

From Jam to Start-up

A framework to support entrepreneurship at game jams and production oriented workshops

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ABSTRACT

Production workshops such as game jams are popular ways of letting participants acquire hands-on knowledge and experience in producing an artifact or game prototype in a very limited timespan. Some of the games made at these production workshops are later published with great success, and create the foundation for new start-up companies. There are, however, an even larger group of very creative and innovative games and artifacts with great potential that go unpublished. This potentially leads to a loss of entrepreneurial opportunities and ultimately the jobs and careers such games could have fostered. The authors of this paper have founded, co-organized, and participated in numerous production workshops where great productions were presented as functional prototypes only to be discontinued at the end of the game jam. There is still a lack of a comprehensive framework that concretely describes the activities and conditions at production workshops and game jams, which can spark the interest of becoming an entrepreneur. In this study, we explore how intense development and production-oriented workshops may impact entrepreneurial intent and the subsequent conversion into entrepreneurial behavior, with the aim of proposing an entrepreneurial framework of activities and conditions at which entrepreneurial intent can thrive and grow within the confines of such workshops. An exploratory research case study approach was employed, focusing on entrepreneurial potential at game jams. An online survey with a sample consisting of 56 participants from several game jams was performed to investigate the mindset behind the numerous developers never pursu-

ing their entrepreneurial opportunity. Furthermore, observations and semi-structured interviews were conducted with game company owners in order to explore the factors and mindset of those that pursued the entrepreneurial path, and to investigate findings of the survey in more depth. The survey and interviews concentrated on the further development process of the game jam projects as entrepreneurial kick-offs, and the exploration focused particularly on identifying activities and conditions at game jams which may aid in heightening the entrepreneurial intent. Moreover, the study highlights barriers for publishing game jam games.

Categories and Subject Descriptors

K.8.0 [Personal Computing]: General—*Games*
; K.3.2 [Computer and Information Science Education]: *Computer science education*

General Terms

Design, Experimentation, Human Factors, Documentation

Keywords

Community, Game Jam, Entrepreneurship, Best Practice, Barriers for Publishing Games

1. INTRODUCTION

Production workshops such as game jams are a powerful mixture of untamed creativity, focused determination and collaborative teamwork. These engaging activities aiming at producing one game or another artifact in just 48 hours with a strict deadline spark a very energetic experience among the participating teams. The result is often games or artifacts matching the quality of many of the alpha or beta versions of games published by smaller game development studios. Unfortunately, even some of the very best game jam productions are never tried against the market as described in this paper. We propose the idea that the energy in such events can be used to fuel the entrepreneurial intent among participants. Game jams are gaining popularity around the globe as more and more game jams are happening with each

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passing year. Research in the field is beginning to emerge with investigations into participant motivations and learning [7], [6] while other investigations have focused on how to conduct game jams [2], prototyping during jams [4], as well as learning and creativity during the game development [5]. It seems that only limited investigations into how game jams may influence the entrepreneurial intent have been published (e.g [3]). Prior research [3] focused on measuring game jam participants' individual entrepreneurial intent specifically, as described in [9], through the use of the Individual Entrepreneurial Intent Scale (IEIS). In that study, it was not possible to observe significant differences between pre- and post-workshop IEIS scores.

The conditions and activities required at such workshops, to support the motivation of becoming a start-up company founder are therefore largely unknown. This paper will use game jams as a case study to identify the best practice conditions and activities because this kind of activity has all the inherent characteristics of a production workshop and as such, the findings and results of this study might be applicable beyond the development scope of game jams. In order to gain further insight in the influence of game jams on entrepreneurship and publishing of game jam games, we investigate the activities and conditions which motivate for entrepreneurship, and which challenges participants face when they want to publish game jam games.

Exploring and describing which game jam conditions and activities may motivate for entrepreneurship is a valuable area of research as the findings may be used to plan and organize future events. In this study, we explore how game jams can support entrepreneurship and identify which barriers, if any, may hinder the publication of game jam games. In order to gain as much knowledge about the phenomenon as possible an exploratory approach [8] is used by combining qualitative and quantitative methods utilizing both online surveys and interviews. The study will contribute to the field with further knowledge about what conditions and activities may support entrepreneurship and which challenges game jam games have before they can be published. The intention is to propose a framework which may assist organizers to prepare workshops with the added benefit of fertilizing the entrepreneurial potential among participants. Our findings reveal that a range of activities and conditions at game jams may aid participants in becoming more motivated for entrepreneurship. Also a range of barriers to publish game jam games were identified.

The paper describes the methods applied to acquire and analyze data. Furthermore the results from the survey and the interviews are presented. These findings are described as a best practice framework which focuses on how game jams can be used as a catalyst for participants to become entrepreneurs. Finally, the results and limitations are discussed and concluded upon before areas for future work and research is discussed.

2. METHODS

In this study, an exploratory research case study approach [8] was employed in order to investigate the fairly novel field in more depth. General observations and experiences made during a series of five different game jams covering a total of 1100 participants, which the authors attended and/or co-organized, in tandem with an online survey and expert in-

terviews were used to collect data between 2013 and 2015.

2.1 Observations

For each game jam, participants were monitored for the full duration of the workshop, and observations relevant to the exploration of the field were noted at key moments, such as group formations and social dynamics throughout. The observations were followed up with talks and interviews with game jam participants after the events to investigate if their games or teams had developed further. The observations resulted in a tentative list of conditions and activities at game jams which may inspire for entrepreneurial intent among game jammers.

2.2 Online Survey

Based on the findings from the observations, an online survey was prepared. The survey was intended to verify the various conditions and activities identified through the observations as well as identifying other factors which were not found in the initial observations. In order to identify as many factors as possible, open-ended questions were used as the major part of the questionnaire. However, close-ended questions were also included for demographic purposes and further investigations for example when investigating the barriers of publishing game jam games.

2.3 Interviews

In our case study, we have focused on interviewing small and medium sized companies (SMEs), as they are fairly typical of the overall picture of the Nordic Games industry. [1]. We used a semi-structured interview approach with recorded and transcribed Skype calls.

The mixed methods utilized in this study combined with previous research assisted us in triangulating various data sources and qualitative (observations, survey and interviews) and quantitative (surveys) methods in order to develop the best practice framework and to identify barriers for publication of game jam games.

3. RESULTS AND FINDINGS

In the following sub-chapters we will present the results and findings concerned with the observations, online survey and interviews.

3.1 Observations

By organizing game jams it was possible to follow the development closer, and have quick and easy access to ask attendees further questions as time progressed. Overall the observations yielded scattered, somewhat anecdotal data. However after attending and organizing the five game jams over between 2013 and 2014 certain patterns emerged. Most noteworthy among these were;

1. Team dynamics are essential - a good team consists of a variety of skill sets (programming, art, design). Without a good distribution of skills the teams can easily get stuck or hit bottlenecks during production.
2. Good experiences resonate and create ripples - teams that walk away with a sense of accomplishment are often sticking together for future events - which also

results in a stronger professional network going forward.

- Attendees are expanding networks - participants at game jams are from a wide variety of backgrounds and skill-levels (professionals, students, novices), but a majority of participants at game jams also focus on networking in addition to game development.
- Safe space for experimentation - by not setting any expectations for profitability or future development requirements, participants learn to scope and brainstorm - and even when the end results are not great participants still walk away with a bigger network, and valuable lessons that can be applied when developing games in the future.

Based on the observations and experience from organizing a number of game jams, a tentative list of activities and conditions which we believed had the potential to support entrepreneurial intent was developed. The following list sum up the *activities*, which we believe are worth investigating further:

- Workshops (post- and pre-jam workshops that arm participants with knowledge or technical skills that they didn't have previously)
- Knowledge that help (in form of experts or post-jam entrepreneurial workshops) will be available after the jam
- Access to knowledge about how to become an entrepreneur, found a start-up
- Inspirational talks and keynotes from other developers that "made it"
- Access to knowledge about PR and Marketing
- Access to business minded people
- Guidance for seeking funding
- Wish to publish the game

The *conditions* are summed up in the following list:

- Determination and motivation to work hard and focused during the game jam
- The experience of finishing a working game before deadline
- Being aware of the deadline, focusing on prioritizing tasks
- Receiving positive feedback of your game at a jam
- Being willing to collaborate closely within the team
- High level of technical skill between team-members
- Being open to learning new tools and techniques
- No limits on creativity when making the game
- Being able to focus on the core of the idea
- Winning, or being nominated for a prize/award
- Financial aid to develop the game further
- A drive to publish the game after the jam
- Finding/building the right team
- Receiving prize money

We wanted to investigate how frequent the above mentioned factors were in game jam participants answers and to explore

if the lists covered everything, and in order to do this, we conducted a survey with a range of open questions intended to explore game jam participants own ideas on how to boost entrepreneurial intent and which barriers there are for publishing game jam games.

3.2 Online Survey

The online survey resulted in a wealth of information from 56 respondents. In the following we will give an overview of the data collected and comment on interesting results. Participants were recruited through convenience sampling, where emails to former participants of the five game jams were invited to participate in the survey.

3.2.1 Participants

The total number of respondents were 56 and out of these, 51 were males (91%) and 5 were females (9%) answered the questionnaire. The average age was 25 years, spanning from 18 years to 45 years. The respondents' highest level of education also varied as can be seen in figure 1.

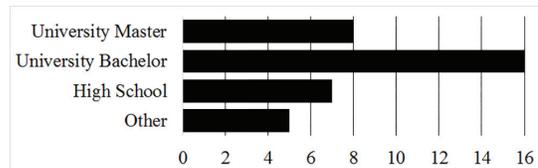


Figure 1: Highest Education

Most of the respondents were students (48%), while 21.5% were working at a company, 7% were between jobs, 14% were self employed, 5.5% were freelancers and 4% stated "other" (see Figure 2) Out of the five respondents who answered "other", one was self-taught, two were college graduates with specializations in classical drawing and 3D modeling respectively and finally two held AP Degrees in Programming and Multimedia respectively.

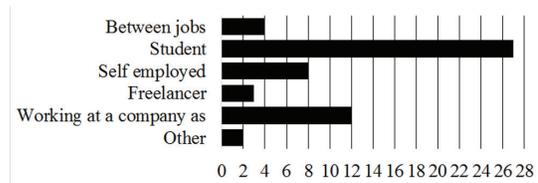


Figure 2: Current position

Of the two respondents, who answered "other", one was in apprenticeship, while one was both studying and working. Respondents have participated in a variety of major game jams during the last years (Figure 3). The respondents, who stated "other" replied with a variety of other game jams.

On average respondents have participated in 8 game jams and Figure 4 show the frequency of attended game jams.

In addition to the above demographics about the participants the survey revealed that 46% of respondents run their own game company, while 27% are working on a professional game production in a company. 77% wish to start their own company and 39% have published a game with an average of 1.5 games. 38% of those that published a game state

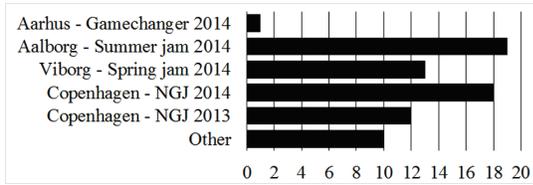


Figure 3: Examples of game jams attended

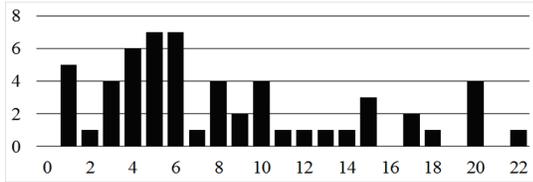


Figure 4: Game jam participation

that their published game was based on an idea conceived at a game jam.

3.2.2 Skills, experience and publishing jam games

Respondents stated that they have been involved in game development for an average of 5 years (range 0-20 years) (Figure 5) and that they had a varied level of skills (Figure 6). Figure 6 below might hold some of the answer to the entrepreneurial restraint among the game jam participants.

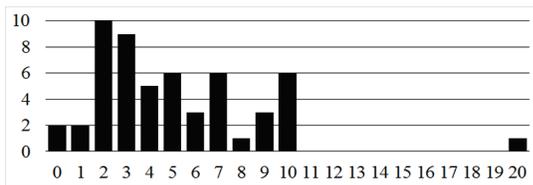


Figure 5: Years of involvement in game development (Range 0-20 years)

It is striking that among a collection of more than 50 enthusiastic game developers, where some are professional software developers or master students in game development, none of them view themselves as experts, and only a single participant dare to rate him/her self as almost an expert. If all or most participants believe that they do not have the skills to compete on the market, this might have a strong influential effect on their final decision for the future of their productions.

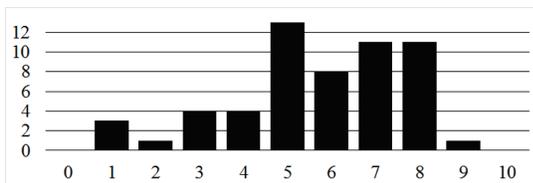


Figure 6: Self evaluated skill level in game development (0=none, 10=expert)

Figure 7 below shows the challenge of publishing game jam games. By analyzing the data from the survey and comparing each participant's result from the question: "Have you

ever published a game?" with the same participant's answer to the question: "How 'complete' was your most finished game jam game at the end of the jam?" we can compare the answers from the participants that have never published a game (white bars) with the participants that have published at least one game (black bars).

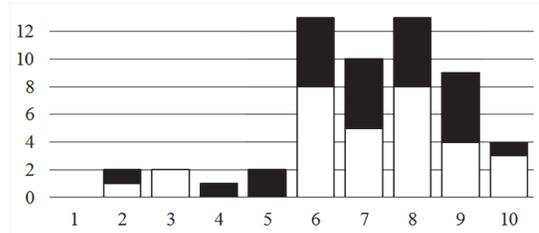


Figure 7: Perceived completeness of most complete Game Jam production. (1- Only concept, 10 - Publishable)

It becomes clear that there are numerous very complete game productions that have never been tested on the market. The figure also shows that it is not the 'completeness' of the game jam games that is the determining factor of whether or not a team take their production to market. The determining factor must therefore be found elsewhere.

3.2.3 Entrepreneurial intent

Since there was lack of a significant difference between the pre- and postjam respondents concerning the IEIS scores from the earlier study [3], we chose to use a simpler method than the IEIS method in the current study, in order to investigate respondents' entrepreneurial intent in more depth. Since we did not have access to pre- and post data from recent events, we decided to ask the following two questions: "Pick one of the game jams you have attended - What was your level of motivation of becoming an entrepreneur BEFORE that game jam?" and "What was your level of motivation of becoming an entrepreneur AFTER that game jam?". Respondents furthermore stated if they had a higher, lower or the same level of EI after that game jam". The results show that 21 respondents out of 56 (38%) had a higher entrepreneurial intent after a game jam.

To explore what the respondents, who had a higher entrepreneurial intent after the game jam, saw as reasons for this, the following question was added to the questionnaire: "If the level of motivation changed, which game jam was it? And which activities and experiences from that game jam made your level of motivation change?" Respondents answered that it was feeling the "game jam high" and accomplishment. Some explained that it was the support from a jury member or other participants who gave constructive feedback and told them that "they could see this game being published on, say, the App Store; it just needs more levels and a little bit of polish". Also winning prizes and getting attention was a motivator for some while others stated that meeting many people at the jam who already had published a game made them realize that they could also do that themselves. Talks, meeting other people, feedback from real developers and experts were other factors. The following quotes from respondents expand on some of these reasons in more detail:

"Having an idea alone isn't always enough, but having the people to help you is so much more important."

"The fact that people become creative and innovative together really creates a big motivation for me to taking a step further."

"It was the social environment of positivity and creativity, and how well constructed the various activities were, that caused the change."

"The fantasy that the day job at my game developing company would be like one never-ending game jam (especially the perspective of experiencing the game jam 'atmosphere' every day)."

3.2.4 Activities and conditions

The quotes and answers above concerned with which experiences made participants more interested in becoming an entrepreneur give some background information on how to support entrepreneurial intent (EI). However, in order to explore respondents' ideas on how game jams may heighten their EI further, the following open-ended question was included in the online survey: "Which activities and conditions at a game jam do you think could boost your entrepreneurial intent?".

Respondents answered this open-ended question with a wide range of activities and conditions. On the next page of the questionnaire, respondents were then asked to categorize their own answers based on a list of checkboxes with predefined activities and conditions. This procedure was used in order not to bias and misinterpret their answers. The predefined topics on the list were based on the observations and experiences during various former game jams which the authors organized (described in the chapter 2 and 2.1).

3.2.5 Activities

Table 1 shows the activities and the frequency of how many of each of those activities was mentioned by the respondents.

Table 1: Activities mentioned in own answer.
Number of respondents (#), percentage of respondents who chose this activity (%).
Rank ordered by highest frequency. (n=56)

	#	%
Knowledge that help (in form of experts or post-jam entrepreneurial workshops) will be available after the jam	34	61%
Inspirational talks/keynotes from other developers that "made it"	34	61%
Access to knowledge about how to become an entrepreneur/found a start-up	32	57%
Access to business minded people	29	52%
Guidance for seeking funding	27	48%
Access to knowledge about PR and Marketing	25	45%
Workshops (post/pre workshops that arm participants with knowledge or technical skills that they didn't have previously)	25	45%
Wish to publish the game	23	41%
Other	2	4%

3.2.6 Conditions

Table 2 shows the conditions and the frequency of how many of each of those conditions were mentioned by the respondents. In general, the results indicate that the predefined factors which may heighten the IE were covering the answers quite comprehensively and that the tentative list of predetermined factors was a good starting point. It is also suggested that activities concerned with events including experts in the field rank higher than workshops concerning tools. The most important conditions are concerned with teamwork, positive feedback and finishing the game - with awards and prize money ranking lower. However, in order to identify further activities and conditions, we also explored if some factors were missing through the survey in the following data collection.

Table 2: Conditions mentioned in own answer.
Number of respondents (#), percentage of respondents who chose this activity (%).
Rank ordered by highest frequency. (n=56)

	#	%
Being willing to collaborate closely with team	31	55%
Receiving positive feedback of your game at a jam	30	54%
Finding/building the right team	29	52%
The experience of finishing a working game before deadline	25	45%
A drive to publish the game after the jam	23	41%
Determination and motivation to work hard and focused during the gamejam	22	39%
Being aware of the deadline, focusing on prioritizing tasks	19	34%
No limits on creativity when making the game	17	30%
Financial aid to develop the game further	16	29%
Being able to focus on the core of the idea	16	29%
Being open to learning new tools and techniques	15	27%
Winning, or being nominated for, an award	14	25%
High level of technical skill between team	11	20%
Receiving prize money	2	4%
Other	3	5%

3.2.7 Additional Activities and Conditions

In order to take into account activities and conditions which were not mentioned on the predefined lists, the five answers in "other" where an additional question was included in the survey concerned with other possibilities "Additional ideas for conditions and activities which could boost your own entrepreneurial motivation at a game jam, not mentioned above, or in your first answer?" In response to this question other new ideas were stated, while other answers added more detail to the activities and conditions already in the tentative list.

Additional Activities:

1. Helping developers and producers meet up after the jam (e.g speed dating manner)
2. "How-to-start-up-a-company" talks - good/bad experiences from already settled developers.
3. Online meetups for groups and individuals where you after the game jam can share experiences, fixes and show off.

jams are viewed as a relatively cheap investment compared to the potential return on investment it provides, which all interviewed companies mentioned. When asked what people mostly took away from game jams, a larger network came up repeatedly. **DAG**: *"An expanded network is a huge part of what you gain from game jams"*.

3.3.2 The importance of a great team

The structure and members of your team is vital to ensuring a high chance of success and survival of your project long term. A team comprised of both students and professionals have different daily routines, which can make further collaboration after the game jam difficult or impossible. One suggestion to solve this was through controlling the group formation process more directly, as proposed by **FUC**: *"You could control the matchmaking process further, to avoid teams with 6 animators and 1 programmer. [...] So splitting [people] up from the start, and say, we need a producer, one 2D/3D guy, and some programmers - and putting them together [in a team]."*

There seems to be a great deal of value put in the teams, going so far to actually categorize as the most important component for success at a game jam. **SUH**: *"Essentially the team is what makes or breaks games. You can have an average concept and a stellar team, then you're more likely to make a good game, than a bad team with a great concept."* **DAG**: *"There has to be matching aspirations, skill sets, and a good environment to socialize."*

3.3.3 Activities

Facilitating team construction

In keeping with the emphasis on the team as a key component for success, it was suggested to actively facilitate the creation of teams to ensure a good mix of skill sets and personalities. **FUC** went on to describe that they often saw prototypes getting stuck on the road to further development due to a mismatch in the goals within teams; some might have full-time jobs and be content with just keeping it as a prototype, while students might be more inclined to take it further. And so, due to a mismatch in aspirations, a prototype can be stuck before going further. This issue was echoed by **DAG**: *"It is two very different things to consider for someone who is 16 and in school, and someone who is on the verge of creating a startup"*

Evaluation of market potential - during and after

As a key activity during the game jam, **FUC** proposed having an experienced industry board that could evaluate the market potential of game pitches, and propose changes that might help it closer to having a future as a commercial product. **FUC**: *"Have teams pitch their ideas prior to development, and receive feedback on whether it could be a sustainable commercial product going forward. [...] This could also be used as a tool for guiding the design process."* This idea was also suggested, although as a post-jam activity by **MEG**, and indirectly verified as a useful tool by **DAG** who created a workshop accidentally after a jam, where he meet up with friends in the field of business and marketing who helped point out areas that could make the game earn money. *"I couldn't really see how I could earn money on the game. [...] But afterwards I was motivated to work on the project because I could see it make sense, business wise."*

TUS elaborated further on this: *"If you're aiming towards*

creating a [commercial] product at a later stage, you'll have to know about marketing [...] something like [mentorship support program] where you can get in touch with mentors and consultants that can help you get further would be great."

In terms of the most defining barrier for taking jam projects further in the questionnaire (see Figure 8), was keeping the team together or finding the right team. This result, in connection with the interviewees emphasis on gathering the right team, makes it reasonable to suggest that gathering and sustaining a team as the primary barrier and condition for taking the step towards establishing a company. The interest in evaluation of market potential and post-jam workshops as suggested by four of the interviewees - **DAG**, **TUS**, **SUH** and **FUC**, were also repeated by the questionnaire respondents as shown in Table 1, where all three of the highest ranked activities can be categorized as expert- and mentor guidance. Finally, by comparing Figure 7 (Perceived completeness of most complete Game Jam production) with the responses from **FUC** and **DAG** highlighting the importance of alignment and common aspirations within the teams, suggests that the future development of a prototype is more reliant on teams sticking together, than how complete their games become.

4. THE BEST PRACTICE FRAMEWORK

Based on the results from the online survey, observations and interviews, we propose the following best practice framework of activities and conditions at game jams which may be used to support entrepreneurship and team sustainability. The factors in Tables 4 (activities) and 5 (conditions) are ranked based on the frequency mentioned among respondents - they are ranked in descending order based on frequency of mentions, with the most mentions first. Elements in *italics* signify additional activities which were proposed by participants and not in the original tentative lists.

Table 4: Activities which may heighten Entrepreneurial Intent

Before
Workshops (post/pre-jam workshops to acquire new knowledge and/or technical skills). <i>Networking and mingling before the event.</i>
During
Knowledge that there will be help (in form of experts or post-jam entrepreneurial workshops) after the jam. Inspirational talks/keynotes from other developers that "made it". <i>Networking and mingling during the event.</i>
After
Access to knowledge about how to become an entrepreneur/found a start-up. Access to business minded people. Guidance for seeking funding, PR and Marketing. Workshops (post/pre-jam workshops to acquire new knowledge and/or technical skills) Wish to publish the game. <i>Helping developers and producers meet up after the jam</i> <i>"How-to-startup" talks - learn from established developers.</i> <i>Online meetups for groups and individuals where you after the game jam can share experiences, fixes and show off.</i> <i>Networking and mingling after the event.</i> <i>Post-jam evaluation and feedback on the game.</i>

The best practice framework is primarily intended to be used

Table 5: Conditions which may heighten Entrepreneurial Intent

Before
Randomized teams to support innovation and avoid predetermined game concepts. A monetary prize, for the winning game(s), which isn't rewarded until the game is published. <i>Theme should be properly thought out with a lot of potential and broad appeal. (including business possibilities)</i>
During
Being willing to collaborate closely within the team. Receiving positive feedback of your game at a jam. Finding/building the right team. The experience of finishing a working game before deadline. Determination and motivation to work hard and focused. Being aware of the deadline, focusing on prioritizing tasks. No limits on creativity when making the game. Being able to focus on the core of the idea. Being open to learning new tools and techniques. Winning, or being nominated for, an award. High level of technical skill between team-members. Receiving prize money. <i>Extra (optional) challenges during the game jam, which make teams adapt to new demands.</i> <i>Support mutually cherished topics among team members to strengthen the social connection.</i>
After
A drive to publish the game after the jam Financial aid to develop the game further <i>Professional developers and producers should evaluate the business potential of a game. (E.g. Introduce a prize for "most likely to make money" to reward developers who design the game around the idea that it needs to make money)</i>

for planning game jams, however other production oriented workshops may also benefit from using the activities and conditions in the preparation for events.

5. CONCLUSION

The findings in this study support many of our initial observations concerned with how a range of activities and conditions could motivate more game jammers to become founders of new companies. However, we are still operating with a limited data set in the survey of 56 participants and suggested areas of interest for further research could thus include:

1. Ranking all identified activities, conditions and barriers with a larger sample.
2. Identifying correlations between participants skills and experience and entrepreneurship across different game jams with more participants.
3. Comparing participants' entrepreneurial intent before and after a game jams with and without the suggested activities and conditions.
4. Measuring the distribution of skill-sets within teams and if it has an impact on the experience of success for participants.
5. Applying the framework developed within non game-oriented production environments

The outcome of this study is a best practice framework which includes a range of activities and conditions which may heighten the entrepreneurial intent among participants

at production oriented workshops like game jams. We hope that the framework will be used in a variety of workshops and it was already applied at the world's largest single-site game jam, Nordic Game Jam 2015 in Copenhagen and will be used at other upcoming game jams in Denmark and there we aim at gathering further data on game jams and entrepreneurship, and iteratively improving on the existing base framework as more data is collected.

By keeping exploring this field, we hope to see more exciting and original game prototypes make it to a larger audience while acquiring further insight to the challenging quest which may pave the way from jam to start-up.

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