Fostering and sustaining innovation
in a fast growing agile company

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Abstract. Sustaining innovation in a fast growing software development company is difficult. As organisations grow, peoples' focus often changes from the big picture of the product being developed to the specific role they fill. This paper presents two complementary approaches that were successfully used to support continued developer-driven innovation in a rapidly growing Australian agile software development company. The method "FedEx™ Day" gives developers one day to showcase a proof of concept they believe should be part of the product, while the method "20% Time" allows more ambitious projects to be undertaken. Given the right setting and management support, the two approaches can support and improve bottom-up innovation in organizations.

Keywords: agile software development, innovation, scrum, XP, FedEx Day, 20% Time, empirical, case study.

1   Introduction

For a company to be successful it needs to promote innovation [19]. An innovation is the implementation of a new or significantly improved product (goods or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations [31]. Innovation is something that comes naturally for a start-up, but becomes harder as a company grows. Managers have identified insufficient innovation as a crucial problem, however, successfully implementing good innovation management practices is difficult [17]. Start-up software companies are creative by nature and their success heavily depends on executive managers, who are responsible for developing and implementing the company's technical strategy [9]. In a start-up, it is crucial to create and stimulate a culture where developers are encouraged to participate in all aspects of development and are allowed to have significant influence over the their work [9]. Innovation may also occur when knowledge from different areas is combined, and shouldering multiple roles

forces developers to become accustomed to formerly unfamiliar areas. Everyone working on the product must internalize the company's strategy and work to realize the goals for the product and the goals for the company as a whole. In addition, the effect an individual developer can have on the bottom line is much more substantial in a start-up, and developers often have a personal stake in the company.

Growth makes enabling and managing innovation harder [17]. This creates a problem for companies as they make the transition from start-up to a larger company with entrenched products and processes. Implementing innovative products and processes often becomes more challenging. One of the challenges that hinders innovation as a company grows is greater specialization, as employees move from cross-functional positions where innovation can be spurred by the diverse responsibilities and information, into more traditional job roles where responsibilities and information are typically narrower. While specialization confers many advantages, it often comes at the cost of innovation capacity originally afforded by the multifunctional work performed by the handful of 'all-doers'. Specialization in-the-best-of-cases allows people to focus on what they do best, but it can also result in a loss of the broader vision of what made the start-up successful to begin with. The concept of developing visually impressive features and providing support by fixing problems on the fly is transformed into turning requirements obtained from someone else into code. The understanding of the overall purpose of the product, as well as customer proximity is greatly diminished.

Motivated by the challenge of maintaining a capability to undertake innovation while growing, our research question has been: *How can a former software start-up maintain innovation capability while growing its workforce?*

To investigate this research question we conducted a case study at Atlassian. Atlassian, facing this challenge of growth, has taken steps to ensure that developer initiated innovation remains one of the foundations of the organization.

The main contribution of this paper is an empirical investigation of two complementary approaches Atlassian has used to empower its developers to innovate, called *FedEx™ Day* and *20% Time* respectively. This paper also contributes to the literature of innovation and agile development. While many of the agile methods explicitly state that facilitating innovation is a key motivation underpinning the emergence and use of agile approaches, rigorous research evaluating innovation in an agile context is lacking [1, 40].

The remainder of this paper is organized as follows. Section 2 gives an overview of the research on innovation. Section 3 defines and describes the case study. Section 4 describes our findings. Finally, our discussion and conclusions are presented in Sections 5 and 6 respectively.

2 Innovation in software development

2.1 The Concept of Innovation

Innovation is a synonym for change [7]. To create an environment that supports innovation, we must understand what innovation is and how it arises. Innovation is com-

monly categorized into four types [31]:

- **Product innovation:** the development of new products and new features that significantly improve an existing product.
- **Process innovation:** new or significantly improved changes to working processes.
- **Market innovation:** significant changes to product design or packaging, product placement, product promotion or pricing through new marketing methods.
- **Organization innovation:** (or business model innovation) encompasses changes to the company's business practices, workplace organization or external relations.

Each of the above four types of innovation can be further categorized into one of four levels of innovation impact [16, 20]:

- **Incremental innovations:** relatively minor changes in technology normally based on an existing platform. The innovation delivers relatively low value to customer benefits.
- **Really new (Market breakthroughs):** based on core technology that is similar to existing products, but that provide substantially higher customer benefits per dollar.
- **Really new (Technological breakthroughs):** substantially different technology than existing products, but do not provide superior customer benefits per dollar.
- **Radical innovations:** or disruptive innovations, which introduce first time features or exceptional performance using substantially different technology at a cost that transforms existing markets or creates new markets and delivers novel utility.

The process for innovation involves searching for and selecting ideas, implementing them and learning from the innovation process. Literature identifies several drivers or determinants of innovation within an organisation (see Section 2.2).

Software product innovation is differentiated from other product innovation, with relatively low start-up costs and short lead-time. It is possible to write, compile and test code all in one day, and the only resource consumed is time. Physical products, however, may require machining, molding, prototypes and by their nature will consume physical resources to test and produce.

Creating an environment that fosters innovation and creativity requires employees to feel motivated, capitalizing on their interests, and enabling satisfaction through the challenge of the work [6].

In addition to motivational factors, management needs to provide time and space for innovation to occur [6]. Google™ does this most visibly through their *20% Time* program. This has lead to many product innovations, including Gmail®, Google News®, Orkut®, and AdSense®. However, Google™ provides little information on how *20% Time* has been operationalized. A similar strategy was adopted much earlier at 3M™, where the "15-percent rule" gives technical staff six hours per week on projects of their own choosing. This strategy led to ScotchTape® and Post-it Notes®.

Innovation management and practices are implicit and a part of every-day-work in start-ups, which are, almost by definition, doing something new. As organizations grow, enabling and managing innovation becomes harder [17], and risk increases as

dedicated resources have to be spent on new ideas in parallel with maintaining the incremental development of the present offering.

2.2 Internal Determinants of Innovation

The authors undertook a review of the literature to identify internal determinants of innovation. A snowball sampling strategy was used to identify the relevant literature. A summary of the findings is presented in Table 1 and reflected upon in Section 4. The list of determinants given below is not exhaustive as the purpose of the review was to find determinants in literature that illustrate and support the relevance of innovation related activities at Atlassian.

Table 1. Internal innovation determinants

Determinants of Innovation		Reference
1. Organization Culture	1.1 Risk taking culture	Aiman-Smith et al. [2]
	1.2 Entrepreneurial culture	Sjoerd et al. [34]
	1.3 Creative stimulants	Fagan [13]
	1.4 Open Communication	Aiman-Smith et al. [2]
	1.5 Incentive provision	Fitzgerald et al. [14]
	1.6 Encouragement of initiatives	Kivimaki et al. [25]
	1.7 Supportive climate	Jong et al. [24]
2. Empowerment	2.1 Job challenge	Jong et al. [24]
	2.2 Agile decision making	Aiman-Smith et al. [2]
	2.3 Autonomy	Jong et al. [24]
	2.4 Meaningful tasks	Aiman-Smith et al. [2]
3. Customer-related	3.1 Customer acceptance	Dunphy et al. [10]
	3.2 Customer orientation	Aiman-Smith et al. [2]
	3.3 Recognizing user need	Voss [17, 37]
4. Inter Collaboration	4.1 Multifunctional teams	Gebauer et al. [18]
	4.2 Technology transfer	Love et al. [27]
	4.3 Team work quality	Hoegl et al. [22]
	4.4 Interaction of human and social capital	Subramaniam et al. [35]
	4.5 Inter-functional coordination	Akman et al. [3]
5. Trust	5.1 Trust to be heard	Clegg et al. [8]
	5.2 Belief to have an impact	Clegg et al. [8]
	5.3 Openness	Prather [32]
6. Knowledge management	6.1 Knowledge sharing	Zhu et al. [39]
	6.2 Organizational learning abilities	Aiman-Smith et al. [2]
	6.3 Organizational capital	Antonio et al. [5]
	6.4 Variety of knowledge sources	Amara et al. [4]
	6.5 Knowledge diffusion	Tseng [36]
	6.6 Training and education of staff	Gebauer et al. [18]
	6.7 Idea generation	Koc [26]
7. Champions	7.1 Innovation catalyst	Freeman et al. [15]

3 Research Method

We choose a case study to investigate our research question: How can a former software start-up maintain innovation capability while growing its workforce?.

3.1 Study Context

Atlassian Software Systems is an agile company selling software to support software development. It began its operations in 2002 in Sydney, Australia and has since opened offices in San Francisco, Gdansk, Kuala Lumpur, Porto Alegre and Amsterdam.

Atlassian sells products aimed at facilitating collaboration and supporting software development. Products include: issue tracking software, enterprise wiki and collaboration software, online source code review and source code repository management. The software developed by Atlassian is also used internally, which means that the developers are also users of the software.

Atlassian has recently started making a push to transform itself from a more traditional software company to a software-as-a-service company. To this end, Atlassian has been focusing resources on making sure that its existing and new products are delivered as services. Its product sales figure was AU$35.5 million for 2008 with more than 12,000 customers in 104 countries.

Since its inception the company has used a combination of XP and Scrum (for an overview of agile methods see e.g. [12] and [11]), and has undergone rapid growth; approximately doubling the number of staff in each year of its ten year existence. By 2010 Atlassian had more than 275 employees.

Atlassian is an open company with important company details being available to all employees. Internal and external wikis and blogs are used heavily and these often host lively discussions about the company. As one of the managers commented, "*everything gets documented on the [intranet], everyone has buy in and everyone has a say in everything so that's why it's such a cool place to work*".

The founders of the company were responsible for the initial development of some of Atlassian's products. They still play a role in software development and are well known within the company for quickly developing prototypes of new features. When interviewed, the head of engineering commented on this practice: "*Yes, especially [one of the founders]. But he's prototyping, he'll be: I can't tell you what I want, so let me code it real quick, then I'll show you, that's [one of the founders]. Yeah it's scary*."

The attitude displayed by the founders towards prototyping has translated itself throughout the company to a preference for action rather than just words or ideas. One of the core company values is for individuals within the company to be proactive, not just to *have* ideas but to *do* something about them. A tech lead discussed this aspect of Atlassian's culture: "*it's just ideas and I have ideas and I want other people to see my ideas, our company isn't as big on it. It's basically do it. Don't just tell me about some great dashboard, show me a prototype, do something, make it happen in the product or something*."

3.2　Data Sources and Analysis

We relied mainly on semi-structured interviews as these provide a rich picture of the internal workings of the company in general and the specifics of the *FedEx™ Day* and *20% Time*, the development practice under investigation. In total 17 employees were interviewed: 2 executives and 15 team members, tech leads, and team leads from three product teams. Each of the semi-structured interviews took approximately one hour. All interviews were recorded and transcribed. The interview schedule and questionnaire are available online (http://sebseb.info/publications/profes2012/). The results have been presented to the management at Atlassian. Author number six, who worked at Atlassian for over five years, helped ensure that our findings were consistent with his experience as a software developer at the company.

To be able to address a broader range of historical and behavioral issues [38], we used multiple sources of evidence. In addition to interviews, we conducted a small survey on the use of *FedEx™ Day* and *20% Time* and we collected data from Atlassian's internal and external websites, which host information and discussions about Atlassian's development practices and the company's structure and culture. These sites are updated frequently and all employees are encouraged to participate in these forums. Data were then categorized and coded. Observations were also made in-situ by attending meetings and observing the operation of *FedEx Day* and *20% Time*.

By combining the data from interviews with the information from the websites, we were able to develop a converging line of inquiry [38] and form a rich and accurate picture of the company in general and the practice of FedEx Day and 20% Time in particular. Our main analysis technique was to combine pattern-matching logic with explanation building [38]. That is, we compared empirically based patterns with the patterns predicted by the theory, while at the same time building an explanation of the case. This strategy also helped us to strengthen the internal validity of the case study.

4　FedEx Day and 20% Time at Atlassian

4.1　Task Allocation at Atlassian

The way tasks are allocated normally at Atlassian is crucial to understanding *FedEx Day*, *20% Time* and their effects. Each team has a product backlog that is updated regularly based on *releases*. A release includes major feature improvements that can be marketed and distributed to all customers. Features in the release backlog are divided into sprints and each sprint produces a point release – a smaller product release. At the beginning of each sprint, the list of features is presented to the developers.

Identifying and allocating tasks/features affects how specialised developers become since this defines what the developer will do. This is done differently in the various teams at Atlassian. We found that in some teams there were limited possibilities for individuals to choose the tasks they wanted, because there was little redundancy in the teams. One developer said: "*A lot of the time it is based on whoever can do the tasks because we've got all very different skill sets*". One team leader said: "*People do volunteer, but there's never a surprise on what they volunteered for.*"

Another said: "*we don't share what everyone's working on and how it works. That's why if someone gets sick, it can take longer time to pick up the stuff after them*"

Another team leader, responsible for 15 developers in 4 sub-teams, said: "*We found with XP, the whole approach of not doing a lot of planning up front gives us a lot of trouble ... a lot of people get frustrated because the release takes longer than the original plan*". This team leader pre-planned the sprint with management and with some input from developers. Then, during the Scrum planning meeting, the team leader assigns tasks to developers.

The introduction of story cards into one of the development teams was seen as a reason for developers not being able to focus on innovation. Story cards are a standard XP practice. Requirements are broken up into short user stories, which are written on small cards. A developer is assigned (or chooses) one or more story cards to work on. Estimated and actual time spent is also tracked on the story card. In this team, story cards were assigned to developers in the fortnightly planning meetings or by the team leader. While story cards were selected and prioritised by the whole team during their planning meetings, many developers commented on the feeling that, with their time being tracked, they no longer had the freedom to experiment and play with new features.

The developers are encouraged to suggest features that should be in the product backlog. However, resource limitations led upper management to reduce the number of features the teams could develop for a release, since resources are allocated according to the revenue generated. In terms of prioritising the features, a developer explained how he influenced the direction of the product: "*[The CEOs] do kind of get a higher priority when we're making our decisions. But in the end it's really the developers and our product manager that decide what goes in and what goes out and have full control over what we do*". Only a few developers reported having this kind of influence on the product, mostly those in the smaller teams.

4.2   FedEx™ Day

Like express couriers, each *FedEx™ Day* gives developers at Atlassian one day to deliver a software product improvement of their choice (Table 1: 1.6, 2.4). The rotating *coordinator* starts organizing the next *FedEx™ Day* several weeks in advance. It is held "during a calm time," three-to-four times per year, to help ensure that most developers will be able to participate.

Most developers at Atlassian know in advance what they want to do on *FedEx™ Day*, but there is support for those who are unsure. A couple of weeks prior to the *FedEx™ Day*, the coordinator organises a series of voluntary lunchtime meetings to discuss possible options. Developers attend not only to seek inspiration, but also to share and discuss ideas.

As *FedEx™ Day* approaches the developers write *delivery orders*, detailing what they hope to achieve on the day. Other employees write comments on these orders, offering hints, tips and ideas. This collaboration occurs between different teams, products and roles (Table 1: 4.5, 6.1, 6.2).

FedEx™ Day itself has been described as a "*rush of adrenaline*," providing a sense of exhilaration. Developers said that the pace within the organization changes considerably: "*You don't write unit test. You just blast out the feature, hack it out however*

you want because it doesn't matter." One team leader estimated that "*people get about three days of work done in just that one day, it's amazing.*"

All the projects are presented at the end of the day (Table 1: 6.1, 6.7). The participants vote to select a winner. Experienced *FedEx™ Day* developers know that the presentation makes or breaks the project. As a result, they always set time aside to make their presentation, even if it means presenting incomplete functionality. The winner receives a trophy and, more importantly bragging rights.

4.3   Experiences with FedEx™ Day

Experience has shown that *FedEx™ Day* projects generally deliver product innovations, and provide incremental innovations and technological breakthroughs. The projects generally fit into one of four categories:

- Features/improvements that a developer wanted, but that never made it onto the roadmap;
- Architectural improvements and bug fixes that were bothering the developer;
- Integration of some new technology with the existing product; and
- Novel and unexpected features that had not previously been discussed with any of the development teams.

The survey results indicate that 80% of the developers use *FedEx™ Day* to work on unscheduled features for the product on which they normally work. The others work on other products at the company, or improving features already scheduled for development.

People within Atlassian clearly see *FedEx™ Day* as satisfying its aim of support innovation. All survey respondents who had participated in *FedEx™ Day* believed it encouraged innovation. During interviews, a number of developers and managers stated that developers are encouraged to "*think differently,*" "*do stuff that is a little unusual*" and "*try new technologies*" and "*collaborating with colleagues from other parts of the company that they wouldn't normally work with*" (Table 1: 4.5, 6.2). Also we found that many of the innovations trialed during FedEx Days have been incorporated into the Atlassian products.

FedEx™ Day is clearly enjoyed by the participants. A number of developers stated in the interviews that *FedEx™ Day* was one of the factors that encouraged them to seek employment at Atlassian.

4.4   The 20% Time Program

As the company grew the Atlassian founders realized that developers' time was increasingly being filled with daily tasks, to the detriment of free time previously used to tackle things judged important by the individual developers. The introduction of *20% Time* program reflected the fact that free-time problem solving had been behind many of the company's most successful products (Table 1: 1.6, 7.1).

The goal of *20% Time* is "*to encourage innovation in products, development techniques and the Atlassian development ecosystem*" (Table 1: 1.3). The "rules" of the program, designed to ensure that the program provides value for the company, em-

phasize the broad range of work that can fit into *20% Time*, and acknowledge that innovation requires experimentation and tolerance of failure.

1. Any 20% project that has consumed more than five days effort requires sign-off – that it is both viable and a good idea – from three developer colleagues not involved in the project, and
2. Any 20% project that has consumed more than 10 days requires sign-off from one of the company founders.

The decision to require only developer sign-off to pass the five-day mark was a conscious one to allow developers to take risks with new ideas (Table 1: 1.1). Presenting ideas and work to senior management is intimidating. Given that developers have an interest in the product as a developer, maintainer and user; it is believed they will have the best interests of the product at heart.

20% projects can either graduate from *20% Time* onto a product roadmap, or be retired. Upon graduation the project is put into a virtual "*Hall of Fame*" and the remainder of the project is funded from the appropriate product budget – freeing up the developers' *20% Time* for new projects.

4.5   Experiences with the 20% Time program

After one year with the program, Atlassian found the projects making it onto a product roadmap typically lasted only one to five days. In total 48 projects were tracked during the first year: 16 made the Hall of Fame, seven were retired, and the remaining 25 were in-progress. The longest project was 18 days.

Development managers noted that developers used *20% Time* "*to work on things that they really, really want to do*" (Table 1: 2.4). One added that the developers who made contributions to a product could "*identify with the product a lot more*".

The survey and interviews show that developers use this time to work on problems similar to what they focus on for *FedEx™ Day*. Part of the complementary nature of *FedEx™ Day* and *20% Time* is that developers often start a project for *FedEx™ Day* and continue working on it with *20% Time*.

Around 85% of the developers use *20% Time* to work on unscheduled features for the product with which they primarily work. However, some people seek to improve scheduled features, or to work on other products. One developer was even working on an open source project that had benefits to Atlassian.

One of the managers discussed the key differences between the types of innovation seen from *FedEx™ Day* and *20% Time*. "*FedEx™ Day is a competition that developers try to win with flashy presentations and features. 20% Time is different because developers have more time to work and do not need to win over their teammates in a short presentation. Thus they can also focus on backend changes, and software product quality.*" These differences mean that a wider variety of ideas are tried, some better fitting *FedEx™ Day*, while some are more likely to be done in *20% Time*.

The greatest challenge developers faced with *20% Time* was allocating time. Managers were initially concerned that the program would consume more than the allocated number of hours. This fear was unfounded. In the first year only 6% of the hours allocated to the program were used. It is likely more time was taken, as these projects

are not formally tracked; however, the actual time is below the program's maximum. Detailed tracking of innovation projects was avoided; managers feared this could stifle creativity, as developers felt compelled to deliver results (Table 1: 1.1). For this reason developers are entrusted with the responsibility of tracking their own time, and seeking approvals.

All developers interviewed said they had nothing but support and encouragement from their managers, although many admitted feeling guilty when using *20% Time*. Developers worried about the impact this had on the rest of their team, especially those from smaller teams.

Development teams tested different ways of allocating time to *20% Time* to minimize disruptions. This included having a 20% week between development cycles, and giving people blocks of time. These tests received mixed reactions; the general sentiment was that it is not always possible to schedule innovation. Some prefer an extended break from their daily work, while others prefer taking a day here and there.

After a yearlong trial, *20% Time* was deemed a success. All *20% Time* participants surveyed felt that it encouraged innovation. *20% Time* is also a successful recruiting tool; a number of employees cited this as one of their reasons for joining the company. One newly hired developer said FedEx and 20% Time "*are pretty much the reason why I applied for a job in Atlassian. For me, it's about innovation. I personally need a creative outlet. Now I have every Friday to look forward to, to do my 20% project which I love doing because it is something that I thought of myself and it's something that hasn't really been done before.*"

4.6 Innovation practices supported by the development process

The way Atlassian works, utilizing the complementary nature of their innovation tools *FedEx™ Day* and *20% Time*, makes the company attractive as an employer as demonstrated by the reactions of many of the developers that were interviewed. Many cited these initiatives as reasons why they chose to work for Atlassian.

Experimental culture
The company's founders see innovation as an important part of Atlassian's every-day business. It permeates everything from strategies to ways of working. The company has focused on entrepreneurial innovation (Table 1: 1.2), and continues to try new practices to remain innovative. The founders and directors are also still actively involved in product development. The attitude towards trying new things through prototyping has permeated the company's culture, which is an important internal innovation determinant (Table 1: 1.3)

Direct customer contact
All developers at Atlassian regularly complete stints in technical support, putting them in direct contact with customers. One aim of this strategy is for developers to understand the products from their customers' perspective – to understand users' problems and get developers to prioritize fixes for the most troublesome bugs (Table 1: 3.2, 3.3). One of the technical managers at Atlassian said that their developers are "*the best people to evaluate which internal improvements need immediate attention*".

The high level of customer interaction also helps ensure that feature development is aligned with actual and potential customers' needs (identified as important for success in many case studies [17]).

"Dogfooding" (Developers use the products)

Atlassian is in a different position to most development companies as it makes tools that support software development. These tools are used extensively within the company. The developers are users of the products, and can understand and evaluate their products from a customers' perspective. This practice is widely known both inside the company and in the wider developer community as "dogfooding". This gives them a strong understanding of a product's strengths, weaknesses and opportunities.

The program manager stated, "*the fact that we use our own products ... is a really cool reinforcing kind of loop and it means that everyone owns their own products and we all use internally, so it means you can be really proud of a product ... In some of the companies I previously worked at I've had no idea how to use our products or what the typical users' problems might be.*"

"Dogfooding" mean the Atlassian developers have a deep understanding of their products from the perspective of a user, a developer and technical support (Table 1: 6.4). This knowledge empowers the developers to make development decisions that benefit all of these groups. This set of incentives has clear commercial benefits. Developers can build features that users want (users perspective), that make sense for the system (developers perspective) and that are intuitive reducing the need for technical support (technical support perspective) (Table 1: 3.3).

One of the managers noted that people use *FedEx™ Day* and *20% Time* to address issues that people identified from their time as users of the products in combination with knowledge acquired during customer interactions.

Agile development practices

In areas where rates of technological change are high and development cycles are short, being a "fast innovator" is increasingly seen as an important determinant of competitiveness [33]. The use of agile development methods, like those used at Atlassian, help support fast product innovation. For example, agile development methods support collaboration and improve information exchange between management, developers, and existing and potential customers [21].

At Atlassian innovation is supported through the use of agile practices such as daily stand-up meetings and job rotations (for example working in support). These practices empower the stakeholders to make better trade-offs as they have a richer understanding of the product (Table 1: 2.2, 2.3). Scrum style retrospectives are also used to support innovative process improvements, because they result in new or significantly improved changes to the working processes.

Information Sharing

Atlassian is an open company. Company information is made available to all employees through blogs and wikis hosted on the company's intranet (Table 1: 6.1). This information includes strategic plans, sales figures and targets and discussions about

the future of the products and the company. This value is also reflected in one of the core company values, which they aspire to and advertise throughout the company offices: "Open company, no bullshit". Further, much information is made available to the general public through the company website. For example, they provide open access to the bugs that customers have logged about their products.

5   Discussion

In this article we present how Atlassian has addressed the challenge of maintaining innovation capacity while growing. We now discuss the case in light of our research question: *How can a former software start-up maintain innovation capability while growing its workforce?* From conducting a single case study, we found the following:

The agile team is often given authority and responsibility for many aspects of their work, and it was important for the innovation capacity of that the team to have direct customer contact. This is consonant with Gassmann et al., who found that a significant proportion of innovative product development ideas come directly or indirectly from the specific needs and requests of customers [17]. Also, Atlassian develops its software using short iterations, which is recognized to support innovation by allowing an organization to be responsive to changing consumer demands [21].

While Atlassian uses Scrum in combination with XP, and the founders encourage people to try out new things, we found that adopting agile practices alone is not enough to foster innovation. Agile development practices alone were found to only support two of the seven categories of innovation determinants, empowerment and knowledge management. Simply adopting agile development practices on their own is insufficient to ensure that a company remains innovative. This is consistent with Hosbond and Nielsen [23]. Developers need to feel that the environment supports and is open to innovation before they will make a contribution [8, 32]. Further, people working on the product need to share information and collaborate so they are sufficiently informed [2, 28, 39]. Due to specialization in teams and iteration pressure (the constant pressure of delivering what has been promised for the next iteration), the individual developer had little freedom. The fact that tasks were often assigned based on skills rather than preferences was the main reason for this. Morgan [30] refers to this as lack of redundancy, and it often leads to little flexibility within agile teams [29].

To conquer the above-mentioned challenges, to give developers time and space to explore and make mistakes and to help them maintain their innovation capacity, Atlassian implements *FedEx™ Day*s and *20% Time*. Activities and incentives used to foster innovation require thought, planning and evolution, as these shape the types of innovations that are created. *FedEx™ Day* leads to flashier, user orientated innovation, while *20% Time* provides an opportunity to work on a broader range of improvements. Ultimately these two processes are complementary and bring about different types of innovations that are important to the company.

We also found that Atlassian adopted a suite of development practices that support all seven categories of innovation determinants found in literature (see Table 1). *20% Time* and an experimental culture support an organisational culture that supports innovation. *FedEx™ Day* and *20% Time* lead to further worker empowerment than

agile development practices alone. Direct customer contact and "dogfooding" lead to customer-related orientation that also encourages innovation. *Fedex™ Day* also encourages inter-collaboration between people across diverse areas of the company.

Further we found that *20% Time* addresses two of the three innovation drivers (Section 2.1) – individual champions can drive innovation and organisational support for innovation, and *FedEx™ Day* exploits all three innovation-drivers (Section 2.1). It supports individual champions within the company to drive innovation; it provides a process to support innovation; and through the *FedEx™ Day* planning sessions, developers discuss and share ideas. We found many benefits of fostering developer-driven innovation within a company including:

- Improving developer's morale; developers want to say: "that was my feature, that was my idea". Employees that feel valued are more likely to stay.
- Increasing developers' ownership of the product and getting them "thinking about what's relevant to customers." The benefits of this type of thinking extend beyond innovation, to all work done by the developers.
- The successful implementation of an innovation strategy will attract great people.

Based on these results from this single case study, it seems worthwhile for companies to examine the development practices that they have adopted and the categories of innovation determinants that these development practices support. Adopting practices like *FedEx™ Day* or *20% Time* may allow companies to overcome shortcomings in their current innovation strategy and pave the way for long-term growth.

6 Conclusion

By observing, interviewing, conducting a survey, and reading company documents, we found that for a software development company to compete it needs strategies to sustain the development of new products, processes and features. The successful implementation of an innovation program requires the work environment to support and encourage creativity and innovation.

Simply adopting agile development practices was found to be insufficient to maintain innovative edge. In Atlassian, agile development practices alone only supported two of the seven categories of innovation determinants. In order to support all seven categories, alternative development practices needed to be adopted. Of these some of the most interesting included *FedEx™ Day* and *20% Ti*me, which can also be seen as organisational innovation methods.

Further, a successful approach to innovation will ensure that innovators understand the product from a range of perspectives, and have the freedom to experiment and make mistakes. It is also crucial to motivate developers by celebrating the use of ideas included in the product. Encouraging and supporting innovation will help attract and retain great people – and with great people follow great ideas. Innovation implies not only generating great ideas, but also taking advantage and capitalizing on those ideas – turning them into innovation.

7   References

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