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Date: 2.22.05

Subject: Managing Product Development Process (MPD™)

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INTRODUCTION TO “MANAGING PRODUCT DEVELOPMENT” (MPD)

Group50's MPD process is a milestone based process that utilizes 10 steps to assuring effective product development. It is designed to be applied to any product development project. Following the process provides management with the ability to assure itself that a product program has gone through a rigorous analysis by the project team (PT). It also assures management that the right set of questions have been asked and reviewed by the project team and documented in a formal fashion that will be audited at a later date. Each milestone requires a review and sign-off prior to moving on to the next milestone.

The 10 milestones are:

1. Investigation
2. Analysis
3. Conceptualization
4. Benchmarking
5. Validation
6. Tooling
7. Field Test
8. Engineering Build
9. Production Release
10. Audit.

TYPE OF PROJECTS

The MPD process is designed to work on any product or service a company wants to develop. For this document, product is used to define a physical

product or service. It is usually used for new products or services whether manufactured in-house or sourced. Modifications to existing products should be taken through the same rigor as new product development. If the product is purchased from another company and private labeled, it is highly recommended that a Supplier Quality Assurance audit be completed as part of the process. SQA is not part of this procedure.

MANAGEMENT OF PRODUCT DEVELOPMENT IN A COMPANY

A properly managed product development process typically has several layers to it. There is a cross functional project team that should report to a cross functional management team that has oversight of product development, the strategic plan and financials controls. For the purposes of this document we will refer to the management team as NPRC or New Product Review Committee.

NPRC approves project progression through each milestone of the process. NPRC should have the authority to approve, change or reject the findings of the PT. It should consist of managing members of each functional area. These members typically report to Group VP's, COO's or Company presidents.

The purpose of the NPRC is to:

- Set objectives for the project team
- Set strategic directions and authorize resources for the PT.
- Monitor project schedules and costs and suggest changes when appropriate.
- Verify to their satisfaction that the project team has met the minimum requirements of every milestone in the project.

PROJECT TEAM

The project team should be a cross functional team which consists of members of each supporting function. It is important to have every business function represented on the team so that the implementation can be properly planned at every step, with no surprises. Each member should have the authority to make commitments for their respective function to support the project. The PT has the responsibility for the day to day management of the project and presenting each milestone to the NPRC. One of the PT members needs to be the lead. This person is typically a product manager from the marketing organization, but leadership should be rotated across functional areas as part of the development process for future leaders of the business. New product development experience is an excellent way to identify people in the organization who will become General Managers and members of the executive team. It is strongly recommended that the core team members, if assigned exclusively to a project, be co-located near one another during the scope of the project to enhance communication. It is also recommended that a "technical lead" be selected to provide technical leadership and coordination for the project as required.

MPD ACTIVITIES

Milestones are important pause points for the project. Milestones are defined as the completion point for the previous activities and the launching points for the next steps in a project. They are also points of completion, where the PT will review the progress of the last milestone, sign-off on its completion and provide the NPRC with the data necessary to have them sign-off. The PT must also prepare the plan for the next milestone and get approval from NPRC to continue on with the process.

Milestone reviews need to include the following items:

1. Summary of performance to budget
2. Summary of schedule performance
3. Changes in project since last review
4. Review of cost targets and performance to those targets
5. Review of outstanding project issues that need to be resolved
6. Assessment of the project's progress
7. Provide the NPRC with an opportunity to realign the PT's priorities, objectives, add additional resources, etc.

At the end of each review, the NPRC members will sign-off on the milestone document approving the completion (with exceptions if any) of the milestone. Sign-off also provides for approval to the PT to move onto the next milestone.

MILESTONE SUMMARIES

1. Investigation

This is the initial phase of the project where the project leader or functional team develops a short summary of the following items:

- Project summary
- Project definition
- Proof that project supports the business's strategic plan
- Estimates of the market size
- Summary of competitive issues
- Profitability
- Initial resource estimates
- Timing
- Cost
- Likely sourcing options
- Likely impact on business resources, systems, infrastructure, etc.

2. Analysis

This milestone is designed to provide the next level of detail from the previous milestone. In this case, the PT will report in more detail on:

- Estimates of market size, market share, and business potential on a global basis
- A preliminary assessment of how the product or service stacks up against the competitor's products (services) and their position in the market.
- A summary of how the product fits/fills competitive gaps in the market place.
- A review of Intellectual property issues.
- Likely competitive responses
- More detailed cost estimates for supporting the product in the marketplace
- Likely rollout campaign
- Preliminary market research results
- Impact on business processes
- Impact on organizational structure, etc.

3. Conceptualization

This milestone is intended to provide the NPRC with the first view of the likely product implementation. Here they will see for the first time:

- Product configurations
- Artist renderings or mock-ups
- Proposed sourcing methods including cost of production
- Initial costing estimates
- More detailed financials including first draft of financial model
- Initial QFD results
- Review of organizational impacts
- SKU strategy to support both domestic and International markets
- Review of business process impacts
- More detail on cost and ROI
- Review of Intellectual property protection
 - Domestic
 - International
 - Alternate design protection

4. Benchmarking

Benchmarking is a milestone, because it is the most important step in providing the business with a complete and thorough understanding of the competitive environment and the challenges the new product will be faced with. In this milestone, the PT is challenged with identifying the Best-in-Class methods utilized to support similar products and projects. New product development should be used as a tool to continuously reinvent the supporting business processes. It is important to remember that the competitive landscape changes with each generation of product. The NPRC needs to understand what the total cost of the project is. Items that should be covered include:

- Benchmarking of similar products
- Understanding Best-in-Class customer service for the product
- Definition of required support of the distribution channels and likely changes needed
- Quality standards
- Anticipated changes in regulations or compliance
- Process reengineering required to effectively support the new product
- Systems requirements for the new product
- End user expectations

5. Validation

This is the pivotal milestone. Validation is the milestone the PT uses to finalize all of the assumptions from the previous milestones. During the review, the PT will show the NPRC the following:

- Complete financial summaries
 - Financial Analysis that utilizes all associated pricing, sales, and cost data.
 - Contribution analysis
 - A cash flow analysis with IRR analysis
 - A sensitivity analysis
- Review of make vs. buy decisions
- Validation of market assumptions
- Completed project plan for design, manufacturing, supply chain, tooling, etc.
- Completion of competitive gap analysis and response strategy
- Summary of supply chain partners
- Product cost against established targets

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- Complete product rollout plan to include phasing of SKU's, customers and global launch
- Status of staffing, process reengineering, new systems, etc.
- Final IP plans and status

6. Tooling

This milestone is designed to provide the PT authorization to release funds for tooling. The PT will review with NPRC the status of:

- Tooling
- Resolution of any open IP issues
- Vendors
- Latest cost estimates
- Scheduling
- Global field test plans
- Status of DFMA's
- Process development
- Equipment/assembly line design
- Product cost

The NPRC will give its approval to release funds for this milestone as a result of this review.

7. Field Test

At this milestone, the PT will review with the NPRC the initial results of preliminary testing of the product. The products being tested will be made of first parts off tooling. The PT will focus on:

- Schedule
- Results of the field test
- Reliability testing and models
- Performance against specification
- Status of quality plans
- Status of regulatory testing (UL, CSA, etc)
- Status of Supplier Quality Assurance program
- Review of First Articles of Inspection

NPRC will be charged with giving the PT permission to move forward with additional unit builds leading up to the Engineering build.

8. Engineering Build

Engineering Build is the first quantity of units made completely from production tooling and processes. The project team will review:

- Summary of the results of build, identifying successes and issues that need to be resolved
- Review of field testing plans for EB units
- Latest cost roll-ups
- Status of Supplier production builds
- Review of supply chain plan, stocking plans, inventory builds
- Product performance
- Validation of all packaging
- Approval of marketing plans, packaging and legal
- Complete review of training plan for entire organization including support teams such as customer service, scheduling, renewal parts, systems, distribution
- Review of sell-in plans for initial production units. Customer review, allocation, etc.
- Review of customer commitments to date.

9. Production Release

Production release is achieved when the PT can deliver to NPRC the following documents:

- Validation of all QC requirements
- Validation of performance to specifications (Exceptions with actions plans included in this item)
- Completion of all BOM's
- Validation of costing and systems supporting the product
- Certification of manufacturing processes
- Completion of all first articles of inspection
- Validation of all marketing, merchandising and sales plans
- Status of testing
- Completion of all reengineered business processes
- Status of documentation of processes
- Validation of rollout plans for product, customers
- Status of training of personal:
 - Manufacturing
 - Customer Service
 - Sales
 - Other support organizations

10. Audit.

Every capital project is required to be audited for performance against commitments. The following items require audit:

- Product cost
- Capital expenditures and conformance to capital procedures
- Quality performance
- Revenue performance
- ROI commitments

Audit reports need to include identified shortfalls and summary of plans to fix shortfalls.

This process is not meant to be all encompassing. This process needs to be implemented as part of a product development strategy inside the organization. It is recommended that the PT and NPRC integrate this process into the overall operations of the company. Each milestone needs to have a project sign-off sheet created. Supporting documents required for this process include:

- Financial analysis
- Supplier Quality Assurance program
- Capability studies
- DFMA
- QFD
- Benchmarking
- Process certification

Group50 Consulting consists of seasoned executive who have “Been There, Done That”. Product development is the single most important function a business must do. We will customize this process for your company and work with your team through the first implementation of a new product leaving behind a world class process that will serve the business well for many years.

About the author: Jim Gitney has over 25 years experience in multiple industries and world class companies such as GE, Black & Decker, Sunbeam and Rain Bird. Having managed operational budgets as large as \$650M and P&L's of over \$200M, Jim has the ability to bridge the gap across all functional disciplines. Jim's expertise is in product marketing programs, rebuilding businesses and organizations, lean manufacturing and new products. He has led several turnarounds and is known to be a can do executive. He has a BS ME from the University of Delaware and a MBA from Gannon University.