

Lean Design: What is it all about?

Lean Thinking is a conceptual model developed by Toyota Motors, focused on the elimination of waste, continuous productivity improvements, and targeted attention on customer value. Its five core principles are:

- Value definition
- Value stream identification
- Process flow
- Flow pulled by demand
- Pursuit of perfection

As the reduction of time-to-market and product development costs are becoming key issues for any organisation, since the late 1990s lean techniques have been implemented not only in manufacturing but also in design. However, as many companies have yet to find their way to apply Lean to their product development process, there is still a great deal of potential that is left unexploited. Since 2003 Bonfiglioli Consulting has coached about 20 Lean Design projects in as many European companies. The company has defined criteria and implementation logic for each lean principle.

Value definition

To define what is 'value', managers should turn their 'value chain' upside down. The traditional value chain starts from the company's core competencies and strengths. The approach to lean design starts from customers' needs and priorities: these are the drivers that set project objectives. To deliver results it is crucial to integrate customer needs and technical R&D contents.

Value stream identification

In lean manufacturing, technological groups have to be identified. Similarly, in lean design product development groups have to be selected. A specific value stream must be defined for each group, together with a set of targets or 'key events'. Whereas in the traditional R&D approach the overall process is split into strict, sequential phases, the lean approach deals with homogeneous 'information streams' marked by logical intermediate targets. This allows for a pragmatic project management, based on planning and rescheduling of team members activities.

Process flow

This is the third step - implementing and enforcing a continuous value stream. In lean design, product development teams are the key to a 'concurrent development', obtained by a real involvement of downstream people from the earliest decision-making stages. According to the particular needs of each project, specific sub-teams should be set - e.g. for technical, economical, productive and logistic issues. In order to maximise teams' cross-functional synergies it is highly recommended to apply problem solving and PDCA (Plan-Do-Check-Act) techniques.

Pulling the value stream

A system rigidly based on early planning of all activities is defined as a 'push system' and it is based on continuous control. The lean planning and control process is of the 'pull' type instead, being 'people driven' rather than 'activity based'. The team leader defines a set of target times and

responsible people who independently manage their own schedule in order to meet the deadlines. Extensive use of visible planning techniques allows full integration between technical issues and activity planning and simplifies planning/control information systems.

The pursuit of perfection

Lean processes lead to revision of the existing organisational model, since many activities shift from ordinary functions to team members. To engineer the change, lean specific methods are adopted, often involving 'cross-functional events' with a large participation of personnel from every area of the company. These events greatly improve communication and encourage 'buy-in' by the teams.

Conclusions

As far as lean design objectives are concerned, two main criteria may be used to evaluate the results:

Results on projects:

Success in development of high value-added products for customers
Time and cost reduction of new product development

Results for People and organisation growth:

Knowledge diffusion (professional growth)
Innovation management extended to all levels of the organisation
Organisational growth self-support

Using the above principles, Bonfiglioli Consulting have achieved outstanding results in terms of the reduction of Time to Market and R&D costs (between 30-50 per cent), and products costs (by 20-30 per cent). ●MTEU