood is about 25% out of 100”*), admitting that the *“momentum has passed”*.

When asked about the participation in the November hackathon, A1 was not keen to attend the event, prioritising another hackathon on the same weekend instead. The leader elaborated that they had already participated in a Pipedrive hackathon, did not have time to prepare for the November hackathon and did not feel connected with the topic of it. A1 also cited being “*overloaded with work*” and missing the mindset for attending the hackathon. A2 on the other hand was open for the prospect of attending the November hackathon, saying that they will if they can. Eventually, only A2, A3 and A6 participated in the next event. As of April 2020, the project of team A has been implemented. A4 indicated that the project had been completed based on the third option – the responsible team had taken the idea and expanded it further as part of a system that the tribe had been developing since September 2019. The development of the feature took place between January – April 2020, starting two months after the interviews and completing almost eleven months after the hackathon.

### **5.2.2 Team E**

Team E was an on-site hackathon team based in the Tallinn office led by E1, a product manager in Pipedrive. The team leader wanted to pitch an idea, which was one of the main reasons for participating in the hackathon (“*This for me is very exciting, especially if I have an idea [...] if I wasn't the one pitching, maybe it wouldn't be that interesting for me.*”, E1). Additional motivators for E1 were “learn or try something new” and “leaving my comfort zone” (both 5.0), citing the wish of overcoming stage fright and improving public speaking skills (“*I also had a goal to become better in public speaking [...] it was a way to overcome my fear of public speaking*”, E1). The leader saw the hackathon also as a fun event but did not exclude the competitive aspect of the event as well (“*I didn't have a goal like we have to win or something. I'm a competitive person, so it's always kind of there. But other than that, I just aim to have fun and do something cool*”, E1; “Win prizes”: 4.0). The other members of team E participated in order to “learn or try something new” (m=4.33, SD=0.58) and “leave their comfort zone” (m=3.67, SD=0.58). The project was related to the team leader's every day work and was an extension of an existing project that was being implemented at the time of the hackathon (“*the new [related] mission was just released, so I think it would have been a really cool addon to that feature*”, E1; “Extend an existing feature”: Leader: 5.0). The team leader and E2 were part of the same tribe in day-to-day work, but other relations between the team members are not known as part of this study.

Among the preparation activities of the team leader were developing “*a vision of how it would look like and how it would work*” (E1) and talking to other people to introduce the idea, hoping to have them join the team. (“*I’d try to talk to people beforehand, maybe to introduce my idea before the hackathon so maybe they could join*”, E1; “*Discussing the idea*”: 4.0). The team eventually had the engineer E2 in advance, who was needed to provide guidance on the feasibility of the solution proposed by E1 (“*Assembling the team*”: 3.0). The remainder of the team was acquired during the team assembly phase of the hackathon and thus did not prepare for the event.

During the hackathon, the team distributed tasks “*based on my skills*” (Members:  $m=4.3$ ,  $SD=0.58$ ), with E2 pointing out that there was “*an agreement on who was going to do what*”. E1 on the other hand said that there were arguments and tension between senior developers E2 and E6, but E1 downplayed the impact of it and deemed it to be “*expected and [...] also part of learning*”. E1 admitted that the teamwork could have been better but added that it “*wasn’t that bad*” and it was expected that cooperation would not be smooth when putting people together in teams spontaneously. The team leader also pointed out that some developed assets were not used in the final demo, which was an inefficient use of resources (“*we had something regarding mobile, but we didn’t even demo it. And then some of the work went there because other engineers had to help [...] I think that we wouldn’t need it*”, E1). This could be the reason why the team leader gave low marks for the team’s work process (2.25) compared to other team members ( $m=3.67$ ,  $SD=0.8$ ).

Eventually the team was able to deliver what they wanted to (“*what we wanted to deliver, we delivered*”, E1). The team was semi-content with the outcome of the project, giving an average score (Leader: 3.0; Members:  $m=3.83$ ,  $SD=0.76$ ). The team leader gave significantly higher marks for the project’s usefulness than the team members, who had mixed opinions in that regard (Leader: 4.75; Members:  $m=3.58$ ,  $SD=1.38$ ). The project did not quite meet E1’s expectations, unlike other team members (Leader: 2.5; Members:  $m=3.67$ ,  $SD=0.2$ ). At the same time, the team members were not keen on continuing to work on the project (Members:  $m=2.89$ ,  $SD=1.26$ ), while the team leader was more eager to continue, emphasising the usefulness of the feature for the customers (“*I saw a lot of value for the customers [...] Interviews with the customers, like usability interviews, their reactions were actually the best*”, E1) and trying to force the completion of the idea (“*I was trying really hard to push that idea so we actually completed it.*”, E1).

The team did not get recognised by the judges. E1 said that *“I didn’t understand how the prices and the places were divided”*. It was especially confusing for the leader because it seemed to them that *“the first place and our idea was very similar”* (E1) and the other team got the first place while their team got nothing. E1 wished to have *“more collaboration afterwards, why some idea doesn’t get anything and why this gets”*. The leader supported the need for it with what they had heard from other participants, saying that *“the majority of the people participate with the purpose of learning”* and thus would like to have more feedback after the hackathon.

Despite the hackathon result, E1 continued with the project almost three months after the hackathon, in mid-August, and completed the project 1.5 months later, in early October (*“What I like the most is that what we actually did is now live and our customers are already using it.”*, E1). E1 was able to complete the project due to the connection of the project with their day-to-day work and being a product manager (*“I’m a PM (product manager) [...] we were just focused on the [related] mission, to release it. But after we released it, I pitched the hackathon project’s mission again, telling the people that it is from the hackathon and I want to get it live.”*, E1). A1, the leader of the winning team of the May hackathon, thought as well that *“[the idea was] by a team who is also responsible for the same subject and they have actually delivered it although it wasn’t their prize. It went well together with what were their responsibilities already. So it was easy for them to prioritise it.”* E1 pointed out that the hackathon helped them to kickstart the project, citing *“it was much easier because I already had the documentation, I already had even some designs”*, also adding that *“there was already some engineering research done so people could ask for some insights there”*. The project was built by *“a separate mission team”*, because E1’s teammates were unavailable. (*“I tried to ask some people if they were available, but they weren’t.”*, E1).

The mixed feelings about the hackathon result also affected the leader’s intentions on attending the November hackathon. E1 admitted that they do not have an idea to take to the hackathon (*“I don’t have an idea [...] Maybe If I had a great idea then I would go again”*, E1). But another factor E1 is the uncertainty of attending the hackathon, saying that *“we would work for 3 days... and I don’t understand what I would get out of it.”* Finally, E1 also noted lack of motivation towards attending the November hackathon: *“I think my motivation went slightly down from the last time. I don’t have this kind of excitement like I had last time.”* Nobody from team E participated in the studied teams of the November hackathon.

### 5.2.3 Team G

Team G was an on-site hackathon team based in the Tallinn office of Pipedrive. The leaders G1, a quality operations manager, and G3, a web publishing lead, were looking to learn or try something new during the hackathon (m=5.0, SD=0). G1 added that during the hackathon one can “*learn a lot by working with people from other departments*” regardless of winning, also adding the motivation of meeting new people (“*I met new faces who I work with in the same building. And that’s great.*”, G1; “Meet new people”: 5.0). The leaders also gave high scores for “get something done” (m=4.5, SD=0.71) and “leave my comfort zone” (m=4.0, SD=0). The team members G2 and G4 were also driven by the prospect of “leave my comfort zone” (m=4.0 SD=0) and “learn something new” (m=4.0, SD=1.4). Both G1 and G2 mentioned joining the hackathon to have fun as well (“*one of [the reasons] was actually to have fun*”, G1; “*I thought that it would be fun*”, G2). Three of the four team members were working in the same team during day-to-day work (“*we all work together and we all 3 wanted to participate in the hackathon and kind of liked the idea together*”, G1). The team’s project could be used in the day jobs of the coworking team members.

The team did not do extensive preparation in advance. G1 said that “*my team thought that you should not be really prepared because in many hackathons, you come up with an idea, you build it on the spot and within this specific timeframe*”. This is why their preparation was limited to discussing the idea (Leaders: m=4.5 SD, 0.71) and doing background research (“*we did a bit of a background research on other companies that had a similar thing created*”, G1; “Doing research”: m=3.5, SD=0.71). The team did not try to get developers in advance either due to the same reasons (“*We did not try to get developers in advance or anything like this.*”, G1). Looking for team members on the hackathon day turned out to be difficult, which is why they ended up with only one mobile developer (“*So we had to look for people on the day but it was not that easy [...] some teams had many developers while we were struggling to find even one.*”, G1; “Assembling the team”: m=1.5, SD=0.71).

The team members took their tasks “based on my skills” and as “assigned by team leader” (both m=4.0, SD=0), while the team leaders chose their tasks “based on my skills” mainly (m=4.5, SD=0.71). G1 said that the teamwork was perfect, “*partially because with the 2 guys I work together in one team already*”. G2 agreed, saying “*I work alongside 2 of them, and I know them already really well. So we already get along and work fine together.*” and also pointed out that the fourth member fit into the team as well (“*I met someone who I had*

never met before, [G4], and [the person] was reasonably new to Pipedrive at that time. And [the person] worked with us just very well as well. We had an awesome team”, G2). The team members gave high scores for the team’s work process, the leaders rating it higher than the members (Leaders:  $m=4.63$ ,  $SD=0.17$ ; Members:  $m=3.75$ ,  $SD=0.35$ ).

G1 thought that they achieved what they wanted to – a visually working prototype. They admitted that they could not have done anything more without the support of an additional developer, which would have been possible only if they had looked for one before the hackathon. (“if we had a developer on the team or maybe 2 developers [...] Because obviously our prototype was very, very basic.”, G1). This is also reflected in the team’s assessment on the project’s outcome (Leaders:  $m=3.88$ ,  $SD=0.53$ ; Members:  $m=3.63$ ,  $SD=0.53$ ), but G2 emphasised that “It worked really well. So I’m happy with how it came out. [...] I’m happy with the results.” Team leader G1 agrees that “we did a good job with what we had”.

The team did not get recognised by the judges. G2 thought that the project was not directly useful for Pipedrive as a product, adding that even if the project would get implemented, “it’s completely stand-alone [...] it would have no linking to the product whatsoever” (“Project’s usefulness”: Leaders:  $m=1.5$ ,  $SD=0.71$ ; Members:  $m=2.0$ ,  $SD=1.41$ ). G2 specified though that the gains of having the project built would be indirect, helping drive traffic to the company’s website and appeal to potential employees. Despite this, the team intended to continue working on the project, since most of the team works together day-to-day anyway. That could also be seen in the survey, the leaders giving high scores for continuation intentions (Leaders:  $m=4.33$ ,  $SD=0.9$ ; Members:  $m=3.5$ ,  $SD=0.24$ ). But the team admitted that they needed developers to join the project, who were unavailable at that time (“the developers in our tribe, [...], they’re always quite busy, so I do not see the possibility of it getting developed”, G2). G1 also pointed to the same issue, saying that “we would need a few developers, and everybody has their own main tasks and jobs and it’s quite hard to find people to do this in their free time”. A final reason for the demise of the project was the limited interest in the project outside of the team (“I remember when my colleague shared that data on the hackathon page, we didn’t really get any feedback from anybody. We were still kind of pumped to do it, but after that it kind of died out.”, G1). G2 also added that “regular work just took over”. The project remains dormant as of April 2020.

The team members were not that motivated to join the November hackathon either. G1 cited day to day work and lack of ideas for not joining the hackathon (“I just have too much stuff

going on. [...] the main reason for me participating would be if I had a really good idea. And this time I don't. Even though the theme for the hackathon is really cool.”, G1). G2 was also undecided about whether to attend the November hackathon, pointing out that they do not have any ideas and are not sure whether any of the ideas appeal to them. Nobody from the team eventually participated in the November hackathon.

### 5.3 Teams Only in the November Hackathon

The teams described in this section participated only in the November 2019 hackathon.

#### 5.3.1 Team L

Team L was a multi-site hackathon team split between the London and Lisbon offices. It was led by L1, a marketing campaign manager at the London office, who wanted to experience the community and excitement around the Pipedrive hackathons (“*I felt it was like an important part of the community of Pipedrive. [...] I was just kind of interested to see what it was all about.*”, L1; “learn or try something new”: 5.0). L1 noted that there had been changes in the organisational structure of their day-to-day work and the hackathon gave an opportunity to experience the job of the people they will work closely with (“*We’re starting to be more aligned with the product [...]. I wanted to almost step into the shoes of people who work closely in product*”, L1). The team leader thought that the experience would help them advance the career (“*It was good for me, I think, career-wise in Pipedrive as well.*”, L1; “Advance my career”: 4.0) and “bring value to the company” (5.0). L1 was also motivated by “leave my comfort zone” (5.0), as they had never led a team before (“*I became sort of the team leader, and I have not had experience in that sort of project before leading a team,*”, L1). The team members were looking to “bring value to the company” (“*[create] an idea that could be implemented into the product roadmap.*”, L2;  $m=4.5$ ,  $SD=0.71$ ) and “learn or try something new” (“*The biggest thing was just learning.*”, L2; “*I was there because I wanted to learn,*”, L3;  $m=4.5$ ,  $SD=0.71$ ). L3 also emphasised the prospect of working with people from other departments, “*especially with developers and see what they do to develop our product.*” The participants were familiar with the people they worked with on the same site. The topic of the hackathon team was directly related to the work of L3 and L4 (“*I think that would be something that would help us a lot.*”, L3). L2 on the other hand wanted to start their own hackathon project, but when they were unable to assemble a team, they felt a need to support L1, the only other person from their site (“*When I didn’t have the people joining my team [...] I realised I needed to [...] go with L1’s idea.*”, L2).

The team leader prepared for the hackathon by coming up with ideas and “*looking at other community type projects that competitors have had and other SaaS companies*” (L1; “Doing research”: 3.0). After narrowing down a few ideas, L1 turned to the hackathon theme author who helped them to decide on which idea to take forward (“Discussing the idea”: 5.0). L1 thought that they should have tried to talk to potential teammates before the hackathon, because they were unable to recruit engineers and designers during the hackathon’s team assembly (“*it probably helps to reach out to different people and do some prep-work in sharing your idea before sharing your idea publicly*”, L1; “Assembling the team”: 1.0).

In order to manage the cooperation between members in two different offices, the team used Slack and Zoom calls in dedicated meeting rooms with large screens and cameras (“*we would always have Zoom up in the room*”, L1). L2 admitted that having the team split between two offices “*wasn’t the most ideal situation, but we made the best of it by just constantly having a Zoom call open, [...] we had them in the room virtually*”. L3 was surprised with the how cooperation turned out, saying that “*it worked out much better than what I expected. [...] it was really easy to just jump on a Zoom meeting*”. Both L1 and L2 pointed out that having the same time zone between the two offices helped them to keep the cooperation smooth. During the hackathon, the team leader picked their tasks “based on my interest” (5.0), while the team members took their tasks “based on my skills” (m=4.33, SD=0.58). All the whole team gave high marks for their work process, with L3 saying that “*we worked really well as a team [...] we didn’t let the fact that we were in different locations stop us*” (Leader: 4.75, Members: m=5.0, SD=0). A bigger problem for the team was the lack of developers (“*We had people from support and marketing, that do not have any technical experience really*”, L2), which at first left the team members “*bumped, because we had at some point thought about giving up and just going back to the sheds*” (L3). But after being pushed by one of the mentors to keep on going and receiving the suggestion of developing the project with Marvel app, the team was rejuvenated (“*From that moment on, [...] we didn’t let that fact that we didn’t have developers at all hold us back*”, L3). A few interview participants from other teams did not agree with that decision. K2 thought that “*It did feel like a let-down*” that a team could deliver a hackathon project without any engineering effort. N1 added that “*It felt like they gave the prize to a team just because they did it without engineers*”, being unsure why engineers would be then needed in the hackathon at all. They nevertheless admitted that the team had delivered a very good idea.

Despite having limited options, L1 thought that “*we basically delivered what I thought we would deliver*”. Overall, the team was unanimously happy with the outcome of the hackathon project with all the team’s study participants giving the maximum score (Leader: 5.0, Members:  $m=5.0$ ,  $SD=0.0$ ). The team was also confident that the project is useful for Pipedrive (Leader: 4.75, Members:  $m=4.5$ ,  $SD=0.71$ ) and had their expectations towards the project confirmed (Leader: 4.0, Members:  $m=4.75$ ,  $SD=0.35$ ).

The team came second in the November hackathon and won the “Audience favourite” special award. L1 was happy with what they achieved, because “*I didn’t expect to come second, I didn’t expect to get the public vote, so that’s all very surprising!*” L2 echoed the feelings, saying that the result “*was a great surprise*”. The leader attributed the victory to the project itself, which was “*sort of using the community that we already have and leveraging that rather than creating a whole new one.*”, adding that “*that’s why the idea was kind-of liked by the judges as well. It’s leveraging something that is already existing and making the most of it.*” L1 also indicated that since the project was related to support, the big support team of Pipedrive may have helped them to win the public vote (“*it was a support-related idea, we have obviously a big support team, so that probably helped with the public vote*”, L1).

Initially after the hackathon, the second place was not promised project completion by the company (“*at the beginning, only the first place was supposed to be implemented. And we got second.*”, L3). Later, during the post-hackathon feedback session, the team was told that “*they’re going to implement the first 3 ideas, including ours*” (L3). 3 months after the hackathon, at the time of the interviews, L1 knew that the project had been picked up by the author of the hackathon theme and that they have made “*some sort of adaptations*” and that “*they’re trying to work out how certain things might work differently*” than what the team had planned. L1 would have wanted to have a stronger link to the project, adding that “*I’m not entirely sure what stage of development it is at*”. L2 knew that their project had “*a strong business case for us to implement our idea into [the community feature]*”. That feature was to be “*launched in the next couple of weeks*” (L2) at the time of the interviews and the theme author “*needs to see how the community feature is going to work out*” before turning to the team’s project. Although the community feature has been launched as of April 2020, the state of Team L’s project is not known.

All the interviewed team members were open to attending future Pipedrive hackathons as well. L1 and L3 indicated that the participation would ultimately depend on whether they

are busy with day to day work (“*it depends whether it is a busy period in work*”, L1; “*it will depend on is how things are in support*”, L3) or the topic of the hackathon (“*it would depend on the topic, if it interested me*”, L1).

### 5.3.2 Team O

Team O was an on-site hackathon team based in the Tallinn office. The leader O1 is a data engineer who participated in the May hackathon’s team C as a regular team member. O1 said that one of the reasons for participating in the hackathon was “*to know how it feels like to lead a hackathon team*”. This was also echoed in the survey, where the team leader gave full marks for “learn or try something new” and “leave my comfort zone” (both 5.0). Additional motivators for O1 were the prospect of “bring value to the company” and “advance my career” (both 5.0). The other members of team O saw the hackathon mainly as an opportunity to “meet new people” (“*I know everybody on my floor, but all other floors are some kind of a hidden area for me*”, O2; “*to meet my fellow colleagues*”, O3;  $m=4.67$ ,  $SD=0.58$ ). Just as the team lead, the event was a way to “learn or try something new” and “leave my comfort zone” for the team members (“*I was really curious about what is the hackathon in*”, O2; “*I have never participated before. So I just wanted to try out.*”, O3; both  $m=4.33$ ,  $SD=0.58$ ). Connections between the team members before the hackathon are not known. The project was not related to the team member’s day-to-day work.

To prepare for the event, O1 “*scheduled a few hours per week to do some research, find people who know about these areas and talk to them*” in order to understand the problem as well as possible before the hackathon (“Doing research” and “Discussing the idea”: 5.0). O1 tried to recruit a few designers asked them to join them in brainstorming but admitted that “*nobody was interested enough*” (“Assembling the team”: 2.0). Though the leader was able to meet with product managers and discuss the topic and obtain different perspectives on the problem. The team was assembled during the hackathon with volunteers selecting the team. The joining team members did not prepare ahead of the hackathon.

All the team members indicated that the team was slow in getting started with the project. O2 said that “*initial work wasn’t really efficient, because nobody actually knew at that moment what we actually needed to do, what we needed to develop*”. O3 added that there was “*friction*” in the team and that “*we weren’t very clear on the idea that we would like to achieve.*” O3 thought that “*the team lead didn’t make it clear enough initially what [s/he] wanted to achieve.*” As a final positive note, O3 said that when the team went back to the

drawing board and started thinking the solution through, *“our team kind of worked well”*. The team leader thought that it was hard for them to *“figure out where we are heading, what fits our strategy, what have we already thought about”* and felt that the hackathon activities were *“pretty much reinventing the wheel and going through all the brainstorming and research on our own”*. O1 added that the two days of hackathon *“were spent on going through the analysis and figuring out the problem and defining it really well”*, which left little time for implementing the solution. O2 added that once the investigation phase was finished, *“the team started to work really efficiently.”* The team leader gave higher scores for the group’s work process than the team members, who gave lower as well as polarising scores (Leader: 4.25; Members:  $m=2.92$ ,  $SD=1.26$ ). The distribution of tasks was done *“based on my skills”* and *“based on my preparation”* for the team leader (both 5.0) and for the team members *“based on my interest”* and *“based on my skills”* (both  $m=4.33$ ,  $SD=0.58$ ). O2 pointed out that *“Everybody took some role, without any discussion.”*, adding that *“everybody was somehow involved in that work.”* O2 emphasised that this *“was the really interesting part for me, because everybody took a role without any forcing or asking”*. O2 added that once they achieved a *“balanced conclusion, that this is what we want to build”* the process of implementing the project was *“fast because we kind of 100% knew what we needed to build”*.

By the end of the hackathon they *“got everything done in kind of the low effort way”* (O1). The leader thinks that the project *“was definitely a success”*, as the goal was to *“to validate the problem and see if it’s really something that the company should invest more heavily in [...] as cheaply as possible”*. O2 agrees that *“we were able to build all steps that are required for our solution for presentation. It was fully workable.”* Though O3 admitted that *“We would have come to a better prototype and a better solution if we wouldn’t have wasted so much time on negotiating what it has to be.”* The differing opinions on the outcome of the project can also be seen in the survey results (Leader: 5.0; Members:  $m=3.58$ ,  $SD=0.8$ ). It can also be seen that the project did not quite meet either the team leader’s or the team member’s expectations (Leader: 3.5; Members:  $m=3.33$ ,  $SD=1.15$ ).

The team did not get recognised by the judges. The team leader thinks that the project *“sort of didn’t fit the general objective of the hackathon”*, elaborating that *“the focus [of the event] was more on engineering something awesome looking.”* The team did not give high marks for the usefulness of the project either (Leader: 3.5; Members:  $m=3.0$ ,  $SD=1.64$ ). None of the team members also continued working on the project. The leader said on the continuation intentions that *“definitely I would have done it”* right after the hackathon, but *“I wasn’t*

*eligible for missions yet*” back then. At the time of the interview, they indicated that current commitments would necessitate *“heavy planning to find time for [the project]”*. O2 said that they would want to continue working on it if their support is needed and told that *“I will be able to allocate the time”*. The continuation intentions shown in the survey were low for both team leader and members (Leader: 3.0, Members:  $m=1.89$ ,  $SD=0.84$ ). The team leader though pointed out that the project *“was already done in the company in different ways”* and that the purpose of the hackathon project was *“to give some ideas to the people already working on similar stuff”*. O3 agreed that *“the idea itself in its form is kind of implemented right now.”* O3 believes that the idea *“was in the mind of the person”* implementing the feature and thinks that the hackathon project *“validated that it’s something worth trying out.”* As of April 2020, the Pipedrive community page, which team O’s hackathon project could have influenced, has been released to the public and is operational.

When asked about the intentions of participating in future Pipedrive hackathons, all 3 interviewed members of team O were in positive spirits. O1 said that they will *“maybe try non-leadership roles again”*. O2 was also open on the prospects but hinted that *“it mostly depends on what the topic of the hackathon will be and whether I’ll have any ideas on that topic or not”*. O3 was also willing to participate in future hackathons, possibly pitching an idea then if the topic speaks to them.

## **5.4 Teams in both Hackathons**

The following teams had common leader(s) in both May and November hackathon editions.

### **5.4.1 Teams B, F and K**

#### **5.4.1.1 Team B**

Team B was a multi-site hackathon team based in the Tartu office with a remote member working in the New York office. The leader B1 was a product manager who had *“just joined Pipedrive”* (B1) at the time. B1 saw the hackathon as an opportunity *“to gain some experience on how the hackathon happens, know about Pipedrive, and also to know more about people in Pipedrive”* (“Learn or try something new”: 5.0). B1 thought of the hackathon as *“just like a fun event”* and was also motivated by the possibilities of *“bring value to the company”* and *“advance my career”* (both 4.0). Other members of team B had similar reasons for participating in the hackathon, the foremost being *“learn or try something new”* ( $m=4.5$ ,  $SD=0.58$ ). B2, who had also recently joined Pipedrive, wanted to *“understand the*

*technical ecosystem*” and to “*get my hands dirty [...] creating something and at the same time learning*”. B3 saw the hackathon as a “*great opportunity to get away from daily work*” and “*work together with a different set of people that I usually don’t work with*”. “Leave my comfort zone” was also among the core motivators for the team members ( $m=4.25$ ,  $SD=0.5$ ). The project of team B was not related to the day-to-day work of the team members while five of the six team members were part of the same tribe.

B1 indicated that they did not prepare for the hackathon, admitting that “*I hadn’t planned to take part in this event earlier. I just decided on it a day before it started.*” and pitching an idea that was worked on in an Exploration Lab of the Tartu tribe prior to being hired. The team leader had borrowed the idea and made it more fitting for the hackathon. B1 indicated that “*I didn’t do any preparation before it actually started*” (B1). On the other hand, B4 did prepare for the event by “*designing mock-ups*”, possibly being a member of the Exploration Lab where the idea was developed. Due to the same team member, all the averages of the preparation indicators for the team members were relatively high with high deviations between answers (“Setting up communication channels”:  $m=3.5$ ,  $SD=1.73$ ; “Planning hackathon activities”:  $m=3.25$ ,  $SD=1.71$ ; “Discussing the idea”:  $m=3.25$ ,  $SD=1.5$ ). The team members also did not mention any extensive preparation activities, saying that “*there wasn’t a very thorough technique to it.*” (B2) and “*I didn’t really prepare in any way*” (B3). But B3 pointed to the “*Exploration Labs in Tartu that we use for idea generation and prototyping and idea validation.*”, that those could be considered as “*preparation for a hackathon*”, since the idea of the team originated from one of the labs.

During the hackathon, the team faced multiple difficulties. Even though the team was assembled on the first day of the hackathon, its composition changed throughout the event, comprising of different people each day. Only four of the allowed six team members worked on the project throughout the hackathon, while the remaining spots were shared between four engineers for varying periods of time (“*we had 8 people going in and out. Just because it was not pre-planned, so everyone did not have 2 whole days.*”, B1). This affected the team’s work process according to B3 (“*the engineers swapping out, they had to take over, then get to know what was actually being made or what had already been produced and where to go with that.*”). Another issue pointed out by B3 was the team leadership. B3 thought that the idea pitcher “*would be managing the product and the process*” of the team, but it seemed to B3 that B1 was “*kind of lost in the process and the context and with the people [s/he] was working with*”. That prompted B3 to slowly take over the team leadership

role, which “*put a damper on the design work I was also supposed to pursue*” (B3). B3 was not too upset about the team’s instability, saying that “*I cannot really fault the product manager for that. [B1] was very new but was still contributing so I don’t really think there was a huge disparity in people’s personal impact or productivity.*” Additionally, the team had a member participating remotely from New York, meaning that there was an 8-hour time zone difference between that person and the remainder of the team. Despite that, B2 thought that the cooperation was easy to handle, because “*we gave [him/her] one job and [s/he] did it. [...] [s/he] was not supposed to be available all the time*”. B2 admitted that the cooperation was “*not as smooth as working cohesively in the same place*”, but they still “*pulled it out.*”. B3 agreed that the remote team member affected them positively, because time zone difference helped them to “*actually work around the clock after we had divided the responsibilities.*” (B3). This was a surprise to B3, because they “*expected it to work way worse than it actually did*”. The team leader picked their tasks “*based on my skills*” (5.0), while the team members chose their tasks “*based on my interest*” (M3.5, SD=1.29). The team members were generally happy with the team’s work process, both the leader and the others giving a similar rating (Leader: 4.0; Members: m=4.0, SD=0.82).

Given the circumstances, the team was still able to deliver what they wanted to (“*We were able to show everything.*”, B1). The leader admitted though that “*everything was not properly coded. Some were pictures, some were hard-coded, some were proper codes.*” B3 thought that “*We could have delivered more, a more comprehensive thing. But in the end, especially supported by the pitch we did, all the elements were there.*” The survey results agree that the team was relatively content with what they delivered (“*Outcome your of hackathon project*”: Leader: 4.0; Members: m=4.19, SD=0.55) and had their expectations mostly confirmed (Leader: 4.0, Members: m=4.38, SD=0.95).

The team came second in the May hackathon. Despite that, the team was not guaranteed to be able to complete their project. The team leader had no visibility about the future of the project, “*whether it will be implemented or not. Is someone else doing it? What will happen to it?*” (B1). A reason for this is the fact that their tribe is not responsible for the project (“*[project B] does not belong to Tartu Tribe*”, B1) and B1 does not know “*where the core lies. It could be any other tribe.*”. B1 indicated that they would take the project further if they had the knowledge where to turn to with the project (“*I’d love to do it. Just because it will give me a chance to [...] do something completely new and innovative for Pipedrive.*”, B1). B3 would have wanted to continue with the project as well but felt that the project was

too big and “currently lacking that specific focus to construct an MVP or a POC out of it” (B3). Additionally, B3 hinted that their tribe was in the middle of vacation season and occupied with more urgent tasks at the time, resulting in the project being put “on the backburner for a while”, although “that idea itself and the project keeps resurfacing every now and then”. B3 knew that the project was worked on “in another Exploration Lab from a different angle”, but that had not seen any further progress either. B2 on the other hand said that they could not continue because “I was on a mission” and would have expected someone to assign them to the hackathon project instead (“There was no notion from anybody denoting that yes, you should work on it”, B2). B2 hoped that after receiving the prize for the project, that they “will get personal time to work on it” but that was not given. The survey results showed as well that the team members were open to continue working on the project (Leader: 3.67; Members:  $m=3.75$ ,  $SD=0.69$ ). The project remains dormant as of April 2020.

All three interviewed team members were also considering attending the November hackathon. B1 was a bit hesitant but hinted that “I have an idea but it’s not polished. So let’s see how it goes.” B2 said that “actually I signed up for it” at the interview, though admitting that “I have not decided yet”. B3 was also willing to participate at the November hackathon, though they had “some scheduling conflicts regarding that”. Eventually, B1, B2 and B4 participated in the November hackathon.

#### **5.4.1.2 Team F**

Team F was a multi-site hackathon team based in the Lisbon office with remote members participating from the Tallinn and New York offices. It was led by F1, a partnership manager, who wanted to experience a hackathon and had an idea that they wanted to work on. Thus, the hackathon was a way to “bring value to the company” (5.0) and “get something done” (5.0). F1 wanted to get “to know the product better”, understand “the different roles and functionalities of product managers” and become “a bit better presenting the project and pitching it”, seeing the hackathon as an opportunity to “learn or try something new” (5.0) and “leave my comfort zone” (5.0). The team leader also saw the chance to perform in front of executive officers like the CEO and CPO as “a one-off opportunity”. For the team members, the hackathon was also a place to “learn or try something new” ( $m=5.0$ ,  $SD=0$ ; “I used [...] it mainly as a learning experience”, F2). Other motivators for the team members were “meet new people” ( $m=4.5$ ,  $SD=0.71$ ; “I thought that it would be a perfect experience [to] connect with someone who is a developer.”), “leaving my comfort zone” and “bring

value to the company” (both  $m=4.5$ ,  $SD=0.71$ ). It is known that F2 and F3 worked in the same department. The project was not related to the team member’s day-to-day work.

The team leader prepared for the hackathon by validating the idea. F1 did “*bit of research on the subject*” (“doing research”: 5.0) and talked to “*a few people in the company just to [...] make sure it was something valuable*” (“discussing the idea”: 3.0). F2 considered their day job as a preparation, because they knew the “*ideas or the pains the customer experiences.*” (“discussing the idea”:  $m=4.5$ ,  $SD=0.71$ ). The team leader did not pre-assemble the team (“assembling the team”: 1.0), making the eventual team formation difficult, since “*lot of teams had pre-formed their teams, so that's where the engineers were already taken*”, adding that “*I don't think that was too fair to play it like this.*” (F1). The team was assembled during the hackathon, with volunteers signing up to the team and an engineer recruited by the leader (“*I had to go and beg for any engineers to come and I got one from Tallinn.*”, F1).

The team leader thought that the cooperation between the team members was “*really really good*”, even though the team was split across three locations (“*It was quite funny because we had 3 locations*”, F1). F1 admitted though that with the member in “*the US it was a bit harder because of the time difference,*”, meaning that the team member “*would be on [his/her] own working when we all would be back home*”. To overcome the distance, the team used “*a zoom room with a big screen*” (F1), helping the team members stay “*connected all the time*” (F1). This was not “*as good as having people in the same office*” though and F1 believes that “*some of the teams were really together and benefitted from that advantage*”. The leader selected their tasks “*based on my skills*” and “*based on my preparation*” (both 5.0), while the team members did it “*based on my skills*” ( $m=4.5$ ,  $SD=0.71$ ) The members rated the team’s work process very highly, giving near-maximum scores (Leader: 5.0; Members:  $m=4.75$ ,  $SD=0.35$ ).

The team leader told that the project’s “*goal was to have an MVP*”. F1 was “*quite satisfied with the results we got. Knowing that we only had one developer*”, adding that “*I think we achieved our goals*”. F1 pointed out that having only one developer affected them quite a lot (“*We could have presented something a bit more functional as well with another developer*”, F1). F2 was nevertheless surprised that “*we could produce so much as a whole in so little time*”, saying that “*I thought that we were going to see rudimentary, basic things, not necessarily working models.*” The survey shows that the team was very happy with what they presented, with everyone giving maximum score for the outcome of the project

(Leader: 5.0; Members:  $m=5.0$ ,  $SD=0$ ). The project also met the expectations of the participants (Leader: 5.0; Members:  $m=4.75$ ,  $SD=0.35$ ).

The team did not receive any awards from the hackathon. This raised some questions within the team, with F1 saying *“I found the winning projects selection pretty odd. It didn’t reflect at all the discussion we had with coaches for the 2 days of the hackathon.”*, elaborating that *“The feedback we got from the coach was not the feedback we got from the judges. We were very surprised not to be selected because during the 2 days our project was one of the top selected projects by the coaches.”* It was not very clear to the team leader why some non-recognised projects were continued and some were not, admitting though that the non-recognised project was most likely continued because *“the product manager was the one pitching, it was easier for [him/her] to force it down the funnel”*. This is also one of the reasons F1 thinks why their project was not continued: *“None of us were in a position to continue it professionally speaking”*. F1 also hinted at limited feedback being one of the reasons for discontinuation, saying *“cause we lacked feedback, then we never really wanted to take it further either.”* and *“it would have been nice to receive detailed feedback about your project after [the hackathon], because [...] having a 2 minute review is not sufficient.”*. The survey showed some hesitation in the continuation intentions as well, getting average scores (Leader: 3.67; Members:  $m=3.83$ ,  $SD=0.24$ ). As of April 2020, the project remains dormant.

The team leader planned to attend the November hackathon, saying that they are doing things differently this time, forming a team in advance: *“We are doing like the others”*, hinting as well that F4 would be joining them in the second hackathon. F1 pointed out that *“there’s more research that is going inside”* and *“there’s extensive work on research already”*. F2 was not so sure about joining the hackathon, saying that they would *“hopefully”* attend. Eventually, only F1 and F3 would participate in the November hackathon.

#### **5.4.1.3 Team K**

Team K was a multi-site hackathon team based in Tartu office, with a remote participant from Lisbon. The team was formed by F1 (here as K1) and B1 (here as K6) from the May hackathon just before the November hackathon as they proposed similar ideas for their hackathon project (*“[I was told] that someone else was working on a similar idea, so we pitched together”*, K1). The reasons for participation for K1 were similar as in the May hackathon, scoring highly in “bring value to the company”, “learn or try something new” “get something done” and “have fun” (all 5.0, *“it was fun the last time. In the one we’ve*

done in May, I really liked it. So I thought I'd do it again. The theme was something easier, what we could relate to more", K1). The team was made up mostly of people who participated also in the previous hackathon, like A2 (here as K2), B2 (here as K3) and A6 (here as K5). The team members were mainly motivated by "have fun" and "leave my comfort zone" (both  $m=4.0$ ,  $SD=0.82$ ; "For fun.", K2, "[to] have fun", K3), closely followed by "bring value to the company" ( $m=3.75$ ,  $SD=0.5$ , "creating something new, which Pipedrive could have", K3). The team members located in Tartu were part of the same tribe. The project was not related to the day-to-day work of any of the team members.

F1 indicated that they had done a lot more preparation compared to the May hackathon, knowing "exactly where we wanted to go" and having "the full scope ready.", contrary to the May hackathon where "I had only done a bit of research on the background, but not much like actually scoping and seeing what we could do for a hackathon". K1 also said that K6 had a few people joining from their office in Tartu. This is also a reason why K1 thought that it was easier to get the team in the November hackathon, as Tartu "had a lot of engineers, whereas in Lisbon on both occasions, we did not have many engineers". On a technical level, the team "planned to see how far we get, otherwise mock everything." (K2).

The team members were happy with how the team worked together. K3 thought that "we worked in a way that the contribution ratio was tremendous. Everybody contributed exactly what they could ship". K2 agreed that "It worked surprisingly well, considering one person was in Portugal." They added that "the product manager and that person [...], they needed to communicate a lot and that worked out better than expected. Even with the time difference." On the other hand, K1 was a little bit disappointed by how the cooperation was organised. K1 said that "I was the only one in Lisbon. Everyone else was in Tartu. So very different dynamic than last time", adding that "I don't think it was [as much fun] team wise because I was a bit on my own". A reason for that was that the communication was not that constant: "the guys in Tartu were like "Alright, let's reconnect in 3 hours". So there's no communication for 3 hours." Though K1 was much more satisfied by the performance of the team: "I was really impressed. Very, very impressed with the amount of things that could be done in a matter of hours", adding that "I'd much rather work with another team like in the November hackathon". The team selected their tasks "based on my skills" (Leader: 5.0; Members:  $m=4.25$ ,  $SD=0.96$ ) and gave high marks for their work process (Leader: 5.0; Members:  $m=4.19$ ,  $SD=0.75$ ).

The team members were satisfied with what they had delivered. K3 said that “*we achieved a more grander scheme that we thought we would not be able to. Then we were able to create a prototype which was working.*” K2 added that in the final solution, the “*frontend was mocked basically, just pictures that you can click on. But in the backend... It was a hack, but it worked already basically. Request comes in, it selects a couple of pipelines, adds the stages to the company and adds an email template as well, so it worked to some extent.*” K2 pointed out that “*If we would have had a really competent front-end developer, then yeah, we could have done this front-end as well*”. The leader was happy, saying “*We had a [...] 90% working prototype. I mean it wasn't a prototype, it was actually built in Pipedrive.*” In the survey though, we could see that the team members had different opinions on the outcome of the project (Leader: 5.0; Members:  $m=3.81$ ,  $SD=1.03$ ). A similar pattern emerges in the expectations towards the project (Leader: 4.5; Members:  $m=3.63$ ,  $SD=1.11$ ).

The team won the November hackathon. K1 was very happy about it, saying that the selection of winners “*was fair*”, though they admitted that “*the competition wasn't as hard as it was the first time*”. K1 thought that one of the reasons for winning was that the project was built inside Pipedrive, the company's product: “*It's like the project is ready to go pretty much.*” (K1). K2 thought that the project itself was the main reason for winning: “*What helped us was that the things we were presenting were already kind-of existing in Pipedrive and could be made public or shareable with little effort. We didn't build anything super-new but it made just use of what was already there. That was the thing that pushed us to the first place*”. K2 also hinted at K5 as the reason for winning (“*I guess the reason is... K5.*”, K2), who both also were part of the winning team of the May hackathon (“*I mean [s/he] is the common denominator. K5's really good at creating flows that are easy to follow for the panellists*”, K2). The team's idea is now promised a dedicated mission that will deliver the feature. K1 though said that “*we don't know where this is going. We've been told Q2, but Q2 is coming soon. Is that still on the plate, is it not?*” K1 would like to be kept up to date on the fate of the project, having someone reach out to them once every few months (“*it would be nice to... a few months after the hackathon having someone reaching out to you and saying “Oh, by the way we just pushed this back because of other priorities” or just to let you know that this is coming.*”, K1). The others were not that keen on working on the project as it “*is out of my field of expertise.*” (K2). The continuation intentions indicated by the team members were relatively low for everyone (Leader: 3.33; Members:  $m=3.08$ ,  $SD=0.42$ ), likely due to a dedicated team taking the project over. The current state of the

project is not known as of April 2020, but K3 pointed out that *“I am assured that [...] it will be part of future plans”*.

All of the interviewed team members are willing to participate in future Pipedrive hackathons (*“Yes, I love it!”*, K1). K2 will participate if they have time and K3 stated that *“I’d for sure take part in the hackathons”*, though only if they are *“available and there is not any deadline to meet or any super important stuff to take care of”*.

## **5.4.2 Teams C and N**

### **5.4.2.1 Team C**

Team C was an on-site hackathon team based in the Tallinn office. It was led by C1, a customer support manager, who wanted to participate because they enjoyed and won the previous Pipedrive hackathon in 2018. C1 saw the hackathon as means to *“get out of every-day life and also produce something really cool”* (“leave my comfort zone”: 4.0). C1 emphasised that they *“definitely want to build something that is actually needed and useful”*, not just *“chill, hang out, joke around and build something stupid”* (“bring value to the company”: 5.0). An additional motivator was the possibility to *“learn and try something new”* (5.0). Another team member saw the hackathon as means to *“meet new people”* and *“learn or try something new”* (both 5.0). That member wanted to *“leave my comfort zone”* and *“advance my career”* with the hackathon (both 5.0). Prior relations between team members are not known. The project was not related to the day-to-day work of the team members.

The team leader had prepared for the hackathon by gathering ideas: *“I researched some ideas. [...] I did some sketching, googling ideas”* (“doing research”, 4.0). C1 also met the hackathon theme author and discussed the choice of topic with them (“discussing the idea”: 5.0). Members for the team were gathered during the hackathon’s team assembly phase, meaning that no prior assembly of the team was made (“assembling the team”: 1.0).

The team leader thought that the working environment in the team was *“definitely peaceful”*, although one of the team members *“was mostly alone for some reason”*. That team member also was *“the one wishing for the idea to take a different direction”*, what the others did not agree with (*“all the 4 of us were on the same page and we had one person who was kind of doing their own thing.”*, C1). The team leader emphasised that *“At the end we were super fine with them doing their own things, it’s helping our team. We didn’t have conflicts per se”*. The survey agrees, showing that the team members chose their tasks primarily “based

on my skills” (Leader: 4.0; Member: 4.0). C1 is not sure though if the disagreement between the team and one specific member affected the project’s result (“*I think not, I don't feel like it did. Maybe it did, we don't know.*”, C1). C1 also said that during the hackathon, “*For a day and a half I just practiced the pitch*”, meaning that the team tried to finish the project early and polish it for the final demo. Both the team leader and the team member of the study gave high scores for the team’s work process (Leader: 4.5; Member: 4.25).

The team came second in the May hackathon and received the special award “Best AI Feature” as well. It is not clear in what state the project was completed by the end of the hackathon. The team members indicated that they were happy with the outcome of the project (“*it was a really cool thing*”, C1; Leader: 4.25, Member: 4.0). C1 also admitted that the project is “*huge*” and implementing it “*would be very complicated*” due to the existing architecture of Pipedrive. C1 stressed though that the project “*has its potential, especially the AI part*”.

The project was not continued. C1 reasoned that “*we all have our own jobs*” and that “*None of us were in a position to include it in our day job.*” The team leader had also given the hackathon theme author feedback, indicating that “*I have input, I have ideas.*” if they wanted to go forward with it (“*continuation intentions*”: Leader: 4.0; Member: 3.67). C1 was expecting “*the company, some team or some mission to pick it up and then we would contribute*”. Since that did not happen, “*none of us had the time to do it ourselves.*” (C1). As of April 2020, the project remains in a dormant state.

#### **5.4.2.2 Team N**

C1 planned to take part in the November hackathon. They formed an on-site team N based in Tallinn, which C1 (here as N1) was leading, now working as an internal tooling specialist. N1 said that they decided to participate again “*Because I really enjoyed participating [in the May hackathon] and we had a great team*”. The team members from the May hackathon started communicating again before the November hackathon. In the survey, N1 indicated that they participated in order to “bring value to the company” and “get something done” (both 5.0). Team N had members B4 (N4) and C5 (N5) who participated in the May hackathon as well and also N2 and N3, who had not participated before. The team members had similar motivations, with “bring value to the company”, “learn or try something new” and “have fun” (all  $m=5.0$ ,  $SD=0$ ). N2 added that they had never participated in a hackathon before, which was one of the motivations for attending the hackathon. Additionally, “get something done” and “leave my comfort zone” received high scores for being the reasons

for participation (both  $m=4.5$ ,  $SD=0.71$ ; “*You will end up seeing something within such a short time. I think it’s really really cool.*”, N2). The hackathon project was not related to the day-to-day work of the team members.

N1 had already gathered a team for the November hackathon at the time of the May hackathon interview (“*we have 4 people in the team already*”, N1; “assembling the team”: 4.0). N1 elaborated that “*we already had our team before the hackathon because we already had people who wanted to participate*”. They “*already have had like 3 meetings.*” (N1) and have come up with four different ideas, which were narrowed down to one (“discussing the idea”: Leader: 5.0; Members:  $m=3.5$ ,  $SD=2.12$ ). The team started expanding on that idea and had “*another meeting where we put together the scope, pitch and name*” (N1, “planning hackathon activities”: 4.0), so that on the hackathon day they could just work “*on the pitch and we already knew [...] what’s the final idea*”. N2 clarified that “*We chose the idea and one developer dug into it for a little bit, if it’s even possible to do it. This is how we prepared, but nothing more*” (“doing research”: Leader: 4.0; Members:  $m=3.0$ ,  $SD=2.83$ ). The team leader had mixed feelings about the team preassembly, saying that it was “*really nice and safe for us*” but at the same time “*it was kind of unfair towards the other people who were participating, and it was harder for them to find teams*” (N1).

The team leader thought that their “*team was really good*”. N1 pointed out that even though “*I was kind-of the head of the team*”, they did not stop anyone from stepping forward (“*[they] took over the role when [they] needed it*”, N1). “*Everybody had their roles*” (N1), meaning that everyone was proactive in how they chose their tasks: “*we all came with our strengths*” (N1). N2 agreed that “*Everybody knew what they were doing, and we were giving feedback*”. The survey showed that the team members took tasks “based on my interest” ( $m=5.0$ ,  $SD=0.0$ ) and “based on my skills” ( $m=4.5$ ,  $SD=0.71$ ), while the leader took their tasks “based on my preparation” (4.0) and “based on my skills” (4.0). N2 also added that “*we actually wanted to build something*”, meaning that they did not want to come up with mock-ups only. The team also tried to finish early and collectively practice for the final demos (“*everybody was listening to the comments, that the mentors were saying and writing down those things. And then later, we went up and we tried to improve our demo*”, N1). The team gave high marks for their work process (Leader: 4.25, Members:  $m=5.0$ ,  $SD=0$ ).

The team “*pretty much ended up delivering what we were planning*” (N2). The team was also approached by the video content creator of Pipedrive during the hackathon, getting

additional “*confirmation that this is something that should be out there and it’s just not something that we are thinking*” (N2). The team leader had their expectations towards their project partially confirmed (3.5) and was also somewhat content with the outcome of the hackathon project (3.5). The team members on the other hand were happier based on the same two criteria (m=4.5, SD=0 and m=5.0, SD=0 respectively).

The team did not get recognised at the hackathon, which was disappointing for the members (“*we all were disappointed with the result.*”, N1). They were specifically unhappy with the selection of winning teams because they thought that given the hackathon topic of community, the project “*needs to be for salespeople and not only Pipedrive users*”. But they saw that “*2 out of those from the top 3 were products that were only for Pipedrive users.*” (N1), which was not aligned with the hackathon topic and the product strategy of Pipedrive (“*[it should be about] community and bringing salespeople together. Not Pipedrive users together.*”, N2). N2 admitted though that “*I understand it from a business perspective that ours wasn’t making money so much*”. Another aspect that N1 pointed out was that “*we were building this to check all the boxes for the hackathon. I thought that it would be something useful for the company*”, but “*it was very unclear what they judged. [...] It felt like they judged based only on the company point of view. So yeah, why were they judging something else that they were given as instructions.*” Though N1 acknowledged that their project “*wouldn’t be the best benefit for the company, it’s not easy to build, so that’s why we didn’t score high*”. The team did not continue working on the project, because they felt if the project “*wasn’t something that the high-level people in the company would say they’re interested in, we didn’t have any outside motivation to do that*”. N1 admitted that the project “*wasn’t my dream thing to build*” and “*it wouldn’t have made any sense. If the company doesn’t see the value in this, then why would we do that*”. N2 also added that they could not work on the project without the support of the company: “*we cannot actually do it, because this is for Pipedrive, it’s a Pipedrive thing with the Pipedrive logo*”. The survey on the other hand shows that the team members would be rather willing to continue (Leader: 4.0, Members: m=3.67, SD=0.0). The project has not been continued as of April 2020.

The misunderstandings about the winner selection led the team leader to doubt in any future participation in Pipedrive hackathons. N1 said that they would participate only if the criteria for judging projects would be published before the hackathon (“*If I don’t see any hint on this in the description, then I probably wouldn’t join*”, N1). N1 admitted though that if the topic of the hackathon would be “*super close to my heart, then I might pressure those and*

*give it a last chance*". N2 was more open to attending any future Pipedrive hackathons, saying that next time they will probably hear out all the pitches before choosing a team.

### **5.4.3 Teams D and M**

#### **5.4.3.1 Team D**

Team D was an on-site hackathon team based in the Tallinn office. It was led by D1, a back-end developer who used the hackathon as a chance to have fun by assuming different roles, both familiar and unfamiliar. The hackathon was also a way to "meet new people" (5.0) for D1. The leader participated in order to "bring value to the company" and "leave my comfort zone" (both 5.0) as well. D1 also added that "*I didn't have an urgent need to win the hackathon or come out with something extraordinary*". The team member participating in the survey had similar motivations, wanting to "bring value to the company", "learn or try something new" and "get something done" (all 4.0). 3 of the 5 team members were from the same tribe, while the project topic was also related to the same members' day-to-day work.

D1 admitted that this was the first hackathon they prepared for in advance: "*usually I don't prepare at all. I just go to the hackathon and do what I do there*". They had organised brainstorming sessions with a few colleagues to come up with ideas ("discussing the idea": 4.0). D1 added that "*we did some technical research also but it wasn't that big*" ("doing research": 2.0). The team member also indicated that they had participated in the brainstorming ("discussing the idea": 3.0), but otherwise did not prepare for the hackathon. The team was assembled at the event.

The team leader thought that the team "*worked pretty well*". They found that "*Everyone was somehow self-motivated, and we had people who we don't usually have in our teams when we work as engineers*" (D1), adding that people were proactive in finding tasks to do. D1 also said that "*everyone had their own role, but we didn't explicitly set the roles*". The survey confirms that the members picked their tasks "based on my skills" (Leader: 3.0, Member: 4.0). D1 wanted to get the solution to work within a TestBox, an instance of the internal test environment for the web application of Pipedrive. The team was happy with their work process (Leader: 4.5, Member: 4.75).

The team was able to make the project work just as they planned. D1 added that they were able to utilise existing API's to develop additional features, which were not "*in my original idea at all*" and "*didn't seem something we could achieve during the hackathon*", which

they were happy about. Even though *“the code quality was horrible”*, D1 said that *“I’m pretty happy about what we achieved”* and said that they *“would rather go even mocking up more and more”* to avoid getting *“stuck with a simple thing in your UI [...] that might consume all your working days”*. The team was relatively content with what they delivered (Leader: 3.0, Member: 4.5) and had their expectations towards the project mostly confirmed (Leader: 3.5, Member 4.0).

The team received the “Product Ready to Launch” award. D1 disagreed though that the project *“wasn’t production-ready in that sense”*, as *“the code didn’t look good and some of the solutions weren’t good enough”*, but still admitted that *“it actually worked.”* They also added that *“Our thing is basically a simple addition to Pipedrive but could make a huge impact”*. Despite this, the project was not continued. D1 reasoned that *“I had other things to do”* but also thought *“I’m not in charge of making the decision whether this is a good addition to the product.”* D1 clarified that *“I’m still a developer, not a PM. PMs have to figure it out if it’s a good idea or not.”* The leader did introduce the idea to the responsible people, but that did not result in any further progress (*“I presented the idea to the PM who is dealing with email.[...] I showed [him/her] the outcome and told [him/her] maybe it’s something we should think of. Other than that, I left it there.”*, D1). D1 pointed out though that the responsible person had left the company in the meantime, but still thinks that *“it is listed somewhere as a good idea”*. The members were not that keen on continuing with the project (Leader: 3.33; Member: 3.33). The fate of the project is unknown as of April 2020.

#### **5.4.3.2 Team M**

D1 planned to take part in the November hackathon as well. They formed team M, a multi-site hackathon team based in the Tallinn office, with a remote member participating from the Tartu office. M1 had similar reasons for participating, saying *“it’s a good way to do something new and also build something that you are not doing daily.”* In the survey, M1 indicated *“bring value to the company”*, *“leave my comfort zone”* (*“become a product manager for some time for a different area that I’m usually working on”*, M1) and *“have fun”* (all 5.0) as the main reasons for participation. Team M also composed of A3 (here as M2) and D2 (as M5) from the previous hackathon. The team members were mainly motivated by the prospect of *“learn or try something new”* (*“try out something”*, M2;  $m=4.0$ ,  $SD=1.73$ ), *“meet new people”* ( $m=3.67$ ,  $SD=1.53$ ) and *“have fun”* (*“have fun with my colleagues”*, M2;  $m=3.33$ ,  $SD=1.53$ ). M2 also pointed to the possibility of *“bring new value for the company,*

*if it is possible*” (“bring value to the company”: Members:  $m=3.0$ ,  $SD=1.73$ ). At least 3 of the team members were working together in the same tribe in their day jobs. The project was not related to the usual work of the team members.

M1 used the same preparation approach for the November hackathon as for the May hackathon. At the time of the May hackathon interviews, M1 had already “*had one brainstorming session with some of the guys*” (“discussing the idea”: 4.0). The team leader had “*thought really realistically of what we need to do*” before the hackathon and had also “*already had some thoughts on how to start implementing it*” (M1, “doing research”: 3.0). M1 did not, however, plan to assemble a team beforehand, saying that “*I think the team has to be formed there, this is a good approach*” (“Assembling the team”: 1.0). M2 said that “*we wanted to implement a working solution. Kind of completely working*” for the hackathon.

The team leader thought that “*we just had a great team, lots of development power*”, though they admitted that “*at some point, some of us didn't have anything to do*”. The leader pointed out that based on the experience from the previous hackathon, they now “*were speaking up roles basically, speaking of who is doing what.*” (“assigned by team lead”: 4.0). The members then picked their tasks “*based on my skills*” ( $m=4.0$ ,  $SD=1.0$ ) and “*based on my interest*” ( $m=3.0$ ,  $SD=0.0$ ). The team though was “*struggling a bit with one of the team members, who was working remotely*” (M1), adding that approachability is not as good as with having everyone in the same location. M1 elaborated that the remote member “*was just not called in sometimes*” or was occasionally unavailable when called in. The leader thinks that having a constant call with the remote member could have improved the information flow but said that the cooperation “*was pretty okay*” and that the remote member was especially useful during the polishing of the final demo. The remote member M2 agrees that it “*wasn't the best experience to participate remotely, especially if you are just alone. [...] I didn't feel that involved*” but adding that “*it was pretty fine*”. The leader also pointed out that “*for the final demo, we actually also did lots of teamwork. So we prepared it, we played it multiple times [...] we did it like 10 times and how we then improved on it*”. The team gave relatively high marks for the work process (Leader: 4.0, Members:  $m=4.17$ ,  $SD=0.29$ ).

The team again delivered a working prototype. The team leader said that “*what we actually developed, was also awesome. We didn't actually mock anything*”. M1 added that the solution “*was synchronised between different browsers*”, though the implementation was not scalable. For a smoother development experience, the leader also chose to develop a “*really*

*dummy backend that accepts just all the responses*”, saving any data sent to it. M2 thought as well that *“It was a somewhat working solution “*, where *“a simple back-end and a simple front-end”* communicated with each other. M2 added though that *“definitely it’s not production-ready.”* The team leader added that they *“actually even delivered a little more than we expected at first”* thanks to the development power of the team. The team was very happy with the outcome of the project (Leader: 5.0; Members: m=4.17, SD=0.76) and had their expectations met (Leader: 4.0, Members: m=4.17, SD=0.29).

The team came third in the November hackathon. That meant that the project was not entitled to continuation by the organisers, but the team leader said that *“one of the product managers liked the idea from the beginning”* and started taking the idea forward. This meant that all the top 3 teams of the November hackathon were promised to be continued, contrary to the initial agreement (*“they decided to implement not only the first place but all of the 3 ideas”*, M2). Despite this, the team members did not continue working on it. M1 was approached by the product manager and asked for estimations and *“if I wanted to be the mission lead”*, which they declined because *“I have so much going on all the time that I didn’t manage to do that”*. M1 also felt that they do not need to be involved with the idea all the time, as *“we were pretty much on the same page with the product manager [and] they can make their decisions”*. M1 added that *“if they release something, I will take a look at what they have released and maybe I will work on it at some point,”* emphasising though that *“I don’t feel that I own this idea”* and did not think that the idea was anyhow unique. M1 finalised that they were happy with the handover process and happy that the idea is being worked on. The other team member, M2, did not continue working on the project because *“it’s not in our tribe’s responsibility to build it here”* and would rather *“focus on whatever is happening in our tribe”* and *“contribute to people who I’m working with”*. These continuation intentions can also be seen in the survey, with the leader keener to work on the project than the other team members (Leader: 4.0; Members: m=2.33, SD=0.58). As of April 2020, the project has been implemented and is accessible on the Pipedrive community page.

Both the interviewed team members were open to participating in future Pipedrive hackathons, given if they *“don’t have any blockers”* (M2) or if the situation at work permits (*“depends on the situation that I have to work on”*, M1).

## 6 Comparison of Teams

To answer the research questions, we need to compare the teams based on project continuation – what is different between teams A, E, K, L, M with continued projects and B, C, D, F, G, N, O with discontinued projects. We will discuss the teams from the perspective of the project, the team, the company, the changes between hackathons and the team members’ location. Sections 6.1-6.3 will focus on RQ1, 6.4 addresses RQ2 and 6.5 answers RQ3.

### 6.1 The Team’s Project

When comparing the continuation of projects based on the project itself, several differences between continued and discontinued projects were found. The findings will contribute to the answer of RQ1 and will be discussed in order of relative importance for project continuation. An overview of the covered aspects can be seen in Table 6 and Table 7.

Table 6. Comparison of project aspects for the May hackathon teams.  
Green shading – team’s project was continued.

<b>ID</b>	<b>Project connection to existing projects</b>	<b>Potential benefactors</b>	<b>Effort to release</b>	<b>Project alignment with work</b>	<b>Prototype</b>
<b>A</b>	Extension to existing feature	Pipedrive customers	Medium	Not related	Inside Pipedrive Fully functional
<b>B</b>	A new feature in the product	Pipedrive customers	Medium	Not related	Inside Pipedrive Partially functional
<b>C</b>	Redesign of existing functionality	Pipedrive customers	Very High	Not related	Not clear
<b>D</b>	Extension to existing feature	Pipedrive customers	Low	Related to developers’	Inside Pipedrive Fully functional
<b>E</b>	Extension to existing feature	Pipedrive customers	Low	Related to product manager’s	Not clear
<b>F</b>	A new feature in the product	Pipedrive customers	Low – Medium	Not related	Not clear
<b>G</b>	Standalone	Pipedrive webpage visitors	Low – Medium	Related to web content managers’	Mock-up

Table 7. Comparison of project aspects for the November hackathon teams.

Green shading – team’s project was continued.

<b>ID</b>	<b>Project connection to existing projects</b>	<b>Potential benefactors</b>	<b>Effort to release</b>	<b>Project alignment with work</b>	<b>Prototype</b>
<b>K</b>	New feature using resources from existing features	Pipedrive customers	Medium	Not related	Inside Pipedrive Fully functional Mocked front-end
<b>L</b>	New feature using existing resources	Pipedrive Knowledge Base visitors Support personnel	Medium	Related to customer support’s	Mock-up
<b>M</b>	New feature using existing resources	Pipedrive customers Product managers	Low	Related to product manager’s	Fully functional
<b>N</b>	Standalone Alternative to a planned project	Pipedrive Community page visitors	Medium – High	Not related	Fully functional
<b>O</b>	Standalone Alternative to a planned project	Pipedrive Community page visitors	High	Not related	WordPress site

The biggest difference between continued and discontinued projects is the connection between the hackathon project and existing projects. All the continued teams had a project that was either an extension to an existing feature or a new feature that utilises existing assets. Teams A and E developed features that increased the functionalities of existing features (“*the new [related] mission was just released, so I think it would have been a really cool add-on to that feature*”, E1), while the continued teams of the November hackathon made use of existing resources (“*What helped us was that the things we were presenting were already kind-of existing in Pipedrive and could be made public or shareable with little effort.*”, K2; “*That’s sort of using the community that we already have and leveraging that rather than creating a whole new one.*”, L1). Most of the discontinued projects were new or independent solutions.

Another finding is that the continued projects were almost exclusively targeting Pipedrive end-users. This was especially evident in the November hackathon, where projects that were meant for the general good of the customer segment of Pipedrive did not get continued (“*I think all of the [recognised] ideas or 2 out of 3 were limited to the Pipedrive users.*”, N2). It seems that projects that directly help the customers of the company are more likely to be continued after the hackathon. Also, projects that would help people in the company with their day-to-day jobs seemed to have more success. Teams L and M are the main examples, as both projects have positive effects on employees of Pipedrive (“*I think that would be something that would help us [customer support] a lot.*”, L3).

Thirdly, it appears that projects that require relatively low effort to be launched have better chances of being continued. Out of nine projects that had medium or less effort required for completion, five were continued. Projects that were difficult to implement, like C (“*To implement this would be very complicated [...] it’s a huge project*”, C1) and O (“*start of the project is really really huge and maybe cost-inefficient*”, O2) were not continued after either hackathon.

A positive effect on the project continuation was also how the team member’s day-to-day work is related to the project. Three of the five projects (E, L, and M) that had team members working on similar topics that the project aims to deliver were continued after the hackathon, while only two out of seven projects (A and K) that had no relation to their team members’ work were continued, with one of those projects encountering significant delays due to this (“*the topic that we were working on is not in our responsibility area meaning that Tartu is not responsible for that*”, A1). The alignment of the topic and team members’ work helped the projects to proceed (“*[Project E] went well together with what were their responsibilities already. So it was easy for them to prioritise it.*”, A1).

A final aspect that helps project continuation is having a fully functional prototype. From five teams who had a fully functional prototype, three were eventually continued – A, K, and M (“*We had a [...] 90% working prototype. I mean it wasn’t a prototype, it was actually built in Pipedrive*”, K1; “*We didn’t actually mock anything*”, M1). Given that both hackathons were won by a team that produced a fully functional prototype, it is likely that having a functional prototype helps the team to demonstrate the project better, giving it higher chances of victory and being noticed by product managers. Also, having a functional proto-

type gives a rough indication of how much effort would be required to implement the project, possibly underlining the feasibility of continuing with the project (“*I think that’s one of the reasons why we won as well. It’s like the project is ready to go pretty much*”, K1).

Based on the findings we can say that the following project related aspects contribute to continuation of projects in our study:

- **Extend or utilise existing assets:** The project is an extension of an existing feature or uses available resources.
- **Help customers and/or employees:** The project is targeting the customers or employees of the company, not the general public.
- **High effort-to-gain ratio:** The project requires relatively low effort to launch with high impact to the customers or employees.
- **Members’ bread and butter:** The project is related to the day jobs of the team members, making it easier to prioritise the project after the hackathon.
- **Functional prototype:** The project’s prototype mimics real behaviour as closely as possible. It is implemented within other products with actual data and enabling tangible interaction within the application, possibly showcasing the effort-to-gain ratio.

Following these aspects may help but is by no means a guarantee of project continuation. For example, all the criteria are met for project D, but the project was not continued likely due to factors that the team could not have influenced, which is discussed in section 6.3.

## 6.2 Team Activities and Structure

In addition to the projects the teams initiated, the team itself and the activities done by team members need to be considered in the context of project continuation. This helps us determine additional factors for answering RQ1. An overview of each team and their respective activities conducted in relation to the hackathon can be seen in Table 8.

Table 8. Comparison of team aspects. Green shading – team’s project was continued.

<b>ID</b>	<b>Motiva- tions</b>	<b>Preparation</b>	<b>Work process</b>	<b>Team composition</b>	<b>Member’s relationships</b>
<b>A</b>	Learn about work Get work done Meet people Win	Exploration lab Customer interviews Scoping Plan hackathon activities Full team assembly	Development Agile Finish early Practice demo extensively	3 developers 2 product managers designer	All from the same tribe
<b>B</b>	Learn about work Leave comfort	None The idea developed and borrowed from an Exploration lab	Development Practice demo Time zones	2-3 developers 1-2 product managers designer customer support	All but one from the same tribe
<b>C</b>	Leave comfort Get work done	Research Discussion with the theme author	Ideation Some misunderstandings Practice demo extensively	2 developers 2 customer support data engineer	Not clear
<b>D</b>	Fun Assume new roles	Brainstorming sessions with colleagues Minor technical research	Development Speak up roles	3 developers office support customer support	All developers from the same tribe
<b>E</b>	Get work done Fun Win	Think about idea Discuss the idea Partial team assembly	Development Arguments between developers Unused features developed	4 developers designer product manager	2 from the same tribe
<b>F</b>	First time Learn a new role Meet people	Minor research Discuss the idea	Development Constant zoom calls open Partial individual work	3 customer support developer marketing specialist	3 in the same department

<b>G</b>	Meet people Fun	Minor research	Ideation Work well together Details unclear	3 web content managers developer	All but one from the same department
<b>K</b>	Liked last time Liked topic Get work done	Plan hackathon activities Scoping Partial team assembly Discussion with the theme author	Development Polish prototype Practice demo extensively	3 developers product manager designer marketing specialist	All but one from the same tribe 2 from winning and 2 from 2 <sup>nd</sup> place team in May
<b>L</b>	First time Learn about work	Research Brainstorming Discussion with the theme author	Ideation Constant video call Occasional work commitments	2 marketing specialists 2 customer support sales specialist	People in the same site have met 2 in the same department
<b>M</b>	Leave comfort Have fun Get work done	Brainstorming sessions with colleagues Minor technical research	Development Set roles Practice demo extensively	5 developers product manager	At least 3 from the same tribe 2 in the same team in May
<b>N</b>	Liked last time Had team Win	Partial team assembly Multiple team meetings Plan hackathon activities Discussion with the theme author	Development Assume roles where necessary Practice demo extensively Check boxes	2 developers product manager data analyst internal tooling	2 in the same team in May 2 and 2 have met before the hackathon
<b>O</b>	Learn a new role Meet new people	Minor research, few hours a week for a month Discuss the idea Ask people to join the team	Ideation Development Assume roles where necessary	data engineer developer product manager customer support localisation manager	Not clear

Based on the table above, it can be seen that teams who participated in the hackathon in order to get work done are more likely to have their project continued. Another positive

factor seems to be learning about work, meaning that team leaders who wanted to learn about aspects that help them become better at their day-to-day work were more likely to have their project continued. Notable examples of that are teams A, B and L, where the team leaders were new in their day jobs (“*I was quite reasonably new in Pipedrive [...] It was like a team-building event. It was a great opportunity to get to know Pipedrive as a product.*”, A1) or had changes in their work, requiring new knowledge in unfamiliar areas (“*we’re starting to be more aligned with the product, [...] I wanted to almost step into the shoes of people who work closely in product*”, L1).

It can also be seen that extensive preparation before the hackathon positively affects project continuation. Teams A and K, which had clear plans in place and knew exactly what they wanted to deliver before the hackathon (“*we knew exactly where we wanted to go. We had the full scope ready*”, K1), won the May and November hackathon respectively and had their projects continued. Discussing the idea with the hackathon theme author seemed also to help project continuation, with half of the teams having their project continued when engaged in discussions before the hackathon. A clear difference in preparation can be seen between team B, F and K, where the same leaders did not prepare for the hackathon in May and did not have their projects continued either (“*in May I had only done a bit of research on the background*”, K1; “*I hadn’t planned to take part in this event earlier. I just decided on it a day before it started. So there was no preparation at all*”, B1), while team K with extensive preparation had also their project continued. Another team with limited preparation is O, where the lack of preparation caused “*friction*” (O3) within the team during the hackathon (“*initial work wasn’t really efficient, because nobody actually knew at that moment what we actually needed to do, what we needed to develop.*”, O2). Team A also showed that having a team building event (“*[we] immediately went for a team building meeting*”, A1), where the team members familiarise with each other and get to know their skills and limits, helps the team to start working efficiently from the get-go (“*we were able to start working efficiently right away*”, A1).

Among the continued teams, A, K and E had their teams at least partially assembled before the hackathon, meaning that having team members in advance can foster project continuation. This can help the team leader understand the feasibility of their idea (“*I had one person, mostly because I needed some guidance on the technical part [...] - to see if what I have in mind is even feasible.*”, E1) or find the best idea (“*we came together and had 4 ideas. Then we went to the next meeting another day where we narrowed it down to one*”, N1) before

the hackathon, thus help make informed decisions on whether or how to proceed with the project. It also makes it easier to have the idea selected for the hackathon, not relying on volunteers during the team assembly phase of the hackathon (*“really nice and safe for us, because last time in May I was panicking, running around the office, trying to find engineers who would join. This time I didn’t have to do that, so it was kind of nice for me”*, N1).

Consistent with the delivery of functional prototypes, teams with a development-oriented work process had a better chance of having their projects continued after the hackathon. Out of the eight teams using development as their main work process, the projects of A, E, K and M were continued. All of those teams had at least three developers, meaning that there has to be enough development power to support the work process (*“It was probably due to the fact that we just had a great team, lots of development power”*, M1; *“We had A3, who was a really strong back-end developer and A5, who was a really strong front-end developer. The PM’s were also really strong.”*, A2). Teams that did not manage to get more than one developer, like F and G, were far worse off (*“could have presented something a bit more functional as well with another dev”*, F1; *“if we had a developer on the team or maybe 2 developers, we could have had a much better result”*, G1), with the exception of team L, that was advised to create a mock-up of the project due to the lack of developers. It could also be seen that teams who finished the project early and started practicing the demo extensively had a better chance in being continued after the hackathon. Team K, the winner of the November hackathon, had finished the project early last day and shifted their focus on compiling the final demo (*“Then Friday, [...] pretty much the product was finished and [...] so we really worked on the pitch. [...] Then we connected a lot to work on this pitch.”*, K1).

Another aspect to discuss is the team familiarity. The winning teams A and K of both hackathons comprised almost exclusively of people who had worked with each other before the event. Team K also had people that had worked together in the previous edition of the hackathon. But some teams with high familiarity did not get their project continued as well, for example B, G, and N. Thus, it cannot be said that team familiarity is a factor clearly contributing to project continuation.

As a conclusion, the following team members’ and management aspects were found to contribute to project continuation:

- **Boost the career:** The members of the team wanted to get work done or wished to learn about aspects related to their day jobs, giving extra motivation to dig deep and put effort into delivering the project.
- **Extensive preparation:** Teams with extensive preparation activities before the hackathon could start working on their projects right away.
- **Team kickstarted:** The team leader has at least one person accompanying them already before the start of the hackathon, possibly helping the preparation process and making it easier to get developers to join.
- **Deliver with development:** Teams with development power and a development-oriented work process can demonstrate more meaningful prototypes.

Just as with the project aspects, the provided team factors do not ensure continuation of the team's project. For example, team N, which had prepared extensively and had a team assembled before the hackathon, did not have their project continued.

### 6.3 Corporate Factors

When analysing teams from the May hackathon, we found additional factors affecting project continuation from the company perspective. This section is an additional contribution to the answer of RQ1.

After the May hackathon, the winning team was permitted to implement their project the way they saw fit. Despite getting the freedom to decide, the team had encountered troubles kickstarting their project due to the alignment of the project with the team member's tribe. They would have had the opportunity to proceed with the project by themselves nevertheless and hand the project over to the actual owner for maintenance after project completion, but they decided not to due to likely future project management and software issues (*"the most likely solution, i.e. result of this, is that they [the future maintainer] either will have to re-write it or change a significant amount of it"*, A1). Additionally, the team members' tribe was not able to prioritise the hackathon project due to more urgent engagements (*"We could have still gone with the first option, but we didn't prioritise it on our side."*, A1).

The team decided to find a new home for the project and approach the tribe which responsibilities fit the project topic the best. Doing so, the team found out that the responsible tribe was also unable to tackle the project in the near term because they *"had other priorities or vacations, lack of resources, changing the office location"* (A1). The team was told that the

tribe will put the project on hold “*till further notice*” (A1), which had not happened by the time of the May hackathon interviews, six months after the hackathon. This caused the team to effectively lose faith in the implementation of the project (“*the momentum has passed*”, A1). Despite this, the project was eventually picked up, expanded and launched as a Mission eight months after the hackathon by the responsible tribe and delivered almost eleven months after the hackathon, though no further interaction occurred between the tribe and hackathon team during the development process.

This observation shows that teams continuing the project themselves within a corporate environment may encounter organisational issues when the project is not related to the day-to-day work of the team members. In contrast, the second project that was initiated at the May hackathon and continued afterwards was launched less than three months and completed in less than five months after the hackathon. The core reason behind this is that the hackathon team leader “*is also responsible for the same subject*” (A1) that the hackathon project was modifying (“*It went well together with what were their responsibilities already. So it was easy for them to prioritise it.*”, A1). Additionally, the team leader had been working on a related project before the hackathon and was highly motivated to get the hackathon project done afterwards (“*we were just focused on the [related] mission, to release it. But after we released it, I pitched the hackathon project’s mission again, telling the people that it is from the hackathon and I want to get it live*”, E1). It seems that having a project that is related to the day jobs of the participants makes it easier for the teams to continue their projects after the hackathon.

The hackathon organisers mitigated the issues that team A faced when trying to launch their project by having pre-agreements in place with the tribe that is most likely responsible for the area of the product the hackathon topic expects innovation in. This ensured that there are resources in place, ready to take up the project in due time. Additionally, since the responsible tribe had already made reservations within their roadmap to accommodate projects from the hackathon, they could also make additional adjustments in the roadmap in time if they found projects besides the winning team’s project that would be worth taking forward. This happened in the November hackathon, since the top three projects were all selected for implementation, with the third place already implemented five months after the hackathon. This decision though caused the relinquishment of the promise for the first-place project to be taken into focus in Q1 2020.

Another example of corporate factors affecting project continuation is team D. The team should have had their project continued after the hackathon based on the criteria presented in section 6.1, as it is a project that extends existing features, is useful for Pipedrive customers, requires relatively low effort for launching given the potential impact (“*Our thing is basically a simple addition to Pipedrive but could make a huge impact*”, D1) and was directly related to the day jobs of most of the team members. The team leader told that they had presented the idea to the responsible product manager after the hackathon, who should have decided in conjunction with other product managers whether to go forward with the idea. It turns out that the product manager had left the company by the May hackathon interviews in November. D1 hoped that the project “*is listed somewhere as a good idea*”, waiting to be picked up, though it is possible that the idea may have been forgotten after the departure of the responsible product manager, effectively ending the possible continuation of the project.

#### **6.4 Team and Organisational Changes Between Hackathons**

In order to answer RQ2, we need to explore differences between the two hackathon editions. There were multiple changes in the organisation of the hackathon and teams that participated in both hackathons. The organisational changes were presented in chapter 3.5, while team composition changes over the two hackathons can be seen in Figure 3:

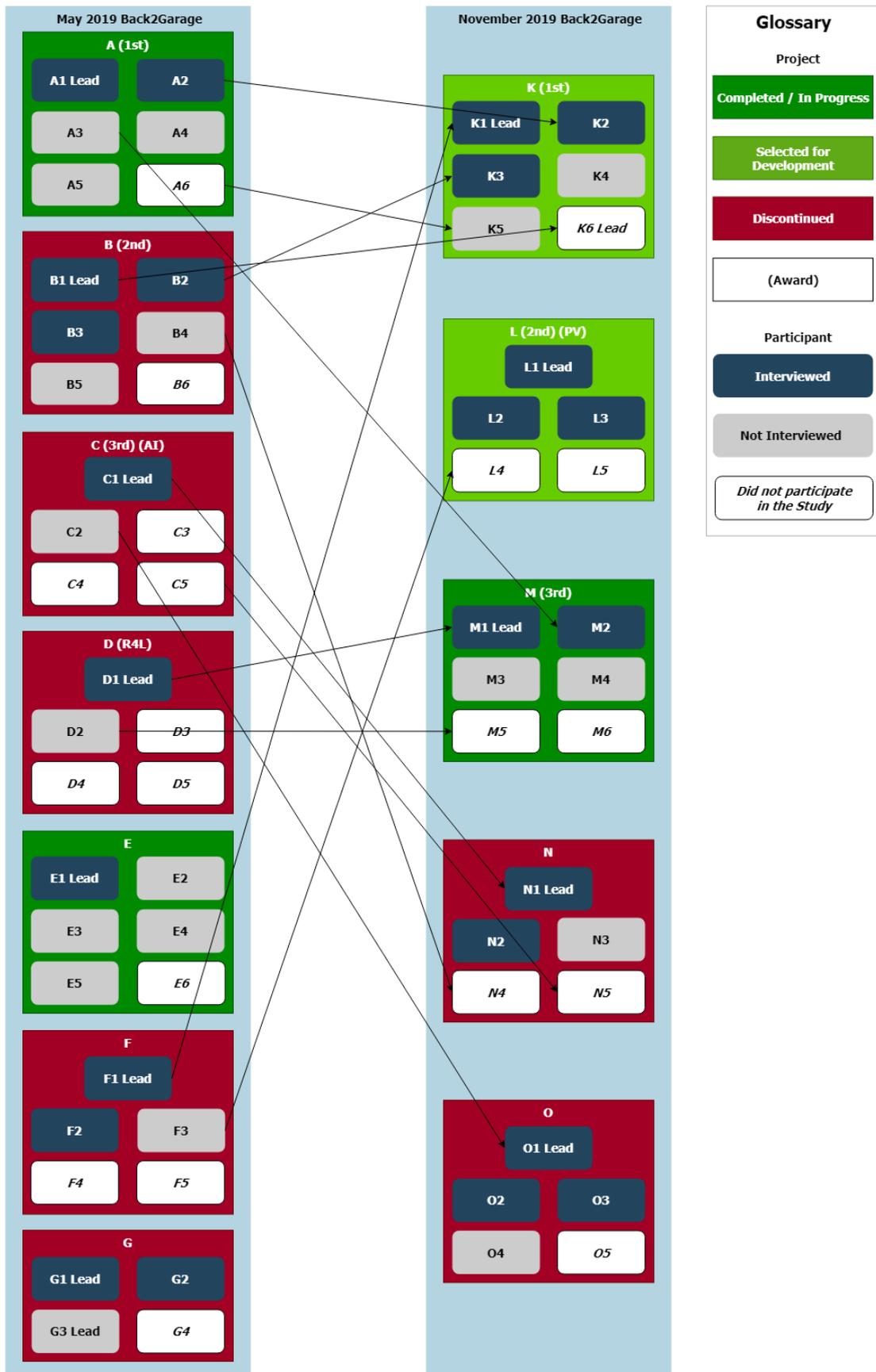


Figure 3. Team changes of hackathon participants between the two hackathon editions.

Refer to Appendix I for the explanation of the acronyms in the parentheses.

Looking at the team changes, teams who had members from winning or high placed teams in the May hackathon were also more likely to be continued after the November hackathon. K2, who was part of team A in the May hackathon, mentioned that the reason for winning both hackathons is the designer K5, who was in team A as well. K2 thought that K5 is “*the common denominator*” between teams A and K, elaborating that K5 is “*really good at creating flows that are easy to follow for the panellists*”. With K2 also being a developer, it is evident that having strong team members, utilising their professional knowledge and capabilities, fosters project continuation. This is also visible for team M, which had M2, who was part of team A and who is considered by K2 as being a “*really strong back-end developer*”, and M1, who worked on a project in the May hackathon which was considered worthy of the prize “Product Ready to Launch”. The same trend can be seen for projects that did not get continued. Members from team C formed also team N, both which did not get continued, both partly due to high effort for implementation. Also, as described in section 6.2, the change of preparation approach between May hackathon teams B, F and the November hackathon team K shows the positive effect of preparation on the continuation of projects.

The organisation team changed the way how the winning team’s project is implemented. Initially, it was promised that only the winning team’s idea will be taken into focus by the tribe responsible for the area of the product during Q1 of 2020, advocated by the hackathon theme author. After the hackathon, the decision was taken to implement all top 3 ideas of the November hackathon. As part of this, the schedule was also revised, with projects of teams M and L scheduled for H1 2020 and the winning idea of K pending implementation in H2 2020. As of April 2020, the project of team M has been implemented and released with the launch of Pipedrive Community page. It is likely that this decision is the main reason why three projects from the November hackathon have been taken forward, as compared to two in the May hackathon. This change of assigning a specific tribe with the task of taking the idea further also helps avoid issues that team A faced when presenting their idea to the responsible tribe, leading to faster implementation of the projects – five months for the project of team M compared to eleven months for the project of team A.

After the May hackathon, several participants were dissatisfied by the amount of feedback they received on their project. A2 for example thought that “*The final results were not really transparent. Yeah we won, but why? It was really vague.*”. E1 agreed, saying that “*I didn’t understand how the prizes and the places were divided. We didn’t get any feedback on that.*”

[...] *Because the first place and our idea was very similar, then they got the first place and we didn't get any place*" and added that *"I've heard that from others too that people would like to have more feedback, because the majority of the people participate with the purpose of learning"*. F1 also pointed to the lack of clarity, saying that they did not understand *"why we didn't make it to the final stages, what was lacking, what the other projects had better"*. To mitigate these issues, the organisers scheduled meetings with each of the participating hackathon teams to give feedback on their project and the selection of winners after the next hackathon. The participants were happy with the addition of the feedback session, with N1 saying *"I think it's very useful. [...] we understood why those teams won, who won"*, adding that *"it 100% should happen every time. That was definitely missing"* in the previous hackathon edition. L1 agreed, saying that *"I think it definitely should be something that should be kept"*. K1 thought as well that *"even for us, why above all the other teams, it was interesting"*, although admitting that it is more useful for teams that did not win.

The study did not find much feedback on the change of bringing the hackathon on weekdays, except from one participant. They pointed out that this change affected their day-to-day jobs in an extensive manner: *"it was really bad, because I just freshly started in the new role"*. They also pointed out that the change affected people not attending the hackathon, saying that *"it took away other people, they had meetings they had to go to"*. Though the same person admitted that other hackathon participants may think otherwise.

## **6.5 Location of Team Members**

The study discusses a total of five cross-location teams, out of which three had their projects continued after the hackathon. All the continued projects were initiated during the November hackathon while the discontinued projects were launched at the May hackathon. We will discuss the feasibility of having multi-site hackathons and look at the experiences of cross-site teams, helping us answer RQ3.

The general opinion on the cross-location format of the hackathon was mostly positive. A2 said that they *"liked that"* due to the larger scope, which made competition and winning more meaningful. N1 pointed out that since the company is pursuing a policy of having *"lot of satellite offices with max 100 people"*, the hackathon should also be cross-office in order to *"show that it's possible to work"* together in such manner. O1 also thought that *"definitely good to have cross-site teams"* from a company perspective. F2 agrees with the format, elaborating that the *"company works like that on a regular basis"* already, with L3 adding

that “before working in Pipedrive, I never worked with people that were in different locations so closely and it really amazed me how easy it is to actually work like this”. B3 thought that this format encourages participation for people that would otherwise not be able or willing to, saying that “only a handful would have taken part [if] we would have to go to another office”, also adding that “the feedback I saw at least from the other offices and especially the more remote ones was overwhelmingly positive”. E1 added that “it’s great that other offices are participating” and thinks that people not working from the Tallinn office should be given the opportunity to join the hackathon from elsewhere. M1 also thought that it would be “not fair” if the hackathons would not permit participation from other offices. M2 added that this format “unites people” from different offices, with N2 considering “to join somebody from another office” for future hackathons. Even though the majority of the teams were on-site, a number of them would still consider adding remote members to their team, like C (“I would be totally up for it”, C1), D, N, and O.

There are some problems though with participating in a hackathon remotely. A2 thought that having a remote team “would have been hard to organise”, with B2 adding that “it’s not as smooth as working cohesively in the same place”. C1 points out that “so many spontaneous ideas that happen, [...] And we don’t have Zoom open all the time to expand this idea with a member from another location”. O3 thinks that “seeing the people face-to-face is probably helping me to contribute better to the idea”, adding that “If I’m far away then it would be hard for them and for myself to participate in the hackathon or to contribute in a more meaningful way”. O2 agrees, saying that it is important to “share the feelings, to feel the atmosphere of the hackathon”, which would not be “so well transferred via camera”. E1 thought that permitting multi-site teams makes things difficult even for on-site teams, as “it was much harder to demo, because people were all over the place and judges were not present locally”. Some problems were more relevant to remote offices. A few participants felt that some of the smaller remote offices did not have anything organised on site: “We had this sense of community in Lisbon and in Tallinn, which we didn’t get in the US, you know the pizza night and stuff like this. I think they missed out on this” (F1). L1 agreed, saying “Maybe get more of an event here. So you guys in Estonia, the last day was like beer and pizza, things like that, so just having it a bit and joining the fun a little bit more”. Another problem specific to smaller offices was the availability of roles for teams. C1 pointed out that “not all the locations have all the parts of a team, like London doesn’t have any engineers”, with N2 adding that “it is not as easy” to get developers for teams in smaller

offices. A final problem is the remoteness of some of the offices. It also happens to be that the smallest offices have the biggest time zone difference compared to the other offices. F1 agreed that *“time difference for the US were really hard”*. K3 added that *“if I consider New York and Tallinn, then there’s kind of a challenge”*, ultimately suggesting *“different hackathons for different time zones”*, which they admitted being not feasible for Pipedrive.

We saw a mix of different opinions between different teams and within a single team when studying multi-site teams. A member from team B saw having a remote member *“Positively because [s/he] was in a different time zone, so we could actually work around the clock after we had divided the responsibilities.”* (B3), while another thought *“it’s not as smooth as working cohesively in the same place”* (B2). In another multi-site team M, the leader thought that *“we were struggling a bit with one of the team members, who was working remotely”*, because they were harder to approach (*“when we started a discussion, [s/he] was just not called in sometimes [or] maybe wasn’t available at that point”*, M1). The remote member also did not have as good of an *“experience than when you have a team on the spot”*, feeling that it’s *“just not really convenient. I didn’t feel that involved”*. At the same time, M1 liked that the remote member could contribute *“while we already had run out of ideas”*, thinking that having such a member *“was even useful”*. M2 agreed that *“we had productive discussions, we had a productive schedule, they had a productive plan. It worked out pretty well”*. The team leader of remote teams F and K had also two contrasting experiences. The team leader saw the team being more *“connected”* in May while sharing their site with 2 team members but had a poor experience in the November hackathon being the sole team member in their office. It seems that a multi-site team should have at least two members per site, since collocated team members from teams M and K reported a more positive hackathon participation experience in comparison to solitary remote members (*“that worked out better than expected”*, K2). At the same time, team L, that had their team evenly split between two sites, had an all-round positive experience (*“I felt that we managed ourselves really well.”*, L2; *“it worked out much better than what I expected”*, L3).

It is noteworthy that in the November hackathon only projects of multi-site teams were continued and the opposite – projects of only single-site teams – applies for the May hackathon. Despite the different experiences, the teams had other factors already putting them in favour of project continuation, like project alignment with existing products, effort for implementation, preparation, team assembly and others. Thus, it cannot be said that having remote members in the team has a clear effect on project continuation in the context of Pipedrive.

## 7 Discussion

The purpose of the thesis was study factors affecting project continuation across two editions of a corporate hackathon. The existing research on outcomes of hackathons focuses mostly on student and civic events [17]–[21], whilst research on corporate hackathons is less common. Some of the aspects have been explored separately, like corporate hackathons and their outcomes [1], [3], [6] or the benefits of having a co-located hackathon [9], but not on a longitudinal perspective and all three aspects together. With the answer to RQ1, this thesis determined aspects that could contribute to the continuation of projects initiated in a corporate hackathon setting. Additionally, factors were determined that could aid project continuation when changes are made between two editions of a hackathon (RQ2) and assessed the potential effect of multi-site site hackathon teams on project continuation (RQ3).

With answering RQ1, we identified a total of five project and four team aspects positively affecting project continuation. Beginning with the key project factor, we found that if the project extends or utilises existing assets, it is more likely to be continued after a corporate hackathon. This means that the project either is an addition to existing features or utilises resources already available for the project to use. This has been found to aid project continuation in previous research [25], also specifically in the context corporate hackathons [3]. This aspect also is aligned with the high effort-to-gain ratio factor, since it is more likely that launching a product that fits inside the existing ecosystem is also easier to launch than standalone products.

Another pair of tightly coupled project and team aspects potentially helping project continuation is that the team members are looking to boost their career with participating in the hackathon and focus on tasks/projects that are their bread and butter, i.e. part of their day jobs. This means the team members are looking to obtain skills or knowledge relevant to their day-to-day work to get their career going at the company or adapt to changes within their jobs. Previous work confirms that this could contribute to project continuation [3]. The same research also found that skill-matching during task distribution could foster project continuation. Our study determined that almost all members from all the teams took tasks primarily based on their existing knowledge and teams with continued projects were indistinguishable from the discontinued teams on that regard. We saw in the case of team E that the existence of highly motivated and capable team leader helps project continuation, which has also been observed in previous research [20].

Teams that had engaged in extensive preparation activities and had their team kickstarted before the hackathon itself were more likely to have their projects continued. This helped the teams to start working efficiently from the get-go. Also, having a teambuilding activity before starting to work on the project can also boost work efficiency for the duration of the hackathon. This is also consistent with existing research, where projects hitting the ground running are more likely to be continued [3], [13].

The analysis also determined that delivering a functional prototype with actual development carried out positively affects project continuation. Demonstrating a working prototype within the existing ecosystem can be an indicator of the effort required to deliver the project and shows the behaviour of the project in the context of how actual end users would experience it. We saw that teams with high development power that could deliver live-like prototypes were more likely to have their project continued. These aspects could highlight project characteristics demonstrating conformance to other continuation factors like effort-to-gain ratio and fit to existing products.

We also saw that the target audience of the project as a factor of project continuation. Projects that helped customers and/or employees of the company were in favour of continuation compared to projects that were for example built for the general good of the customer segment. It is understandable that companies seek opportunities that have the biggest value for the business and can generate added revenue or that help alleviate load on existing workforce, helping to cut costs or investments. We have not seen this as an aspect affecting project continuation in corporate hackathons in previous research.

Finally, we identified a few corporate pointers affecting the outcome of hackathon projects. Projects that conformed to all the continuation criteria found in the study had their continuation efforts hampered due to either product alignment mismatches between the project and the team member's department or the departure of responsible stakeholders from the company. At the same time, teams that had the project aligned with their members' day-to-day work were able to continue and complete their projects considerably faster after the hackathon. A possible mitigation to the issue was found while responding to RQ2.

When answering RQ2, we found additional pointers supporting the answer to RQ1. Teams that changed their approach to the hackathon over the two editions in a way that the team's activities and project match aspects described for RQ1 had also better chances to have their project continued. From the team composition viewpoint, it could be seen that if a team in

the follow-up hackathon had members from the previous hackathon editions, the results are similar to the teams the members originated from, i.e. if most of the members were in high ranking teams in the earlier edition, they also received high ranks in the second hackathon edition. It was also found that organisational changes like clarifying procedures with likely stakeholders of the winning team's topic in advance hastened the process of implementing winning ideas. In our example, the implementation time for the promised projects was shortened by almost 60%, from about eleven months to about five months. Some of the changes also altered the attitude of hackathon participants towards attending future editions of the hackathon, like giving personal feedback to each hackathon team after the event and having the hackathon on weekdays, possibly improving the participation experience in general.

Concerning RQ3, no clear pattern was found between project continuation and team member's location. The first hackathon saw the continuation of two projects, both of which had their team located on a single site, while the second hackathon saw continuation of three projects, all of which had members split between two different hackathon sites. The location is not a key factor to the continuation of the teams since the teams had multiple aspects already indicating high probability of continuation, like preparation, functional prototype and project alignment with existing products. It should be noted though that having the multi-site team split between sites in a way that the team members are not alone on their respective locations may improve the hackathon participation experience for the otherwise isolated team members. Previous research suggests that hackathons requiring participant collocation have better likelihoods to foster innovation [9], improve relationships between team members and increases team performance [26], but this was found for hackathons organised in a scientific context and for participants attending hackathons in order to learn. The participants in the studied corporate hackathon were rather motivated by getting work done and career-related aspects. We also saw participants of the hackathon point out that the multi-site format attracted more participants since it was not required to travel to a remote office for attendance. This has also been noted in previous research [27].

## **7.1 Implications**

This study contributed to the research of corporate hackathons by looking at aspects affecting project continuation in two editions of a single corporate hackathon. It adds to the information of project and team aspects affecting project continuation and establishes new knowledge on how changes over two hackathon editions contribute to project continuation.

The research also explores how remote hackathon teams split across multiple hackathon sites compared to single-site hackathon teams. The thesis has numerous implications on future research and on companies organising internal hackathons.

### **7.1.1 On Research**

The thesis confirmed parts of previous research [3] concerning project sustainability in a corporate setting. We also found aspects that could be considered as an addition to the research. New pointers supporting findings of this thesis and previous research were identified by studying teams that participated at two editions of a single hackathon. This knowledge can be used as a basis for future longitudinal studies of corporate hackathons.

Additionally, the thesis established new knowledge on remote hackathons, which allow participation from multiple sites and formation of cross-location teams. It found that in the given context, the distributed nature of the event does not have clear effects on the continuation of hackathon projects.

The study raised a few new questions for additional research. How does the distribution of different roles in a hackathon team over multiple hackathon sites affect the team's performance? How to prepare the company or department roadmaps for the inclusion of hackathon projects? How much development power is required for a successful continuation of a hackathon project? What can be done to ensure role availability for all participating hackathon teams? How to provide similar hackathon experiences to all the participants across all the sites of a remote hackathon?

### **7.1.2 On Companies**

The study describes a successful implementation of an internal hackathon for corporate innovation, where hackathon projects are taken forward and released to generate value for the business. The study shows aspects possibly hindering project continuation in a corporate environment and options to mitigate the issues. For example, having pre-agreements with stakeholders before the hackathon eases the addition of projects into existing roadmaps, giving the stakeholders enough time to accommodate potential changes in their plans and resources by the time the hackathon project is mature enough for continuation. This may also avoid the entanglement of ideas to corporate changes like departures of employees.

The added angle of multi-site corporate hackathons and the resulting knowledge could encourage arrangement of hackathons within companies that are distributed between multiple

smaller offices. The experience from Pipedrive hackathons implies that there are enough grounds to warrant the arrangement of similar hackathons, despite some problems related to smallest of the hackathon sites.

This research could affect the organisation or participation of hackathons in Pipedrive. The knowledge will be shared with stakeholders or potential hackathon participants in the company, who may take decisions on how to proceed with the next hackathon based on that.

## **7.2 Limitations**

As part of this thesis, two editions of a single internal corporate hackathon held across multiple offices were studied. Given how the study was conducted, there are a few limitations. The distributed nature of Pipedrive's Back2Garage requires multiple observers across a multitude of international locations to get a better picture of specific activities and aspects conducted by the teams during the hackathon. We were able to conduct observations based on a single site and broadcasted pictures only and relied on interviews of remote participants to get the perspective of other sites. Also, some of the knowledge about the teams was limited to only the team leader and a single team member for the May hackathon. This can possibly add bias to the collected data.

Additionally, the interviews with the hackathon participants were conducted only once, three to six months after the hackathon, except for some participants of both hackathons. The timeframe is long enough to change the participant's perception of events and could result in loss of important aspects that could affect the findings of the study. The timeframe could be too short to draw definite conclusions on the continuation of some projects. In this study, a project was continued seven months after the hackathon it was initiated at. Given that the second round of interviews was approximately three months after the November hackathon, the knowledge on the eventual continuation of the November hackathon projects is likely to be inconclusive at that time.

It must be said that the findings of this study may also be applicable only in the context of the study setting. Studies in different companies and different types of hackathons may discover additional or contradicting factors. This could mean that companies considering organising multi-site hackathons should evaluate whether the existing work process and environment would enable reasonable organisation of such hackathons.

## 8 Conclusions

This study explored two editions of a multi-site internal corporate hackathon series and found aspects that could affect the continuation of projects initiated at the event. The study looked at the event from a longitudinal perspective with the added dimension of remote participation. Corporate hackathons have been explored to a far lesser extent than civic, student and other public hackathons, whilst there is even less research on hackathons from a longitudinal and multi-location perspective. The study sets a baseline for future research on similar events.

The observation of two events from a single corporate hackathon series, two surveys, 25 interviews and subsequent analysis led to the discovery of five project and four team aspects along with two company factors possibly affecting project continuation in a corporate hackathon setting. The discovered aspects were similar to findings from the limited existing research on the outcomes of corporate hackathons and added a few new perspectives to the knowledge. Additionally, the study saw some confirmation of the effect of the aspects within teams that had changed their approach after the first edition of the hackathon.

Additional findings include the effect of changes between two hackathon editions on project continuation. Dedicated feedback for the teams helped the participants understand the outcome of the hackathon from the judges' perspective and prior agreements with stakeholders on project continuation helped the stakeholders prepare for project implementation upon the hackathon's conclusion.

The thesis filled gaps in existing research on corporate hackathons and opened research on the new perspectives of similar events. Given the context of the current world, insights into such events could become ever more important in both research and organisations.

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## Appendix

### I. Glossary

Tribe	A development team within the Pipedrive Agile Framework [30].
Mission	A project to deliver a business goal within the Pipedrive Agile Framework [30].
PM	Product manager.
May hackathon	Pipedrive's May 2019 Back2Garage hackathon.
November hackathon	Pipedrive's November 2019 Back2Garage hackathon.
Exploration Lab	A 4-hour mini hackathon in Tartu tribe for generating and evaluating product ideas.
TestBox	An instance of the internal test environment for the web application of Pipedrive.
AI (Figure 3)	Special Award "Best AI Feature" of the May hackathon.
R4L (Figure 3)	Special Award "Product Ready to Launch" of the May hackathon.
PV (Figure 3)	Special Award "Audience Favourite" of the November hackathon.

## II. Survey

25/04/2020

November 2019 Back2Garage Research and Feedback Survey

# November 2019 Back2Garage Research and Feedback Survey

Hi! I'm Alar Leemet, Software Engineering Intern at Pipedrive and Software Engineering master's student at University of Tartu. As a part of my master's thesis I'm researching the what contributes to the continuation or corporate hackathon projects. I kindly ask you to reflect on the 3 days at the hackathon and answer the following questions.

The answers you provide will be used only for research purposes as part of my master's thesis and for making the next hackathon organized by Pipedrive better. Participation in this survey is entirely voluntary. If you later wish to have your data removed from the research, you can contact me ([alar.leemet@pipedrive.com](mailto:alar.leemet@pipedrive.com) or Slack) to have that data erased.

**\*Required**

1. I have read and understand the above information and I wish to participate in the research and continue with the survey. \*

*Mark only one oval.*

Yes

No

Before the Hackathon

Your reasons for participation and preparation

2. How many hackathons (both Pipedrive and external) have you participated in prior to this one? Enter a number: \*

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3. Please choose your position on the following statements. I came to the hackathon to... \*

Mark only one oval per row.

	1. Not at all	2. To some extent	3. To a moderate extent	4. To a large extent	5. Completely
Meet new people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bring value to the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advance my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learn or try something new	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get something done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Win prizes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leave my comfort zone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have free food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. If there are any other reasons why you wanted to participate in the hackathon, please list them here:

\_\_\_\_\_

5. Please choose your position on the following statements. I prepared for the hackathon by... \*

Mark only one oval per row.

	1. Not at all	2. To some extent	3. To a moderate extent	4. To a large extent	5. Completely
Doing research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussing the idea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning hackathon activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assembling the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setting up my development environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setting up communication channels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. If your preparation activities were not listed above, please state them here:

\_\_\_\_\_

7. What means of communication did you plan to use within the team during the hackathon?

Mark only one oval per row.

	1. Not at all	2. To some extent	3. To a moderate extent	4. To a large extent	5. Completely
Face-to-Face	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone calls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Slack	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emailing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video conference / call	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. If your preferred communication channels were not listed above, please add them here:

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9. Any other thoughts or expectations before the hackathon?

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During the Hackathon

What and how did you do in the hackathon

10. Please provide the name of your team. \*

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11. Are you the owner of the idea (or idea advocate if the pitcher/author is not a team member)? \*

Mark only one oval.

Yes Skip to question 21

No Skip to question 26

12. What was the goal of your project? \*

Mark only one oval per row.

	1. Not at all	2. To a small extent	3. To a moderate extent	4. To a large extent	5. Completely
Build a new feature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extend an existing feature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Redesign a feature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Build a tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Branding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. If your project's goals were not listed above, please add them here:

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14. What means did you use for sharing materials within the team during the hackathon?

Mark only one oval per row.

	1. Never	2. Seldom	3. Sometimes	4. Often	5. Always
Repositories (Github etc)	<input type="radio"/>				
Hardware (USB stick, Bluetooth etc)	<input type="radio"/>				
Cloud solutions (Google Drive etc)	<input type="radio"/>				
Slack	<input type="radio"/>				
Emails	<input type="radio"/>				

15. If the means you used to share materials were not listed above, please add them here:

\_\_\_\_\_

16. How did you pick your tasks during the hackathon? \*

Mark only one oval per row.

	1. Not at all	2. To a small extent	3. To a moderate extent	4. To a large extent	5. Completely
Based on my Interest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on my Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on my Preparation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assigned by team lead	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Randomly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. If you picked your tasks based on aspects not listed above, please add them here:

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18. Did you talk to the other teams on the following topics?

Mark only one oval per row.

	1. Never	2. Seldom	3. Sometimes	4. Often	5. Always
Project idea	<input type="radio"/>				
Technical solutions/approaches	<input type="radio"/>				
Problems	<input type="radio"/>				
Personal matters	<input type="radio"/>				

19. If you talked about topics not listed above, please add them here:

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20. Would you describe your group's work process as more: \*

Mark only one oval per row.

	1	2	3	4	5
Inefficient ... Efficcient	<input type="radio"/>				
Uncoordinated ... Coordinated	<input type="radio"/>				
Unfair ... Fair	<input type="radio"/>				
Confusing ... Easy to Understand	<input type="radio"/>				

Skip to question 26

Idea Owner Opinion

Questions more relevant to the idea owner

21. Please describe briefly what was the project of your team. \*

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22. What has been done to find an application for the project after the hackathon? \*

Mark only one oval per row.

	1. Not at all	2. To a small extent	3. To a moderate extent	4. To a large extent	5. Completely
Project idea chosen based on existing pains	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project made similar to something planned to be in a mission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Looked for interested parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project made general enough for multiple applications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. If any activities done were not listed above, please add them here:

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24. If your team has additional activities planned for promoting the project after the hackathon, please add them here:

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25. Any thoughts on how the idea was received by others?

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After the Hackathon

Reflect on how the hackathon turned out for you

26. How do you feel about the outcome of your hackathon project: \*

Mark only one oval per row.

	1	2	3	4	5
Very dissatisfied ... Very satisfied	<input type="radio"/>				
Very displeased ... Very pleased	<input type="radio"/>				
Very frustrated ... Very contented	<input type="radio"/>				
Absolutely terrible ... Absolutely delighted	<input type="radio"/>				

27. Please indicate your level of agreement with the statements regarding your intentions on project continuation: \*

Mark only one oval per row.

	1. Strongly disagree	2. Somewhat disagree	3. Neutral	4. Somewhat agree	5. Strongly agree
I intend to continue working on the project after the hackathon rather than discontinue.	<input type="radio"/>				
I intend to continue working on the hackathon project rather than work on other projects after the hackathon.	<input type="radio"/>				
If I could, I would discontinue working on the project after the hackathon.	<input type="radio"/>				

28. Please indicate your level of agreement with the statements. My project... \*

Mark only one oval per row.

	1. Strongly disagree	2. Somewhat disagree	3. Neutral	4. Somewhat agree	5. Strongly agree
Improves the product's performance.	<input type="radio"/>				
Increases the product's productivity.	<input type="radio"/>				
Enhances the product's effectiveness.	<input type="radio"/>				
Is generally useful for the product.	<input type="radio"/>				

29. Please indicate your level of agreement with the statements regarding your expectations towards your project: \*

Mark only one oval per row.

	1. Strongly disagree	2. Somewhat disagree	3. Neutral	4. Somewhat agree	5. Strongly agree
My experience with participating in the project was better than what I expected.	<input type="radio"/>				
Overall, most of my expectations from participating in the project were confirmed.	<input type="radio"/>				

30. How did the cross-site format of the hackathon work for you?

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31. If you participated in the May hackathon, how did the November hackathon compare to the previous edition?

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32. Any other thoughts on the hackathon?

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You and Pipedrive

33. Your position in Pipedrive: \*

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34. Your tribe:

*Mark only one oval.*

- Core
- Cosmos
- Data
- DevOps Tooling
- Fundamentals
- Gravity
- Lead
- Marketing-Engineering
- Mobile
- Tagus
- Tartu

35. Not in a tribe? Enter your Pipedrive team here:

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36. Office from where you participated in the hackathon: \*

*Mark only one oval.*

- Florida
- Lisbon
- London
- New York
- Prague
- Tallinn
- Tartu

Demographics

As a final note, some general data about yourself.

37. Gender \*

*Mark only one oval.*

- Female
- Male
- Prefer not to say
- Other: \_\_\_\_\_

38. Age \*

*Mark only one oval.*

- 18 – 24
- 25 – 34
- 35 – 44
- 45 – 54
- 55 – 64
- 65+
- Prefer not to say

39. If you wish to learn about the results of the survey and further contribute to the research, leave your email here.

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### III. Sample May Hackathon Interview Guide

Thank you for participating in this interview. With this interview, **we try to understand the reasons of continuation or discontinuation of your Back2Garage hackathon project** as well as your own intentions towards continuing with the project.

1. **Before (Warmup):** Why did you decide to participate in the Hackathon and work on this project?
  - a. **Preparation:** How did you prepare for the event?
    - i. Should you change anything in your preparation approach?
  - b. **Team:** How did you find your team?
2. **Results:** How do you feel about the results of the hackathon?
  - a. **Personal:** Did you achieve your personal goals?
    - i. Which goals?
    - ii. How would you assess your performance?
  - b. **Project:** Did the project achieve its goals?
    - i. What could have been done differently?
  - c. **Team:** How did the team work together?
    - i. Did everyone contribute equally? **[Probe]**
    - ii. What impact did you have on the project?
    - iii. **SURVEY-SPECIFIC** You gave an average score for you team's efficiency. What are the reasons for this?
  - d. **Feedback:** What feedback did you receive on the project?
    - i. How important is this feedback to you?
    - ii. **SURVEY-SPECIFIC** It appears that you did not communicate with other teams. Why?
3. **Project continuation:** Did you continue working on the project after the hackathon?
  - a. **Yes**
    - i. Why?
    - ii. At what stage are you with your project?
    - iii. Did you continue working with the same team? Changes?
  - b. **No**
    - i. Why not?
    - ii. What hindered you from continuing with the project?
    - iii. What could have helped you continue with the project?
4. **Next hackathon:** Do you plan to attend the next hackathon coming up at Nov 20-22?
  - a. **Yes**
    - i. Will you participate with the same team? Why (not)?
    - ii. Do you plan to work on the same project? Why (not)?
  - b. **No**
    - i. Why?
    - ii. What would make you reconsider?
5. **Global format:** What do you think about the global format of the hackathon?
  - a. Should it continue like this?
  - b. What could be improved? Changed?

#### [WRAPPING UP]

6. **Organisation:** How was the hackathon organised in your opinion?
  - a. Was the organisation of the hackathon clear to you?
  - b. What do you think about the organisers' performance?
  - c. **REPEAT PARTICIPANT:** How did this hackathon fare compared to previous years?
7. **Free Microphone:** If you have anything to add to the topics we covered.

Thank you very much!

## IV. Sample November Hackathon Interview Guide

Thank you for participating in this interview. With this interview, **we try to understand the reasons for the continuation or discontinuation of your Back2Garage hackathon project** as well as your own intentions towards continuing with the project.

1. **Before (Warmup):** Why did you decide to participate in the Hackathon and work on this project?
  - a. **Preparation:** How did you prepare for the event?
    - i. Should you change anything in your preparation approach?
  - b. **Team:** How did you select/assemble your team?
  - c. **SECOND INTERVIEW:** How did you approach this hackathon compared to the May edition?
2. **Results:** How do you feel about the team's results in terms of the hackathon?
  - a. **Personal:** What were your personal goals with the hackathon? Did you achieve them?
    - i. How would you assess your performance?
  - b. **Project:** What were the main goals of the project? Did you achieve them?
    - i. What could have been done differently?
  - c. **Teamwork:** How did the team work together?
    - i. Did everyone contribute equally? **[Probe]**
    - ii. What impact did you have on the project? What was your role in the team?
    - iii. **SECOND INTERVIEW:** How does the November hackathon team compare to the May hackathon team? Composition? Teamwork?
  - d. **Feedback:** Did you receive any feedback?
    - i. What impact did that feedback have on your project? Was the feedback meaningful/useful?
    - ii. What type of feedback would you have wanted to receive?
    - iii. **SECOND INTERVIEW:** How does the received feedback differ compared to the May edition of the hackathon?
3. **Project continuation:** Did you continue working on the project after the hackathon?
  - a. **Yes:** Why?
    - i. At what stage are you with your project?
    - ii. Did you continue working with the same team? Changes?
  - b. **No:** Why not?
    - i. What hindered you from continuing with the project?
    - ii. What could have helped you continue with the project?
    - iii. How did your everyday work affect your intentions on continuing with the project?
4. **Next hackathon:** Do you plan to attend future Pipedrive hackathons?
  - a. **Yes**
    - i. Would you participate with the same team? Why (not)?
    - ii. Would you participate with the same project? Why (not)?
  - b. **No**
    - i. Why?
    - ii. What would make you reconsider?
5. **Global format:** What do you think about the global format of the hackathon?
  - a. Should it continue like this?
  - b. What could be improved? Changed?
  - c. How did cooperating with people from other offices work for you?

### [WRAPPING UP]

6. **Organisation:** How was the hackathon organised in your opinion?
  - a. What do you think about the organisers' performance?
  - b. What do you think about the organizer's post-hackathon feedback session?
  - c. **REPEAT PARTICIPANT:** How did this hackathon fare compared to previous years?
7. **Free Microphone:** If you have anything to add to the topics we covered.

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