The Gauntlet

- An Essence Game

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Synopsis:

This report introduces Essence, Innovation Games, and their interaction. Furthermore, it documents the five iterations the second Essence Game was through, including creation of a Game Template, and Test.

The overlying development method used, is the spiral model; during the individual iterations both innovation games as well as more regular methods are used.

The end result is a tested version of the second Essence game, as well as a template for further Essence games.

Preface

This report is written by a group of three Software Engineering master students at the Department of Computer Science at Aalborg University, Denmark. This report is the second part of a specialty in Information Systems, the first part of the specialty is covered in the report *Discovering Essence*[8]. Despite being two parts of a specialty, each part can be read independently.

This report assumes that the reader is familiar with agile software processes[2] and software innovation processes.

Throughout the report we might use he, she, his or her in reference to a person, such references should be read as he/she and his/her - and are not meant to be gender discriminating.

The timeframe for the project started February 3rd, 2008 and ended on June 6th, 2008.

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Summary

This report contains the development of a new type of innovation game for use in software development teams. These games, which emphasize social dynamics much like role-playing games, are called Essence games, as they are an addition to the Essence concepts currently under development by Ivan Aaen[3][5].

The games are based on the ideas on Innovation Games as presented by Hohmann[13]. However, as Innovation Games are abstract in description, they can suit a wide variety of development situations. An Essence game on the other hand is designed to suit only software development, and is therefore more concrete.

In this report a single Essence game is created. This game is called *The Gauntlet*, and is a game which fits into the Essence Growth mode. The game itself is a review game, which can provide a limited amount of new ideas for the product being reviewed.
The game is centered on challenging the current product, and allowing it to prove that it is a worthy product. Much in the same way as medieval knights had to prove their worth, if they were challenged to a duel when another knight threw down a gauntlet.

The end result of the report is that we prove that the Gauntlet game does work as a review game, and that using the Essence concepts in a gaming context can prove beneficial. However, the results from the test conducted on the game are limited, as it was conducted with us as test subjects. To definitively prove that Essence games works, a much larger set of tests must be conducted.

The report presents a game template, which can be used when creating additional Essence games. The template has been thoroughly documented, to ensure that others would be able to use it to create more Essence games, which would in turn benefit Essence.

Report Structure

The report is divided into three distinct parts, each with a separate focus and responsibility.

The first part of the report contains a dissection of Essence and Innovation Games. This part introduces unfamiliar readers to the two concepts, in addition to documenting our

understanding of the two concepts. This part therefore provides a common foundation upon which to understand the new concept of Essence games.

The following part, part two, takes the step from underlying knowledge and into creation. In this stage, we document the process we have gone through to create the Essence game, from the initial very abstract thoughts to a fully described game with a separate game template.
The method used to develop and mature the game was the classic spiral model, in which five iterations was performed.

The final part of the report is a conclusion part. This part summarizes our thoughts and experiences with the project. The part ends with ideas for future work which could be performed within the field of Essence games.

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Introduction

Within the field of software engineering, a new set of concepts is emerging. This set of concepts is called Essence[3], and is developed for the Software Innovation Research Laboratory (SIRL)[6].

Essence introduces, amongst other things, a set of roles into the community of developers in a development group. These roles are intended to enhance and structure idea-generation and -usage.

Essence has taken the first step to involve role-play in software development. We will carry it a step further. Within role-play, the concept of role-playing game exists. The game concept in role-play is a more structured event, where there is a goal and a way to win.

This structure and sense of competition and winning is also found within regular development. In this case, they are called Innovation games.

We assume that we can create a variant of Innovation games, which includes the role-play aspects found in Essence. Since the games draw their foundation from Essence, they will be called Essence games.

Previously a single Essence game, called Remember the Future, has been created[8].

> *During the evaluation of the game, Remember the Future, it became clear, that a number of changes were required to make the game ready for usage outside experiments.*[8]

This quote underlines that the game has a long way, before it would be useful outside an academically testing environment.

1

1.1 What is Essence?

Essence is a collection of tools and ideas, designed to work as a supplement to a regular development methodology. The purpose of Essence is to ensure that innovation and creative thinking is not forgotten during development of a software product.
While most of Essence would work with both agile and traditional development, it is designed to support agile development.

The main concepts of Essence are roles, views, and modes.
Roles set how the interaction between the developers and customers are, and defines parties between which certain discussions should occur. The roles in Essence are Challenger, Responder, Anchor, and Child. Essence's views are called Product, Project, Process, and People. The purpose for the views is to separate different aspects of a project, whereas the modes are a way of defining what the current focus is. The way Essence divides modes, are in Idea, Plan, and Growth.
Both the Essence website[3] and Essence whitepaper[5] presents a more detailed description of the roles, view, and modes.

1.1.1 What do the Elements Symbolize?

The names of the different views in Essence are not chosen randomly or because they sound interesting. These names have been used to describe different moods or temperaments in people since before Hippocrates. The four elements *Fire*, *Earth*, *Water* and *Air* represent the four temperaments *Choleric*, *Melancholic*, *Phlegmatic* and *Sanguine*. Briefly it can be said that choleric people are aggressive and ambitious where persons who are melancholic are thoughtful or pondering. People who are phlegmatic are said to be content, solid and to lack enthusiasm. Sanguine implies a cocky, confident and perhaps arrogant temper.

The different views in SIRL are matched with a temperament that fits that way of looking on things.

We believe it is beneficial to take choleric standpoint when focusing on the product aspect of something, and this view has been given the name *Fire*. A strong sense of ambition will make the person responsible for the actual making of the product strive for the best end result possible and allow them to disregard the influences they consider nuisances to some extent.

Similarly, the project focus is called *Earth*. As mentioned above, this implies a melancholic view. The project is the domain of the customer. A good on-site customer[11] is reflective. That does not mean he is not enthusiastic, but his primary role is to challenge and fuel the Responder who is eager to defeat the challenge.

The Process view is given the name *Water*. Process is the domain of the Anchor. The Anchor is rather cold and speculative compared to the other roles. He is aware of the other members and will intervene when they are acting counterproductively. Metaphorically water will quell a destructive flame or stifle sparks from grinding gears before they set things ablaze.

The People view is called *Air*. The typical sanguine traits describe the Child role well and these traits fit a champion of the People view well. Fanning a dying flame will bring it back to life or end it entirely. The Child role is a balance; provocation can help innovation, but it can break a team.

1.2   What are Innovation Games?

In short, Innovation Games are events where people meet and discuss a project or task in an entirely different context. A new context and set of rules can help to introduce new ideas to the project, or can help to prove or disprove whether a certain idea is viable.

An example of an Innovation Game is the Product Box game, where the goal is to create the product box for the product. Since the box will often emphasize the most important features of the product, this game will help identify those features.

1.3   The Scope of This Paper

This paper will accept Essence and Innovation Games as is, and it will explain how we combine Essence and Innovation Games to create a new form of games called Essence Games.

This is done first by analyzing Essence and Innovation Games. Then, an Essence game and Essence game template will be created, presented, and evaluated.

I

Analyzing

Essence **2**

Essence[4][5][8][3] has a set of concepts that need to be understood individually. The basic components are *roles*, *modes*, and *views*.

The following explains how we interpret the different concepts and what they represent.

2.1 The Essence backlog

Essence works with agile project methods. Agile projects usually begin with some way of describing the features needed for the project to be a success. These are recorded in a *Product backlog* in Scrum[10] or in a set of user stories in XP[11]. Before a project iteration begins, the customer and the team agrees on some set of tasks that must be completed within that iteration, this set of tasks are called the *Sprint backlog* in Scrum or *Task list* in XP. After the iteration a new set of features is chosen and the process is repeated.

Usually the product backlog is only updated with complete features that are relatively clear. This is impractical when new ideas are encouraged throughout the iteration, as ideas are sometimes unclear or incomplete. Discussing the idea before adding it to the product backlog matures it. Essence has the Essence backlog for this.

The *Essence backlog* is a collection of prospective ideas, conceptual in nature. This collection can be updated any time. The customer then decides if he wants to use some of the good ideas from the Essence backlog by moving them to the Product backlog. The Essence backlog is not exclusively for the customer; the developers and the process responsible can add their ideas to it as well, and chose to use ideas from it to solve their

tasks. This ensures that ideas are preserved and discussed.

2.2 Roles

Roles are a concept which most people use every day. For instance being friendly to someone who is not a friend is a role.

> *Role-play as a term describes a range of activities characterized by involving participants in 'as-if' or 'simulated' actions and circumstances.*
> [12]

In other words role-play is pretending something and acting accordingly. It allows participants to assume values and attitudes that they would normally not have[1]. More importantly, it allows participants to leave behind their restraints. People today tend to restrain themselves. The fact that the words 'ethics' and 'moral' exist, proves that we have rules that govern the way we behave. We feel uncomfortable taking the last biscuit without asking if anyone else wants it first. If we can pretend that our values are different we can change our behavior.

This is why Essence uses roles and role-play. Development teams have restraints too; some people aggressively dominate discussions, when it would be beneficial to be calm and steady. In other cases people are passive because they shun confrontation. If each team member pretends he is someone who is governed by rules that are beneficial to the project and behaves in a way that fuel innovation, the project will have greater success[7]. Thus Essence defines four roles. Apart from what has just been described these roles provide different filters for the team members. Having four roles lets team members interpret the project differently.

2.2.1 Challenger

The Challenger is the on-site customer. There is one Challenger in a typical project team. The Challenger is responsible for the project and he is the primary stakeholder. The on-site customer concept is common for most agile development methods. He decides the priorities of tasks and the order in which problems are solved. The Challenger focuses on ensuring that the product adds value to the customer.
In Essence however his most important role is to put up challenges. A challenge gives the Responders an opportunity to shine. A challenge could be explaining some business aspect that is laborious or inefficient or say that he wants to bring a product to a new market.
The demeanor of the Challenger is reflective and somewhat enthusiastic. Much of his energy is derived from the Responders.

2.2.2 Responder

The Responders are developers, which imply that they are the craftsmen in the team. The typical project team has several Responders. A Responder also breaks down problems in tasks and sets the boundaries of what is technical possible.

Essence changes the focus of this craftsman. Responders first task is to answer challenges with ambition. Choosing safe solutions to a challenge does not bring innovation, whereas ambitious solutions do. This can also be seen in the demeanor of typical Responders; they are very eager and ambitious. Challenges motivate them and they aspire to greatness. In their minds, a solution should not be dictated by the path of least resistance. Responders focus on the product.

2.2.3 Anchor

The Anchor is also a developer, but he has a different focus than the Responder. His primary role is providing for the rest of the team. Everything that would be considered an obstacle or nuisance is handled by the Anchor. He is not a team leader in any way. Anchors focus on the process. He makes the project advance by smoothing out the bumps. An Anchor will realize that new inspiration can be drawn from some activity and set it up. This could, for instance, be an Essence game. He also could resolve some issue by suggesting a break or settle the dispute. His calm demeanor facilitates this. He is content and solid but unenthusiastic. This means the other team members feel safe around him.

2.2.4 Child

The Child role is a temporary role. It is there to allow the members of the team to step out of their regular frame and assume a critical viewpoint on the present issue. It can be hard for the other roles to take this critical standpoint in their own right, and it could ruin the perception of a team member. It is, for instance, hard for a Responder to be ambitious and critical at the same time. The Child role provides this outlet. The mood of the Child is cocky and arrogant. The unqualified belief in their own opinion and the boasting, almost caricatural delivery of same, makes it easier for the other roles to realize what the point of the Childs disagreeing is. It also enables the others to rise above the level of the Child, in maturity, instead of entering a shouting contest.

2.3 Modes

Modes are a way of expressing a certain project focus. Shifting the project focus means prioritizing activities differently. The focus is normally implied by how much time has passed. For instance it is customary to spend time on ideas and planning in the beginning of a project. Being explicit about this focus removes doubt and makes it easier to determine if a task is relevant at that point in time, that is, determine if the task should be belayed or postponed. It would be sensible to call this concept 'phase' rather than 'mode'. A phase in classical software development terminology is a segment of time dedicated to reaching a specific goal. When a phase is completed, its goal is achieved, and it is possible to move on to the next phase. Modes are not phases. A mode does not infer a sequential structure. There is nothing to hinder a project from starting in Plan and then go to Idea and then back to Plan. With a time-boxed iteration it is restraining to know that some goal has to be achieved before the next can be undertaken. Modes make it possible to switch focus when necessary.

2.3.1 Idea

During the Idea mode the team focuses on activities that generate new ideas or refine existing ideas. During this mode emphasis is put on experimenting and investigating. Idealistic and challenging thoughts are encouraged.

2.3.2 Plan

The Plan mode is about planning and strategy. Outlining what needs to be done and what resources need to be made available are examples of high priority tasks in the Plan mode. Flexible plans allow the project to adapt to changes. Long term detail planning is usually avoided in agile project and, thus also in Essence.

2.3.3 Growth

During Growth activities are focused on development and verification. The team needs to realize their ambitious goal and the actual construction happens in Growth mode. It is important to revise the Customers needs and make sure that the product will actually improve the customer's organizations.

2.4   Views

The different roles and modes provide different filters or cross sections of the project. This filtered information is represented on four different views. A view is a surface on which information can be presented. The views are named after the four elements: Fire, Earth, Water, Air. As explained in 1.1.1 on page 2 these names are derived from ancient ideas about moods or temperaments. Defining what each view should cover, involves starting at the very basis, the elements. Each element is closely connected to a psyche, and through that psyche the view is structured. More concretely this means that information shown on Fire is closely related to the choleric state of mind, a state that is represented by the Responders, which indicates a very product oriented view. As a consequence Fire is used to view the product.

2.4.1   Information in the views

It can be hard to understand what the different views really show, so the following shows the distribution even more concretely. This is not exhaustive, but most project aspects will more or less fit into one of these views.

Product

- Source code
- Other source representations like class diagrams
- Database schema
- Product documentation

Project

- Sprint backlog
- Product backlog
- Essence backlog
- Product tests
- Schedule and resource allocation

Process

- Games catalog
- Development method guides
- Organizational patterns
- Risk management

- Process documentation

People

- Running prototype

- Inspirational material like videos or pictures or competing products

- User stories

- Video conferences

2.5 SIRL

SIRL is a laboratory designed in conjunction with Essence and is structured around four SMART Boards^{TM} each of which represents a different Essence view. Modes and Roles are mental concepts which do not have any physical representation, and as such these concepts are not a part of the SIRL facilities.

Since SIRL and Essence evolve together, SIRL is also a natural choice as a workspace when working with Essence.

Innovation Games

The word game is usually reserved for things related to entertainment. Here, a game is an activity that breaks the normal work day to answer some question or provide value another way. For instance an organization might conduct a volleyball tournament to encourage employees to get to know each other and strengthen the team spirit. A volleyball tournament does nothing to advance the current product line or answer whether a device has flaws or not, but it can still be advantageous for the organization to conduct one, under the assumption that a tighter team operates more efficiently.

Unlike teambuilding games, Innovation games neither focus on building a team spirit nor on the company's employees. Instead, innovation games centers on the customers and product innovation and product evaluation.

Luke Hohmann has written a book[13] about this type of game. In the book he presents 12 different innovation games, and documents how the games can be divided into different groups. As a representative for Innovation games, we have selected the Product Box game, because it is used in this project.
The Innovation games described by Hohmann are generic games that can be used for software development, surgery techniques, common consumer product, and military weapons systems.

The purpose of innovation games is to involve customers more in the product development, and it is a comparatively short activity which, if successful, gives the project a more explicit goal to strive for. It accomplishes this by forcing the customers to look beyond their immediate expectations for the product.

3.1   Product Box

The Product Box game [13, pp. 68-75] is a game where the product is analyzed from the end-users point of view. More precisely it focuses on how the product looks on the aisles in a supermarket or where it is being sold. All retail products need to separate themselves from other similar products, and explain to the customer why the costumer should choose exactly this product and not the product besides it.

This premise, and the fact that creating the packing prior to completing the product, forces the customer and engineers into thinking of new and different features. This approach differs from building the same product as the competitors, and then figuring out how to add something that separates the product from the competitors' product.

The game contains two phases, the production phase and the sales phase. The production phase is a 30 to 45 minute time span in which the boxes are created. After this phase it is time for the sales phase, this phase takes approximately 5 minutes per participant, and is where the different product boxes are presented and sold to the other participants.

Production Phase

For the production phase, each customer is given a blank box, which forms the basis for their product box. If they want, the customers are allowed to team up in small teams and work together on a box.

In addition to a blank box, they should have a wide variety of materials available, such as colored pens and glitter glue. A list of suggested materials are available in Hohmann[13, p. 71-72].

Most importantly the customers are allowed to do what they want with the box; cut it, or attach another box to it, or build their own box from scratch. It is not important that the box is large enough to contain the actual product.

Sales Phase

This phase gives each customer or team of customers a 5 minute chance to present and sell their box. During this phase it is critical that the selling team is standing up and the remaining customers are seated. It is also important that the remaining customers have a clear line of view to the selling team, as this placement enforces a natural sense of focus.

Things to consider

As an introduction to the game, Hohmann suggests that a couple of boxes from common merchandise are shown and scrutinized to refresh the customers' memory on how others promote features. These example boxes do not have to be within the field of the current product.

Hohmann suggests that pictures of the boxes are taken after the game is over, as customers often would like to keep their boxes as souvenirs after the game.

Interaction 4

Having defined the different components in Essence in Chapter 2 on page 7 and games in Chapter 3 on page 13, we can now explain how they interact.

4.1 Explaining it

Most fundamental are the roles. More than anything else, the roles interact with each other, and in the Responders case, with people of the same role. This interaction drives the innovation[7]. The primary synergy is formed by the challenge of the Challenger and the ambitious responses of the Responders. As ideas form and transform back and forth between these two roles, they are refined and recorded. This should be very clear.

The roles are used both in games and in modes. In the different modes, the roles have different cues and different tasks are important. On the other hand the team decides what mode to be in, so the mode both controls the team and is controlled by the team. In actuality, modes are just a concept or state of mind, but they have an anthropomorphic quality even though modes are simply a set of rules. Their purpose is to manipulate the development team by forcing the team members to focus on some specific aspect of software development.

Like modes, games also require interaction with the team. The games have a certain purpose. The current mode then decides if a game can be used, with the current focus, or if the game is inappropriate.
If a game is suitable for the given mode, the team can use the game. The game dictates special tasks for some or all the players, and some additional interaction patterns.

4.2 Persistent vs. Fleeting

The components have their own different interaction and lasting scopes. This section documents these scopes, and what impact they have on introducing Innovation Games into Essence.

In the context of Essence, the persistent and fleeting terms are compared to a projects lifespan. So something persistent exists throughout an entire project.

Another point of view on these two terms, are to compare them to proficiency and familiarity. Team members are assumed to be proficient in persistent components, whereas it is only required that team members are familiar with fleeting components.

Roles

A team using Essence is assumed to be a persistent team, and not simply a team assembled for a specific project or task. Ideally, the team members are used to their roles, and have familiarized them with the way their role sees things so any reaction is second nature.

The Child role is a special case, as it is a temporary role every other role can take, and as such they should be proficient in this role. The role is taken for very short periods, but even if it is a very fleeting role, every other role needs to be ready to use it.
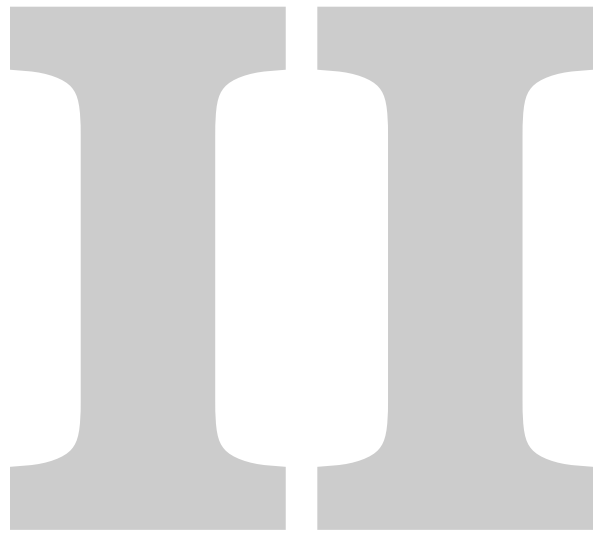
Modes

Though a project involves switching between modes, the modes are not considered fleeting. This is because the mode of a project is a reference point for the team. The decision to conduct some activity is validated by the mode. This also means that switching mode is a major change for the project team.

Games

The very nature of games is that they are designed to be relatively short events, and are therefore not persistent. However, their results are valid far beyond the duration of the game. Some games might require multiple sessions, however they will still be considered to be fleeting events.

The closest games can get to being persistent is creative games in the beginning of the project, and using the results from these games as criteria for validation games later in the project. However, this does not transform the game itself into something persistent, only creates the illusion of persistency by depending upon later games to validate the results of the game.

II

Constructing Games

Creating the Game

Part 2 documents the five iterations through which the Essence game was developed.

The first game description was created from the results of creative activities. These activities and the way they were conducted are described in this chapter. In addition to that, this chapter documents the procedure we followed to create the Essence game, and presents an overview for the following chapters.

5.1 Overview of the Procedure

The Essence game concept is an entirely new concept, and as such, there is very little knowledge to build our research upon. To compensate for this, we will follow the Spiral Model[15, pp. 86-88]. The model encourages developing a prototype and learning all there is to learn from it, and then do another iteration which do not necessarily continue from where the last iteration left off.

For the first iteration, we had to determine what aspects of software development the game should focus on. To explore which possibilities there were and what each of these possibilities would contribute with, we conducted a brainstorm.

After deciding on a specific situation, a Product Box innovation game was conducted to bring out innovative ideas for a game. The Product Box game was the second iteration. After the review of the Product Box game[13, pp. 68-75], the remaining details of the game were created inspired by the Product Box game. The result is presented in Chapter 6 on page 25.

The creation of the first version of the Gauntlet occurred in the third iteration, as well

as a review of the game. This review, indicated that the game could benefit from an additional iteration.

The fourth iteration consisted of creating a template, revising the previous game, and testing the game.

Having tested the game, the fifth iteration covered creating a final edition of the Gauntlet game. Figure 5.1 illustrates this model in a graphical representation.
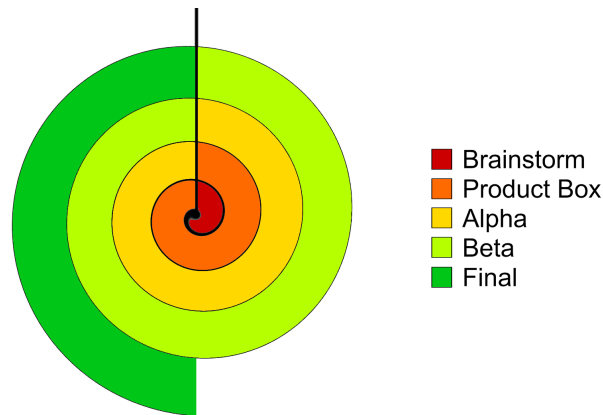

Figure 5.1: Spiral Model for the Gauntlet Game

5.2   Brainstorming the Situation

Software development is a broad field, and cannot be covered by a single game. As a result we needed to narrow down the scope to create a game.

This was done by brainstorming over the different Essence modes, and determining which type of games would be placed in which mode. Each type of game would also produce different challenges, e.g. creating an Idea game is unlike creating a Plan game.

Each of the three modes in Essence allows for numerous games, each with a different focus. To show how different games within a single mode can be, an Idea game could focus on:

- Generating entirely new ideas.

- Clarifying current feature suggestions.

- Creating a set of validation goals for the current feature set.

When the time was up, we examined our brainstorm, and reviewed what arguments existed for selecting each type of game. Since there was no correct answer, we had to base our choice solely on our preferences, we decided on the following characteristics.

- Current mode is Growth

- Some features are implemented

- A working prototype exists

- Review situation

The reason behind the choices were that Idea mode games would to some extent be similar to innovation games and Plan games were not as interesting to us, as Growth games.

Within Growth mode, it was decided that the game should be in the later cycles of a development project to get a distance to the classic attitude of "innovate, design, implement". We want to show that innovation should occur throughout the development phase.

5.3   Product Box

The end result for the brainstorm served as the foundation for the Product Box game. The time to create a game, and a box to sell it in, was set to 45 minutes. This matches the upper limit suggested by the Product Box game. We choose this since we did not have any experience with either Product Box game or creating games.

The result was three very different product boxes, each with a separate game mechanic and focal point. The front of our product boxes can be seen in Figure 5.2 on the next page.

As we processed the results we identified features and ideas from each box that we liked, and decided that they should be part of the final product.

5.4   Connecting the Dots

After processing the results from the Product Box game, a game concept was clear, a rough game play skeleton was visible, and the main components were identified. These components are Challenges, Events and Lives.

Challenges are coherent pieces of the game world and include some obstacle for the product to defeat[7]. These challenges give the product opportunity to show how it works and why it is novel. They also provide discussion between the Challenger and the Responders which should result in better mutual understanding and innovation.

Events are random occurrences e.g. natural disasters. These keep the participants on their toes and give opportunity for someone to respond with even more ambition. It also offers more chances to show how the product performs.
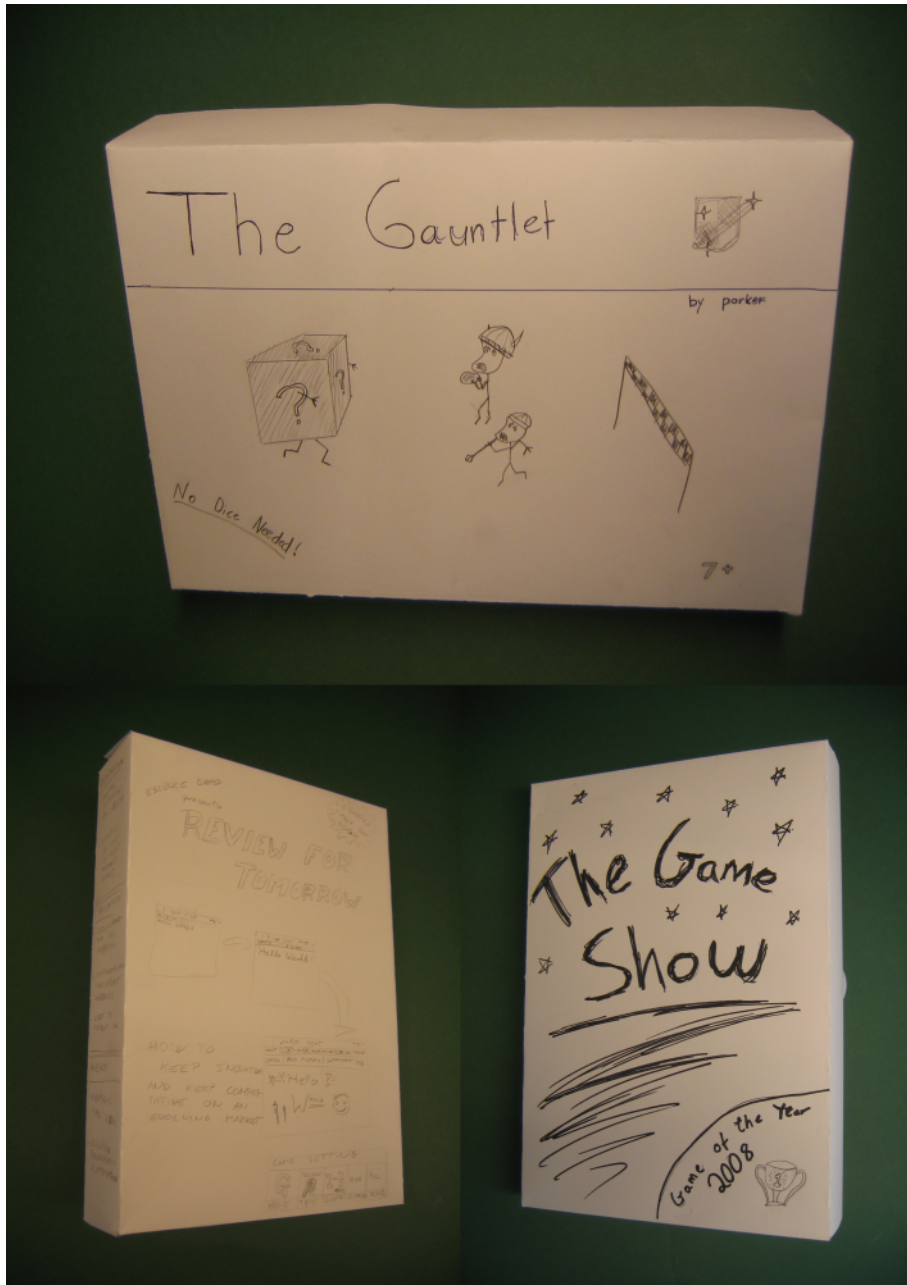
Figure 5.2: Our Three Product Boxes

The last main component is lives. Lives gauge the maturity of the product. A set of challenges are created for a specific product at a certain point in time. The product is expected to fail some of the challenges but not too many. Each failed challenge costs one life and a negative amount of lives could be testimony that the product is not as mature as expected. Having lives left after the game on the other hand might show that the product will perform well in the environment it is intended for.

The last step before we could create the game was to assemble all the features and ideas from the Product Box game into a single coherent element.

The results of this endeavor was a game, which can be seen in Chapter 6 on page 25.

6

The Gauntlet
- Alpha

The gauntlet is an Essence game that focuses on the Growth mode and works in a review situation.

The game requires a working prototype within the area that is to be reviewed.

6.1   Generally about The Gauntlet

The game is called *The Gauntlet*. The name was chosen because the game resembles an obstacle course.

In the game the Challenger poses a set of challenges which must be resolved by the Responders using the features of the current prototype. The challenges are created beforehand from use case scenarios, requirements and acceptance tests. Generic events, such as a power outage or flooding, can also be used to see how the product handles such situations.

A challenge is composed of a start setting and a goal setting. The start describes the initial situation e.g. "The user is writing a notice to put up on the wall, and wants to draw attention to the header." where the goal situation could be "The header is clearly emphasized.".
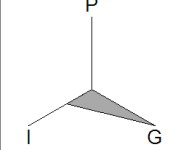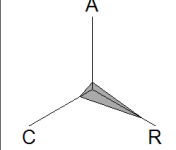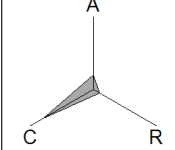
6.1.1 The Gauntlet Rating

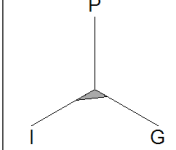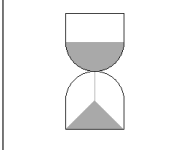| P	A	A	P	
I G	C R	C R	I G	
Mode	Players Σ5-10	Preparation	Exploration	Duration

Table 6.1: The Gauntlet Game Ratings

Table 6.1 shows how the Gauntlet game is rated according to Essence modes, distribution of players, which roles have to prepare, how much the game allows for further exploration, and the expected duration of a game.

The figures only use the initials for the Essence modes and roles, to allow room for a larger figure. This can be done, since the initials for the modes and roles are distinctive.

As Essence does not enforce clear lines between modes, games should also display this trait. Therefore the figures themselves are, with exception of duration, represented using three-legged spider charts.

6.2 Roles in The Gauntlet

As an Essence game should use all four Essence roles, the Gauntlet also utilizes all four roles.

This section will present each roles responsibilities, motivations, and criteria for success.

6.2.1 The Challenger

The Challenger puts together the obstacles and set the scene for the game. These obstacles must be created ahead of the game session and their structure should be carefully considered. They must be as true to the way the product fits into the real world as possible. This is done by adhering to the limitations dictated by the use-case stories. If they are unreasonably hard, complex, or overly simple, the benefits of game will be limited.

When the game begins, the Challenger controls the flow of the situation. He explains the Responders what they see and hear and he decides what is happening around them. One by one he introduces his prefabricated challenges in the order he finds appropriate. This can change during the game and he is encouraged to adapt to what the Responders are doing. In some situations it might not be appropriate to use the order that was

initially decided or maybe one challenge should be changed slightly to explore exactly what the product can do and how it does it in that situation. The ability to change a challenge stretches so far, that the Challenger could create new challenges during the game, if a he discovers a situation not covered by his prepared challenges.

The Challengers focus is to reveal the product and its current limitations by provoking the Responders. The way the Challenger wins is by giving the Responders a deeper understanding of the usage pattern of the product, and by stimulating new ideas as solutions for the challenges.

6.2.2 The Responder

The Responders represent the product. Each Responder has specialized knowledge of some part of the implementation and the associated features. This should be used to disarm or defeat the obstacles set in place by the Challenger. The Responder should brush up on his overall knowledge of the product before the game. This does not mean that he has to know every detail; the Responder group as a unit will have expert knowledge of the implementation.

The Responders' most primitive measure of success is simply solving each challenge using the current feature set, proving that the product works satisfactory. However, to achieve a greater measure of success, the team has to gain even better understanding of the customer-intended use. This allows them to get new ideas of improving the product beyond the minimum requirements of the use cases.

6.2.3 The Anchor

The Anchors role during the game is to act as a secondary game master. The responsibilities of the secondary game master is keeping track of the lives spend and remaining, introducing events, and to ensure that challenges are not unfair and challenges is not just swept away by the Responders.

With regards to the events, the Anchor must draw an event card with a given interval which then acts as an outside interference. The interval between events should be determined by the team, and only the time the Responders use to solve a challenge should be counted against this interval.

The Anchors motivation for the game is to ensure that both parties are treated fairly, and to encourage a productive interaction between the two parties.

6.2.4 The Child

The focus of the Child role is to allow a role shift, which can be used by e.g. a Responder to tell the Challenger that the given challenge is just a rewrite of a previously failed challenge.

6.3 Views in The Gauntlet

This section presents the content of the views during the Gauntlet. The content of the views is associated with the responsibility of each role.

Product
This view contains the product prototype and a list of planned features. The Responders use this view to demonstrate how they can defeat the challenges.

Project
The Challenger uses this view to display the current challenge. Challenges should be presented as a textual description.

Process
On this view the Anchor keep track of life spent, record new features, and display events when they occur. Events, like challenges, should be described using text. However, unlike challenges, the events should not contain a large amount of text. The reason is that events should only explain what occurs and not why.

People
The People view holds a collection of prospective ideas. The ideas are updated or deleted or new ideas are added as the game progresses.

6.4 Preparations

As described in Section 6.2.1 on page 26, the Challenger has to prepare the challenges. In addition to this, the Responders should be sure they are familiar with the product and the Anchor has to prepare a stack of generic event cards. These events could be such events as e.g. power outage.
The Anchor is combined with the Challenger responsible for ensuring that any required test data is provided for the application test, if there is a need for it.

6.5   Playing the Game

When playing the game, the Responders play in a world created by the Challenger. The Challenger presents a product scenario as a challenge, and the Responders should then demonstrate or document how the prototype solves this challenge. If the prototype is able to solve the challenge, the amount of lives are not changed, whereas if it was unable to solve the challenge, there is a cost of a life.

Thus if the game is performed early in the Growth mode, there will be many challenges that are unsolvable for the prototype, whereas closer to the deadline or milestone a lower amount of challenges should remain unsolvable.

6.5.1   Game flow

The flow of the game focuses on a constant ping-pong between the Challenger and the Responders.

A typical case would be the Challenger presents a challenge and the Responders then steps through the prototype to show how the challenge situation can be solved. There could be multiple solutions to the given challenge where only some have been implemented. As such the implemented versions can be shown and other ideas could be presented to discuss the best practice.

When a viable solution has been presented and the Challenger is satisfied, the next challenge is presented.

If the Responders do not have an implemented solution, they can spend life-points to buy a solution. This allows the game to evaluate how far along in the development process they are. The number of lives the team has should be determined depending on the number of challenges, and where in the development phase they are. Challenges bypassed in this way, should be considered stored until the next game, to ensure that the feature is in fact implemented at a later point.

6.5.2   Events

Since use cases often only takes into account regular interaction patterns, other generic events could be introduced to cover special cases. This could be all from printer jams, peripheral hardware failure, to power outage and network problems. These events are controlled by the Anchor, and should be introduced periodically .

The purpose of these events are not to be destructive to the review, but rather to create some extraordinary input, which could help review the system and put the system and use cases into a new context. Both the Responders and the Challenger can help to avert these problems, since e.g. a power outage could be averted by using an Uninterruptible

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Power Supply (UPS).

6.5.3 Lives

The main purpose of lives is to evaluate how well the review went in comparison to estimates. Therefore in the situation that the team uses up all their available lives by the end of review, should suggest that they are on track. If the team uses up all their lives prior to the end of the review, the game should continue into a negative amount of lives.

Lives as such should be viewed in a positive light and they are not meant to serve as a destructive measurement of how well the prototype performs.

6.6 Expected Results

The end result of the game is that the development team has received a greater understanding of the Challenger's vision for the product. In addition to this, a list of features that are required should have arisen, as well as some features might be discarded.

To some extent the best result might be a validation that all features are implemented correctly, and that every situation is covered and nothing is over engineered. However, that situation might also occur if the Responders and Challengers are locked in an unimaginative frame of reference.

7 Game Template

After creating the first game description, we presented and discussed the game with Ivan Aaen and we discovered that the description varied between being too inadequate and too thorough.

A solution to ensuring a more consistent description was to create a game template for the description, and documenting in the template what each section should contain. An important trait for the template was to ensure that it was generic enough to be used for all future Essence games, so they could be presented in a similar fashion.

This chapter presents the template we created, based on these requirements and discussions with Ivan Aaen. Chapter 8 on page 37 will then present a revised description of the Gauntlet game, using this template, to illustrate how an Essence game description should appear.

7.1 Title

After listing the title, a small general description of the game should follow. The purpose of this description is to serve as an introduction to the game for a reader, and allow an already familiar user to remember the game.

In addition to providing an overview of the game, the game ratings should also be presented here. An example of game ratings can be seen in Table 7.1 on the following page. The game ratings are inspired from Hohmann's[13, pp. 20-25] rating system, but the ratings are changed to a more agile and Essence oriented set of values.

Though the ratings should not be explicitly documented in the actually game descriptions, a description is included into this template to detail how to read the ratings.

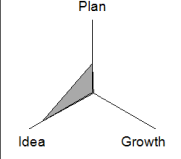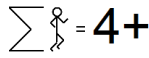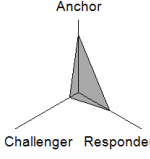| Mode	Players	Preparation	Duration
(spider chart: Plan, Idea, Growth)	$\sum \raisebox{0ex}{\scriptsize⚇} = 4+$	(chart: Anchor, Challenger, Responder)	2-3 hr

Table 7.1: Example Game Ratings

The reason why this documentation should not be needed is that the ratings should be self explanatory.

Mode The game mode is described in a spider chart, where each leg is a different mode. The more a given mode influences the game, and vice versa, the higher value it gets.

In the example in Table 7.1, the game is mostly an Idea game, however it also have a significant impact on Plan. This chart suggests that the game could have something to do with selecting ideas for the Plan mode.

Players The players will always assume that a team consists of minimum one Challenger, Responder and Anchor. The rating gives a value which shows either a minimum or an interval amount of total players for the game. The specific distribution of the players should be noted in the general description if it diverges from one Challenger, one Anchor, and the rest as Responders.

Preparation As with mode, this chart documents how much preparation should be expected from each role. A small figure indicates that the total sum of preparation is very small, while a large figure indicates that the game requires much preparation. In the example in Table 7.1, both the Responder and the Anchor has a high amount of preparation. The Challenger on the other hand, only has to spend very little time preparing for the game.

Duration Duration is specified as an amount of time. In the example, the game is estimated to take two to three hours.

Appendix C on page 77 describes the tool used to create these rating images.

7.1.1 Expected Results

Following the introduction, the next thing to document is what kinds of results can be expected from the game.

These results should be kept to a generic description, and serves as a guide for users to evaluate if the game gives results within the area they seek information.

7.1.2 Game Mechanics

As some games might introduce special concepts into the game mechanics, these concepts should be explained prior to introducing the game flow itself.

This section is used to explain what and how these special concepts works.

To give a concrete example of how such a description could be documented, a concept called Action Cards from a fictive game, called HammerTime, will be documented.

Example Case: Action Cards

In HammerTime a deck of cards is present. As part of the preparation the deck will be shuffled and the top 30 cards with be used in the game.

Each card describes an action that must be performed on the plan. An example of a card drawn could be:

> **Cost-benefit.**
>
> For each task in the Essence log, assign two values between 1 and 100 to it. The first value is how much the task is worth for the Challenger, and the second value is based on how complex the task is.

7.1.3 Essence Usage

Since it is an Essence game, it is important to record how the different aspects of Essence should be used within the game, if their usage varies even the slightest from the original Essence definition.

Though an Essence game should ideally follow the Essence definition, a game might require more than is usually expected of a role or some extra information to be displayed in a view. An example of this could be the Anchor should take notes, or the Process view holds conceptual drawing.

Views

Essence presents four views and offers a general definition on what each view contains. Within the game, these views might have to be used for a specific purpose, and this should be documented here.

Product Is the Product view only used to display code, UML schematics, and designs?

Project Is the Project view only used to display sprint backlog, product backlog and Essence backlog?

Process Should the game description be available on this view?

People Is this view used for showing prototypes, concept images, or video conference with a remote user?

Roles

As with Views, the Roles might require a deeper description regarding extra responsibilities within the game, or if the roles should interact in a special way.

Challenger In the game, should the Challenger do more than challenge the team, and accept and reject ideas?

Responder So beyond the implementation aspect, what is important for the Responder?

Anchor How should the Anchor motivate the interaction between the Challenger and the Responder? Is the Anchor an observer, someone who takes notes during the session, or something different?

Child Is the Child role used in a particular fashion in this game?

7.1.4 Preparation

A game usually requires some preparation beyond gathering the participants and reserving a room for the session.
These preparations could for instance be sorting and preparing the action cards mentioned in the game mechanics section. Another important task to remember to describe in this section is if there is a requirement for specific items, which must be present for the game. The following list provides a few examples of things that could be required for a gaming session.

- Drawings

- Figures

- Footage

- Prototypes

- Mockups

- Specific hardware

- Specific software

- Concept art

Challenger What should the Challenger prepare for, other than knowing, and perhaps refreshing, the current sprint backlog.

Responder Should the Responder prepare a demonstration of the program?

Anchor The Anchor should review the game description an extra time, to ensure that the game is clear in his memory and he can act as an instructor on the game. In addition, he should prepare for data collection during the game, whether by getting video cameras or by ensuring that relevant papers are available.

Child Since the Child role is a temporary role, there should not be any preparation required for this role.

7.1.5 Game Flow

The players should be able to absorb a thorough description of the flow of the game, to ensure that they understand how the game is played. This description could be expressed in many ways, e.g. using a state diagram, a block of text, or a numbered list. It would not even have to be a textual description; it could also be a movie, a set of podcasts or lectures or even a game.

The precise structure and means of a game flow description should reflect the nature of the game. There is also the question of when to do this. If a game is described to the players early, the players will tend to prepare for the game, perhaps even only unconsciously. This can dampen innovation as the spontaneous back and forth between players is fake if the players have ideas or solutions ready beforehand. On the other hand the players will be confused and surprised if the intention to play is announced and the description is given to them right before the game.

The description must include everything there is to know about the actual game flow, so that players can read and understand how the game works, and how to play it. If the game flow is not unambiguous the game might end up being played in several different ways, which does not necessarily lead to the correct results.

When creating a game, it is important to remember that it is a small role-play and as such the three basic elements of role-playing is important. These three elements are *Characters*, *Settings*, and *Situations*[4]

7.1.6 Processing the Results

Conducting the game does not necessarily provide all the results at once. Therefore this last phase is an important part of any game.
This section should specify what steps are required to turn the game experience into results, if the game itself does not provide explicit results.

In addition to listing what should be collected, and how it should be processed, this section should also provide an estimate on the amount of time such tasks would take. If for instance a 1 hour game session includes taking notes, and recording the session on video, this section should emphasize that reviewing a recording and type out the notes cannot be completed in a few person-hours. Other examples of result processing could be to write a report documenting what features where discussed and what the final fate of those features is, to ensure that it is easy to review what the result of the game was later on.

8

The Gauntlet
- Beta

The first Essence Growth game created is called the Gauntlet. The name is drawn from classic medieval culture, where throwing your gauntlet down was a way of challenging someone to a duel.

In much the same way as a duel for honor in the medieval was a test of both skill and wisdom; the games nature is based upon a civilized test of skill and wisdom.

The game is a Growth game, and it is centered on challenging the current prototype product. These challenges, and the order in which they are presented, is controlled by the Challenger, where the Responders then have to meet the challenge and prove that their product can defeat this challenge. The product is expected to be in a prototype stage at the point in time where this game is conducted, and as such the product cannot be expected to overcome all challenges.

The intention is that as the Responders demonstrate and explains how the prototype can defeat a challenge, a dialog between the two parties should occur. In addition to the challenges, random events are introduced to act as a catalyst for getting a different perspective on the challenges and solutions.

8.1   Expected Results

The Gauntlet game should result in giving the Challenger a clear insight into how far along the product is, and what to expect from the current development cycle.
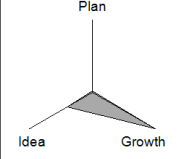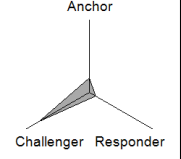
Mode	Players	Preparation	Duration
Plan / Idea / Growth	$\sum \text{\textdagger} = 5\text{-}10$	Anchor / Challenger Responder	1-2 hr

Table 8.1: Gauntlet Game Ratings

The Responders should get a better understanding of the usage and interaction pattern the Challenger expects. In addition to this the Responders should learn if there are features that need additional work, or should be discarded.

To summarize, the results should produce:

- Reviewed prototype

- Refreshed feature list

- Modification ideas

- Deeper understanding of the usage pattern

8.2 Game Mechanics

The game contains three specific mechanics, Challenges, Events, and Lives.
Each of these mechanics will be explained in the following sections.

8.2.1 Challenges

It is the Challenger, who has the responsibility of creating these challenges, and the Responder who has to demonstrate and explain how this challenge is completed.

The challenge itself is a description of a situation and a request for usage of a specific feature. A single challenge might contain more than one request on how to invoke the feature in question, and a challenge must resemble a real life usage interaction.
An example of a challenge for a word processing application can be seen below.

> The user is writing a notice to put up on the wall, and wants to draw attention to the header.
> - How can the user make the header bold?
> - Is there other ways to highlight the head?

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8.2.2   Events

Events represent random actions which the product might experience during its life cycle. These events are controlled by the Anchor, and as such the Anchor should be aware that the most important aspect is that the events are not dominating the game.

Each event is listed separately and contains a description of an action that occurs. It is then up to the Responder and Challenger to work with this restriction and the solution can come from both parties. As such it is a kind of risk management situation, an example of an event could be that the system experiences a power failure, like the example Event in this section. This event could be solved either by the Challenger by stating that the system will always run on an UPS or by the Responder by showing that all activities are committed atomic, and that the system can reboot and return to the previous state. Additionally it might just prove that the system will crash and take several hours to reestablish, but it is a risk the Challenger is willing to accept.
The events can therefore help to place the challenge in a new context, which could occur, while it is not a common context that is usually checked for.

Power failure for 10 seconds.

To ensure that the events do not cloud the game, an event occurs every 5 minutes of Responder time. That is, the time spend by the Challenger, should not count against this time.

For a sample list of events, See Appendix B on page 75.

8.2.3   Lives

To give a more concrete measurement on how far the product is on completion, the Gauntlet uses a concept of lives.
A product is given an amount of lives depending on how many challenges and how far along it is in the development cycle at the time the game is conducted.

Each time a challenge is encountered that the current prototype is unable to defeat, a life is lost and the apparent solution to the challenge is noted. In addition to this, the challenge that cost a life should be saved for a future review, to ensure that the feature is implemented at a later stage.

8.3   Essence Usage

The Gauntlet game requires access to relevant code, diagrams, pictures, compiled product, and applications to display this information in a structured way, on at least two of the four Essence views.
In addition, the Essence roles, with exception of the Child, are an integrated part of the structure of the Gauntlet game.

8.3.1   Views

The game uses all Essence views, and Product and People view require access to, or support from, a computer system; whereas Project and Process could be whiteboards or a similar product.

Product The Product view is used to display code, UML charts, database design diagrams, and similar aspects of the product.
The view can be used to show details on how to defeat the current challenge.

Project The Project view should contain the relevant planning logs, like sprint backlog, product backlog, and Essence backlog. In addition to these logs, the view would be ideally suited for also displaying the current challenge.

Process The Process view is the Anchors tool box, the view is used to keep track of events in play, when a new event should trigger, how many lives are left, a list of what lives have been used for, and a list of notes, comments, and ideas that should be evaluated in the post-game phase.

People The People view should display the User Interface (UI), perhaps as screenshots in an image processing tool, so changes can be drawn on the UI and stored.
Additionally, the running prototype should be available in this view to demonstrate how implemented features work in the larger context.

8.3.2   Roles

The main roles in the Gauntlet are the Challenger and the Responder roles. The Anchor role is only a supporting role, while the Child role is a minor role.

Challenger The Challenger is responsible for creating and presenting the challenges, and as such he controls the game.
Together with the Responder role, the Challenger reviews the features and has to be open to dialog about other approaches on how to use the feature.

Responder The product is presented through the Responder role. The Responder must be able to demonstrate how the product can defeat the challenges, or be creative and determine which features are required to defeat the challenge.

   As the technical expert, the Responder must be able to suggest other ways to access the features, so the Challenger can determine if other ways of accessing a given feature is worth implementing.

Anchor The Anchor role is similar to that of a game show host. He has to keep track of lives, how much time has passed since last event, draw new events and note down new ideas.

   In addition to that, he has to ensure that the game is played in accordance with the rules.

Child This role is normally unoccupied, but can be used if to call out on others who acts unjust.

   For instance if the Challenger keeps challenging the same feature in the system, it would be natural for a Responder to employ the Child role.

8.4   Preparation

With regard to preparation, the Challenger is the heaviest burdened role. However, due to the nature of his preparation, it can be split into many small segments, which in turn allows him to prepare during the time he is not needed as an on-site customer.

Challenger The Challenger is responsible for creating a set of challenges, and defining what should be success and failure for these challenges.

Responder The Responders should not expect to spend much time preparing, as they should only brush up on the product, if they are uncertain about some parts of it. In case of a non-existing UI the Responder should also create a mock-up UI.

Anchor The Anchor has two responsibilities. The first is to ensure that any data that might be required for the challenges are available, e.g. ensuring that a well formed XML-file is at hand, if the challenges include testing an XML parser. The second responsibility is to sort the events and ensure that only relevant events are available in the event stack.

Child No preparation needed.

8.5   Game Flow

The main flow in the game is described using a numerical list, as the game flow is structured as a simple cycle. The only exception to this clean structure is the events which occur every 5 minutes of Responder time.

1. Challenger presents a challenge.

2. The Responder demonstrates a solution if the program can accomplish the challenge; otherwise the Anchor deducts a life, and a description of how the challenge can be completed is presented.

3. A dialog between the Responder and Challenger about variation or other ways to accomplish the challenge.

4. If there are no more challenges left end the game, else go to item 1

8.6   Processing the Results

As the game is completed, an initial result on the product status should be obvious on the number of lives remaining.
Though the reason why the lives have been used and any remaining lives were not used needs to be further analyzed, a rule of thumb would be that if all the lives were used, the product should be on track.

The first post-game process should be going through the list of ideas and features noted down, and reviewing how these notes can be converted into coherent sentences.

Analyzing why and where the lives were spent can give the team an idea about which areas of the product that needs work. The parts of the product that have resulted in loss of lives should be parts that have not been developed yet. However, in some cases, parts that were supposed to be completely developed have cost a life, as it did not act in accordance with the Challengers expectations.
If the amount of lives spent far exceeds the amount of lives available, it is important to determine why this happened. Is it an indication that the product is far behind schedule, or is it because the Challenger has inadvertently targeted all the components scheduled for development later in this development cycle?

Most of the new ideas from the game should be moved into the Essence backlog, but ideas that directly affect the current development cycle, should be considered as candidates for the current development backlog, e.g. the current sprint backlog. The ideas left in the Essence backlog would then be filtered into the project during the coming development phases, if they are still useful.

Testing the Gauntlet

Creating the initial game is only the first step in making a useful tool. The game must also be tested to ensure that it actually works and to discover any shortcomings in the game that should be fixed.

With this philosophy in mind, it is time to test the Gauntlet, and lay the groundwork for the next version.

The system we used as a test case is a hobby project under development by Morten Saxov. The system is used in a youth club as a combined cash register and stockroom tracking system.

9.1 Success Criteria

Prior to conducting the test, a set of criteria to determine success needs to be established. We established these, by breaking down the answer to the question: "What makes a game work?" The most simple and abstract answer is that the game teaches something or that knowledge is gained as a result of conducting the activity. Well what does that mean and what facilitates this? We figured that the answer could be broken down into the following:

- Presentation of the game

  - Ratings

- * The rating diagram is self explanatory
  * The ratings are informative and accurate
- – The game flow description
  * The game flow description explains the game and lets the participants know how the game plays out

- Game preparation

  – The preparations do not hinder innovation by making the participants prepare innovative suggestions beforehand

  – The preparations set up a proper frame and content for the game so the participants have something to talk about

- The game

  – Understanding how the product is supposed to be used

    * The teams understanding of the way the product will be used is increased

  – The prototype review detail

    * The prototype is reviewed in sufficient detail

  – The actual game elements

    * Game mechanics
      · Challenges are being used and help make the usage patterns tangible
      · Events have a positive influence on the challenges
      · Events work and help inspire the team with fresh input
      · Lives help gauge the maturity of the current iteration compared to customer expectations
      · The life-points are balanced

    * Views
      · Views are used the way described in the game description and they support the game activities
      · The distribution of information on the views is balanced so congestion is avoided

    * Roles
      · The workload is balanced between the roles although, not necessarily the Child role
      · The tasks fit the roles
      · A good dialog exists between the Responder and Challenger

- Game follow-up

    – New ideas are produced as a result of the game

    – The Essence backlog is involved and updated after the game

    – Ideas about modifying the product are recorded and put into the proper list

9.2 Test Case System

The test case is a register and stockroom tracking system for a self-service kiosk in a local youth club in Aalborg.
The system is developed to keep track of purchases to and sales from the kiosk, as well as who performs a given purchase or sale.
The system was developed while running in the wild; the first version of the system went live in November 2007. As a result, the system has matured and been through some cycles of user feedback. In addition to this, the system was developed to replace an earlier system, created by the same programmer, which survived 3 years before being retired.

The test case therefore reflects a situation where the system is not in a prototype stage, but instead in continuous development. As such, it is a product in Growth mode and can therefore be reviewed.

9.3 Running the Gauntlet

This section describes the way the game played out during our test from preparation up to evaluation. We have chosen to make the author of the program, Morten Saxov, the Responder in this test. The reason is that the author has the very best and deepest understanding of the implementation. However, he also has the best understanding of how the program is being used and what the requirements are. This is a dilemma; which of two roles should the best candidate for both roles, be assigned to?

If he is the Challenger, that means the Responder has no knowledge of the program, which means he will have to spend time learning how the implementation is put together and gather why, by inference. A graver problem is that the author, in the role of Challenger, would have to force himself to ignore all ideas and emotions about the product, he would possess as a developer, and specifically as the author. If the Challenger knows more about the implementation than the Responder, situations could emerge where the Responder failed a challenge, due to lack of understanding, rather than the product failing that challenge, because it is flawed or simply immature.

On the other hand, if he is the Responder, whoever is Challenger has less knowledge about the environment the system is made for, than Morten. The Challenger would have to imagine what the requirements were to the system, as they were not explicitly documented.

Weighing back and forth, we decided that it would be far better for someone else to act as the Challenger and have the strongest Responder possible, than forcing Morten to constantly be mindful of his ownership of the product in the role of Challenger. Jeppe Vestergaard Boelsmand took the role of Challenger and Rasmus Jensen was the Anchor.

9.3.1 Preparations

Before the actual game was conducted the Challenger and the Anchor had to prepare the challenges and the event cards. The Challenger began by writing up a list of requirements for the specified system, as this was not available beforehand.
The Challenger really knew nothing about the implementation at hand, except what was given by the premise; the system is used in a youth club as a combined cash register and stockroom tracking system.
From the initial list of requirements, a list of challenges was created so the outcome of the challenges would uncover how well the implementation adhered to the requirements. This list of challenges are found in Appendix D on page 79. The list was sent to the Anchor, so he could prepare data for the game. The Anchor prepared event cards for the game. The event cards are found in Appendix B on page 75.

9.3.2 Playing

The video recording of this game are found on the DVD in Appendix E on page 81 and is called *The Gauntlet Test*. The Challenger began by presenting the first challenge. He explained the situation and the challenge. Each challenge took the form of a question or set of questions. After the first challenge was presented, the Responder proposed a solution and after a little back and forth, the next challenge was presented. The chess clock we had set up for introducing events at similarly sized time intervals was supposed to run only when the Responder spoke. It was started, but after a while, the Anchor did not stop and restart the timer. The reason for this being that it was hard to determine when the Responder was speaking and those rapid discussions required the anchors attention to be on the topic while also tapping the timer whenever the Responder took the word.

During the game the Anchor took notes, thus recording outcomes and important points discovered during the game.

A couple of noteworthy examples can be seen in the recording. Whenever an event came up the Anchor interrupted and announced the event. At `07:20` in *The Gauntlet Test* the first event occurs. The event says that the mouse fails in this case. It shows how the event is introduced and how the Responder uses the keyboard to navigate.

When the Challenger or the Responder felt the need to discuss design decisions and ability to extend the program they stepped over to the Product view, to take a look at the code. This can be seen at `16:22` in *The Gauntlet Test*, where the Challenger asks how local and how major the changes would be if the tax system was changed to differentiate between different types of goods. The Team moved closer to the Product view and the Responder explained what the new tax system would implicate.

This is how the game played out. It took half an hour to play and the following evaluation of the Gauntlet game lasted about 40 minutes.

9.4   Evaluation of the Gauntlet

Before going into the actual evaluation, we will discuss the reasoning behind our way of evaluating. It should be clear that we are evaluating the performance of the Essence Game, the Gauntlet, as a concept, not how the results of the game affect the further development of the inventory management system / cash register. After this the evaluation results are presented.

9.4.1   Evaluation Method

Our method is heavily influenced by the Human Computer Interface (HCI) analysis method Instant Data Analysis (IDA). Even though evaluating a game is not the same as finding interaction problems in a HCI context, the core idea can be transferred. Keldskov et. al.[9] shows us how the method works in HCI context. Even though their focus is conducting the entire test and analysis in a day, the article documents that the method performs only a little worse than a lengthy video analysis, which would have been one of our alternatives. It is also documented that the method finds different usability problems than the video analysis.

The way it works, is that a test is performed with a test monitor, data logger and an operator of the recording equipment. After testing a set of subjects the test team brainstorms problems and then discusses the list until there is some consensus that all the problems listed are valid. This is done immediately after the testing, so whatever was perceived is fresh in the minds of the team members.

Bridging the differences between game analysis and HCI analysis fully is not necessary in order to justify applying the central idea behind the IDA method; the fact that

similar equipment and staff is used to evaluate a concept will suffice. There are certain differences though:

- There is only one logger or observer in the game; the Anchor

- During HCI experiments, each tests are performed multiple times which enables pattern recognition

To defeat the first issue all three participants of the game are included in the evaluation session. Even though we are in effect the test subjects, we also have the best opportunity to catch issues with the game.

Because we do not do the game multiple times in rapid succession, patterns are harder to discover. Because of this, discussion is guided by the success criterion. This does not mean that following specific thread during the discussion to the end is discouraged.

Thus, as soon as the test was over we started to evaluate, having the game fresh in mind.

9.4.2 Results

The criterion is discussed on a higher abstract level than indicated by the final list of criteria. This does not mean that each criterion was not considered alone, just that communicating the outcome is more natural this way.

Ratings

We did not have any problems understanding the ratings as they seemed rather straight forward. However, in this case we are biased because we are the designers of the ratings, and in our opinion the scheme we have come up with is self explanatory.

Our test used a three man team, while the games suggested five to ten players.
We discovered that it was possible for three players to play the game. A couple of additional players would have significantly increased the dynamics of the team. By this we mean that the dialog between the Responder and the Challenger was good, but the input from additional Responders would have been a great advantage for both Challenger and Responders.

The distribution of expected preparation matched the actual preparation performed.
The mode-rating also accurately reflected the experience and results. This means the game yielded a lot of review data and some ideas for future releases.

With regards to the duration rating, the test lasted only 30 minutes where the rating specifies one to two hours. Even though there is a significant difference between these two numbers we still believe that the rated estimate is valid. The reason for this is that our test could have lasted far longer if the Challenger had been more familiar

with the requirements, rather than creating them immediately prior to expressing the challenges. Having more responders would also make the game last longer as each Responder would contribute to the discussions.

The game flow description

The description is presented in a simple and straightforward way. Together with the role description it makes it clear how to play the game.

The preparations

The challenges were not influence by prior knowledge of the product and therefore they allowed unbiased discussion.

The challenges succeeded in setting a scene, and creating a center for the dialog between the Responder and Challenger.

Understanding how the product is supposed to be used

The teams' understanding of how the product would be used in the field has been greatly increased.

This has been achieved by watching how the product solves the tasks the Challenger wants it to and by listening to how the Responder imagined the features would be used.

The prototype is reviewed in sufficient detail

The breadth of the review was great, but the results were of a qualitative nature because of the way the challenges were specified.

The breadth is attained by the Challengers desire to see how the product performs in his proposed work flow.

Events

Events worked. They gave the planned challenges new twists which forced the players to think in new ways. The clock was hard to maintain because the back and forth between the Responder and the Challenger was so rapid. A random interval between events, which is not influenced by who is speaking, creates a sensation of unpredictability. An additional advantage of keeping the interval uninfluenced by the speaker, is that it relives the Anchor of some work.

Lives

Lives did not work. They were quickly forfeited as they were very vague and it was hard to tell if a failed challenge would cost a life or multiple lives or in some cases whether a challenge had even failed at all.

Views

The Project view was not used to display the active challenge, however the rest of the views were actively used. As expected, the People view was the most active, but this did not result in clutter or congestion.

Roles

The balance between the roles was even. The game really plays on the core synergy

between Challenger and Responder, and as they feed each other there one really cannot dominate.

Post game

New ideas were produced as a result of the game; however, as the test was not conducted on a product created by the team, the ideas were collected and delivered to the author of the program. Had the product been developed by an Essence team, they would have updated their Essence backlog after the game and updated their product and sprint backlogs, or equivalent lists, at the beginning of the next iteration.

The circumstances that the game can be conducted on an external product indicate that the Gauntlet could be used as a regular review tool.

9.5 Next Generation

With these things in mind we are ready to create a final draft of the Gauntlet game. A side effect of discussing our test was discovering that the word challenge was hard to distinguish game challenges from the general concept of challenges in Essence. Therefore challenges in the Gauntlet have been renamed duels.

10
The Gauntlet
- Final

This Essence game is called the Gauntlet. The name is drawn from classic medieval culture, where throwing your gauntlet down was a way of challenging someone to a duel.

In much the same way as a duel for honor in the medieval was a test of both skill and wisdom; the games nature is based upon a civilized test of skill and wisdom.

The game is centered on challenging the current prototype product. Each challenge is a viewed as a duel. These duels, and the order in which they are presented, is controlled by the Challenger, where the Responders then have to enter the duel and prove that their product can win it. The product is expected to be in a prototype stage when this game is conducted, and as such the product cannot be expected to win every duel.

The intention is that as the Responders demonstrate and explains how the prototype can win a duel, a dialog between the two parties should occur. In addition to the duels, random events are introduced to act as a catalyst for getting a different perspective on the duels and solutions.

10.1   Expected Results

The Gauntlet game should result in giving the Challenger a clear insight into how far along the product is, and what to expect from the current development cycle.

The Responders should get a better understanding of the usage and interaction pattern
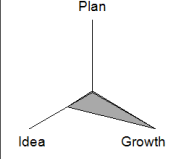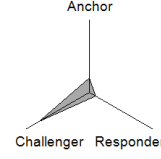
Mode	Players	Preparation	Duration
Plan / Idea / Growth	$\sum \overset{\circ}{\xi}$ = 5-10	Anchor / Challenger Responder	1-2 hr

Table 10.1: Gauntlet Game Ratings

the Challenger expects. In addition to this the Responders should learn if there are features that need additional work, or should be discarded.

To summarize, the game should produce the following results:

- Reviewed prototype

- Refreshed feature list and Essence backlog

- Modification ideas

- Deeper understanding of the usage pattern

10.2   Game Mechanics

The game contains two specific mechanics, Duels, and Events.
Each of these mechanics will be explained in the following sections.

10.2.1   Duels

It is the Challenger, who has the responsibility of creating and presenting the duels, and the Responder who has to demonstrate and explain how a duel is won.

Definition

A dual is a text which is divided into three parts; a *Setting*, a *Success Criterion*, and *Other Goals*.

Setting This paragraph should create the setting and atmosphere for the duel.

Success Criterion This paragraph lists the main criterion for success.

Other Goals If there are additional success criteria or ideas. This optional paragraph should contain them.

Usage

The duel itself should be a description of a setting with some conditions, and a success criterion. A single duel might contain more than one request on how to invoke the feature in question, and a duel must resemble real life interaction.

An example of a duel for a word processing application can be seen below.

Setting:
The user is writing a notice to put up on the wall, and wants to draw attention to the header.

Success Criterion:
Make the header draw attention to itself by highlighting it.

Other Goals:
Take advantage of color printer.
Draw attention without changing the textsize.

10.2.2 Events

Events represent random actions which the product might experience during its life cycle. These events are controlled by the Anchor, and as such the Anchor should be aware that the most important aspect is that the events are not dominating the game.
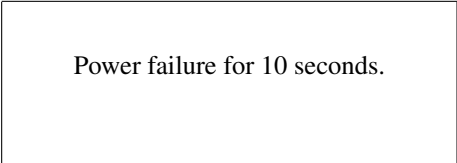
Definition

An event is a short paragraph of text. This text explains what have occurred, and nothing more.

Usage

Each event is listed separately and contains a description of an action that occurs. It is then up to the Responder and Challenger to work with this restriction and the solution can come from both parties.

The events can therefore help to place the duel in a new context, which could occur, while it is not a common context that is usually checked for. As such it is a kind of risk management situation, an example of an event could be that the system experiences a power failure, like the example Event in this section. This event could be solved either by the Challenger by stating that the system will always run on an UPS or by the Responder by showing that all activities are committed atomic, and that the system can reboot and return to the previous state. Additionally it might just prove that the system

will crash and take several hours to reestablish, but it is a risk the Challenger is willing to accept.

<div style="border:1px solid black; text-align:center; padding:2em;">
Power failure for 10 seconds.
</div>

To ensure that the events do not cloud the game, an event occurs in average every 5 minutes. The time interval however should be random instead of a constant interval.

For a sample list of events, See Appendix B on page 75.

10.3 Essence Usage

The Gauntlet game requires access to relevant code, diagrams, pictures, compiled product, and applications to display this information in a structured way, on at least two of the four Essence views.
In addition, the Essence roles, with exception of the Child, are an integrated part of the structure of the Gauntlet game.

10.3.1 Views

The game uses all Essence views, and Product and People view require access to, or support from, a computer system; whereas Project and Process could be whiteboards or a similar product.

Product The Product view is used to display code, UML charts, database design diagrams, and similar aspects of the product.
The view can be used to show details on how to win the current duel.

Project The Project view should contain the relevant planning logs, like sprint backlog, product backlog, and Essence backlog. In addition to these logs, the view would be ideally suited for also displaying the current duel.

Process The Process view is the Anchors tool box, the view is used to keep track of events in play, when a new event should trigger, a list of suggested solutions for failed duels, and a list of notes, comments, and ideas that should be evaluated in the post-game phase.

People The People view should display the UI, perhaps as screenshots in an image processing tool, so changes can be drawn on the UI and stored.

Additionally, the running prototype should be available in this view to demonstrate how implemented features work in the larger context.

10.3.2 Roles

The main roles in the Gauntlet are the Challenger and the Responder roles. The Anchor role is only a supporting role, while the Child role is a minor role.

Challenger The Challenger is responsible for creating and presenting the duels, and as such he controls the game.

Together with the Responder role, the Challenger reviews the features and has to be open to dialog about other approaches on how to use the feature.

Responder The product is presented through the Responder role. The Responder must be able to demonstrate how the product can win the duels, or be creative and determine which features are required to win.

As the technical expert, the Responder must be able to suggest other ways to access the features, so the Challenger can determine if other ways of accessing a given feature is worth implementing.

Anchor The Anchor role is a combination of a facilitator and observer. He has to keep track of how much time has passed since last event, draw new events, and note down new ideas. It is worth noting, that the Anchor should not have to turn away from the other players to write his notes, so he should take notes on a piece of paper, or otherwise be able to observe the dialogs while taking notes.

In addition, he has to ensure that the game is played in accordance with the rules.

Child This role is normally unoccupied, but can be used if to call out on others who acts unjust.

For instance if the Challenger keeps challenging the same feature in the system, it would be natural for a Responder to assume the Child role.

10.4 Preparation

With regard to preparation, the Challenger is the heaviest burdened role. However, due to the nature of his preparation, it can be split into many small segments, which in turn allows him to prepare during the time he is not needed as an on-site customer.

Challenger The Challenger is responsible for creating a set of duels, and defining what should be success and failure for these duels.

Responder The Responders should not expect to spend much time preparing, as they should only brush up on the product, if they are uncertain about some parts of it. In case of a non-existing UI the Responder should also create a mock-up UI.

Anchor The Anchor has two responsibilities. The first is to ensure that any data that might be required for the duels are available, e.g. ensuring that a well formed XML-file is at hand, if the duels include testing an XML parser. The second responsibility is to sort the events and ensure that only relevant events are available in the event stack.

Child No preparation needed.

10.5   Game Flow

The main flow in the game is described using a numerical list, as the game flow is structured as a simple cycle. The only exception to this clean structure is the events which occur in average every 5 minutes.
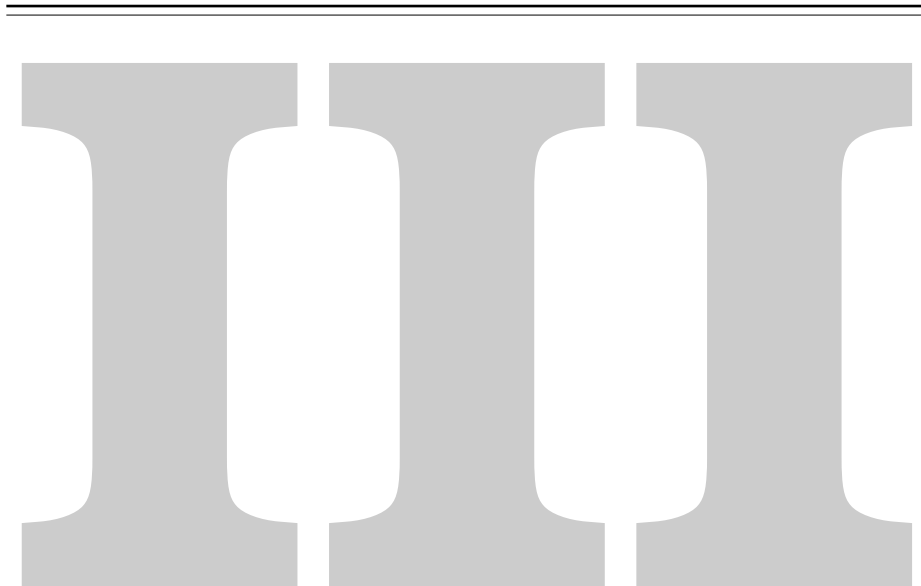
1. Challenger presents a duel.

2. If the prototype can win the duel

   (a) The Responder explains how the Challenger can solve the duel.

   (b) The Challenger then tries to accomplish the task.

   Otherwise

   (a) The Responder presents an immediate solution for winning the duel.

   (b) The Anchor notes this solution

3. A dialog between the Responder and Challenger about variation or other ways to win the duel.

4. If there are no more duels left end the game, else go to item 1

10.6   Processing the Results

The first post-game process should be going through the list of ideas and features noted down, and reviewing how these notes can be converted into coherent sentences.
Most of these ideas should be moved into the Essence backlog, but ideas that directly affect the current development cycle, should be considered as candidates for the current development backlog, e.g. the current sprint backlog. The ideas left in the Essence

backlog would then be filtered into the project during the coming development phases, if they are still useful.

III

Conclusion

11

Conclusion

This last part covers conclusion and future research possibilities. The conclusion covers our process, the Essence game template we have created and the Gauntlet game itself.

We have provided Essence with two additional Process tools: The Essence game template and the Gauntlet. Equipping SIRL and Essence is important for their development and usage outside an academic context. As Essence is developed further and further, it becomes a more attractive tool to the software industry. This in turn will allow for more hands-on experience, and the resulting user feedback will help it improve even further.

11.1   Our Process

We started out intending to read literature about Essence, innovation games, and role-play. From this study we analyzed each topic and created a set of heuristics. The idea was that it would later allow us to see, if a set of roles and modes matched a specific game and vice versa. Next we wanted to assign numeric values to each heuristic for each role and mode. These values would then be used to identify how a game should be structured if it was to focus on a specific mode, and how the roles could augment this.

After assigning values to roles and modes, we realized that this approach forced a certain interpretation on Essence and gaming, and that assigning these values did not improve the ability to correlate modes and games in the way expected. Instead of changing Essence, it made more sense to design and create a game that was tailored to Essence. Thus we decided to learn from our recent experience and change our

approach.

Instead of spending our time analyzing, we wanted to gain experience by creating a game. It made sense to introduce innovation more directly. This time we started out by brainstorming a theme and setting for a game. This half-day exercise put us in a position where we were able to do what we set out to; combining Essence and games.

Playing the Product Box game proved a great asset in identifying what ended up as the Gauntlet. We explored our idea in the alpha version of the Gauntlet. This let us to the realization that it was important to separate structure from content.
We accomplished this by putting the alpha aside and creating a separate template, based on our recent experience creating and explaining the game. Using the template to give the game structure resulted in the beta version, and using the template proved to be beneficial. The game was more whole and the description was less ambiguous.

This version was tested in a laboratory experiment, which revealed some flaws in the game design. The test was done by conducting the game and immediately evaluating it. This test method did not cover the descriptions of the game. In turn, this means that the template is untested. The flaws found during game testing were corrected in the final version of the game.

Deciding to change approach was the right decision; it made progress more natural and it turned out that the heuristics were not required.

In creating a foundation for understanding the Essence games, we have conveyed the Essence concepts. Our presentation of Essence adds to the body of knowledge and provides an alternative angle on the topic. In practice this means that there is more material, through which it is possible to understand Essence.

11.2 Template

The template extends Essence. It brings games into the Essence context. Games are a valuable innovation asset and using them in Essence is meaningful.

The template is designed to work independently of this paper. It provides structure for future Essence games, and the rating system included provides overview when looking at a collection of games. This in turn makes selecting the proper game for a given situation easier.

Even though the template is not tested, we are confident that it can be used to present all Essence games sensibly. It has a generic structure, but it still requires description of both the game and how Essence concepts work in the game. Reinforcing our belief in the template is the fact that it is able to describe every game presented by Hohmann. This indicates that every Innovation game is a subset of a prospective Essence game.

Hohmann presents a reason for why each game works, which we do not consider a part of the game description. If anything of vital importance for the game to succeed is presented with why it works, we believe it should be found in the general game description.

11.3 The Gauntlet

After testing the game and correcting the flaws, we are confident that this game contributes positively to development in Growth mode. This confidence stems from the fact that we, during the test, could determine that the game was reviewing the product and that the game was producing new ideas. Furthermore, the Gauntlet proves that Essence games in general and Growth games specifically, are viable.

In practice we have invented a new review method. The Gauntlet moves the review away from a formal setting, and uses role-play to allow the participants to speak freely about the product. When people are comfortable with the situation they are more likely to be constructive when discussing.

The game is driven by the Challenger, so the Responders are not tempted to elude problematic areas of the product as he has little control of the situation. This approach helps present the product in an honest manner. The duels are created by the Challenger. He decides the order of the duels, which means things that are important to him are sure to be unveiled.

The Gauntlet test indicated that the game can be used to review software that is not created by an Essence team. This is very interesting as it means Essence practice can be applied to a regular project to some extent. However, more research is needed to confirm this allegation.

12 Future Work

The research conducted in this report is not an all-encompassing work on the concept of Essence games. This report has focused on establishing and conducting a preliminary test of a single Essence Game.

With this report as a basis, there are many paths open for future work. A number of ideas for such research are described in the following sections; however, we are aware that this is not an exhausted list of ideas that is presented in this chapter.

12.1 Additional Gauntlet Testing

The test conducted in this report is based on a single small application, which was out of prototype stage.

Additional test scenarios could be:

Retesting the Gauntlet The final version of the Gauntlet is untested. This version is developed based on results of a test on the beta version, and it would be beneficial to conduct a similar test on the final version.

Varying product maturity Our test was conducted with a product that had matured. However, testing products in different stages of development, could unveil whether the game performs equally on products in different stages.

Varying experience within Essence Team Participants experience with Essence might have an influence on the game results.

Varying number of participants A series of tests could be conducted to determine,

what the effect of scaling the number of participants up would be.

Large-scale testing A series of test using a team of the same size with the same experience in Essence and the same product, could provide insight into whether the game works consistently or not.

External usage The Gauntlet test indicated that the game can be used to review software that is not created by an Essence team. Not every participant of the game has to have intricate knowledge of the product or the application context. A consultant could use the game with a regular development team in the capacity of Anchor. He would then help the customer make the Duels and explain how to operate as a Challenger. He would also explain the developers what is expected from Responders.

The thesis that the Gauntlet could be used as an external review tool would be interesting to verify through specific tests.

Each of these tests scenarios could yield additional improvements on both the Gauntlet game and the game template.

12.2   Create Additional Essence Games

With the template and the first Growth game created, the creation of additional games for all three Essence modes is an obvious goal for further work.

A very important reason to create games for all the modes is to provide evidence that an entire development cycle is supported by Essence games.

Ideas for games are games that could be used to introduce regular development teams to Essence or games which introduce an Essence team to the concept of games in general or a specific game, like the XP Game introduces a team to the XP Planning Game[14].

12.3   Convert Other Games

Given Hohmanns selection of games in Innovation Games[13], it could be an interesting research topic to examine these games and discover if a conversion of the games from innovation games into Essence games could be made. With such a conversion tool, other innovation games could perhaps also be converted with the same method.

This tool, or method, would have to consider how to take an abstract game and separate information onto views, and divide responsibilities and activities into the different roles.

A previous attempt at converting the innovation game Remember the Future into an

Essence game has proved that a converting task is not a trivial matter. Further details on this game, and the issues with it, can be found in Discovering Essence[8].

In addition to Innovation games, Planning Games from Extreme Programming and games from other development practices could be considered as a candidate for an Essence game.

12.4 Create an Index for the Process View

Even though not many games exist at the current stage, an index for storing and easy retrieval of the games should exist. Development of a structure to sort games should be considered.

This project could also contain a software development task; namely creating an application for SIRL, which structures games and allows users of SIRL to view games that matches a specific set of conditions.
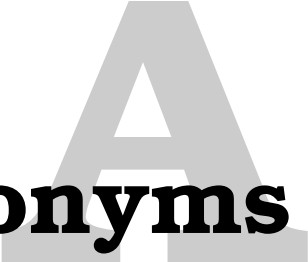
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IV

Appendix

Acronyms

A

HCI Human Computer Interface
IDA Instant Data Analysis
SIRL Software Innovation Research Laboratory
UPS Uninterruptible Power Supply
UI User Interface

B Events

This chapter contains the event cards used in connection with the Gauntlet game test in Chapter 9 on page 43.

The cards in this chapter could be used as real event cards, if they were cut out.

Power failure for 10 seconds.	Disconnected from network.
Disconnected from internet.	Printer jam.
Mouse stops working.	Keyboard stops working.
Lunch break.	Instant reboot.

Super administrator quit without notice.	Last backup failed.
Tax structure changes.	Regional format changes.
Increased requirements for logging.	Personal data restrictions increases.
Competitors product is scheduled to be launched.	The native language of the company changes.
Vat structure changes, to differentiated vat.	A users gets married and changes the last name.

C

Game Rating Tool

This appendix is a description of the Game Rating Tool. The tool is a .NET 2.0 application created to generate the rating images, used in the game descriptions.

The main screen of the tool can be seen in Figure C.1. The program is configured to show all four ratings horizontally side by side. Each rating is represented by an image with a graph, and some input boxes. The graphs are created automatically when the values in the input boxes are changed. In Mode and Preparation the values on the axes can be an integer between 1 and 50. In Players and Duration the values are text strings.
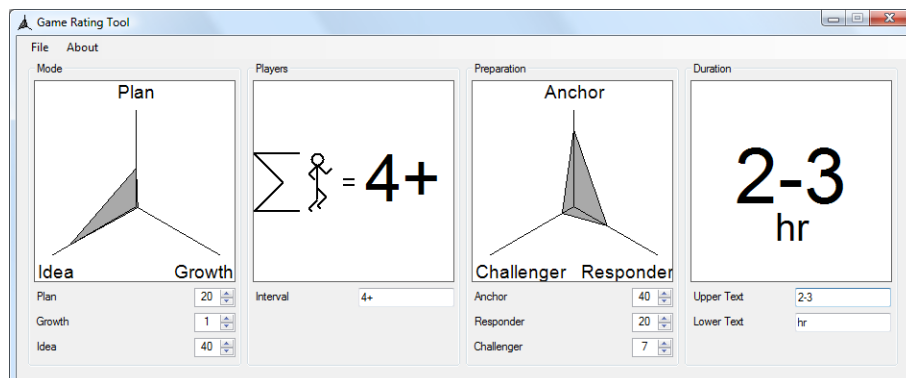

Figure C.1: Main Screen of Game Rating Tool

When saving, the values are saved in an XML file, and a subfolder with the same name is created for the pictures.

An example of a save file can be seen in Listing C.1 on the next page, this save file

is the one used to create the rating images for the Game Template in Chapter 7 on page 31.

```xml
<?xml version="1.0" encoding="utf-8"?>
<rating>
   <mode plan="20" growth="1" idea="40" />
   <player interval="4+" />
   <preparation anchor="40" responder="20" challenger="7" />
   <duration uppertext="2-3" lowertext="hr" />
</rating>
```

Listing C.1: Save File Code Example

The tool itself, can be found on the DVD in Appendix E on page 81.

D Email from Challenger to Anchor

These were the challenges sent to the Anchor before the test. The original mail was send in Danish, and is therefore replicated here in Danish as well.

```
Hej anchor

Her er mit gauntlet for kasseapperatet:

    Det er onsdag aften og Jørgen skal gøre klar til spilleaften i morgen aften.
          Han vil gerne:
  - Se hvad der er på lager
  - lave en liste over hvad han skal købe


  - Har Jørgen nogle bestemte rettigheder?

Jørgen går ud og køber de ting han skal bruge. Chips er blevet dyrere og han vil
    gerne regulere prisen da han kommer tilbage.
  - Hvordan gør han det?
  - Hvad gør han ellers da han kommer tilbage med varerne?

Jørgen lukker og _slukker_ efter sig overbevist om at alting er klar til
    spilleaften:
  - ?

Torsdag aften kommer folk og spiller. De bliver snack-sultne og begynder at få
    lyst til et-eller-andet.
```

```
    - Hvordan sker det første køb (fra slukket eller skal vi være tændt til at
         starte med?)
    - Vi et par indkøb
Michale har glemt sin tegnebog
    - Hvad kan han gøre?

Spilleaften slutter:
    - hvad er proceduren nu?

Kasseren vil gerne have et overblik.
      Kan han:
    - Se salg på en given dato?
    - Se salg for en bestemt person?
    - Skal han stå ved kasseapperatet?
    - få overblik over priserne og advancen?
    - Se prisændringer over tid (for en vare)?
    - Se salg over tid (Totalt eller for et set af varer)?
    - Rapporter? Eksporter/format?
    - Kan man se om noget er blevet udsolgt?

Systemet har kørt i nogle år.
    - Er der sket noget med svartiden?
    - Er rapporterne stadig overskuelige?
```

Listing D.1: Email From Challenger to Anchor

Digital Appendix

This appendix contains one DVD, which contains reports, software, and video. The index of the DVD is as followed:

- Report

  Discovering Essence Report for the first part of the specialty (SW9)

  The Gauntlet Report for this part of the specialty (SW10)

- Software

  Game Rating Tool Tool for creating the rating images, used in game descriptions

  Ratings Gauntlet and Template rating images and savefiles

- Video

  The Gauntlet Test Video documentary from the test of the Gauntlet