

Scaling Product Ownership

Mike Lowery & Marcus Evans
British Broadcasting Corporation
Mike.lowery@bbc.co.uk

Abstract

Many people ask the question “Does Scrum scale?” especially those who have been scarred by Scrum done badly or those who are resistant to change. Our experience has led us to believe that Scrum can be scaled effectively but not without a few bloody noses along the way. Scrum teams with Scrum Masters seems to scale naturally especially where strong technical leadership is applied. However, we ran into problems in scaling the role of Product Owner. This report shows what we did to scale product ownership and the highs and lows of the journey we took getting there.

1. Introduction

The British Broadcasting Corporation (BBC) is a large highly regarded traditional broadcasting organisation within the United Kingdom and the rest of the world. Producing a wide range of radio and television programmes over many stations and channels and has a large Internet presence, through web and mobile sites with a comparatively small amount of video footage available for Internet based consumption. One of the major challenges the BBC now faces is the rise in demand for delivery of broadcast content via the Internet.

The iPlayer project was set up to allow the BBC to meet the demands of the UK public and eventually worldwide users for an internet based delivery of method for current TV and Radio output. The project will enable a “catch-up TV” service via broadband internet that will allow users to search and browse for content from a rolling “last seven days” content window. Programmes can then be downloaded (via a Kontiki Peer to Peer Network) into an application running on their desktop.

The longer-term goal is to provide a unified player for all BBC downloadable and streamed media. The initial launch is aimed at Microsoft Windows platforms with a road map for other operating systems and mobile devices.

To deliver iPlayer, the BBC divided development between three suppliers managed by a central program team. The two non-BBC suppliers were to provide encoded media, metadata, associated subtitling, storage and delivery. The BBC would use its own Future Media and Technology (FM&T) division to provide the search, browse, and manage functionality that directly faces the end user. This report focuses on the work done by these FM&T teams.

FM&T was able to use some existing component teams although some new dedicated teams needed to be created for iPlayer specific components. In all nine teams were tasked to supply the central team for iPlayer. These teams were divided along functional lines as follows:

1. Homepage creation.
2. Calls to Action that tells the user what they can do in a given situation i.e. “Watch Live”, “Download Now”.
3. Application to manage the downloaded media.
4. Search - which allows users to explore the content available to download, providing the backbone to content discovery.
5. Schedule – a web based Electronic Programme Guide.
6. Programme Information – metadata provision and manipulation on any given programme (i.e. “Directors Name”, “First Broadcast Date”).
7. Single Sign On – user management allowing access to this and other BBC services.
8. Geo-IP Checking and Preferences Management – automated system checking and preferences management.
9. User experience / interaction.

This experience report covers the relationships or lack thereof between the component teams and the various incarnations of product owner employed to deliver this project.

2. Setting up the project

In April 2006, eighty people were organized into nine development teams for iPlayer. These teams included a variety of job roles including developers, testers, analysts, designers and project managers. In FM&T our policy is to make project managers our Scrum Masters.

Seven of these teams were already delivering using Scrum [1] and the other two teams planned a transition to Scrum during the project. All the teams moved to two-week sprints and we synchronized our sprints, to aid deployments and dependency planning. A two-week sprint length works well for our teams because in a media environment where transmission deadlines may change the product backlog can be volatile.

We dutifully set up daily scrum meetings for each team, and a daily scrum-of-scrums to address cross-functional needs and impediments. In this scrum-of-scrums meeting, we asked the usual status questions - what we have done and what are we doing - although we concentrated the majority of our energy on discussion of impediments and cross-team dependencies (expressed as risks that might lead to future impediments). We also set up a weekly meeting for the lead developers in each team to ensure consistent direction for standards and development methods.

Our next task was to appoint a Product Owner. We felt that it was important on a project of this scale that the Product Owner should come from the central team. This seemed the natural way to fill the role as the central team had the responsibility of coordinating the activities of all three suppliers and providing the product roadmap, technical architecture and functional requirements.

We also tried to ensure that the central team was fully bought into the Scrum mindset. Looking back we probably did not do enough to convince the central team of the benefits of a Scrum based approach. In FM&T we had our “must get building” heads on and did not fully manage their expectations. In hindsight, we recognize that it takes a lot of time and effort to evangelize Scrum; this cannot really be achieved by a short presentation.

With this basic setup, the component teams within FM&T happily set off into the unknown to deliver the project.

3. Where it started to go wrong

Almost immediately (within two sprints), our project stalled, we could not fill our backlogs. Those items that we did have in the backlog were vague and

uncertain. What we need was clarity and direction, what we needed was input from our Product Owner. So nine teams, all with synchronized sprints, did the right thing and asked the Product Owner from the central team to come to their planning sessions. It does not take a genius to do the math for this and see that 9 teams each requiring 4 hours for product backlog planning and another 4 hours for sprint planning and backlog item clarification does not fit into one 7 hour day. In fact, it would have taken our Product Owner until the end of the two-week sprint to cover this off with all the teams. Looking back this is immediately obvious but at the time the deadlines and an overwhelming drive to build things stopped us from thinking this through.

What the component development teams saw during this time was:

- The Product Owner was so busy that he was not available to make timely decisions.
- Even though the Product Owner was manically busy, he never actively empowered the teams to make their own decisions. This led to an interesting shift in development. Some teams were frozen by this and development slowed to a crawl. Other teams did what they felt like and moved the development forward only to have work scrapped when the rumors stopped and the Product Owner finally gave direction.
- Product backlogs were not prioritized so teams started to build items in the order that they preferred and moved unattractive items to the bottom of their product backlog...
- Whenever any attempts were made to prioritize the product backlogs, the Product Owner struggled because the items on the list were only understandable by the teams who wrote them.
- The number of scope meetings rose to fever pitch, as what was in and out of scope was never clear and the Product Owner was never available.

This situation could not continue for long, especially as the cynics were starting to get their “scrum can’t deliver” voices heard.

The Scrum Masters got together and tried to understand what was going on. We had been on the course, read the book, eaten the biscuit and Scrum ran through our veins yet to our surprise it had failed. Actually, what had caused this apparent failure was the fact that we had created a bottleneck in our decision

making process. The other aspects of Scrum were working well or at least as well as they could be, without clear direction, fast decision-making and using a prioritized product backlog that was not owned by the Product Owner.

Because we never did the math on actually how long it would take the Product Owner to carry out their normal functions, our next decision seems a little odd, especially with the power of 20/20 hindsight.

4. More is good?

Having identified that one Product Owner was not enough we decided to split the load between the two main system architects from the central team who owned the product roadmap. We made this choice based on the theory that by halving the previous Product Owner's load they would be more able to make decisions, and direct the project accordingly.

To some extent this worked, the Product Owner was more accessible to the team and some decisions were made more rapidly, the product started to move forward. However, this was not as fast or as clear as in the previous "one team, one Product Owner" projects. Something was still wrong, we had tried 'inspect and adapt' but the results were not proving positive.

Again we completely missed the fact that the two Product Owners needed to do a 36-hour week just to cover planning, and as we still were using synchronized sprints we were trying to fit all this in one day.

What was obvious is that the two product owners had logically split the work between them but mentally did not divide the work (they each felt they owned the whole project at the same time) nor did it appear that they had they thought about dependencies between themselves. This failure led to clashes between teams where the opposing (it seemed to us like they were in opposition, even if they thought they were working together) Product Owners gave contradictory direction, often on a daily basis.

In the end this was worse than no direction at all, because when you have no vision then any direction you go in must be right. However when you have two contradictory visions then the only thing you can do is stop and wait for them to align.

What the teams saw during this time was:

- The Product Owner was definitely more approachable for direction.
- The two contradictory views, often self contradictory too, lead to even greater paralysis than no view.

- Ignoring the Product Owner and doing your own thing led to actual "results", so the Product Owners increasingly became point of reference only for obscure areas of the specification rather than owners of product backlog and thus project direction

This new take on product ownership lasted for about 4 months, with many heated debates about lack of direction. A number of teams decided to go it alone and over the next few sprints the rest followed. So, by effectively ignoring the Product Owners the project had decided by default that this central Product Owner role even done by two people did not work. Now each team decided to appoint their own local Product Owner from within their individual teams.

5. The Teams do it alone

The central roles were scrapped and they were relegated to providing specification direction and planning the product roadmap. Each team appointed their Development Producer¹ to work as an embedded Product Owner. It's worth noting that he BBC differs from many organisations due to its public funded nature, in that the Product Owner role is not financially focused. Rather they are focused instead on feature development and product enhancement for all users and not areas such as market share or competitor analysis. Thus, the business analyst aspect of their role is ideally suited for our Product Owner needs.

Each team developed their priorities from a directionless (there was not a single clear combined product vision) list provided by the central team. They combined this with their own teams needs (some teams look after operational and feature enhancements for other products) and the direction they thought their product should go to achieve the project as a whole.

The new in-team Product Owners were able to do what in theory should have worked for the larger team. An unanticipated side effect was that we increased the number of teams that the central team had to communicate. The central team went from coordinating the original three large suppliers, to two large suppliers and a confederation of nine small suppliers from FM&T.

¹ a BBC role that combines the work of a business analyst and product knowledge specialist in order to drive and inform the product development process to define, maintain and refine new and existing products and services

One of the things Scrum approach pushes is the “common sense” approach. Integral to this, we believe should be strong and open communication both intra and inter team. Sadly, we did not really practice what we preached and like many other confederations we always looked to our own needs first and foremost, the needs of the whole took second place at best. This was never done intentionally or maliciously, it was just that once the teams get their heads down and start building they very rarely look up until they hit the wall.

What the teams saw this time was:

- Clear product ownership.
- Definite project direction.
- Questions were answered quickly.
- Delivery teams had planned thought out product backlogs.
- Work picked up pace and we were back to delivering new functionality each iteration.
- The in-team Product Owners became subject matter experts.
- Each team put itself into a specialist silo.
- Team direction was not always business direction.
- Product backlog items fell through the gaps between teams.

This was a vast improvement and from an individual teams point of view a complete success.

However, from a programme or an integrated supplier’s point of view it was still lacking in a number of places. Getting an overall view of “how are we doing” was very cumbersome and combining release plans into a single view of the product took days. The entire project is managed using task boards in the team workspaces (using sticky notes or index cards) and spreadsheets, the overall release plan generated by some pivot table wizardry.

The two main failings of this approach however were work falling between teams as each team assumed the other teams were picking up these tasks, and that the nine teams often interpreted the product roadmap in nine different ways.

This latter problem meant that the teams would prioritise their backlogs according to their own criteria and would rarely build things when the other teams needed them to (this even happened for some teams that sat near each other).

Again, our ‘inspect and adapt’ cycle brought more improvements, and on the whole lead effective delivery. After about six months of running this way, the lack of inter-team connectivity lead us to the next stage in our development of what we feel is a successful product ownership model for this type of project.

6. Back to the start with a twist

Oddly, our next step was to move back to a single Product Owner from the central team again. However, we had learned from our previous implementations and responsibilities were distributed in a different way.

Now, the Product Owner from the central team does not give direction on individual features and rather is there to ensure that the overall business direction of the project is maintained. They also ensure that things do not fall through the perceived cracks between the teams, and that dependencies and impacts are captured mapped and coordinated. The in-team Product Owners were retained to act as product specialists more than pure Product Owners who set priorities.

To make this happen and provide a way of upwards reporting that makes sense at all levels we introduced the concept of “themes” which could be considered as epic stories [2]. The Business Product Owner then prioritizes the themes provided by the central team; this easily allows them to set the direction and implicit delivery priority for every team from a much-shortened backlog. At the time of writing this report we had 45 themes that mapped onto 828 product backlog items.

Examples of these themes are:

- Guidance - visibility and confirmation
- Install, upgrade and uninstall
- Accessibility - Subtitles

During sprint planning the in-team Product Owner can be with the teams as a product specialist to answer product specific queries as well as ensuring that the sprint goals meet the overall business need.

The final elements that we have implemented to improve our inter-team communication are cross-team product demo and theme review meetings.

The cross-team product demo meeting enables us to show the bigger picture very easily and helps each team gain an understanding of recent changes and new features to the overall product offering. Again this meeting has evolved into a much more streamlined approach. We used to have run product demos where every team effectively repeated their own team product demo rather than an integrated product demo. The pace of this meeting was slow and felt very disjointed as each team swapped laptops, environments, and presented the latest version of an xml schema etc.

We now demo the product from an end user perspective, this gives a better feel and flow to the whole event and informal drinks afterwards help the different teams mingle and build new relationships.

The theme review meeting has also been through a number of manifestations before arriving at the current

version. It must be said however that we never encountered any resistance at all from the FM&T teams when we decided to implement this. It reflects the fact that they too felt concerned about the silo problem yet not able to see a solution to it.

We started with a Scrum Masters dependency meeting every sprint to ensure that all our work was aligned when the teams worked alone. This sort of worked but it did not address the lack of business direction only as it only mapped the inter team dependencies.

After we implemented the role of Business Product Owner, it was natural that they lead a restructured version of the old dependency meeting. The implementation of a themed approach (or at least a prioritized high level view of the project) was crucial to the success of this meeting. It is now attended by the Business Product Owner, product specialists, scrum masters and the project technical lead. In each meeting we:

- Confirm theme priorities
- Review each teams backlog for that theme
- Review the current estimated delivery dates per theme
- Map dependencies
- Add new cross team backlog items which have not emerged during team level sprint planning

This approach really does work well for us and ensures that not only is all the functionality required built, but also that each team gets what it needs at exactly the right time (impediments permitting). Although some work is still required to ensure the cross-team planning meeting runs more smoothly and that some themes are not just catch-alls for disparate functionality and that they are described at the right level of detail.

7. Conclusion

Getting the right mix of business direction and individual team focus is not an easy task. As we have found single or even dual points of product ownership within multi-component environments did not work for us. Nor did the devolved approach completely solve our issues.

It should not be a surprise to anyone that decision-making bottlenecks, lack of coherent direction and missing functionality were a direct result of our choice of Product Ownership methods. That said, all our choices during the duration of this project felt both natural and reflective of the situation we were in at the time.

Perhaps more surprising is that at no point did the teams delivering the work see Scrum failing them (or at least not providing and adequate framework to help them tackle this task), rather problems that arose were attributed to the people in the role of Product Owner. This focus on the individuals rather than the process led us to overlook the actual root causes.

Anyone who is using or about to use Scrum and considering employing it in a multi-team project needs to consider:

- The amount of time a traditional Product Owner has available to give to each team in the project.
- Relying on a single Product Owner leads to delays in planning lack of project direction and delays in delivery.
- The Product Owners ability to direct the project effectively diminishes as the number of teams they have to give direction to increases.
- Uncoordinated teams working in silos often deliver what they want not what the overall business actually needs.

Successfully scaling Scrum projects is not just about making sure the usual boxes are ticked:

- Scrums of scrums,
- Co-location of development teams,
- The right people in the right teams,
- Empowered scrum masters.

It is critical that close attention is paid to the combined amount of work and expectations placed on product owners by both the business and the teams delivering the work. We believe that a combination of clear business direction and subject matter expertise can effectively guide large multi-team projects or programs.

Scrum gives us a simple, repeatable way of delivering disparate projects. For this to be fully effective when scaling a project we must look at the capacities and velocities for all concerned to make sure the Product Owner is properly supported not just the “doers” in the Scrum team.

Eighty happy pigs make a lot of bacon but one egg per day only leaves you hungry for more!

8. References

- [1] Schwaber Ken, Agile Project Management with Scrum, Microsoft Press, Redmond USA, 2004
- [2] Cohn Mike, Agile Estimating and Planning, Pearson, Stoughton MA USA, 2006