Visualisation Boards.

31st Oct

Today I worked with Gary on creating a visualisation board for my team. By visualising our process and making the process steps more explicit it becomes easier for us to see how we are doing and where the problems are.

What is a visualisation board?
A visualisation board is a tool to help you improve your process. It is literally a board where you visualise both the process and its steps and the current status of work within that process.

Origins of a visualisation board
The origins for a visualisation board is at Toyota. Toyota identified that storing, trucking, shipping and a number of other process steps in their manufacturing process are non value adding. By mapping out the steps that create value as well as the steps in-between that do not add value you create a 'value stream'.

Taiichi Ohno's Toyota Production System focuses on the delivery of value and the creation of knowledge. In Lean Thinking (book by Womack and Jones) the process is explained by going through the description of the value stream of a can of cola. The value of a can of cola is realised when the customer consumes it.

The value stream of a can of cola starts with the extraction of Bauxite from a mine in Australia. The resources and half-products are stored, trucked and shipped all over the world. In Iceland the ore is used to produce ingots of aluminium. In Finland the ingots are used to produce rolls of aluminium. In Spain these aluminium rolls are stamped into circles that are formed into cans. The cans are filled with Cola, send to the warehouse and from there to supermarkets where we buy them and finally drink the cola. The whole process takes 365 days however there are only 24 hours of value adding activity.

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By mapping the process out it becomes easier to get an overview of what is happening. We wanted to create something similar for our project. What are all the steps we take to realise our goal and how do they all relate?

How to create a visualisation board?
With our project the steps are less explicit and less visual. So we need to draw them out. The important visualisation of our board is both the states of our work where we add value as well as the waiting states or queues before and after them.

The ideal visualisation board has only three states. “Waiting” (work is waiting to be done), “Work in Progress” (where we do the actual work) and “Done” (when the work is done, duh.). However in the real world, systems are often more complicated. The whole process consists of multiple specialisms resulting in multi-step processes. We model each of these specialisms as a column in our visualisation board. In order to create a little buffer between these steps the visualisation board is extended by having a “Waiting” and “Done” for each process step. As the “Done” from one process is the “Waiting” of the next process, these queues are often named after the process they feed, e.g. “Waiting for development”.

Column modelling
Steps to create a visualisation board turned out to be reasonably simple. We modelled each step in our process as a column and added buffers between all these steps. We took extra care to ensure that all process steps done by different individuals or groups are included, even though they may only take a few seconds.
An example of a step that could be done quickly but we have still modelled is the “Standards Approval” where our system administrators check if everything is done according to the standards. Getting the approval may sometimes take a long time as the admin guys are generally very busy. This causes us significant delays. By having this on the board it’s clearly visible when this is delaying us.

Hopefully when this happens to often we can have a conversation on how to remove this step and keep everybody happy and satisfied. When we have some time we will look into how to remove this. First we need to create trust in each other and increase the visibility of the approval problem.

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Hidden queues
Process steps and waiting for them is one type of queue. There are two other types we out for: waiting and multi-tasking.

When we can't continue to work on something because we have to wait on something or someone, the items we can't work on at that time are considered blocked.
To visualise these we agreed to write what's causing the delay on a brightly coloured sticky note. If the board is full of those brightly coloured stickies we know we have a problem.

Multitasking is when someone works on more than one item at a time. When you are working on more than one work item, you have created a hidden queue formed by the items you are currently not actively working on. The solution is simple. For starters we decided on a one item per person policy. We'll see how this works out and can change it later.

Bottleneck / capacity management
Eli Goldratt created a theory based on identifying the constraints to optimise throughput in a system. In other words how much a factory (or any other process) produces is determined by its slowest step. Assume producing a car takes ten steps. At each of these steps the team working there is able to handle producing 20 cars per hour, except for one step where they can only handle producing 12 cars per hour. Because all of the steps have to be done to produce the car, the total productivity can never be higher than 12 cars per hour.

The step that is creating the fewest cars in this example is called the constraint. It constraints or limits the total productivity. Adding additional capacity to anywhere in the system other than at the constraint will have no beneficial impact. It is only possible to improve the capacity of the whole by adding capacity at the constraint.

Board patterns
Gary used this Theory of Constraints by Eli Goldratt to explain some common patterns to look for when using a visualisation board. When you have a constraint in your system (board) work will queue up in front of a constraint. Also the steps after the constraint will have less work ready to work on as they are waiting for work to come through the constraint.

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