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## OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Airtel ATN develops complex software in a highly-regulated industry. The software must be delivered physically and in a controlled process. This means the software development process does not lend itself naturally to iterative development.

Regulations also require a high level of transparency around testing and documentation. The existing Standard Operating Procedure (SOP) was to treat each software delivery as an independent project and move through phases of development, verification and validation testing, and deployment.

For these reasons, a LeanStart was undertaken to adopt the Kanban method at team level as the main tool to support an effective change management approach in order to achieve a more Lean value stream. By visualising work and adopting practices to increase efficiency as well as creating feedback loops for continuous improvements, the team was armed with tools and practices underpinned by Lean principles to increase their efficiency.

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## LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Under this LeanStart initiative, varied approaches were undertaken in order to successfully bring relevant outcomes.

### Visual Management

The purpose of us using visual management was to improve the effectiveness of communication and reaction. Visual aids enabled us to convey messages quicker and invite more interest than written information. This also means exposing opportunities of improvement to allow them to be addressed sooner. Effective visual management entailed us putting careful thought into all the types with a view to attaining the greatest impact. There was a big focus on improving transparency by visualising work. This also entailed us collaboratively conceiving and evolving a Kanban Board that reflected all the work the team was performing.



## COMPANY OVERVIEW

Airtel ATN is an independent supplier of data communication solutions for the aerospace industry. Airtel ATN has been active in the Aeronautical Telecommunication Network (ATN) since 1993 and is an international leader in the development of Data Link communications solutions, including ACARS and FANS. The company develops and implements Data Link equipment and test services. With more than 20 years in the aviation industry, Airtel ATN has consistently been an international leader in the development of ATN communications software.

[www.airtel-atn.com](http://www.airtel-atn.com)

# AIRTEL ATN

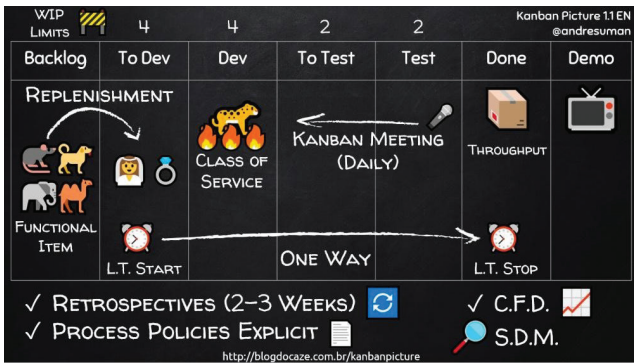


Figure 1.

## Kanban

Kanban is a method for defining, managing, and improving services that deliver knowledge work, such as professional services, creative endeavours, and the design of both physical and software products. It may be characterised as a “start from what you do now” method – a catalyst for rapid and focused change within organisations – that reduces resistance to beneficial change in line with the organisation’s goals.

The use of the Kanban Method made visible what is otherwise intangible knowledge work so as to ensure that our service works on the right amount of work – work that is requested and needed by the customer and that our service has the capability to deliver. To do this, we use a Kanban system – a delivery flow system that limits the amount of work in progress (WIP) by using visual signals (see the Kanban Board example in Figure 1).

The Kanban Maturity Model (KMM) was used as a guideline to evolve Kanban adoption. KMM provided a proven road-map of guidance on recommended practices to meet our improvement goals. This road-map helped us to eliminate two common failure modes in Kanban and Agile implementations: overreaching causing an aborted start, and, false summit plateaus that fail to realise the full benefits.

Visualising work and evolving Kanban highlighted opportunities to improve like reducing and limiting our WIP to avoid constant task switching. Additionally, they served as the main input to the new feedback loop meetings for continuously improving our way of working.

## Feedback Loop Meetings – Kaizen

Kaizen is core to Lean and is an approach to creating continuous improvement based on the idea that small and ongoing positive changes can reap major improvements. Typically, it is based on cooperation and commitment, and stands in contrast to approaches that use radical changes or top-down edicts to achieve transformation. It was developed in the manufacturing sector to lower defects, eliminate waste, boost productivity, encourage worker purpose and accountability, and promote innovation.



Figure 3.

## Kanban Maturity Model



Figure 2.

## Cost of Delay for Prioritisation

Cost of Delay is a way of communicating the impact of time on the outcomes we hope to achieve. More formally, it is the partial derivative of the total expected value with respect to time. The model supports some principles of product development flow, including:

- Taking an economic view.
- Ignoring sunk costs.
- Making financial choices continuously.
- Using decision rules to decentralise decision-making and control.

Cost of Delay combines urgency and value – two things that research shows humans are not very good at distinguishing between. We took this approach to help us make better and more informed decisions, that is, decisions based on us understanding not just how valuable something is, but also how urgent it is.

## LEAN INITIATIVE IMPROVEMENTS & IMPACT

As mentioned earlier, we used the KMM as a guideline to evolve Kanban adoption. Our Router Team consolidated at the organisational maturity level 1 [Kanban Maturity Level] transitioning to level 2 presenting the following outcomes:

- Clearer priorities and more focus on customer value [outcomes] over outputs.
- Improved transparency.
- More collaboration with positive impact on team's morale.
- An emergent Leaner process supported by a frequent inspection and adaptation.

Additionally, by reducing the limit of parallel tasks that each team member could work on to max 2, there was an average improvement from 40%+ loss time on context switching to roughly 20%.

The Router Team consisted of 8 team members, which thus represents an average of 20%+ gained time to spend on value-adding activities, and less WIP led to higher quality and shortened lead times. As a team member noted:

***“Kanban boards are a great mechanism to help visualise prioritised work. Enable teams to engage together – radiate information.”***

At program level, Cost of Delay and WSJF [Cost of Delay divided by Effort] were introduced to help us to understand and quantify the impact of time (urgency) and outcomes (value). Comparing the WSJF amongst current and new demands helped our leadership to make more accurate decisions regarding the prioritisation of new demands.

Furthermore, a program board was conceived in order to visualise the current state of demands as well as what is coming up in the pipeline. The benefit to this is transparency to all staff and increased communication between the leadership team and our software engineers. The team now understand why work is prioritised a certain way and what the long-term strategy is behind the decisions taken. They also have a better understanding of what work is coming next.

***“Small changes such as using a visual board and having a board containing sales pipeline information have had a very significant impact on how we work. There is a lot more transparency in the company and we have reduced the number of tasks each person can work on at any one time. Everyone has a clearer picture of what we are doing and why we are doing it, and also what is coming next. This has improved focus and overall efficiency in our development teams.”***



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