



New Product Development Methods

Steve Wetterling

Servenger will work with you and your staff through a step-wise New Product Development process that is understandable and low risk. Each phase will have clear plans, deliverables, reviews and budget appropriate to the magnitude of the project. We take pride in delivering value to our clients. This should be clearly apparent at each milestone.

At the very beginning of a project are the essential questions:

What is this going to cost?

How long is it going to take?

Our New Product Development process consists of phases that begin with a concise Definition of the product and work step-wise through to **Manufacturing Start Up**. Our process is structured to provide high quality estimates during the **Definition, Requirements** and **Plan & Proposal** phases before making major financial commitments to go forward. Each phase includes target deliverables and milestone dates. As the project moves toward the development process, the product design will more and more closely conform to the detailed Requirements document developed at the start of the effort.

Our New Product Development process is scalable to the size, complexity and risks with the proposed project:

Simple projects get a simple plan and proposal.

Complex projects get a highly detailed plan and proposal.

The New Product Development Process consists of Phases:

Definition

What does the product look like and what does it do? This is a concise statement with illustrations of the functionality of the product, usually from the users' point of view.

Requirements

A written description is created for the important functional and performance attributes of the product. Including illustrations, this document will help explain the Requirements to new members of the team as the project ramps up. The Requirements document will be the yardstick to measure against at each project milestone.

Plan & Proposal

This is the plan for what will be done, approximately how long it will take and how much it will cost. Early phase cost & time estimates are expected to be more accurate than cost & time estimates for the later phases. The customer is expected at this point to commit to the budget for the immediate next phase, but only to provide general approval for the later phases.

This is the answer to “**What will this cost?**” and “**How long will it take?**” to develop the new product.

An important element of this phase is the evaluation and understanding of the program risks. The essential work of the Project Manager thereafter will be to address and minimize the risk elements as the effort progresses.

Project Start

With customer approval and funding, the project will commence.

Prototype Phase (A-Phase)

A highly detailed functional prototype version of the intended product is created. Among other outcomes, the Marketing staff will be able to see and understand the functionality of the product so that they can develop the value statement for what the new product brings the market. The software developer will use the prototype to run and test the initial code.

Review and Acceptance of the A-Phase Prototype

This is the formal ending to the Prototype Phase. It includes a Design Review activity comparing the A-Phase prototype to the design Requirements and a review of the work to be done during the following phases.

Presentation Phase (B-Phase)

The engineering staff creates a mechanical, electrical, software and fit & finish approximation of the final product. Though not expected to be completely ready for Manufacturing release, the B-phase prototype will be sufficiently representative to demonstrate all the functionality set out in the Requirements statement. The Manufacturing Test procedures will be developed using the B-phase unit.

Regulatory Test & Certification

FDA, FCC, UL/CSA/European regulatory compliance documentation and testing of the B-Phase prototype is performed as required using a certified third party test lab.

Customer Acceptance of the B-phase Prototype

This is the formal ending to the Presentation Phase. It includes a Design Review activity comparing the B-Phase prototype to the design Requirements and a review of the remaining work to be done.

Manufacturing Start Up Phase

Preparatory to the Manufacturing Start Up Phase, a detailed Manufacturing Readiness Review is performed of all the elements that are needed to successfully manufacture, test, package, ship, market and sell the new product. It necessarily includes non-engineering but vitally important activities where the engineers provide information to other participants in the business venture so that they can do their work.

Included in this detailed review are the following questions:

- What changes are needed to the mechanical or electrical design, software and fit & finish to meet the product Requirements originally set out ?
- What changes need to be made or new information provided to enable the manufacturer to manufacture and test the product?
- Is the Product Packaging designed, sourced and available to the manufacturer?
- Is the Product Distribution plan worked out and ready to go including quantities, arrival dates, customs arrangements, warehousing, sales channels, delivery methods, financing and payment arrangements, customer support phone line, warranty response arrangements, etc.

There is typically some last minute problem solving here with both technical and non-technical activities. Good project management throughout the product development program will minimize the occurrence and impact of last minute surprises.

Manufacturing Start Up will typically involve the initial production of a small number of First Article units to show that the manufacturer has the information and methods in place to build the new product successfully. Once the initial manufacturing lot is accepted, the manufacturer will execute an agreed on ramp up schedule for delivery of product.

Ongoing Manufacturing and Making Profits

Since Servenger has done the development work, we would typically be involved in some way to support the product through its lifecycle. The most convenient way would be for Servenger to act as the ongoing Original Equipment Manufacturer (OEM) channel for the products that we have designed.

About Successful Project Management

Project Management is the art for using talent, time and money to create a successful outcome. Good Project Management is essential for successful New Product Development. We have studied this art for thirty years in classes and daily work.

There are three levels to successful Project Management:

#1 - The lowest level, consisting of:

Creating the Plan for what to do and in what order, identifying the activities that can be done in parallel, understanding the interdependencies and slack times and then how the interdependencies have to come together to meet the program milestones. Gant charts on big marker boards and Microsoft Project are the tools at this level. It is typical to create an initial MS Project plan for a complex project and then throw it away and create a better one as the work team gets smarter for how to get things done.

#2 - The mid level, consisting of three very important on-going activities:

Monitoring Progress vs. the Plan as the project progresses:

A skillful Project Leader encourages team members to take personal ownership for the successful completion of each activity and to accurately report the progress. During weekly project meetings, activities that are on-schedule get marked with a green dot and proceed with a lesser level of monitoring until the next meeting. Activities that are behind schedule, or are likely to fall behind schedule in the near term, get marked with a red dot and are then intensively managed to bring them onto schedule.

Design Reviews where the progress of the project activities leading up to the next milestone are reviewed:

Detailed Design Reviews focus the engineering staff on having a complete and correct solution to achieve the product functionality. Errors, missing information and uncompleted tasks are identified for correction.

Anticipating Surprises:

A good Project Manager is always looking ahead to the upcoming milestones and anticipating the “chicken tests” that have to be successfully passed to meet the milestones and keep the project on track. The truly skillful Project Manager will already have “Plan B” alternatives ready to go for when a test outcome is unfavorable. Ask us about the “chicken test” concept as we plan your project. If there are no chicken tests included then it may not be a very good project plan.

#3 - The highest level, where the executive level over-view, information sharing and decision making gets done:

The most skillful Project Manager will have a good grasp of the “**Big Picture**” for how the project is going versus schedule & budget and most of all for the risks that may cause delays, excess costs or outright failure of the effort. At this level a good Project Manager

is capable of delivering an accurate and believable synopsis of the Big Picture to the sponsors, owners and/or executives of the enterprise.

In the best case the Big Picture is that the project is on or ahead of budget and schedule with the risks identified and planned for.

In the worst case, a project can be irretrievably broken and should be turned off or at least re-planned before proceeding further. Those are the projects that needlessly waste time and money.

In thirty years we haven't had any projects end up in this category. However, the best Project Manager has to be constantly evaluating the project and brave enough to speak up with the bad news as it occurs and then fix it if possible.

Repeating a message from above:

Simple projects get simple plans and complex projects get complex plans.