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Review article

Amalgamate the application performance and product lifecycle

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ABSTRACT

The aim of this paper are twofold: to review the application performance based on scope of product life cycle (PLC) research; to pinpoint areas requiring further investigation on synchronization of Product application performance & PLC. New functionality, are creating new performance issues while application development, testing, and release to production cycles are at an accelerating pace. In the midst of these demands, new technologies such as Mobile, Virtualization and Cloud are complicating the environments in which applications are delivered. This paper will help in unify and communicate effectively between teams throughout the application lifecycle to maximum the application performance that is the lifeblood of any organization's business operation.

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1. Product management

The new application performance management best practice is to unify all of the teams involved throughout the application lifecycle by providing a common set of information that is both instantaneous and actionable as stated Driffield, N & Björn, and (J 2012).

This means connecting the Development, Test, Production and Business teams together through information that serves about application performance issues. Each team, in a complete application

lifecycle solution, receives performance information that is relevant to their role and can be used to fix problems immediately, when they occur.

Parsons, Leonard, (November, 1975) advocated product development is the process of designing, building, operating, and maintaining a good or service. 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, high end engineering 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 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 as discovered by Fox, Harold, and Rink, David, (Winter, 1977). This paper discusses the product management, application performance discipline and how it can be applied to creating a customer driven organization.

2. Product development

Anthony, (A 2012) suggest 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 as per A.J. Bailetti and Y. Liu, (2012). 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.

3. Product life cycle

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

1. Develop the product
2. Operate the product
3. Exit of 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.

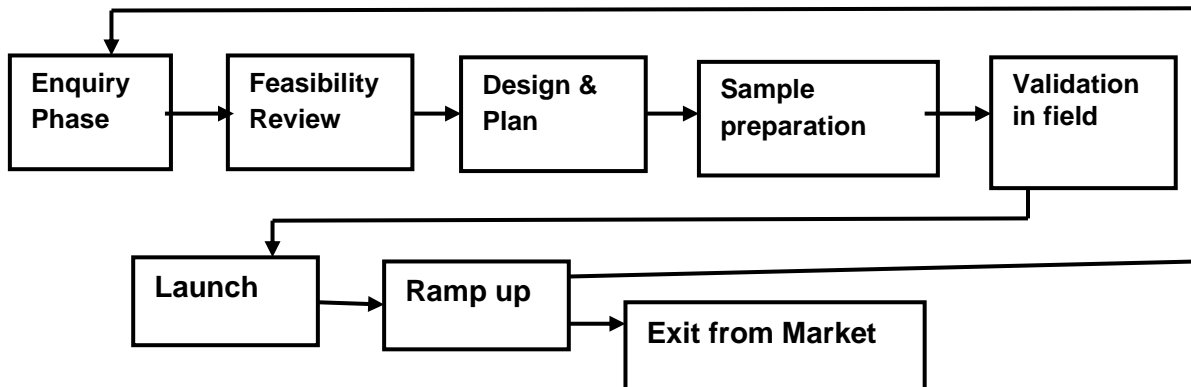


Fig. 1. Product life cycle.

3.1. Enquiry Phase

As per Kovac, F. and Dague, M., Forecasting, (July 1972) 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.

3.2. Feasibility review 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.

3.3. 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.

Sample preparation 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.

3.4. Validation 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 perform 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.

3.5. 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.

3.6. Ramp-up

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).

3.7. Exit from market

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.

4. Customer life cycle

Just as products have life cycle, customers also have a life cycle as per Dodge, H. Robert, and Rink, David (1978). 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 1) as per Archibald, RD & Voropaev, VI 2003. Figure 2 gives a more complete view of the customer life cycle

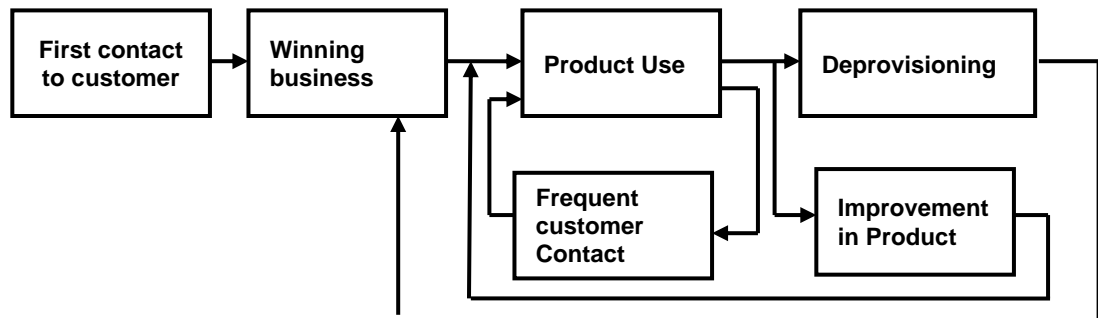


Fig. 2. Customer life cycle.

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

4.1. First contact to customer

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

4.2. Winning business

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.

4.3. 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.

4.4. Frequent customer 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 as stated by 1)

Bokinge, M & Malmqvist J 2012. 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.

4.5. Improvement in product

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 outgrows 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.

4.6. Deprovisioning

Catry, Bernard, and Chevalier, Michel, (October, 1974) states 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.

5. The discipline of product management

As members of a discipline, product managers work at all levels of a company in the product development process 1) Di Macro, P (2012). 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.

Table 1
Product Management Roles.

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

5.1. 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.

5.2. 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.

5.3. 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.

6. Conclusion

From research it discloses the application performance is directly control the product life cycle (PLC) and Product performance from business prospective. The role of product strategy director is defines in following three categories.

[A] 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

[B] 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

[C] 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

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