



DESIGN FOR LSS

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INTRODUCING DFSS

- In the current global marketplace, competition for products and services has never been higher.
- Consumers have multiple choices for many very similar products.
- Therefore, many manufacturing companies are continually striving to introduce completely new products or break into new markets. Sometimes the products meet the consumer's needs and expectations and sometimes they don't.
- The company will usually redesign the product, sometimes developing and testing multiple iterations prior to re-introducing the product to market.
- Multiple redesigns of a product are expensive and wasteful. It would be much more beneficial if the product met the actual needs and expectations of the customer, with a higher level of product quality the first time.

DFSS

- Design for Six Sigma (DFSS) is a philosophy for designing new products, services and processes often with high customer involvement from the outset, though that won't always be so – consider inventions by people.
- DFSS is the acronym for Design For Six Sigma. Unlike the DMAIC methodology, the phases or steps of DFSS are not universally recognized or defined and almost every company or training organization will define DFSS differently.

NEED FOR DFSS

WHEN TO IMPLEMENT DESIGN FOR SIX SIGMA

HOW TO IMPLEMENT DESIGN FOR SIX SIGMA

HOW TO IMPLEMENT DESIGN FOR SIX SIGMA

The DFSS project should involve a cross functional team from the entire organization. It is a team effort that should be focused on the customer requirements and Critical to Quality parameters (CTQs).

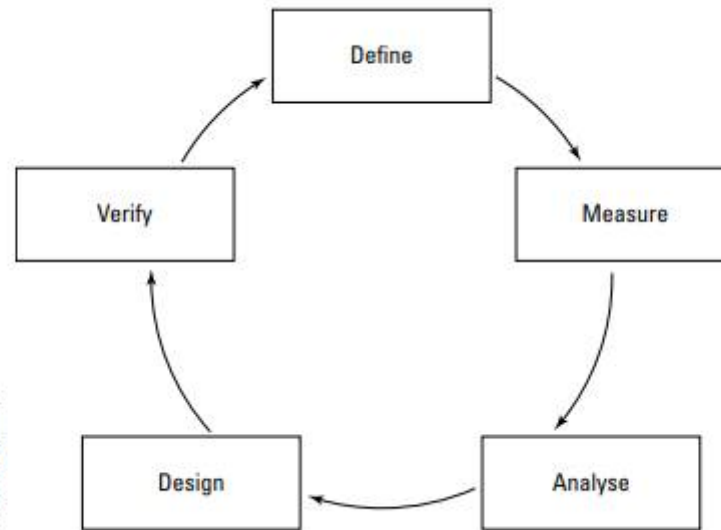


Figure 12-1:
The DMADV
phases.

Define : The Define stage should include the Project Charter, Communication Plan and Risk Assessment / Management Plan.

The Project Charter

The team should develop a Project Charter, which should include :

- Purpose or reason for project
- Voice of business
- Project scope
- Problem statement
- Project timeline
- Project Budget
- Others

The Communication Plan

To develop the Communication Plan, answer the following questions :

- Who is the primary contact on the team that is responsible for communicating ?
- What are the main goals for the communication process ?
- Who are you communicating to ? (Identify target audience)
- When and how often will the communication occur ?
- What methods will be used for communication ?

The Risk Assessment or Risk Management Plan :

- Risks associated with the project
- Impact of risks against the success of the project
- Outline / plan for managing any project risk

MEASURE

During the Measurement Phase, the project focus is on understanding customer needs and wants and then translating them into measurable design requirements.

The customer information may be obtained through various methods including :

- Customer surveys
- Dealer or site visits
- Warranty or customer service information
- Historical data
- Consumer Focus Groups

ANALYZE

- ❑ The customer information should be captured and translated into measurable design performance or functional requirements. The Parameter (P) Diagram is often used to capture and translate this information.
- ❑ Those requirements should then be converted into System, Sub-system and Component level design requirements.
- ❑ The Quality Function Deployment (QFD) and Characteristic Matrix are effective tools for driving the needs of the customer from the machine level down to component level requirements.
- ❑ The team should then use the information to develop multiple concept level design options.
- ❑ Various assessment tools like benchmarking or brainstorming can be used to evaluate how well each of the design concepts meet customer and business requirements and their potential for success.

DESIGN

- ❑ When the DFSS team has selected a single concept-level design, it is time to begin the detailed design work using 3D modeling, preliminary drawings, etc.
- ❑ The design team evaluates the physical product and other considerations including, but not limited to, the following
 - ❑ Manufacturing process
 - ❑ Equipment requirements
 - ❑ Supporting technology
 - ❑ Material selection
 - ❑ Manufacturing location
 - ❑ Packaging

VERIFY

- ❑ During the Verify Phase, the team introduces the design of the product or process and performs the validation testing to verify that it does meet customer and performance requirements.
- ❑ In addition, the team should develop a detailed process map, process documentation and instructions. Usually a prototype or pilot build is conducted.
- ❑ A pilot build can take the form of a limited product production run, service offering or possibly a test of a new process.
- ❑ The information or data collected during the prototype or pilot run is then used to improve the design of the product or process prior to a full roll-out or product launch.
- ❑ When the project is complete the team ensures the process is ready to hand-off to the business leaders and current production teams.
- ❑ The team should provide all required process documentation and a Process Control Plan.
- ❑ Finally, the project leaders, stakeholders and sponsors complete the project documentation and communicate the project results.

REFERENCES

1. **Lean Six Sigma for Dummies by John Morgon and Martin Brenig - Jones**