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Agile Industrial Trial Experience Report – Rapid7 Hantro

Abstract

The purpose of this document is to present experiences and results of Hantro's Rapid7 trial. This report presents the objectives of the trial, Rapid7 in short, environment of the trial, metrics used, and experiences and their analysis. This report is purposed to help other Agile ITEA consortium when planning or starting to use Rapid7.



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Agile Industrial Trial Experience Report – Rapid7 Hantro

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CHANGE LOG

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TABLE OF CONTENTS

CHANGE LOG	2
1 Introduction	4
2 Background Information	4
2.1 Description of the Company	4
2.2 Trial Environment.....	4
3 Rapid7 in short	5
4 Objectives and Metrics of the Trial	5
4.1.1 Objectives	5
4.1.2 Metrics	5
5 Trial Implementation	6
6 Results and Analysis of the Trial	7
6.1 Metric results	7
6.2 Empirical Evaluation	7
6.3 Analysis	8
6.4 Rapid7 Suitability to Pilot Environment.....	8
6.5 Future work.....	9
7 Summary	9
References	10

1 Introduction

Hantro decided to pilot Rapid7 method to shorten specification times, emphasis teamwork and reduce review problems. The first pilot is behind and it brought positive results in pilot environment.

Chapter 2 introduces background information about the company and trial environment. Chapter 3 presents the Rapid7 method in short. In chapter 4 objectives and metrics are presented. Chapter 5 describes the trial. Results are presented and analyzed in chapter 6. Finally chapter 7 summarizes the trial.

2 Background Information

2.1 Description of the Company

Hantro develops video technology for mobile devices. Hantro's products are standard based video codecs implemented in software as well as hardware. Hantro's product portfolio also includes software multimedia application engine. Hantro's video solutions are integrated into world leading application processors, baseband processors and mobile handsets.

Working with new technologies within fast moving markets has shown that flexible way of working and configurable processes are needed. Hantro has started Agile method studying in the end of year 2003. Recently Hantro has analyzed suitability of different agile methods in current projects, processes and culture. Hantro hasn't used systematically any specific agile method or practice before this Rapid7 trial.

There are 75 employees working at Hantro. Hantro's research and development engineers are all working at the same site at Oulu, when face-to-face communication is the preferred way of communication. Also otherwise Hantro's culture supports agile principles.

2.2 Trial Environment

Rapid7 practice was piloted in a new product development project. The product is standard based hardware codec and control code. The work in the project is mixture of algorithm, ASIC and software design flows and integration and verification. There are 12 people working in the project.

In addition to Rapid7, the project pilots incremental development model. It changes the nature of the project from the previous hardware codec projects. There have appeared several changes during the project, which have affected design and schedules, but increment schedule has been kept.

The customers of the project are internal customer projects. In customer projects this product is integrated to customer environment and customer is supported. Because of several interfaces outside, systematic change control and bug tracking methods have been used.

3 Rapid7 in short

RaPiD7 (Rapid Production of Documentation, 7 steps), developed in Nokia, is a method to make specification and documentation work more efficient. Traditional documentation usually relies on inspections to verify the quality of the documentation. In the RaPiD7 people are involved in the documentation work earlier as a team. This way people get understanding of the system, misunderstandings are solved and different aspects are taken into account in an early phase of the project. With efficient teamwork Rapid7 affects calendar time efficiency. [1]

4 Objectives and Metrics of the Trial

4.1.1 Objectives

Earlier, in Hantro document reviews have been quite long, people have not prepared enough to reviews because of other busy tasks and therefore comments have often been on rough level. Reviews have still brought some change needs, implementation of those changes has taken time before baseline have been set. Especially interfaces between different components have been under discussions and change requests in inspections. It was written that with help of Rapid7 it is possible to improve communication about technical issues in early phase of the project by involving all applicable designers in giving comments and requirements in documentation. Rapid7 seemed to provide well-structured and proven model.

The goal of the trial was to make specification work more efficient and emphasize good design solutions. More detailed the objective was to **reduce review problems** and **get comments** about design solutions in an early phase of the project and **shorten specification times**.

4.1.2 Metrics

Metrics were selected based on goals and data availability. Good design solution is something hard to measure, because there are also so many other factors, like new incremental model and talented designers. Therefore we selected metrics based on assumption that motivating working method, having right people involved at right time and getting comments early enough affect design solutions positively.

Workshop level:

- Goals:
 - o Effective workshops
 - o Right people affecting design solutions (good design solutions)
- Metrics:
 - o Time
 - o Number of attendees
 - o Decisions made
 - o Feelings about the workshop
- Data collection method: workshop minutes

Project level:

- Goals:
 - o Effective ways of working
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- Motivating working method (good design solutions)
- Reduce review problems
- Metrics:
 - Specification calendar time (also compared to the estimation)
 - Specification work amount
 - Feelings about method and affects to reviews
- Data collection method: work time follow-up system, post increment workshop discussion, review meeting minutes

5 Trial Implementation

The trial was divided into five phases, kick-off, project level workshop planning, workshop implementation, facilitator training and feedback session. The trial was started in the beginning of the project and it was ended after first increment of the project. The trial duration was six months.

There were some risks identified in the beginning of the project. The project schedule was very tight and in that kind of project it is easy to slip to the old model. It would require lots of persistence from the project manager to motivate project members. In addition we did have very little information about the method usage in practice and the training of the facilitator was very light in the beginning of the project.

Kick-off

In the project kick-off meeting there was a Rapid7 training held by Roope Kylmäkoski from Nokia. Whole R&D department was invited in the Rapid7 part of the kick-off. The training contained Rapid7 benefits compared to the old model, overview of the method, applicability of the method and challenges.

Project level workshop planning

After the kick-off project manager and quality coordinator planned together what kind of documents will be created in workshops, what issues to solve in workshops, who should be invited, who is the facilitator and when could be good time to organize the workshop for each document. It was decided also that amount of workshops per document is not fixed. The deliverable of this planning phase was additional workshop chapter in the project plan. We did get support from Roope Kylmäkoski to this phase.

Workshop implementations

Workshops were used in ASIC top-level specification, ASIC block specifications, technical customer documentation, architecture specification and system model specification. It was designed to use Rapid7 technique in API specification but unfortunately it went in a traditional way. There were 1-2 workshops per document.

Project manager was a facilitator in each workshop. He was also in charge of making appointment at the right time and setting the agenda. He did it together with the responsible designer. Rapid7 was used as a frame in workshops but phases 3-5 were done less formally. Used method for idea gathering and analysis was open discussion. Still also other methods were piloted (e.g. post-it technique), but they didn't work in our culture.

In the first workshop the document was written during the workshop, the last workshops were concentrated on some specific issue in the design.

Facilitator training

Facilitator training was needed from the beginning of the trial, but we succeeded to organize it in the end of the trial. Even if it was late from trial point of view, in the training the pilot project manager and other future facilitators got more training about the role and techniques of facilitator. We also discussed about problems found in the facilitating in the pilot project.

Feedback session

After the first increment in the project, there was a Post Increment Workshop. There we discussed about the Rapid7 trial, its benefits and weaknesses. We discussed also how it should be used in the future.

6 Results and Analysis of the Trial

6.1 Metric results

Workshop level:

- 17 workshops behind
- Time required in workshops together 136,5 hours, 0,85 man months
- Average time per workshop was 2 hours 15 minutes, it varied between 1 hour and 3 hours
- Average number of attendees was 5, it varied between 3 and 8
- Decisions made in workshop were related to block interfaces, architecture and document templates
- Reaching targets of the workshops varied. Some workshops had too many issues on the agenda, but others clarified well the issues to be covered.

Project level:

- Absolute specification work amount is not public information
- Specification work amount was 15% smaller than estimated
- Review times were not much shorter. But instead the review time was spent more efficiently, as reviewers could focus on the subjects as it was familiar, thanks to workshops. No big changes were anymore introduced in the review. Document quality was much better in the review phase.

6.2 Empirical Evaluation

Positive feelings about Rapid7:

- Does not require too much work load
 - Information was shared earlier than in previous project
 - Thanks to workshops, no so much surprises in interfaces
 - It is possible to affect design solutions already in the beginning of the project
 - Other designers understand neighbour solutions, less misunderstandings
 - Interfaces are clear already in the beginning of the specification work
 - Solutions are based on common understandings
 - System, SW and ASIC designers have more cooperation, wider understanding about the product
 - Helped test specification, because design was clear
 - People understand the specification under review
 - Good for new employee to get an understanding about the entity
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Negative feelings about Rapid7:

- Requires a lot of time from the facilitator

What was good in workshops in practice:

- With good goal and preparation specification meetings went better
- Agenda was good, meetings really had a meaning
- Meetings were managed (keep the schedule and the goal)

What was not working in workshops in practice:

- There were not enough understanding about workshop methods
- Sometimes goal setting was unclear or there were too many goals
- Timing of workshops was sometimes too late
- Should have more workshops per document
- Roles of the attendees were not presented in the beginning of the workshop

6.3 Analysis

The goals of the trial were reached largely. Metrics present that the specification time was reduced compared to the estimation. According to comments misunderstanding were avoided with communication in the workshops in an early phase of the specification work. Also ideas were gathered more widely, which may have positive affects to high quality design solution. Review problems were reduced a bit. The reviews of the documents, which had been created in workshops, were concentrating more on the design solutions than earlier. In project level the pilot was successful and the method was approved by the designers.

Still there is room for improvements in efficient of workshops level. The main issues were timing of the workshops, goal setting, document types created in the workshops, and facilitation of the workshops. API manual didn't have workshop because of the timing problems.

The main reasons for lack of efficiency were probably realization of risks. We didn't have comprehensive facilitation training in the beginning of the trial. The toolset and practices were limited. The facilitator was the busiest man in the project, therefore he had often not enough time to follow the right timing of the workshops or prepare the goals well enough. But the technical and social capabilities of the facilitator made it possible to have workshops with results. This trial has given us experience how to improve the workshop methods and facilitating in the next projects.

6.4 Rapid7 Suitability to Pilot Environment

The pilot did prove that specification workshops are working in product development in Hantro's culture. But there were discussions about the importance of naming: is it important to have "seven step" -method called Rapid7 or well-prepared, goal-driven specification workshops. The final opinion was that the seven steps of Rapid7 give a proven tool set for facilitator. Experienced facilitator can then customize the steps and methods used there. For designers Rapid7 workshops are called specification workshops or specification meetings, where they do not have to think the steps actively.

According to this trial the most suitable brainstorming and decision making technique in technical specifications was open discussion. Still the facilitator should be careful and

open minded to select also other techniques if they are suitable in different projects, documents or group.

In the pilot project the method was used in limited document types. The opinion of the project members was that the method could be suitable also in requirement specification, project planning, other customer documentation and demonstration planning. Some project members thought that the method could be suitable also in process improvement work.

6.5 Future work

In the future we are going to use this method also in other projects. In the feedback session we gathered ideas how to make workshops more effective and successful. The list below is usable for the Hantro's future projects and other consortium members who are going to pilot this method.

Success factors:

- Facilitator needs time
- There should be several people capable of facilitation in a project
- Facilitator needs to have understanding about the facilitating toolset
- Secretary selecting is important, he/she has to be able to write things easily and understand the issue
- Right timing of the workshops is essential. The timing depends on document type, sometimes it is more effective to have first workshop before the specification has been started. Sometimes a first proposal is a good starting point.
- Facilitator should plan together with designer what issues are good to decide in workshop, e.g. what is the goal of the workshop. Issues, e.g. interfaces, where wide understanding and agreement are essential should be covered in workshops. On the other hand issues that can be decided by one designer should not be taken to workshops.
- Facilitator should keep in mind the focus and take care of it
- Refreshment workshops should be organized when something changes
- Have to be thought carefully, who to invite to balance with efficiency and wide understanding and ideas
- Workshop plan in a project plan gives a backbone for the workshops
- Enough time in order to get results
- Problem should be solved in a limited time

7 Summary

The goals of the Rapid7 trial were to make specification work more efficient and emphasize good design solutions. The goals of the trial were reached largely, specification work amount decreased, information sharing improved and review problems reduced. In addition designers felt specification workshops functional and were motivated about the method. The trial proved that the method is suitable to Hantro's product development work and it will be utilized in the future project.

To get the method working even better in the future projects workshop timing, goal setting and facilitating techniques needs attention.

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References

- [1] Kylmäkoski, R. Efficient Authoring of Software Documentation Using RaPiD7. ICSE 2003.
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