The Discipline of Product Management

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Product development is the process of designing, building, operating, and maintaining a good or service[1]. Software and Internet companies use a product development process to ensure that they are not just manufacturing a technology, but creating a product that people will want to buy and continue to use. To be sure, a base technology is at the heart of the product, but product development ensures that the customer's voice is not lost in the rush to an exciting technology. Product development adds things like pricing, marketing, and customer support to the technology to create a complete product.

Without a product management philosophy and discipline, an IT organization becomes focused on the technology instead of the customers and is often organized along technology lines rather than in ways that benefit the customer. Ultimately, an IT organization must serve its customers or it will go out of business, either because the customers go away or because they complain to executive management until the organization is changed.

This paper discusses the product management discipline and how it can be applied to creating a customer driven IT organization.

Product Development

Product development is performed by a multi-disciplinary team whose goal is building, operating, and maintaining the product. Team members may include product managers, software developers, project managers, product operations engineers, customer support managers, software quality assurance engineers, user interface design engineers, marketers, financial personnel, and graphic artists.

The product manager serves as the leader of this cross functional team. While the product manager does not necessarily function as the operational manager for these people, she *does* lead, coordinate, and supervise their work toward the end goal of making the product a reality, launching it, operating it, and managing it throughout its life cycle.

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[1] For purposes of this document we will refer to all services, goods, or other things offered for sale by an organization to be a "product."

Product management as a discipline is about *what* the product should be. Product managers are advocates for the customer's needs and desires. A large product might have numerous product managers working towards its success at a variety of levels, all the way from the junior product manager writing specifications about single feature sets to a product strategy director who has overall responsibility to executive management for the product direction. A product manager's responsibilities include the following:

- Defining and planning product lines and product enhancements
- Managing product contracts and sales
- Setting strategic direction based on customer needs and business goals
- Interpreting strategic goals into operational tasks
- Making proposals to senior management regarding implications of proposed plans
- Serving as a representative to internal and external clients.Taking the lead in establishing tactical plans and objectives
- Developing and implementing administrative and operational matters ensuring achievement of objectives
- Evaluating risks and trade-offs
- Proposing contingency plans
- Analyzing business processes and creating applications to improve or support those processes
- Branding
- Working with graphic designers to create look and feel
- Defining navigational flow and user experience
- Defining feature sets and scoping releases

People not familiar with the discipline of product management frequently get a product manager confused with other players. Its useful to look at what a product manager is not. A product manager is *not:*

A developer – Developers are focused on the technology and not the overall product. Some great product managers are former developers, but it is difficult to do both at once. There is a natural tension between developers and product managers that should be maintained to create a balanced product.

A software manager – the software manager is a functional manager and usually not focused on the product or the customers.

A project manager – project managers are about *how* and *when,* while the product manager is about *what*. Project managers work closely with product managers to ensure successful completion of different phases in the product life cycle.

A marketer – while product management is usually seen as a marketing discipline, marketers are focused on the marketing plan and are usually not driving the overall product direction.

Product managers are accountable to executive management for overall product direction, key decisions, product budget (and sometimes even the complete product P&L), ensuring that final product meets specifications, and evangelizing product to internal and external stakeholders.   Product managers also have accountability to users for feature sets, navigation, quality, and overall experience.

Before we can discuss product management as a discipline and how it functions in the organization we must consider two important life cycles: In the next section, we'll talk about the product life cycle; in the following section we'll discuss the customer life cycle.

Product Life Cycle

In its simplest form, the product life cycle consists of three phases:

1. Develop the product
2. Operate the product
3. Decommission the product

Obviously this simplistic model leaves a number of questions about changes, procedures, etc. Figure 1 gives a more complete view of the product life cycle.
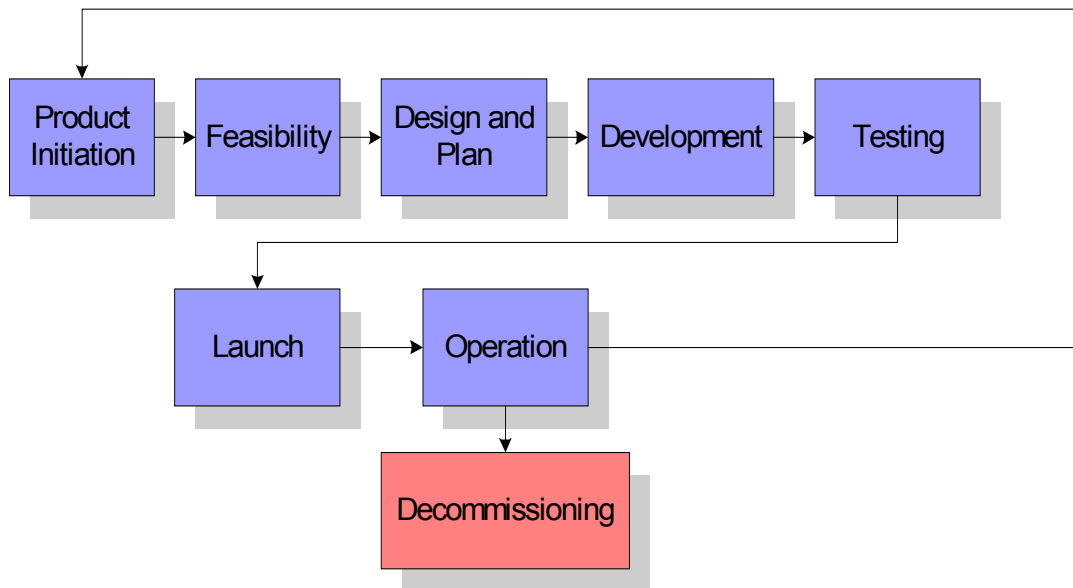
Figure 1: Product Life Cycle

Product Initiation Phase: In the Initiation Phase, Product Management, Engineering, or Operations submits a request for a new service or modification to an existing service.

These requests are received and prioritized by the Program Management Office (PMO). Once prioritized, the requests are reviewed by various management teams to assess the impact and viability of the request in the context of business needs and the organization's strategy. If approved, the request is given necessary funding and resources in order to proceed to the Feasibility Phase.

Feasibility Phase: The Feasibility Phase is where an idea is explored in more depth in order to determine the feasibility of engineering the requested service within the scope of the business needs. The request that has been approved during the initiation phase by the Governing Committee is evaluated at the engineering and product management level. From an engineering perspective, the service is evaluated for technical feasibility. The preliminary Technical Service Description outlines the general architecture of the proposed service. The Feasibility Analysis and stable Business Case are also developed during this phase. These documents summarize time and cost estimates and other investment information necessary for deciding whether to continue the product development process or not.

Design and Plan Phase: In the Design & Plan Phase, the cross-functional team documents all detail pertaining to the development of the service. While core documents, such as the Marketing Service Description, Technical Service Description, and Design Specifications, are stabilized, other groups, including Operations, QA, and Customer Care begin to specify their requirements for supporting the service. All of these documents are approved and signed off by the project team and the Design & Plan Checklist is presented to the Governing Committee for final approval before moving into the Development Phase.

Development Phase: In the Development Phase, the actual engineering of the service is completed. As the service is being developed, other functional groups continue preparatory work for the Testing and Introduction Phases. Much of the documentation to support Customer Care, Training, Vendors, and Clients is created during this phase. Also, the Quality Assurance Group prepares for the testing handoff by documenting Test Plans and Test Specifications, and configuring the test environment.

In this phase, a decision gate ensures that all pieces required for testing have been completed. The following are requirements to pass through the decision gate:
- Ready for Testing Phase from a System Integration Test perspective
- Documentation Complete
- Test Environment Complete
- Code Complete
- Vendor Requirements met
- Integration Testing & Results Complete

Once the Project Team has approved the readiness of the service, the Development Checklist is compiled and presented to the Governing Committee for approval to move the service into the Testing Phase.

Testing Phase: The majority of the Testing Phase is spent certifying the hardware and software changes involved in the service. The service will undergo a number of readiness tests in a Lab Environment. Operations also performs necessary system and network tests to ensure operational readiness prior to deployment. Once QA Test Results and Operations Readiness Test Results are completed, the service may under go field trials as directed by product management. The Testing Phase Decision Gate is based on the QA Test Results, Operations Test Results, Field Verification, Change Requests, and Business Needs. A 'go' decision at the gate authorizes the launch of the service.

Product Launch Phase: The Product Launch Phase coordinates the deployment of the new or modified service. As the service is enabled by Operations, the supporting organizations initiate support processes to maintain the service. Once deployed a service check is made by the Project Team and Program Management Organization to ensure that the Service is available. If the service is found to be unsuccessful, a predetermined un-launch process will be executed. If the service is launched without incident, the Project Team then evaluates the stability of the release and the service is transitioned to the Life Cycle Management Process.

Operation Phase: The Operation Phase is typically the longest of the phases since once a product is developed, it may be operated for quite some time before it is updated or decommissioned. The operation phase requires an organization that can manage the product, track problems and bugs, and respond to customer issues regarding the product in a timely and cost effective manner. A multi-tiered product support model is used to ensure that products are operated in a way that leads to RASM (reliability, availability, security, and manageability).

Decommissioning Phase: The Decommissioning Phase occurs at the end of the product life cycle. While it may seem like the decommissioning phase is something that can be safely ignored since there will likely be larger problems if the product is decommissioned, the truth is that many products are taken out of service. Even when a company is in bankruptcy, the rational, orderly closing down of a product or service is important to managing the company's assets.

Customer Life Cycle

Just as products have life cycle, customers also have a life cycle. In its most simple forms the customer life cycle consists of two phases:
1. Customer buys the product
2. Customer uses product

In many cases, however, particularly when a product is a service or a good that needs to be periodically replenished, the life cycle is slightly more complicated. Figure 2 gives a more complete view of the customer life cycle
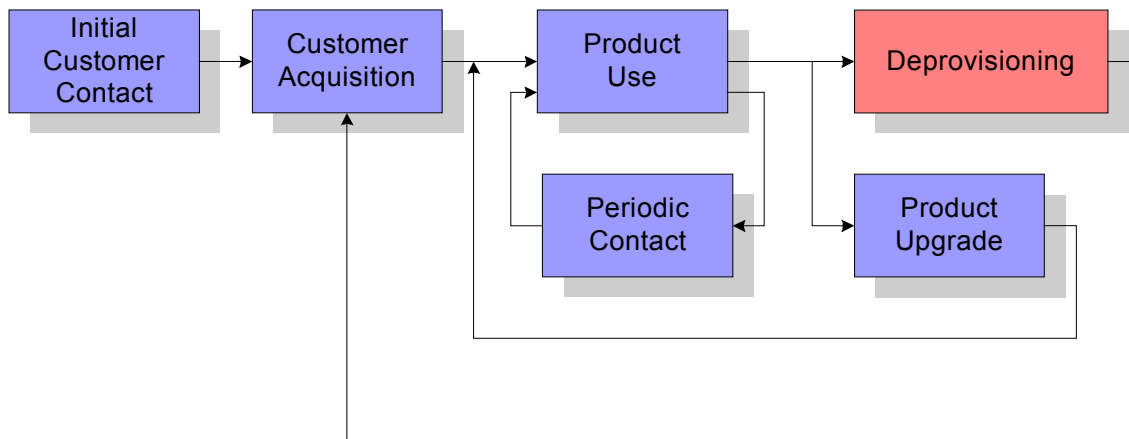
Figure 2: Customer Life Cycle

Even this model is overly simplified compared to what one might see in a sales textbook, but it is sufficient for our purposes.

Initial Customer Contact: The initial customer contact phase collapses all of the marketing, advertising, and initial sales calls into one tidy box.

Customer Acquisition: The customer acquisition phase is the first point where a person or organization becomes a customer. Abstractly, the process consists of an agreement between the customer and the organization to exchange money for the product. From the product manager's perspective, however, the process is much more complicated:

- How will the customer request service? The customer may request service by phone, email, web page, or in person.
- How will payment be received?
- How will the product be delivered? In the case of a service, the process of delivering the product is called provisioning and may consist of touching a number of unrelated systems and configuring myriad devices and systems.

Product Use: Every product is designed to ultimately be used by a customer. The customer may use a product and have to repurchase before another use or the product may be such that the customer uses it over and over after purchase. The payment may be made once or on a recurring basis.

Periodic Contact: Throughout the product use phase, the customer may have periodic contact with the company. These interactions take the form of

- Customer service

- Technical support
- Billing
- Sales calls

In each of these events, the company has an opportunity to make a positive or negative impression on the customer. These periodic contacts are usually managed using some sort of Customer Relationship Management (CRM) system that tracks all interactions with a customer from all channels. The CRM system thus allows the product manager (and others) to capture vital information about missed sales opportunities, customer complaints, common problems, etc. Using this data the product manager can mold a product so that it better meets customer needs and reduces customer support costs.

Product Upgrade: When a customer is finished using a product, the things can happen: the customer can be upgraded to a follow on product that meets their needs or deprovisioned. The product upgrade path is desirable because it keeps the customer and reduces customer reacquisition costs. Customer frequently outgrow products or their needs change. If a company has a well managed product portfolio, a product more suited for the customer's current situation will be waiting for them.

Deprovisioning: Deprovisioning a customer may seem like an issue that need not be dealt with: the customer stops using the product and nothing more need be done. However, in many cases, particularly where service with a recurring billing has been provided, if the customer is not properly deprovisioned, there will be future costs resulting from either providing service that is not being paid for or from billing a customer who is not receiving service. In either case there are likely to be costly customer support calls and an unhappy customer. Customer deprovisioning, where appropriate, should be planned for and built into the product from the beginning.

The Discipline of Product Management

As a members of a discipline, product managers work at all levels of a company in the product development process. For our purposes, we will discuss only three levels: product manager, lead product manager, and product strategy director. Of course, these might have different names and be shared among multiple people in any real installation.

Role	Driver	Work Product
Product Strategy Director	Business Strategy	Product Portfolio
Lead Product Manager	Product Life Cycle	Product Roadmap
Product Manager	Customer Life Cycle	Product

Table 1: Product Management Roles

Table 1 shows the three roles of product management, gives the driver for the role and the work product that the role produces.

Product Manager: The product manager is driven by the customer life cycle and produces a product. Any large product may have multiple product managers assigned to it, especially during Design and Plan, Development, and Testing, portions of the product life cycle. A product manager must be concerned with every aspect of the customer life cycle and every way that the customer might touch the product or the company about the product. They are primarily concerned with the customer experience in every dimension that it might take. The end result of all of this is the product itself.

Lead Product Manager: The lead product manager is responsible for a product throughout its entire life cycle. Every product will have a product manager assigned to it from inception to decommissioning, guiding the product from birth through death. This guidance is called a "product roadmap" and is the detailed plan for the product lifecycle. The lead product manager manages a cross functional team of people who are responsible for the development and operation of the product. This team may grow and diminish during different phases of the product life cycle, but generally includes:
- Software developers
- Project managers
- Product operations engineers
- Software quality assurance engineers
- User interface design engineers
- Marketers
- Financial personnel
- Graphic artists
- Customer support

The lead product manager does not necessarily function as the operational manager for these people, but leads, coordinates, and supervises their work toward the end goal of making the product a reality, launching it, operating it, and managing it throughout its life cycle.

The product managers who manage the customer life cycle report to the lead product manager during times that they are assigned to the team. In many cases, the product manager will have P&L responsibility for the product and thus manage everything about the product including sales, marketing, and advertising.

Product Strategy Director: The product strategy director is a member of the executive management team and is responsible for creating a portfolio of products that are aligned with the business strategy of the company.   A small company might have a small product portfolio. A large company might have multiple portfolios organized along lines of business.

A product strategy director has the following responsibilities:

- Define and plan product lines and product enhancements
- Management of product contracts and sales
- Strategic direction based on customer needs and business goals
- Interpret strategic goals into operational tasks
- Make proposals to senior management regarding implications of proposed plans
- Serves as representative to internal and external clients.
- Manages external vendors and deliverables
- Takes lead in establishing tactical plans and objectives
- Develops and implements administrative and operational matters ensuring achievement of objectives
- Establishes business plan and operational goals
- Evaluates risks and trade-offs; proposes contingency plans

The product strategy director is accountable in the following areas:

- Accountable for overall product direction.
- Make key decisions based on risk management and trade-off assessments.
- Act as product evangelist
- Manage product budget
- Anticipate and develop strategies and tactics to meet client business needs
- Participate in strategic decisions that will have long term impact on product success
- Provide business leadership to members of team including developers, contractors, and others

The product strategy director is gives leadership in the following ways:

- Provide tactical leadership and general direction to managers and team members.
- Regularly interact with executive management
- Handle controversial and sensitive situations with diplomacy
- Negotiate with clients and customers as well as executives and other directors
- Provide supervisory guidance and mentoring to more junior product managers