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Using Agile Practices to Influence Motivation within IT Project Teams

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Abstract. This exploratory study of IT project teams in Sweden and Ireland investigates how three agile practices, namely daily stand-ups, iteration planning, and iteration retrospectives, contribute to motivation or de-motivation in an agile team. Several studies recognise that motivating staff is critically important for a project manager and have identified factors that motivate IT project staff in particular. Yet relatively little is known about motivation in an agile context and in particular how an IT project manager may use agile practices to improve team motivation. Seventeen individuals across two teams were interviewed, including both project managers and their staff. The results from both cases indicate that agile practices can contribute to team motivation and de-motivation. This study makes an important contribution in the area of motivation and agile project management by identifying factors that contribute to and inhibit motivation in agile IT project teams. It also makes a contribution to the existing literature by identifying additional factors that motivate and de-motivate IT developers, namely increased visibility and transparency on the progression of tasks, an increase in the number of meetings, lengthy meetings, use of agile practices on long-term projects and use of agile practices for complex or fragmented tasks.

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Key words: agile project management, Scrum, motivation, information systems, information technology

1 Introduction

Agile project management (APM) methods such as Scrum are often referred to as 'lightweight' approaches to IT project management, as they are in direct contrast to the traditional long-term, bureaucratic, plan-driven, document-heavy approach to managing software development (Boehm 2002). They allow requirements to evolve and change during iterations, encourage close collaboration between agile teams and users, and have teams that are self-organising and cross-functional (AgileAlliance 2001). The principles underpinning APM devolve much more authority to the team members, and the role of the manager becomes more akin to a facilitator (AgileAlliance 2001). According to the Agile Alliance (2001), in order for such a flat, autonomous management structure to work, APM teams should contain motivated individuals, be provided with the environment and support they need, and be trusted to get the job done (AgileAlliance 2001). With APM, the team is provided with substantially more control than it would have had when using a plan-driven approach to software development. This is a dramatic change for the project manager, who has traditionally been the primary controller (Nerur et al. 2005). Therefore, project managers need to ensure that their team members are sufficiently motivated to make the right decisions and complete tasks in a timely manner.

Research in the area of APM has grown in recent years due to the increase in the number of software project teams that use an agile approach (Abrahamsson et al. 2009; Conboy 2009; McEvoy and Butler 2009). While it is acknowledged that challenges exist in relation to the implementation of agile methods (Boehm and Turner 2005; Coram and Bohner 2005; Nerur et al. 2005) it has been suggested that teams that use an agile approach experience greater reward than those that use other software development methods (Whitworth and Biddle 2007).

A recent systematic literature review conducted by Dybå and Dingsøyr (2008) identified a gap in our understanding of agile methods in practice, in so far as very few empirical studies have focused on the human or social factors of agile teams, such as motivational aspects. Given that motivated people are recognised as a key factor in the success of IT projects (DeMarco and Lister 1987), the motivation for this research was therefore to explore how the project manager of an agile IT project can use agile approaches to motivate staff and avoid de-motivation. Previous studies have highlighted the importance of employee motivation (Herzberg 1968; Mayo 1949), established a link between goal-setting and task motivation (Locke 1968), identified factors that motivate and de-motivate software developers (Beecham et al. 2008; Hall et al. 2008), and more recently a study has addressed motivation in agile teams (Whitworth and Biddle 2007). However, little has been said about how agile practices impact motivation or de-motivation in teams. There have also been calls for further research that is more practice-focused (Dybå and Dingsøyr 2008) and to investigate how each distinct agile practice can help to optimise the performance of an agile team (Maruping et al. 2009). Consequently, three agile practices were selected for the purposes of this study – iteration planning, daily stand-up, and iteration retrospective (see Table 1), on the basis that they are amongst the more commonly used agile practices by practitioners

(VersionOne 2009) and the nature of these practices permit a researcher to more readily observe their implementation. They complement each other with each of the practices related to the management and control of an agile project. They also epitomise the values and principles of the 'Agile Manifesto' by allowing the entire team to collectively participate in self-organisation, goal-setting, decision-making, collaboration, daily communication, the provision and receipt of feedback and self-reflection, whereas some other agile practices, though popularly used, involve only some members of the team such as developers (e.g. pair-programming) or testers (e.g. test driven development). Additionally, there is limited research on particular aspects of some agile practices with recent calls for further empirical research on agile methods (Dybå and Dingsøyr 2008), specifically research that is more practice-focused (Maruping et al. 2009).

The objective of this study is to explore if and how three agile practices contribute to motivation or de-motivation in an agile project management (APM) team (see Figure 1). This research is conducted as part of a wider research project which is studying agile practices and their impact on APM teams. The remainder of this paper is structured as follows. The next section provides an overview of the literature on teams, agile project management, the scrum project management method, and motivating staff on agile project management teams. The research objective is then set out, followed by details on the methodological approach for this study. Finally, the findings are presented, with a key focus on the implications for project managers. This is followed by a discussion of limitations of the research and avenues for future research.

2 Background literature

Teams are groups of individuals that work together, are dependent upon one another and have one or more tasks to perform in order to accomplish various goals (Hackman 1990; Mayer et al. 1995). They should comprise individuals who are technically competent, are productive, and have good problem solving and interpersonal skills (Jurison 1999). To perform well as a team all members must be committed to the team, have autonomy to make decisions, and have a supportive environment that provides the team with all the necessary resources and skills in order for them to conduct their work (Wageman 1997; Wageman et al. 2009). Individuals must also feel that they have the support of other team members (Bishop et al. 2000) as the relationship between individuals within teams can impact on the dynamics of the team (Gruenfeld et al. 1996). For example, teams of individuals that are more familiar with each other may be more effective at sharing information and views than those who are not (Gruenfeld et al. 1996).

2.1 Agile project management

Teams can be manager-led or self-governing and self-managing (Hackman 1990). APM teams are considered self-managing (Cockburn and Highsmith 2001), although it must be noted that while they often have responsibility for managing their own work and behaviors, others usually make decisions about goals, team structure, and organisational supports (Barker 1993; Cohen et al. 1997; Manz and Sims 1987). These types of teams are empowered and have autonomy

to make decisions about their tasks and the processes that they use, which are traditionally the responsibility of supervisors and managers (Alper et al. 1998; Cummings 1978). Of course, it cannot be assumed that, merely by putting a group of individuals together in a team and calling them 'self-managing', they automatically become "agile" (Moe et al. 2010). There are a number of other aspects which are essential for a team to be agile, including team size and composition and the working environment. While the optimal size of an agile team has been debated, APM teams are typically small with no more than ten members (Schwaber and Beedle 2002). Team members have a range of skills, are cross-functional, and have the ability to complete the required tasks (Elssamadisy 2008, p128). To ensure an agile team produces quality work, an appropriate and supportive environment must be available, for example, ensuring availability of required tools, and open-office space to facilitate open communication. There is also a necessity for team members to be cooperative, collaborative, trusting, have good relationships with each other, and be able to make decisions quickly (Cockburn and Highsmith 2001).

2.2 The Scrum project management method

Scrum is a simple low-overhead process for managing and tracking IT projects. It attempts to control what Schwaber and Beedle (2002) call this "*chaordic*" process using a project management framework which involves requirements gathering, design and programming. While it is very much influenced by Boehm's (1988) spiral model, it does not contain prescriptive operational instructions for developers like some agile approaches (e.g. eXtreme Programming), but is instead a project management method (Conboy, 2009). The origins of this methodology are outside the field of IT project management and can be traced to Japan in the mid 1980's where Takeuchi and Nonaka's (1986) Scrum model for new product development was first used. This original model had many similar characteristics to the Scrum IT project management method as it represented an adaptive, quick, self-organising product development process (Abrahamsson et al. 2002). At its heart, Scrum is comprised of a number of stages which, building on its underpinning metaphor of a rugby scrum, also follow a sporting theme (e.g. the notion of "*sprint*" iterations). Extensive discussions of Scrum can be found in Schwaber and Beedle (2002) and Rising and Janoff (2000). Other studies have examined the disadvantages of Scrum (e.g. Cohn and Ford 2003) and how to tailor it to various contexts e.g. (Fitzgerald et al. 2006; Sutherland 2001).

2.3 Motivating staff on agile project teams

With the continuing pressure to deliver successful IT projects and new ways of working, such as agile methods, it is important to effectively manage how project staff are motivated (Hall et al. 2008). A manager must ensure that each individual team member is motivated to use their abilities in the best interests of the team or organisation (Walsh and Schneider 2002). There are several prominent motivation theories including the work of Herzberg (1968) that help to explain the intrinsic and extrinsic factors that motivate IT project personnel. Intrinsic motivators come from the work itself and relate to the personal goals and aspirations of the individual, whereas

extrinsic motivators relate to the working environment and whether that working environment meets the needs of the individual (Asproni 2004). Within the area of software development, Beecham et al. (2008) detail a comprehensive list of motivating and de-motivating factors, which is used as the basis for the analysis of data from this study (see Figure 1).

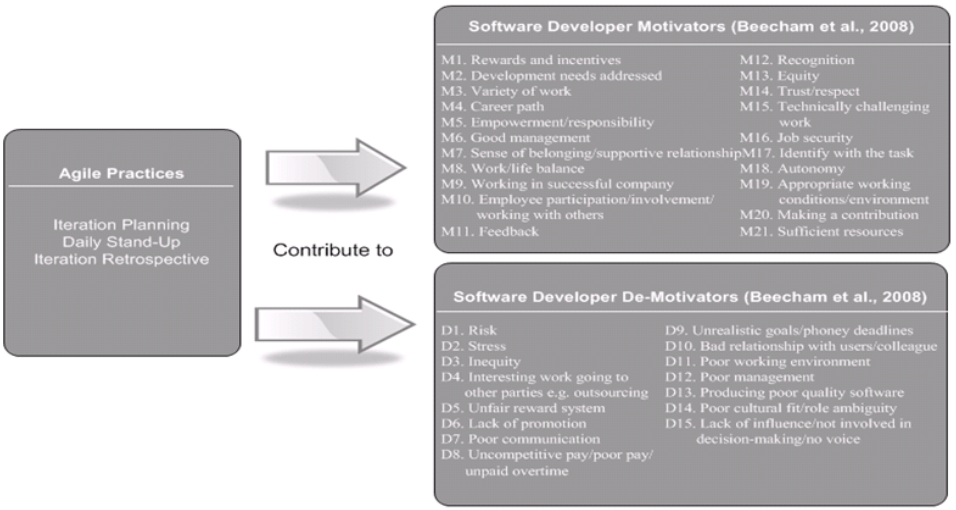

Figure 1. Research Model

By implementing an agile approach, an IT project manager can potentially increase the motivation of an agile team in a number of ways. Agile projects are divided into short iterations where the goal can clearly be seen by all (Hansson et al. 2006). Agile teams are in theory given the autonomy to monitor and manage themselves and should be allowed to do so, with minimal interference from other personnel with higher authority, as unnecessary interference can cause a lack of motivation and commitment if team members feel their decisions are being undermined (Hackman 1990). Team members can motivate and influence each other's behavior through frequent meetings and communications (Das and Teng 2001), such as, the daily stand-up. They can be motivated to develop their skills by learning from more experienced personnel, and encouraging each other to take responsibility for specific areas of the work (Hansson et al. 2006). They can also be de-motivated by factors such as lack of promotion or career path (Zawacki 1992), lack of resources (DeMarco and Lister 1987), and unrealistic schedules (Boehm 1981). These are just some examples of how an agile team may be motivated or de-motivated. It is possible that different agile practices can contribute to a team's motivation or de-motivation. As yet very little research has investigated the link between agile practices and the motivation of agile teams, the most notable previous contribution being that of Whitworth and Biddle (2007). Thus arises our research objective, which is to explore if and how the three specific agile practices outlined in Table 1 contribute to motivation or de-motivation in an agile project management (APM) team. In planning our research approach, given that an investigation of all factors across

all practices would have been very complex and resource-intensive, we had to make a trade-off decision between investigating a smaller number of motivating/de-motivating factors or a smaller number of agile practices. Our preference was to use the full breadth of the existing framework and concentrate on a selection of practices rather than attempting to examine a greater number of practices within a narrowed framework.

Agile Practice	*Description*
Iteration Planning	The iteration planning session is a meeting that takes place at the start of each iteration where the team collectively defines and plans tasks that must be completed during the next iteration (Beck and Andres 2005; Schwaber and Beedle 2002)
Daily Stand-Up	The daily stand-up is a short daily status team meeting lasting a maximum of 10-15 minutes typically conducted at the same time each day with team members standing up. During the meeting, team members explain briefly what they accomplished since the previous meeting, what will be completed by the next meeting, and indicate any impediments that may prevent them from completing their current tasks (Elssamadisy 2008; Schwaber and Beedle 2002).
Iteration Retrospective	An iteration retrospective is a meeting that is held at the end of each iteration where the project team reflects on what went well in the iteration, what did not, and what could be improved for future iterations (Elssamadisy 2007; Schwaber and Beedle 2002).

Table 1. Agile IT project management practices studied

3 Research method

A qualitative approach was used, which is considered suitable for developing a 'rich', deeper appreciation of the nuances of the teams and their management within their natural organisational setting (Yin 2008). We sought to understand the views from the perspective of all team members on how the three selected agile practices motivate or de-motivate the team. Both teams had implemented a variety of agile practices, but the focus of this study related solely to the agile practices detailed in Table 1. Two exploratory case studies were conducted to identify differences and similarities across teams in two different cultural settings (Ireland and Sweden).

3.1 The cases studied

The teams were selected on the basis that they had implemented and were using Scrum, and in particular had been using the three agile practices described in Table 1 for a minimum of 6 months. Both teams were located in large multinational organisations, were working on long-term projects (greater than one year's duration) for internal customers, and the team mem-

bership was stable. In the Irish organisation, the implementation of agile methods was driven internally by senior management based in the U.S. as part of a full implementation across the organisation. In the Swedish organisation, the implementation of agile methods was driven internally by the manager of the team in question. Both teams initially adopted a number of agile practices, including the three practices studied, and continually added more as they became more familiar with APM.

The first team studied composed of ten individuals. This team was distributed between Ireland (developers), India (Quality Assurance function), and the U.S. (Database Specialist). Shortly after data collection commenced, the two QA team members based in India departed from the team and did not participate in the study. The remaining eight team members were interviewed. The average length of service of team members was approximately four years with individuals working in an APM team on average for less than two years. This team worked on a long-term project, which was in existence for two years at the time of the study, and it was expected that the project would continue for a further year. The aim of this project was to develop a set of services used by various front-end applications for developing financial analysis documents. The end users were financial analysts across six internal business units based in the U.S. This organisation did not wish to be identified and to protect their identity and that of individual team members a pseudonym of "IRE" is used hereafter.

The second team studied composed of nine individuals and was a co-located team in Sweden, based in ABB Substation Automation Products, a unit that develops and manufactures high voltage protection and control products for an internal customer. The team was working on a long-term project, which involved the development of a product for an internal business unit. The project was in existence for nine months at the time of data collection and was expected to continue for the foreseeable future. The team was also required to provide support and maintenance for previous projects as part of their working week, but these were not included as tasks in the iteration. This team had worked together for many years on a variety of projects, mostly in a non-agile environment. The average length of service of team members to the organisation was fifteen years with all team members working in an agile environment for nine months.

3.2 Data collection

Empirical data was collected between December 2009 and May 2010 and consisted primarily of face-to-face interviews with team members at their place of work. One interview in the IRE team was conducted via conference call as this team member was based in the United States. One of the researchers travelled to Sweden in May 2010 to collect data from the team in ABB. A total of 17 interviews were conducted across the two Scrum teams. The interviews varied between 50 minutes and 75 minutes in length and were audio-recorded and later transcribed. The interviews were conducted in a "reflexive" manner where the researcher followed up on insights uncovered mid-interview, and adjusted the content and schedule of the interview accordingly (Rubin and Rubin 2005; Wengraf 2001). To facilitate openness and honesty from interviewees, each participant was guaranteed anonymity and informed that the audio recordings were for the sole use of the researchers. Feedback was provided in aggregated format to managers, who were also given the opportunity to comment.

Case	*Length of time since agile implementation*	*Average years employed by the organisation*	*Roles interviewed and number of interviews*	*Number of observations*
IRE (Ireland)	2 years	4 years	1 Project Manager 1Business Analyst 5 Developers 1 Technical Architect	2 Iteration Planning 2 Daily Stand-up 2 Iteration Retrospective
ABB (Sweden)	9 months	15 years	1 Scrum Master 1 Product Owner 7 Developers	1 Iteration Planning 3 Daily Stand-up

Table 2. APM team profiles

Each interview followed an interview protocol based on the framework (Figure 1). Participants were first asked some background questions on the project and on their own experience. This was followed by questions in relation to the team and how the team functioned (e.g. setting goals, working environment, reward mechanisms). The line of questioning continually asked the interviewees to consider the agile practices in their responses. To mitigate the potential risk of bias from 'leading' questions, interviewees were not directly prompted to speak about motivating and de-motivating factors. Rather, the interviewees spoke naturally and their comments on how each practice contributed to motivation or de-motivation emerged during the course of this dialogue. The interviews concluded by asking interviewees to identify any other motivating or de-motivating factors as a result of using the agile practices. The factors as identified by Beecham et al. (2008) were used as prompts in this instance where required. Sample excerpts from the interview protocol are provided in the Appendix at the end of this article.

The interview questions were mostly open-ended (Yin 2008), and "interview guides" (Patton 1990) were used, which are preferred when the study is inductive or interpretive (Rubin and Rubin 2005; Silverman 1998; Yin 2003). Notes were taken during the interviews and follow-up questions or clarifying questions were asked where required. The three agile practices studied were also observed in action. These observations were documented as field notes and impressions formed were also noted as recommended by Eisenhardt (1989) for case study research. A list of interviewees and agile practices observed are detailed in Table 2.

3.3 Data analysis

All interview transcripts and field notes were imported into NVivo for analysis and were grouped by team. To address the research objective, the authors read through the transcripts and field notes several times in view of each other (i.e. "constant comparison"). Segments of the tran-

scripts, individual comments or observation notes relating to each team's motivating or de-motivating factors were highlighted and coded using the initial seed categories taken from Beecham et al.'s (2008) framework (see Figure 1). Beside each coded section the role of the individual and the agile practice referred to were noted in addition to other analytical memoranda. This helped to organise the data, identify patterns and themes across the three agile practices in relation to motivation and de-motivation, and to validate the data from different individuals (Miles and Huberman 1999). Because the unit of analysis was the team, but the unit of data collection was the individual, it was necessary to verify the internal reliability of the data gathered within the two teams so as to check for inconsistencies and anomalies. The findings for each interviewee were reviewed and validated by triangulating them against those gathered from each of the other interviewees as well as from the observation field notes.

4 Findings

The two APM teams studied were predominantly well-established, experienced, self-organising teams with team members appearing to have a good work ethic and track record of delivering on what had been promised. Consistent with prior research, it was found that individuals on both teams were personally motivated by factors such as interesting and challenging work, responsibility, and the opportunity for growth and development as part of a defined career path. However, this study extends the literature in relation to IT project staff motivation by reporting how the use of agile practices contributes to motivation (Table 3) or de-motivation (Table 4). The impact of the agile practices on each motivating and de-motivating factor identified was examined. A number of the motivational and de-motivational factors identified by Beecham et al. (2008) (detailed in Figure 1) were clearly not impacted by the agile practices studied (e.g. rewards and incentives, career path, lack of promotion, uncompetitive pay), or there was no evidence to support that the agile practices contributed to such factors (e.g. poor communication, poor working environment).

4.1 Contributors to motivation

The findings showed that the introduction of the three agile practices, namely iteration planning, daily stand-ups, and iteration retrospectives (summarised in Table 3), influenced motivation levels amongst team members in a number of ways. In some instances team members compared their experiences pre- and post- APM implementation. Even though such a comparison was not the focus of this research, this is reported in the findings where relevant. Comparisons were mostly made by participants in ABB, where the team had implemented agile practices nine months prior to the data collection and individuals could easily recall their pre-agile experiences. Both teams reported positive experiences with the adoption of agile practices. Team members indicated that they had little desire to work on a team that did not use an agile approach with a "preference for agile to the traditional approach [Developer3, IRE]". While the three agile practices contributed to this, it is likely that this view was due to the agile method as a whole, rather

than specific agile practices. Explanations of how the agile practices contributed to motivation are detailed in this section. The naming convention used follows the numbering of the motivating factors detailed in Figure 1.

M3. Variety of work (e.g. making good use of skills, being stretched)

The iteration planning meeting provides a forum in which team members can easily and openly verbalise their preference to work on specific task(s) in order to "learn the most…or to acquire certain skills [Developer4, IRE]", which is motivating for team members. It is also used by teams to allocate difficult or complex tasks to particular individuals to motivate them to work on more difficult tasks. In ABB a difficult task is often purposely allocated by the team to a less experienced team member to challenge their skills. At the same time an experienced team member is assigned to assist with the task, which utilises the skills of the experienced developer while advancing the skills of the inexperienced team member, thereby instilling greater self-confidence and esteem.

M5. Empowerment/responsibility; M18. Autonomy

The iteration planning meeting provides teams with ownership and autonomy over the team goals and their personal goals. Responsibility is allocated to teams to establish and clarify the goals for each sprint and to determine how the goals are achieved. For example, team members are involved in "prioritising tasks [Project Manager, IRE]", deciding "how many points we think are reasonable to execute in a sprint [Developer 1, ABB]", and "who is going to do them [the tasks] [Developer 2, IRE]". Teams also have autonomy to allocate tasks in whatever way they deemed appropriate. In 'IRE' tasks are assigned by the project manager to "whoever is responsible for a certain area [Developer 2, IRE]", which may be a consequence of the intense pressure this team were under recently to deliver substantial functionality in a tight timeframe. This contrasts with the team in ABB who embraced their newly found autonomy and assign tasks to "pairs, or threesomes…to help with sharing and transferring knowledge [Product Owner, ABB]". While this motivates developers it causes frustration for the Product Owner as "productivity has gone down by half [Product Owner, ABB]" and he feels this needs to be addressed. Similarly, the daily stand-up allows team members to communicate their personal daily goals to the team, keep track of "where we are, how we are doing [Developer 1, ABB]", or can identify "areas that you know may potentially hold us up [Developer 5, IRE]", which the team can then address.

M7. Sense of belonging/supportive relationships

Both teams are in agreement that the agile practices develop supportive relationships and help team members to feel part of the team. The agile practices require daily communication, collaboration and interaction amongst team members, including distributed team members, which help team members to develop a sense of belonging to the team. The practices help the "team work more efficiently as a team, not as individuals [Scrum Master, ABB]". Consequently, team

members are motivated to share ideas and provide feedback with team members becoming "more comfortable with each other, more confident with each other, and a friendship or some sort of human relationship builds up between them [Project Manager, IRE]". One of the more experienced developers on the Swedish team commented that this was "a notable change in several people [Developer1, ABB]" and several members of the Swedish team stated that they felt more like a team since the implementation of the agile practices as previously communication amongst the team may not have occurred for days. The Product Owner [ABB] also agreed by stating that "all team members now feel involved", which he believes has helped with team motivation. These changes were more noticeable in the Swedish team rather than the Irish team as the implementation of the APM method was quite recent and interviewees could easily recall how the team functioned previously.

M10. Employee participation/involvement/working with others

In both teams the three agile practices have motivated individuals to work very closely with one another as they are involved in the iteration planning and are fully aware of the tasks other team members are assigned. They report on progress or lack of progress and seek support if necessary during the daily stand-up or in the iteration retrospective. Team members actively seek help and advice as soon as it is required and will not necessarily wait for the next daily stand-up meeting to request help. The feeling from one developer in ABB is that "if I have a problem the team will help to solve it" and everybody is always willing to help, whereas previously team members felt "more isolated and you didn't really want to disturb anyone [Developer 2, ABB]" to request help. A similar view is held in the IRE team where, for example, one developer remarked that "it's all pretty good support at the moment. I think people feel relaxed and can walk up to anybody on the team to seek assistance [Developer1, IRE]". It is also easier for new team members to integrate quickly into the team as it is "pretty quick and easy to get up to speed in terms of what other people are working on [Project Manager, IRE]" and "with the stand up every day and the regular three week iterations you're involved [Developer 2, IRE]".

M11. Feedback

Both teams use the daily stand-up as a means to highlight difficulties and provide feedback to each other on current tasks. This has become the norm and individuals are motivated to provide feedback as it is considered to be for the good of the team. In ABB the customer participates in the retrospectives, reviews the completed software, and provides feedback. The Product Owner [ABB] believes that regular customer participation in the retrospective meeting is a huge motivator for the team to deliver on what was promised. This does not occur in the Irish team as the customer, while internal to the organisation, is located in a different country and does not attend the retrospective meeting. Both teams use the iteration retrospectives to raise any issues or concerns, although this was more prevalent in ABB than in IRE. They provide an opportunity for "[issues] to be highlighted to your manager [Developer 2, IRE]", which can be addressed earlier than they may have been previously. For the most part these concerns are listened to and

are dealt with by the Scrum Master [ABB], which the team find motivating. They see value in voicing their concerns because they know they will be addressed.

M12. Recognition (e.g., for high quality, good job done based on objective criteria)

The team in ABB regularly use the daily stand-up and the retrospective as a forum to verbally praise each other for work completed, which they find motivating. For example, "we get to thank people… and that comes from the Scrum Master [Developer 2, ABB]", or you "get appreciation from the team when I say what I've done [Developer 6, ABB]." Also, during the software demonstration as part of the iteration retrospective the customer occasionally provides some positive comments, which is considered recognition for work well done "if you get some positive comments that's a good grade [Developer1 ABB]". This contrasts with the findings of the team in IRE where rewards or recognition are quite formal. They are in the form of monetary rewards, which are periodically awarded to a team or to individuals within the organisation for work well done. However, most team members do not aspire to receive one of these awards as the feeling is that"they are rarely given out to teams that have been up and running for a few years…there's not a whole lot of good recognition … for experienced teams [Project Manager, IRE]", although one developer did indicate his desire to sometimes "want [praise and] recognition [Developer 5, IRE]" as it may result in the assignment of new and interesting work. While this team appreciates any recognition given they do not appear to actively seek rewards or recognition.

M14. Trust and respect

All three agile practices were identified as an important component of building trust in an APM team. The team is trusted to make correct decisions during the iteration planning meeting, which may relate to estimates, prioritisation or design. For example, "I don't tend to take a lot of decisions because those guys have – well they will have – more context than me. I trust their estimates [Project Manager, IRE]" with everyone "trusted to do good work [Developer 7, ABB]". The stand-up is a daily touch-point for all team members, which "keep the lines of communication open [Developer 4, IRE]", helps individuals to better understand each other, become familiar with each others' personalities, traits and competencies, and be more comfortable in their interactions with each other leading to increased levels of trust. It also helps to build trust amongst all team members. This is particularly important in IRE where the project manager has some trust concerns with distributed team members, due to their different cultures. Team members in India "tend to give you a more positive picture of things, they don't want to tell you bad news and they don't want to tell you any difficulties", but the "stand-up is a great way to keep on top of their progress [Project Manager, IRE]". The Scrum Master in ABB is also of the view that the retrospective is important for building trust, especially "the feedback, appreciation part – stuff like that. That builds trust for sure [Scrum Master, ABB]".

M17. Identify with the task (e.g., clear goals, know purpose of task, producing identifiable piece of quality work)

Both teams feel collectively responsible to meet their goals and are motivated to help each other and work together to reach a solution when there is a problem. The iteration planning meetings motivate team members "to set better targets [Developer3, IRE] as team members set personal goals and make a commitment to deliver on those goals and "no-one wants to be the person talking about what they didn't get done [Project Manager, IRE]". It is not possible for a developer to cover up or to ignore a problem. For example, "you can't just stand there [at a daily stand-up] and fabricate something [Developer1, ABB]; as [we know] what everyone is up to [Developer1, IRE]". Both teams are actively involved in the planning and allocation of workloads at the start of each iteration, where tasks are clearly identified. In one team "there is a common goal across the team to hit the deadlines [Developer1, IRE]" and the team is motivated to achieve that goal with "people putting in the extra hours [Developer1, IRE]" if needed. As the development cycle is short (i.e. two or three weeks), both teams find it easier to clearly detail the tasks that must be completed within the required timeframe and it is motivating to "start from a new page every two weeks where we have new goals set [Developer6, ABB]". In ABB the daily stand-up has "helped them [the team] to set better and more accurate personal daily goals [Scrum Master, ABB]", which is motivating for the team as they feel a sense of achievement when they meet their daily goals.

New Motivator: Visibility and transparency on the progression of tasks

Both teams are in agreement that the daily stand-ups in particular provide greater transparency on work completed or in progress, which is a strong self-motivator for all team members. Team members must provide daily updates on progress made, with the status of each task visible to all team members on the Scrum Board. Individuals also feel a certain level of accountability to the team as team members are aware who is working on a particular task and can track progress that has been made on a daily basis. Some developers feel that they are "letting the team down [Developer 2, ABB]" if tasks are not completed on time. It is also very easy for the team to identify problem areas which can be addressed promptly. One developer felt that it was important on a personal level that "you demonstrate that you are completing work on time as agreed [Developer3, IRE]". This feeling may be due to the environment in which this individual was working, as the organisation recently experienced a difficult restructuring which resulted in some job losses.

4.2 Contributors to de-motivation

While there are many positive aspects of these agile practices, the agile practices also resulted in de-motivation in both teams, as summarised in Table 4. These mostly related to the daily stand-up, even though the daily stand-up was considered a very positive aspect of an agile project management method. This section presents how the agile practices contributed to de-motivation.

Motivators in IT Project Management - adapted from Beecham et al. (2008)	*Iteration Planning*	*Daily Stand-Up*	*Iteration Retrospective*
M3. Variety of work (e.g. making good use of skills, being stretched)	X		
M5. Empowerment/Responsibility	X	X	
M7. Sense of belonging/supportive relationships	X	X	X
M10. Employee participation/ involvement/working with others	X	X	X
M11. Feedback		X	X
M12. Recognition (for high quality, good job done based on objective criteria)		X	X
M14. Trust/respect	X	X	X
M17. Identify with the task (clear goals, personal interest, know purpose of task, how it fits in with the whole, producing identifiable piece of quality work)	X	X	
M18. Autonomy	X	X	
NEW: Visibility and transparency on the progression of tasks		X	

Table 3. Impact of agile practices on motivation

D2. Stress

The agile practices require team members to report daily on their progress. This negatively impacts some team members who put pressure on themselves to deliver their allocated tasks within the timeframes agreed, even though there may be circumstances outside of their control affecting their ability to deliver on a particular task such as "lack of customer presence at the meetings [Developer 5, IRE]". This results in the team making assumptions to progress, which may need to be reversed at a later date. A number of individuals felt a certain amount of peer pressure at daily stand-ups and retrospectives "to be seen to be making progress [Developer2, IRE]" and to contribute to the conversation even though they may have nothing valuable to add. However, several interviewees detailed that this peer pressure was self-imposed and was not a result of any direct pressure from their colleagues. Another team member indicated that it can be stressful "to have to always deliver every day [Developer2, ABB]" with two team members indicating that they "work overtime when the pressure is very intense [Developer3, ABB]" and there are tight deadlines in order to complete their tasks.

New de-motivator: Frequency and length of meetings

The three agile practices studied require project teams to participate in meetings on a daily and weekly basis in addition to any other scheduled meetings that normally take place. The length of time for these meetings varies between 10 minutes (daily stand-up) to 3 hours (iteration plan-

ning, or retrospective). These are viewed by some as de-motivating and disruptive to the day as they reduce the amount of time available to work on the deliverables required for the next day, causing some frustration. For example, "the more meetings you have the more work you get and the less time you have to do it" [Developer4, IRE]". This is particularly de-motivating when individuals "feel under pressure [Developer2, IRE]" to make progress, even though this is sometimes outside of their control, for example, when waiting on a decision from the customer. Occasionally the iteration planning and daily stand-up exceed the time planned which can result in tiredness, distraction and de-motivation; "sometimes we can have too long a daily stand-up… The longest I think we have more than 1 hour… it can be the same thing on the planning meeting. It can be too detailed [Developer 3, ABB]"

New de-motivator: Continued use of practices on a long-term project

Over time the impact of the agile practices may diminish on a long-term project (e.g. > 2 years), particularly where the team composition is relatively stable throughout the project. The daily stand-up may become routine with less interaction amongst team members. This may be due to increased experience with team members feeling that less feedback or participation is required. This is evident in the IRE team where daily stand-up meetings have been in use for over two years and the feeling from one developer, who was one of the first members of the team, is that "some guys just aren't switched on as much… and that they are tired of going into this meeting every day [Developer1, IRE]". The daily stand-up was called "tedious or a bit of a chore [Developer3, IRE]", and the value of the daily stand-up and the retrospective were questioned by a number of individuals with one team member feeling that sometimes they are "saying the same thing as yesterday and you wonder if anyone notices [Developer3, IRE]". While the daily stand-up was still considered important by this team, it seems to have lost its momentum and become 'stale' and as a result could be detrimental to the motivation of the team. The composition of the team has changed intermittently since the inception of the project, but a number of individuals have worked on the project since the outset. If these team members become de-motivated, it may be difficult for newer team members to continue to be motivated by the agile practices.

New de-motivator: Complex or fragmented tasks

Complex tasks were also highlighted as a de-motivator by a number of developers in ABB but were not evident in IRE. In ABB complex tasks are often allocated in the planning meeting that require some research and can prove difficult to estimate as "you really don't know how much time it will take you [Developer 2, ABB]". This can result in the lack of completion of the tasks for the iteration due to poor estimation, and "it's de-motivating [Developer 2, ABB]" for the person responsible to report on this in the daily stand-up or in the iteration retrospective. In both teams, fragmented tasks caused frustration where individuals have to report a lack of progress or where there appears to be a lack of progress. For example, it can be difficult to capture fragmented effort in some tasks such as "I could have spent half a day talking in emails to a QA guy [Developer 2, IRE]" or where a developer is "trying to analyse a problem for one day… and

there may be no [tangible] outcome [Developer 6, ABB]". This apparent lack of progress can lead to de-motivation where it occurs on a regular basis.

De- Motivators in IT Project Management (adapted from Beecham et al. (2008))	*Iteration Planning*	*Daily Stand-Up*	*Iteration Retrospective*
D2. Stress		X	X
NEW: Frequency and length of meetings	X	X	X
NEW: Continued use of practices on a long-term project		X	
NEW: Complex or fragmented tasks	X	X	X

Table 4. Impact of agile practices on de-motivation

5 Discussion

This research sought to understand how the use of agile IT project management practices contribute to team motivation or de-motivation. The results show that the iteration planning meeting, daily stand-up, and iteration retrospective can both motivate and de-motivate an agile project team. In our study, all factors identified by Beecham et al. (2008) were not affected by the use of these agile practices. This was not unexpected as a number of these factors (e.g. unfair reward system, job security, lack of promotion) relate to the use of agile methods in general (Conboy et al. 2011) or to the structure and management of the organisation (Beecham et al. 2008). A number of new motivating and de-motivating factors were also identified, which were specifically caused by the use of the three agile practices studied.

5.1 Motivating factors

Similar to studies that focus on agile methods in general (Whitworth and Biddle 2007), we found that the use of the three selected agile practices encourage greater interaction and discussion, feedback, support and communication between both teams, all of which are motivating for the team and help individuals feel part of the team. Team members are more familiar with each others' abilities and competencies due to increased communication and interaction. They also feel more comfortable asking for assistance as soon as it is needed and provide feedback when requested, as this is considered in the best interests of the team. This positive work practice has emerged as a result of the agile practices. However, the same experience may not be evident in other teams. It was surprising though that the agile practices did not encourage individuals to be critical of each other in the presence of their peers or to provide forums for negative feedback. These practices could provide individuals with an opportunity to reveal the shortcomings of other team members, especially if it was for their own personal gain, which could lead to de-mo-

tivation. They could also result in teams reaching consensus quickly without holding sufficient discussion to consider all possible solutions to a problem in order to minimise conflict amongst team members. Instead, team members in both cases feel empowered, in control of their work, and that the agile practices help them to feel part of the team.

In an organisational setting, formal reward systems have a strong influence on how individuals and teams function (Cohen and Bailey 1997) and are an incentive for individuals to behave in a particular way. However, in APM teams, the frequent interaction and communication between members can be used as a means to informally provide feedback, monitor and evaluate performance of team members, and provide rewards to each other if team members are performing as expected (Asproni 2004). There was strong evidence of this in ABB where team members used the agile practices to verbally reward and praise each other. This may be due to their enthusiasm for the method as it was only in use for nine months at the point of data collection. This contrasts with the IRE team where agile was in use for two years and evidence of informal rewards was limited. Instead, rewards in this team were typically formal and monetary based. It is possible that informal rewards were present at the outset, but may have diminished over time as the practices became routine after utilising them for two years.

Research has shown that individuals with different personality types, experiences and cultural backgrounds vary in their propensity to trust others, with levels of trust evolving or diminishing over time as they interact with and observe each other (Das and Teng 2001; Mayer et al. 1995). This was also evident in this study in the IRE team where different cultures were present. However, the agile practices helped to alleviate some of the trust issues between the project manager and the distributed team members through regular interaction and communication. Increased visibility on tasks also contributed to increased trust amongst individuals on both teams with those who regularly demonstrated an ability to complete tasks on time trusted to complete their tasks as expected.

Locke's (1968) goal-setting theory argues that personal goal setting is a powerful motivator with individuals who set specific and difficult goals for themselves performing better than when goals are vague or easy. APM teams use the iteration planning and daily stand-up meetings to set their own goals, understand how tasks are related to another, and provide feedback to one another, which is motivating for team members and concurs with Locke's theory. This regularly occurs in ABB where team members assign tasks to each other that they find challenging for their level of experience, while at the same time providing the support to each other to complete the tasks, if required.

While the agile practices contribute to motivation in both teams, it is possible that other factors may be present that contributed to the positive experience of these teams, such as the composition of these teams, the individuals themselves, the length of time individuals have known each other and are working together (Gruenfeld et al. 1996), or the environment in which they work (Wageman 1997). The personalities of team members differed with some individuals more introverted than others, which was more prevalent in ABB than in the IRE team. This was likely due to the length of time since the implementation of agile with team members in IRE using agile for two years and team members accustomed to verbalising their opinions and providing feedback. Even though teams that have a mix of personality types (introverted and extroverted) can be successful (Jurison 1999), the agile practices have motivated all individuals to freely voice their opinions and share information and have provided them with greater autonomy over their

work and the goals for each iteration. For example, it allows individuals to express preferences for particular tasks, share and rotate tasks to increase learning and knowledge, and allocate responsibility for tasks to particular individuals.

Both teams studied are more cohesive as a result of using these agile practices, but it is possible that group-think may emerge within the team. Group-think relates to the desire of a deeply cohesive group to reach consensus without considering the various alternatives available, resulting in the discouragement of individuals to express their views (Whyte 1989). However, this was not evident within these teams as observations of the practices in action demonstrated that disagreements regularly took place. Also, many tasks are complex or new in software development and where a task is not well understood it is difficult for a team to unanimously agree how to complete the task, or to estimate a time to complete the task without holding a discussion and hearing various points of view.

5.2 De-motivating factors

Agile project management methods have been criticised by some practitioners and academics for their shortcomings e.g. (Parnas 2006). However, few academic studies have addressed the negative consequences of implementing agile methods and practices in an industry setting (Dybå and Dingsøyr 2008). Consequently, this study attempted to identify factors that not only motivated, but de-motivated agile project teams as a result of using these three agile practices.

Even though the practices were broadly considered positive, team members were not necessarily comfortable with the increase in visibility and accountability. While this was a motivator for team members to complete their tasks, the visibility also resulted in team members putting pressure and stress on themselves to deliver on what was promised as they felt accountable to the team. This may be beneficial from a management perspective as tasks may be completed more quickly. Conversely, this may place team members under continuous undue stress particularly where tasks are complex or fragmented and it is difficult to communicate effort expended. This may result in de-motivation or frustration when team members feel they are continuously reporting little progress. Managers must ensure that team members are not experiencing unnecessary stress, work with the team to ensure tasks are allocated appropriately, and ensure that sufficient supports are in place if required.

In ABB meetings sometimes extended beyond the timeframe specified for various reasons, such as difficulty estimating a task or lengthy discussion on a particular task. This led to frustration for team members when their daily workload was planned around the timeframe allocated for meetings and lengthy meetings impacted their ability to deliver as agreed. However, these difficulties can be resolved by having an agreement in place within the team to discontinue a discussion once it exceeds a certain amount of time and that further discussion takes place after the meeting between relevant team members, which will allow other team members to continue with their work. While participants indicated that too many meetings also caused difficulty for them, further probing established that in both of these organisations other meetings or training are often scheduled, which employees are expected to attend. Therefore, while the agile practices are a contributory factor to de-motivation they may not be the sole reason for de-motivation.

6 Conclusion

Our study makes a number of contributions to both practice and to the agile and motivation literature. Firstly, it contributes to the literature on APM methods and agile practices - iteration planning, daily stand-up, and iteration retrospective. As a consequence of using these practices, individuals have clearly defined goals, share and rotate tasks, feel part of the team, are very supportive and willing to assist each other, have increased levels of trust, and provide informal praise and recognition to each other, all of which help to motivate team members. The study also highlights how the practices may cause de-motivation through increased stress, and pressure to deliver. Secondly, it extends the literature on IT project staff motivation by identifying new factors that cause motivation and de-motivation, as a result of agile practices (see Tables 3 and 4). Even though some studies have addressed motivation and others have focused on agile methods, this is the first study of which we are aware that examines motivation and de-motivation of IT project staff from the perspective of agile practices. Finally, this study provides an additional insight into the link between motivation of teams and agile practices and indicates that there is a strong link between agile practices and motivation/de-motivation. Ideally, these influences should be positive, but we found that in certain circumstances they can cause de-motivation such as an increase in the number of meetings, lengthy meetings, use of agile practices on long-term projects, and use of agile practices for complex or fragmented tasks.

From a practitioners' perspective this study highlights to managers how these practices can cause some frustration and apprehension amongst team members and it is important than managers are aware of these so that they can be avoided or addressed where possible. As agile teams project-manage themselves they must be clear on the goals and benefits of each agile practice, ensure they are used effectively to motivate each other, and use their abilities for the good of the team. If the agile practices are causing difficulties then the team must take control and change the way the practices are implemented. For example, if the daily stand-up is considered disruptive to the day, the team should collectively agree on a time that is most suitable for all parties that minimises disruption to the team. Likewise, if a team feels that an agile practice is no longer useful then the team must work together to identify difficulties and take action to resolve and implement a solution to address the problem, so that the agile practice can continue to be effective.

6.1 Limitations and future research

Our research has a number of limitations. Firstly, the study is limited by virtue of the fact that only two APM teams were examined. Both teams were well established and familiar with each other. The findings are therefore only representative of these two teams, which limits the generalisability of the findings to other APM teams. We acknowledge that the findings may be different with teams that have no prior experience working with each other, are less experienced, are from different industry sectors, or have multiple distributed team members. Secondly, the number of agile practices studied is limited to three, which was deliberate to bound the study. However, we do recognise that other agile practices may also contribute to team motivation and de-motivation. A further limitation relates to the timeframe in which data was collected. The

findings of our study are only reflective of the perspective of participants during the relatively narrow period of time during which data was being collected (Pettigrew 1990). A longitudinal study may provide further insights into how the agile practices continue to motivate or de-motivate an APM team over time and whether the length of time since implementation impacts on the benefits of using the practices. Future research should examine these and other agile practices across a variety of teams and cultures to determine if there are other impacts on team motivation and de-motivation. Additional research should examine how other agile practices may further impact APM teams, the relationships of team members, or affect project outcomes.

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9 Appendix

This appendix details an excerpt of the interview protocol.

Excerpt of the Interview Protocol	*Beecham et al. (2008) Factor*
Section A: Background Questions How long have you been part of this team? How long has this project team been working together? [To help determine whether the team are socialised into the group and whether the team have developed a common understanding, beliefs, expectations over a long period of time.] Has the team changed since the start of the project? How long has the team been using an agile method to develop software? Will you provide some background information on the project you are currently working on? ……..	M7. Sense of belonging/ supportive relationships
Section B: Team Characteristics B.1 Sense of belonging Do you feel part of the team? Why/why not? How has the iteration planning helped you to feel part of the team? How has the daily stand-up helped you to feel part of the team? How has the iteration retrospective helped you to feel part of the team? ……	M7. Sense of belonging/ supportive relationships M10. Employee Participation/ involvement/ working with others D10. Bad relationships with users and colleagues
B4. Working environment How would you describe your current working environment? How has the iteration planning impacted on your working environment? How has the daily stand-up impacted on your working environment? How has the iteration retrospective impacted on your working environment? ……..	M17. Identify with the task M18. Appropriate working conditions/environment D11. Poor working environment

Section C: Other Motivators and De-Motivators To what extent does the iteration planning motivate the project team? [Prompts: opportunity to tackle new problems, opportunity to increase knowledge and skills, planning for a short timeframe] To what extent does the daily stand-up motivate the project team? [Prompts: requirement to provide an updates at daily stand-up meetings, perception that progression must be made, desire to complete tasks on time, deadlines are immediate, praise and support from each other, sense of personal satisfaction, increase my feelings of self-esteem] To what extent does the iteration retrospective motivate the project team? [Prompts: recognition received from other team members for work done, feeling of accomplishment, contribution to personal growth and development,] To what extent does the iteration planning de-motivate the project team? [Prompts: iterations too short, lack of long-term planning in comparison to Waterfall approach, lack of input from the customer] To what extent does the daily stand-up de-motivate the project team? [Prompts: dislike asking for help, dislike reporting lack of progress at daily meetings, constant feeling that must deliver, constant monitoring of work, too many distractions with meetings and other unplanned tasks, lack of down-time, lack of input from the customer] To what extent does the iteration retrospective de-motivate the project team? [Prompts: lack of action, lack of customer feedback, no recognition for work completed]	