

Value Streaming Through Customer Participation in Product Realization

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ABSTRACT

Success in lean product realization depends on the ability to specify value from the voice of the customer at the beginning of the process. Value streaming, is therefore essential for assuring that the specified value is being pursued and achieved throughout the process. During lean implementation, however, it is usually assumed that nothing but value will be streamed if wastes are eliminated using value stream mapping. While waste elimination is necessary to make the process leaner and facilitate value streaming it is not sufficient for assuring that specified value is being streamed without structured and formalized participation of customers.

With current structure of product realization processes, the voice of the customer is provided during the planning phase at the beginning of the process and customer satisfaction feedback is provided after product launch. With limited customer Participation during the process it is harder to assure that the voice of the customer specified value is being streamed. Shifting the process paradigm from planning, design, and manufacturing to the natural phases of inception, conception, and maturation would allow more structured and formalized participation of customers. Providing these necessary customers' participations when needed would assure that specified value is pursued, streamed and ultimately achieved.

In this paper an approach for assuring that the voice of the customer specified value is being streamed during traditional and lean product realization processes is discussed. For traditional product realization processes, value streaming and customer satisfaction could be greatly improved by structuring and formalizing customers' evaluations of concept vehicles. For the lean product realization processes, value inputs start at the inception phase and value streaming continues through the product conception and development/validation. Participation of the customers is structured during formalized milestones to assure achievement of customers' specified value.

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INTRODUCTION

One of the foundational principles in lean product development is specifying value based on the voice of the customer. However, success of any lean implementation depends on the ability to stream the specified value throughout the product development process. For identifying and specifying value from the voice of the customer methodologies such as Kano Model have been developed [1,2,3]. Similarly, value streaming is usually accomplished through value stream mapping [4,5,6]. During implementation of value stream mapping it is commonly assumed that "nothing but value" will be streamed if wastes are identified and eliminated. Therefore, the main focus during any lean product development process is making sure that all wastes are identified and eliminated. While identifying and

eliminating wastes may cause the process to be leaner there is no guarantee that customer specified value is being truly streamed without customer participation.

To assure that value is truly being streamed, a more direct approach is proposed. In this approach customer participation, which is mainly provided during the planning phase at the beginning of the product development process, would be also provided during other process phases. To demonstrate the proposed approach, participation of customers throughout traditional and lean product realization processes will be discussed.

Lean Principles

During any lean implementation, following the five lean principles shown in [Figure 1](#) is essential [7].

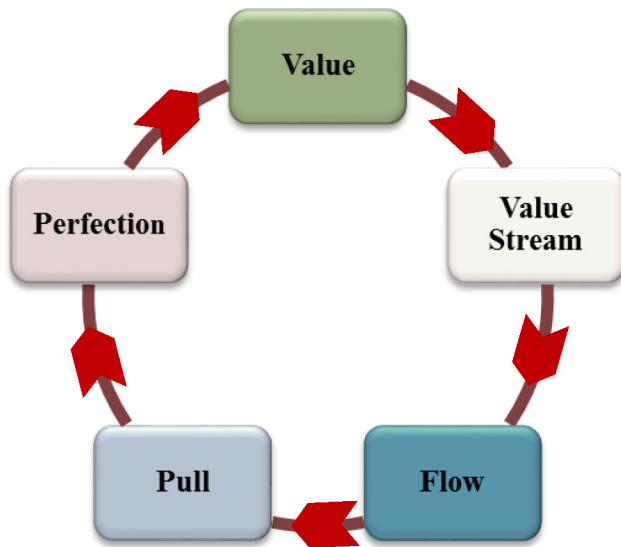


Figure 1. Lean Principles

These five lean principles can be summarized as:

- **VALUE** - As defined and specified by the voice of the customer, value is central principle in lean thinking. Therefore, understand customer's perspective is essential to identify value and distinguish what are the necessary activities and resources needed to achieve it.
- **VALUE STREAM** - To assure that nothing flows through the process except value, value streaming during all process phases and activities is needed for creating the customer's desired value.
- **FLOW** - Process flow is key enabler for value streaming, waste elimination, and achieving customer's defined value within targeted time to market.
- **PULL** - For driving process flow with minimum waste added to demanded customer's value, through pull nothing is permitted unless needed by downstream process phases or activities.
- **PERFECTION** - Continuous improvement driven by the relentless strive to deliver identified value and satisfy the customer.

Elimination of all forms of wastes from the process is essential for lean implementation success. For lean production, Taiichi Ohno the mastermind behind Toyota Production System identified the following seven wastes [8]:

- Overproduction
- Inventory
- Extra Processing Steps
- Motion
- Defects
- Waiting
- Transportation

Similarly, lean product development requires identification and elimination of all process wastes. For new product development any undesirable product feature, process activity, and resources that does not add value should be considered waste. Accordingly, for new product development process the following seven wastes can be identified:

- Undesirable product features
- Rework
- Extra Process Steps
- Unnecessary activities
- Process errors
- Process delays
- Miscommunications

Monitoring and eliminating these wastes throughout the realization process are necessary but not sufficient for value streaming. Since value is defined by customers, allowing customers' participation at some appropriate intervals during the process is also needed to assure that the specified value is being streamed.

PRODUCT REALIZATION PROCESS

In the late 80's a task force from Ford, GM, and Chrysler developed the Advanced Product Quality Planning (APQP) system. The APQP was developed to addresses some of the following automotive industry challenges:

- Increase customer satisfaction
- Improve product quality
- Reduce New Product Development time
- Streamline Supply chain
- Foster more product innovations
- Develop a continuous improvement culture

Phases, timing, and milestones of the generic New Product Development (NPD) process are shown in Figure 2 [9].

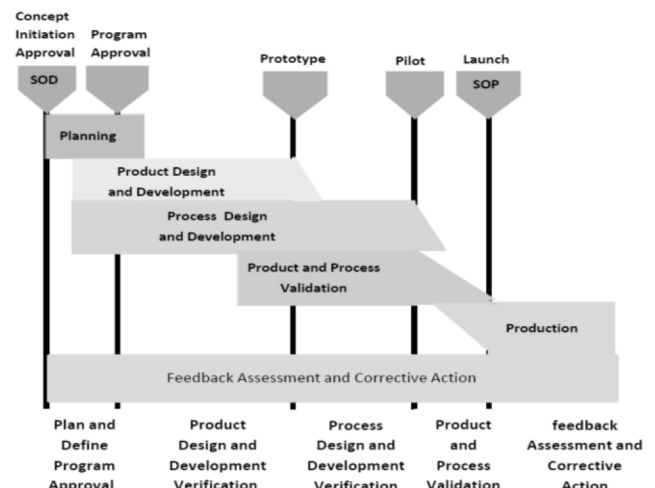


Figure 2. APQP New Product Development Process Documents
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