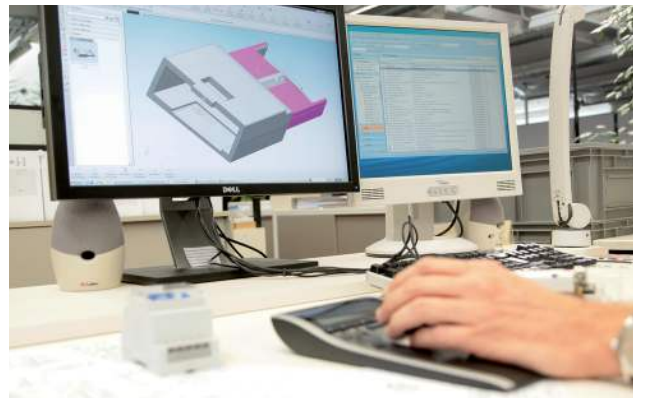


LEAN DEVELOPMENT

Lean development of market and production-oriented products



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Your Partner on the way to Top Performance

Focussing on the essential.

LEADERS IN INNOVATION AND PERFORMANCE DEVELOP LEANER COMPANIES AND GET THEIR PRODUCTS TO THE MARKET QUICKER.

LEAN DEVELOPMENT reduces lead times in the product creation process through the elimination of waste. A Lean Development System uses lean principles, based on organisational and operational methods with the aim of takt-timing development projects efficiently and securing their results. Mentor-mentee dialogue instead of hierarchy and micromanagement Frontloading instead.

These days, complex products are the result of complex development processes. Competition and market conditions condense the life cycles of products as well as the 'time-to-money'. These challenges cannot be mastered by troubleshooting - the demands made on modern development organizations have undergone a fundamental change. At the same time, innovation and product development represent the most effective levers for securing lasting corporate success. Minimizing waste coupled with flexibility and breathability of the development organization are the starting points whole productivity potentials can be unlocked to good effect.

The logic of a lean production system can lead to the coherent development of a product creation process based on minimized lead times.

1. **Absence of faults** = robust processes thanks to the widespread use of standards, FMEA together with immediate clarification in case of fault and problems during the early stages of a project
2. **Flow** = continuous communication of development results from initial customer specifications to the start of series production
3. **Rhythm** = takt-timing of projects and work packages by project clarification prior to project start, stringent project control and short-cycle regular communication
4. **Pull** = pull principle at the interfaces - information and decisionmaking is called in by the next downstream processors as required



Transparency and focus instead of authorization to read and a flood of information



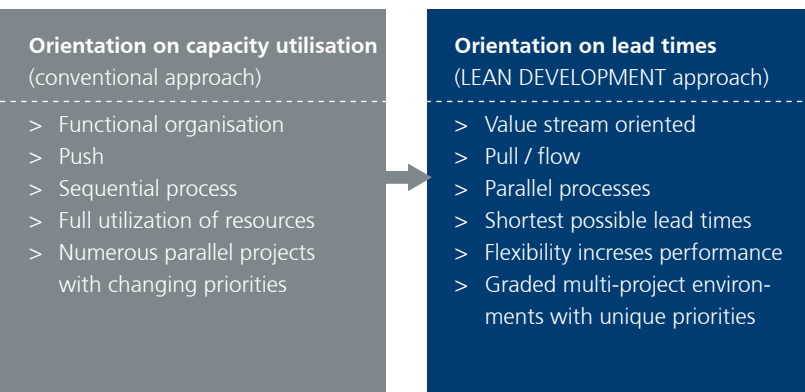
Mentor-mentee dialogue instead of hierarchy and micromanagement



Frontloading instead of resource overloading



Value-stream orientation instead of functional thinking



The main focus in lean development is on minimizing lead time together with increasing efficiency and effectiveness through waste reduction.

The Lean Innovation and Development system is guided by the Lean criteria and consists of eight spheres of activity:

1_ Development strategy: Develop functional strategy through strategic preview and derivation of road maps. Implement the strategy in the development system.

2_ Innovation and development process: Create robust processes for innovation, development and start-up. Use a trend radar to focus on the future. Focus attention on profitability and feasibility at an early stage. Separate advance development from actual product development. Install a technology supermarket with sophisticated prototypes and operate targeted IP management. Concentrate on the value creation along the value stream. Use front-loading and timed development.

3_ Development organisation: Install a value-stream oriented development organisation with structured fields of expertise, a strong project organisation with chief engineers and segmentation. Build an innovation network. Embed the process of continuous improvement in all parts of the organisation. Create a working environment that fosters creativity, order and transparency.

4_ Management instruments: With multi-project Obeya, visual team management and virtual shop floor management, create the foundations for a comprehensive visual management at the heart of the action. Integrate visual transparency into a lean regular communication scheme. Install a development control system that tracks costs, schedules, performance and quality. Ensure an integrated,

standards-based knowledge management. Develop the strategic objectives in your organisation unit.

5_ Technology and product development: Check your product complexity through effective variant management. Perform value analyses to identify the intrinsic value of your processes and products, and operate active value engineering. Optimise your designs for affordable and flawless production. Modularise your products and develop standards with high reuse rates.

6_ Multi-project management: Develop your individual project management to achieve excellence. Install a transparent multi-project environment that enables fact-based management. Use agile methods to respond quickly and flexibly to changes and uncertainties.

7_ Shop floor management: Increase transparency, speed and adherence to schedules through shop floor management within individual project management and in line organisation.

8_ Qualification in development: Qualify your improvement organisation for the implementation of lean development systems with variant management, value analyses, Lean training and poka-yoke.

Advantages and benefits thanks to LEAN DEVELOPMENT

Sustainable reduction in lead times as the result of simultaneous and interdisciplinary work

Increased project throughput for the same team

Faster reaction times, fault reduction and increased adherence to schedules

Greater efficiency in communication resulting from a drastic reduction in unsystematic communication

Optimized use of resources and bottleneck competences

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Knowledge makes you smart, implementation lean.



Lean development,
faster market launch
Competitive advantages
through Lean Development

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„Intensive working hours, regular shop floor meetings and systematic front-loading have increased our reliability and significantly reduced the lead times of the projects.“

Stefan Jörgens
Director R&D
Albrecht JUNG GmbH & Co. KG

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