Product Development

Transformation from Current System to One Based on Learning First Product Development

Colin Gilchrist

Background: The Fisher & Paykel Appliances Transformation
The first question that must be asked by any company is why they should even contemplate the change from a standard ‘phase gate’ system used by many companies around the world to one based on Learning First. Indeed what is the meaning of ‘Learning First’ as applied to product development.

A study commissioned by the National Center of manufacturing Science in the USA showed that the Toyota Motor Company were vastly superior to their competitors in the US with respect to product development productivity and time to market. In fact they could introduce a new vehicle in the half the time of the US manufacturers with half the number of engineers.

The study showed that Toyota were methodical and assiduous in the acquisition of knowledge before committing to any design decision. They constructed causal diagrams, limit curves, and trade off curves detailing the effect the design decision had on other factors and the range of feasible design decisions. This knowledge was captured and made available for re-use over their whole vehicle range.

When compared to our own company using the phase gate system we were plagued with design loopbacks caused by making decisions and setting specification without understanding the full implications on other design, manufacturing and customer interests.

In short we needed to reduce ‘time to market’ on new products as well as reducing warranty and manufacturing quality issues. Our reading and led us to choosing the Toyota approach as the recommended methodology. The project management team charged with improving our product development system also identified LFPD as having an affinity with our overall philosophy of product innovation.

Our overall goal was to provide a platform that provided an approach to product development that ensured that we delivered new products to market that enhanced our revenue stream through innovation, reliability and market leadership.

Preparation for Change:
A change as major as the one contemplated was not too underestimated. It was not only a change to the product development system but a culture change for the total organisation.

Experience in delivering such change was required and we contracted Michael Kennedy author of ‘Product Development for The Lean Enterprise’ and founder and CEO of Targeted Convergence Corporation to guide us through the process by delivering a series of workshops on the principles of LFPD and coaching us on how to implement them.

John Bongard the CEO, at that time, gave his full support to the approach and delivered this message to the executive team and the full product development team.
I was appointed LFPD champion and managed the project in collaboration with the VP of Engineering and other members of the management team. We decided on a participative approach and consulted with all of the product development team members and invited full involvement at all stages of the transformation.

**Issues Encountered during Transition:**
As with any change of this magnitude there were some fears and doubts expressed. Typical of the questions and comments were:

- Is this a re-arrangement of the deck chairs?
- How long will it take?
- Will this just be flavour of the month?
- How will it affect my job?
- What will the structure look like?
- Do we have executive support?
- What's wrong with the current system?
- Why Toyota?
- Why is it taking so long?

Other issues ranged from trivial to genuine concerns.

The major issue was that with the same management team making decisions there would be no significant improvements. The consensus reached with the total team was that all positions would be advertised internally and all applicants interviewed. This was a major change and took some time. It was a mixed success. We unearthed some hidden talent and we appointed people to positions based on the Toyota structure according to their skill and experience. We did however have some casualties and some experienced people left because of their expectation that they would retain positions based solely on their seniority with the company. The most unfortunate part of this was the loss of knowledge as a result of the loss of good engineering experience.

I have mixed feelings on the suitability of this move and would advise any company contemplating a change of this import to consider carefully the full implications. It demonstrated the commitment of FPA to change but at a price.

Another concern that we would revert back to type when the pressure came on and retreat to our comfort zone. This was a comfort zone of quick ill-informed decisions. Decisions made because of time pressure. Decisions that were expedient at the time but could cause subsequent major rework. By emphasising and encouraging the use of LAMDA problem solving and A3's and not jumping to point based solutions it became self evident to the team that the initial time pressures were well worth it when compared to time consuming and expensive fire-fighting caused by unplanned loopbacks.

There was also concern that we would enter the region of 'paralysis by analyses because of the upfront philosophy of 'test and design' rather than 'design and test'. Again the fears were allayed as the benefits of limit and trade off curves were realised. The time spent initially in preparing the curves meant that on subsequent projects the benefits were realised because knowledge had been captured and was available for re-use. Also the use of LAMDA as a problem solving tool eliminated problems that had plagued us for a long time.
Just recently this was proved again by one of the organisations adopting LFPD. A reliability problem with one of the major components of their product had been causing reliability issues and major warranty costs. Acrimonious problem solving meetings over a period of months had failed to resolve the issue. The meetings were long and agreements were reluctant outcomes. It was decided after a problem solving workshop to apply LAMDA and produce an A3. It took one week to put it all together. The A3 was circulated prior to the meeting. At the meeting the decision time took 30secs, the solution implemented and the problem resolved.

**Observed Differences in the Organization:**

After the first presentation to our people there was an overwhelming desire to embrace a system that allowed them to capture and share knowledge thus promoting a product design system that prevented the recurrence of errors and delivered products of pride. The biggest problem was coping with the impatience for change.

The following factors are the most evident elements of change.

1. **LAMDA**: Tool of choice for problem solving, demonstrating that time spent understanding the current situation and defining the real problem leads to robust solutions that benefit the whole organisation.
2. **Collaborative Problem-solving using A3’s and LAMDA**: This encourages the involvement of others in the discussion phase, promoting the consideration of alternatives and sharing of knowledge.
3. **Fact-based decisions vs. opinions or wishful thinking**: Again a by product of LAMDA and A3’s promoting the necessity of providing factual based solutions rather than “expedient” based point solutions that do not stack up in the longer term.
4. **Use of limit or trade-off curves for evaluation of alternative solutions and knowledge sharing**: Fantastic response. The acceptance has been widespread and influences all decision making.
5. **Improved understanding of customer interests**: Similar response to ‘limit & trade off curves’. People are now asking the questions consider the customer interest rather than just the technical issue. A good example here was the understanding that the spin speed of a washing machine was not simply how fast but how the clothes felt at the end of the cycle.
6. **Changes in the working relationship between product development and other organizations**: the communication between functions has improved dramatically particularly between product development and marketing.
7. **Changes in morale of the product development organization**: One comment from a team member summed it up - IT FEELS GOOD!!!!

**Summary**

Learning First Product Development principles can be applied irrespective of company size or classification. Indeed the principles can be used by any type of organisation in any field to ensure that the decisions that they make to design a product or service are made with the knowledge of their customer, their range of expertise and the skill and abilities of their people.
The roles in smaller organisations may be incorporated together but again the principles still apply, in larger organisation the ability to make knowledge visible and to learn collaboratively is probably the most important benefit because in doing so knowledge becomes a tangible asset that can be managed to the overall benefit of the company.