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Agile as Path towards Self-Propelling Teams
ENABLED WORKFORCE
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ABSTRACT

This paper talks about the path taken in one of the Key project that had unknown technological challenges and we also wanted to mature towards the building the Self Propelling teams (XFT team) to manage the challenges. The technological unknowns, TTM, made us to explore best possible SW development pre-empt strategy (SW development & verification even before silicon availability). Knowing that, we cannot enforce on the way we work, as it will be short lived and hard to sustain, we made a concisions decision to evolve the team incrementally towards pre-empt strategy. The hypothesis was to conserve or reserve the time to handle the technological unknowns from the SoC challenges during or post Power On. This is possible only by ensuring that our SW has a good functional coverage even before silicon is available. The team learnt, tuned & adapted to Incremental way of working by following Agile. Unlike with many team, we had virtual teams and we evolved towards distributed agile using virtual Kanban board, 2 levels of CFDs and analysis at various abstraction level/domain/XFT, functionality coverage, team restructuring and deployment & rolling wave/iterative plan and many more. This has truly helped in extending the boundaries beyond the initial commitment signed during the budget approval. These achievements would not have been possible without great team collaboration and commitment towards self-propelling teams.

INTRODUCTION

Every organization and project will face different unique situation and will always strive towards goal managing the uniqueness from the experience or learning from the other projects. Hence, Project Manager becomes very important similar to a doctor, who handles every patient with individual attention/prescription. Project Manager will have to innovate, experiment, learn and keep moving towards the end goal/objective. This is one such experiment or innovation in an attempt to change the way we work. It is often said when human are involved, “It is not rocket science”. I would say yes, it is even complex than Rocket science. We had a unique situation where our predecessor project had adapted Agile to certain extent and few had not. Each of the projects had shared the learning from the important phases / milestone. The training was adequate for the team on the various facets of Agile; However, I believe, it had certain difficulties. In addition, some of the earlier projects has not adapted Agile and even they had some difficulties, which we believed, Agile would have solved to greater extent. We learnt and strategized agile deployment considering all above-mentioned learnings briefed.

Some of the things we focused were on can be categorized under these headings and is detailed out later.

1. Start with “Why?”
2. KISS → Keep It Simple and Straightforward, by focusing on the Agile manifesto and principles
4. Plans at certain Abstraction level.
5. Listening to Vocabulary – Coach
6. Owning the Pass – Responsibility
7. Bottom-up freedom, however reiterate on the discipline
8. Manage the noise

DETAILS OF THE PAPER
1. START WITH “WHY?”

As a project management team, we did not want to go agile for the sake of going agile (organizational initiative) nor did we want to ripple by saying “We are Agile” to keep away from initiators/intruders. We started with a question “Why?”. Few important reasons that were evident were,

a. There are technological un-knows because of the processor process technology and we will have to be reactive during our SW integration on the SoC/Target Platform.

b. TTM is not negotiable and will have to meet with the identified scope to be relevant in the competition.

c. We wanted the team to self-organize and identify the limitation, explore possibilities by taking risk, continuously evolve towards better solution keeping the TTM in mind.

Our objective was to redirect the functionality testing effort towards unknowns, post the silicon availability and also explore maximum coverage prior to the silicon availability. To achieve the good functionality, we need to have maximum test case coverage of the feature, integrated and working at the system level.

This mandated us to go towards agile so that the incremental development at the system level on identified validation vehicle (Hybrid Virtual Platforms).

Overall strategy looked as in the Picture-1. This was mainly for the Project Management team.

**Note:** The SW development and the SoC development will have to happen in parallel, which means we will not have the SoC for SW testing and hence we cannot pre-empt the testing to catch Unknowns.

**Picture-1:** Strategy for Deployment

We shared the workflow and Iteration break up at the feature level during the Kick-off and it was shared during the Budget approval gate review as in the Picture-2 & 3. Overall iteration as in the Picture-4. The “Why?” was followed by “How?”.

**Picture-2:** XFT Work flow

**Picture-3:** Definition of Done in each iteration.
Iteration level planning identified the feature that would available at the Epic level. This is through the contribution from each of the XFTs. Picture-4

Here the key focus is/was on the mind-set and we did not stress too much on the tools, reporting, estimations and scheduling. This is a customized version derived from Agile Manifesto, which was signed by all the XFT leads.

**Highlight:**

- Support each other stresses on the Interactions with individuals and collaboration
- Incremental planning and adapting to changes. Strive for working product
- Open for changes and trying new. Embracing Change and evolve.
- Share BKMs, learnings or retrospectives (Interactions).

**Picture-5: Our Principles**

2. **KISS ➔ KEEP IT SIMPLE AND STRAIGHTFORWARD, BY FOCUSING ON THE AGILE MANIFESTO AND PRINCIPLES**

As part of the learning we learnt from some of the previous projects teams adapted Agile however and brought in the Agile tools and did a good job. The team also got Agile training. However, it seemed, to have missed on the core aspects as in the the Agile Manifesto and focused more on the Agile Processes/Ceremonies. The teams used the tools as instrument to mediate. The team followed the Scrum concepts at the component level and seemed to have missed the focus of the system level.

Hence, consciously our team wanted to keep it simple. We started of an XLS based templated to identify the by using the known tools like XLS to begin with and focus on Agile manifesto. XLS based templated was used to create the EPIC and the iteration. Gradually the XLS was imported to the tool and started managing which helped in process automation.
Below is the snapshot of the XLS based Iteration Planning (where XFTs identify the Features, Sprint number, Criteria, Validation Vehicle and Dependencies.

Below XLS is uses as a pre-work for the Iteration plan meeting (where all the XFT join) to discuss and understand the dependencies.

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<th>Features</th>
<th>Sprints</th>
<th>Acceptance Crit.</th>
<th>Dependencies</th>
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**Picture-6: XLS based Sprint Planning**

3. **KAIZEN – STEP BY STEP.**

Though Kaizen is about continuous improvement, we also stressed on the one variable or minimal variable at a time. Once the team got acquainted with the breaking the feature into small aspects where it can be integrated to the mainline, we took the next step of monitoring and controlling. Relative estimate using the T-Shirt size estimation was introduced next and some teams got into the Planning Poker for Sprints. Once we migrated to a tool based Kanban (RTC), we stressed on the weekly review in each XFT meeting on all the features and move the Kanban tickets (Features) to next appropriate state. This also enable us to calculate the velocity of the individual XFT, where the data was stable/disciplined. This was done in the background and the data was shared to the teams for next planning iteration.

We can see the evolution from XLS based plan and tracking in the initial iteration as in Picture-6 and towards the Virtual Kanban board with various states, as in the Picture-7.
Various states of the Kanban and the qualifier for the same was shared to the team and the states got evolved to match the common understanding of the system. The various state are shared as below in the Picture-8. The disciplined updates from the XFTs also helped in reflecting the same in the form of a CFD at various levels. This is detailed in the section-4. The weekly report from XFTs made use of the CFD for reporting at every abstraction level.

As can be seen the team structure, we wanted the reporting at every abstract level. The planning of the feature/Kanban ticket were done at an abstract level where an EPIC planning (also called it as horizon planning) done at the iteration level. The EPIC identified at the Iteration planning were broken into a features that can be done at a Sprint level (SW Kanban). This was done through a Iteration Planning Kick-off. We did weekly reviews on the sprint level features. Actions were taken on the Identified Impediments.

The Project Managers review the Horizon plan to see the Iteration progress to be shared it upwards. The SW Kanban status (Features Sprints) are reviewed within the PM team and XFTs. XFTs had the flexibility of planning for any further lower level task to manage it on daily basis and again the flexibility was with the team to use the appropriate tools like team post-its, One note or even Virtual Kanban using RTC.
- Horizon/Epic plan → To up level on the feature completion.
- SW Kanban (Feature plan with in iteration) → To project management team and XFTs.
- Internal tracking → with-in XFTs to their convenience

The CFDs provided the information on the progress at the various level. The entire CFD is done considering the Virtual Kanban board on a weekly cadence. XFT lead updates the SW Kanban (as shown in Picture-7) and associated EPIC are update and we can see the below sets of Charts.

![Picture-10: EPIC Planning CFD](image1)

![Picture-11: SW Kanban CFD](image2)

Each XFTs shared the report Using the CFDs per XFT level. We can see the bottleneck in critical state transitions. Planned number of feature and actuals were measure. We also learnt on the progress based on the current performance.

We also reviewed the topics that got replanned constantly, through a score.

![Picture-12: XFT CFD](image3)

5. LISTENING TO VOCABULARY – COACH

One has to keep the Agile Manifesto as a pivot for any of the conversation esp. when one is trying to evangelize Agile. This is especially important in a distributed team environment with different time zones.

More discussion with the teams as a PM or coach, it is good to observe and refocus on Agile pivot. 1. Iteration planning meetings (where all the XFTs present and converge on dependencies, Quarterly) 2. XFT meetings (All XFT stakeholders Participate in depth, Weekly) 3. Sprint planning meetings (Sprint duration). 4. Daily Stand-up meeting (at XFT level) 5. Cross XFT (Weekly where all XFTs converge) are the different forums that were available to observe the team vocabulary. By the type of articulation, we can identify the engine status. If the XFT share during the Cross XFT for some details from other XFT or component, it can considered for discussion on the efficiency and participation of stakeholders in the daily/walking to person / calling/chatting. Another instance, if the XFT lead mentions “we are done!! now it is up to integration team to ensure it on the mainline”, it talks about ownership. From the definition of done, a feature has to be working at the system level.

There were serval instances PM as a coach was able to realign considering Agile Manifesto as pivot. The nature of the team is further identified during the critical issue/crisis stage.
6. OWNING THE PASS – RESPONSIBILITY

It is always a difficult question to answer “Who own the functionality?”. It might be straightforward classification if it is based on domain. It becomes complex when there are several stakeholders. We had a thumb rule. Every XFT that delivers a feature shall own until it is consumed in the intended way & is the qualifier for Done. In case of further ambiguity of ownership, we seek the help of product architect to resolve and convince else nominate most appropriate XFT. It is a hard acceptance however; this helps in resolving the dangling/orphaned issue, which becomes potential blocker for Done/completion. This will also build a culture of Pull as against Push. This approach further scales the team to mature to a new level of product ownership and career progress.

7. BOTTOM-UP FREEDOM, HOWEVER REITERATE ON THE DISCIPLINE

It is well known, “Something that does not get tracked does not get done”. There is no attempt to enforce X-theory point of view but more from to convey the priority and importance. This helps team to resolve for any priority issues. The XFT teams share plans as part of bottom up plan and they are reviewed against the system milestones. We enabled the mechanism to mechanism to track the commitment, re-plan for any impediments, and track #of times the feature is re-planned. This entire mechanism is articulated/used as a reflection of commitment and for any improvement needs and pre-emptive mitigation plans.

8. MANAGE THE NOISE

In the entire process of Agile adaptation one has to strategize. It is human to resist, however imposing the changes without a strategy is a sure recipe to fail. Hence, we need to strategize. Many times, there will be new entrants who have good influence technical aspects and other best practices. Though these are with good intentions, it often create a noise overall in the team. Every one interpret and respond in their own way. We had similar situation where management initiative to further strengthen verification aspects and get good coverage pre-si became a noise. The new initiator focused only the initiative and missed the strategy to intercept among the existing execution strategy. Impact: teams started extreme thinking of interpreting “Agile way is cancelled” and start new way of execution. Though this was not the case. This noise was managed by converging the Verification initiative activities to the into XFTs backlog for the feature and improving the Definition of Done.

There were similar noise to our strategy on tool usage, tractability, new forums to name a few. In most of the case the initiatives were from management and was managed, though was tough period we managed to control our destiny. It was not an attempt to be blind to the good practices; it was a conscious effort to control the initiatives intercepts in context of the original bigger story. Many times, initiators will not be aware of the path taken or the history.

Finally, it is also a risk and one has to be ready for the consequences. It is also clear demonstration of responsibility.
CONCLUSION

Every organization will have some initiative to be in the market by improving efficiency in very possible way. It was same in our project as well. However, the efficiency cannot be achieved if there are multiple integration points. It is extremely important for team to own the project and the product that is produced. Once the ownership is realized or felt, teams will find all the ways to optimize and overcome obstacles. Also, in an environment, where we have unknowns to be handled, it is best addressed when development is done incrementally where one can learn into the next iteration. It is also very easier catch issue when there are less variables in the system and manage one by one. All these can be realized when every member propels with own energy towards the project goals. And strategically starting with “Why?” help in internalizing the need and commit. It is more of Intrinsic motivating every team member. Once this is imbibed in the mind, miracle happen; where teams explore new ways of doing and overcome limitation by improving efficiencies. One has to manage the noise and control the responsibility. It is high risk and goes without saying high return in long run.

Focusing on the Agile manifesto as the pivot we created a path towards self-propelling team.

Some of the achievement that were earlier unheard of

- Executed Certification TCs on the Virtual Platform (10,000 + test suite). This is/was earlier done post Power on and stabilization phases.
- Virtual platform performance, which is inherently slow as we run the processor simulation functionality, was improved by 6 times. Which mean virtual platform worked 6 times faster. Which means, more TC execution and faster debug for any issues.
- Identified the Hybrid validation vehicle and this enabled to capture the issues in the silicon/RTL. Thus prevented re-spin. Note, this is beyond the normal RTL verification. Our test infrastructure further enabled more use cases, which is added advantage.
- Able to catch the interfaces gaps and initiated the new concept. However, this was bad, but good that it did not surface during the big bang integration during PO. Helped in overcoming some challenges of higher integration of peripheral early enough.
- For the first time we had an infrastructure to test the integrated software with deep sleep functionality, which were earlier mostly enabled post BU.
- Finally yet importantly, it created more bonds with the team, they stated to get to know each other and prepared incrementally to take bigger challenges.

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