Game Development Accelerator – Initial Design and Research Approach

Antero Järvi, Tuomas Mäkilä, Sami Hyrynsalmi

University of Turku, Turku FI-20014, Finland
{antero.jarvi, tuomas.makila, sthyry}@utu.fi

Abstract. Start-ups and game development are trending topics. There are established methods for both, but these are not suitable as such for starting game companies developing their first commercial game product. In this paper, a design for a series of accelerator programs, targeted for the first-time game developers, and an accompanying research approach are discussed. The goal of the approach is to combine quality research with relevant, imminent results, which help game start-ups to raise the success probability and lower the investors' risks. Initial ideas of the accelerator design are presented to activate discussion with other researchers and practitioners planning or doing similar experiments.

Keywords: game business, lean start-up, start-up accelerator, game development

1 Introduction

During the last few years, entrepreneurship has become a mainstream trend and there are now start-up accelerators not only in traditional start-up hubs like Silicon Valley but in almost all major university cities around the world. Similarly, game development as a hobby and as a career choice is gaining interest among students with background from computer science to art and more humanistic disciplines.

As mentioned, there is a wide variety of accelerator programs like Y Combinator[1] and Seedcamp[2] to name some of the most well-known ones. However, only a few accelerators targeted to starting game developers exist, although the needs of a starting game company differ from the needs of more traditional start-ups. For example, monetization, marketing, and distribution – as well as the product life-cycle – all have specific characteristics in the game industry. A game start-up usually targets to a single, well-segmented, intangible *game product* whereas traditional start-ups nowadays concentrate on service concepts or wider product lines.

This paper describes our research approach and initial ideas on a game-specific accelerator program. In this paper, we raise a discussion on the following topics:

[1] http://ycombinator.com/
[2] http://www.seedcamp.com/

1. Can first-time commercial game developers benefit from a game-specific start-up accelerator program?
2. How such a program should differ from existing, general start-up accelerators?
3. Can a popular and field-tested Lean Start-Up Method (LSU) be used as a basis for such an accelerator program?

It should be noted that the established game companies commonly use agile practices, which are closely related to the lean start-up methodology, in organisation of their daily development work. They also apply business and product development principles that are very close to the lean start-up practices. However, the key motivation in this research is to disseminate this knowledge to inexperienced game developers and train them to utilize these apparently good practices.

The paper is organized as follows. Section 2 presents game development and start-up methodologies in general, and challenges of the game development more specifically. Section 3 presents our planned research approach. Section 4 discusses the initial ideas of the design of a game-specific accelerator program. Section 5 defines the next steps of our research and concludes the paper.

2 Background and Motivation

Although computer and electronic games origin decades ago from basements of the universities and the existing studies on various aspects of computer games is exhaustive (see e.g. Smed & Hakonen 2006), the research on computer game start-ups and game business is, to the authors' knowledge, rare.

In the following, we will first shortly present three perspectives on game development and use these to state the motivation for this research. Then we will present different game production concepts from literature in order to understand the product development process of games and how it differs from traditional software development. It is followed by a brief discussion on the domain of software start-ups and challenges faced by the game developers.

2.1 Motivation: Three perspectives on game development

Hakonen et al. (2008) identified three perspectives for making of computer games: Humanistic, Construction and Business perspectives. The first perspective addresses how games affect gaming communities, players, and society at the large. The second focuses on the building of the game with a technical point-of-view. The last one concerns the economics of the computer games including e.g. productization and competition strategies.

We use this division as a baseline. However, as our approach is more pragmatic, we narrow the scope of the perspectives and rename them as 1) Game design, 2) Game building, and 3) Game business. These perspectives are not separated; instead, they are highly intertwined as presented in Figure 1. The first, *Game design*, address actual design issues such as control mechanism, gameplay, story, artistic style and

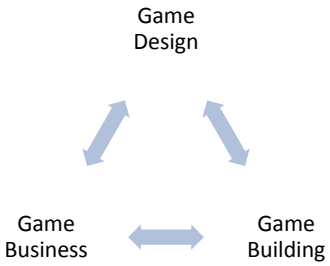

Figure 1: Three perspectives for a computer game production

graphics as well as the social dimension of the game. That is, the Game design perspective focuses on the gameplay experience.

Game building includes the software and audio-visual engineering viewpoint of game production. For example, this perspective includes such issues as handling of hardware and platform, skills and formation of the team, company's organization and project's schedule. We include, furthermore, in this perspective also other important issues, that should be taken into account in the game development, such as billing, tutorials and menu systems *i.e.* the productization of the game.

The third perspective, *Game business*, focuses on the economic side of computer games. It includes such issues as customer and partner identification, monetization plan, organization of the game launch as well as discovery and growth plans.

The three perspectives help to identify different issues that need to be thought through during the actual game development. However, it should be noted that the perspectives and issues are highly interdependent. For example, game design issues might either enable or prevent the use of in-game payments. Similarly, the decision to use a *Freemium* -based business model might set requirements to the game design (e.g. premium content) and game building (e.g. player engagement).

Looking more closely to the presented three perspectives, we can notify the complexity of the computer game domain. When a new, inexperienced, team starts to develop a new game, they face several relevant questions. From the presented three perspectives, we can easily highlight questions such as 'Where to start?', 'What influences on what?', and 'What do we know and what we should know?'. This complexity acts as the driving force for our research.

2.2 Game production

Computer game production differs from more traditional software product development in that a game production process often includes several multi-disciplinary areas such as game and story design, graphics design and implementation, sound engineering and level design (Mäkilä et al. 2009). A few scholars have discussed about the generic game development models, e.g. Chandler (2006), Larsen (2002), and Manninen et al. (2006). In the following, we will review the models of Manninen et al.

(2006) and Chandler (2006). Manninen et al. (2006) divides the creation of computer games into six phases:

1. **Concept** phase in which the conceptual design of the game is drafted.
2. **Pre-production** phase consists of creation of a working prototype. The objective of the phase is to "plan, test and evaluate everything possible".
3. **Production** phase contains all tasks, from programming to graphics and sounds, and integration needed in game creation.
4. **Validation and testing** phase includes functional testing as well as quality assurance of gameplay, user interfaces etc.
5. **Launch** phase consists of releasing the game and supporting activities.
6. **Maintenance** phase includes bug fixing and upgrades development.

In comparison, in Chandler's (2006) generic model has only four phases: Pre-production, Production, Testing, and Wrap-up. The two models are very similar. The former, however, emphasis more post-release activities. Hakonen et al. (2008) compared these two models to a general software product development model by Hohmann (2003) and noted only minor differences. They stressed the natural co-operation of several disciplines in game production which is rare or non-existent in a software product development.

Electronic games, however, have one clear difference: the users are seldom able to choose which desktop software they use, unlike game players who do not have to play games that they do not like. Furthermore, in addition to the requirements of being easy to use, the games are required to challenge the users (Weinschenk & Barker, 2000). That is, the game is required to be both entertaining and challenging; we call this simply as a fun factor and address its design later in the paper.

2.3 Software Start-up Process

During the last years, the software start-up practice has been revolutionized mainly by two business development frameworks: Customer Development model by Steven Blank (2005) and Lean Start-up methodology (LSU) by Eric Ries (2011). These tools aim to create manageability and measurability into the start-ups; they are meant to change the way products and companies are built and launched. We will quickly present these methods and refer interested readers to Blank (2005), Ries (2011), and Cooper & Vlaskovits (2010) for further details.

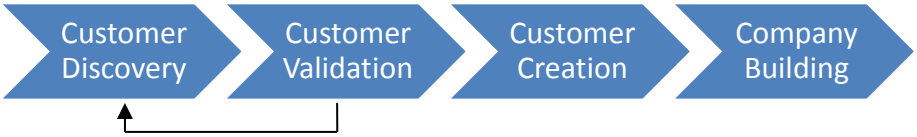

Figure 2: Customer Development model (adopted, Blank 2005)

Blank (2005) describes Customer Development methodology, illustrated in Figure 2, in four steps: Customer Discovery, the first step focuses on identifying the customers and how they value the problem that the start-up is trying to solve. This step tries to establish the Problem/Solution Fit, i.e. a validation that the real customer problem is found. The second step, Customer Validation, aims to prove that the start-up has found a market which reacts positively to the product. In practice, this includes e.g. verifying the size of the market, pricing strategy and repeatable sales model. At the end of this step, the start-up has established the Product/Market Fit.

The third step of the Customer Development model is Customer Creation (Blank, 2005). In this step, the aim is to scale execution by creating and driving customer demand. For example, some start-up companies join to the market populated by the rivals while others create markets for their products. In the last step, Company Building, the goal is to transform the company from learning and discovery organization to a well-oiled execution machine for the business.

Blank (2006) emphasizes that in contrast to the traditional product development model, Customer Development is an iterative process and going backward should not be treated as a failure. Furthermore, he underlines the importance of getting out of the building and meeting the customers. In top of these principles, Ries (2008, 2011) started to build his own Lean Star-up methodology.

The Lean Start-up model was first presented with three pillars (Ries, 2008): 1) the use of open-source and free software or low cost development platforms, 2) the use of agile development methodologies (see e.g. Larman, 2003), and 3) the use of Customer Development. Cooper and Vlaskovits (2010) added the fourth pillar to LSU: the use of cheap and effective measurement and analysis tools. Ries (2008) stated that his belief is that using these pillars will lower development costs, shorten time-to-market, and improve the quality of products.

LSU has since been evolving and it now utilizes the principles of previously mentioned pillars in more general context than in software start-up development. The fundamental activity is the Build-Measure-Learn loop (Ries, 2011). The loop, illustrated in Figure 3, aims to eliminate uncertainty and help to work smarter, not harder. The central concept in the loop is a Minimum Viable Product (MVP), defined as “a version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort” (Ries, 2009).

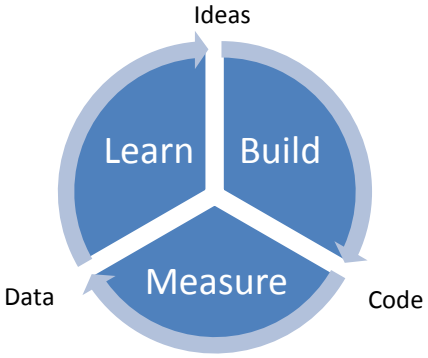

Figure 3: The Lean Build-Measure-Learn –loop (Ries, 2011)

3 Research Goals and Approach

This paper describes initial thoughts on how a game startup can be helped to build their first game product by taking steps to approximately right direction. We see that there is an opportunity to successfully combine the systematic investigation methods of academic research with hands-on learning-by-doing activities to construct relevant guidelines for the first-time commercial game makers. The goal of this endeavor is to 1) give game startups better chance of success with their first game products, 2) make work of investors who finance these start-ups easier and less risky and 3) simultaneously do high-quality academic research.

We propose a research approach where a suitable start-up accelerator design is developed through a series of real-life game startup accelerators, which are analyzed using qualitative and quantitative case study methods. The scientific data and results are used to iteratively improve the design and ultimately make it scalable and to be used more broadly. Lean principles are utilized in this research by testing the design as early as possible and by adjusting it based on participant feedback.

The planned steps to achieve the research goals are listed below:

1. First draft of the accelerator design and adjustments based on the interviews of the game companies;
2. First batch of the accelerator analyzed as a case study;
3. Adjustments to the design based on the first case study;
4. Second batch of the accelerator analyzed as a case study; and
5. Dissemination of the research results as a pragmatic handbook and a permanent accelerator program.

Utilization of empirical strategy in this research work is justified by the uncertainty in the accelerator design and real impacts on the game business development. The feasibility of initial acceleration design is verified rapidly, and the decision on continuing the research can be done before wasting significant resources.

The success of a specific accelerator is heavily influenced by two factors: 1) How good (skill-set, team dynamics etc.) are the teams and 2) How seasoned mentors participate in the accelerator. The accelerator can also be seen as a learning experience and if all teams do not succeed with their first game product, they have better odds to do so with their following games.

4 Accelerator Design

The inspiration for the design of the game accelerator is the LSU methodology. It is widely field-tested in business software start-ups, but less applied to game start-ups. There are only a few early ideas and experiences outside the academic field (see e.g. Vining, 2011; York, 2012).

4.1 Lean Start-up Concepts in Game Development

The main LSU principles do not carry over to game projects as such, but need to be reinterpreted for the game development domain. Thus we briefly discuss how these principles are reflected into game development.

Context – LSU is meant to be used when developing something new under the conditions of extreme uncertainty. This is not the case in all game projects, as some aim for the replacement game market, i.e. essentially copy an existing successful game concept by modifying it without major innovations. Thus, we require that the game concept involves something new that is untested in the targeted game market. Another factor that increases uncertainty is the lack of experience in the team. This is why we prefer first time commercial game developers, as we expect to generate the highest benefits for this group. To emphasize: in order to maximize the achievable benefits of LSU process we decided to exclude game clones and "me-too" versions of the games, as well as experienced teams.

Minimum Viable Game (MVG) – The development should as early as possible aim for a minimum playable game that implements the core game mechanics leaving out everything else. After this point the game should be kept playable at all times. However, a major challenge in using minimum viable games to test hypotheses about the gameplay is that games are holistic products and it is not trivial to know what contributes to the players experience and what can be left out of the game. This is different from minimum viable business software products, where validating a customer need can be simply done by adding a feature to see how the customer values it.

Build-Measure-Learn – The loop works similarly in game production than in plain vanilla version of LSU. It should be noted that the scope of the LSU loop includes all three areas – Game Business, Game Building and Game Design – whereas the traditional 'Play testing' frequently done in game development only focuses on Game Design, i.e. finding the fun factor.

Validated Learning – Testing in LSU must be done scientifically, i.e. experiments are designed for a specific purpose and metrics are chosen to measure the outcome of

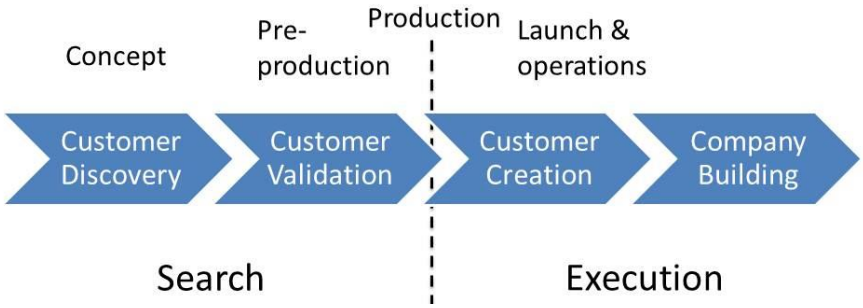

Figure 4: The mapping of game production phases to Customer Development model

the experiment. Both test design and used metrics are very game specific and part of domain experience. LSU emphasizes the use of these methods with discipline.

Information Accounting – In LSU it is vital to keep track on what hypotheses about the business being built have been validated and what still remains uncertain. This is typically done with a business model canvas (Osterwalder & Pigneur, 2010). The uncertainties in game development, discussed previously as the three perspectives in game production, differ from those captured in commonly used canvases. Thus a game specific business modelling canvas should be crafted. To the authors' knowledge, there are currently no game specific business canvases, and as part of this research a canvas will be developed.

The overall progress in the LSU methodology is structured along the four phases in Customer Development as shown in Figure 4. The four phases cannot be directly matched to game business development phases, instead the division to *search* and *execution* modes is more important. In the original Customer Development method, first two phases are about searching a repeatable and scalable business model, whereas the latter two phases are about growing the business and creating an established company. In game development projects, we find similar modes. Concept creation and pre-production are about searching for a game that is worth making as well as a business model to monetize it. In the production phase and later, final game is produced, polished, launched and supported, thus it is about execution. Traditionally, in pre-production, before crossing over to production, the game developers need to fix all major decisions about the game, since changing them would be too expensive once the game is in production. In short, bulk of the creative and innovative work is done before entering the production phase. Therefore we limit the scope of the accelerator into the concept and pre-production phases.

Some of the known applications of LSU thinking into games are for latter phases, especially live operation of an online game. The focus here is on optimization of the game – the balance of its mechanics, monetization etc., and although uses similar techniques than LSU, is fundamentally very different.

4.2 Key Game Development Decisions

The key activities in developing a game and making it commercial are the approximately the following:

1. Build the fun
2. Find the market i.e. the players
3. Choose monetization mechanisms
4. Ensure growth of game audience

Build the fun, i.e. finding the customer value, is the cornerstone of a successful game. This is, as any creative design work, difficult to do in a strictly forward process. The Mechanics-Dynamics-Aesthetics (MDA) (LeBlanc, 2008) model captures the nature of game design: mechanics are the rules of the game, dynamics is what happens when the game is played and aesthetics is what the player experiences, the fun. The aesthetics is the value that is sought after, but the designers can directly only affect the mechanics. A common way to deal with this is to use game testing and prototyping extensively in game design (Schell, 2008). However this differs from the Build-Measure-Learn loop in LSU since the prototypes are typically tested by the game developers themselves, not the intended customers. Furthermore, this design is strongly guided by the vision that the developers have about the game; it is more about realizing an anticipated customer need than learning what the customer needs.

Finding the customer and eventually the market early is one of the fundamental principles of LSU. When developing games it is crucial to understand what audience the game is targeting. This affects everything: what the game should be like, how the game should be monetized, marketed, distributed, what is the size of the business opportunity, etc. However, new game development teams tend to ignore this question and simply develop the game for themselves, or even worse, to everybody. Early analysis of the game audience will be highlighted in the accelerator and possibly validated using LSU methods.

Monetization is more complicated than just setting the price and selling the game. In many game platforms, and especially in mobile gaming, monetization is done increasingly using the free to play model with small monetary micro-purchases during the game play. This model requires deep understanding on what the player tries to achieve in the game and hooking the micro-purchases directly to this. This is an example of how tightly Game Business and Game Design are connected.

Growth of a business can have three different drivers (Ries, 2011), all of which are applicable to game businesses: sticky-, viral- and paid engines of growth. In sticky mode the growth comes from keeping the players as long as possible and generating revenue either via micro-purchases or some subscription model. In viral mode growth relies on players bringing in new players via some social media connections or multiplayer game mechanics. Third mode, paid growth, simply means more traditional marketing driven sales. Depending on the case, only one or all of the growth engines can be involved. Using viral and sticky engines typically entail decisions that are suitable for validation by the LSU loop.

It should be emphasized that the above issues, especially monetization mechanisms and viral or sticky growth models, cannot be added later onto otherwise finalized game. Instead, they are directly connected to designing the core game play and building the fun, thus they must be taken into account early as the game concept is formed and the game designed. This fact will be taken into account in the accelerator design, by using the LSU method to validate these important business decisions as early as possible.

4.3 Practical Implementation Issues

As we have chosen the lean start-up method as the guideline for our first accelerator trial, we will choose the participating game projects so that they maximally fit the lean start-up 'sweet spot'. The accelerator aims to teach the business aspects of the game production to technically skilled participants. In practice this means that the teams are inexperienced first time *commercial* game developers, however they have sufficient skills in coding, game design, media production and other needed development skills. This is to ensure that the focus of the accelerator program remains on developing the Game business aspects, not learning basic development skills. The games are small enough that playable MVG's can be built in reasonable time, that the game play testing can be organized with reasonable effort, and the development platform allows fast development and publishing.

In the first accelerator trial we aim at six teams since it is manageable, leaves room for one or two teams dropping out and yields enough cases for the research. The duration will be approximately two months which should be enough for releasing several sequential minimum viable games, and force the teams make decisions on critical business issues in addition to developing the game.

The teams will be supported by weekly mentoring session by seasoned experts on various topics in Game Design, Game Business, and Game Building. At the end of the program the game projects will be presented to investors to get their opinion if the projects are easier to evaluate or more mature compared to a normal first time commercial game project.

5 Future Work and Conclusion

In this paper, we raised a discussion on a game-specific start-up accelerator program for first-time commercial game developers, and how such a program should differ from existing, general start-up accelerators. Furthermore, we ask can a popular and field-tested Lean Start-Up Method (LSU) be used as a basis for such an accelerator program.

We have described above a research approach to develop a game start-up accelerator program for game developers doing their first commercial production. In addition to the systematic research approach, we have presented our initial thoughts on the pragmatic design of such an accelerator program.

Our intention is to start the research activities and the first round of the program during the year 2013 in Turku, Finland. We will run and develop the accelerator design simultaneously with the research activities, which will provide us objective data on the program results. We expect to publish a more detailed description of the accelerator design on the end of the year 2013.

As mentioned, most of the work will be done in the Turku region. The region is fertile for this work since there are currently lots of enthusiastic game development hobbyists, but only a few, small professional game companies. Turku is a fast growing game development site in Finland. The authors are heavily involved in the game development training and the start-up development activities in the area. Finally, we encourage other researchers and practitioners with same kind ideas to consider our thoughts and, if the concept seems sensible, boldly adopt and adapt the accelerator design in their own experiments.

References

Blank, S. The Four Steps to the Epiphany: Successful Strategies for Products that Win. Second edition. Cafepress.com, San Mateo (2005)

Chandler, H. M.: The Game Production Handbook. Game Development Series. Charles River Media (2006)

Cooper, B., Vlaskovits, P.: The Entrepreneur's Guide to Customer Development. Cooper-Vlaskovits, USA (2010)

Hakonen, H., Mäkilä, T., Smed, J., Best, A.: Learning to Make Computer Games: An Academic Approach. TUCS Technical Report No 899. Turku Centre for Computer Science (2008)

Hohmann, L.: Beyond Software Architecture: Creating and Sustaining Winning Solutions. Addison-Wesley Signature Series. Addison-Wesley Professional (2003)

Larman, C.: Agile & Iterative Development: A Manager's Guide. Addison-Wesley (2003)

Larsen, S.: Playing the Game: Managing Computer Game Development. Technical Report International Edition. Version 1.1. Blackwood Interactive (2002)

LeBlanc et al. MDA Framework, http://www.cs.north-western. edu/~hunicke/MDA.pdf. Accessed April 2013.

Manninen, T., Kujanpää, T., Vallius, L., Korva, T., Koskinen, P.: Game Production Process — A Preliminary Study. Technical Report v1.0. Ludocraft/ELIAS-project (2006)

Mäkilä, T., Hakonen, H., Smed, J., Best, A.: Three Approaches Towards Teaching Game Production. In Kankaanranta, M., Neittaanmäki, P. (eds.) Design and Use of Serious Games. Intelligent Systems, Control, and Automation: Science and Engineering Volume 37, pp 3-18, Springer Netherlands (2009)

Osterwalder, Y., Pigneur, Y.: Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. First edition. Wiley (2010)

Ries, E.: The lean startup. (2008) Accessed on April 7, 2013 http://www.startuplessonslearned.com/2008/09/lean-startup.html

Ries, E.: Minimum Viable Product: a guide. (2009) Accessed on April 7, 2013 http://www.startuplessonslearned.com/2009/08/minimum-viable-product-guide.html

Ries, E.: The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. First edition. Crown Business, New York (2011)

Schell, J. (2008) *The art of game design: A book of lenses.* Amsterdam : Elsevier.

Smed, J., Hakonen, H.: Algorithms and Networking for Computer Games. John Wiley & Sons, UK, Chichester (2006)
Vining, N.: Lean Startups, part II: Some Games That Suck (And Why That's Not A Bad Thing). Gaslamp Games Inc. (2011). Accessed on April 9, 2013 http://www.gaslampgames.com/2011/01/26/lean-startups-part-ii-some-games-that-suck-and-why-thats-not-a-bad-thing/
Weinschenk S., Barker D.T.: Designing effective speech interfaces. John Wiley & Sons, Inc., New York (2000)
York, T.: Making Lean Startup Tactics Work for Games. Gamasutra – The Art and Business of Making Games (2012)- Accessed on April 9, 2013 http://www.gamasutra.com/view/feature/168647/making_lean_startup_tactics_work_.php