

Retrospective games in Intel Technology Poland

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Abstract— One of the Agile principles is that the team should regularly reflect on "how to become more effective, then tunes and adjusts its behavior accordingly". While the setup of a retrospective session is intuitive, in praxis, conducting successful retrospectives is challenging. This paper is a continuation of our previous work on the use collaborative games in addressing common retrospective problems. In addition to the replication of our previous action research in a new context, we aim to investigate whether preliminary anonymous idea generation mitigates negative social influences that have been identified as causes of poor performance of brainstorming. The obtained results confirms the previous findings that game-based retrospectives produces better results than the standard retrospective as well as improves participants' creativity, involvement, and communication. Our findings also suggest benefits to the preliminary anonymous idea generation.

I. INTRODUCTION

ALTHOUGH agile software development has become mainstream in industry, changing to an agile mindset is still challenging for many companies [8, 13, 16]. However, in today's competitive business world, which creates demand for shorter cycle times and in which technology evolves rapidly [18], the need for agility has become even more important [6]. To adapt to environmental changes, mitigate the frequent problems with addressing customer's needs [10, 19] and adjust their processes accordingly, organizations implement process improvement initiatives [27]. Scrum provides organizations continuous process improvement by the Sprint Retrospective [7]. According to the Scrum Guide, retrospective is a time-boxed meeting held at the end of each sprint to reflect on the past iteration and creates plans for improvements to be enacted during the next iteration. Retrospectives are held as face-to-face meetings, which are the most common way of communication, both among the agile team and between the team and the stakeholders [11]. The aim of team reflexivity is to share experiences, learn from failures and successes, and adjust the way of working to become continuously better [9].

Although reflection is a fundamental aspect of agile software development, not all teams take it as seriously as they should. Babb et al. [2] found that in the hectic life of software development, where teams perform under sustained pressure to deliver the Increment, retrospectives are the meetings most likely to be skipped or compromised over

time. Furthermore, several studies suggested that running an effective and enjoyable retrospective meeting is challenging [22]. This is because if the meeting is repeated according to the same pattern over and over again, it can cause a certain monotony and lack of motivation. In turn, when retrospectives become flat, they may be abandoned because they stop adding value. To address this challenge, Przybyłek & Kotecka [22] successfully refreshed retrospective meetings in three agile teams by adopting collaborative games. Collaborative games are designed to be engaging and support retrospectives by providing structure to the meeting, new exploration perspectives, encouraging equal participation and stimulating creativity [22].

Recently, Gaikwad et al. [5] pointed out further disadvantages of retrospective meetings: they are non-anonymous and time consuming. In fact, both issues have been long identified with face-to-face idea generation sessions [4]. It appears that participants may feel fear of negative evaluation from others, [17] and they also feel anxious that there may be negative social consequences of sharing ideas contrary to the ideas of higher-status others [3]. When not all participants feel free to contribute, potential good ideas are lost [3]. Besides, in a face-to-face group, participants are unable to express themselves simultaneously, but must take turns to express their ideas (production blocking) [4, 17]. Nunamaker et al. [14] found that these two inhibitory factors can be reduced by electronic idea generation sessions, in which the participants are anonymous (therefore mitigating evaluation apprehension) and in which participation is asynchronous (therefore mitigating production blocking). Similar findings were also obtained by Davis et al. [3].

Since anonymity has been demonstrated to mitigate negative group effects that are responsible for the productivity loss in face-to-face idea generation sessions, this paper is aimed to introduce anonymity in the idea-generation phase of the retrospective. We expect that anonymity will encourage participants to express their true feelings and critical thinking, which in turn will increase the quality and quantity of ideas generated [26]. Besides, we intend to replicate our previous studies [15, 25] in which we adopted the "game-based retrospectives" approach initially introduced by Przybyłek & Kotecka [22].

II. RELATED WORK

There has been lots of interest in adopting collaborative games to support agile teams. Przybyłek & Olszewski [21] defined an extension to Open Kanban, which consists of 12 collaborative games to help novice Kanban practitioners to understand the Kanban principles. Przybyłek and his team [24, 28] proposed a framework for extending Scrum with 9 collaborative games to enhance agile requirements engineering. Przybyłek & Kowalski [23] developed a web portal which provides 8 collaborative games to be used in agile software development. Przybyłek & Kotecka [22] adopted 5 retrospective games, which improved team members' creativity, involvement, and communication as well as produced better results than the standard retrospective. In our previous work [15, 25], we confirmed their findings, while this paper complements and extends this research area.

III. RESEARCH METHOD AND CONTEXT

Our study was carried out as Action Research. Action Research is aimed at solving an immediate business problem, while simultaneously expanding scientific knowledge [1]. The researcher is concerned to intervene in the studied situations for the explicit purpose of improving the situation. According to Avison et al. [1] terminology, our study followed research-driven initiation, i.e. our supervisor was in possession of a general theoretical approach to addressing a problem situation (which was specified as a proposal for a Master's thesis) and searching for settings that are characterized by such a problem. The first author of this paper had been a member of a Scrum team at Intel Technology Poland that was willing to participate in the research, so he undertake the Master's project. The team consisted of 11 developers, a team lead and a Scrum Master. Four senior developers, who had been in the team from the beginning, were imbued with higher status because of their knowledge and expertise. The team was responsible for validation of the Intel Ethernet Switch software. The software was very often updated and released to the external customer. Accordingly, it was very important to keep the required levels of quality. The requirements for the specific features were very void and changed easily over the time.

IV. ACTION RESEARCH IN INTEL TECHNOLOGY POLAND

A. Diagnosing

We started by conducting a focus group to inspect Scrum practices used by the participating team. Our aim was to investigate the practical implementation of Scrum and the ScrumButs. All team members attended the focus group. The discussion was structured around 5 questions, but in this paper we focus only on feedback pertaining to the Sprint Retrospective (all questions and the full feedback can be found in [12]). It turned out that all Scrum meetings, except

Daily Scrum, were merged into one. Besides, retrospectives were often skipped as they "did not bring any useful information".

B. Action planning

Since we identified a lot of ScrumButs regarding the whole Scrum process, we decided to break the intervention into smaller steps, which would be implemented as separate Action Research cycles. We also concluded that the Sprint Retrospective should be fixed first. Accordingly, in the first cycle, we planed to implement all retrospective games that we used in our prior study [25] and in addition try a new game, namely Mountain Climbing. Besides, we decided to implement each game twice, first in non-anonymous and then in anonymous way.

C. Action taking

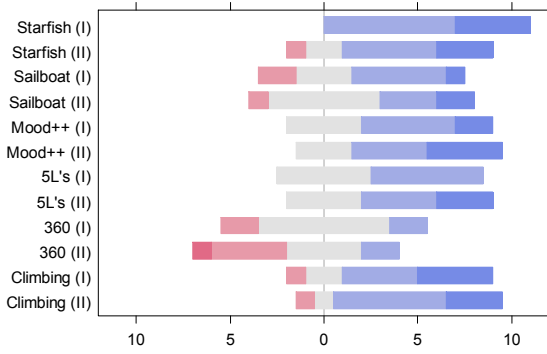
Before a game was run for the first time, it was presented to the team. When introducing the first game, which was Sailboat, the participants felt that drawing on the board was like playing in kindergarten, so it was a waste of time. Nevertheless, during the meeting, they changed their minds and began to see the value in the game. After each game session, we issued a questionnaire to collect feedback from the participants. At the end of the day, the results were analyzed and discussed with the team.

D. Evaluating and specifying learning

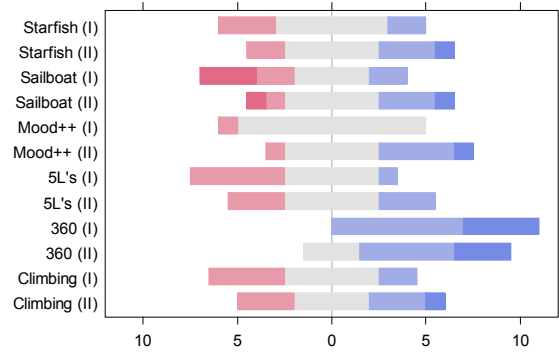
Fig.1 summarizes the questionnaire results. The responses were made on a five-point Likert scale. Overall, **Starfish** and **Mood++** performed the best and were admired for covering all important aspects of the Sprint Retrospective. However, the majority of the participants agreed that all games except **360° Appreciation** produced better results than the standard approach and thus should be permanently adopted by the team. Nevertheless, as for the **Sailboat** adoption, the opinions were divided, because the game was very time-consuming. Unsurprisingly, **Mountain Climbing**, which is quite similar to **Sailboat**, was rated better in all aspects. In contrast to the remaining games, **360° Appreciation** cannot be considered as a standalone retrospective, so it received the lowest grades regarding the first question, but since it positively affects all other aspects except creativity, the team decided that the game should be permanently adopted.

When it comes to creativity, only Starfish and Mood++ performed well. In turn, *Motivation & Involvement* as well as *Communication* were boosted mainly by **360° Appreciation**. It is reasonable, as the game is to praise other teammates, which helps team members to be socially connected with the team and makes the collaboration easier. As for other games, the responses were divided between supporters, opponents and undecided. Furthermore, **Mood++**, **360° Appreciation** and **Mountain Climbing** made most of the participants more willing to attend the meeting. Finally, *Easiness of playing & Understandability* was the most positively rated aspect of all games.

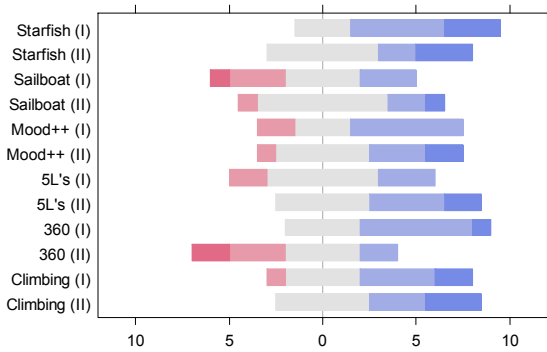
Q1. The game produces better results than the standard approach.



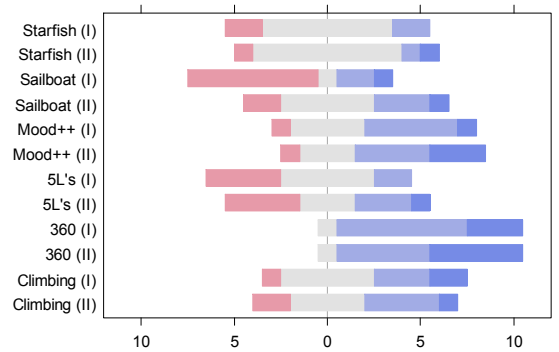
Q5. The game improves communication among the team members.



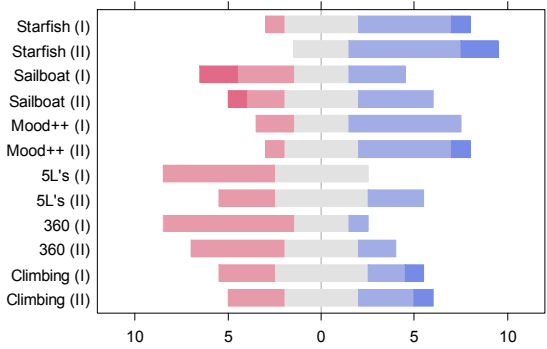
Q2. The game should be permanently adopted by your team.



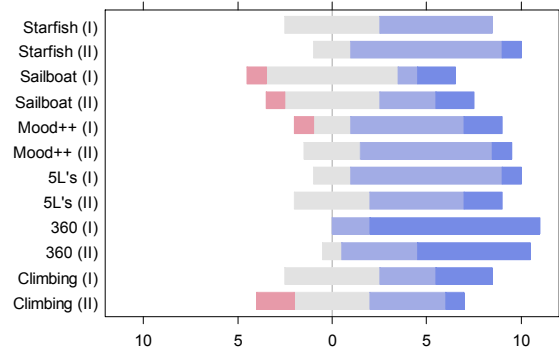
Q6. The game makes participants more willing to attend the meeting.



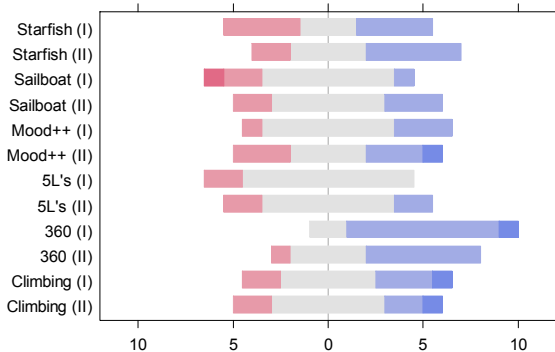
Q3. The game fosters participants' creativity.



Q7. The game is easy to understand and play.



Q4. The game fosters participants' motivation and involvement.



Legend:

- Strongly Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Strongly Agree

For each game, (I) refers to the results of the first round (non-anonymous), while (II) refers to the results of the second round (with the preliminary anonymous idea generation).

Figure 1. Aggregated results

Although collaborative games are claimed to encourage equal participation, we observed that when the contributors were non-anonymous, senior developers dominated meetings by talking more and exerting control over the retrospective agenda. On the one hand, this kept the retrospectives on-task and focused; on the other hand, junior team members contributed less, because they refrained from disagreeing with higher-status others. Accordingly, in general, all games except **360° Appreciation** benefited from anonymity. Unsurprisingly, since **360° Appreciation** allows team members to express only positive feedback, the authors of this feedback preferred to be known. The aspects that gained the most were *Creativity* and *Communication*, while as for other aspects the improvements were rather slight.

V. CONCLUSIONS

This paper reports on an Action Research project conducted in Intel Technology Poland. The research objective was to replicate the previous studies on game-based retrospectives and to investigate whether the preliminary anonymous idea generation mitigates negative social influences. On the other hand, the practical objective was to audit and improve the working practices in the participating team. We confirmed that game-based retrospectives produce better results than standard retrospectives and lead to a variety of measurable societal outcomes. Accordingly, the team has continued to run them since the project finished. Taking into account the results from [15, 22] and this work, the most successful game is Starfish. Besides, we observed that higher status team members dominate meetings even though collaborative games are used. Our results also suggest that game-based retrospectives benefit from anonymity. The only exception is 360° Appreciation, which, in fact, cannot be considered as a standalone retrospective. Nevertheless, we intend to further investigate the effect of anonymity in a controlled experiment with settings similar to [3, 14, 20, 26].

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