

**The Benefits and Challenges of Planning Poker in  
Software Development:  
Comparison Between Theory and Practice**

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# Abstract

Planning Poker is a collaborative software effort estimation technique widely used in agile software development methodologies such as Scrum and Extreme Programming (XP). Proponents of Planning Poker claim that the method has the benefits of multi-perspective effort forecasting, promoting group interaction and participation, while avoiding the risk of the “anchoring” cognitive bias, leading to accurate effort forecasting without unrealistic precision. While there is body of empirical research about Planning Poker that investigates the estimation accuracy of the technique in practice, there is not any research that looks at the detail of the implementation of the process of Planning Poker estimation in practice and whether these claimed benefits are realized in practice. This thesis focuses on analyzing the practical execution of Planning Poker in a detailed case study, aiming to identify how the practical process of Planning Poker differs from the theory, and whether the expected benefits are seen or not, and why.

The aim of this investigation is to provide a comprehensive conceptualization of Planning Poker estimation in practice, as well as understanding of the difference between practice and theory. In addition, this study also expects to deepen an understanding of the activities of the Planning Poker technique that contribute to the observed benefits and challenges. This will be helpful for software estimators to optimize execution of the Planning Poker technique to maximize the claimed and observed benefits it can provide.

The approach to this investigation is based on analyzing video and audio recordings of two Planning Poker sessions undertaken by a team in a case organization. This is supplemented by field notes and photographs related to the Planning Poker meetings. The study starts with an in-depth literature review to explore the theory related to some special behaviors in practical Planning Poker estimation meetings. Both Planning Poker meetings are held by the same development team for the same software project, and conducted in two different development iterations as part of Sprint planning using Scrum as their software development approach. This thesis explores the differences between the process inferred from analyzing the meetings and theory of Planning Poker. The differences between both meetings also is explored. This thesis also explores whether those claimed benefits in literatures are achieved in practical Planning

Poker estimation meetings, and discusses some of the challenges observed in both meetings.

The findings of the research includes identification of several different estimation process patterns, such as a gradual changing of the benefit of promoting group interaction is achieved well in practice, whereas avoidance of the “anchoring” effect and promoting individual participation, are largely not achieved. In addition, this thesis identifies some of the practical challenges in implementing Planning Poker, for example domination of the discussion by a single practitioner.

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## Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signature: 

Date: 7 March 2017



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## **Chapter 1 INTRODUCTION**

This chapter introduces the research problems of this thesis as well as a description of background information and motivation related to this research problem. Meanwhile, the research aims of this thesis and an overview of research method also are presented. An outline of this thesis is provided at the end of this chapter.

## 1.1 Background

In Agile software development (ASD), the software product to be created is incrementally developed by a team in fixed-time iterations or Sprints. In plan-driven approaches to software development, a Project Manager (PM) has ultimate authority on what to work on in each increment and what functionality is expected at the end of each iteration. While this may be a consultative process, it relies heavily on the experience of the PM, and can be unrealistic in terms of the team's capability. In contrast, in an ASD approach, the client representative (Product Owner, or PO) decides on the *order* of work to be done, and the software team decides *how much* of the functionality they will commit to delivering on a Sprint-by-Sprint basis. A technique for the estimation of what they will commit to in each iteration, widely adopted in practice (Mahnič, & Hovelja, 2012), is called Planning Poker. It was first proposed and defined by Grenning in 2002, and gained popularity after its inclusion in Cohn's book (2005). In this approach the estimate of how much functionality to commit to in a Sprint is based on a group estimation of two parameters: (1) an estimate of the capacity of the team for one sprint (the teams "velocity"), and (2) an estimate of how much of the ordered work can be achieved by the team, given this team capacity. It is a group estimation technique with face-to-face interaction, being mainly used to estimate relative efforts or size of user stories based on group consensus.

Planning Poker combines multiple estimation techniques to forecast the relevant effort of software development including combination of expert opinions, use of analogy and use of disaggregation (Cohn, 2005). In complex situations the combination of multiple approaches can contribute to the improvement of estimation accuracy, providing more effective estimation results when compared to one single approach. Meanwhile, due to the particular estimation mechanism and process, it is argued that Planning Poker also achieves other software effort estimation benefits, such as promoting the combination of multiple opinions, avoiding the so-called 'anchoring' effect (the mutual influence among estimators), as well as promoting individual participation (Grenning, 2002) (Haugen, 2006) (Mahnič, & Hovelja, 2012). The 'anchoring' is a common cognitive bias phenomenon in group process. It can be understood as the influence of one person's first estimate on the subsequent estimates of others, even if the first estimate is unrealistic (Aranda, & Easterbrook, 2005). In addition, the Planning Poker technique can also be used as an approach

of organizing work in a multi-specialist group so that highly complex software problems can be solved (Børte, Ludvigsen, & Mørch, 2012).

There are numerous empirical research studies that discuss various software effort estimation techniques, but only relatively few of these focus on the Planning Poker technique. To be specific, Molokken-Ostvold and Haugen (2007) conducted a research to compare the difference between various estimate combination techniques, and analyzed the differences of estimation results with different estimate combination techniques in terms of optimism of estimates and accuracy of estimate results. This research also explored the differences of estimate accuracy and optimism between Planning Poker and unstructured estimate methods. Results showed that Planning Poker can provide less optimistic estimates and more accurate estimate results than mechanical combination of individual expert estimates, whereas the accuracy of estimates achieved by Planning Poker was similar to the existing individual estimate method. Later, Moløkken-Østvold, Haugen and Benestad (2008) conducted empirical research with similar research questions. This research explored the influence of Planning Poker on some other aspects of the developers' work. The research results were similar with aforementioned experiments, which Planning Poker can reduce the optimism of estimates compared to the statistical combining of individual estimates and achieved similar accuracy with individual expert estimation. In addition, through interviewing estimators, this research also found that Planning Poker estimate technique facilitated group discussion. In contrast, in some cases, Planning Poker achieved less optimism and accuracy than statistical combination method due to the experience of estimators (Mahnič and Hovelja, 2012). Similar conclusion was also obtained by the experiments of both Buehler, Messervey and Griffin (2005) and Haugen (2006).

This research is centered on the accuracy and optimism of estimates contributed by Planning Poker. The actual implementation of the Planning Poker in practice is not discussed in detail, however, and it's my experience that Planning Poker may not be executed exactly as prescribed by authoritative sources as best practice. Variations in the implementation of the process in practice may affect the claimed benefits of Planning Poker so it is important to understand these variations and why they happen. As a contribution to this understanding, this thesis analyses in detail the specific execution process of two Planning Poker estimate meetings based. The

meetings were observed and recorded as part of a larger study undertaken by my thesis supervisor, and so the data collection is outside the scope of this thesis. In this study, there were two actual estimate meetings with Planning Poker and both meetings came from observing the same software development group working on the same software project, at different stages of the development lifecycle. One meeting was prior to sprinting and the other near the end of the first sprint. Therefore, it is likely to have some difference between these two meetings. This thesis analyzes the specific execution process of both Planning Poker meetings by comparing the both practical meetings with theory, analyzing the influence brought by the difference and providing practitioners with recommendation to improve the negative influences. Meanwhile, this thesis also verifies whether and how those benefits of Planning Poker claimed in literatures can be achieved in practice. Finally, the challenges during executing Planning Poker estimate technique are also explored and analyzed.

## **1.2 Research Motivation and Aims**

The research is motivated by the notion that Planning Poker is not always executed in the same way, as recommended in authoritative guidelines. It is useful to understand these variations and why they occur and the possible consequences, to guide future practice and practice guidelines. It is also useful to gather evidence that the claimed benefits of Planning Poker happen in practice, or not. This can also inform practitioners in their decision on how to implement Planning Poker.

The research aim is to understand how Planning Poker is executed in practice and compare that with the Planning Poker best practice commonly agreed on and described in authoritative guidelines. Another aim is to investigate if the claimed benefits of Planning Poker are seen in practice. While most of the empirical research literature focuses on the accuracy of estimates using Planning Poker (Molokken-Ostvold and Haugen, 2007) (Moløkken-Østvold, Haugen and Benestad, 2008) (Mahnič and Hovelja, 2012), this study investigates factors which may affect this accuracy, such as sharing and combining opinions and avoiding the 'anchoring' effect as described in (Grenning, 2002) (Haugen, 2006) (Mahnič, & Hovelja, 2012).

This would provide a new insights into the Planning Poker estimate meeting and deepen the

understanding for the purpose of all the activities of Planning Poker. This would be helpful for software estimators to avoid incorrect execution of Planning Poker technique and maximize those benefits provided by Planning Poker technique such as sharing and combination of multiple opinions. Meanwhile, this thesis also explore those challenges that happened during executing Planning Poker estimate meeting, providing software estimators with valuable information about prevention of these possible challenges.

### **1.3 Research Questions**

To achieve these aims, this thesis answers four main research questions:

*RQ1. Does the implementation of Planning Poker in practice differ from the prescribed*

*Process, and if so, in what ways?*

*RQ2. Does the implementation of Planning Poker in practice change at different phases of*

*development cycle?*

*RQ3. What claimed benefits are realized in practice and how?*

*RQ4. What are the challenges in implementing Planning Poker in practice?*

### **1.4 Research Approach**

To answer these questions, this thesis analyses the data from an observational case study of a software development team doing Planning Poker at their place of work. This case study focuses on analyzing the audio recordings of two software estimation meetings using Planning Poker, focusing on the specific estimation process in the two meetings and the rich interactions. Transcripts of these meetings were created and are the basis of further data analysis.

To answer RQ1, the activities and time flow of activities were identified from the transcripts and compared with a standard process identified from a review of relevant literature and guidelines. Further insights into the details of the process were obtained by content and interaction analysis of the transcripts. To answer RQ2, any phenomenon or patterns between the meetings were compared, contrasted and explained, due to the fact that they took place at different phases of the software development cycle. To answer RQ3, two specific factors that are beneficial to the

outcome of the estimation, identified in the literature review, were focused on: avoiding anchoring effects that may artificially influence individual estimates; and obtaining wide individual participation in the estimation to include multiple perspectives. The transcripts were thematically analysed to identify these factors and the contexts. Thematic analysis was also used to identify challenges, to answer RQ4, informed by the literature review.

The aim of the literature review was to identify the current knowledge about the relevant various aspects of Planning Poker estimate technique, including prescribed flow, the advantages and expected benefits as well as potential challenges during Planning Poker meeting. These will be used as a reference to compare with the practical meetings, exploring the difference with the possible reasons and whether those expected benefits are achieved in practice. In addition, due to the fact that Planning Poker is an estimate technique that is recommended in agile development environment, a high-level comparison between agile development estimate and traditional estimate method is done, which is likely to be used to explain some behaviors and decision during meetings in practice.

Further, due to the fact that both meetings contributed same software project and were conducted by the same team at different times, a comparison between both meetings is also done in order to explore any change on estimate process related to the different phases of software development they occurred in.

## **1.5 Main Contribution**

The findings from this thesis will contribute to empirical knowledge of practical adoption of Planning Poker estimate technique, which can help other practitioners to improve the estimate process with Planning Poker estimate technique, avoiding some potential challenges. This thesis provides a structured in-depth understanding of Planning Poker estimate technique with its components such as roles allocation, the recommended metrics and measure scale with reasons. In addition, this thesis also contributes a clear activity flow of Planning Poker estimate technique and how those expected benefits of Planning Poker estimate technique are achieved, which can help practitioners to more effectively adopt the Planning Poker technique.

The whole thesis provides an in-depth insight into the detail of Planning Poker estimate technique in terms of theory and practice. The aims of every activity of Planning Poker technique and the implementation in real practical process were analyzed, which could provide guidance in the future execution of Planning Poker estimate technique, potentially making it easier for practitioners to learn and understand the Planning Poker technique.

## **1.6 Thesis Outline**

After the introductory chapter, the second chapter provides a series of relevant theory based on literature review. This literature review starts from a relatively high-level, providing the background of agile software development methodology and a comparison with traditional software development methodology. Then the software estimate is introduced into discussion, which the Planning Poker estimate technique is emphatically discussed, including the reasons for employing Planning Poker technique, challenges, and current empirical research. Chapter 3 provides a specific research design and implementation process, which emphatically the relation between literature review and case study and the analysis pattern of case study. The main findings of this thesis by analyzing the practical data are presented in Chapter 4, which is divided into three main stages: the analysis of estimate process, analysis of achievement in practice, and the challenges happened in practice. Chapter 5 summarized the main findings of this research, and answering the research questions explicitly. Meanwhile, the limitation of this research and the suggestion for future related research are indicated.



## **Chapter 2 LITERATURE REVIEW**

In this chapter, related research literature is reviewed and summarized to understand the current state of knowledge in this area, as well as position the study in this thesis. This chapter starts with the introduction of agile software development, and discusses the difference of software estimation between traditional software development and agile environment with various software estimate techniques and relevant concepts such as metrics and measure scale, then the Planning Poker estimation technique is introduced and discussed in detailed, which the prescribed process, recommended metrics and measure scale, as well as benefits and challenges are discussed. At the end of this chapter, an overview of current empirical research related to Planning Poker technique is provided.

## 2.1 Agile Software Development

Generally, Planning Poker is adopted in the context of a team using agile software development methods, which differs with the traditional software development methods. Traditional software development is a plan-based approach such as waterfall (Dybå & Dingsøyr, 2008). In traditional software development methodologies, the development plan for a software project requires the highly-detailed requirements specification, then beginning to developing the software project. In order to obtain a highly-detailed requirements specification, these requirements are discussed and modified repeatedly before developing the software. However, when a highly-detailed requirements specification is obtained and a specific developing plan is draw up. Then the development work was starts, whereas the requirement changes still were not avoided that there were constantly some missed tasks and new functionalities to be found and presented, which resulted in that the original development plan had be frequently changed. Finally, the progress of development was running behind the schedule, even project failed. Coelho and Basu (2012) in their article also indicated that this traditional software development methodology cannot provide a satisfactory answers in regard to schedule and cost, and being difficult to meet the requirement changes of customers. In order to improve this situation, a few practitioners started to invert the traditional software development methodology and created some new methodologies (Lindstrom & Jeffries, 2004).

In 2001, the agile software development was emerged, and it formally defined in the Manifesto for agile software development (Beck et al., 2001), which articulated core values and principles of agile methodologies:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Recently, agile software development has been obtained huge popularity in software industries (Coelho & Basu, 2012). The focus of agile methodology is to support the requirement changes of customers (Coelho & Basu, 2012). The agile software development methodology valued

individuals and the communication between them more than the development process and balanced the software effort and investment in planning and the plan would be revised throughout the life cycle of the project, providing a better vision of the developing project for customers, managers and team members (Dybå & Dingsøy, 2008) (Coelho & Basu, 2012). Lindstrom and Jeffries (2004) in their articles clearly indicated that the agile methodology effectively improved the success rate of software project development. Another survey called “Project Management in Plan-Based and Agile Companies” found that agile companies can better cater customers’ requirements by frequent user involvement and reasonable development plans (Ceschi, Sillitti, Succi, & De Panfilis, 2005).

The agile software development contains many specialized methods such as Dynamic Systems Development Method (DSDM), Crystal method, feature-driven development, Scrum, Extreme programming, etc. generally, in the agile methodology, the development team executes a software project in short iterations (Lindstrom & Jeffries, 2004). The features selected to be developed in each iteration are based on the business priority of features (Coelho & Basu, 2012). These features in agile methodology are called user stories. Each user story generally is formulated in one or two sentences in the language of the clients, and typically written on an index card, rather than stating all details regarding the feature. The index cards are served as reminders for future conversations and discussion about the relevant features. And the details can be fleshed out in the further discussion (Haugen, 2006). These user stories would be estimated for release and iteration planning (Beck, & Fowler, 2001). Planning Poker is one of estimate techniques that is commonly used in agile software development method.

### **2.1.1 What is Iteration**

In agile software development, an iteration is a single and time-boxed development cycle, usually being measured as weeks (Dybå & Dingsøy, 2008), which may vary among different software projects. In Scrum agile development method, the iteration also is called ‘Sprint’. An iteration may also be defined as the elapsed time between iteration planning sessions. An agile software development project is comprised of multiple iterations. To be specific, generally, when the development of a software project adopts the agile methodology, user stories need to be

prioritized and estimated for the sake of release and iteration planning. Release planning is a very high-level plan that may cover many iterations (Cohn, 2005). The purpose of the release planning is to let the customer select the user stories to be developed in each iteration (Haugen, 2006). After prioritization and estimation work was completed, the iteration one will started, which is followed by another iteration for implementing some new user stories according to the release plan of that software project.

In traditional software development, all requirements are gathered before developing phase, and converting these requirements into project specifications. Then, according to the project specifications, the time and cost required for developing the software project are estimated (Torrecilla-Salinas, Sedeño, Escalona, & Mejías, 2015). In agile software development methodology, these work is conducted in iteration zero, which is before starting to develop the software project and usually takes a couple of weeks (Schwaber, 2004). During this period, each user story is estimated and the iteration plan is drawn up according to various factors such as assumed team productivity, probabilistic uncertainty, estimated velocity, priorities and estimated size of user stories (Cohn, 2005) (Miranda, Bourque, & Abran, 2009).

### **2.1.2 What is Velocity**

Velocity refers to the working capability of a team in an iteration (Kang, Choi, & Baik, 2010). This is a measure of a team's rate of progress. The measure unit of velocity can use the metrics of user stories such as story points. For example, fifty story points are planned to be finished in each iteration, the fifty story points is the velocity of an iteration. Cohn (2005) proposed three approaches to estimate the velocity: using historical values, running an iteration or making a forecast. In terms of the approach of using historical values, it only is appropriate for some software projects that are very similar with the old projects with similar development team. The second approach that the velocity is acquired by running an iteration is more supported by Cohn (2005). The result of velocity obtained by observed is reliable. The approach of making a forecast just is appropriate some particular situations. It is important that there is a high degree of uncertainty to be reflected in the forecasting velocity.

## 2.2 Software Development Estimation

Software development estimation can be regarded as the prediction for the effort, schedule and cost required for the developing of software according to the assumed team productivity (Miranda, Bourque & Abran, 2009). The prediction is equally likely to be above or below the actual results (Kitchenham & Linkman, 1997). Notice that even though estimation and planning in software field are related topics, estimation is not planning and planning also is not estimation, estimation should be treated as an unbiased, analytical process and planning should be treated as a biased, goal-seeking process. The planning of a software project based on its estimation (Popli & Chauhan, 2012).

The software development effort estimation has long been recognized as one of the most vital tasks in software project (Idri, Abnane, & Abran, 2016). An effective software effort estimation can provide the information required to arrange a workable software development plan and conduct time and cost estimation of software projects (Popli & Chauhan, 2012), which is required by customers as inputs to conduct investment analysis, and project managers also required the effort estimation of software projects to enable to better schedule and to administrate the software development work (Jørgensen, 2007). An effective estimation can be beneficial to reduce the risks and inefficiencies work, especially for agile development team (Choudhari & Suman, 2012). Also it can be helpful to classify and prioritize development projects with respect to an overall business plan (Mansor, Yahya, & Arshad, 2011). Inversely, an unsuccessful estimation can result in huge damages to the organization and clients in terms of schedule and budget (Jakhar & Rajnish, 2016).

However, forecasting the effort required for developing of software is very challenging. With the growth of software size and complexity, the difficulty of estimate for software project also is increased (Ziauddin & Zia, 2012). A review of surveys regarding software development effort estimation has revealed that a majority of projects (60%-80%) encountered the overrun of estimation, and also indicated that software projects expend on average 30-40% more effort than is estimated (Molokken & Jorgensen, 2003). A recent review of studies indicated that software projects on average overran their budgets by 20-30% (Halkjelsvik & Jørgensen, 2012), and

exceeded their expected duration by approximately 20% (Molokken & Jørgensen, 2003). In order to obtain an effective and accurate estimation, there are various strategies and estimation methods to be suggested during the last decades, such as function point (FP), source lines of code (SLOC), expert judgment-based, analogy and disaggregation. In terms of estimation models, it includes Planning Poker.

A software estimation process that is integrated with the software development process can help projects establish realistic and credible plans to implement the project requirements and satisfy commitments. (Popli & Chauhan, 2012).

### **2.2.1 How is Estimation Used in Agile**

Before starting to develop a software project, customers always concerned some critical questions such as: How much would this project cost? When would this project be finished (Torrecilla-Salinas, Sedeño, Escalona, & Mejías, 2015)? In terms of standpoint of the development group or company, the prediction about the software project such as how much efforts is required for this software project? How to plan to develop this project in order to ensure the success rate? In order to answer these questions, it is necessary that this software project is estimated before starting developing, and scheduling a feasible development plan and providing justifiable answers for customers. These are the purposes of the estimation rather than achieving an accurate estimate result as close as possible to the actual result (Kupiainen, Mäntylä, & Itkonen, 2015).

Like aforementioned software development planning, the estimation and development schedule of a software project in the traditional software development methodology is based on the stable and strong requirement specifications that is gathered before starting developing a software project, and attempting to obtain an exact project deadline date. However, this kind of schedule is very sensitive to uncertainties and changes of project requirements (Torrecilla-Salinas, Sedeño, Escalona, & Mejías, 2015). Any requirement changes happened after starting the software project can influence the initial development plan such as project delay, even failure (Chow & Cao, 2008). However, in agile software development methodology, apart from the initial requirements collected

before starting project, the new requirements also are gathered by frequent user involvement and collecting feedbacks throughout the whole development period. And these new requirements can be responded timely in the following iterations. Also, other than the purpose of estimation in traditional development method, the estimation result in agile development methodologies is used to schedule that how much efforts can be finished in the each iteration, rather than answering how long will these efforts take. In another way, it is not advocated in agile development methodologies that giving an exact deadline date for finishing a software project, in favor of giving a date range that taking into account the uncertainty of this software project (Cohn, 2005).

### **2.2.2 Uncertainty**

The uncertainty can come in multiple forms. For example, one of the common ways is that one of user stories developed in last iteration does not exactly meeting the need of customers, which can be classified as a type of uncertainty. The uncertainty is one of factors that leading to the failure of traditional software development method (Cohn, 2005). In traditional development method, the uncertainty in the initial requirements analysis is often ignored with the assumption that it is a complete and perfect specification. However, after starting to develop this software project, there are often tasks involved in some user stories to be missed, which results in continual delay of developing progress and deadline, even failure of project. In agile software development, the uncertainty is accepted (McDaid et al., 2006). The iteration of agile development is the way to deal with the uncertainty of software products (Cohn, 2005). In agile, project managers frequently communicate with customers, collecting feedback and discovering the missed tasked in time. And these missed tasked will be added into following iteration plan. Then the uncertainty will be reduced by iterations (Cohn, 2005).

### **2.3 Estimate Methods and Techniques**

There are many software estimate techniques and methods to be proposed in last few years, and most of them widely have been adopted to estimate the software development efforts with suitable environments in software field. In agile software development methodology, the estimation for the size and effort of software project also is a significant procedure. For that, various estimation methods for measure the size and effort of the software project have been proposed such as

analogy-based estimation, expert judgment-based estimation, Delphi and Wideband Delphi.

### 2.3.1 Traditional Estimate Methods

Analogy-based estimation: Analogy-Based Estimation (ABE) was first proposed in 1970s (Li, Xie, & Goh, 2009). As a simple and capable model in the field of software development effort estimation, the ABE was extensively studied and applied by Shepperd and Schofield (1997). The fundamental principle of ABE is that: when a new software project was provided to be estimated, it was compared with to the already finished similar projects to predict the effort and cost of this new project (Nasir, 2006). Generally, the ABE was comprised of four components: a historical dataset, a similarity function, a solution function and the associated retrieval rules (Li, Xie, & Goh, 2009).

- (1) Historical Dataset: the historical dataset is to keep all information of previous projects. Generally, the historical dataset is huge, often containing noisy or redundant projects. In order to improve the ABE technique, it is better that refining the historical dataset into a smaller and more representative subset, which reduces the search space, saving more computing resources that can be used to search the most similar project. Besides, due to the fact that the noise elements in the historical dataset are eliminated, the estimate quality probably would be improved (Li, Xie, & Goh, 2009).
- (2) Similarity Function: the similarity function is used to measure the level of similarity between the already finished project and the new project. There are many popular similarity functions such as Euclidean similarity and Manhattan similarity. These similarity functions were involved in some complicated algorithm, which was not the emphasis of this research, hence the specific calculative process of the similarity functions would not be explained in detail (Bardsiri, Abang, & Khatibi, 2014).
- (3) Solution Function: the solution function is used to estimate the software development effort by considering the similar projects found by the similarity function. To be specific, after the most similar projects are selected, the estimation for the new project would be determined by calculating certain statistic based on the selected projects by some formulas (Bardsiri, Abang, & Khatibi, 2014).



The basic ABE estimation process can be carried out according to the following steps (Li, Xie, & Goh, 2008; Bardsiri, Abang & Khatibi, 2014):

1. collecting previous projects information and creating a historical dataset
2. determining the important and relevant features such as function points and line of code for comparison purpose
3. retrieving the similarities between the previous projects and new project
4. estimating the effort of new project

(4) Expert judgment-based: The definition of the expert judgment-based is broad, it can be understood as an estimation strategy in the interval from unaided intuition to expert judgment according to historical data, process guidelines and checklists (Jørgensen, 2004). Most of the steps in the expert judgment-based effort estimation processes, e.g., the breaking down of the project into activities, may be explicit and can be review readily (Jørgensen, 2007). Expert estimation can be described as estimation conducted by persons recognized as experts where important parts of the estimation process is based on non-explicit, non-recoverable reasoning processes (Jørgensen, 2004).

### **2.3.2 Group Estimate Techniques**

Delphi: the Delphi technique does not require face-to-face discussions among the development team. In Delphi technique, a coordinator was required to play a central role, who takes individual estimate results anonymously from all the estimators through several iterations, complying these results and continues the process until same and balanced feedback is captured. During this process, it was not required that the direct interaction among the estimators (Moløkken-Østfold & Jørgensen, 2004) (Nasir, 2006).

Wideband Delphi: the Wideband Delphi technique is a modification of Delphi technique, it was proposed by Boehm and Farquhar in 1970s (Stochel, 2011), and introduced at Rand Corporation. The Wideand Delphi estimate method provided a software project with a wide assistances in terms of effort estimation, plan and schedule (Nasir, 2006). To be specific, similar with the Delphi, there was also a coordinator to be required. However, the difference with the Delphi technique is

that the Wideband Delphi technique involved more group interactions than Delphi (Moløkken-Østvold & Jørgensen, 2004) (Moløkken-Østvold, Haugen & Benestad, 2008), estimators provided their individual estimates anonymously, and met to discuss these individual estimates or revised estimates in the context of other estimates, which would be repeated until a satisfactory estimate result was obtained both prior to and during the estimation iterations (Mahnič & Hovelja, 2012). The following steps were proposed in some literatures (Stochel, 2011) (Nasir, 2006):

1. Coordinator presents each estimator with a specification and an individual estimation
2. Coordinator convenes a group meeting in which estimation issues is discussed with each other
3. Estimators give individual estimations anonymously
4. Coordinator prepares and distributes a summary of the estimations
5. Coordinator convenes a group meeting, specifically focusing in having the estimators discuss points where their estimates vary widely
6. Estimators gave individual again anonymously, and steps 4 to 6 are iterated for as many rounds as appropriate.

## **2.4 Metrics for Sizing User Stories**

Source Lines of Code (SLOC): SLOC is a traditional sizing metric for software development effort, it can be acted as a metric for measuring the size of software due to the fact that it can be seen and the effect of it can be visualized. It is the direct result of programming work. In the early stage of software development, majority of expense for developing software projects was spent on the programming work (Nguyen et al., 2007). Also, software development effort was highly correlated with SLOC, a software project with higher SLOC certainly required more time and effort to develop (Coelho & Basu, 2012). Therefore, the SLOC emerged as the most perceivable indicator of cost on developing a software project. However, the measurement of SLOC for software development effort had a lot of shortcomings, and lacked precise. Firstly, software functionalities were not effectively correlated with SLOC, experienced developers may develop the same functionalities with less code than entry-level developers. And a program with less code might offer more functionalities than a program with a large amount of code. In addition, with emergence of some new technologies such as high-level programming languages, the tradition that one-to-one

correspondence between physical lines and instruction was broken. And the SLOC required to develop a same functionality in two different platforms might be completely different. So the measurement of SLOC became a poor productivity metric (Coelho & Basu, 2012).

Function points: function points also was one of the most widespread sizing metrics for software development effort. This metric was based on five end-user identifiable functionalities, which were divided into 2 data function types and 3 transactional function types, including External Inputs (EIs), External Outputs (EOs), External Inquiries (EQs), Internal Logical Files (ILFs) and External Interface Files (EIFs). Each of these functions in a software project would be quantified and weighted for estimating the effort of software development (Meli & Santillo, 1999) however, the FPA had to estimate the software development efforts by counting manually, which a great amount of details were required to estimated (Coelho & Basu, 2012), causing a lot of tedious work during estimation process.

Story points: like mentioned above, features of software project in agile development are jotted down in cards and are called user stories (Coelho & Basu, 2012). Story points are used as a unit to measure the size of a user story. The relationship between story point and effort can be defined by the estimate team. The Story point is a metric for relatively expressing the overall size of a user Story or a feature. The value of the Story point is dependent on the development complexity, effort involved, and the inherent risk and so on. This value was expressed by a series of specified numbers, each user story in a software project would be assigned a point number according to their size estimated, involving relevant effort, complexity and some potential risks. And these assigned values should be relative in nature, for example, a user story that was assigned with a two-point value should roughly be double efforts than a user story that was assigned with a one-point value in one software project (Coelho & Basu, 2012).

Ideal days: the ideal days differs from the elapsed days. The elapsed days mean the rough working days that contains many additional works such as answering emails and attending meetings. However, the ideal days is the days that you just work on these tasks involved in this user story. When employing the ideal days as the metric of efforts of user stories in a software project, it can be assumed that the user story being estimated is the only job that you will work on

and everything that you need for implementing this user story will be on your hand when you start to work for this story (Cohn, 2005).

Working-hours: this metric can be relatively easy to understand literally, it means that how many hours would be cost on a task or user story. Similar with the metric of ideal days, this metric of working-hours only represents the predicted amounts of hours that you just work on these tasks involved in the user story that is being estimated. The time spent on some additional works that often arise in working such as attending meetings and answering emails also do not calculated into time prediction.

### **2.4.1 Relative Estimation versus Absolute Estimation**

The concepts of relative estimation and absolute estimation were involved in sizing user stories. First of all, relative estimation was a measurement by comparison between one new user story and another known user story, which was broadly applied in user story estimation of agile methodology. For example, there was a user story to be estimated as one story points, another user story had double efforts on implementation as that user story. Then this new user story can be estimated as two story points. This was similar with the analogy-based estimation approach. However, compared with the analogy-based estimation approach, this relative estimation was easier, which just is a rough comparison.

Opposite to relative estimation, the reference and comparison were not required in absolute estimation. And the metrics in absolute estimation usually were working-hours or working-days. The absolute estimation purely considered the efforts involved in a new story, for example, how many hours this user story can be implemented.

## 2.5 Planning Poker

Compared with other estimation techniques, Planning Poker is a relatively new software effort estimation technique and widely used in agile development especially in Scrum and Extreme Programming, both of which are popular and contemporary software development methods (Mahnič & Hovelja, 2012). The Planning Poker estimation technique was first arisen and defined by Grenning in 2002, and being proposed by Cohn (2005) in his textbook “agile estimating and planning”. It is a group face-to-face estimation technique, being mainly used to estimate relevant efforts or size of user stories based on achieving group consensus. In Planning Poker, expert opinions, analogy and disaggregation are combined into an enjoyable approach to estimate user stories in a quick and reliable way (Cohn, 2005), being beneficial to obtain more effective estimate results. Moreover, due to the combination of multiple estimation techniques and the particular estimate process, Planning Poker also achieves many other benefits to estimate works and development team such as promoting the sharing and combination of multiple opinions, avoiding the so-called ‘anchoring’ effect and the mutual influence among estimators as well as promoting individual participation (Grenning, 2002) (Haugen, 2006) (Mahnič & Hovelja, 2012). ‘Anchoring’ can be understood in estimate process as an impact on subsequent estimates after someone putting forward an estimate or expectation on the size of a user story, even if the estimates or expectations is unrealistic (Aranda & Easterbrook, 2005). In addition, the Planning Poker technique can also be acted as an approach of organizing work in a multi-specialist group so that highly complex software problems can be solved (Børte, Ludvigsen, & Mørch, 2012).

### 2.5.1 Prescribed Process of Planning Poker

Actually, the mechanics of Planning Poker are not complicated, and it is more like a game (Grenning, 2002). However, during implementing Planning Poker estimation technique, there are some prescribed procedures with particular aims, which should be followed correctly. This subchapter will illustrate the prescribed process of Planning Poker in detail, and the aim of every procedure also will be pointed out roughly.

In many literatures, the prescribed process of Planning Poker has been briefly summarized (Cohn, 2005) (Haugen, 2006) (Molokken-Ostfold & Haugen, 2007) (Moløkken-Østfold, Haugen, &

Benestad, 2008) (Tamrakar & Jørgensen, 2012) (Børte, Ludvigsen, & Mørch, 2012). For example, the description of Mahnič, and Hovelja (2012) for the prescribed process of Planning Poker in their article is “the product owner begins by explaining its requirements of each user story. In turn, the team discusses the work involved in that user story, posing questions to the product owner as needed. When the story has been fully discussed, each estimator privately estimates the required effort by writing the corresponding number of story points on a paper note card or choosing a card with the corresponding predefined value. All cards are revealed simultaneously in order to assure the independence between the different group members. If the estimates differ too much the estimators discuss their estimates. The high and low estimators should especially share their reasons. After discussion, the group revote on their estimates by revealing again all cards at the same time. The process is repeated until consensus is achieved.”

Tamrakar and Jørgensen (2012) in their article divided the prescribed process of Planning Poker into six brief steps. Unlike the description of Mahnič and Hovelja (2012), Tamrakar and Jørgensen (2012) described the Planning Poker estimate technique in terms of tasks rather than user stories such as:

- (i) Presentation of the task.
- (ii) The task was discussed.
- (iii) The estimators produced independent estimates of the task.
- (iv) The estimators presented their estimates, by selecting the card with the appropriate number, at the same time.
- (v) The estimators with the lowest and highest estimate numbers justified their estimates.
- (vi) If there was sufficient agreement on estimates, the estimation process for the task stopped here. If there was a substantial disagreement or some estimators have gained new insight through the other people’s justification or the discussion, then the steps are repeated from step (iii). This was done until sufficient agreement was achieved or there was no change in estimates from the previous round.

Although there are some differences among these descriptions of prescribed process of Planning Poker from literature, the main principle and procedure in these descriptions are basically the same. The following describes in detail the prescribed process of Planning Poker step by step,

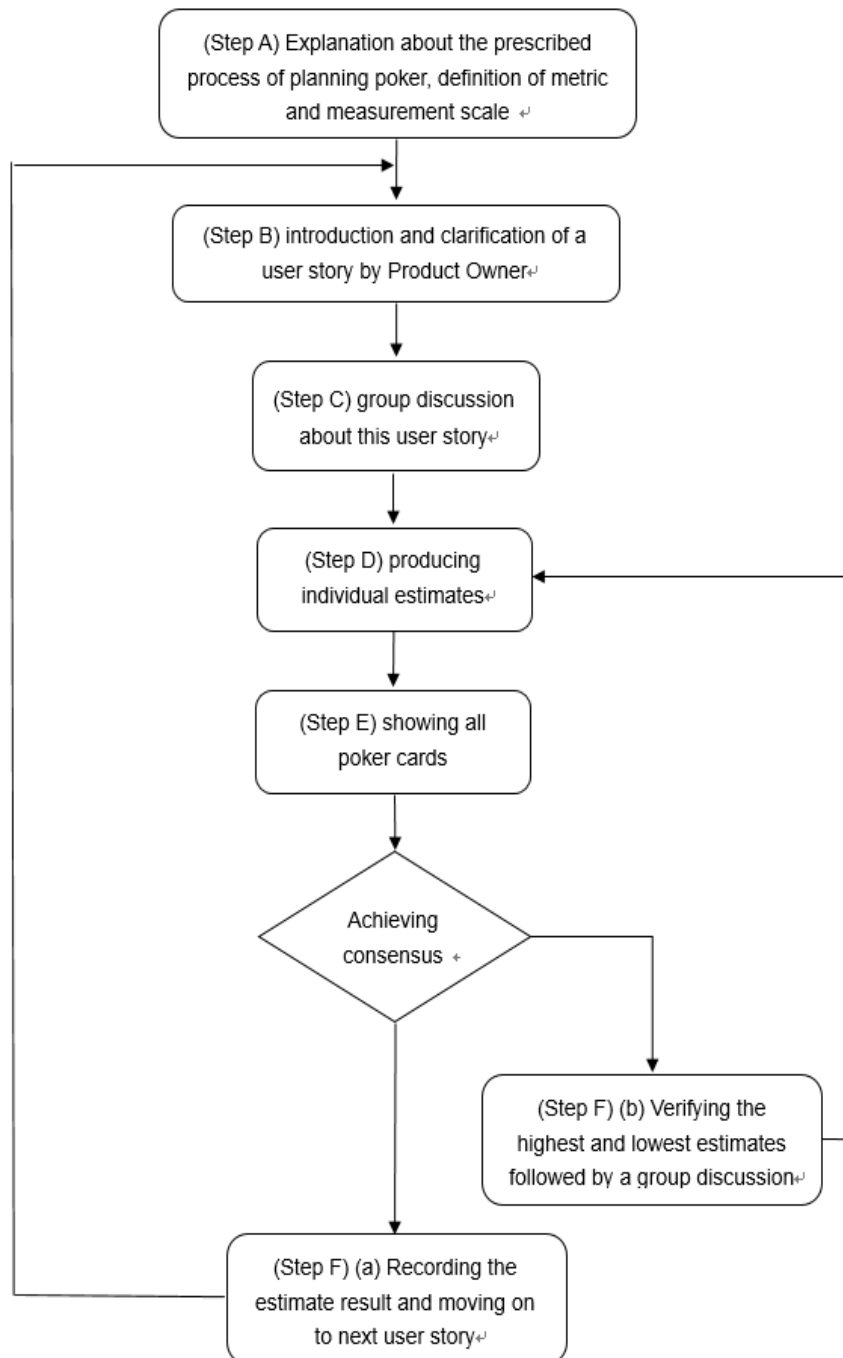
as depicted in a flowchart as shown in **Figure 2**. This flowchart was drawn by reviewing and synthesizing a number of related articles (Cohn, 2005; Haugen, 2006; Molokken-Ostvold & Haugen, 2007; Moløkken-Østvold, Haugen, & Benestad, 2008; Tamrakar & Jørgensen, 2012; Børte, Ludvigsen, & Mørch, 2012).

It should be mentioned that there is an important artifact required during this Planning Poker estimate meeting: Poker Cards as shown in **Figure 1**. Generally, it should be several copies of a deck of poker cards, being used as the representation of each group member's individual estimate of the specific user story, shown by those numbers shown on the poker cards. The outcome of showing these cards will guide what kind of activity will be performed next such as further elaboration, clarification, summarizing, specification and justification in order to achieve group consensus (Børte, Ludvigsen, & Mørch, 2012). Each estimator should assign with a deck of poker cards before starting estimating works.



**Figure 1** Poker Cards Example (Børte, Ludvigsen, & Mørch, 2012)

In fact, the literature that talks about the prescribed process of Planning Poker only describes the procedure and principles rather than the detailed process of Planning Poker meeting. Following is the detailed description of prescribed Planning Poker method refined from various literatures and books.



**Figure 2** Prescribed Process of Planning Poker



(Step A) Generally, the Planning Poker meeting should be begun with an explanation about the prescribed process to other participants especially for a new group. And the metric such as story points or ideal days and measure scale adopted in their estimates for sizing user stories also should be defined. After these, the formal estimating work will start.

(Step B) Firstly, the user story is presented to the team and a brief overview about this user story also is provided, including the expected functionalities involved in this user story.

(Step C) Following, a bit of time will be given to the whole estimate team in order to discuss and clarify this user story. Generally, this user story will be breakdown into a series of tasks involved in this user story. Until that every estimate group member feels they acquire enough information to estimate this user story.

(Step D) Then every estimator need to independently produce their individual estimate by selecting a poker card with an appropriate number according to their personal perspective in terms of the effort involved in implementing that user story, and laying that poker card face down.

(Step E) After each estimator selecting an appropriate poker card that presenting their individual estimates, all estimators reveal the selected poker cards simultaneously. Then, there are only two different situations will happen.

(Step F) (a) The first situation is that all estimators show their poker cards with a same number, which means the group consensus is achieved that all participants' estimate results regarding the efforts involved in that user story are same. So, no more discussion is needed, recording the estimate result and moving on to next user story; (b) Conversely, another situation is that the group consensus is not achieved that all estimators show their poker cards with different numbers, which means one or several participants' estimate results regarding the efforts involved in this user story are different. Then, the whole team has to discuss this user story again, sharing their perspectives and trying to reach a consensus. Usually, during the this situation, the people who show the highest estimate number and the lowest estimate number need to state their justifications and reasons why they show the estimating number, such as what the difficulty for

implementing the user story is or why the implementation of this user story is easy, which is followed by a short discussion participated by the whole group. After discussion, they have to go back to the Step D that performing an individual estimate round and poker game. This cycle process will be repeated until group consensus is reached.

Although group consensus generally can be achieved after the second or third round of poker game, sometimes there is also some special conditions happening. A case in point is that the group consensus still cannot be achieved after the several rounds of poker game. Planning Poker also has some flexible mechanisms. For example, the estimate group can decide how many rounds of poker game would be played for each user story, as the time they could spend was limited (Børte, Ludvigsen, & Mørch, 2012). If the group consensus still cannot be achieved during the limited rounds of poker game, then the estimate result for that user story may be calculated as the mean or median of the individual estimates in the final round, or by applying other ways of consensus making (Tamrakar & Jørgensen, 2012).

### **2.5.2 Recommended Measure Scale**

In the aforementioned prescribed process of Planning Poker, it is mentioned that the measure scale for sizing user stories need to defined in Step A. In terms of Planning Poker estimate technique, Grenning (2002) in his article even suggested that the measure scale in planning poker may adopt a non-linear sequence of numbers such as 1, 2, 3, 5, 7, 10, and "infinity". A poker card with the "infinity" means that the efforts involved in that user story was too large to be estimated. When sizing user stories, if the ratio of sizes between two user stories is not as large as a following term in this sequence (Miranda, Bourque, & Abran, 2009), the nearest term in this sequence will be chosen.

Although this non-linear sequence of numbers in estimating reflected the less precision than a linear sequence of numbers, his considerations probably were to speed up the estimate process and the precision at the initial phase is unnecessary (Tamrakar & Jørgensen, 2012). Indeed, in agile development method, the accuracy of estimate is improved iteration by iteration (Miranda, Bourque & Abran, 2009) (Mahnic, 2011), which the complexity of the software product and group

productivity in each iteration would be calculated in order to adjust the planning of following iterations.

Later, Cohn (2005) in his book "Agile Estimating and Planning" proposed another non-linear sequence of numbers as the measure scale adopted in Planning Poker estimate technique: 0, 1, 2, 3, 5, 8, 13, 20, 40 ..... which is much similar with the Fibonacci sequence (0, 1, 1, 2, 3, 5, 8, 13, 21, 34 .....). The possible reasons contains the following points: (a) in Planning Poker estimate technique, the size of user stories estimated are relative, and the gaps between each two numbers in this Fibonacci sequence become reasonably larger as the numbers increase (Cohn, 2005); (b) the estimate process of user stories adopts analogy between a new user story and already estimated user story. In order to avoid wasting time on discussing insignificant differences between two user stories, for instance, if the difference between two user stories is not as large as a following term in the series, the two user stories are assumed to be of the same size (Miranda, Bourque, & Abran, 2009). Tamrakar and Jørgensen (2012) conducted an experiment to study the influence of the Fibonacci sequence to estimate process in Planning Poker, results revealed that the median of time cost on estimating each requirement with the Fibonacci sequence was obviously less than the median of time cost on estimating each requirement with the traditional linear sequence; (c) The Fibonacci sequence provides appropriate flexible ranges to reflect the uncertainty of user stories.

### **2.5.3 Roles and Responsibilities in Planning Poker**

Generally, in terms of estimate planning in agile software development methodology, all team members who involved in the implementation of user stories (Mahnič & Hovelja, 2012) need to attend the estimating and planning meeting such as developers, requirement analysts and testers. It is same in terms of Planning Poker estimate meeting. However, it should be stressed that there are two significant roles in Planning Poker estimating meeting. These two roles and their responsibilities and listed and explained below:

- Customer representative:

The customer representative also can be called Product Owner in Scrum agile method, this

role is responsible for providing the development team with a vision of what the customer wishes to develop, and in charge of maintaining, prioritizing, explaining and clarifying all user stories during estimate meetings and iterations (Mahnič & Hovelja, 2012).

- Moderator:

In general, the moderator may be played by Scrum master who is a key role in Scrum agile method, being responsible for managing and controlling the whole development process (Schwaber, 2004). In Planning Poker estimate meeting, the moderator is responsible for hosting the whole estimating process such as counting down for poker game and controlling the time cost on each user story.

#### **2.5.4 Reasons for Employing Planning Poker**

Due to some reasons such as some particular activities and principles in the prescribed process of Planning Poker, the Planning Poker estimate technique achieved multiple benefits to the development team and participants, which facilitates Planning Poker is widely adopted in software industries. This sub-chapter will discuss these benefits achieved by Planning Poker estimate technique in detail.

First of all, Planning Poker estimate technique promotes the group discussion and effectively improves the accuracy of software effort estimate. To be specific, Planning Poker, as a group discussion-based estimate technique, ensures that all developers participate in the estimation process, and that everybody's opinion can be heard, regardless of whether they are among the loudest or most influential people in the group (Haugen, 2006) (Mahnič & Hovelja, 2012). Meanwhile, due to some particular principles and activities prescribed in Planning Poker technique such as disaggregation of user stories and arguments for and against the highest and lowest estimates, Planning Poker facilitates social interaction in the construction of an estimate (Børte, Ludvigsen, & Mørch, 2012), which also provides more opportunities to find as many issues that affect the implementation as possible (Mahnič & Hovelja, 2012). In addition, Planning Poker, as a group discussion-based estimate technique with some particular activities, also is beneficial to promote sharing and integration of multiple opinions (Cohn, 2005), which is significant

component in group-based effort estimation. Also, the group-based effort estimation also is considered to be more accurate than individual estimation, which has been verified by Moløkken-Østvold and Jørgensen (2004). They conducted an experiment participated by twenty software professionals to estimate the efforts required for several actual software projects by two approaches: individual estimate and group discussion-based estimate. It was found that the group discussion-based estimate results were closer to the efforts expended on the actual software projects than the individual estimate results. Moreover, Moløkken-Østvold and Jørgensen (2004) argued that participants with different backgrounds in software effort estimate can help to eliminate the problem of over-optimism by identifying more issues affecting implementation of user stories. Cohn (2005) in his book “Agile Estimating and Planning” also indicated that Planning Poker provides estimators with a chance of lively dialogue, so that every estimator can call upon their peers to explain and justify their personal estimation and can be responded immediately, which can contribute to improvement of the estimate accuracy, especially in some user stories with a large amount of uncertainty (Hagafors & Brehmer, 1983).

Another benefit that is widely approved in the literatures is that Planning Poker estimate technique effectively helps to avoid the so-called ‘anchoring’ affect (Haugen, 2006) (Tamrakar & Jørgensen, 2012). This is achieved by some particular activities and principles in Planning Poker estimate technique. For instance, all estimators need to reveal their selected poker cards simultaneously, and Individual estimates are not influenced by others.

Finally, the reason that is proposed in less literatures is that Planning Poker is considered as a light-weight estimate technique with face-to-face interaction, which is easily to perform with limited overhead (Mahnič & Hovelja, 2012).

### **2.5.5 Significant Activities in Planning Poker**

In order to achieve those benefits stated above, there are many significant activities prescribed in Planning Poker which need to correctly be performed during Planning Poker meeting. This sub-chapter will split the prescribed process of Planning Poker and refine those significant activities, and point out the related benefits. These detailed activities split from the prescribed process of

Planning Poker also will be used on data analysis in order to answer the first question of this research: How does the Planning Poker process in practice differ from the prescribed process in literature?

(a) Clarifying and sharing understanding for Planning Poker process (in Step A):

This activity is to clarify the prescribed process of Planning Poker to team members, which is very important for the efficiency of estimate, especially for a new group.

(b) Defining the metric for estimating user stories (in Step A):

This is an extremely simple activity. Generally, the metric that would be used on estimate meeting had been selected before estimate meeting. Estimators just need to be informed that which metric would be used on the estimate planning rather than discussion and re-definition. Some common metrics for user stories are listed in the previous chapter. Cohn (2005) in his book "Agile Estimating and Planning" suggested two metrics for Planning Poker: story points and ideal days.

(c) Defining measure scale for estimating user stories (in Step A):

Similarly with previous activity, this is also an extremely simple activity and estimators just need to be informed that which metric would be used on the estimate planning rather than discussion and re-definition. The recommended measure scale (Fibonacci sequence) for Planning Poker is given in Chapter 2.5.2 of this research.

(d) Each user story is clarified by Product Owner (in Step B):

This is the start of estimating each user story. Each user story is clarified and explained by the Product Owner in order to let the team better understand the tasks involved in that user story.

(e) Sharing understanding for user stories (in Step C):

This is a group discussion activity, which is performed after each user story is introduced. During this activity, all questions about the introduced user story should be raised and the possible tasks involved in implementing that user story should be discussed. This activity is

helpful for the group to better clarify tasks involved in that user story.

(f) Producing individual estimate (in Step D):

This activity ensures that all group members can participate in estimating by each person selecting a poker card with an appropriate number to present their individual estimate results according to their personal perspective in terms of the effort involved in implementing that user story. The key point is that the selected poker card should be laid the face down in order to avoid the so-called 'anchoring' affect.

(g) Synchronize showing individual estimation results (in Step E):

This is the most significant procedure in Planning Poker, estimators must show their own estimating results simultaneously in order to avoid the 'anchoring' affect.

(h) The highest and lowest estimates are verified when group consensus is not achieved (in Step F):

This activity only happen when group consensus is not achieved in the last poker game. In Planning Poker technique, all estimators can elaborate their personal opinions causally after a failing poker game. It is expected that the person who gave the highest or lowest estimate number in the last round of poke game can to verify his or her perspective. Then a group discussion can be triggered. This activity is beneficial to achieve the benefit that promoting sharing and integration of multiple opinions (Cohn, 2005).

(i) Repeating poker games when group consensus is not achieved (Optionally):

This is an optional activity that can be replaced by an oral agreement such as taking the median of the individual estimates in the final round (Tamrakar & Jørgensen, 2012). But the oral agreement must be based on at least one round of poker game in order to avoid the 'anchoring' affect.

## 2.5.6 Significant Principles in Planning Poker

In order to ensure that all purposes of Planning Poker with every activity can be achieved, there are some significant principles that should be obeyed, which will be listed and explained in this sub-chapter. Likewise, these principles also will be used in data analysis in order to answer the first question of this research: How does the Planning Poker process in practice differ from the prescribed process in literature?

(a) Time-box for the estimating meeting:

This principle is to ensure the efficiency of the estimating meeting. A rough time plan on the estimate meeting should be forecasted and arranged in advanced.

(b) User stories are clarified by Product Owner:

This principle is to ensure the team can better understand the tasks involved in that user story, which is beneficial to guarantee the related features can be developed correctly, and meet the requirements of customers (Mahnic, 2011). A case study conducted by Mahnic (2011) also indicate that the role of Product Owner is extremely important in clarifying all user requirements, which also is the key procedure of what assuring the smooth running of a software project.

(c) Defining a base user story:

This is the key element of analogy-based estimate method, which is a significant component of Planning Poker. This base user story is used as the baseline, and the story points of other user stories are determined based on the baseline. If the baseline story point changes, other story points also have to be changed (Kang, Choi, & Baik, 2010) (Popli & Chauhan, 2012). Cohn (2005) proposed two different approaches to define the base user story as the baseline: the first approach is that selecting a user story that seems the smallest size; the second approach is that selecting a user story that seems medium size as the baseline. The suggestion of Popli and Chauhan (2012) in their article is that finding the simplest user story as the base user story.



(d) Providing a measurement scale that taking into account the uncertainty of some big user stories:

This principle is to consider the uncertainty factor of user stories. It is suggested that employing the symbol '?' as a measurement in order to present those big user stories with uncertainty (Tamrakar & Jørgensen, 2012).

(e) Individual estimates are not influenced by others:

This is a significant principle when performing the activity of producing individual estimate, and aiming to achieve some benefits provided by Planning Poker technique such as avoiding the so-called 'anchoring' affect (Haugen, 2006) (Tamrakar & Jørgensen, 2012).

(f) Only those user stories involved in implementation are estimated:

The reason is that only those user stories which involved in implementation are involved with the release and iteration planning.

(g) the estimates of every user story should be relative:

This is a significant principle in Planning Poker estimate meeting. It has been mentioned in the previous chapter that Planning Poker estimate technique combined multiple estimate approaches such as expert opinions, analogy and disaggregation (Cohn, 2005). This principle is to ensure the analogy approach can be adopted to produce the relative estimate, avoiding the absolute estimate.

(h) every user story should be disaggregated into a series of small tasks:

The purpose of combining the disaggregation into Planning Poker estimate technique was to ensure the accuracy of estimate. In addition, the process of disaggregation also provides more opportunities to find as many issues that affect the implementation as possible (Mahnič & Hovelja, 2012).

## 2.6 Empirical Research about Planning Poker and Group Estimates

Since 2002 that the Planning Poker technique was arisen by Grenning, there were a limited number of empirical literatures related to Planning Poker, most of which were centered on the accuracy of estimation and just few research discussed other aspects related to the Planning Poker such as measure scale and communicative practice. In this sub-section, there were nine empirical literatures to be summarized, and there were six research to be related to the estimate accuracy of using Planning Poker technique, one research was related to the Fibonacci sequence recommended for Planning Poker technique, one research focused on the discussion process for estimating user stories by Planning Poker technique. Although the last two empirical research were not related to the Planning Poker, they provided a strong evidence that group discussion-based estimate technique effectively improve the accuracy of estimates. In these empirical research, it was worth mentioning that there were two research to indicate the unavailability of using Planning Poker technique on estimate accuracy, but these estimators participated in the two experiments also had relative lack of practice experience. Following, these relevant literatures with their research results will be summarized and compared in detail.

First of all, this review will start with these empirical literatures about the estimate accuracy of using Planning Poker technique. Molokken-Ostvold and Haugen (2007) conducted a research to compare some differences between group consensus achieved by Planning Poker estimate technique and mechanical combination of individual expert estimation in terms of optimism of produced estimates and accuracy of estimate results, and the differences of estimate accuracy between Planning Poker and the unstructured estimate method, including whether the estimate results obtained by Planning Poker estimate technique are less optimistic than the mechanical combination of individual expert estimates when producing estimates, and more accurate than the mechanical combination of individual expert estimates and the existing individual estimation method. In this research, all tasks were estimated by a same group, and part of tasks were estimated by Planning Poker estimate technique. And there was a calculation to be defined for comparing estimate accuracy with the actual efforts. Results revealed that the optimism was slightly reduced after group discussion, and there was a slight indication that the accuracy the estimate results achieved by group consensus was increased than mechanical combining of

individual estimates. However, compared with individual estimate method, the Planning Poker just achieved a similar estimate accuracy.

In 2008, Moløkken-Østvold, Haugen and Benestad performed another empirical research with similar research questions compared to aforementioned research. Apart from emphatic analysis for the effects of Planning Poker in terms of optimistic and accuracy of estimates, the difference with the research in 2007 is that this research also explored the influence of Planning Poker on some other aspects of the developers' work. In this study, the estimates results obtained by the Planning Poker estimate method and an existing individual estimation method are compared with actual efforts for development tasks. And a code analysis also was performed for exploring any possible differences related to the size or complexity of the changes. Finally, a series of interviews with the estimators also were conducted in order to explore individual perspectives about Planning Poker and individual estimation technique. There were several results to be came from this research. Firstly, compared with the statistical combining of individual estimates, the Planning Poker, as a group estimate technique, can reduced the optimism when producing estimate. And the Planning Poker estimating technique also achieved as similar accuracy as estimated by individual experts estimate. These two research results corresponded with the aforementioned research (Molokken-Ostvold & Haugen, 2007). Moreover, this study also indicated that the median estimation in both Planning Poker and control groups can provide fairly unbiased estimates results. In addition, there was an additional benefit to be found that Planning Poker estimate technique facilitated group discussion, but the reason of this phenomenon cannot be explained due to the design of this research. Meanwhile, there was another benefit of Planning Poker from the interviews, which the Planning Poker estimate technique was helpful for the project group to discuss implementation strategies for each task, and provided a better overview of what each developer would work on.

Later, in 2012, Mahnič and Hovelja also conducted a case study with the similar research questions, which also mainly explored the optimism and accuracy of estimates achieved by Planning Poker estimate technique. However, there was a slightly opposite result with aforementioned research to be obtained in this study. To be specific, in this study, there were 13 student teams were organized to develop the same Web-based information system and use both

Planning Poker technique to estimate same user stories, and the estimates obtained by the first round of poker game were combined by statistical combination. Meanwhile, these user stories were also estimated by an expert group using the same way in order to compare the estimate results with the student teams. Results showed that students' estimates obtained by the statistical combination method were optimistic and less accurate and the Planning Poker estimate technique increased the optimism and reduced the accuracy. The similar phenomenon also happened in the three experiments of Buehler, Messervey and Griffin (2005) participated by many undergraduate students with professional background, all experimental results showed that the prediction results generated by group discussion was a little more optimistic than those prediction results generated by individual estimates. But, in Mahnič and Hovelja (2012), the experts group's estimates obtained by Planning Poker were much closer to the actual values than the estimate results of statistical combination. Therefore, a possible inference raised in this research was that the optimism bias can diminish or disappear by increasing the expertise of people when estimated.

Haugen (2006) also conducted an empirical study to analyze the estimate accuracy of using Planning Poker technique. Similar with the study of Mahnič and Hovelja (2012), the results of this study also was related to the experience of estimators. To be specific, in this experiment, a complicated application system project was conducted by a development team, and using Extreme Programming development method. And the estimate work of user stories involved in this project was divided and performed by unstructured group estimate method and Planning Poker estimate technique. Results revealed that Planning Poker technique improved the estimate accuracy when estimators had some experiences on the relevant tasks involved in user stories. Inversely, Planning Poker technique posed negative effects on the estimate accuracy when estimators did not have experiences on the relevant tasks involved in user stories.

Mahnic (2011) conducted a case study regarding introducing Scrum concepts to development groups, which aims to analyze development groups' capabilities of adopting Scrum concepts and collect the groups' perspectives about the importance of particular activities for a successful Scrum project. In this case study, the Planning Poker estimate technique was adopted. Even though the Planning Poker estimate technique just was not the main research subject, there still was a theory to be proved in this case study that the estimate accuracy by Planning Poker was

improved iteration by iteration.

Regarding other aspects of Planning Poker technique, Tamrakar and Jørgensen (2012) performed a series of experiments in order to study the influence of Fibonacci numbers as measure scale employed in Planning Poker estimate technique. They conducted two main empirical studies, being separately participated by some computer science students and computer professionals with different measure scales. These students were divided into two estimate teams and these professionals were divided into four estimate teams. There were one student team and two professional's team to estimate tasks by the traditional linear sequence, and other teams adopted the Fibonacci sequences to estimate tasks. Results revealed that there was no significant difference between the individual effort estimates with the Fibonacci sequence and the individual effort estimates traditional linear sequence. And it is found that the median of time cost on estimating each requirement with the Fibonacci sequence was obviously less than the median of time cost on estimating each requirement with the traditional linear sequence.

In addition, in the all literatures regarding group estimates reviewed by this research, there was only one empirical article focusing on communicative practice, which was conducted by Børte, Ludvigsen and Mørch (2012). Their experiment aimed to analyze the discussion process from reasoning to quantification when software professionals estimated the efforts of a software based on Planning Poker technique, and focusing on the use of concepts during discussion. After detailed analysis for interaction contents, researchers indicated that the introduction of concepts during group discussion can cause the 'anchoring' effect, which the historical experiences of other participants subsequently can be activated.

Apart from those empirical research that focused on Planning Poker technique, there also were some empirical research to explore the group discussion-based estimate method with some other techniques. Passing and Shepperd (2003) conducted an experiment to analyze and compare two estimate approaches: checklist method and Delphi group discussion technique, in terms of accuracy, transparency and consistency of estimates. In this experiment, there were three rounds of estimates to be performed, and every round estimate contained two aspects: Line of Code (LOC) and efforts. Both checklists method and group discussion with Delphi technique were

adopted in each round estimate, and the third round of estimates additionally added the individual estimate activity in order to the purpose of comparison. Results revealed that the estimate method of checklists increased the size of estimated tasks in terms of the efforts and LOC, whereas the estimate method of group discussions with Delphi technique did not pose any additional influence. And it was found that both checklists method and group discussions improved the accuracy of the LOC estimate compared to the actual data, whereas there was not similar trend to be shown on efforts estimates. Regarding the consistency and transparency of estimates, only checklists estimate contributed on these two items. In 2004, Moløkken-Østvold and Jørgensen also performed an experiment to study the performance of group discussion estimate method compared to individual estimates. And there were twenty software professionals to participate and be divided into five estimate groups. Results showed that the group-based estimate method provided less optimism, and were closer to the actual data than individual estimates results. Although the both two empirical research were not related to the Planning Poker technique, there were plenty of evidence to be provided and show the advantage of group discussion-based estimate method such as the improvement on accuracy.

## **2.7 Likely Challenges in Group Estimation**

As already mentioned, group discussion-based estimate techniques have many benefits for software estimate such as combination and sharing of multiple opinions, which improves the estimate accuracy to large extent (Cohn, 2005) (Moløkken-Østvold & Jørgensen, 2004). And the Planning Poker estimate technique, as one of the group estimate technique with particular activities, it contributes more benefits to the estimate work such as more opportunities for finding issues and the promoting interaction between estimators (Mahnič & Hovelja, 2012) (Børte, Ludvigsen, & Mørch, 2012). In spite of this, there still are some challenges that is likely to happen during group estimate process. A case in point is the so-called 'anchoring' effect, another example can be that group discussion may increase the optimistic bias of individual estimates (Buehler, Messervey, & Griffin, 2005). This sub-chapter focuses on these likely challenges in group discussion-based estimation.

The first challenge was the so-called 'anchoring' effect, which has been raised in the previous

chapter of this thesis. In this section, the 'anchoring' effect would be further explained and discussed. The 'anchoring' is a cognitive bias that people's subjective opinions may tend to the first piece of information when making decision. This effect can happen in group discussion process of various field. In software field, the 'anchoring' can be understood as an impact on subsequent estimates after someone putting forward an estimate or expectation on the size of a user story in group discussion-based estimate process, even if the estimates or expectations is unrealistic (Aranda & Easterbrook, 2005). For example, an estimator may try to give an estimate result closing to another estimate given by another estimator. There are many literatures to discuss that Planning Poker estimate technique is helpful to avoid the 'anchoring' (Haugen, 2006) (Tamrakar & Jørgensen, 2012). However, there is not any literature that reveals the 'anchoring' effect in group estimate process to be found, which probably is due to the fact that the 'anchoring' effect is a subjective thinking that cannot be reflected by empirical research.

The second likely challenge was that the prediction results generated by group discussion was more optimistic than those prediction results generated by individual estimates. Even though this was mutually excluded with the experimental result of Moløkken-Østvold and Jørgensen (2004) that there was less optimism to be shown on estimate results after group discussions compared to the estimate results generated by individual estimates, this challenge has already revealed in two known empirical research conducted by Buehler, Messervey and Griffin (2005) as well as Mahnič and Hovelja (2012). Both research have been discussed in the previous chapter, there was a common point to be found in reviewing the two research, which all participants in these experiments that revealed this likely challenge were professional students with less experience. However, another experiment of Mahnič and Hovelja (2012) participated by some experienced professionals showed an opposite result with aforementioned challenge, which the prediction results generated by these experienced professional was much closing to the actual data. This experimental result was corresponding with experimental conclusion of Moløkken-Østvold and Jørgensen (2004) that was participated by some software professionals. Therefore, it can be inferred that the phenomenon of increasing optimism is likely to be happened in the group estimate process participated by people with less experience.

## **Chapter 3 RESEARCH DESIGN AND IMPLEMENTATION**

In this chapter, the research strategy and implementation method used in this thesis are introduced. This revolves around the nature of the research questions that have been described, aiming to answer the research questions accordingly. This includes an overview of research strategy of this thesis, the case study method and design, data collection and analysis as well as implementation process and result of literature review and case study.



### 3.1 Research Strategy

The primary aim of this thesis is to explore the differences between the prescribed process of planning poker, as the theoretical (ideal) baseline, and how Planning Poker is actually implemented in practice. The baseline, theoretical Planning Poker process is obtained by synthesizing the prescribed process described in some authoritative literature (e.g. (Cohn, 2005)). To understand a practical implementation of Planning Poker, a software development team was observed and recorded as they did planning poker, as an in-depth case study. Two planning poker meetings were observed and audio recording of these meetings, together with field notes, are the data used for analysis. Content and thematic analysis are used to analyze transcripts of the meetings, together with information from the field notes.

The case study is a suitable research approach to studying a phenomenon in detail in its real-life context, to get some insights into that phenomenon (Yin, 2003). This fits the research aim of this thesis to understand the phenomenon of planning poker and the detailed process, benefits and challenges. As Geering (2007) notes, this case study cannot be expected to be generalizable to all other teams doing planning poker but should provide some insights to others involved in planning poker that may be useful.

The selection of the case organization, the case team and the project, as well as the data collection, were all undertaken prior to this thesis by another researcher (my supervisor). The scope of this thesis is the data analysis and literature review and interpreting these results for this case study.

The overall approach to the research is interpretivist using an in-depth field study as a case study. The interpretivist approach proposes that observing reality is something subjective and based on meanings and understanding (Black, 2006). As described by Klein & Myers (1999), research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools, and other artifacts". The research in this thesis analyses the language and meanings of a team doing Planning Poker, as well as the artifacts in these meetings, to understand the reality of Planning

Poker in a real-world setting. However, positivist case study is to search evidence for formal propositions, tests hypotheses and draws inferences from several single-samples to a stated population (Runeson & Höst, 2009). This is not suitable for this research.

The specific execution process in two separate Planning Poker meetings of the same team on the same project in the case organization are analysed to identify the process in practice. The theory and practice are compared and contrasted to find the differences and similarities between the two. The differences are further analyzed to identify the consequences and reasons for these differences and provide recommendations to improve any negative consequences. Furthermore, this thesis also explores the claimed benefits of using Planning Poker and compares them with what was found in the case study. Similarly, common challenges are identified in literature and compared with what happened during the Planning Poker meetings. This could give practitioners insights into the Planning Poker estimation technique and help to deepen understanding of all the activities in Planning Poker, as well as get how to achieve the expected benefits and address potential challenges. To achieve these aims, the observation and deep analysis of Planning Poker meetings are required, focusing on the specific estimation process of each user story on the meeting and exploring the possible reasons and results.

In order to find the difference of Planning Poker estimate meeting between practice and theory, it needs to be prioritized to clarify the theory of Planning Poker estimate technique, and deep understanding the purpose and expectation of Planning Poker technique. To obtain the clarification of theory and in-depth understanding, it was required to search the theory about Planning Poker estimate technique from literatures, clarifying the expected executing process of Planning Poker technique and refining the significant activities and principles of Planning Poker technique with respective contribution.

To analyze the two Planning Poker meetings in the case study, the research approach that was used in was based on the method that was used by Børte, Ludvigsen and Mørch (2012) in their empirical study. In this study, the whole meeting is unpacked and analyzed according to the specific conversation content of different process steps in order to explore the achievement during interaction. In this thesis, the Planning Poker meetings are be divided into several activities

according to previous literature review, and each activities are be compared with theory, analyzed and discussed using the specific meeting transcript contents in order to explore the contribution and influence.

Various research have been conducted many years after Planning Poker estimation technique was proposed by Cohn (2005). Apart from a deep understanding about Planning Poker technique, the literature review conducted in this research prior to the case study also was used to design the specific research direction for strategic data analysis such as the process and principles of Planning Poker, the claimed benefits as well as the possible challenges. These research directions from literature review are used as the landmarks during data analysis, in which the observed process and principles of Planning Poker will be contrasted with theory, the claimed benefits will be compared with the observed benefits, and those challenges will be explored. Then the primary differences between practice and theory will be identified. This research will analyze and discuss possible causes and results of any differences identified.

### **3.1.1 Case Study Method and Design**

The primary research question of this thesis is:

*RQ1. Does the implementation of Planning Poker in practice differ from the prescribed process, and if so, in what ways?*

In order to answer this question, case analysis for empirical Planning Poker estimate meetings is essential, which observing various phenomena happened during practical Planning Poker estimate meeting. Yin (2003) defined that case study research was a suitable method to investigate a phenomenon and explain the causal links within its real-life context. And Yin (2014) clearly indicated in his book that case study method was suitable to explain some present circumstance such as “how” or “why” some phenomenon works. A case study approach is appropriate for “studying phenomena in their context” (Runeson & Höst 2008), particularly where the context and the phenomenon are closely intertwined, as is the case with Planning Poker and the context of team-based software development in practice. Both of these suggest that the adoption of case study method in this thesis research is appropriate.

Case study approach contains two different categories: single-case studies and multiple-case studies. Single-case studies were often employed to investigate existing theory, extending more valuable information and exploring possible challenges. It can help to review research in the whole field. Multiple-case studies were often used to predict results in terms of some cases with common features, which mainly contributed to possible patterns or contrasting results (Yin, 2003). In terms of this research, the single-case study is used, with data from two Planning Poker meetings collected and analyzed, as part of this case. These meetings were analyzed to look for some useful patterns between the prescribed process and the implementation of Planning Poker in practice. The two meetings are also compared with each other since they occur at different phases of software development. The aim is to compare and contrast any phenomenon or patterns between the meetings that may be explained because they took place at different phases of the software development cycle in order to answer *RQ2*. of this thesis:

*RQ2. Does the implementation of Planning Poker in practice change at different phases of the development cycle?*

Before starting the case study, a detailed research plan is required. Yin (2014) defines the components of case study research design as five steps:

- Case study's questions;
- Its propositions;
- Its unit of analysis;
- The logic linking the data to the propositions;
- The criteria for interpreting the findings.

These steps are now used to structure the description of my research plan:

***Case study questions and propositions:*** This research also would conduct the case study research according to these procedures. The proposition of this research was confirmed by reviewing literatures about Planning Poker, which there hardly was any literatures to investigate and discuss about the process of Planning Poker estimate technique. Most of relevant literatures regarding Planning Poker were related with the accuracy of estimate results by Planning Poker technique, comparing with other estimate techniques or real spending time. Therefore, this research initially targeted the estimate process of Planning Poker technique. Furthermore, this

research determined the main research question: how the practical process of Planning Poker differ from the theory, as mentioned in aforementioned description. The further research questions of this thesis include:

*RQ3. What claimed benefits are realized in practice and how?*

*RQ4. What are the challenges in implementing Planning Poker in practice?*

In order to answer these research questions, it was required to clarify the theory of Planning Poker estimate technique, and deep understanding the purpose and expectation of Planning Poker technique. The clarification of theory and in-depth understanding would be required by searching the theory about Planning Poker estimate technique from literatures, aiming to clarify the expected executing process of Planning Poker technique and refine the significant activities and principles of Planning Poker technique with respective contribution. The case study was strongly based on the theory from literature review.

***Unit of Analysis:*** The unit of analysis in this thesis is the Planning Poker process that takes place to get agreement on the estimate for a specific user story. This may involve one or more rounds of Planning Poker for a given user story. A single Planning Poker meeting had many such rounds of Planning Poker, for all the user stories estimated in that meeting. Patterns of the planning poker activities for each user story process and for two meetings were the basis of describing the Planning Poker process for comparison with theory.

***Linking the data to propositions and criteria for interpreting findings:*** The unit of analysis was related with the logic linking the data to the propositions and the criteria for interpreting the findings. Specifically, the unit of analysis is analyzed from three aspects. Firstly, after prescribed process of Planning Poker technique was obtained by literature reviewing, the comparison between theory and practice was conducted. The empirical Planning Poker estimate meetings in this research will be compared with theory in detail, including every activity and procedure. Meanwhile, this case study also will look for the pattern in practicing Planning Poker estimate technique, and compared with the theory. The possible reasons and relevant consequence caused those difference also would be analyzed and discussed. Secondly, this research will analyze that whether those claimed benefits were achieved in empirical Planning Poker estimate meetings, and exploring possible reasons while any claimed benefit was not achieved. Finally,

this research also summarized those challenges happened in both empirical meetings, and give feasible suggestions in order to be conducive for other practitioners to avoid those challenges.

### **3.1.2 Literature Review of Research**

The first stage of this research is the literature review that involved in reading and analyzing the theory of Planning Poker estimate technique with underlying understanding. The primary aim of literature review is to contribute a deep understanding the theory of Planning Poker estimate technique, including the reasons why employing Planning Poker technique, the aim and prescribed process of Planning Poker as well as previous research regarding Planning Poker technique. Therefore, the literature review of this research started with agile development method in order to understand the aim of Planning Poker technique, then this research goes through all details of Planning Poker technique. The findings from this literature review also will provide a comparison with empirical Planning Poker meetings in case study.

The framework of this review was planned from a high-level introduction of agile development method to the details of Planning Poker technique. This is due to the fact that Planning Poker technique is proposed to use in agile software method, hence it is necessary to understand the reason why Planning Poker technique is proposed in agile software method. Therefore this research introduced the process of agile development method and components. Meanwhile, this research planned to compare the difference between agile development method and traditional software development methods. This will contribute to understand Planning Poker technique with aims to a large extent.

### **3.1.3 Data Collection and Analysis**

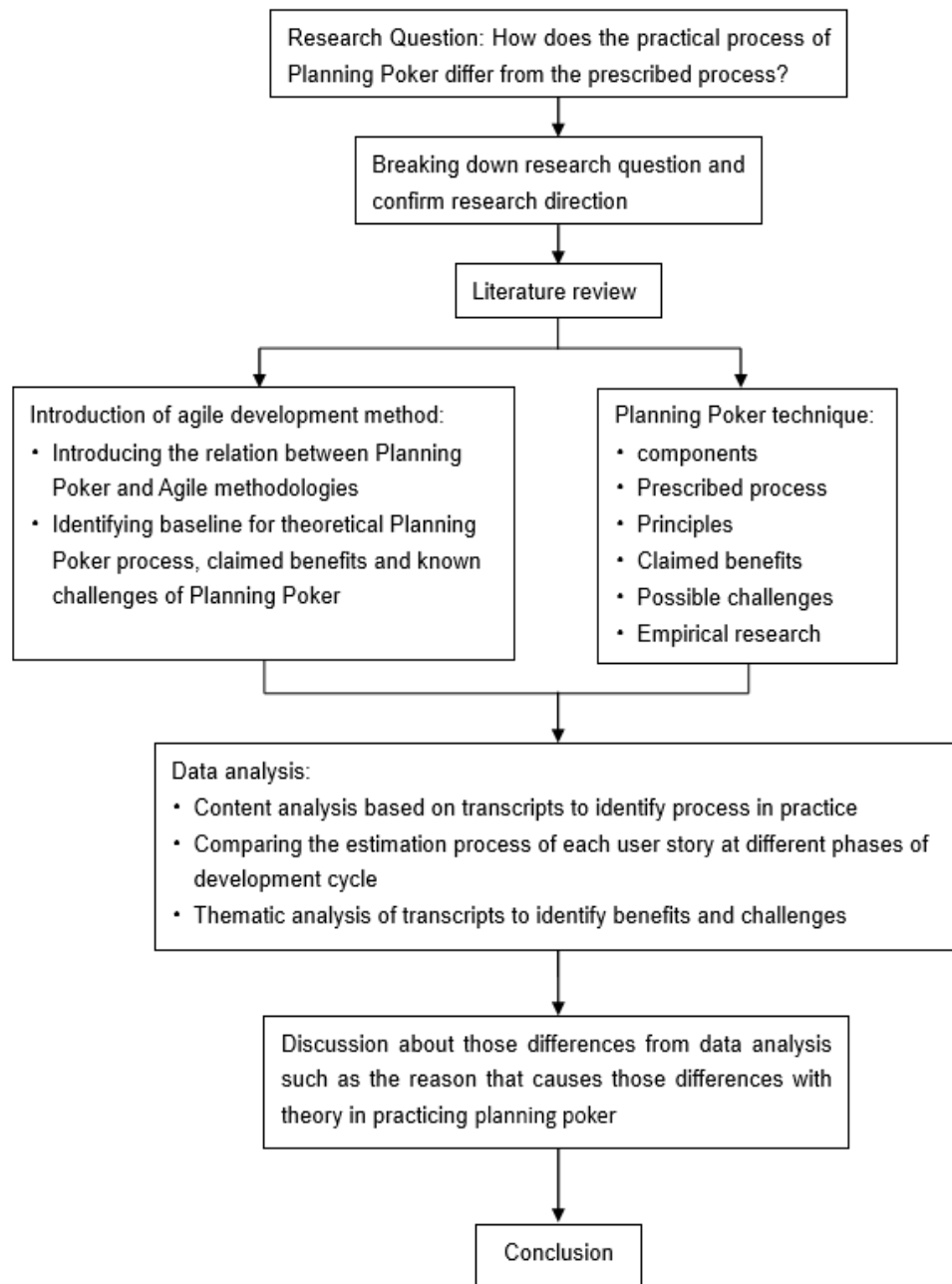
In order to answer the research questions of this research, it is necessary to select the research object that adopts Planning Poker technique under an agile development environment. Therefore, this research selected two audio recordings of Planning Poker estimate meetings as the research object of this thesis, which was provided by my supervisor. The recordings are of two estimation meetings under agile development environment with Planning Poker technique, and being executed by same development group for a same software project. In the meeting, the relevant

efforts were estimated by user stories in order to schedule a sprint backlog. Before conducting case study, both audio recordings were transcribed to text documentation in order to easily explore their interaction content on meetings. The data analysis work was conducted based on the text documentation, going through from the apparent process to every specific interaction that happened in the estimate process of each user story.

During data analysis, the prescribed process of Planning Poker technique is the process that is used to estimate *one user story*, hence the whole practical meeting was divided into many estimation processes according to the amount of user stories estimated during meetings in order to compare with the theory. The primary purpose of this research was to explore how the practical process of Planning Poker differs from the theory. This thesis would find the difference between theory and practice, and analyze the influence and possible causes.

Furthermore, this research also explores another two questions by these practical data: What benefits were achieved in practice; and what challenge happened during meeting. The first question was to explore what they did very well on the meeting, which would be worth proposing to other practitioners. Conversely, the second question explores the challenges they met during meetings, and analyzes the possible reasons. Meanwhile,

The feasible recommendations also are provided for other practitioners, in order to avoid these challenges in the implementing Planning Poker in practice. The design of the whole research process is shown in **Figure 3**.



**Figure 3** Research Design Process Diagram



## **3.2 Implementation of Research**

### **3.2.1 Literature Review**

Considering the fact that the Planning Poker estimate technique was recommended in agile software development method (Cohn, 2005), it was necessary that the literature review was conducted from a relatively high-level concept. Because the reason that resulted in some decisions and behaviors during meetings was likely to involve in the implication of agile development estimate. Therefore, at the beginning of this literature review chapter, the agile software development method was introduced with a comparison with traditional software development method. Meanwhile, the differences of software estimate between agile software development and traditional software development were summarized. And some other software estimate techniques were briefly illustrated in this thesis. Then this thesis focused on the Planning Poker technique at the final part of literature review chapter.

Based on the literature review conducted prior to case study, a thorough understanding regarding Planning Poker estimate technique can be obtained, including prescribed process of Planning Poker, the primary expectation, some other expected benefits as well as potential challenges. This will contribution the following case study, providing primary directions for the analysis of data. The prescribed process of Planning Poker technique from literature review would be used and compared with the practical data in order to obtain the differences. Those expected estimate approaches also be verified in order to judge whether these approaches were adopted in practice. Those possible challenges also would be reference of this research to explore whether those challenges happened during practice.

### **3.2.2 Case Study**

After literature review, this research conducted the case study work. According to research design of this thesis, the audio recording of both empirical Planning Poker meetings were transcribed to text documentation in order to better analyze the contents of both meetings. Based on the text documentation transcribed that are showed in appendix A and B, this thesis adopted a method that was similar with the method adopted by Børte, Ludvigsen and Mørch (2012) in their empirical research, in which the content of both meetings were broken into many activities and unpacked

into the detailed conversation contents. In this research, both meetings were divided into many parts according to the estimate process of each user story, which will be helpful to find the pattern of estimate process with Planning Poker technique in practice.

Based on the estimate process that has been divided, this thesis conducted a deep study that analyzed and compared the estimate process of each user story of both meetings, exploring the differences among these estimate processes of every user story in detail. Meanwhile, those claimed benefits of Planning Poker technique also were discussed according to both empirical Planning Poker meetings. Both meetings also were reviewed to explore possible challenges. To be specific, the whole analysis process of this thesis for practical data was divided into three stages. Meanwhile, in order to better observe the time spent on each user story, the rough timeline of both meetings also was drawn respectively.

The first stage was the relatively bigger research phase in this thesis, it provided a detailed description for two meetings according to the estimate process of each user story. Then the comparison with theory and comparison between two meetings were conducted respectively. By this comparison, this thesis found some differences between practice and theory, the reasons that caused these differences and the results that lead to these differences also were analyzed and discussed. Meanwhile, this thesis summarized several pattern of estimate process by comparing the estimate process of each user story, and analyzing the possible reasons that caused these differences by connecting various factors such as the phenomena of individual estimates.

The second stage was based on those claimed benefits of Planning Poker technique from literature review. This phase explored whether those expected benefits provided by Planning Poker were achieved in both empirical Planning Poker meetings. Due to the limitation of data, this thesis investigated two expected benefits: promotion of group interaction and individual participation; avoiding 'anchoring' effect. This thesis found plenty of evidence to affirm or deny these expected benefits.

The third stage was relatively light-weight phase in this research, which mainly summarized the challenges happened during estimate process of both meetings, which these challenges also

were reflected the description and analysis of the first stage of this thesis.

By this case study, a new vision about practical Planning Poker technique was provided. An in-depth understanding about the situation of employment of Planning Poker technique in practice was acquired, which will be helpful for other software estimators to avoid incorrect execution of Planning Poker technique and maximize those benefits provided by Planning Poker technique such as sharing and combination of multiple opinions.

## **Chapter 4 FINDINGS AND DISCUSSION**

This chapter is to answer the research questions of this thesis by analyzing and discussing the transcripts of the recordings of the meetings.. This chapter starts with a description of organization that executes both practical estimate meetings and some background of the software project estimated during meetings. Meanwhile, this section also gives a detailed description about two practical meetings, including the participators, duration, timeline, user stories as well as the order of user stories introduced during estimation. This provides the basic information in order to be convenient for the following analysis and discussion of the meeting contents. From section 4.2, the analysis and discussion work start with a comparison of estimate activities and principles between practice and theory. Then this thesis will go through the specific meeting content, analyzing the estimate process and discussing the relevant influence and achievement. This contributes to deepen the understanding for the Planning Poker technique, helping more practitioners to avoid incorrect behaviors during executing Planning Poker technique and maximize those benefits provided by Planning Poker technique.

## 4.1 Context of Cases Study Organization

The case organization is a New Zealand company in the Financial/Insurance sector which has a large in-house software development department to develop and maintain the software that supports the company's services. One of the in-house development teams was observed and recorded as part of a larger study and the data used in this thesis was collected as part of this study. This software project aimed to improve and extend a web-based application, mainly through providing a middleware layer between the web application and a data warehouse. The tasks of this project involved in the improvement of the existing middleware and the installation in sites geographically spread throughout New Zealand. Ethics approval for this research and subsequent data analysis was granted by AUT's Ethics Committee.

In terms of this development process, this development team adopted a Scrum development method including practices such as sprint planning, daily scrum meetings, sprint reviews, retrospective meetings, and the use of user stories. The Planning Poker technique was used for sprint planning, to estimate the size of the user stories involved in this software project for the purposes of committing to a certain number of stories in a sprint, and tracking progress. The whole development process was planned into multiple iterations (sprints) of 4 weeks. Pre-sprint preparatory work, including sprint planning for the first sprint, was performed in sprint zero, which was a period of about six weeks. The core of this development team was composed of three business analysts (BA-1, BA-2 and BA-3), two legacy system developers (DL-1 and DL-2), a Java developer (DJ-1), two testers (T-1 and T-2), a project manager (PM-1), and two Product Owners (PO-1 and PO-2).

The data used in this thesis were gathered from two estimation meetings, one in the second week of sprint zero, and the other seven weeks later in the third week of sprint one. Not all of team members participated in the two estimate meetings. The specific participants in two estimate meetings is discussed in the next section. One important point that needs to be mentioned is that there was several-week gap between executing the two estimate meetings, which may give rise to some differences in them. For example, the time spent on each user story estimate using Planning Poker was less in the second meeting. This may be due to the increased domain

familiarity and learning between the first and second meetings. Therefore, this thesis also compares the differences between the two meetings.

It can be seen from the transcripts in Appendices A and B that parts of the audio recording were unintelligible because the recording may have been too quiet, background noise too loud, or several people talked simultaneously. While this represents some loss of information, it did not affect the analyses of the transcripts significantly since the meanings and patterns came from several parts of the transcripts.

#### 4.1.1 Context of Meeting A

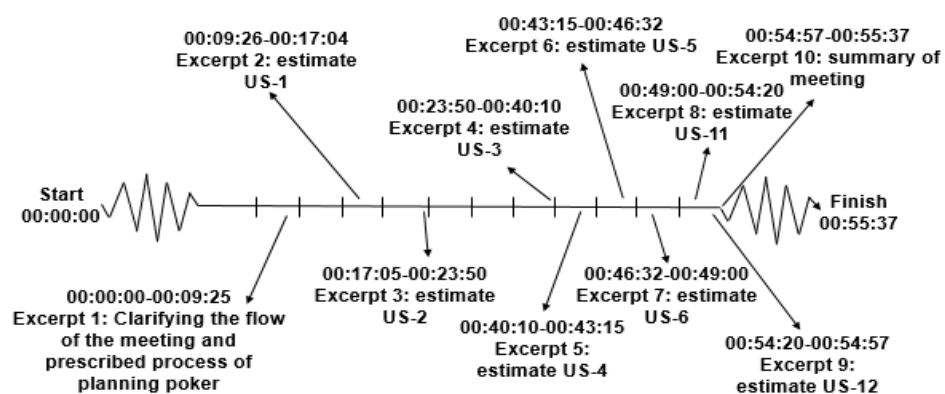
The meeting A was the first estimate meeting of this software development project and performed at the first week of iteration zero. And there were ten participants to attend this estimate meeting, which consisted of two business analyst (BA-1 and BA-2), one Java developer (DJ-1), two testers (T-1 and T-2), one legacy system developer (DL-1), three Customer Service (CS-1, CS-2 and CS-3) and a project management (PM-1). All of participants of this meeting had rich experiences on their own roles, whereas T-1, T-2 and PM only had less experience on agile method and DL did not have any experience on agile method at all.

The user stories involved in this software project have been prioritized before starting this estimate meeting, which the priority was shown by numbers such as 1, 2 and 3. For example, a user story was prioritized as '1', meaning this user story had the top priority, another user story was prioritized as '2', meaning this user story had the relatively lower priority than last one. Other numbers can be analogized in the same manner. In meeting A, the order of introduction of these user stories estimated in this meeting also followed their priorities, starting from the user story with the top priority to other user stories with relatively less priorities. In addition, this estimate session were be separated into two parts to carry out averagely, this audio data records the first part of this estimate session, which continued for fifty-five minutes approximately, and there were eight user stories to be introduced during this meeting. The relevant information of these user stories was shown in **Table 1**, including the order of introduction, priority, overview of content and type. But only six user stories were estimated during this meeting. **Figure 4** illustrated the rough

timeline of the estimate meeting A, and indicated the activities that they did on this estimating meeting. The US-1 in this diagram was abbreviation of User Story-One, which represented that the priority of this user story is first. And other abbreviation in this diagram can analogized in the same manner.

**Table 1** the Information of User Stories in Meeting A

Order of Introduction	Priority	Overview of Content	Type
First	1	Reminder to do the work required to hand over Middleware to the support team	Team process reminder
Second	2	Middleware feature written as a user story	Feature for an external user
Third	3	Middleware feature written as a user story	Feature for an external user
Fourth	4	Reminder to inform third party supplier to change their form as a consequence of a new feature	User story task reminder
Fifth	5	Investigate constraints of the current system and the implications for implementing a new feature	User story task reminder
Sixth (Un-estimated)	6	Middleware feature written as a user story	Feature for an external user
Seventh	11	Middleware feature written as a user story	Feature for an external user
Eighth (Un-estimated)	12	Middleware feature written as a user story	Feature for an internal user



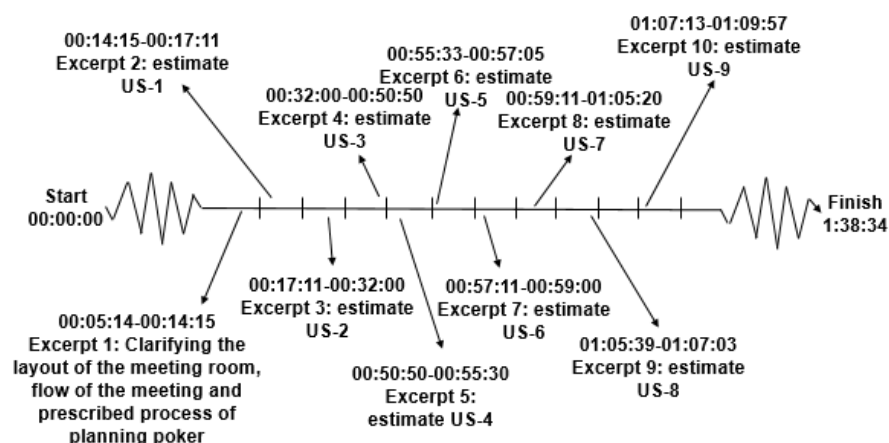
**Figure 4** Timeline of Meeting A

### 4.1.2 Context of Meeting B

The meeting B was performed after several weeks of meeting A, which was in the later period of iteration zero. and there were eight persons to participate in this estimate meeting, which consisted of two business analyst (BA-1 and BA-2), one java developer (DJ-1), a project manager (PM-1), two legacy system developers (DL-1 and DL-2) and two testers (T-1 and T-2). Similarly with meeting A, all of participants of this meeting had rich experiences on their own roles, whereas T-1, T-2 and PM only had less experience on agile method and DL-1 and DL-2 did not have any experience on agile method at all.

And there were seventeen user stories to be introduced in this meeting, which included eight investigation user stories, approximately spending one hundred minutes totally. However, due to the fact that most of user stories involved in the meeting B were not read out in the audio recording, hence the content of these user stories cannot be obtained. **Figure 5** illustrated the rough timeline of the estimate meeting B, due to some investigation user stories discussed in meeting B, hence only those user stories with normal estimate purposes were showed in **Figure 5**. And it need to be noticed that this audio recording contained some other discussion before starting the formal estimate meeting, hence the first excerpt in **Figure 5** started from 00:05:14.

In addition, due to the fact that the priority of these user stories were not indicated in the audio recording of meeting B, hence the US-1 in **Figure 5** was differ from the meaning of US-1 in **Figure 4**, it just represented the sequence of user stories estimated during the meeting.



**Figure 5** Timeline of Meeting B



## **4.2 Compared with the Theory**

This sub-chapter aims to answer the primary question of this research: How the practical process of Planning Poker differ from the theory. In this sub-chapter, the two meetings will be analyzed and compared with the theory that are discussed and summarized in the literature review chapter of this thesis, aiming to find out some differences between the practice and theory. First, the process of these two meetings will be described and analyzed, and then these two data will be compared with theory summarized from literatures. This comparison will be conducted in terms of two main aspects: whether the main activities of Planning Poker are carried out and whether the principles of Planning Poker were exactly followed. The results of comparisons will be summarized into tables.

### **4.2.1 Description and Analysis of Meeting A**

The meeting A is composed of three main phases, including the clarification of meeting process, the estimation activity and a brief summary. In this section, the first two phases will be described and discussed in detail, considering that the summary phase is not one of the main research subject of this thesis, hence it would not be described and discussed.

At the beginning of this meeting, the prescribed process of Planning Poker meeting and some relevant concepts were clarified by the BA-1, which lasted for about nine minutes, including the time-box of the meeting, base scale user stories, the adopted metric as well as measure scale. The time-box in this meeting was planned as two hours, being separated into two parts to carry out as mentioned above. And the first two user stories were used as the base user story. Also, story points, as one of recommended metrics by Cohn (2005) in his book "agile estimating and planning", was adopted in this meeting, and it was definitely indicated that the story points only was on behalf of the size of efforts for a particular user story, being not involved in the time spent on implementation of that user story. Regarding the measure scale, they used the recommended Fibonacci sequence with some modifications as the measure scale (Cohn, 2005) (Miranda, Bourque, & Abran, 2009) (Tamrakar & Jørgensen, 2012), and prepared some cards with big numbers for unknown efforts of user stories such as twenty, forty and one hundred. However, during meeting, BA indicated that, considering that it would be easier for estimators to determine

numbers for the efforts of each user story, the measure scale was limited from one to thirteen. Thirteen represented that this user story contained too much uncertainty to estimate. In addition, there was a question to be raised and cause a discussion during the clarification process, which is that whether others' efforts also need to be taken into account when individual estimate results are decided. This question would be explain in the last section of this chapter in detail.

From Excerpt 2, the estimate activity for user stories formally started. For the first user story (US-1), they performed two rounds of poker game, and spent seven minutes and thirty-six seconds on estimate work of US-1. During this process, they basically followed the prescribed process and principles of Planning Poker. To be specific, firstly, the user story was introduced and clarified by the BA-1, which was followed a group discussion about a series of tasks and concepts involved in the implementation of US-1 such as the meaning of middleware. Then they produced the individual estimates under the organization of BA-1, and all these individual estimates were shown synchronously after BA-1 counted down. However, there was not a group consensus to be achieved in this round of poker game, which the T-1 gave the highest story points and DL-1 gave the lowest points, and being asked to explain their perspectives. And then they performed the second round of poker game after a short group discussion, and reaching a consensus that the size of this user story was given two points.

For the second user story (US-2), they only performed one round of poker game, and spent eight minutes and forty-five seconds on estimating this user story. However, during this estimate process, they didn't exactly follow the prescribed process and principles of Planning Poker. In detail, after this user story was introduced and clarified, estimators discussed about this user story, including what efforts need to do for the implementation of US-2. Then the BA-1 organized the first round of poker game with a countdown for turning over the poker cards simultaneously, whereas it cannot achieve a consensus that estimators gave different individual estimate results. However, CS-3 suddenly indicated that she want to change her individual estimates during explaining her perspective after the first round of poker game, which was followed by a brief group discussion. In the brief discussion, all estimators researched an oral agreement that the size of this user story was given two story points without the second round of poker game.

Regarding the third user story (US-3), the estimate process for this user story was relatively complicated, hence they also spent relatively longer time on estimating it, which sixteen minutes and twenty seconds was taken on the estimate of US-3. Specifically, in order to better understanding this user story, there was a new person (DJ-1) to join in this estimate meeting and share his understanding for this user story after this user story was introduced and briefly discussed. And then they discussed about a series of question involved in the implementation and clarification of US-3, during this process, DJ-1 did not only inquire the information about the base user story (US-1) but also raised doubts that the estimated result of base user story need to be increased, which gave rise to that a long time was spent and a new round of poker game was carried on for the base user story (US-1). However, the previously estimated result of the base user story was not changed and PM-1 reminded that the discussion should move on and focus on the third user story, which was responded by others. After a short discussion about US-3, the first round of poker game was performed without a group consensus, and the persons (DL-1 & DJ-1) who gave the highest and lowest points were asked to explain their perspectives. However, there was not the second round of poker game to be performed, similar with the estimate process of last user story, they researched the group consensus by an oral agreement, and taking the average value (five points) as the points of the third user story.

The estimate process for the fourth user story (US-4) was relatively easier, only three minutes and five seconds was taken and only one round of poker game was performed. Similarly with the estimate process of last two user stories, they also researched the group consensus by an oral agreement. To be specific, this user story was introduced and discussed at the beginning, which a series of relevant efforts were illustrated. And then BA-1 organized the first round of poker game without a group consensus, which was followed by the explanations from the persons (PM-1 and DL-1) who gave the highest and lowest points. PM-1 thought the efforts involved in this user story was complicated and DL-1 only considered the relevant testing effort. In the following discussion, PM-1 proposed that taking five points as the size of this user story by synthesizing the perspectives of all estimators, which was agreed by others. There was not the second round of poker game to be performed. And then, they introduced the next user story.

The fifth user story (US-5) is an investigation user story, which aims to talk about some tricky

defects and technical feasibility of relevant functionalities involved in this user story. Due to the different estimate purposes, some prescribed estimate procedures may be skipped during estimating and discussing about these investigation user stories. The US-5 is to investigate constraints of the current system and the implications for implementing a new feature, hence the size of this user story did not required to be estimated, they just clarified the reasons of relevant questions, and then moving on the next user story.

For the sixth user story (US-6), on account of the limited rest of time and the complexity of US-6, they decided to put the sixth user story into another session after it was introduced and briefly discussed. And then the BA-1 introduced a relatively easy user story, the eleventh user story (US-11). And a series of relevant tasks was clarified and discussed. Then BA-1 organized the first poker game for US-11, and counted down for turning over the selected poker cards synchronously. However, there was not a uniform individual estimate result to be achieved, and they did not follow the prescribed process of Planning Poker technique, which the person who gave the highest or lowest estimate was not asked explained. Instead, BA-1 proposed taking the highest estimate as the size of US-11, which was not agreed by all estimators immediately. T-1 thought three points was a little bit much, which caused a group discussion for a relatively longer time. And the whole casual discussion almost dominated by T-1 and PM-1. Finally, CS-3 proposed taking two as the size of US-11, and being agreed by others. Then they moved on to next user story (US-12). However, due to the fact that BA-2 said this one was not her user story, it was discarded.

#### **4.2.2 Description and Analysis of Meeting B**

Compared with meeting A, meeting B contained more particular behaviors that differed with the prescribed process of Planning Poker technique. And there were more user stories to be estimated in the meeting B, part of user stories involved in the meeting B were also for investigation. The main purpose of these investigation user stories was to confirm relevant tasks and explore tricky defects and technical feasibility of relevant functionalities involved in the user stories rather than estimate the size of these user stories, hence the discussion process about these investigation user stories did not follow the prescribed process of Planning Poker estimate technique. Therefore, this sub-chapter would only focus on describing and analyzing these user

stories estimate process with normal estimate purposes, rather than describing and analyzing the whole estimate process user story by user story.

In this section, the description of meeting B will be separated into two parts: the clarification of meeting process and the estimation activity. Firstly, at the beginning of this meeting, similarly with the meeting A, the BA-1 clarified the prescribed process of Planning Poker and explained the layout of the board where some user stories were stuck on that, which lasted for about nine minutes. During this process, the BA-1 briefly explained the implication and measure scale of the metric again. Likewise with meeting A, the metric was adopted as story points in this meeting, which only represented the rough size of this user story, not involving the time or days spent on that user story. And the recommended Fibonacci sequence in the literatures was adopted as the measurement scale with some modifications, which was limited up to thirteen. Thirteen was the biggest number in this sequence and represented that this user story contained too much uncertainty to estimate. In addition, there was a same question being raised with the meeting A, which is that whether others' efforts also need to be taken into account when individual estimate results are decided. This question would be explained in the last section of this chapter in detail.

From the 00:14:15, the estimate activity for user stories formally started. The estimate process of the first user story (US-1) in meeting B was relatively quick, whereas there was an 'anchoring' phenomenon to happen during this estimate process. To be specific, after introduction of this user story, BA-2 clarified the functionalities of this user story and indicated his preferred individual estimate number, which was one. Then the BA-1 organized the first round. And all practitioners gave the same estimate number with one. This process took less than three minutes.

For the second user story (US-2) in meeting B, they spent approaching five minutes on the estimate of US-2. To be specific, after this user story was introduced, there was a long discussion to be touched off, which discussed about a series of relevant efforts such as data configuration. During discussion, they had a question about a concept involved in the content of US-2, which would be clarified by checking with the person who gave this user story. Then BA-1 organized the first round of poker game for US-2 and counted down for turning over the selected poker cards simultaneously, whereas there was not a group consensus to be reached, and BA-1 did not ask

the person who gave the highest or lowest points to explain his or her perspective. Instead, BA-1 proposed to take the highest points as the size of US-2, which was followed by a casual discussion, and the casual discussion almost was dominated by DJ-1 who stated the details of estimate were required. Finally, only PM-1 and DJ-1 responded to the proposal of BA-1, taking eight as the size of US-2. Almost all other estimators kept silent during this casual discussion.

The estimate process for the third user story (US-3) was relatively complicated and took longer time, which approaching twenty minutes was spent on the estimate of US-3. Specifically, after US-3 was introduced, a series of questions were discussed, including some relevant techniques and conception involved in this user story. During this discussion, one of estimators explicitly said out his intention that he wanted to give two or three as the story points of US-3 before the first round of poker game, which may cause the so-called 'anchoring' effect that has been mentioned in literature review chapter. The 'anchoring' is a negative phenomenon in Planning Poker estimate meeting that estimators should avoid it during the estimate meeting with Planning Poker estimate method. After the group discussion, they executed the first round of poker game for US-3 without a group consensus, and also BA-1 did not ask the person who gave the highest or lowest points in the first round of poker game to verify his or her perspective. Instead, a casual group discussion followed the first round of poker game. During this discussion, and this user story also was detailed and extended, and the whole discussion was almost dominated by DJ-1 and most of other estimators kept silent during this casual discussion. Then the second round of poker game was performed, although most of estimators gave five points as the size of US-3, the group consensus still was not achieved. And the BA-1 proposed that taking five points as the size of this user story, which was the highest estimates in the second round of poker game. This was agreed by the whole team.

For the fourth user story (US-4), they spent four minutes and forty seconds and only one carried on one round of poker game for it. Specifically, after this user story was introduced and clarified, they started to discuss the relevant conception and detail the requirements, and a series of relevant tasks were listed. During discussion, they found some requirements were not unclear and would check again with the person who gave this user story. Then, they performed the first round of poker game based on their understanding, whereas there was not a group consensus

to be achieved. And the BA-1 proposed that taking the highest point (three) given in this poker as the size of this user story again. The reason may be that BA-1 considered that the efforts involved in different roles were different, hence she synthesized the individual estimate of the first round of poker game with different roles, and taking the highest estimates as the size of US-4.

The similar solution also was adopted in the estimate process of fifth user story (US-5), after the fifth user story was introduced and clarified, there was only one round of poker game to be performed. Although there was not a group consensus to be achieved in this poker game, BA-1 proposed that taking the highest point as the story points of the US-5, which was agreed by all estimators. The whole process just took less than two minutes.

The estimate process of the sixth user story (US-6) was also very quick, just spending about one minute and fifty seconds. Likewise with the estimate process of US-5, after it was introduced and clarified, there was only one round of poker game to be performed without a group consensus, which was followed by a casual discussion. The casual discussion was dominated by DJ-1 again, DJ-1 stated a series of efforts involved in the implementation of this US-6. Meanwhile, T-1 also briefly explained the efforts to involve in testing during this casual discussion, and proposing to take the highest points (three) as the size of US-6. During this casual discussion, almost all other estimators kept silent.

The estimate process of the seventh user story (US-7) was relatively special. To be specific, after this user story was introduced and clarified, they discussed about a series of relevant problems for approximately six minutes, and found that there were many system questions involved in his user story cannot be solved on meeting. Therefore, BA-1, as the moderator of this meeting, decided that do not spend more time on this user story, and putting thirteen points on this user story.

The estimate process of the eighth user story (US-8) was also quick, only one minute and twenty-four seconds. After this user story was introduced and clarified, they started a brief discussion, which was followed by a round of poker game without a group consensus. Then BA-1 proposed to take the highest points in the poker game as the size of US-8 again. The persons who gave

the highest and lowest estimates in the poker game was not also asked to explain their estimates. This approach had been used in the estimate process of US-2, US-3 and US-4.

The estimate process of the ninth user story (US-9) was extra special, which there was not any poker game to be conducted. To be specific, after this user story was introduced and clarified, all of estimators indicated that this user story was extreme small during discussion. Therefore, BA-1 asked the intention of other estimators that whether taking one as the story points of US-9, which was agreed by all estimators.

All these user stories that they estimated after US-9 in meeting B were investigation user stories. However, probably due to the different purpose of these investigation user stories, the estimate process of these investigation user story did not follow the prescribed process of Planning Poker technique. Most of investigation user stories were estimated only by an oral discussion without poker game. Even the size of part of investigation user stories were not estimated, which they only discussed the constraints of the current system and the implications for implementing a new feature. Therefore, the estimate process of these investigation user stories would not be act as the main research object of this thesis.

### **4.2.3 Comparison of Meeting A & B**

In order to answer the primary question of this research, a more specific and clear comparison between theory and practice was required, hence this sub-chapter further compared the practice of Planning Poker estimate meetings with the theory by two tables, which provided an overview of differences between practice and theory. The detailed process of practical meetings have described in the previous section with simple relevance and comparison. The literature review chapter of this thesis also has described the theory of Planning Poker estimate technique in detail, including prescribed flow, significant activities and principles. This sub-chapter would strongly connected with the literature review chapter, aiming to obtain detailed and effective comparison results in order to answer the first research question.

In this chapter, the two practical data would be further compared with the significant activities and



principles of Planning Poker technique summarized in the previous chapter, and they would be measured by how degree the practice followed the prescribed process of Planning Poker. Meanwhile, the two meetings also would be compared with each other in order to find some difference, due to the fact that the two meetings were performed in different time with a long gap.

**Table 2** and **Table 3** showed the comparison results of both Planning Poker estimate meetings between practice and theory in terms of significant activities and principles. This comparison was conducted on the different degrees of compliance, and the degrees of compliance were defined as Always, Sometimes, Rarely and Never. Meanwhile, the degrees of compliance on some of significant activities such as the “The highest and lowest estimates are verified when group consensus is not achieved (in Step F)” also would be expressed by rates, the denominator represented the amount of user stories estimated on the meeting, being not including those investigation user stories and some user stories that were discarded, and the numerator represented that how many user stories estimated on the meeting performed this activity.

**Table 2** Comparison on Significant Activities of Planning Poker Estimate Meeting

<b>Significant Activities in Theory</b>	<b>Meeting A</b>	<b>Meeting B</b>
Clarifying and Sharing understanding for the Planning Poker process (in Step A)	Always	Always
Defining the metric for estimating user stories (in Step A)	Always	Always
Defining measure scale for estimating user stories (in Step A)	Always	Always
Each user story is clarified by Product Owner (in Step B)	Never	Never
Sharing understanding for user stories (in Step C)	Always	Always
Producing individual estimate (in Step D)	Always	Sometimes 1/9
Synchronize showing individual estimation (in Step E)	Always	Always
The highest and lowest estimates are verified when group consensus is not achieved (in Step F)	Sometimes 4/5	Never 0/9
Repeating poker games when group consensus is not achieved (Optionally)	Rarely 1/5	Rarely 1/9

**Table 3** Comparison in Significant Principles of Planning Poker Estimate Meeting

<b>Significant Principles in Theory</b>	<b>Meeting A</b>	<b>Meeting B</b>
Time-box for the estimating meeting	Always	Never
User stories are clarified by Product Owner	Never	Never
Defining a base user story	Always	Never
Providing a measurement scale that take into account more uncertainty for bigger stories	Always	Always
Individual estimates are not influenced by others	Always	Sometimes
Only those user stories involved in implementation are estimated	Always	Always
The estimates of every user story should be relative	Always	Always
Every user story should be disaggregated into a series of small tasks	Always	Always

It can be seen more clearly from the **Table 2** and **Table 3** that both meeting A and meeting B did not exactly followed the prescribed activities and principles of Planning Poker estimate technique. To be specific, there were several common differences with the prescribed activities and principles in both meeting A and B. First of all, in both meeting A and B, user stories were clarified by business analyst rather than Product Owner. The Product Owner did not attend in both meeting A and B. In Agile methodology, one of the responsibilities of Product Owner was definition of user stories in order to exactly transmit the expected functionalities involved in user stories to development group. However, in this thesis, due to the lack of detailed development process, the accuracy of information transmission about user stories cannot studied. Secondly, they adopted a modified Fibonacci sequence as the measure scale in both meetings, which was limited from one to thirteen, thirteen represented this user story contained too much uncertainty to estimate. The reason stated by the moderator of both meetings was that this was easier for estimators to decide their individual estimates. And in actual estimate results, this situation also did not happen that there was not a suitable number to be given in terms of a big user story. Therefore, it can be supported that this modified Fibonacci sequence did not pose any impact on the estimates of this

software project. The bigger differences arose on the estimate phase, which there was only one round of poker game to be performed in the estimate process of most user stories, no matter whether the group consensus on the estimate result was achieved. Meanwhile, the activity of verifying the highest and lowest was not carried out, especially in meeting B. This activity was always replaced by an oral agreement or a casual discussion. In casual discussion, estimators can verify and discuss their opinions optionally. However, the casual discussion may pose some other positive or negative effects such as it achieved a deep discussion or someone dominated the discussion process, which would be discussed in the following section.

In addition, compared with meeting A, there were more differences with the prescribed activities and principles of Planning Poker technique in the meeting B, though these differences were slight. Firstly, there was not any evidence regarding the definition of base user story and time-box for the estimating meeting to be found in meeting B. But due to the fact that the both estimate meeting A and B contributed to the same software project and conducted by the same group, it can be assumed that the base user story in meeting A still was used as the base user story in meeting B. Besides, there was not poker game to be performed in the estimate of last user story in meeting B. The reason probably was that some team members indicated the relevant efforts involved in this user story was extremely small during the discussion, and PM-1 directly suggested taking one as the size of this user story. However, the oral suggestion by PM-1 is likely to pose the “anchoring” to other estimators, especially for other estimators who had approaching estimate results with PM-1’s suggestion. The actual situation also showed that there was not any estimator to raise an objection to PM-1’s suggestion.

#### **4.2.4 Discussion for Findings**

By aforementioned description and comparison, it can be found that there were three huge differences between practice and theory, and all these differences were centered on the estimate process that the process of Planning Poker estimate meeting was changed as the meeting went on. To be specific, firstly, in meeting A, they omitted the repeating poker game and achieved the group consensus by oral agreement in the estimate process of most user stories. The estimate process of each user story can be summarized as: introduction and clarification of user story, a

round of poker game, verification discussion and achieving an oral agreement. The reason why the repeating poker game was omitted probably was that they thought they already had an accordant perspective in terms of the effort of a user story, the second round of poker game was not required. This helped them to achieve a quick estimate approach that the time spent on estimating each user story was around five minutes. However, this estimate approach was further simplified in the estimate process of many user stories in meeting B, which the verification discussion was omitted and replaced by suggestion of BA-1, taking the highest estimate as the size of a user story immediately after poker game. To be more specific, the simplified estimate process can be summarized as: introduction and clarification of user story, a round of poker game and suggestion of BA-1 to take the highest estimate as the size of a user story. The reason why BA-1 immediately suggested to take the highest estimate as the size of a user story probably was related to the estimate purpose of agile development method, which was to schedule how much efforts can be finished in the each iteration. In order to avoid the development progress behind schedule, an overestimate may pose less damage than underestimate. This consideration can be reflected in the estimate process of US-6 in meeting B, which T-1 briefly explained the relatively more efforts involved in testing, which was responded by BA-1. And all suggestions of BA-1 were agreed by other estimators. This helped them to achieve a faster estimate approach than meeting A, which the time spent on estimating each user story was around three minutes.

Another difference with the theory was that the original activity of verifying the highest and lowest estimates was replaced by a casual discussion. This phenomenon first happened in the estimate process of the last user story in meeting A, and happened in the estimate processes of four user stories in meeting B. And due to the different experiences and personalities of each estimator, the casual discussion was always dominated by one or two estimators especially by DJ-1, and others estimators always kept silent or briefly echoed. And the final estimate result always depended on the intention of the dominator.

In order to further explore that adoption pattern of these different estimate processes such as conditions of adoption, this thesis collected the situations of individual estimate numbers during every round of poker game and the final estimate result of each user story in both practical meetings, and sorted these different situations of individual estimate numbers during every round

of poker game according to the diversity of these numbers and the gap range among these numbers. Both diversity and gap range were measured by 'Low' and 'High'. Then this thesis gave two hypotheses:

- (a) This estimate team achieved group consensus by oral agreement or moderator's suggestion when both diversity and gap range of individual numbers in last round of poker game were 'Low'.
- (b) This estimate team achieved group consensus by a casual discussion when the diversity or gap range of individual numbers in last round of poker game was 'High'.

**Table 4** and **Table 5** showed the adoption situations of different estimate processes in meeting A and meeting B respectively. Those aforementioned different estimate processes, as solutions of different situations, also were abbreviated in the tables as: 'Normal', 'Oral', 'Proposed' and 'Casual'. 'Normal' represented that the estimate process of this user story exactly followed the prescribed process of Planning Poker technique that the group consensus was achieved by playing poker game; 'Oral' represented that the group consensus was achieved by oral agreements; 'Proposed' represented that the group consensus was achieved by the proposal of BA-1; 'Casual' represented the original activity of verifying the highest and lowest estimates was replaced by a casual discussion. And 'Non-execution' represented that this round of poker game was not executed in practice. However, due to the fact that not all of individual estimate numbers were said out in audio recordings, this thesis only collected limited individual estimate numbers.

**Table 4** Adoption Situations of Different Estimate Processes in Meeting A

	Round	Individual estimates	Diversity	Gap Range	Solution	Result
US-1	First	2,5	Low	Low	Normal	2
	Second	Not-available	Not-available	Not-available	Normal	
US-2	First	Not-available	Not-available	Not-available	Oral	2
	Second	Non-execution				
US-3	First	2,8	Low	High	Oral	5
	Second	Non-execution				
US-4	First	1,3,8	High	High	Oral	5
	Second	Non-execution				
US-5	An investigation user story, only the constraints of the current system and the implications for implementing the new feature were discussion.					NaN
US-11	First	1,2,3,3	High	Low	Casual	2
	Second	Non-execution				

**Table 5** Adoption Situations of Different Estimate Processes in Meeting B

	Round	Individual estimate	Diversity	Gap Range	Solution	Result
US-1	First	1,1,1,1,1,1,1,1	Low	Low	Normal	1
	Second	Non-execution				
US-2	First	1,2,3,8	High	High	Casual	8
	Second	Non-execution				
US-3	First	2,3,3	Low	Low	Casual	5
	Second	2,5,5,5,5	Low	Low	Casual	
US-4	First	1,1,3,3	Low	Low	Proposed	3
	Second	Non-execution				
US-5	First	0,1,2,3,3	High	Low	Proposed	3
	Second	Non-execution				
US-6	First	1,2,2,2	Low	Low	Casual	3
	Second	Non-execution				
US-7	There was not poker game to be executed due to too much uncertainty.					13
US-8	First	1,2,3	High	Low	Proposed	3
	Second	Non-execution				
US-9	Group consensus was achieved by only discussion due to simplicity of this user story.					1

By observing both **Table 4** and **Table 5**, this thesis did not find any evidence to support aforementioned hypotheses. And there was not a certain necessary connection to be found between different estimate processes and individual estimate numbers. The adoption of these different estimate processes during both meetings more liked a gradual changing pattern of estimate process. To be specific, at the beginning of meeting, the prescribed process of Planning Poker was exactly followed, which the group consensus was achieved by poker game. With the continuation of the meeting, the approach of achievement of group consensus was simplified, being replaced by oral agreement. The reason probably was that practitioners thought the repeating poker game was unnecessary if practitioners have intended to achieve group



consensus during discussion followed by the last round of poker game. Then, this estimate process was further modified as the meeting went on, which the activity of verifying highest and lowest individual estimates was omitted, and being replaced by a casual discussion. This estimate process was further simplified in the meeting B, which BA-1 always immediately proposed to take the highest individual estimate number from last round of poker game as the size of a user story when the gap range between individual estimate numbers was small. The possible reason were that the time spent on arguing the small gap range was unnecessary, and an overestimate was more feasible than an underestimate in agile development method. BA-1, as a moderator of estimate meeting, has right to propose and make a decision during estimate process.

### **4.3 Compared with the Expected Benefits**

The second research objective of this thesis was to explore what benefits were achieved in practice with Planning Poker estimate technique. This would be explored in terms of two aspects: whether these benefits claimed in the literatures were achieved in the practice; and what other benefits were achieved in the practice.

In the literature review chapter, those benefits of Planning Poker estimate technique have been arisen by discussion of reasons for employing Planning Poker technique, which mainly contributed to three aspects: (a) Planning Poker estimate technique promotes group interaction and individual participation, (b) and effectively improves accuracy of estimates, (c) also is beneficial to avoid the so-called “anchoring” effect. All these contributions were achieved by various particular activities of Planning Poker technique and some expected detailed estimate approaches combined in Planning Poker technique such as analogy and disaggregation. However, due to the lack of actual time-cost of this software project, the accuracy of estimates cannot be measured. Therefore, this sub-chapter would have to analyze and discuss the practical data in terms of just two aspects: whether Planning Poker estimate technique promoted group interaction and individual participation; and whether the so-called “anchoring” effect was avoided in both meeting A and B. And then, this sub-chapter also would explore what other benefits were achieved in these two meetings.

### 4.3.1 Promotion of Group Interaction and Individual Participation

Due to some particular activities such as poker game and verifying the highest and lowest estimates, Planning Poker technique provided more opportunities to promote group interaction, enhancing sharing and integration of multiple opinions. However, the promotion of group interaction is a relatively abstract concept, which is difficult to judge whether the positive effect of “promotion” is achieved just by these audio recordings. This thesis try to look for some evidence from the conversation content of both meetings to support that the positive effect of “promotion” is achieved with the effect of Planning Poker technique. There were some excerpts to be found from two meetings that there were more opinions to be raised and shared under some particular activities of Planning Poker estimate technique.

The first example was an excerpt from the estimate process of US-1 in meeting A, which accurately followed the prescribed process of Planning Poker technique. During this process, T-1 and DL-1 were asked to explain the reason for giving the highest and lowest estimates after the first round of poker game. Then T-1 clearly indicated her consideration such as reframing of documentation, which involved in lots of effort, whereas DL-1, as a legacy system developer, indicated that these documentation required for this user story have been finished in fact. During this process, a good group interaction was achieved that DL-1 shared some historical information to this new development team, and it can be supported that the accuracy of estimates also was improved. These were contributed by the activity of verifying the highest and lowest estimates. Similar case also happened in estimate processes of other user stories, another example could be the excerpt from the estimate process of US-4 in meeting A, which PM-1 and DL-1 as the persons who gave the highest and lowest individual estimates were asked to explain their estimates. PM-1 indicated that the technology involved in the implementation of this user story was complicated and the efforts involved in this user story was less controllable in terms of the role of PM-1. And DL-1 explained that he thought there was only testing work was involved in this use story. By the elaboration of both persons, the different opinions can be quickly found and discussed after the first round of poker game. The ignored consideration can be mutually complemented among estimators.

However, in the estimate process of most user stories, although the poker game was correctly carried out, the activity of verifying the highest and lowest estimates was not performed, being replaced by a casual discussion especially in meeting B. In these estimate process, it was worth further explored that whether there were good group interaction and sharing of opinions to be achieved in these casual discussion. In order to answer this question, the estimate process of several user stories with casual discussion were selected and further analyzed such as the estimate process of US-6 in meeting B. Results showed that there was only one or two estimators to share their opinions in most of time during this casual discussion, and other estimators briefly added explanations or just echoed in most of time. A case in point was the estimate process of US-3 in meeting B. After the first round of poker game for this user story, DJ-1 indicated the size of this user story depends on different situations, and explained various possible situation based on this user story. Until starting the second round of poker game, the whole discussion was almost dominated by DJ-1 who explained these possible situations and a series of relevant tasks in great majority of time of discussion.

**Table 6** Percentage of Individual Participation in the Estimate Process of Each User Story of Meeting A

	PM-1	BA-1	BA-2	DJ-1	DL-1	CS-1	CS-2	CS-3	T-1	T-2
US-1	17.8%	30.8%	25.6%	0%	10.3%	0%	2.6%	1.3%	9%	2.6%
US-2	11.1%	30.6%	9.7%	0%	11.1%	0%	4.2%	20.8%	12.5%	0%
US-3	6.6%	16.4%	16%	27.5%	9.4%	0%	5.3%	6.1%	12.7%	0%
US-4	10%	27.5%	15%	0%	10%	0%	7.5%	7.5%	15%	7.5%
US-5	2%	28.8%	1.9%	0%	7.7%	0%	17.3%	30.8%	11.5%	0%
US-6	15%	30%	30%	0%	0%	0%	0%	0%	25%	0%
US-11	20.7%	34.5%	8.6%	0%	3.4%	0%	3.4%	8.6%	17.2%	3.4%
US-12	0%	50%	25%	0%	0%	0%	0%	8.3%	8.3%	8.3%

**Table 7** Percentage of Individual Participation in the Estimate Process of Each User Story of

## Meeting B

	PM-1	BA-1	BA-2	DJ-1	DL-1	DL-2	T-1	T-2
US-1	27.2%	54.5%	0%	18.2%	0%	0%	0%	0%
US-2	29.8%	43.9%	0%	7%	0%	5.3%	14%	0%
US-3	3%	22.9%	2%	32.8%	19.9%	9.5%	9%	1%
US-4	0%	28.9%	10.5%	31.6%	25%	0%	3.9%	0%
US-5	0%	42.1%	0%	26.3%	0%	5.3%	26.3%	0%
US-6	4.7%	23.3%	4.7%	32.6%	23.3%	2.3%	7%	2.3%
US-7	9.1%	20.9%	12.7%	39.1%	18.2%	0%	0%	0%
US-8	14.3%	52.4%	0%	23.8%	0%	0%	9.5%	0%
US-9	28.9%	39.5%	0%	26.3%	2.6%	2.6%	0%	0%

Regarding promotion of individual participation, it also was mentioned in the literature review chapter that Planning Poker provided an equal opportunity to all estimators in the estimation process, and that everybody's opinion can be heard, regardless of whether they are among the loudest or most influential people in the group (Haugen, 2006) (Mahnič & Hovelja, 2012). This also can effectively avoid that the discussion was dominated by certain participator. This thesis would analyze the percentage of individual participation in the estimate process of each user story of two meetings, in order to verify that whether every estimators equally participated in the discussion and whether the discussion was dominated by certain participator.

**Table 6** and **Table 7** respectively showed the percentage of individual participation in the estimate process of each user story of both meeting A and meeting B. It was worth mentioning that BA-1 was likely to have relatively more individual participation proportion in the estimate process of each user story, due to the fact that BA-1, as a moderator, was responsible for more works on the meeting such as introduction and clarification of user stories. And DJ-1 participated in discussion with an extremely participation in order to the clarification of US-3 in meeting A. Apart from these, it can be found from **Table 6** and **Table 7** that other estimators still did not have a completely equal individual participation proportion in the estimate process of each user story in two meetings,

especially in meeting B. To be specific, in meeting A, although there was not a completely equal individual participation proportion in the estimate process of each user story, this unequal phenomenon was slight. And most estimators can participate in discussion during the estimate process of each user story. Especially in the estimate processes of US-3 and US-4 in meeting A, with the accurate execution of the activity of verifying the highest and lowest individual estimates, almost all estimators can participate in the discussion with a relatively balanced participation. However, in meeting B, the situation of unequal participation was serious, the estimate process of almost all user stories was dominated by one or two estimators especially in the estimate processes of US-3 and US-7, which were completely dominated by DJ-1. This phenomenon can be more obviously perceived by listening the audio recording, which there was only one estimator to explain a series of relevant tasks at most of time, and others just asked questions or briefly added explanations even echoed.

### **4.3.2 Avoiding of the ‘Anchoring’ Effect**

Avoiding the so-called ‘anchoring’ effect is the common benefit that was claimed in many relevant literatures (Haugen, 2006) (Tamrakar, & Jørgensen, 2012). As mentioned in the previous chapter, ‘anchoring’ can be understood in estimate process as an impact on subsequent estimates after someone putting forward an estimate or expectation on the size of a user story, even if the estimates or expectations is unrealistic (Aranda, & Easterbrook, 2005). Avoiding the ‘anchoring’ effect mainly was contributed by the activity of “synchronize showing individual estimation” and the principle of “individual estimates are not influenced by others” in Planning Poker. According to the transcription and analysis of the practical data, both meeting A and meeting B carried on the activity of “synchronize showing individual estimation” well, which those selected poker cards were asked to face down and were turned over after BA-1 counted down. However, as mentioned above, due to the fact that the practical data of this thesis just were audio recordings, it cannot be observed that whether estimators glanced others’ selections when producing individual estimates, and it just can be judged that there was not any influential voice when producing individual estimates.

However, although the activity of “synchronize showing individual estimation” and the principle of

“individual estimates are not influenced by others” were commendably performed in both meeting A and meeting B, this thesis found that the so-called ‘anchoring’ effect still cannot be completely avoided in meeting B. In the estimate process for US-3 in meeting B, there was an obvious ‘anchoring’ effect that DJ-1 said out his intention about the story points of US-3 before the first round of poker game, which was likely to pose the so-called ‘anchoring’ effect to other estimators when producing individual estimates in the first round of poker game, especially for other estimators who had approaching estimate results with DJ-1’s thinking. And the actual situation also showed that other estimators’ individual estimates in the first round of poker game were very closed to the DJ-1’s intention.

Another ‘anchoring’ effect happened the estimate process of US-1 in meeting B. During the clarification of user story, BA-2 clearly indicated his preferred individual estimate number, which was one. Then BA-1 organized the first round of poker game for this use story. All practitioners also gave the same number with BA-2, which was one.

### **4.3.3 Other achievements**

Apart from the aforementioned benefits achieved in both meeting A and meeting B, there was some other achievements to be accomplished in meeting A and meeting B. To be specific, in the literature review chapter, it was mentioned that Planning Poker estimate technique combined multiple estimate approaches such as expert opinions, analogy and disaggregation (Cohn, 2005). In the practical data of this thesis, there were many evidences to be found that the disaggregation and analogy approaches were commendably adopted in estimation of these user stories in both meeting A and meeting B. Specifically, firstly, according to the transcription of both meetings, it can be found that almost each user story was disaggregated into a series of tasks after introduction of a user story. For example, during the estimate process of US-1 in meeting A, It can be seen that this user story was disaggregated into a series of tasks such as update of a peculiar system and handover of documentation. Similarly, during the estimate process of US-2 in meeting B, PM-1 and T-1 stated a series of relevant tasks for the implementation of this user story such as data configuration and access as well as testing scheme. However, after reviewing the whole meeting recordings, it was found that that clarification of tasks of user stories was always

dominated by DJ-1. The reason was probably that DJ-1 knew more implementation process and relevant technologies due to the fact that DJ-1 was an experienced developer.

Meanwhile, there was an evidence to be found that the analogy between user stories was adopted during estimate process, which happened in the estimate process of US-3 in meeting A. During this process, DL-1 compared the involved effort in US-3 with the effort of US-2 in meeting A and thought there were more efforts involved in US-3 than the effort of US-2. Regrettably, there was not an obvious evidence to be found in the estimate process of each user story that the analogy approach was adopted in both meeting A and meeting B, but it can be believed that the base user story defined on the meeting as a baseline can be adopted when producing individual estimates for each user story.

#### **4.4 Challenges and Questions Arisen in Practice**

In the literature review chapter, there were two potential challenges in the Planning Poker estimate meeting to be described and discussed. One of the potential challenges was the so-called 'anchoring' effect, which was a common challenge during group discussion-based estimate process. It has been mentioned in previous section that the 'anchoring' can be understood as an impact on subsequent estimates after someone putting forward an estimate or expectation on the size of a user story in group discussion-based estimate process, even if the estimates or expectations is unrealistic (Aranda, & Easterbrook, 2005). For example, an estimator may try to give an estimate result closing to another estimate given by another estimator. In Planning Poker estimate technique, there were some approaches to be provided in order to avoid the common challenge of group discussion-based estimate process, 'anchoring' effect (Aranda, & Easterbrook, 2005) (Haugen, 2006) (Tamrakar, & Jørgensen, 2012). Even so, the so-called 'anchoring' effect also arose during the practical meeting of this thesis. To be specific, as mentioned in the previous sections, in Planning Poker, some particular activities and principles specially contributed to avoiding the 'anchoring' effect such as laying poker cards face down and synchronize showing individual estimation. However, although these activities and principles were performed and obeyed commendably, the so-called 'anchoring' effect was not completely avoided. A case in point is the estimate process of US-3 in meeting B, DJ-1 clearly said out the story points that he

preferred to before the first round of poker game. This was a behavior that was likely to cause the 'anchoring' effect, especially for those people who had similar thoughts with DJ-1. And the actual result also showed that other estimators' individual estimates in the first round of poker game were very closed to the DJ-1's suggestion. Fortunately, there was not similar phenomenon to arise during the estimate process of other user stories of both meeting A and meeting B. In order to avoid this situation, a clear indication about the preferred number of individual estimate should be avoided.

The second challenge raised in these practical meetings was a phenomenon mentioned in previous section of this thesis, which the discussion was often dominated by one or two practitioners and other practitioners just echoed or even kept silent. To be specific, in the comparison section of estimate process between theory and practice and the analysis section of individual participation, it has been mentioned that the discussion and clarification of user stories often was dominated by DJ-1 who was an experienced developer in this team. This was probably due to the personality and experience of DJ-1 so that DJ-1 often strongly stated his opinion and intention. It gave rise to that other practitioners briefly added explained or just echoed even kept silent.

Apart from aforementioned two challenges happened in the practical data of this thesis, there was a common question to be raised in both meetings, which was that whether other roles' efforts also need to be taken into account when producing individual estimate result. The answer from the moderator of both meetings was that every practitioner may consider the relevant effort in his or her own role when producing individual estimates, but the final estimate result would consider the effort involved in the whole development group. Indeed, the software estimate in agile methodology was to estimate the relevant effort involved in the whole development period of each user story, which started with development of a user story, testing of a user story, until done of a user story. Therefore, the final estimate result need to contain the effort involved in all roles of a development group.



## **Chapter 5 CONCLUSION**

In the previous sections of this thesis, an in-depth analysis and discussion of practical Planning Poker meetings have been finished. In this chapter, a summary of the whole research is presented by integrating all analysis and discussion, including research aims and questions, research approach as well as research results. Meanwhile, the limitations and future work are pointed out at the end of this chapter.

## 5.1 Summary

The aim of this study was to provide a new vision into the Planning Poker estimate meeting in practice, further understanding the difference between practice and theory. Meanwhile, this study also expected to deepen the understanding for the purpose of every activities of Planning Poker technique, which would be helpful for software estimators to avoid incorrect execution of Planning Poker technique and maximize those benefits provided by Planning Poker technique such as sharing and combination of multiple opinions. In addition, this thesis also explored those possible challenges happened during executing Planning Poker estimate meeting, providing software estimators with valuable information about prevention of these possible challenges. In order to achieve these aims, this raised four questions:

*RQ1. Does the implementation of Planning Poker in practice differ from the prescribed Process, and if so, in what ways?*

*RQ2. Does the implementation of Planning Poker in practice change at different phases of development cycle?*

*RQ3. What claimed benefits are realized in practice and how?*

*RQ4. What are the challenges in implementing Planning Poker in practice?*

In order to answer these research questions, this research collected two practical estimate meetings with Planning Poker technique as the research objects. Both meetings were conducted by a same software development team for a same software project, and executed in different time. Before commencing the case study, this thesis conducted an in-depth literature review, which was to provide theoretical support for the case study of this thesis. This literature review started with the concept of agile software development methodologies and difference with the traditional software development method due to the fact that Planning Poker was a recommended estimate technique adopted in agile methodologies. And this literature review discussed about the difference of estimate purposes between agile methodologies and traditional software development method. This was likely to be used as causes to explain some behaviors in practice. Then this literature review briefly discussed some software estimate techniques, and then focused on the Planning Poker technique. This discussion about Planning Poker estimate technique drew the prescribed process of Planning Poker into flow chart by summarizing relevant theory from

literatures as shown in **Figure 2**, and summarized and explained a series of components of Planning Poker technique such as the recommended metrics, the recommended measure scale and roles allocation. Besides, this section also emphatically explained the reasons for employing Planning Poker technique such as promoting the group interaction and avoiding the 'anchoring' effect, and summarized the possible challenges happened in group discussion-based estimate techniques.

Based on this literature review, this thesis conducted the case study for two practical estimate meeting with Planning Poker technique, and answer the research questions of this thesis. This research not only looked at the estimate process of each user story, but also explored the conversation content of two meetings to look for the answers of research questions.

In order to answer the first research question, this investigation compared and analyzed the difference of the whole Planning Poker meeting and estimate process of each user story between theory and practice. In terms of the Planning Poker meeting, both meetings basically followed the prescribed activities and principles of Planning Poker technique, and used those recommended components such as metrics. Specifically, the moderator of both meetings clarified the prescribed estimate process of Planning Poker technique before starting estimation, and defining the metrics, measure scale and base user story used in meetings. Every user story can be disaggregated into a series of relevant tasks in the estimate process, and this thesis also found the evidence that the analogy method was adopted in estimate process from the specific conversation contents. However, due to absence of the Product Owner, the moderator in two meetings was played by the business analyst, who also was responsible for introduction and clarification of user stories during estimation. However, they used the recommended Fibonacci sequence with some modification as the measure scale, which was limited from one to thirteen. Thirteen represented that this user story contained too much uncertainty to estimate. The moderator explained that this modification was to be easier for estimators to decide their individual estimates. And in actual estimate results, this situation also did not happen that there was not a suitable number to be given in terms of a big user story. Therefore, it can be supported that this modified Fibonacci sequence did not pose any impact on the estimates of this software project.

The biggest difference was arisen on the estimate process. There was only one round of poker game to be executed in the estimate of most user stories. And they did not exactly follow the prescribed process of Planning Poker estimate technique, which they achieved the group consensus by various different methods. There was three modified estimate processes to be used to achieve the group consensus in meetings.

This thesis also tried to look for any connection between individual estimate numbers and different estimate processes by some hypotheses. However, there was not any evidence to be found to support these hypotheses. These modified estimate processes was more like a gradual changing pattern of estimate process as the meetings went on. This can be used to answer the second research question of this thesis. To be more specific, at the beginning of meeting, the prescribed process of Planning Poker was exactly followed, which the group consensus was achieved by playing poker game. However, with the continuation of the meeting, the approach of achievement of group consensus was simplified, being replaced by oral agreement after the one round of poker game. The reason why the repeating poker game was omitted probably was that practitioners thought they already had an accordant perspective in terms of a user story, the second round of poker game was not required. This helped them to achieve a quick estimate approach that the time spent on estimating each user story was around five minutes. Then, this estimate process was further modified as the meeting went on, which the original activity of verifying highest and lowest individual estimates was omitted, and being replaced by a casual discussion after playing poker game. In casual discussion, practitioners can verified and discussed their opinions optionally. However, this casual discussion always was dominated by an experienced developer, and others estimators always kept silent or briefly echoed. And the final estimate result always depended on the intention of the dominator. Then, the estimate process was further simplified, which the moderator of meetings always immediately proposed to take the highest individual estimate number from last round of poker game as the size of a user story. The possible reason was that the time spent on arguing between closed estimate numbers was unnecessary. The estimate purpose of agile development method was to schedule how much efforts can be finished in the each iteration rather than an exact time spent on the implementation of certain user story. In order to avoid the development progress behind schedule, an overestimate may pose less damage than underestimate. Also, the moderator of estimate meeting has right to propose and

make a decision during estimate process. This helped them to achieve a faster estimate approach than meeting A, which the time spent on estimating each user story was around three minutes.

Regarding the third research question, this research found that not all of benefits claimed in literatures can be achieved in practical Planning Poker estimate meetings. In detail, this analysis mainly explored about two benefits of Planning Poker: avoiding the so-called 'anchoring' effect; promoting the group interaction and individual participation. The benefit of avoiding the so-called 'anchoring' effect mainly was contributed by some particular activities and principles of Planning Poker technique such as synchronizing showing individual estimation results. However, although these particular activities and principles were obeyed well in practice, the 'anchoring' effect still cannot be avoided. The reason was that some of estimators specifically indicated their preferred estimate numbers before executing poker game. This kind of situation happened in the estimate process of two user stories in practical estimate meetings, and that other estimators' individual estimate numbers in the following poker game were same with or very closed to the this number that has been specifically indicated by someone else. With regard to the benefit of promoting the group interaction and individual participation, this research found that, the particular activity of Planning Poker technique, verifying the highest and lowest estimates activity commendably promoted the group interaction, which the different opinions can be quickly found and discussed. The ignored consideration can be mutually complemented among estimators. However, in practice, the activity of verifying the highest and lowest estimates was not exactly followed, which was always ignored or replaced by a casual discussion. The casual discussion was always dominated by one of estimators, which was caused probably due to the personality and experiences. And others estimators just kept silent or briefly echoed. Therefore, there was a commendable group interaction during the casual discussion. This situation has been mentioned in aforementioned answer of the first research question. In order to explore whether Planning Poker promoted individual participation, this thesis counted and analyzed the percentage of individual participation in the estimate process of each user story for verifying that whether every estimators almost equally participated in the discussion. Results showed there was not an almost unequal participation of each practitioner in the estimate process of each user story especially in the estimate process of some user stories which had casual discussion. The estimator who had rich experiences always had higher participation. The reason probably was that the estimator with

rich experience had more capabilities to clarify some relevant tasks about the implementation of a user story and answer others' questions.

By these analysis, this thesis summarized two challenges to answer the fourth research question. The first challenge was the 'anchoring' effect. In order to avoid this, this thesis suggested that it need to be banned that the preferred estimate number was clearly indicated before poker game. The second challenge was that the discussion was always dominated by one of estimators, which was caused by personal experience and personality. In order to avoid this challenge, this thesis suggested that the particular activity of Planning Poker technique, verifying the highest and lowest estimates, need to be exactly followed, which can provide other estimators with more opportunities to discuss their perspectives. In addition, this thesis found a question that was common raised in both practical meetings, which was that whether other roles' efforts also need to be taken into account when producing individual estimate result. This thesis gave an answer by summarizing the answer from the moderator of both meetings and combining the purpose of software estimate in agile development methodologies, which the practitioner may consider the relevant effort in his or her own role when producing individual estimates, but the final estimate result would consider the effort involved in the whole development group. This also can meet the purpose of software estimate in agile methodology, which was to estimate the relevant effort involved in the whole development period of each user story.

## **5.1 Limitations**

The data researched in this thesis was only the audio recording of Planning Poker estimate meetings, there was not the video recording of both Planning Poker estimate meetings to be collected. Therefore, some behaviors of practitioners that was likely to cause impacts on estimate planning cannot be analyzed. For example, the behavior that whether estimators glanced others' selections when producing individual estimates cannot be observed. This kind of behavior need to be explicitly avoided when producing individual estimates, which is claimed by Cohn (2005). Referring others' estimates would cause a negative impact on sharing of multiple opinions and group interaction. If the video recording of both Planning Poker estimate meetings can be obtained, this thesis will be able to further explore some possible effects caused by some

behaviors such as whether there was still the sharing of multiple opinions after a round of poker game with the behaviors of glancing others' estimates.

Another limitation in this research is the lack of data about actual time-cost of each user story that is estimated in both practical Planning Poker meetings, which can be used to measure the accuracy of estimates. To be specific, software estimation in agile methodologies is to provide a development schedule that how much effort can be finished in a prescribed period, which is based on the estimated effort involved in each user story. If the data about actual time-cost of each user story can be obtained, this thesis will be able to measure the estimate accuracy of Planning Poker technique by comparing it with the estimated time-cost based on a same user story and velocity of development team. Furthermore, this thesis can further explore the difference of estimate accuracy between different patterns of estimate process.

## **5.2 Future Work**

In literature review chapter, this thesis summarized three reasons for employing Planning Poker estimate technique, including estimate accuracy, avoiding the so-called 'anchoring' effect as well as promotion of group interaction and individual participation. However, owing to the limitation of practical data, this thesis only explored two aspects of these advantages of Planning Poker technique, the estimate accuracy was not explored and discussed in this research. But the estimate accuracy achieved by Planning Poker technique with different estimate process patterns in practice was worth exploring. According to the analysis of practical estimate meetings, this thesis summarized several different estimate process patterns of Planning Poker technique, which the final estimate result of a user story was achieved by different methods such as playing poker game, an oral agreement of group, the moderator's proposal or a casual discussion. The difference of estimate accuracy between these different estimate process patterns was worth exploring.

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## APPENDIX A – Transcription of Meeting A

Speaker	Content
BA-1	(unintelligible, 0:00:00.0) (laughter) so Client1 can tell us what (unintelligible, 0:00:05.7). So these numbers are the size of the effort, rather than the hours or the date. They are relative. so the number one is slightly easier than number two and vice versa. And you'll find out that they start jumping from five to eight and thirteen, twenty, from forty, even a hundred, that's to reflect the amount of unknown when we increase the size of the effort. So, what I used to do is we actually just have a maximum number of thirteen and so we don't actually have twenty, forty and hundred, so, because that'll make it easier for people to decide (unintelligible, 0:00:50.7). The idea is, for each of the user story we'll go through, we'll talk about the, one user story at a time. Any question, we'll raise that, we'll talk about it. When we all know what this user story is about we'll take a number and then we we say, when I say, "One, two, three," we'll show the number together. Now then the person with the highest number and the lowest number will explain the logic for that particular number in terms of the amount of work, and then people can think about, "Okay, do I want (unintelligible, 0:01:21.9)."
DL-1	(unintelligible, 0:01:23.6)
BA-1	Sure.
DL-1	So when I put my card in, if I just say I think it's three points worth of effort in my role, or to actually get the story done as in for my development work, my documentation, the testers, is it for everything or just for my part of it?
BA-1	I think it just for yourself, because you can't, I mean, I don't know how much work for tester really (0:01:46.4). So it could be a user story that would take (unintelligible, 0:01:50.1) one point, but a tester would be three points and (unintelligible, 0:01:53.7), "Oh it's because (unintelligible, 0:01:55.4) a tester involves blah, blah, blah, blah." And then we'd kind of go, "Yep, okay we agree with (unintelligible, 0:02:00.4)," so that user story would be up at that three points instead of one, because it just make less work for you. So overall we look at the team effort, rather individual effort. And if in doubt (unintelligible, 0:02:13.4).
T-1	(unintelligible, 0:02:15.8) combined effort, you take what combined effort would be, would that be how it is?
BA-1	Yep.
CS-3	Yep.
BA-1	Yep. (simultaneous conversation, 0:02:26.1 - 0:02:32.8)
A-1	(unintelligible, 0:02:32.8)
BA-1	Absolutely, so some of the user story, especially there was one that I know of, the number five, we'll break them down. So, we've got two hours, so we've got one hour this morning and one in the afternoon to go through this. Ideally, we'll get all the (unintelligible, 0:02:57.4) done and (unintelligible, 0:03:00.3) the number five we'll break it down, and that's why we have Client1 here to guide us through that particular section.
A-1	(unintelligible, 0:03:07.2)
BA-1	Yes, so I've got twenty blank user stories, so we can write them up and we can size them, hopefully because tyhey are smaller (unintelligible, 0:03:17.6). But we see how it go, if we really (unintelligible, 0:03:25.4) then we just have to give a bigger number, including the (unintelligible, 0:03:27.2).

A-1	I don't know if I can (unintelligible, 0:03:31.7) they didn't tell you elaborate (0:03:37.4) stories, but I thought they should be stories coming from their side as well.
BA-1	Sure, sure.
A-1	But I don't know if I...
BA-1	From them I didn't get a sense of a lot of work. I do have a chance for myself to go and catch up with them to nail down exactly what I wanted to say (0:03:52.9). But I did take them through at least twice, together, one user story at a time and they were quite happy with it. So I'll still continue with that discussion and if there's anything unknown (unintelligible, 0:04:06.2).
A-1	Okay, I guess (unintelligible, 0:04:07.3) that I think they should be concerned about and then run it past them (unintelligible, 0:04:14.9), is that alright?
BA-1	Okay.
A-1	(unintelligible, 0:04:19.4) I don't know if, yeah. Yep.
BA-1	Okay.
A-1	I'll just tell their stories, so I'll just add their stories.
BA-1	Okay, and then probably just explain to the team what they are about.
A-1	Yep.
BA-1	Yep, okay. So some of the charts say if your experience comes into play, so if you are lacking (unintelligible, 0:04:42.0) experience with this particular user story, then your points will be higher because you need to factor in the fact that you need to understand what this is about. So it tends to be, again, if you're unsure just put a higher point. And (unintelligible, 0:04:57.0) we're not worrying about the hours or the days or even the sprints, we're just saying, "Okay what's the size of effort for this particular user story?" Is that okay with everyone?
PM-1	Yep and do we need to do any sort of collaboration of what we all, my, to sort of understand that my three is the same as everyone else's three, for example, 'cause you usually do that based upon when you've already done a sprint and you've seen how kind of everything comes out and sort of (unintelligible, 0:05:27.6) given that we're a new team, is there anything we need to do to make sure that we've got a somewhat same starting point?
BA-1	Yep. I think for the first two user stories, they are quite small. We'll break it down to the task and then we can say, then we'll do a number. So each user story that we'll come to size we can say, "Is this one more complicated or less complicated than the previous one?" We can use that as a way to guess the effort.
PM-1	So if as a team we decided the first item was three tasks and probably take about a week, and then we'd all sort of work out well that's (unintelligible, 0:06:07.1).
BA-1	So we're not thinking about the length of the work at all, we're not thinking about a week or not, we're just saying, "Okay, based on my how familiar I am with (unintelligible, 0:06:15.1) to this task, how quickly can I get it done, do I find it easy, do I find it hard, am I unsure, and therefore what my points are." So it's nothing to do with time at the moment.
T-1	So it's more like difficulty, how difficult (unintelligible, 0:06:31.4).
BA-1	Exactly. How difficult is this user story to, for me to do? Is that okay?
PM-1	Mm.
BA-1	Are we happy, are we okay with say using the cards (0:06:43.9) from the question mark to zero and to thirteen, or would you like to have twenty, forty and hundred?
T-1	(unintelligible, 0:06:54.4)
BA-1	Are we okay to have a thirteen as the highest? So the thirteen would be absolutely, you have

	no idea of what I need to do in this user story, so I need to go and find out, investigate and talk to people, (unintelligible, 0:07:08.7) thirteen. If it's really, I have absolutely no idea (unintelligible, 0:07:16.5). Is that alright? (unintelligible, 0:07:18.6) if you feel like oh I want to put (unintelligible, 0:07:23.3) then we can do that too. So pretty much just a lot of (unintelligible, 0:07:31.4) your opinion, your thought, your concerns, we'll raise them, because ideally I should have got the team together much earlier and everybody's come up with the user story together. (interruption, aside conversations, 0:07:43.3)So ideally the whole team should come up with these user stories together, but because of the resource constraints, so I kind of end up talking to different people at different times (unintelligible, 0:08:00.6).(interruption, aside conversations, 0:08:03.1 - 0:08:32.0)So the people who's going to do the work, we've got a stack of card and CST1, Kyle, Client1 here are guiding us, especially (unintelligible, 0:08:41.5) story that we need to break it down with, we definitely need your guidance. So we just covered our points, so for each user story, we'll do it one by one, we'll discuss this user story and then the team will give them a size of an effort. For the first one, we'll break it down to the task, so we can get a feel for how complex the particular user story is. And I've got a new plain stack of (unintelligible, 0:09:07.6) of user story for us to use. (unintelligible, 0:09:12.3) cool, are we ready?
DL-1	Yep.
CS-3	(unintelligible, 0:09:17.7) (laughter) I never done this before, so.
BA-1	I wish, Kyle. (unintelligible, 0:09:24.3)
CS-3	(unintelligible, 0:09:25.6)
BA-1	Okay, so the first user story is as a project team I want to hand over the support of middleware to CST so that the project team resource is freed up and the business gets (unintelligible, 0:09:42.4).
A-1	What do we mean by middleware in this context, I thought we were talking about unbundling?
BA-1	So these are from the priority six onwards it's all about unbundling.
A-1	So what do we mean by support of middleware? Isn't this introduction now?
PM-1	No, no, it's not being supported by CST.
A-1	So what do we mean by middleware here?
PM-1	Middleware, so the middleware that sits between, so the piece of software, middleware, you know, the middleware between e-global and solve it, at the moment is being supported by our project people and we need to hand that over to CST. But we need to do various things like (unintelligible, 0:10:22.4) to allow that.
A-1	Okay.
BA-1	Yep? So like (unintelligible, 0:10:30.8) we need to update the (unknown terminology, 0:10:33.8 ) site, so I'm just writing down that particular task because we're not quite sure. And the, I guess if we say if I was going to do this, I wouldn't know what, I don't know anything about middleware, so I'll probably have to actually factor in some of, you know, learning about what this middleware is about and what (unintelligible, 0:10:59.7), so I'll put it in like a study middleware.
A-1	Have CST asked us for any handover document?
BA-1	Yes they have.
A-1	So they have them already or do we still need to create one?
BA-1	I know from (unknown name, 0:11:15.8) and Daniel, they've given CST as much document (0:11:21.2) they ever wanted or dreamed of, but we just need to format them in the style that

	CST's happy with.
A-1	There's still work to be done?
BA-1	Yep, so I guess...
A-1	For the handover document?
BA-1	Yes, so I guess another task would be actually talk to CST to find out exactly what's missing and make sure they're happy.
PM-1	And there'll be various bits of toing and froing and disagreements and things like that.
BA-1	Yep, so it's negotiation as well. So pretty much we negotiate with CST to find out what it is that they wanted and it would probably, whoever need to do this work needs to study middleware and know, make sure we knows (0:12:02.0) about it and then finally we update the (unknown terminology, 0:12:05.3) site, and also (unintelligible, 0:12:07.3) go back to CST to make sure that they're happy with that and then we get a sign off.
T-1	Yeah, exactly. Sign off is the key (0:12:14.9).
BA-1	Okay. (pause)
A-1	There's no development.
BA-1	No. No, there's no development.
T-1	(unintelligible, 0:12:31.4)
A-1	But that's just a task, right?
T-1	Yeah, just a task, yep.
A-1	I mean in terms of (unintelligible, 0:12:38.4) they're not testing anything (unintelligible, 0:12:40.5).
CST1	No, again, we have to sit down with (unintelligible, 0:12:43.7).
DL-1	(unintelligible, 0:12:47.5)(simultaneous conversation, 0:12:50.4 - 0:12:55.6)
DL-1	Oh for the (unintelligible, 0:12:56.1).
T-2	But then, if I could add something, I think Kasalya and I would love to learn something from that side as well, 'cause they might need our help in the near future, yeah.
A-1	So training (0:13:10.5).
T-2	Yeah, it will be good if we know how to test them as well (0:13:12.6).
BA-1	Okay, so I've got talk to CST, find out what they want, study middlewares and update (unknown terminology, 0:13:18.5) site and organise training if needed, and sign off, get signed off for handover. So that would be kind of like my task for this user story.
A-1	When you say there is no development, what did you mean by that, PM1?
PM-1	Well it's an existing application, we're just handing it over to them.
A-1	Yeah, so in theory there's nothing, right? I'm just wondering.
PM-1	In theory there shouldn't be anything, no.
A-1	Yeah, yeah.
PM-1	I mean the only possible thing is we go to hand it over and we say, "This is how it works." And they say, "My goodness, you can't do that, unless you've changed this or changed that," or whatever. So there is that little element of unknown, but I think it's unlikely.
A-1	Okay, so we don't need to provide an estimate for that, right, that unknown (unintelligible, 0:13:56.6)?
BA-1	No, (unintelligible, 0:13:56.3).
PM-1	No, that will come out of this, it's more of a risk, you know, our assumption is, we have a discussion, they say, "That's cool, fill in this document and we're done."
A-1	(unintelligible, 0:14:03.4) no development that's the assumption?



PM-1	Yep.
BA-1	Yep. So now we're sizing, so we're going to pick a number, like this, the effort that we think it will take to do these tasks (unintelligible, 0:14:14.5). Okay? So, we take, looking at your cards and pick a number, and don't show it until I call out. Are we ready?
PM-1	Yep.
T-1	Yes.
BA-1	Okay. One, two, three. (pause) One, two, three. So, okay, so (Kasalya), do you want a chance to explain why do you think it's a five.
T-1	See I think it's because, from what (unknown name, 0:14:46.8) was saying was it's done and, but CST have not come back and said that they are happy with it. So it might involve reframing the documentation, it might involve lots more effort (unintelligible, 0:14:59.3) so that they understand, from our point of view we've done what we're supposed to do, but they're not happy with it. So that's why I put a five, thinking there's an unknown there of what they want.
BA-1	What about two, (unintelligible, 0:15:10.2).
DL-1	I put two because middleware's been live for well over a year now. We originally did all the documentation that was required for CST right at the start, but then they've come back to us and said, "Actually we've changed what we want you to tell us, now we need you tell us all this stuff as well." So then we've done documentation and basically from their requirements they say, "This is what we need for you to handover your project." We've actually done everything they've asked for now, it's all documented, all we have to do is literally...
BA-1	So the knowledge is already documented?
DL-1	I think (unintelligible, 0:15:46.1) sat with CST (unintelligible, 0:15:48.3), literally it's a case of getting the document signed, as far as I'm aware.
BA-1	Okay. Does that make you feel slightly better?
DL-1	(unintelligible, 0:15:56.7)
A-1	Yeah, slightly better, because I probably didn't know the history behind it.
BA-1	Sure. Sure, sure.
T-1	(unintelligible, 0:16:00.1) the documents are all there and done (unintelligible, 0:16:02.6). It's just the (unintelligible, 0:16:05.9).
BA-1	So, in that case, do we just want to give a new number again?
T-1	Yep.
BA-1	Okay. Are we ready? One, two, three.
A-1	(unintelligible, 0:16:18.2)
DL-1	I might change my mind after that. (laughter)
PM-1	Thirteen just to annoy everyone, yeah. (simultaneous conversation, 0:16:29.7) I'm the only one that's going to be slightly pessimistic and say three just because, I don't know, I'm just nervous (unintelligible, 0:16:37.3).
CS-3	(unintelligible, 0:16:37.4) other issues.
PM-1	Well it's just whenever you involve another team there's other things, but I'm happy to go with two (unintelligible, 0:16:45.3).
BA-1	Okay, so two it is.
PM-1	My pessimism I want to be noted. (simultaneous conversation, 0:16:49.2 - 0:17:03.0)
BA-1	Okay, so we give two to that user story.
A-1	(unintelligible, 0:17:04.7)

BA-1	Yeah, pretty much.
CS-2	I think they're pretty much (unintelligible, 0:17:10.9) they just want someone to say officially this is what you have to do, this is what you have to look for, out for. They know what to do with that.
DL-1	I think (unintelligible, 0:17:17.6).
PM-1	No one's going to talk about my pessimism and paranoia.
CS-2	No (unintelligible, 0:17:28.0) change it.
PM-1	Change it.
BA-1	Okay.
DL-1	(unintelligible, 0:17:31.5)
BA-1	Okay, so the user story two, as a product owner I want to lockdown middleware policies in solve it, and to only allow branch staff to provide fast track blackboard notes on risks and to conduct renewal review on these policies. Now I just really need to provide you some info. This one is very fluid at the moment. We do need to take consideration of how much you lockdown. PO1 is talking about locking down all the data that e-global give to us, but not the data that we own. And Client1 talked about lockdown the renewal. As well as we need to enable the business to provide urgent notes for the notice. So this one is quite fluid. If I was writing a task, my first task would be schedule discussion group for (unintelligible, 0:18:36.2). So my first task would be schedule discussion with (unintelligible, 0:18:45.8), CST, PO1, and CST2. Then we can talk about, then we can identify a feasible feature, approach. So what I mean by that is identify whether we're doing a complete lockdown or whether we're doing a role related access constraint (unintelligible, 0:19:11.4). So even though these two tasks are quite small in the south (0:19:21.3), but (unintelligible, 0:19:23.1) actually change that user story, because the outcome of that discussion will change this.
CS-2	Of those might change.
A-1	(unintelligible, 0:19:31.1) depending on what they want.
T-1	For me, you know, (unintelligible, 0:19:40.9) policies which creates problems with (unintelligible, 0:19:53.0).
A-1	(unintelligible, 0:19:53.5)
CS-3	(unintelligible, 0:19:54.9)
T-1	They're not locked down.
A-1	They're not locked down.
CS-3	No, they've got several warning (unintelligible, 0:19:58.0).
A-1	This is a different lockdown, yeah, they have warning messages, right, Kyle, but not locked down.
CS-3	Yeah, but sometimes you still need to get into (unintelligible, 0:20:04.8).
A-1	So is that the same, is that what we want to happen?
CS-2	Well that's what will come out of these, I guess.
A-1	(unintelligible, 0:20:10.3)
PM-1	Well that ups our number that we give, if there's all sorts of unknown then that's a higher number, because it's analysis and we don't know.
BA-1	So (unintelligible, 0:20:19.8) do we want, do we feel better if we say, if we limit this user story to as long as we find out an approach then this user story is done, so this is purely an investigation user story. So we're not trying to second guess ourselves, because we don't know what will come out of discussion.

DL-1	So this would be a user story to find out what the requirements are?
BA-1	Yeah.
DL-1	(unintelligible, 0:20:46.9) to say this is actually the work that we need to do to meet the requirement.
BA-1	Yeah, because that's the only bit I know at the moment.
DL-1	Yeah, because (unintelligible, 0:20:55.1) at the moment, these policies are locked down to a degree in that if anyone touches any of these policies via solve it through any of the routes you can get into the policy, they get a warning saying it's an e-global (unintelligible, 0:21:08.3). It's just a case of saying at that point you can't go any further (unintelligible, 0:21:16.9) lock it down based on the user's authority levels then that's a lot more work. So, and yeah, so I think (unintelligible, 0:21:24.4).
CS-3	If you lock it down sometimes (unintelligible, 0:21:25.6).
BA-1	Exactly, yeah.
CS-3	And if we're going to prevent that then we'd have to create a new policy, a (unintelligible, 0:21:31.9) go through fix the addresses, delete that batch (unintelligible, 0:21:35.2).
BA-1	So we'll try to get that fleshed out during the discussion. So (unintelligible, 0:21:40.1)...
A-1	(unintelligible, 0:21:40.7)
T-1	(unintelligible, 0:21:44.1)
DL-1	Well, for this time being, (unintelligible, 0:21:48.5)...
CS-2	For this one we're just gathering the info.
DL-1	...as a story to find out what we need to do.
BA-1	So this user story for the acceptance (0:21:57.2) criteria I'll just say identify a design approach.
DL-1	Yep.
BA-1	Yep?
T-1	I think we should identify the requirements first (unintelligible, 0:22:05.9).
BA-1	Sorry, I didn't (unintelligible, 0:22:08.1) requirement approach. So the business approach, what business (unintelligible, 0:22:13.2).
T-1	What do they want to (unintelligible, 0:22:14.1).
BA-1	Yep. And I'm kind of wanting that to be an outcome of this discussion.
T-1	Yep.
BA-1	So based on that (pause) can we give it a number?
PM-1	You've already got your card out.
CS-3	Yeah.
BA-1	Okay.
PM-1	Hope you did look at your card.
CS-3	I did. It hasn't changed my (unintelligible, 0:22:35.6).
BA-1	Okay, are we ready?
CS-3	Yep.
BA-1	One, two, three.
PM-1	See you should have changed. (laughter)
DL-1	You've got to explain yourself now you're different. (laughter)
CS-3	(unintelligible, 0:22:49.0)
BA-1	For the discussion in trying to identify what the business wants.
CS-3	Oh yep.
T-1	For me it looks like a training issue, to be honest.

CS-3	(unintelligible, 0:23:02.0)
T-1	(unintelligible, 0:23:03.2)
BA-1	So are we...
CS-3	I'm going number one.
BA-1	Why?
CS-3	Because I think to find out the requirements it won't actually take that long, but your other card, to build it, whatever it is, (unintelligible, 0:23:14.8).
BA-1	Yep. And what value, what do you think?
PM-1	More on what approach we're going to have.
BA-1	Right, so (unintelligible, 0:23:20.9).
PM-1	So that depends, yeah.
BA-1	Should it come, I mean hopefully should come out of the discussion, right?
PM-1	Yeah.
CS-3	My number is based on if that card is just to find out what the approach and then what the, I think that it's, it'll be easy.
BA-1	Okay.
DL-1	My number's more if you go and lock it down then what are you preventing.
BA-1	Exactly, which we're not quite sure yet. Okay. Do we want it for two to be safe?
T-1	Two is fine.
CS-3	Two's good, yep.
PM-1	Yep.
BA-1	Okay, cool. Number, priority three. I want, as a product owner, I want to allow certain brokers to use (unknown terminology, 0:23:57.4) to port domestic policy but not bind, so that (unknown terminology, 0:24:00.8) will stop creating bundled domestic policies for these particular brokers. Now there's been quite a lot of discussion, oh that's (unknown name, 0:24:09.4), sorry, I need to grab (unknown name, 0:24:10.3).(interruption, aside conversations, 0:24:11.1)
T-1	We need (unintelligible, 0:24:18.2).
BA-1	Yeah, I put that note there, we need to...
T-1	So with the time constraint, does it make the job, you know...
BA-1	We may need to put that as a higher priority (unintelligible, 0:24:32.1).
T-1	(unintelligible, 0:24:33.5)
BA-1	(unintelligible, 0:24:35.5), no, no. Okay, (unknown name, 0:24:38.1), we're doing this user story for stop binding and (unintelligible, 0:24:41.5).(simultaneous conversations, 0:24:42.5) I think you can have mine, because I'm not going to do any work on this one. Okay. So, there's quite a lot of discussion happened here already for this particular user story. (unknown name, 0:25:01.6), do you want to share a bit with the team.
DJ-1	So what I understand (unintelligible, 0:25:07.8) and what I understand is they want some specific agents (unintelligible, 0:25:15.8) allow them to rate and refer, but not beyond that, so they don't get (unintelligible, 0:25:22.9).
A-1	Yes, but only domestic, okay, because they might have (unintelligible, 0:25:28.1).
DJ-1	Okay, so domestic (unintelligible, 0:25:30.0) we need to restrict, allow them to (unintelligible, 0:25:36.6) display a different page for them. So for example (unintelligible, 0:25:46.4) finalised page which you can go and say (unintelligible, 0:25:50.6).
CS-3	(unintelligible, 0:25:58.2) the next button on the (unintelligible, 0:25:59.3)?

DJ-1	No, what you're thinking of is straight away, don't show them that page, just show them some page which just gives them information, okay, thank you (unintelligible, 0:26:06.7).
CS-3	(unintelligible, 0:26:09.0) so change that referral piece (0:26:10.6) as well.
DJ-1	Yeah, so what happens is that page does not come up, it only comes up when the referral has (unintelligible, 0:26:18.0).
A-1	(unintelligible, 0:26:17.3)
DJ-1	Declaration page will still come up, declaration page (unintelligible, 0:26:20.6).
CS-3	Oh no, no, that's the declaration page I'm talking about.
DJ-1	Okay, no, no, declaration page will still come up. But this next declaration page, if they're being referred, if you refer it will be just showing a pop up saying, "This policy has been referred," that's it and then goes to the summary page. That is if it's referred and it's underwritten and it's released, then when they do (unintelligible, 0:26:37.4) on the declaration page it actually goes to (unintelligible, 0:26:39.9) page that says, you know, where we will deliver, whatever (0:26:41.6). So that page we won't show, we won't show, we'll show something like, some simple (unintelligible, 0:26:47.8).
A-1	And there's only one (unintelligible, 0:26:54.6)?
DJ-1	Sorry, what was that?
A-1	Only one (unintelligible, 0:26:57.2), only one logo or whatever you call it.
DJ-1	Yeah, yeah, so...
A-1	So it's the same logo or...
DJ-1	So is it, is it...
A-1	...is this not business driven?
DJ-1	So is it going to be for, what, is it going to be Vero, AMP, what is going to be?
A-1	I don't know, do you know (unintelligible, 0:27:13.6).
T-1	It's for Vero. For Vero.
CS-2	Yeah, it'll be for Vero, but potentially it could (unintelligible, 0:27:16.4).
DJ-1	We will use the same...
A-1	For AMP (unintelligible, 0:27:18.1).
CS-2	Maybe not, I would say, (unintelligible, 0:27:20.0).
A-1	The only one (unintelligible, 0:27:22.4).
DJ-1	But then we use, we'll use the same...
T-1	But they can use, they'll want to use for AMP as well in the future if that is, you know?
DJ-1	No, no, just give me the text because the (unintelligible, 0:27:29.1) normal basic structure of the pages like Vero logo and everything, except the text in the middle will just have (unintelligible, 0:27:38.2) and goes to the summary page from there.
A-1	I just want to check with Mimi, you had the requirement before for (unintelligible, 0:27:47.7) even though they don't bind.
T-1	Yes.
A-1	Will that change (unintelligible, 0:27:52.2)?
T-1	No.
A-1	Oh okay.
T-1	Because this step (unintelligible, 0:27:55.6) is right at the end.
A-1	Oh okay, so yeah...
T-1	(unintelligible, 0:27:57.9)
A-1	...you could still go through (unintelligible, 0:28:00.0).

DJ-1	(unintelligible, 0:27:59.4) as is, what it is, but when it's released, at that time...
T-1	Released and then we, they go to the next page, that's when they get to fill in the option, whether they want to do annual or (unintelligible, 0:28:12.9).
A-1	Will there be a chance that after, today they decide they don't want this binding, but tomorrow they will take it back and say tomorrow you can bind, you know what I mean? Do and undo.
DJ-1	Yeah, so that agent list...
T-1	It can be...
A-1	Is this easy?
DJ-1	Yeah, yeah, so they...
A-1	(unintelligible, 0:28:31.5)
DJ-1	...if you remove the agent (unintelligible, 0:28:34.1) agent number (unintelligible, 0:28:36.2).
A-1	So it's easy?
DJ-1	Yeah.
A-1	It won't require development?
DJ-1	No, because this is only specific for an agent.
A-1	Yeah, but if the agent decides otherwise, it's an easy change?
DJ-1	Remove from the list, yep.
A-1	Okay.
DJ-1	Remove from the list (unintelligible, 0:28:46.2).
A-1	Like an undo?
DJ-1	Yeah, yeah.
A-1	Yep, okay.
DJ-1	(unintelligible, 0:28:51.3) all this will happen only for a specific list of agents, so if you take away the name that agent will be able to bind.
T-1	(unintelligible, 0:28:57.6)
DJ-1	(unintelligible, 0:29:02.5) from solve it, or it could be (unintelligible, 0:29:06.7), I think it will be mostly from the (unintelligible, 0:29:10.8) which is like how we have those messages and (unintelligible, 0:29:13.1).
A-1	It won't come from solve it, right?
DJ-1	No, I don't know, (unintelligible, 0:29:18.0).
DL-1	So then you'd need some maintenance functions (unintelligible, 0:29:21.8).
A-1	Yeah, that's right, because (unintelligible, 0:29:22.5).
DJ-1	I think mostly it'll be (unintelligible, 0:29:25.5)...
CS-3	(unintelligible, 0:29:28.5)
DJ-1	No, no, remember we had a agents blacklist (0:29:32.3) kind of thing?
CS-3	Oh yeah.
T-1	(unintelligible, 0:29:32.8)
CS-3	So that's solve it.
DJ-1	Yeah, but that is (unintelligible, 0:29:36.5) they just copy that and they don't have to restart or whatever, (unintelligible, 0:29:42.6).
DL-1	(unintelligible, 0:29:44.6)
T-1	(unintelligible, 0:29:48.8)
DL-1	Yeah, so you don't (unintelligible, 0:29:50.0).
DJ-1	No. So I think we'll (unintelligible, 0:29:52.1).
A-1	(unintelligible, 0:29:53.5)

T-1	I know Cathy was complaining about it, she thought, because she's got to manually type in the agency numbers.
A-1	And they need to deploy every time? (unintelligible, 0:30:05.9)
DJ-1	Not deploy, it'll be, they'll have to just restart.
A-1	Yeah, so does this mean that they cannot do this right away, kind of thing, like if I want it tomorrow do we need to wait for Thursday which is their deployment day, is this that sort of thing?
DJ-1	No, no. So...
CS-2	They do it straightaway.
T-1	They can do it straightaway.
DJ-1	...restart, restart. So it will be only the end of the business day, close of business day you can do that. So today you ask for it, tomorrow you can have it, provided (unintelligible, 0:30:28.6).
BA-1	So we're saying there's no maintenance change on this user story at all, right?
A-1	No, there's no maintenance, (unintelligible, 0:30:38.3).
BA-1	Cool, so we're saying the task will be like a, okay, Marissa need to provide a text message...
A-1	Hah?
BA-1	No, or me?(simultaneous conversation, 0:30:46.9 - 0:31:00.5)
BA-1	Okay, sorry, sorry. So we need to identify the required text message, right? And then we change the Java code.
DJ-1	Yes.
BA-1	Yep. So that's pretty much two, and I'll add...
PM-1	What about all the training material and things, 'cause we said (unintelligible, 0:31:13.1) training material.
T-1	No that's what I said that's part of what we need to do.
CS-3	But yeah, put that on the card. Modify the existing training documentation.
DL-1	(unintelligible, 0:31:25.3)
T-1	That, so that's not a story for you guys though, is it?
BA-1	No really.
T-1	That's for us.
PM-1	Interesting point though, just as a question, certainly when I'm doing my sizing, I would still view that as something I need to worry about, even though I'm not doing it, I would think, "Oh heck it's going to go (unintelligible, 0:31:41.4)," so that would up my points that I would do for myself, is that a valid...
A-1	Maybe it's a separate story, PM1.
DL-1	But if you make it a separate story then you wouldn't have to.
A-1	Right?
PM-1	But if it is, if it's a separate story that's fine, but I think, are we saying, is it a separate story or is it part of this?
T-1	'Cause it definitely needs to be done.
A-1	Yeah, so I think one...
PM-1	Would it just be a task in here?
A-1	...I think it's a story.
T-1	It's a separate story. (simultaneous conversation, 0:32:02.9)
PM-1	Okay, yep.

BA-1	Are we saying a separate story, or do I just make us accept (unintelligible, 0:32:08.3)?
PM-1	Why not have it as a task in this existing story?
BA-1	Okay, so that's, create training material, is it?
T-1	Yep.
BA-1	(unintelligible, 0:32:20.8)
T-1	(unintelligible, 0:32:22.7)
DJ-1	What's your base for these numbers?
BA-1	So the max is thirteen.
CS-3	Max is thirteen.
DJ-1	No, no, so what (unintelligible, 0:32:29.9).
DL-1	Two, two.
CS-3	Two, two, so far.
DJ-1	(unintelligible, 0:32:35.5)
BA-1	(unintelligible, 0:32:37.5)
DJ-1	And the two story is what, can you just tell me one of the two stories?
BA-1	So the first two...
DL-1	Handover middleware support to CST.
DJ-1	Is that two?
DL-1	Yeah.
DJ-1	(laughter)
BA-1	No that's for discussion, that's for discussion. (simultaneous conversation, 0:32:51.1 - 0:33:01.3)
DJ-1	And I'm saying, it's two for that, two story (unintelligible, 0:33:02.8).
BA-1	No, no, that user story is just for discussion, just for discussion.
A-1	(unintelligible, 0:33:06.9) maybe we need to change the (unintelligible, 0:33:13.4).
DJ-1	Discussion is fine, (unintelligible, 0:33:15.7) handing over to CST two points. (laughter) I say wow that's quick.
BA-1	So handing over to the CST for the existing middleware, that's two. And locking down, discussion for lockdown middleware policy is a two. So those are the user story we've covered.
DJ-1	So when you say handing over to CST (unintelligible, 0:33:37.5) or is it do you mean actually going and saying, "CST this is what is..."
T-1	And getting a sign off from them saying that from now on...
DJ-1	We have been doing this (unintelligible, 0:33:44.8) for almost a month now, you know that (unintelligible, 0:33:46.9).
PM-1	But we're talking about outstanding work, so we're not talking about the work that's already been done.
DJ-1	Do we know what's the outstanding work in their opinion?
PM-1	Well we have an email from them.
DJ-1	Pardon.
PM-1	We have an email from them saying this is what you need to do.
DJ-1	(unintelligible, 0:33:59.2) two items, three items, what is it? I mean I don't (unintelligible, 0:34:02.6) from CST, because two points, if it's just two points meaning, I feel, two points would be take this document, done, thank you, get a sign off, bye-bye.
BA-1	So for that two point we have talk to CST and whoever don't know their middleware will need



	to get to know the middleware, update the (unknown terminology, 0:34:22.6) site and organise training if needed and get sign off.
PM-1	But it depends on what that two points means. Because if we say thirteen points is the biggest possible piece of work we could possibly get.
DJ-1	Two points can be a week's work.
DL-1	We don't know.
BA-1	We're not talking about a time here, so purely (unintelligible, 0:34:44.3).
DJ-1	So if I take that two points (unintelligible, 0:34:46.2) then where is zero, minus one or whatever. (laughter)
CS-2	Should have gone a hundred for that one.
T-1	So do we want to bump that up then? Because you would know because (unintelligible, 0:34:55.4).
DJ-1	I think we should, because I've been handing over these guys for last, a month, and every time they come back to me and say, "Oh how do I do this, how do I do that?" So, sorry, I'm saying...(simultaneous conversation, 0:35:07.3 - 0:35:17.0)
BA-1	Do we want to do that one again? (laughter)
DJ-1	I will say a five or eight for them, (unintelligible, 0:35:21.3).
BA-1	So knowing thirteen is like the biggest to unknown, so we have, zero, one, two, five, eight, thirteen.(interruption, aside conversation, 0:35:34.8 - 0:35:44.3)
DJ-1	Because if you give that five (unintelligible, 0:35:48.0) if you give two, I have to give minus one for my story.
A-1	But then that's only (unintelligible, 0:35:55.8).
BA-1	Exactly.
DL-1	(unintelligible, 0:35:57.0) development point of view, yeah.
BA-1	So hold on a minute, are we talking about...(simultaneous conversation, 0:36:00.7 - 0:36:12.4) Okay, hold on a minute, so for the handing over to CST, do you want to give that a new number?
PM-1	Yep.
BA-1	So...
CS-3	Let's make it three.
PM-1	Yep.
BA-1	Are we happy with three?
DJ-1	(unintelligible, 0:36:23.5)
BA-1	For handing over CST. So CST1's got a five.
T-1	(unintelligible, 0:36:28.7)
A-1	(unintelligible, 0:36:30.5) had five before. (simultaneous conversation, 0:36:32.2 - 0:36:35.2)
CS-2	It's their willingness, isn't it, to want to take it, is one of the things.
A-1	They don't have a choice.
DJ-1	Because you are handing over, we are handing over. (laughter)
DL-1	(unintelligible, 0:36:41.5) raising remedies and...
CS-2	We've always raised remedies for them.
CS-3	Yeah, but (unintelligible, 0:36:48.0).
CS-2	(unintelligible, 0:36:49.8)
CS-3	So does that also take into account the amount of time they're going to spend working on those issues (unintelligible, 0:36:57.0)?

CS-2	No.
CS-3	No.
PM-1	Not the working on the issues, it's the getting a handle of it.
BA-1	Okay, so what's the number, do we, are we, do you want to show a number? Okay, one, two, three. Alright, five, five, three...
PM-1	Five, yeah, I've got a five. (laughter)
CS-3	Peer pressure.
A-1	Peer pressure.
PM-1	I'm happy with (unintelligible, 0:37:17.9) I just don't want to argue down.
DL-1	Now I'm stuck now, because can't really put thirteen, now I can only put an eight (unintelligible, 0:37:26.2), but my eight, the amount of work I've got to do is going to be a lot more bother than doing a handover.
BA-1	I guess this one is more because of, we really need to get CST...
DJ-1	There's a lot of unknowns, Daniel, there's still a lot of unknowns, because we don't know that this is what they'll come up and say, "Okay, that's fine, but we need more, we need (unintelligible, 0:37:42.5)."
DL-1	No, they've got, they've got, no they've got a document. They've got a document that says this is what we need for handover (unintelligible, 0:37:46.7).
DJ-1	That's already been (unintelligible, 0:37:46.9).
DL-1	(unintelligible, 0:37:48.3) documentation (unintelligible, 0:37:48.7) document.
DJ-1	You've already done that?
DL-1	Yeah, so what's...
DJ-1	But they still come back to us.
DL-1	Well they shouldn't, they can't.
DJ-1	But they still come back.
T-1	See but the thing is they need to be comfortable about it, so (unintelligible, 0:37:55.2).
DL-1	(unintelligible, 0:37:55.4) to you to keep asking you to support them, fixing the existing issues. So that's not counted. (simultaneous conversation, 0:38:00.7 - 0:38:04.4)
DJ-1	For me, handover is once I've given them they really shouldn't be coming (unintelligible, 0:38:06.6) if only there's some complicated issues.
DL-1	(unintelligible, 0:38:09.5)
PM-1	We should move on. I think with this point is if, if we're going kind of arguing about something that's a big debate, that's almost you err to the higher card almost, because it shows disagreement.
BA-1	Okay, so now we're talking about stock binding and (unintelligible, 0:38:27.3). So the task is only about identifying the required text message, change the Java code, creating training material.
DJ-1	Identifying the agent list.
CS-3	Testing.
T-1	Yep, which is easy.
BA-1	And testing?
T-1	Hm-mm.
DJ-1	Testing, identifying agent list, agents (unintelligible, 0:38:42.9).
BA-1	Okay. Cool. Have we got it, are we ready? Okay, one, two, three. (pause) I've got an eight.

DL-1	I've got an eight.
BA-1	I've got an eight and two. Okay, can eight explain eight?
DL-1	Well that sounds like a lot more work than the previous one. And now we're saying that's a two?
DJ-1	No, it's not much.
T-1	It doesn't seem like a lot of work to me.
DJ-1	No, it's not much actually.
BA-1	I guess because it's known, there's known work around (unintelligible, 0:39:16.2).
CS-2	I put it more as an unknown (unintelligible, 0:39:19.1).
DL-1	Yeah, but this means you've got a lot to do, you've got Java work to do, you've got...
DJ-1	I'm talking only about Java work. I'm not talking about testing, I'm not talking about anything else, just my number, my number is only for Java. (simultaneous conversation, 0:39:28.1)
DL-1	(unintelligible, 0:39:28.8) there's Java, there's all sorts (unintelligible, 0:39:30.7).
DJ-1	Yeah, so you need to take the medium average, so if I have taken two, she's taken five and three, so the medium will be say around...
DL-1	(unintelligible, 0:39:36.7) have an eight, Dave had an eight.
CS-2	'Cause it was more of an unknown.
DJ-1	Take five then, take five.
BA-1	So you were unknown, so that's fine, 'cause you don't need to do the work.
CS-2	That's fine. So why don't we take five then.
BA-1	(unintelligible, 0:39:45.5)
T-1	The requirements are clear, the training (unintelligible, 0:39:48.7).
BA-1	Cool, so that's a two, that's five, so I'll take five for the testing side. Yep. Okay, cool.
DJ-1	That's it?
BA-1	Yep, that's it, thank you.
CS-2	So what was the number for that?
BA-1	That was a five.
CS-2	That was a five.
BA-1	Thank you. Okay, next one. As a project team I want to ensure e-global displays record A and B accessories, info, (unintelligible, 0:40:16.3) so that brokers are informed correctly. So this one will involve (unknown name, 0:40:22.3) which I don't actually know them very well. But for our side it will include testing, so we need to do testing and we need e-global to do the implementation and deployment.
A-1	So this is a change in their (unintelligible, 0:40:42.6), no change at the backend, because the service provides it already.
CS-3	Do there's nothing from us in terms of (unintelligible, 0:40:50.8)?
A-1	Well if the service is giving it to them then there's no change for us.
T-1	So what do we provide, do we provide them the list of accessories, is it, or, was it some data that we provide or...
CS-3	Says it's already been provided.
T-2	What happens is from the side of e-global, there is a field there for accessories, but when we look at policy it doesn't come up (unintelligible, 0:41:10.4).
T-1	Okay, (unintelligible, 0:41:11.6) which overrides (unintelligible, 0:41:14.3).
T-2	Yes. They say if you create the policy in solve it and we put some accessories, if we do (unintelligible, 0:41:20.2) from e-global it won't get the accessories.

T-1	(unintelligible, 0:41:26.2) and then when you save it, it blanks (0:41:27.9) out the accessories in solve it.
BA-1	That's right.
T-1	So that involves test, set up of the environment and testing, I guess.
BA-1	Yep.
T-1	To make sure that (unintelligible, 0:41:37.1).
CS-3	Shall we call (unknown name, 0:41:39.8) (laughter), what they think.
BA-1	(unintelligible, 0:41:42.5)
T-1	So they have the environment (unintelligible, 0:41:42.5).
PM-1	Already factored that into my (unintelligible, 0:41:46.5).
CS-2	(laughter) Exactly.
A-1	Actually, we need (unintelligible, 0:41:48.7). (simultaneous conversation, 0:41:48.7 - 0:41:51.8)
A-1	But (unintelligible, 0:41:52.1) mapping.
DL-1	(unintelligible, 0:41:53.8)
A-1	This mapping is alright?
CS-2	Yep. Yep.
DL-1	(unintelligible, 0:41:56.7) it's just that (unknown terminology, 0:41:59.1) aren't using it.
BA-1	No.
DL-1	They need to (unintelligible, 0:42:01.6).
T-2	(unintelligible, 0:42:01.8)
BA-1	Yep, okay, cool. Are we all ready for a number?
CS-2	Yep.
BA-1	Okay. One, two, three.
A-1	Three for me.
BA-1	Three, three, okay, can eight explain please.
PM-1	The reason I've put eight is because it involves (unknown name, 0:42:19.8) doing work, which I can imagine being a big headache for me. And because I've got to worry about who's going to pay for it, (unintelligible, 0:42:28.2), so from a PM side of things that's a lot less controllable than if it's just happening within the team that's here.
BA-1	Sure. What about you, Dan? You've got a one.
DL-1	I thought it was just about doing the testing, 'cause if (unknown name, 0:42:41.3) are doing the work, we're doing the testing.
BA-1	Okay, are we happy to give that eight for PM1 to get grey hair.
PM-1	Look, this is just my bit of it though, so I would see this as a good case of you make it a five because it's taking into account everything else, but from my bit of it, is an eight, but it averages out at a five.
BA-1	You're happy with a five then?
PM-1	Yeah, yeah.
BA-1	Okay, five it is. Okay, next one (unintelligible, 0:43:16.9) I want to find out why solve it doesn't allow address changes or new risk being created (unintelligible, 0:43:23.4). Yeah, this one we say is going to be investigation one, just to see whether that's actually the case, before actually, we're not changing it, we're just to find out whether that's the case or not.
CS-2	So this card is just an investigation phase?
BA-1	Exactly. We're not fixing anything, purely identify whether that's the current situation or not.

	Okay. Any questions on that...
CS-3	We already know that yes it is.
T-1	We know the answer.
CS-3	Yeah.
T-1	Yeah. (laughter)
CS-3	And it's because it may, the rules may have been...(simultaneous conversation, 0:43:53.2 - 0:43:58.8)...the rules may have been misinterpreted when (unknown terminology, 0:44:00.9) was getting created. (simultaneous conversation, 0:44:02.1 - 0:44:07.5) No, the, when (unknown terminology, 0:44:08.2) was getting created, it looks like the rules were misinterpreted for solve it not allowing you to add a risk or change an address from renewal, but you can in solve it. So it was well why doesn't (unknown terminology, 0:44:19.4) follow those rules?
BA-1	So I guess for us, we'll probably want to...
DL-1	Well this is wrong then, 'cause this is saying why doesn't solve it allow it, but it's solve it who does allow it, it's the online what doesn't allow it.
CS-3	Exactly, yep.
BA-1	So we're saying...
CS-3	It's the frontend that doesn't allow it, but the backend does. So it's (unintelligible, 0:44:34.6).
BA-1	Sorry, so what is the frontend that doesn't allow it? (simultaneous conversation, 0:44:38.5 - 0:44:44.8)
BA-1	So can I change the user story to find out why middleware doesn't allow address change (unintelligible, 0:44:48.9)?
CS-3	Yes.
BA-1	Okay. Okay. So the, I guess the, one of the thing would be talk to (unintelligible, 0:44:54.5), yep.
CS-2	Yep.
BA-1	And then pretty much do the investigation after that really.
CS-2	Yep.
BA-1	Yep, are we happy with that?
CS-3	What does that say, Dave, here? (simultaneous conversation, 0:45:06.5 - 0:45:14.4)
CS-3	On the notes for that.
CS-2	(unintelligible, 0:45:16.5)
CS-3	But you can't do it on middleware, 'cause it's not two transactions, is it?
CS-2	No that's a typo, it should say, this can be done as one transaction on solve it, but two on middleware.
CS-3	But you can't do it on middleware?
CS-2	No.
T-1	No you can...
CS-2	You have to renew and endorse, or endorse, yeah...
CS-3	Oh yep.
BA-1	So we're saying you can do one transaction on solve it but two on middleware.
CS-3	As a workaround.
BA-1	As a workaround.
T-1	That's not acceptable (unintelligible, 0:45:49.7).
CS-3	But then that workaround forces the policy to be renewed.

DL-1	So do we actually need this story then if everyone knows (unintelligible, 0:45:56.2).
BA-1	Yeah.
A-1	(unintelligible, 0:45:56.1)
DL-1	(unintelligible, 0:45:58.3)
BA-1	So we're not doing anything, do we want to do anything about this?
CS-3	In middleware.
T-1	If we want it to be fixed.
DL-1	We need the story to fix it (unintelligible, 0:46:07.5).
BA-1	So to fix it. So I'll take this one out, because if I come up with any new user story probably need to get reprioritised, so I'll take this one out, is everyone okay with that?
CS-2	Yeah, we'll say it's already done.
PM-1	Yay, put it in the completed thing. (laughter)
BA-1	Okay, cool.
CS-3	So do we need a new user story (unintelligible, 0:46:25.9)?
BA-1	Yep.
CS-3	(unintelligible, 0:46:28.5)
T-1	(unintelligible, 0:46:30.2)
CS-2	Bonus.
BA-1	Good. Next one is the big and chunky one. How much time do we have? We've got nine minutes, wonderful. Sorry, so this one, at the moment is saying, as a (unintelligible, 0:46:45.5) user, I want to see a new policy created within a public prototype (0:46:50.1) and (unintelligible, 0:46:51.6) transfer to transfer an active content, building, vehicle, boat, (unintelligible, 0:47:00.6) from a packaged policy, so that the packaged policy has one less active risk. So this one pretty much describe the whole, the majority, the big proportion of the unbundling work (unintelligible, 0:47:13.4) acceptance criteria.
T-1	(unintelligible, 0:47:17.0) shouldn't that say transfer an active risk from (unintelligible, 0:47:23.3)?
BA-1	Yep, so I've put it as one of the acceptance (unintelligible, 0:47:29.6). So we wanted to, we want to break this one down. So we wanted to say if we can get Client1 and Kyle to guide us through in terms of the screen that you check and then we'll break that into, we'll turn each one of them into a user story by itself, so say one screen at a time (0:47:46.7). Is that okay?
PM-1	But at this stage we're pointing for this complete story here (unintelligible, 0:47:54.6).
A-1	(unintelligible, 0:47:55.4)
PM-1	Okay. But, you want to break it down in this session now or...
BA-1	Yeah.
PM-1	Okay, yep, cool.
BA-1	Yep, in this session, so given we've only got eight minutes but we've still got another session this afternoon so we can continue on that one. But, I mean do people know what I wanted to get?
T-1	Yep, (unintelligible, 0:48:14.4) should be able to tell you easily what steps are there.
A-1	Yeah, I was hoping that it mimic whatever you were trying to do (unintelligible, 0:48:21.7).
T-1	Yeah, I had that sheet of paper (unintelligible, 0:48:24.9).
A-1	Yeah, that's right, we have to break it down like that so that the acceptance criteria is very clear. So like I want to transfer blackboard data from one to the other, I want to transfer interested parties (0:48:33.9), I want to transfer...

T-1	So for everything (unintelligible, 0:48:36.7).
A-1	Yep. Maybe, this is (unintelligible, 0:48:39.0) maybe we should start the session this afternoon with this one and go with the others, because this one...
BA-1	Okay.
A-1	...so as not to break the thought.
BA-1	Sure, okay, so for both Client1 and Kyle, are you okay with what (unintelligible, 0:48:52.4) for this afternoon.
A-1	(unintelligible, 0:48:55.1)
T-1	And then we don't have to (unintelligible, 0:48:57.2).
BA-1	Cool. Sounds good. Okay, so we jump over to user story eleven. As a (unintelligible, 0:49:07.4) user I want to terminate the original risk. (simultaneous conversation, 0:49:14.9 - 0:49:20.0) So user story ID eleven, as a (unintelligible, 0:49:22.9) user I want to terminate the original risk after its info is replicate by the new risk so that the single risk policy is the only active one. So this one is assuming that we've done all the moving around and replicating the information from the original policy to the new policy and risk, and now we've come back to terminate original risk. Any question on this one?
A-1	Okay, so you've got a (unintelligible, 0:49:51.6) but you've got (unintelligible, 0:49:52.6)?
BA-1	Yep.
A-1	Yep, so this is just terminating the risk.
BA-1	That's right. Any question on this one?
T-1	And this is after the unbundling, is it?
BA-1	Yep, so after you've created a new policy (unintelligible, 0:50:06.9) you move all the information over, so (unintelligible, 0:50:11.1) now you come in to terminate the original risk.
CS-3	Would the unbundling tool be handling that?(simultaneous conversation, 0:50:20.5 - 0:50:25.7)
T-2	So once you've created the new risk you can terminate the old one.
BA-1	Yep.
PM-1	And is this, could you say this is a feature of the unbundling?
T-1	Yes. (unintelligible, 0:50:32.8)
PM-1	So...
CS-3	So I suppose we're breaking it down for cancelation, so at the moment there's (unintelligible, 0:50:38.8).
BA-1	Yep, so this one's just...
CS-3	Okay, so we show our cards?
BA-1	Yep, are we ready? Okay. One, two, three. Cool, so two for, three for testing, one for development, so three, (unintelligible, 0:50:54.4).
T-1	I think it's a bit much. (laughter)
BA-1	Okay, so are you happy with three or you, would you like a two or...
T-1	Yeah, probably I could (unintelligible, 0:51:01.8) because it would be part of the unbundling process I guess.
BA-1	Yeah, it is a part of unbundling.
T-1	So while I'm testing that I should be able to finish that as well.
BA-1	You mean, while you're testing...
T-1	Yeah, while I'm testing five.
BA-1	You probably won't though, because it hasn't (unintelligible, 0:51:14.8).
T-1	But only after he finishes that can he do this, isn't it?

BA-1	That's right, that's right, so...
T-1	So while I'm testing five I should be able to test this, so I guess it shouldn't be, it's maybe a one (unintelligible, 0:51:27.0).
T-2	(unintelligible, 0:51:26.0)
BA-1	So what numbers will you guys be, so what would you expect the acceptance criteria to be, I guess I was thinking of okay the original risk is terminated (unintelligible, 0:51:38.2).
PM-1	Just as a question, does this make sense as a user story, 'cause (unintelligible, 0:51:45.1) and this is a question, not a statement. So we're getting the one that's ID number five and we're breaking that up into things that need to be done, and then this is a feature and presumably there's going to be lots and lots of other features. Is each feature of this level of granularity going to be represented by a user story, or are we going to have more sort of packages of work that needs doing? I'm just wondering whether...
BA-1	For the number five we're going to break it down into screens.
PM-1	Sure. Yeah, so five is fine, but given that we are breaking down five and we'll have these user stories based upon packages of work that need doing, does eleven make sense as a user story alongside those others, or does it make sense that when you're breaking down five that you consider eleven along with it, if that makes sense?
BA-1	(unintelligible, 0:52:30.3) so at the minute, if we do the eleven by itself, and by the time we breakdown the five we can say, "Oh maybe we can match the two together."
T-1	(unintelligible, 0:52:37.6) it'll be five broken down into, let's say ten steps and this will be the eleventh step as well, I think.
BA-1	Yeah.
PM-1	Okay. So, I mean this is all solve it stuff, right?
BA-1	Yeah.
PM-1	So a question for Daniel, does, given that you're going to be doing the work from your point of view of developing things, does that make sense? I just want to make sure this aligns (unintelligible, 0:52:59.1).
DL-1	Well I know what it means. That is something I need to (unintelligible, 0:53:02.1) I need to, once I've mapped all the information (unintelligible, 0:53:04.9) go back and then terminate that risk.
PM-1	And that makes sense as being a separate user story alongside the others that have been (unintelligible, 0:53:13.0).
DL-1	(unintelligible, 0:53:13.5) eleven, twelve, all the remaining ones are all sort of part (unintelligible, 0:53:19.9). So I have to do all the work to make a policy unbundled, now that was all going to be a story five, but you can't really have that as a story 'cause that's the whole of the project (0:53:32.6) really. So that's why I'm saying we need to break it down and say, "Right, you've got to create the policy for (unintelligible, 0:53:38.2), you've got to move the risk across, you've got to then (unintelligible, 0:53:40.2)," and so on, and this would be then part of, once I move the risk across then you can cancel the risk, cancel the policy.
A-1	I think eleven is a story.
PM-1	Okay that's fine. As long as, Daniel, you're happy with it being a separate story.
A-1	Yep, it's a story.
T-1	I think and also from a testing (unintelligible, 0:53:53.1) it becomes something that we need to check.
A-1	(unintelligible, 0:53:55.9)



PM-1	Yep, that's fine.
BA-1	So what's the number we wanted on this one?
CS-3	Two.
PM-1	Two.
BA-1	Are we happy with two?
CS-3	Yep.
PM-1	Yep.
BA-1	Cool, two it is.
CS-2	You had three.
PM-1	Well yeah, but it's, based on Daniel being..
CS-2	Oh okay.
PM-1	I was concerned that this wasn't, possibly wasn't right, but if Daniel's happy, I'm happy.
BA-1	Okay, so ID twelve, as a solve it architect I want to create a new DPK policy to (unintelligible, 0:54:22.7) on the original policy that I'm not content building (unintelligible, 0:54:30.5).
A-1	This is not my story?
BA-1	It isn't?
A-1	No.
BA-1	But I thought you (unintelligible, 0:54:38.5).
A-1	If there is something left over, then it (unintelligible, 0:54:42.1).(simultaneous conversation, 0:54:43.1) No, maybe there was a misunderstanding, but this is not (unintelligible, 0:54:50.6).
BA-1	Okay, so I'll take this one out then.
CS-3	This user story doesn't make sense (unintelligible, 0:54:53.1).
T-2	(unintelligible, 0:54:54.8)
BA-1	No. So we'll just leave it there.
T-1	Oh that's good, (unintelligible, 0:54:57.6).
BA-1	Okay, so just to wrap up for this session, are we okay with the flow of things. Are we okay with the discussion quality? Yep, so for the afternoon session, we'll continue but we'll start with the ID five and break it down into other user stories. Okay, cool, awesome. Thank you guys.

## APPENDIX B – Transcription of Meeting B

Speaker	Content
BA-1	Cool. OK. So I just explain the layout. This is our backlog. Everybody knows, and we just use it to put points on the straight way. Up here, behind PM1, we've a left inside, can turning around on this place. At left inside the first row is priority the business analysis. The second log is our user stories that we want to do or need to do. The third row, the bottom in business lists, so they pretty much ...(unintelligible)... and then the first one, at the most right inside, that's our yet happened sprint activity, some sprint activities are happening, but these yet haven't happen. So, what we want to do. Just help everybody to understand each user story. We want to go through from the left side to guess the effort. So for each one user story, we talk about what it is. If we don't know. Then we talk about. We'll use poker to guess how much effort it take for me to fulfill user story. We will do that first of all. Then, we will say: OK. From the technique informatization perspective, what's the best way to influence one to zero, being mind the business priority. And at the same time, the concept of fail early. In agile, they talk about fail early with is there anything that is risky. We want to do first. So we do that. we need to poker combine the second row into the first row and practicing away that team thing we can ...(unintelligible)... most logical we can fulfil it. And also, being mind every sprint start every sprint user story get prioritized by that product owner. So everything technique that really critical. We probably don't want to put it in the late sprint. Because it not happened. So that's something we need to do. Then we'll say: ok. We know it has four sprints. One for the backup. So let's just think about four sprints. And those on the user stories we need to do. As a team How many user stories that we will be comfortable to fulfill in each sprint. Again be in mind. Later sprints gets re-prioritised. Everything that we believe is really important critical risky. But we want to do these earlier if it's possible.
DJ-1	This is ...(unintelligible)... looking at sprint first joining?
BA-1	First two.
DJ-1	First two?
BA-1	Yeah.
DJ-1	So the first two which we will test them...(unintelligible 00:08:16)... isn't it? Looking at?
BA-1	We are not whole lot. We haven't done this sprint. That all comes these meetings.
PM-1	But this pretty all come this goal ...(unintelligible 00:08:27)...
BA-1	At this moment.
PM-1	So we are not try to say all this becomes sprint one. (simultaneous conversation) (00:08:36--00:08:41)
BA-1	So we as a team we come up with how many user stories we want to do in a sprint. We do that by having a rough guess of the effort that were requires from each member team. Are we happy with that?
PM-1	...(unintelligible 00:08:58)... going to be a huge sprint been story that ...(unintelligible 00:08:59)... sprint over multiple, sprint ...(unintelligible 00:09:09)... in sprint four.
BA-1	So no question about that? That's what we will do in this workshop.
DJ-1	OK. So that's we will working at this moment. We will sprint zero work for me. But there is a lot of work in sprint one for testers.

BA-1	OK.
DJ-1	Yep, because when we finish this in this week.
PM-1	You will ...(unintelligible 00:09:29)... to fulfill.
DJ-1	Because that's a part of already fresh because like the fresh middleware and environment let us ...(unintelligible 00:09:35)... I am not doing the kind of exceptionally some kind of logic, I'm just cleaning up and make up by chan.
BA-1	We can write a new user story for the tester?
DJ-1	So that becomes that can be used to do only that ...(unintelligible 00:09:48)... that code can be used, we don't you know that's improve code introduction.
PM-1	You are getting code by straight.
DJ-1	Yeah, I am getting the code (bystreet?). Even just doing a little bit login then so that just have because making that ready. But it will have a lot of activities for that sprint one. So I think keep in mind, that is giving pointing. That ...(unintelligible 00:10:05)... doing testing also.
BA-1	So it's like what are the testing and development environment?
DJ-1	The testing the middleware environment after the binge freshed. (00:10:16)
BA-1	(Writing a new user story...)
	(simultaneous conversation, 00:10:20 - 00:12:17)
BA-1	OK. So are we ready? I just quickly briefly go through the planning poker. The poker, we've got 0, which is absolutely known effort for me as whole personally. So I could be BA or tester or developer. ...(interrupted by someone 00:12:36)... And one means really mild. And goes to one two three. And then start taken a little bit effort five. Eight is considered to be quite hard. Thirteen is as no clear work need to do. So the effort needs time that we need do including finding out what we need to do. Hopefully, after we talk, you know all the effort we spend on these user stories. We don't have any thirteen. But, so that's the feel for. This is purely a god feel. It doesn't need to be accurate what's so ever. It purely from my perspective. What is my contribution to that user story how much effort it will take me.
PM-1	Did you want to say how is the next step close to sprint 1, ...(unintelligible 00:13:21)... for sprint one. So don't worry about the factor is high, never ...(unintelligible 00:13:23)... mind. This is taking ...(unintelligible 00:13:24) if the whole project, then when we cost this sprint on we focus on that, do worry the operation, then we can do the next to the other sprint, so, following the good pen. (simultaneous conversation, 00:13:26 - 00:13:39)
BA-1	OK, so what we play planned poker again. We pick a number and not showing. And until everybody's ready, we show this side top. That people with lower points need to explain. And the people with the high points need to explain. And the team has to go again. We have ...(unintelligible 00:13:54)... ok. (00:13:55)
T-2	So the points I put ...(unintelligible 00:13:58)... just use my piece ...(unintelligible 00:14:00)...
BA-1	Just you know.
S-?	How much ...(unintelligible 00:14:00)...
T-2	Not includes that I think testing may be ...(unintelligible 00:14:03)...(Some people synchronously answer: no, no, no. 00:14:04)
BA-1	No one (endout?) will take the higher point, so if the tester has a lot of efforts of the user story and the developers has not ...(unintelligible 00:14:10)... for me, then we take the testers'.
BA-1	Cool, are we ready. So we'll start with the first one, we will attend eBix training on notification template. For this user story, I've changed it to just attend training. And it was quite same for mine. (00:14:30) so, as ...(unintelligible)... it reminds to do the training and calm down and tell

	us what are soon to do to take us into goal, which is enabling ...(unintelligible 00:14:14)... have own standard notification template. Do we understand that user story? (00:14:50)
DJ-1	This involve for you guy, and I don't know, testing we don't do, they don't do testing on this.
PM-1	so ...(unintelligible 00:15:05)... this would be number of, maybe a number of other user stories, one for account training, and others not happen to remember. So we are looking at what e-global reduces for all fermentation. Not so ...(unintelligible)... and we say how feels any global, which are ablated for around ...(unintelligible)... going to a document. Basically, be training had do imagine. So nothing to be complicated around the requirement major. Because in the priority, just to be it who is the other big group have decided they can put other members into e-global as well. I think it's quite good. And then say do that sit that had role document like broken view. We haven't lady like for Wendy who used ...(unintelligible)... moved off the broke, but we haven't. She only does templates group members. And they were consensus thing. So our requirement for these documentation to go valid into a broker is dropping down. And also because the schedule we are running on the time. Get one of those for brokers. I lay to that will even require requirements into that much. Because all of that, just being told me in the last since Friday.
DJ-1	...(unintelligible)...
BA-1	She still don't need to the meeting.
PM-1	...(unintelligible)... change the priority?
BA-1	No.
PM-1	But attending the training is so priority. So I prefer one. (simultaneous conversation, 00:17:05 - 00:17:08)
BA-2	So do we understand that user story? ( Others answered yes at the same time, 00:17:11)
BA-1	OK. Are we ready? One, two, three. OK.
BA-1	Cool. Put the one point. (simultaneous conversation, 00:17:15 - 00:17:54)
BA-1	OK. Next one. We move in post six.
T-1	Could you please...(unintelligible)...
PM-1	I can't do this job at this place. Because I've got full requirements. Basically, we talk to Mandy. She says it's simply SQL update. But we think it's more than that. It's already get date already for deployment. We identify all the risks and we say ...(unintelligible)... middleware. We Jun has a sit jobs she has to do on two or three days to July. We don't play it off. She puts a DT flag middleware.
T-1	It's basically a data configuration.
PM	Data configuration is ending. One of activities is to failed in the access, which has got two hundred fifty dollars each size. And impose access for you. In briskly, that was put it yet. And show up the documentation is ...(unintelligible)... you know this imposes access to notification through beak on multi-pay. But through middleware in documentation, that comes up. It's in the voting. So you have two hundred fifty in the policy or two hundred fifty in the voting, looks like you can have five hundred dollars. So basically, take that two hundred fifty doesn't show in the documentation but still do that you have ...(unintelligible)... to access. We've got questions. We need to have else down in the document. We don't need to do update the blackboard notes. Just say what we have done. So Dave in the last time, for one we were doing insurance but he find out very light. He has to do come out to Sunday do three hours work to get down. So there was a little paining why come to be get instead the job to do this. The criteria would be something like if it's a house and it have got tennis and it have got two hundred and fifty dollars

	access. That can't ...(unintelligible)... re-access. But I don't know what ...(unintelligible)... he has. So even ask questions excepts criteria ...(unintelligible)...
T-1	For the testing, a feel like would be ...(unintelligible)... we make sure that...
PM-1	It's a good question. Possibly. She arise a good question because we don't do anything like we don't test when we do that preparation for that paining for each of the appointment we don't a test from what June does. He just does a thing like right day fix for example. We are the right date is black it's a right date. He reply these proper right day using program danged. And many things, they even I listed the right days that been changed or speak items that we are going to update these it's a job speak items. The thing up important date ...(unintelligible)... rather than ...(unintelligible)... so, there is a slide, I guess the risky that ...(unintelligible)... someone almost check they are important.
DJ-2	That's tested. All the programmer uses the tested.
PM-1	Right.
DJ-2	They often use this deployment. So this will be tested. ...(unintelligible)...
PM-1	Just only all of job are secret jobs. You know that. That he runs. What he want to do one of run job. And just post all together ...(unintelligible)... so we should think about what Junes doing to make the life easier in the appointment side. We do this job...(unintelligible)... we haven't got user stories for June because.
DJ-1	What ...(unintelligible)... I want to combine all the...(unintelligible)...
PM-1	That's what he need to do this.
DJ-1	He'll do that ...(unintelligible)... fix program. ...(Unintelligible)...A short discussion. (00:21:01 - 00:24:07)
BA-1	Do we want to ...(unintelligible)... he actually want to put note exam when we talk. Do we actually want to plan some testing time? Just easy what the current situation is. And just identified maybe some implications like what ...(unintelligible)... houses. In this user story, so when we actually go ahead makes some changes. We can actually see the change.
T-1	...(unintelligible)... Find out hot water proof is really.
PM-1	How hot is the ...(unintelligible)... day with the spring shops ...(unintelligible)...
BA-1	But I just ...(unintelligible)... do the actual like actually know what's current happening in the software from Dave would be good. But there is more information for handsome knowledge for you guys.
T-1	That's good. Because I ...(unintelligible)...
PM	Yeah, I think probably this approach for me to talk to Dave for clarifying requirements, and come back to talk to you guys. Don't worry about the sinker requirement is. If we've got questions we need to put them down. We all start come to Dave.
BA-1	No. no. no. I'm not talking to (someone's name). I'm talk to Client1. And you talk to Client1. They can plan to solve it how to do it they like. And so I've got here for my...(unintelligible)... and identify AST requirements as well as impair from notes. And then also from AST and Client1.
PM-1	I don't think we have got AST ones.
BA-1	You do? You have? Or do you need to talk?
DJ-1	I think we talk...(unintelligible)...
BA-1	I mean do you need to because you want to consider...(unintelligible)... AST need to do. Is part of this user story?
BA-2	Don't speak that, about this story, at this moment, the AST have a list things to

	do. ...(unintelligible)... program being ...(unintelligible)... programmer see
BA-1	OK.
BA-2	If we do this. Then we have to also call this program date.
PM-1	...(unintelligible)...
BA-1	Yeah, ...(unintelligible)... change that process to make all happening we can do. If we do that work, that would be a different story.
BA-1	That's right.
PM-1	But we don't do any work?
BA-1	No, we still need to talk place ...(unintelligible)... would be better, that's not for technology would be mind. Right?
PM-1	I've done about this...(unintelligible)...
BA-1	You have?
PM-1	It's no ...(unintelligible)...
BA-1	OK. Do we understand?
T-1	So we didn't want to ask them should be ...(unintelligible)... you know for ...(unintelligible)...
PM-1	We don't care.
BA-1	We don't care. (simultaneous conversation 00:26:10 - 00:26:50)
BA-1	So just a mind to talk to Client1. OK. We are not carry about AST here. Cool. So we talk about for this user story want to do some testing to understand the current situation. And I'm going to get conformation from Client1. And I identify the access criteria. We are not worried about the AST.
T-1	Also ...(unintelligible)... (A short discussion until 00:29:15)
BA-1	OK. Are we comfortable with this one? Do we know what we need to do? OK. So Mike needs to come on with that seventh criteria, just start a few for what is this user story need us to do based on what's you talking about.
S-?	No, this we don't. But asking how's we are doing?
BA-2	OK, that's fine. No, No. that's fine. We just need to know what we need to be done rather than how we need to do.
DJ-1	What's the level e-global ...(unintelligible)...
S-?	I will solve this one early. Do you want to use descript or do you want the program ...(unintelligible)...
BA-1	So think in your head, the most complicated cases because mikes haven't given you the seventh criteria yet. So think in your head the most complicated one and give the number.
PM-1	Think about something similarly, the current jobs means what. And moving our code more. (A short discussion until 00:31:00)
BA-1	OK. We got number here. Ready? One, two, three.
BA-1	We got three, eight and I got one. OK. Well, ...(unintelligible)... got two.
S-?	...(unintelligible)...
BA-1	So, in terms of the west case, do you involve ...(unintelligible)... your words was case two, your words was case eight.
PM-1	I'm thinking if I say that was case two, when the next user story actually used to create referable then words case is for this more than double referable.
BA-1	Shall I leave it eight?
DJ-1	We've got this for next two library find out more about this. And we are going to do more detail estimation. I don't think we've got too much detail decision with this story.

BA-1	No.
DJ-1	So probably once Mike gives us information and we can become straight forward.
PM-1	Take it eight. Because this is ...(unintelligible)... in the room.
BA-1	OK.
T-1	...(unintelligible)...
BA-1	OK. So ready for next one?
S-?	...(unintelligible)...
BA-1	Alien ... and web forms served. (00:32:35) Do we understand this one.
DJ-1	What is the three levels? Like skima at the soft skima we call verify skima. Then that is a called than middleware with jack's. Are you ...(unintelligible)... limits? So the way the story but workers. I need to find out what the (name?) requires. The (name?) says I need forty-three calendars. I need to go backwards. I need to see middleware especially ...(unintelligible).... And go for the backwards and say: Oh, ...(unintelligible)... and next is e-global web form ...(unintelligible)... you know what I mean. These of things we have to go through. This story comes that if ..(underfund?)..., that is very simple, if ..(underfund?)..., it's just middleware to change again simple. But if something is found which is (name?) required. ...(unintelligible)...
T-1	...(unintelligible)...
DJ-1	Yes. Not the verify. Verify would be fine, most of time, but would be skima which is e-global line. If that require is changed, then you are up forward. Not because of us, because of the outside ...(unintelligible)... to do that.
T-1	How long would it take to check this?
DJ-1	So, as far as testing is considered, just need to test that, ...(unintelligible)... forty-four, then it's accepted or not, if it's forty-three, accept.
T-1	How many?
DJ-1	Yes, as now, we don't know. Because exactly ...(unintelligible)...people go to all the fees, but ...(unintelligible)...., otherwise I know for effective (check it?). (simultaneous conversation 00:33:31 - 00:34:02)
DJ-1	As I know, I say two or three. I don't think so there's a lot ...(unintelligible)... would be a free form ...(unintelligible)... issue, ...(unintelligible)... drop-down is ...(unintelligible)... so I can see around three to four at this moment, if was case scenario could be all of them are not matching, but this is not going to be, I don't think that's matching.
S-?	...(unintelligible)...
BA-1	OK, are we got number in here? Are we ready? OK, one, two, three.
BA-1	OK, one got three, one got two, and one got three. Two three, double three. OK.
BA-1	...(unintelligible)...
DJ-1	I'd say that all depends. If the skima level changes, and this can go to five also.
BA-1	OK. Change a words expire date will it'll not in your face.
PM-1	That's gone. ...(unintelligible)... oh, that's already changed really?
PM-1	Change that story to only happening ...(unintelligible)...
DJ-1	So the expire date because for right now you have expire say first of November to first two thousand eleven, and now you want to allow the broker to change the expire date to bring in a forward to say ...(unintelligible)...to October, currently, we do not allowed them, they want to be allowed, so that they can ...(unintelligible)... to twenty-fifth of October.
T-1	...(unintelligible)...

DJ-1	This is like middleware. And so ...(unintelligible)... yeah, so the unknown is for me I think Daniel already test something which he says it is ...(unintelligible)... level. Yeah, so what I need to get more the knowledge just to how much effort the requires the middleware, I need to just take out that validation which we do that you can't change the expire date, and then we go through, now they could be that select ...(unintelligible)...complain which we have tested, they could be that if they allowed, let's go through ...(unintelligible)... that's all good, all happy. It could be that the e-global may has some issues. It says you know you are sending that date, but the response because thinks that they are not being response they just get ok and then come back, so few things that needs to be miss get it, ...(unintelligible)... to actually point to say hang on. This is what meaning to do. But I think Daniel only test major parts which allows expire, but it's not ...(unintelligible)...
BA-1	OK, I just quickly run you put an acceptance criteria that I've got here. So it's using the endorsement transaction on policy are not in renew face. Expire date cannot be change to more than twelve months after effective date. So case off refer all expertise. Every time you do this we need ...(unintelligible)...
S-?	So that is update here also.
BA-1	Yep.
S-?	OK.
BA-1	And then, update expire date is used for the next renew a fico I think that's a deal but it's put it here for testers. And can I change expire date of policy that is un-renew face. So ...(unintelligible)... absolutely ...(unintelligible)..., no renew policy.
BA-2	This is ...(unintelligible)... any policy.
DJ-1	No, no, no, this is only ...(unintelligible)..., and it could be only I don't change it's going to fit everyone or it's going to fit middleware.
BA-1	...(unintelligible)...
DJ-1	...(unintelligible)... so that's all the working condition. (two ladies simultaneous conversation 00:38:23 - 00:38:25)
DJ-1	That's only middleware. It's only happen for middleware. So that's being supported.
S-?	...(unintelligible 00:38:32)...
BA-2	It's not allowed.
DJ-1	More than twelve month late.
BA-1	You can have more than twelve months late, but we only allowed a license twelve months.
S-?	...(unintelligible 00:38:54)...
BA-1	You can only shorten it. So that what many want, you can only shorten you can only put license twelve month. Not early twelve months.
T-1	...(unintelligible 00:39:02)...
DJ-1	... (unintelligible 00:39:04)...
BA-2	That's why we are not ...(unintelligible 00:39:04)... cycle.
DJ-1	Yeah, ...(unintelligible 00:39:09)...
T-1	...(unintelligible 00:39:10)...
DJ-1	...(unintelligible 00:39:11)...
T-1	If I change the expire date to ...(unintelligible 00:39:14)...
DJ-1	You can't change the ...(shallv? unintelligible 00:39:17)... you have to do that via e-global.
T-1	Because you don't allow endorsement ...(unintelligible 00:39:20)...
DJ-1	You have to change expire date and the e-global to say I'm shortening it. Only validation I have



	to do front it the second point, if it says link in it, it should be not allowed. I don't know (shallv? Unintelligible 00:39:31) isn't allowed. If not, we have to pick up and say hang on, you can't do it. But if it's shortening it, I need to let them pass. ...(unintelligible 00:39:43)...
BA-2	...(unintelligible 00:39:47)... set up is.
DJ-1	Look the expire date and the policy, it's not quietly the same thing, then refer.
BA-1	So ...(someone's name) (unintelligible 00:39:57) you have a question?
BA-2	Yeah, ...(unintelligible 00:40:01)...
DJ-1	You are, what was the ...(pre-names? Unintelligible 00:40:02)...
T-1	You need to update the ...(pre-names? Unintelligible 00:40:05)... so that be a refund. So ...(unintelligible 00:40:17)...
PM-1	What have to be employ brokers ...(unintelligible 00:40:24)... before?
DJ-1	Exactly, that an employment, can we also separate it?
BA-1	Should we have an employment process outside this user story?
DJ-1	Yes.
PM-1	This is, eh... ...(unintelligible 00:40:38)... process going for, not going backwards.
BA-1	So we need to have the employment process wonderful going for the brokers hand on the middleware and ...(unintelligible 00:40:53)... brokers have got middleware, so we need to have ...(base? Unintelligible 00:40:55)...., but they wouldn't ...(things? Unintelligible 00:40:47)... this user story.
DJ-1	What you have deserves different user story? What are we improvement the data's part? This exercise is need to employ to brokers, that's a separate story.
S-?	...(unintelligible 00:41:12)...(simultaneous conversation, 00:41:12 - 00:42:19)
DJ-1	I dispose a point ...(fronten? Unintelligible 00:42:24)... he says if I change the expire date, then you are not allowed I think. So I just need to under lock it and see what happens.
S-?	...(unintelligible 00:42:35)...
DJ-1	That does automatically. So as long as the referable is that replace, it picks it up and starts joining a ...(Unintelligible 00:42:42)...so for me, I for now...(unintelligible 00:42:43)... just blocking it, but if it's more than my blocking then you need to find out. So I'm just going to accordingly taking the worse case scenario.
S-?	This referable is BA attending?
DJ-1	Yeah, yeah, same BA, same similarly, what do you think for others? (simultaneous conversation, 00:42:59 - 00:43:11)
BA-2	But what done what about does know which they need to know program they need to go and see expire date equal do next expire date may be request, can they do that is the BA?
S-?	That's ...(unintelligible 00:43:30)... things to do use this user story. What can I have ...(unintelligible 00:43:36)... easy the referable trigger f, from the inception to expire, if their license ...(fail homes? Unintelligible 00:43:48)... send referable or trigger referable, but I only ...(unintelligible 00:44:07)... the policy you do next endorsement, which is not shorten ..(for many further? Unintelligible 00:44:13)...., because they got referable place which how can I influence this ...
DJ-1	And new business ...(unintelligible 00:44:27)... (simultaneous conversation, 00:44:27 - 00:44:40)
BA-1	Are we talking outside of this user story or just extend this user story? (Simultaneous response: extend user story.)
BA-1	So every time you change expire date you have to trigger referable.

DJ-1	Yeah.
PM-1	Maybe not.
DJ-1	No, no, no, for she say. That's what you say.
BA-1	That's what I say. Every time you change expire date, you need to trigger referable.
DJ-1	Yes, yes, that's what you say.
BA-1	That's why ...(unintelligible 00:44:55)... accepts criteria.
DJ-1	OK.
T-1	This is new business and less than twelve month.
BA-1	This isn't a new business this is not, we only ...(unintelligible 00:45:04)...
T-1	...(unintelligible 00:45:06)...
DJ-1	Only an announcement.
T-1	...(unintelligible 00:45:08)...
S-?	Because this is a guess one.
DJ-1	Yeah.
T-1	So that's just using this endorsement before.
DJ-1	This story is only for endorsement. We join load a pass now we are loading it. That's ...(unintelligible 00:45:16)...
DJ-1	What...(unintelligible 00:45:18)... a pass? You know.
DJ-1	...(unintelligible 00:45:20)...
DJ-1	I think it's ...(unintelligible 00:45:23)..., it's because I thought the brokers my start planning, which is a ...(unintelligible 00:45:27)...
DJ-1	Correct. Correct.
BA-1	I choose be two as well. I mean ...(unintelligible 00:45:28)... people start, so...
DJ-1	So I am going to be a right change coming up ...(unintelligible 00:45:31)... before.
BA-1	Yeah, yeah, many so wired about ...(unintelligible 00:45:33)...
DJ-1	That's why they want to refer, so that they can catch. Why they are doing that.
BA-1	OK. So do we all understand this one?
T-1	Probably you need to check with the big one in new business.
BA-1	New business is not ...(endorsements? Unintelligible 00:45:46)...
DJ-1	Again this story only for.
T-1	...(unintelligible 00:45:48)... I'm a customer, I see, I want to need to for eleven month, I want to create the new policy. So use it.
S-?	No, you have to create it for...
BA-1	no, no, no.
DJ-1	No, no, no. this story only for endorsement, new business is separate, it's excepted. New business seems is taking business upfront. Yet, you taking this you already taking this business and you are shortening this, they need to know why they shortening it. Ok? So forget new business, just endorsement, this story is only for endorsements
BA-1	Why not touching in business is however currently...
DJ-1	I think new business just wards, so ... you can shorten it.
T-1	New business not only work once, you can shorten it.
DJ-1	Yeah, yeah. Only for endorsement, this story is only for endorsement.
BA-1	OK.
DJ-1	OK.
BA-1	Got a number? One, two, three. (00:46:29)

BA-1	I got five, five, five, five, and one got two. ...(unintelligible 00:46:36)... goes five or we have to goes five? (simultaneous conversation until 00:46:39, sounds all people answered five)
BA-1	OK. Five it is.
DJ-1	Because what we need to testing also is a dominate net, just put excepts to dominate net. Just put there. Because I don't know how dominate net ...(unintelligible 00:46:54)... yet.
BA-1	Twenty-eight what?
DJ-1	Dominate net situation where you change location and change expire.
BA-1	What about you need to find out ...(in instituted ?unintelligible 00:47:04)... that?
S-?	Yes, yes, we need to find it out and ...(unintelligible 00:47:07)...
BA-1	That's not as seventh criteria then. It's something you need to find out.
S-?	...(unintelligible 00:47:11)...
DJ-1	Pardon?
S-?	...(unintelligible 00:47:13)...
DJ-1	It is. But want it is a cancelation which means closing it, dominating the other one is new business scale. So the domination will be as of today, and new business will be with new factored that. But it still need to test that.
S-?	...(unintelligible 00:47:26)... changing the policy expire?
DJ-1	You are changing the policy because you are doing more together, you doing changing location and expire change and then see how it works.
S-?	...(unintelligible 00:47:34)... because you change on first you change the policy and secondly change the risk.
DJ-1	Yeah.
S-?	So if you only change the policy and risk only ...(endorsement? Unintelligible 00:47:45)...
DJ-1	Again ...(devalue? Unintelligible 00:47:47)... that, because what date endorsement and something will load everything, so they'll say: oh, I change it to say ...(unintelligible 00:47:57)... is than less, and I am going to change location ...(unintelligible 00:47:58)..., so we have to test all the situations.
S-?	Cool, we've got ...(unintelligible 00:48:03)...
BA-1	Yeah.
DJ-1	Yeah. Ha, ha, ha. Five is going enough for now.
S-?	Yeah, five ...(security? unintelligible 00:48:08)...
DJ-1	...(unintelligible 00:48:10)... check this process, we doing this cards right? And then we ...(unintelligible 00:48:17)... and you said two, you said five, and we going to consensus we going with five, the other meeting for sprint one right? We are doing discuss you know?
BA-1	no.
DJ-1	I just found is the process mean to address a factor that he who may has a different school was ...(unintelligible 00:48:42)...some students?
BA-1	It does ...(unintelligible 00:48:45)... all the talks about, so the talk ...(unintelligible 00:48:49)...cards.
DJ-1	But, yeah, so ...(unintelligible 00:48:50)...I put zero on ...(unintelligible 00:48:53)... story. But actually ...(unintelligible 00:48:57)... I got something to do on that story.
BA-1	What's ...(unintelligible 00:49:00)...
DJ-1	When?
BA-1	Like ...(unintelligible 00:49:01)...
DJ-1	Like right now, we are discussing. Because when we put that last one down,

	right? ...(unintelligible 00:49:19)...just put down, right? Are you ...(unintelligible 00:49:21)...
BA-1	Five.
DJ-1	Five. You also put five. (simultaneous conversation 00:49:23 - 00:49:45)
DJ-1	Actually, I was wondering someone actually think what nothing to do, but actually, I've forgot something.
PM-1	But that talk what seems like the other story where ...(unintelligible 00:49:55)... and we'll two, we said ok...
DJ-1	But we only yeah ...(unintelligible 00:50:01)... not posing anything else July? (simultaneous conversation until 00:50:07 – 00:50:11)
DJ-1	We are taking five it goes because since I misunderstand student I'm not taking at least five is chilling me. I can have enough time to do that work.
DJ-1	ok, do you have taking any assumption even though she put five she put zero, you'll got anything on that because you may something ...(unintelligible 00:50:26)...
DJ-1	Yeah, I may have something, but as for now, I don't know. But the fits is going to shave me, or I'll see what's up.
DJ-1	Ok. If only taking one score ...(unintelligible 00:50:35)...
DJ-1	You don't doing. Tester's five, ...(unintelligible 00:50:37)... puts two ...they are doing on it.
T-1	...(unintelligible 00:50:40)... I am going to put two, and I put ...(unintelligible 00:50:42)... they probably have to ...(unintelligible BA-1 and T-1 were talking simultaneously 00:50:44)...
PM-1	ok, next one.
BA-1	ok, lock down, we lag force five performa transfer, so at the moment, I think we've got validation trip for the two agents, but and performa transfer at the moment they need to specify agent number from, and the agent number for two, then the performa transfer will move all the policy for from the from agent to the two agent. So I think then we'll say that's he think that you think there validation for the two. We just need to make sure that's a case as well as these validation for the front. But in the way, we need to check if the agent has got any policy with DT flats or if the front agent has amv policy that's going to go to two agents that's not an amv policy, then we need to say no. that's wasa? So no agent said view link agents and no miss of amv in the mvp as receipt of powerfully transfer. That's what this user story say.
DJ-1	Is it ...(unintelligible 00:51:52)..., isn't it?
BA-1	That's just for albert.
DJ-1	This part only ...(unintelligible 00:51:58)...
BA-1	What?
DJ-1	The part got brokers?
BA-1	No. ...(unintelligible 00:52:03)... at all, just middleware fast.
DJ-1	You create all...(unintelligible 00:52:06)... decision problems.
T-1	When did they do this performa transfer, do they do it?
BA-1	They do because one of agents board another ...(agent? unintelligible 00:52:12)...
DJ-1	But they ...(unintelligible 00:52:13)... many requirement, she says ...(unintelligible 00:52:18)... another decision ...(unintelligible 00:52:24)...
BA-1	Yeah. There is an existing performa transfer handles Middleware2.
DJ-1	So my a saying is that...
BA-1	So, so, under performlyya transfer screen at this moment handles Middleware2.
DJ-1	I don't know the screen.
BA-1	We are only doing the middleware ...(silenter? Unintelligible 00:52:35)... so you probably want

	to check with CST1 to say I was
DJ-1	The decision process before we even touch the screen go and decide to move book terser? From one place to another.
BA-1	Yeah.
DJ-1	It's are we going to move the common? Place and make the decision we have to go through some steps in branch. And we'll say right now they are right date, they'll be criteria, they can be move from this end-front to the two, once a might going this group...
BA-1	Sir, I need to all check with many and to say how the Middleware2 comes and display here, so will go with that we currently have. So that's you know what the Middleware2...is
DJ-1	I'll say that just my mind stating was this story involves menus process which the branches meet me to know before right going round this before the transfer, I guess ...(unintelligible 00:53:28)... round this...
BA-1	That's fine. But when the branch come to do the performa transfer what you want the system to do?
DJ-1	I think it's a validation.
BA-1	Yep, so what is the validation?
DJ-1	You put in your acceptance criteria.
BA-1	So I'm only checking the middleware fee.
DJ-1	That's staff there. It's not going to the system mainly done there. It's done looking at the book.
DJ-1	It's by both.
BA-1	It's done by the system.
DJ-1	...(unintelligible 00:54:11)... do the validation and say I'm not doing the transfer, it's from agents which got DT.
BA-1	The whole load.
DJ-1	On ...(unintelligible 00:54:19)... the policies. Were this case... ...(unintelligible 00:54:26)... validation, not three. But they would like this case ...(unintelligible 00:54:29)...
BA-1	I'll all check with CST1 on that one.
DJ-1	But that's difference in that, lists she...(unintelligible 00:54:36)...
BA-1	Yeah, she probably talk about this process, so, rather than, anyway, I am looking at the system on other things. So we need to get the system to do that parts.
DJ-1	She know the brokers.
BA-1	I will check with CST1 on that one.
DJ-1	...(unintelligible 00:54:51)...
BA-1	Yeah, broker have got flag.
DJ-1	That flag, you should be ...(unintelligible 00:54:55)...
BA-1	And do you know that current performa has cut Middleware2 as well. I just need to know which shoot want that changed or not. So I'll check this with that one.
T-1	From testing points, used ...(unintelligible 00:55:09)... not the working.
DJ-1	...(unintelligible 00:55:09)...( simultaneous answer: for the tester. 00:55:11)
BA-1	OK, any questions on this user story? No? OK, got a number.
BA-1	OK, one two three. (00:55:28) Ok, I got three, I got one. Three and one, happy go with three?
T-1	Yep.
BA-1	OK, next one is locking down the middleware for albert, it's by stopping renew. So this one is very specific. It's all the experience list green. So it's only on the particular screen. Are we only blocking the option that R-O-A, we block that feature we only display on our message.

DJ-1	Just on the screen?
BA-1	Just on that screen.
T-1	But they've have like a regulation that screen to see the other screens...
BA-1	Still work, that's right, that's right.
DJ-1	So we've got check the all screen.
T-1	Not really.
DJ-1	It's only for ...(unintelligible 00:56:17)...
DJ-1	...(unintelligible 00:56:22)...sprint.
T-1	The only one sprint.
DJ-1	Do enough test in most of policies?
T-1	One ...(unintelligible 00:56:25)... policies one sprint.
BA-1	...(name? unintelligible 00:56:31)... I know that you probably were taking notes, but if you want you can put on the sticker notes and I just put on with user story if you want to.
S-?	...(unintelligible 00:56:41)...
BA-1	Yeah.
T-1	That's all right.
BA-1	That's cool. That's cool. ...(That's you are happy? Unintelligible 00:56:48)...
BA-1	so we've got ready? One, two, three. (00:56:57)
BA-1	OK, I got three, I got two, I got one, I got zero, I got three. Go with three? happy with three? (00:57:05)
BA-1	OK, this one. (00:57:11) next one is I identify a surety? Code is line to this is purely looking at the current process. The current process ...(apply? Unintelligible 00:57:24)... identify s? Code, and we try to find a way to see if it make decide easier. So it's no technology involved here at all.
DJ-1	Depends. Because if there requirements come size I need to change subject to make more early...
BA-1	We would be allowed, the product owner wouldn't want us to do that. that's working get already ...
DJ-1	How would you make this on thirty cord easier?
BA-1	So ,at the moment, he only talk about Michael? With the full-year thing, you outlook. That's way he want.
DJ-1	I don't think you discard them, change the subject and send e-mail
BA-1	That's not technology solution.
DJ-1	That's developer, because that middleware has to change. We are sending the subject. We are adding the subject and sending the cross and the e-mail ...(unintelligible 00:58:02).... If subject has to change, then the middleware is involved.
BA-1	OK, OK, OK. Good advice. All right, so, I probably need you to put numbers soon.
DJ-1	Yeah.
BA-1	OK, so we've got something ready, got number ready. One, two, three. (00:58:18)
BA-1	I got one, I got two, and we go with two?
DJ-1	Yep.
T-1	Yep, three two here.
BA-1	I got three. People do you want three?
PM-1	But I think it maybe work ...(unintelligible 00:58:29).... you need to look process, watch process,

	also advice some process.
DJ-1	we outlook ...
PM-1	So the ...(unintelligible 00:58:38)... task.
BA-1	OK.
T-1	That's more testing for ...(w? unintelligible 00:58:42)... because make sure that...
DJ-1	Because many e-mails come goes to that box, means box ...(unintelligible 00:58:45)... very supports in bla bla.
T-1	You have a bit of testing.
DJ-1	It's not test running the describes. actually, going and sending outlook, coming and currently and bla bla, so...
DJ-1	How much ready?
DJ-1	Two.
BA-1	Three, sorry. (simultaneous conversation 00:58:50 - 00:59:00)
DJ-1	BA, but tester activity have to see that goals currently.
DJ-1	...(unintelligible 00:59:05)... would be change something right?
DJ-1	yeah
BA-1	OK. Next one. (00:59:11) change address at renew?
DJ-1	No?
BA-1	No?
DJ-1	Report ...(unintelligible 00:59:16)...
BA-1	Oh, sorry.
DJ-1	That ...(unintelligible 00:59:18)..., isn't it? Change address this one?
BA-1	Sorry. Eleven, where does eleven go. All right. That's on the wall, because will was working on that. Sorry. So, change address and renew, I want you to be able to change address and renew face by middleware, so that I don't need to do the work around. ...(unintelligible 00:59:41)... correct conversations.
DJ-1	What are we ...(unintelligible 00:59:46)... remember that with two three connection.
BA-1	Yes.
DJ-1	This is student discussion, isn't it?
BA-1	For the sprint zero, I have two questions we need to answer. One is ...(pepi?name? want?)... One had feature by ...(unintelligible 01:00:01)... so we need to check with the best case, that's a case why that is.
DJ-1	Yes, that's ...(one to? unintelligible 01:00:05)... case, which requested off, because involve one developers don't understand that is a terminology ...(unintelligible 01:00:13)...
BA-1	Right.
DJ-1	We fret out, that how soft drink it, they agree with our factors. My speedy, you lie, you should be running on your right.
BA-1	So that's going ahead with this one then. So that's a technology error rather than a business decision to stop this feature.
DJ-1	Now, business function is the when changing address it will still run.
BA-1	Ok.
DJ-1	will own one don't think your dark was required
BA-1	Ok.
DJ-1	Wove two? Does ...(unintelligible 01:00:57)...
BA-1	So, wove two do anything?

DJ-1	No, wove two is doing.
PM-1	Wove two basically says...
DJ-1	Is doing.
PM-1	You're right. You do changing location.
DJ-1	three does that
PM-1	It is two ...(unintelligible 01:01:08)...
DJ-1	But middleware is not allowing it.
BA-1	No, I need the middleware to do that.
DJ-1	So because middleware is different transactions. (BA-1 and PM simultaneous talking 01:01:22)
DJ-1	It allows, but not allow renew face. It's that we want, isn't that renew face. So they want to br by plus changing address, which is any dominate endorsement and renew one which we don't allow the middleware because that's two or three transactions and one (transactions?). That's what we have mentioned in the other day. We need to get more information of this. And small solve it...
PM-1	...(unintelligible 01:01:58)...
DJ-1	Exactly, ...(unintelligible 01:02:00)... solve it for me, I just pass this request as BR transaction which solve excepted.
BA-1	...(ken and bacon this? Unintelligible 01:02:08)...
DJ-1	Yeah, it is.
PM-1	Do you send endorsements? Its BR endorse not happen?
DJ-1	No, I'm sending...
PM-1	Send BR endorse some renew because helping renew ...(unintelligible 01:02:25)...
DJ-1	That's want they want. Remember I don't have BR and endorsement middleware, I have either BR or we have endorsement, which is not BR endorsements.
DJ-1	They are particular computers while that's ...(unintelligible 01:02:39)... more information what they want. Currently, we've not think that we've a logical thinking.
DJ-1	So this is doing a lot of student's destination.
BA-1	OK, anyway I also saying I know the Middleware2, Middleware2 frequently is used to do one transaction and bacon? That is what the soft needs to do.
DJ-1	Two transaction.
BA-1	Any idea with it we can that? (Simultaneous conversation 01:02:44 - 01:03:15)
DJ-1	But doesn't our business sense.
BA-1	OK. OK. So we'll say that's technique there, there is no consign from technology things. We can make what gets business wants to make work.
DJ-1	We think basically that they should be then additional criteria error basically when do what I want.
BA-1	Yeah. That's fine, that's fine.
DJ-1	That means its' no work as far as softs con turn and middleware goes to consign. What how does softs wants, softs is ok with picking up and softs do it. What are (identify?) we do and softs pick up ...(identify? unintelligible 01:03:44)... and look at that address change and say: oh, ok, fine. The address change. Only to do...
DJ-1	You have to send this, you can send this endorsement, and you can up.
DJ-1	Exactly, so which case we need doing renew buying? I am giving the pr (desperations?), actually my pr deportations actually says it is ARZ bank, so I'm sending you that ...(unintelligible 01:04:00)...calling that service sending that ..(Cross unintelligible



	01:04:01)... Now we need to invite you we do say: oh, you don't change address, so I need to call endorsement and then what happens the pr buying. What happens the pr buy? Do I ... (unintelligible 01:04:09)... after that. ... (unintelligible 01:04:11)...
DJ-1	... (unintelligible 01:04:12)... because.. Exactly that is same, that's what I'm saying. ... (unintelligible 01:04:15)... endorsement insurance change address?
DJ-1	Yes. Then that first is ... (unintelligible 01:04:18)...
DJ-1	Yes. So then happens use that except that is renewable straight away, when ... (unintelligible 01:04:26)... what do you want to ask to do? What the soft we want or what does e-global should do endorsement first? But changing address changing then do renew buying.
DJ-1	Yeah. That's again that's the business decision she to be done, wonderful decision. So it's easy to say we want us but then how is even business to be involved say, he made social should say: hang on hang on, we can handle that. They may ... (unintelligible 01:04:48)...
BA-1	So, any implication if we boom whatever we need to do in this face just sprint two.
DJ-1	It's the... (sobs? Name? unintelligible 01:04:53)... sprint two, because we still do not clear what exactly.
BA-1	I mean it there any like implication in terms of will be two figure, we (confirmation?). So the stuff so we look at this in sprint two
DJ-1	And if don't out that Client1's different transaction times coming for such kind of thing, they've skima thing, ... (unintelligible 01:05:10)...
BA-1	OK, all right, so that's no spend any more time on this, and it'll put it as a ... (quite thirteen? Unintelligible 01:05:13)...
DJ-1	not exactly, that will ...
PM-1	Michael part fail this, this is probably be owned what we would be developed in sprint one. Anyway ... (unintelligible 01:05:20)...
BA-1	OK, OK. I'll put it on point thirteen. We don't need to talk about any more. Ok.
PM-1	Yeah.
DJ-1	Yep.
BA-1	Go next one. (01:05:27)
S-?	... (someone imitated someone else unintelligible 01:05:30)...
DJ-1	you have ...
PM-1	do we ...
BA-1	Cool, next one, (01:05:39) right pool coz this is bonus, so this one is really so from our perspective all we need to do provide a log. In terms of technology answer, we just log in it, and we say that Michael's going to show (waves?) how they can take that fails and do some work and other report only to the signal. The bit ... (unintelligible 01:06:00)... We need to find out the location with the far means to be put.
DJ-1	And process on this way can I pick up and?
PM-1	(Someone's name?) For you I know you are looking at local loading staff part in your sprint, you also can do this effort at the same time.
DJ-1	OK.
BA-1	Any testing require?
PM-1	Yes.
BA-1	Testing do just check the log in part, which mean create the ... (unintelligible 01:06:23)...
BA-1	OK.
T-1	It's not ... (unintelligible 01:06:26)...

DJ-1	And also going for buying ...(unintelligible 01:06:28)... isn't it? And going buying.
BA-1	That's right.
DJ-1	So as do.
BA-1	OK.
DJ-1	...(unintelligible 01:06:39)...
T-1	...(unintelligible 01:06:39)...
BA-1	Yes, and you need to find for this side things we want it fail.
BA-1	Ok, so we got number ready, (01:06:52) ok, one, two, three. (01:06:56)
BA-1	I got one, I got two, I got three.
BA-1	Go with three? (01:07:03)
PM-1	Yep.
BA-1	OK.
BA-1	OK, next one. (01:07:13) ensure ...(unintelligible 01:07:18)... flowers solve exercise remains available after employment. So that wants to we find out only two user sprint using it and we're going to give them the exercise. It's purely development thing. The technology involves ever.
DJ-1	It there ...(unintelligible 01:07:41)... or run them in sprint one?
BA-1	We are not talking about sprint at all, so we only talk about the main (icer?) that needs to do in each user stories.
DJ-1	It that the last priority actually? For students.
DJ-2	Did you talk about the sprint? Just ask ...(unintelligible 01:07:56)...
BA-1	No, (laughter...)
DJ-1	Don't take it best.
BA-1	OK. Let's going there. So any questions require for this user story?
DJ-1	Do you use these users not access to ...(unintelligible 01:08:13)...
BA-1	That's one we need to check, if ...(unintelligible 01:08:18)...
BA-1	OK, if they can, if we can when it's born.
PM-1	Yeah, that's right ...(unintelligible 01:08:27)... give me a less bit of items, and ...(unintelligible 01:08:30)...
T-2	...(unintelligible talked to PM-1 01:08:32)...
PM-1	For user.
BA-1	So Michael ...(unintelligible 01:08:33)... if they can it will be we need to do something about it. So some technology is ...(unintelligible 01:08:40)... there. So you probably do it in sprint zero. Say was case, we do it in sprint two or still be ok for ...(unintelligible 01:08:46)... flower, the portent? Sprint two, we locking at the employment. However.
PM-1	Yeah. We don't think it's going to be. Do we think it's going to be huge ...(unintelligible 01:08:58)...work on this. So I think what ...(unintelligible 01:09:00)... any more.
DJ-1	Was case scenario if they do that access, that would change ...(unintelligible 01:09:07)...
BA-1	But there are only two users, so we just take a ...(unintelligible 01:09:11)...
PM-1	Change ...(unintelligible 01:09:13)...
BA-1	OK.
PM-1	They don't think using ...(unintelligible 01:09:17)...
BA-1	OK, so Michael want giving us...
PM-1	The known technology is just only access.
DJ-1	I don't think it needs to spend time in sprint zero.
PM-1	I am going to say if we have ...(unintelligible 01:09:39)... look at the date to probably

	in ...(unintelligible 01:09:40)... officer.
BA-1	they say was worse scenario they if any technology required would be locking in sprint two on it not locking on sprint one.
DJ-1	...(unintelligible 01:09:51)...
BA-1	OK, cool. Do you want to give some number on that? That should be zero?
PM-1	One.
BA-1	OK, cool. Ok, that's that, and we'll leave that thirty all the wants, so that's second row. ...(unintelligible 01:10:14)... I need to do the second row now.
PM-1	What's that one there?
BA-1	Investigation that is the eighteen. So that one (name?) do you want to call ...(unintelligible 01:10:29)...
DJ-1	Me?
BA-1	Yes please.
DJ-1	In that investigation options, there's take management there online.
BA-1	OK, so this one is to find out the technique options to allow second blog is to use online to quote domestic policy finance by any DBD, DCD and D-post. So we just need a list of options, not doing the way, just options. And the business as??? As bottom of current priority, I'll also ask ten, just from the technique perspective. We need to put it upon all we work about that's ...(unintelligible 01:11:03)... later.
DJ-1	This is ...(name?)... Investigation, isn't it?
BA-1	Just investigation, and the range of possibility would be you know just display and the message instruction on screen.
DJ-1	No, no, wait. This is story point only for investigation ...
BA-1	Just for investigation.
DJ-1	So what comes out for different user story for that?
BA-1	Correct.
DJ-1	Yep, finally, ...(unintelligible 01:11:20)... project.
BA-1	Yeah.
DJ-1	Yeah.
BA-1	So this one just in investigation, could I have piece of numbers? ()(a blank for a short time with some little voice discussion 01:11:26 - 01:11:34)
BA-1	I got two, or we go with two?
DJ-1	Yep.
PM-1	Because this is ...(wrong? Unintelligible 01:11:39)... online, this is nothing solve it. This is online build, this is nothing solve it at all.
DJ-1	Pardon?
PM-1	This's only online. Just do ...(unintelligible 01:11:50)...
BA-1	Or you have to be with two? Do you want one?
DJ-1	Just put two.
DJ-1	...(unintelligible 01:11:58)... flowers users haven't or solve access.
PM-1	Yep.
DJ-1	No, no, no. this is set date online updates not allow to do some investigation not allow to do a buying. Just do a read, ...(unintelligible 01:12:12)... just online.
DJ-1	...(unintelligible 01:12:14)... consider like we use the this moment someone goes middleware we block this on role. So, basically, they can solve ...(unintelligible 01:12:33)... is bottom one

	more says just like contract works, ...(unintelligible 01:12:36)... contract works, the house contents major in bottom all gone, and discuss more ...
DJ-1	...(unintelligible 01:12:46)... comes solve it, no that's not how ...(unintelligible 01:12:51)..., we don't do deck which says ...(unintelligible 01:12:54)... says: hi, it would not allow course for audits, they want allow course, but they don't allow band.
BA-2	...(unintelligible 01:13:07)...
DJ-1	Yeah, but also they don't want touch the soft side thing, because this is the only way to touch that, they were from (frontend?), they were just block them. ...(unintelligible 01:13:17)... than this, they wouldn't like button to say find the policy now.
PM-1	The blocks ...(unintelligible 01:13:23)... the blocks don't solve it, isn't it?
DJ-1	Yeah, that ...(unintelligible 01:13:27)... solve it.
PM-1	So, how we manage that, that is how we manage boat, finding, this is.
DJ-1	(Name?) is right, solve this side that would like buying read, but in this case, they want them to come they don't want them to show the button of the end, ...(a finalist? Unintelligible 01:13:38)... because they don't touch other because this is only for middleware only for ...
DJ-1	In my head, we keep that information ...(unintelligible 01:13:48)...say this side is very well.
PM-1	The only thing deserve just keep my browser, the last month you got three (boats?), go through??? Online.
DJ-1	Just three?
PM-1	Three (boats?), so many few is that you wouldn't do the work for boat, you just keep the three process we got.
DJ-1	OK.
DJ-1	Yeah, for all of them basically, that contract was ...(unintelligible 01:14:12)...isn't it? Then we doing for contract and then we can do for boats. So ...(unintelligible 01:14:17)...
PM-1	...(unintelligible 01:14:20)...
DJ-1	As we don't do anything or we do (find?) of them, so we can do...
BA-1	Yep, ok.
PM-1	...(unintelligible 01:14:27)... have to do boat.
BA-1	Do we take that outline?
DJ-1	Yeah.
BA-1	So we play they want need by product, that what we say. Ok, so.
BA-1	Next one. (01:14:38) enable different versions of middleware to support different broker system.
DJ-1	That's still long going ...(unintelligible 01:14:46)... investigating.
BA-1	we have four sprint zero activities, I guess we need to find out what we need to do here, so this user story actually do what we need to be done rather than investigating.
DJ-1	That's this goal now.
PM-1	...(unintelligible 01:15:06)...
BA-1	So this print zero activity, so if we not doing if we don't know what we doing in sprint one, we are not going to do this in sprint ...(unintelligible 01:15:17)... so what we have to be (tensile? Unintelligible 01:15:19) if we do it in sprint two with?
DJ-1	Well, it's probably getting involved sprint zero, it's probably going to be analysis during sprint zero and sprint one ...(unintelligible 01:15:34)...
DJ-1	Yeah, yeah, it's not a small thing, it's a big thing.
DJ-1	I think we need to begin it now, I think it down for ...(unintelligible 01:15:43)... developing in

	sprint one, I think it's not investigation now, ...(unintelligible 01:15:52)...
PM-1	And we try to do that ...(unintelligible 01:15:55)...
BA-1	OK, do you want this user story just be as investigation?
DJ-1	Yes. For now, we should do that.
BA-1	Because we don't know what is building.
T-1	Yes.
DJ-1	Yes. That's fine.
PM-1	Or you are going to talk round about the ...(unintelligible 01:16:13)... contents? ...(unintelligible 01:16:22)... making agreements, this we are going to do. ...(unintelligible 01:16:33)...definitely start now, we need to specifically put ...(unintelligible 01:16:37)... almost plays their holden cards in there for actually work, you know you got a week or we know the moment that's going to be (a list of work? Unintelligible 01:16:44)...
BA-1	Well, it's not choice, because we don't know, you do not give a number.
PM-1	But we are playing out the base of us in sprint zero, you know, this is trunk ...(unintelligible 01:16:51)...sprints, so if we don't there...
BA-1	So (???) rather use story when we know it, they all get add in sprint two (pritozation? Unintelligible 01:16:59).
PM-1	I don't would say have you user story in putting it like thirteen or something for now for actually work, it something like probably going to be ...(unintelligible 01:17:06)... and just moving ...(unintelligible 01:17:08)...sprints there. ...(unintelligible 01:17:11)... new one.
DJ-1	New one for (investigating? 01:17:12)...
PM-1	...(unintelligible 01:17:15)...
BA-1	That's OK, all right, so can give me a number for investigation user story please. (01:17:19)
BA-1	(01:17:27) ok, I've got five, I've got zero. (solved? Unintelligible 01:17:34) people, I don't know.
PM-1	Solved is not going to do anything, ...(unintelligible 01:17:37)... if we have versioning, we'll probably do it in much close to our own face.
DJ-1	...(unintelligible 01:17:46)...
PM-1	Agree.
DJ-1	This is skima change?
PM-1	It's still not known for last days. ...(unintelligible 01:17:51)...
DJ-1	...(where of the bee? unintelligible 01:17:52)... the most of that versions, ...(unintelligible 01:17:59)...
PM-1	Yes. (Simultaneous conversation 01:18:00 - 01:18:03)
BA-1	Sorry, so I've got the five, can you put thirteen on that one.
DJ-1	Thirteen.
BA-1	thank you.(Nobody talked 01:18:05 - 01:18:28)
BA-1	OK, who's next one, (01:18:28) identify transaction courses. Ok, this one is we actually checking and the ranch how long take them to do this transaction, and then we'll put a number into a benefits sprint sheets ...(unintelligible 01:18:45)... comes up, and then we'll give that transaction course.(Simultaneous conversation and DJ-1 ask a question, 01:18:46 - 01:18:51)
BA-1	No, that's ...(unintelligible 01:18:54)... ranch people, I want to put five.
PM-1	Yep, we ...(unintelligible 01:19:02)...
BA-1	OK.
BA-1	(01:19:04) next one is maintain solve data quality, so that one that we'll talk about we want to find out who own the solve data and ...(unintelligible 01:19:13)... only (sheet?) with that, and

	PM1 was quite happy to make it go away for us.
DJ-1	Yeah, and third is three for the you know it make you go away number, ...(unintelligible 01:19:26)... have to go away.
BA-1	OK.
PM-1	Well, what I don't want to in turn is us building ...(unintelligible 01:19:37)... you are ...(unintelligible 01:19:41)...
BA-1	Or process?
PM-1	Yeah, it's something which can't automatically it's not this project that's ...(unintelligible 01:19:54)... the only thing they could be asked for ...(unintelligible 01:19:58)... meeting, ...(unintelligible 01:19:59)... quality, which ...(scare? unintelligible 01:20:01)... me on play. So you change the story just ...(unintelligible 01:20:08)...
BA-1	So you just want to risk that issue but you don't want to project tend to welcome that, that's why I decide this.
PM-1	I been nervous about ...(unintelligible 01:20:20)... someone else got ...(unintelligible 01:20:23)... the same ...(unintelligible 01:20:26)...
DJ-1	it's not about work for us, can you say do we know who is responsible for data quality, and we could analyze that question about, we didn't know whether who ??? IT, or the product, the ???, or the some else, and (their?) discussion will project ...(unintelligible 01:20:57)... question was more around, if we know who own the data then we can say for example what steps have you got plays say whoever is, that may can sure is that data come in somewhat, it's going to be in good status, we don't want to clean it up and ...(unintelligible 01:21:21)... but even from us, the analysis is going to be that con turn something ...(unintelligible 01:21:28)... all be different ??? Petition ...(unintelligible 01:21:33)...
PM-1	We just want to know who (arounded?), come on the process make sure it's clean and then we go...(unintelligible 01:21:41)... obviously one like (BI's?) school, ??? Signal says we own it, and we put anything into it, we go...
DJ-1	I just go funny feeling that, ...(unintelligible 01:21:54)...(Simultaneous conversation 01:21:54 - 01:21:57)
DJ-1	We should just say we don't know ??? That's it, and that's only we should do.
PM-1	But I think it's (strange?).
BA-1	Slide.
DJ-1	...(unintelligible 01:22:06)... combine the only sheet.
DJ-1	It's something which I think should be pick up AST not ??? us.
BA-1	so this one user story self is to find out resource (presidencies?) place to maintain soft quality and on pose way I've got there is no such (president?) resource.
PM-1	...(unintelligible 01:22:19)... resource process only sheet.
DJ-1	It's still alone. If...(unintelligible 01:22:30)...(Simultaneous conversation 01:22:30 - 01:22:33)
S-?	That's cool, but I just want to get done, thank for all asking these questions, I think ...(unintelligible 01:22:38)...
PM-1	But they don't know the gate way what we come entrance.
DJ-1	And I am going to say this is project to me like ...(unintelligible 01:22:45)... we want us to made. Base some processes something some kind of program, that is a different thing, otherwise, we should be ...(unintelligible sounds like DJ-1 still talking in the background 01:22:52)...
PM-1	Yep.

BA-1	So, are we happy with three? (01:22:52) (Simultaneous conversation 01:22:52 - 01:22:58)
BA-1	OK, next one. (01:22:58) who's next one, oh, right, that's (name?) talking to me, but it's only half.
BA-1	So this one is that have to activate the training, menu, and wouldn't change address instead of just (leave?), they change address they need to terminate that (imperious? Unintelligible 01:23:19) and create a new address. So that's purely the trend branch and that's just training thing.
T-1	...(unintelligible 01:23:26)...three solve it.
BA-1	Yes, that's right. So I ...(unintelligible 01:23:30)... didn't know what I mean, ...(unintelligible 01:23:34)... I just need to catch up all that ...(unintelligible 01:23:37)... put away.
T-1	That's what happens automatically ...(unintelligible 01:23:38)... (Simultaneous conversation 01:23:38 - 01:23:43)
BA-1	OK, next one. (01:23:51)(Simultaneous conversation sounds talking about last story until 01:23:58)
BA-1	Document critical decision. That's for AST. So AST want us to, AST wants to be (informant?) project version technique, this is process in the reason detail, so that AST can support council as well for the bus. Would people be happy for put this done criteria and it let's check with we need to go through for each user story.
DJ-1	I would ...(do? unintelligible 01:24:38)...
BA-1	Cool? Ok. Use ...(unintelligible 01:24:42)... just put on the found criteria, thank you sir. Just ...(unintelligible 01:24:49)...
BA-1	OK, (01:24:49) next one is seventeen, which is set up education monitor to steps, we for we are (tense? Intelligible 01:24:57) for, but we don't need it. It's about doing ...(unintelligible 01:25:00)... sent we do, and he's going to catch up (name? unintelligible 01:25:03)...
DJ-1	As for to them.
BA-1	Yeah.
DJ-1	...(unintelligible 01:25:04)... ask me to speak to (roby?), you know ...(unintelligible 01:25:06)... this mentioning, he said he doesn't want ...(unintelligible 01:25:07)... brand at this moment, which feels (name?) to find out which is working and which is ...(unintelligible 01:25:12)..., but this monitoring is difficult for middleware ...(unintelligible 01:25:17)... I can request, they can only do kind of existing online application, they can just go and fix them and combine with something they can mode it. And the way we can be ...(unintelligible 01:25:26)...only for kind of request, becomes just go to the URL and then come back.
BA-1	Right.
DJ-1	You know what that mean?
BA-1	Yeah.
DJ-1	That is for online you can go to URL and come back, and URL send the working page, exact success page and come back, that's fine. But I guess the (sense of?) URL to middleware, then they come back and they have saying I got (unison?) sent request.
BA-1	Yeah.
DJ-1	What they want us.
DJ-1	...(unintelligible 01:25:46)...
DJ-1	No, that ...(unintelligible 01:25:48)... loading that. It seems, they can't ...(unintelligible 01:25:50)... me.
S-?	...(unintelligible 01:25:52)...

DJ-1	No, it nobody do. As such (in baby? Unintelligible 01:25:54), we don't allow this to introduction.
BA-1	So this user story would be for you to do a bit of (digging?) found what we want, so that's something we can do.
DJ-1	Yeah. I think that's ground two, ground two is ...(globe? Unintelligible 01:26:02)... is video, and send what the thing ...(unintelligible 01:26:05)... happen ...(unintelligible 01:26:05)... at this moment, now I can talk to them.
BA-1	So, would you want to give us a number on it? (01:26:09)
DJ-1	Just one.
S-?	...(unintelligible 01:26:13)... still four. ...(unintelligible 01:26:16)...
DJ-1	That I want you up, it's not allow see you in three month request.
BA-1	OK, (01:26:22) next one is ...(unintelligible 01:26:30)...that remind this into face. You have been for me to put it done criteria, so, again.
PM-1	So the question is when we have any data to specific maintain outside the process here. We shouldn't ...(unintelligible 01:26:43)... looking at.
BA-1	Would that be if ever we do data, we need to bought the main ...(unintelligible 01:26:48)...
PM-1	You know, I think it's really (???) ideas for that.
BA-1	So I put as done criteria. (T-1 talking something in the background voice)
PM-1	Done criteria but do more something bad if ever, it been ...(unintelligible 01:26:54)..., we don't know yet. And something is important, could through some (permission?) of the story. We are thinking about oh we can made this feel than that status base? (Unintelligible 01:27:02)... my team. And we want to think: hold on, no, because we don't want going to do this.
BA-1	Yeah, so what we have to be (fition?) if I put it into done criteria for the (western) check?
PM-1	Yeah, eh...
BA-1	I am looking the ...(unintelligible 01:27:14)...
T-1	...(unintelligible 01:27:15)... and bound what they said we can be. Yeah.
PM-1	Yeah.
BA-1	Well, what do you think? Ok with that?
DJ-1	That's much well ...(unintelligible 01:27:24)... ...(unintelligible 01:27:35)...
DJ-1	Two or three each ...(unintelligible 01:27:44)... one basically is, I think (name?) base one, data can be update to release menu information.
BA-1	That is AST row. Did you want...
PM-1	Did anything basically if scan bad we have full conversion, the basically core ...(unintelligible 01:28:06)... core program, ...(unintelligible 01:28:09)... mind, is that the end, it's all menu steps. Are you want that to basically we can mind in my new one, that's it. The list the mount menu steps they have to do is basically ...(unintelligible 01:28:32)... the number of ...(unintelligible 01:28:33)...
T-1	...(unintelligible 01:28:36)...
DJ-1	...(unintelligible 01:28:42)...
PM-1	That's right. Locking the data, ...(unintelligible 01:28:44)... something.
PM-1	I think the (???) has been.
T-1	Yeah, I think it's more ...(unintelligible 01:28:49)...
DJ-1	That's basically what we should be thinking. There is ...(unintelligible 01:28:55)... basically I don't have to round fifteen commands, you can trick off where I am. ...(unintelligible 01:29:03)...
BA-1	So, that's same mean our user story on the removing far re-access, we need to go and train



	for whatever from to do that. Because this one involved on steps.
DJ-1	No, it don't confuse that, just ...(unintelligible 01:29:20)..., that's done criteria, (next to hands for?) we need to anything like that. ...(unintelligible 01:29:25)... this is we need to be done, and let's list menu process.
BA-1	OK.
DJ-1	That's part of basically commerce steps.
BA-1	But it's not ...(unintelligible 01:29:39)...
DJ-1	It's part of clean steps, which is we giving at ...(unintelligible 01:29:44)... list.
PM-1	Could you ...(unintelligible 01:29:52)... that's only set once.
BA-1	OK.
DJ-1	...(unintelligible 01:29:55)...
BA-1	OK.
DJ-1	we will address it if comes up ...
DJ-1	I want to test to story found the last one, it should be on the high priority, because that's what is dependent on that (blue?) on the top.
BA-1	so put the section six, so maintain data to remind on the interface, I put as done criteria for us to go through and check any time ...(unintelligible 01:30:24)... ok?
DJ-1	Yep.
DJ-1	Yep.
PM-1	...(unintelligible 01:30:31)...(Simultaneous conversation until 01:30:47)
BA-1	OK, (01:30:48) next one is as a tester, I'll, sorry.
DJ-1	...(unintelligible 01:30:53)...
DJ-1	Testing (viding?), so we you know this involves there are automatic (???) running against, so you can reply on that one. That visits couple your thirty to seventy percent of your normal test cases. But what you need to test further is the renew onside. Because renew something which we can do automatically. And a few things which doesn't renew ...(after update? unintelligible 01:31:11)...
DJ-1	My question is that as a tester, that should be in AST function ...(unintelligible 01:31:15)... running would be finished?
DJ-1	No, no, no. we are updating it, and we have to report it. You can ...(unintelligible 01:31:20)...the ship on that. Otherwise, they should doing that, but then why should they do it, because this is no kind of, we are doing that because we want to some work on this one. So ...(unintelligible 01:31:25)... let's do it.
DJ-1	Is there any idea is what if you feel exhausted in sprint zero ...(unintelligible 01:31:31)... sprint one, ...(unintelligible 01:31:36)...
DJ-1	Exactly, as to happen, yeah, that's why I said the priority should be on the top.
DJ-1	Yeah.
T-1	Does that mean we need more test cases along that ...(unintelligible 01:31:38)...
DJ-1	renew is that are ...(unintelligible 01:31:38)... there are already if you, I mean there are already in place, but you need a few more test cases to take cover both few new things which have been updated. My own thing is, ...(unintelligible 01:31:48)... it's time-consuming process.
T-1	And is it ...(unintelligible 01:31:52)...
DJ-1	Pardon?
T-1	...(unintelligible 01:31:54)...
DJ-1	No, no, no. no (slaving? Unintelligible 01:31:55) for us.

DJ-1	We will have to do some ...(unintelligible 01:31:57)...
DJ-1	Yeah, so like a renewable that manual test, you have to run it then ...(unintelligible 01:32:01)...
BA-1	OK, are we any other question for the test manually environment?
T-1	No.
BA-1	Ready for your number, Go. (01:32:09)(Simultaneous conversation 01:32:09 - 01:32:20)
BA-1	OK, go with five? (01:32:23)
DJ-1	Yeah.
BA-1	OK. I've got number one which we've talked about it which display (disappointment?). So as project (???) I wonder you have played did you put new features to brokers, (???) on middleware and 2D on middleware, so that newly developing features can be used for all brokers. That's all we talk about it.
S-?	...(unintelligible 01:32:59)...
BA-1	Is that the versioning, is it the past ...(unintelligible 01:33:06)...
PM-1	...(unintelligible 01:33:06)... just go back and replace zero, (for?) some into zero version.
DJ-1	High relatable?
PM-1	Very high your ...(unintelligible 01:33:19)... is.
DJ-1	...(unintelligible 01:33:22)...
PM-1	...(unintelligible 01:33:22)... we've done ... just reason just wants down there. And we have other version.
DJ-1	Yeah. ...(unintelligible 01:33:33)... could you do idea versions just doing some technique which can't fix, it's a process for ...(unintelligible 01:33:40)... change management.
T-1	...(unintelligible 01:33:33)...
PM-1	Yeah, the part of versioning is a that we get ...(unintelligible 01:33:56)... version that we've got which is to a documents (ebax?) version control. So we know that we have ...(unintelligible 01:34:11)... versions.
DJ-1	Careful that we don't use terms that we all use change management, ...(unintelligible 01:34:21)... management, versioning. That we know talk about. What we want to know from (ebax?), how they round it out. For ...(unintelligible 01:34:30)... they have two pool of the versions and ...(unintelligible 01:34:35)...
PM-1	We want to know how are they control ...(unintelligible 01:34:39)... So.
DJ-1	How's they round it out?
PM-1	We want to know that as well. And we want to know what version ...(unintelligible 01:34:53)... and has that version got ...(unintelligible 01:34:57)...
DJ-1	How do you change the code is basically ...(unintelligible 01:35:04)...
PM-1	We just want to know that ...(unintelligible 01:35:05)...
BA-1	So the versioning user story is more technique so I think what feature we need to implement. As this one is more like the business process, so I think how we are going to use that. (sounds like T-1 talked in the background voice)
PM-1	Yeah, too hard to have to be.
DJ-1	...(unintelligible 01:35:20)... and put out to individuals. (name?) change ...(unintelligible 01:35:23)... version to control, version control is ...(unintelligible 01:35:24)... and hang on, you know, application in terms with version control.
DJ-1	...(unintelligible 01:35:33)...
PM-1	What I am saying if we said versioning we don't have to do any versioning we are saying that. ...(unintelligible 01:35:41)... we are not doing any versioning we'll still the things we

	change into the web-phones some ...(unintelligible 01:35:46)...
DJ-1	yep, this is not to do ...(unintelligible 01:35:46)... versioning at all, the employing your features in terms of you saying a. because it's not ...(unintelligible 01:35:51)... we think it's skima base, the moment do have skima change is that versioning we come to play is that however the version that, but if ...(unintelligible 01:35:57)... for now we go back what we have at this moment, doesn't look like any skima change happening, which case just seeing that ...(unintelligible 01:36:04)... for the working story cards are being employed.
T-1	So the change management ...(unintelligible 01:36:08)... versioning?
DJ-1	Yes, this is ...(unintelligible 01:36:11)...
T-1	...(unintelligible 01:36:13)...
PM-1	we have one version at this moment, and but we are ...(unintelligible 01:36:18)... and then it's going into a version of the web-phone inside, the web-phone has a version number, and they are just keeping and they said for the ...(unintelligible 01:36:30)... we are not going to change our version number, because this is ...(unintelligible 01:36:34)... just quiet to existing version number in the brokers ...(unintelligible 01:36:41)..., but if you did significant change we write handout middleware are web-phone version number as well. ...(unintelligible 01:36:50)... you got two versions of (villi? Unintelligible 01:36:53)..., so yes, they (unintelligible 01:36:58)... made it, I think it's related to just the process of the change.
DJ-1	OK, ...(unintelligible 01:37:10)...
BA-1	I'm sure it'll take a manual one, ...(unintelligible 01:37:15)... talk to each other.
DJ-1	For the option, ...(unintelligible 01:37:21)... that's fine.
BA-1	Can we give a number? (01:37:23)
S-?	What we do a number? Just ...(unintelligible 01:37:29)...
DJ-1	This is only for...
BA-1	This one is having a plan to display new features to brokers, so newly developed features can be used for all brokers. OK? Got a number. One, two, three. (01:37:45)
T-1	Manual testing we ...(unintelligible 01:37:50)...
BA-1	No.
DJ-1	No.
DJ-1	Yes.
PM-1	Yes, they have different version.
T-1	...(unintelligible 01:37:55)...
DJ-1	So any deployment of doing features it is ...(unintelligible 01:37:58)... test, not them. So it's ...(unintelligible 01:38:01)... for them to. We need to get the ...(unintelligible and PM and T-1 talk in the background 01:38:05)... from them.(Simultaneous conversation 01:38:05 - 01:38:10)
BA-1	So what we've got. I've got five. Happy with five. (01:38:13)
DJ-1	I think five is a big one, not a lot of things we have to work.
PM-1	Yeah, I got five.
BA-1	Happy with five?
T-1	Yeah.
BA-1	Why no?
DJ-1	It's not big.
BA-1	So it's the same, yeah, the ...(unintelligible 01:38:24)... sorry. Ok, I think it's everything we have.

DJ-1	...(unintelligible 01:38:29)...
BA-1	We've got all the user story size, so nearly ...(unintelligible 01:38:34)... the fine stuff.(there are two people talking ...unintelligible...)
BA-1	You can't see you mean want to script down ...(unintelligible 01:38:43)... end of the table. We've got two roles, on the left inside is the business priority, being in mind is one more thing is the ...(sounds like they were sorting user stories ... 01:38:45 - 01:39:22)
BA-1	OK, so the left inside for the business prioritize, that's currently at eleven. And left inside we have got, we need to combine two into one.
DJ-1	...(unintelligible 01:39:46)...
BA-1	That's the same thing. I just forgot.(Simultaneous conversation 01:39:47 - 01:40:00)
BA-1	So, how do we do this? Is there different versions of middleware to support different broker systems? I've got thirteen. How important it is have where about on the first row do we want this to be? When we want to start this investigating?
DJ-1	So that's not investigating.
BA-1	Is this want this doing the work, put it down here. When we want to start investigating versioning we say?
PM-1	Right now.
BA-1	Right now? I put it on the first, are we happy with that?
PM-1	And put the testing also as first.
DJ-1	Absolutely yes.
BA-1	Sorry bottom?
DJ-1	Yeah.
BA-1	I put it on the first then you can ...
PM-1	Put it down on the bottom and then let's give priority when ...(unintelligible 01:40:48)... done for me. It go away.
BA-1	That's probably always getting priority.
PM-1	Yes, fine, put it down there. That's fine.
BA-1	OK, I need to do that.
DJ-1	Conversion we have ...(unintelligible 01:41:08)...
BA-1	Yeah.
PM-1	Sorry?
DJ-1	Environment we need ...(sligelen? Unintelligible 01:41:14)... environment is we had ...(unintelligible 01:41:18)... introduction.