



# LEAN INNOVATION - R&D

## BACKGROUND

Generating innovative ideas and developing them into competitive products is vital to being genuinely successful in an ever more competitive marketplace. However, innovation and product development functions have complex environments and fundamentally unique challenges different to other processes within an organisation.

Innovation and product development functions are dynamic systems with very highly interrelated and interdependent elements that produce very few finished products. Once innovation projects reach a level of maturity and are approved, they are fed into a product development process.

Innovation and product development both have great potential for productivity increases and cost reduction. The early stages of product development can incur as much as 75%-80% of the overall development costs. Making the right decisions before those costs are committed can mean meeting or exceeding your customer's needs as well as generate tremendous savings.

## CHALLENGES

A disproportionate amount of wasted time and effort in product development is directly linked to innovation processes not working properly. More often than not, the major factor contributing to waste in innovation and product development functions is the lack of a systematic assessment of potential ideas as well as a standardised product creation process.

Balancing a company's innovation related activities that are "necessary waste" with those that create value presents an ongoing struggle for companies of all sizes. The benefits of applying Lean Principles to innovation and product Development functions and activities can dramatically affect a company's product portfolio and its bottom line.

### APPLYING LEAN TO QUESTIONS LIKE THESE CAN ENSURE A COMPETITIVE EDGE:

- How do you structure your innovation and product development processes to remain vibrant, continuously encouraging innovators despite setbacks, and ensure you are developing the right products?
- How do you stop ill-conceived projects from wasting resources by entering a more cost intensive product development phase without killing good ideas?
- How do you match customer needs and corporate strategy and determine the selection criteria for innovation management?
- How do you use Lean Principles to create more innovative and better products in the same way it's done in manufacturing?
- How do you reduce the time-to-market for new products and improve the chances of successfully meeting your customers' demands?

## FOCUS AREAS

Waste in innovation and product development processes can be identified, classified and minimised in the same way as waste in manufacturing as well as creating tremendous savings potential. Lean principles, Kaizen methods, and re-engineering approaches can be applied in a creative environment for improving product portfolio quality and reducing the total lead-time to develop new products and, in general, for achieving excellence in product development areas.

### AREAS OF WASTE OFTEN IDENTIFIED IN AN INNOVATION AND PRODUCT DEVELOPMENT ENVIRONMENT:

#### TRANSPORTATION & HANDLING

Movement of prototypes and samples, multiple hand-offs of engineering data, approvals.

#### INVENTORY

Purchasing or making things before they are needed (e.g. workshop materials, milling work with substandard data). Batch ordering of parts (e.g. parts prototypes that are never built).

#### MOVEMENT

Unnecessary additional work, unnecessary loops, re-work, changes. Walking or driving between offices locations for regular meetings. Development teams in different locations rather than working together.

#### WAITING

People, systems and tools wait or delays in non-transparent processes. Waiting for approvals to continue development, proceed to the next level of innovation, or to stop and abandon the project. Waiting for data or waiting for clarification or correction of work received from upstream processes.

#### OVER-PRODUCTION

Unnecessary features or information, the quality of the function or information is bad. Working on innovation projects that are not part of the next product cycle. Data processing that is done on a routine schedule - regardless of current demand. Too much information gathered, stored, and maintained.

#### OVER-PROCESSING

Important information is stalled in the system, a mixture of necessary and unnecessary information blocks the critical path. Building prototypes or designing preliminary studies to a higher detail than necessary to make decisions. Over engineering solutions rather than using modular or industry solutions.

#### DEFECTS

Information is not efficiently received or processed (e.g. missing or wrong standards) or information is wrong or does not have the maturity it should have. Building prototypes or beginning a test without the necessary data accuracy. Engineering change orders, design flaws, employee turnover and miscommunication.

#### UNSYNCHRONISED PROCESSES

Frequent changes to decisions already made, projects are over time and over budget, unpredictable project execution.

## LEAN SOLUTIONS

Managing innovations with Lean Principles enables the efficient selection and assessment of ideas. A clear and standardised process to evaluate ideas reduces the “gut feeling” decisions and leads to a higher success rate. Projects run and reported the same way will have the same structure and can be more easily assessed for the ultimate test - is this something our customers want?

Innovation and product development processes built on a foundation of Lean Principles enables companies to innovate sustainability, while providing a flexible and stable environment for products to be developed. We implement Lean Solutions in innovation and product development functions in a similar way to other functions. The solutions must fit the challenges without stifling creativity or the potential for good ideas to succeed in the market.

### PULL

- Enable FIFO at the batch level
- Reduce inventory levels throughout processes
- Avoid over-production
- Increase visibility of bottlenecks in the process

### ONE PIECE FLOW

- Enable FIFO to a single product / service level
- Create transparency of the real process lead time
- Reduce lead time
- Reduce inventory levels throughout process
- Increase quality
- Reorganise the processes in the right sequence

### TAKT

- Process transparency
- Balanced distribution of the workload across resources
- Process flexibility
- Ability to plan resource capacity and / or improve forecasting
- Optimal efficiency in resource utilisation

### ZERO DEFECTS

- Enables problem root cause analysis and solving
- Prevents problems snowballing through the process
- Increases quality
- Enables an open culture of problem solving vs. finger pointing



# TANGIBLE IMPROVEMENTS

## LEAD TIME

- Implementing reporting standards reduced reporting cycles which allowed for faster decision making and project maturation resulting in a decrease of overall development lead time by six months - 70%
- Higher data quality resulted in shorter tooling lead time and a reduction of production facility preparation time by two months - 30%

## QUALITY

- Implementing standards for internal data modelling reduced milling errors and re-work by 25%
- Optimising and standardising B2B data exchange process decreased supplier caused defects 98% over the entire process

## COSTS

- By reducing the overall product development lead time, ongoing development costs could be reduced by 30% ~ EUR 60 million per product cycle
- Lean planning processes reduced prototype testing costs in R&D by EUR 300 million in the first year
- A result of an improved R&D planning process, forecast accuracy increased resulting in ~ EUR 200 million working capital reduction per year



Should you be interested to know more about our Lean services regarding this topic, then please contact us:

**Tel**

+971 4 368 2124

**Email**

[info@fourprinciples.com](mailto:info@fourprinciples.com)

**Dubai, UAE Office Address**

Dubai Media City

Building 8

Office 212

P.O. Box 502621

Dubai, UAE