

Agile Incident Management using Kanban Board for data Visualization

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Abstract: *The concept of agile exist in the Industry for executing the project and most widely used for development projects [fig 1.][1]. Though the traditional incident management work on ITIL framework inducing the agile flavor is now the new trend. The foremost technique to handle the execution of Agile project is the Kanban board. The paper would discuss about the usage of Kanban board in Agile Incident management which provides a visual display of the ticket status that are in queue and helps the project to decide on the distribution and prioritization of the tickets during the daily SCRUM. Further few of the case study evidence the success of using the Kanban in incident management in reducing the waiting time and quick resolution of incidents. [5]*

Keywords: *Agile, Incident Management, Kanban, ITIL*

I. Introduction

Incident Management is one of the focused area in ITSM (IT Service Management). ITIL (Information Technology Information Library) defines Incident as an “An unplanned interruption to an IT Service or a reduction in the Quality of an IT Service. For example, Failure of one disk from a mirror set.” The concept of Agile in IT industry is well adapted by the development projects. In the recent times project which are handling IT service management are trying to induce the concept. Implementing Agile to the traditional Incident Management is to ensure the faster prioritization and distribution of the incidents and reduce the waiting and aging time of the incident. Kanban is one of the methodology used to execute Agile projects.

A Kanban is a Japanese term which means “visual signals” or “card”. This was started by the workers working in Toyota production line where they used actual cards to signal the step for manufacturing. A Kanban Board either manual or an e-board could be used to effectively display the status of the work and the backlog that exist in the project at a given time. During the daily SCRUM, it helps the scrum master to have a visualize glimpse of how the ticket are placed in which status and helps to decide and plan to balance work. Unlike the traditional Agile for development which are based on sprints, here the focus is incident resolution. In additional to the ticket status display, we could keep track of which ticket is worked by whom and what is the current aging for SLA (service level Agreement) breach. As SLA is one of the most important aspect for the incident management as per the contractual commitment with the client one need to adhere to it.

II. Data Visualization using kanban board

“A picture speaks thousands of words” similarly a visual representation of the ticket status and the workload through Kanban board would help in deciding the performance of the project. As per the Agile principle the SCRUM meeting is headed by SCRUM Master. A SCRUM is a stand-up meeting where a quick discussion on completed, pending and planned activities are discussed. A Kanban Board can be used when conducting a SCRUM meeting which would show the status of the current meeting and then the allocation of the work is done accordingly. In a typical Incident management, the predictability of incident cannot be done but then there is always a room reserved for any critical incident that come to the team. It is mandatory for the SCRUM master to manage the inflow and outflow of the ticket and ensure that the incidents are responded and resolved within the defined Service Level Agreement. The Visualization of the ticket using Kanban board would be one of the best tool to help as discussed previously.

There would be an instance where the support personnels may be on leave and hence balancing the strength of human resource against the ticket existing and expected ticket as per past trend would help the manger to take decision on the minimum strength of personnel to be available or how could the mitigation plan could be made. Unlike the Agile for Development where the team size is pre-decided before the sprint, in an Agile incident management this would be a constraint where the team size may vary.

III. Kanban Integration with ticketing system for SUPPORT

As depicted in Fig 2. The one spot communication between the support team and the end user is through service desk system. It is where the incident is raised by the user. In case we have the Kanban Dashboard integrated with the service desk system, we have the visual treat of real-time ticket status. A simple Kanban board could as depicted in the Fig 3 where the board is divided into vertical columns and we have the status such as In-progress, Complete, Closed, Pending and backlog. In each of the status we have the various ticket with the symbol as P1 for priority 1 ticket, P2 for priority 2 ticket, and so till P4 ticket. This provides you the overview of how the tickets are currently positioned and where is the issues if the ticket is pending. Also a brief about the backlog could be visualized.

IV. Metric Visualization AND decision

Metrics plays an important role in any project execution against which we check the project performance. The Project Performance Monitoring (PPM) as per CMMI SVC would help you to understanding how the project is doing with the ticketing and gives an indication regarding the target achievement. Capability analysis is determined to check how capable is the project in handling the tickets. And it is usually measured against the response time and the resolution time which we could take help from the Kanban board.

% Response time: Total Incident applicable for the SLA for that month / Total incident achieved the Response SLA in that month

%Resolution time: total incident applicable for the SLA for that month/ Total incident achieved the resolution SLA in that month.

The achieving of SLA met or not will be against the target that is set for the project

In a Kanban board we could have this customized figure in the real time and come up with the decision on how good at we in Incident handling. Most of the Kanban board even provides you the customization of configuring the RAG for each ticket to keep a track and give us the early warning of SLA breach.

Thus, decision making based on the Kanban board in agile incident management could be very useful and effective in relation to the real-time ticket status

V. Case study to prove the benefits from Kanban for incident management

There are three case studies that is considered for studying the effectiveness of the KANBAN board usage[2][3][4][5]. In all case studies the KANBAN board was integrated with the existing Service Desk tool which made it more effective to provide the real-time status of Incident or the call reported. In the TABLE 1 we could see the organization tried to full fill objectives that they were seeking by KANBAN technique. And it gave them the desired result. The over all understanding that we get from these case studies are

1. KANBAN board give a real time picture and useful during the SCRUM meeting
2. It also helps in performing the process improvements
3. Improve Agility and efficiency of the team or the personnel in the project
4. The present service desk tool helps us the inbuilt Kanban board

VI. Tools Helping to have inbuilt KANBAN Features

In market there are many service desk tool that comes up with inbuilt features of Kanban or can be added as an plugin to the existing version of the service desk tool. As the industry is trending to have more agility and lean process it would be necessary at some point to have different ways to visualize the status and make quick decision which in turns leads to agility in decision making. Few tools such as PEGA, PagerDuty, Tango04, JIRA which help you to integrate Kanban. As seen in the previous section many companies have already achieve the benefits of Data Visualization,

VII. Figures and Tables

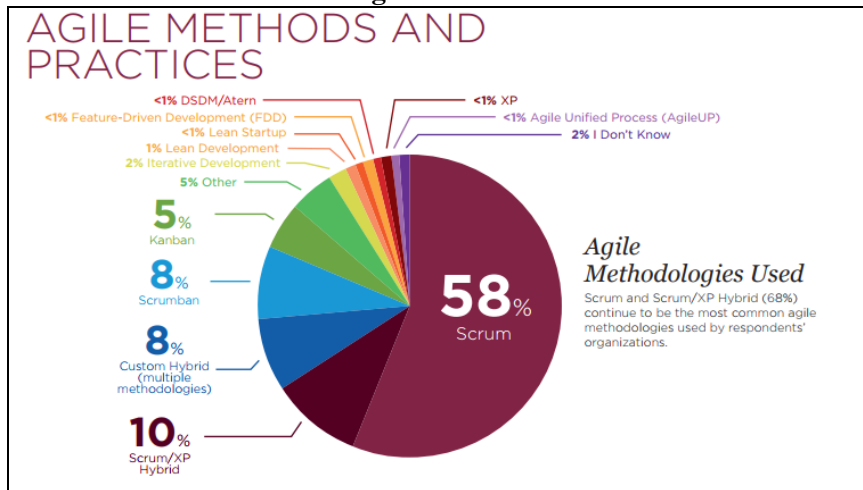


Figure 1 Agile Methods and practices across industry 2017 (Source: Version One 2017)

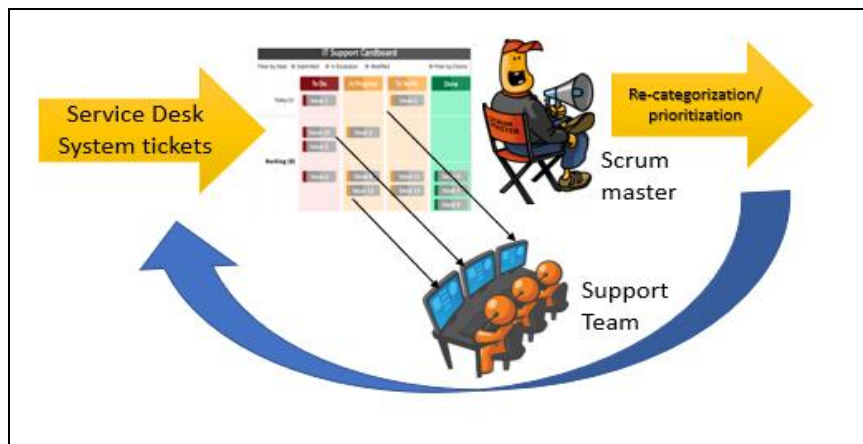


Figure 2: Incident Management Process Using Kanban For Data Visualization

Ticket Status	Queue Size	Pending	In progress	Completed	Closed
	Today(6)	P2	P3	P3	P3
Pending (7)		P4	P2	P3	P2
In progress (4)		P3	P4	P2	P2
Completed(7)	Ticket Backlog(8)	P3	P2	P4	P2
P1 (0) Active		P3		P3	P2
P2(4) Active		P3		P4	P3
P3 (5) Active		P3		P2	
P4 (2) Active		P2			

Figure 2: Kanban Board For Support Project

Table 1: Case study on Kanban for Incident Management

Company Introduction	Objective	Area of focus	Tools used	Outcome on using Kanban board
Australian based insurance company [4]	Reducing the backlog of query for L1 and L2 support	Incident Management Change Management	BMC Remedy integrated with Kanban board	Decision on distributing of work was easily using Kanban board and conducting Daily Scrum Color coding used for various stages of ticket such as In-progress, Completed, pending, in Queue The amount of card/backlog reduced from 60 to 25 in two months
Road Transport based company[5]	Speed up default response system, proactive incident management system	Reduction in Mean time to respond	PEGA Tool	Helped in refining the process Effective tracking of incident management and visual display to the team
Vehicle remarketing service[6]	Overcome the communication barrier within team and outside organization i.e with customer Reduce Mean time to Respond	Escalation process Oncall Scheduling	Pager Duty	Auto acknowledgement of incident Auto escalation Effect management of off business hours call scheduling The overall Mean Time to Respond Reduced, There was increase in agility and Efficiency

VIII. Conclusion

As KANBAN is a powerful source of Visual display it is therefore suggested by the paper to have an integration of Incident Management and IT Service Management system with KANBAN board to get a good benefit of decision making on the ticket inflow and outflow status. And during SCRUM there could be opportunities for improvising the process like to bring Automation, Robotic Process Automation etc. The number of case studies taken are limited to 3, but are from different domains. The RAG indicator helps you to alert as and when the task is nearing its due date to tell the team to expedite the work. Current Kanban board could also be customized for having trends which would help us to do a pattern analysis for the project. On a whole it visualization of data that would get us the more transparent data also the team could have the real-time updates on the current workload which helps us to decide upon the work balancing as well. The outcome that we could see from the case studies is the organization has got good outcome of improving the team efficiency and the productivity.

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Note that the journal title, volume number and issue number are set in italics.

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