Managing NPDI Processes

Applying Business Process Management Principles to New Product Development and Introduction

By Pejman Makhfi - August 2010

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Preface

Processes are part of intellectual property and among the most important assets of each organization. As such, improving business processes is always a priority for every organization.

This has been acknowledged by business leaders across all industries. In the Gartner report "Leading in Times of Transition: The 2010 CIO Agenda," improving business

> "Brilliant process management is our strategy. We get brilliant results from average people managing brilliant processes. We observe that our competitors often get average (or worse) results from brilliant people managing broken processes."
>
> *- Toyota's President Mr. Cho summarizing the reason for the company's relentless progress over the years*

processes is ranked as the number one priority of CIOs in 2007, 2008, 2009 and 2010.

TOP 10 BUSINESS PRIORITIES IN 2010	
Priorities	**Ranking**
Business process improvement	1
Reducing enterprise costs	2
Increasing the use of Information/analytics	3
Improving enterprise workforce effectiveness	4
Attracting and retaining new customers	5
Managing change initiatives	6
Creating new products or services (innovation)	7
Targeting customers and markets more effectively	8
Consolidating business operations	9
Expanding current customer relationships	10

Source: Gartner EXP (January 2010) http://www.gartner.com/it/page.jsp?id=1283413

In the recent years Business Process Management (BPM) has become the formal approach for managing and improving enterprise processes. BPM, as defined by Object Management Group (OMG), is a holistic management approach that promotes business effectiveness and efficiency while striving for innovation, flexibility, and integration with technology. Simply put, BPM attempts to improve processes continuously.

Every business process improvement initiative starts with capturing the processes as they are, and then trying to optimize, automate and continuously improving them towards perfection.

This paper provides an overview and guidelines in taking inventory and modeling new product development and introduction NPDI-- product development and introduction-- processes within the BPM paradigm.

Introduction to NPDI

New product development and introduction, or NPDI, is about bringing the right product to the right customers at the right time and price. NPDI is one of the most important processes in many companies as it drives the revenue, margins and competitive position of a company in the marketplace. Accordingly, NPDI is always a target for business processes improvement.

Among others, the NPDI process (or possibly the lack of it) can be responsible for:

- Development of wrong product or service
- Schedule delays
- Cost overruns
- Feature set mismatch
- Marketing and sales performance issues

Various studies suggest that between 50 and 80 percent of NPDI programs fail to live up to management's expectations. There are many reasons for this, such as misunderstanding of real customers' needs.

The NPDI process starts with identifying an opportunity in the market and ends with a successful launch of the corresponding product or service. This process requires a coordinated effort among many functions, from marketing to engineering and finance, to manufacturing, suppliers, business development and sales.

Any miscommunication or timing mismatch between those functions may result in extra costly mistakes and delays. Utilizing BPM in NPDI can help in mitigate many of possible problems sources, while making it more efficient.

Keep in mind: NPDI is a process, a journey, and not a destination.

While at its core NPDI represents one process, its actual activities are executed in separate sequential or parallel processes.

All these processes need to be synchronously managed between multi-disciplinary teams to successfully bring a new product to market, no matter if the product is an

industrial machine with hundreds of parts or a software system with different components and modules.

To manage all this, first the underlying processes need to be captured. The explicit definition of processes not only facilitates continuous process improvement cycles, but also helps with control, visibility and knowledge retention within organizations.

Contrary to some depictions, being process-oriented doesn't necessarily mean being rigid and prescriptive. Well-managed processes can anticipate and provide agility and flexibility in adapting to market and requirement changes, while fostering cross functional harmony and effectiveness within organization.
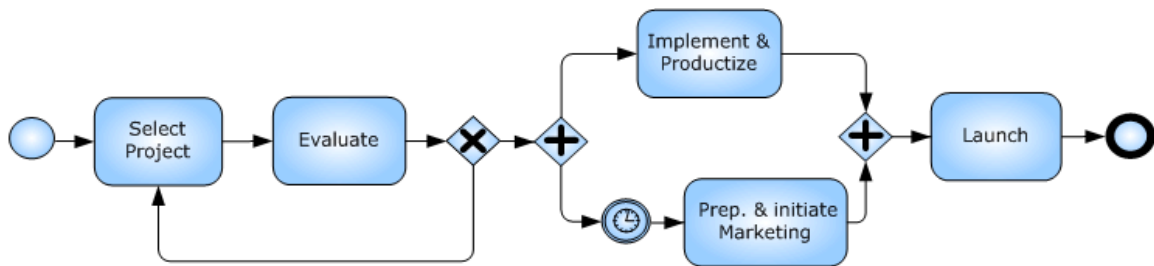
NPDI Processes

The actual NPDI practice is unique to every company due to its organizational structures, available resources, information systems and overall capabilities. Nevertheless, the following model closely reflects an end-to-end NPDI process.
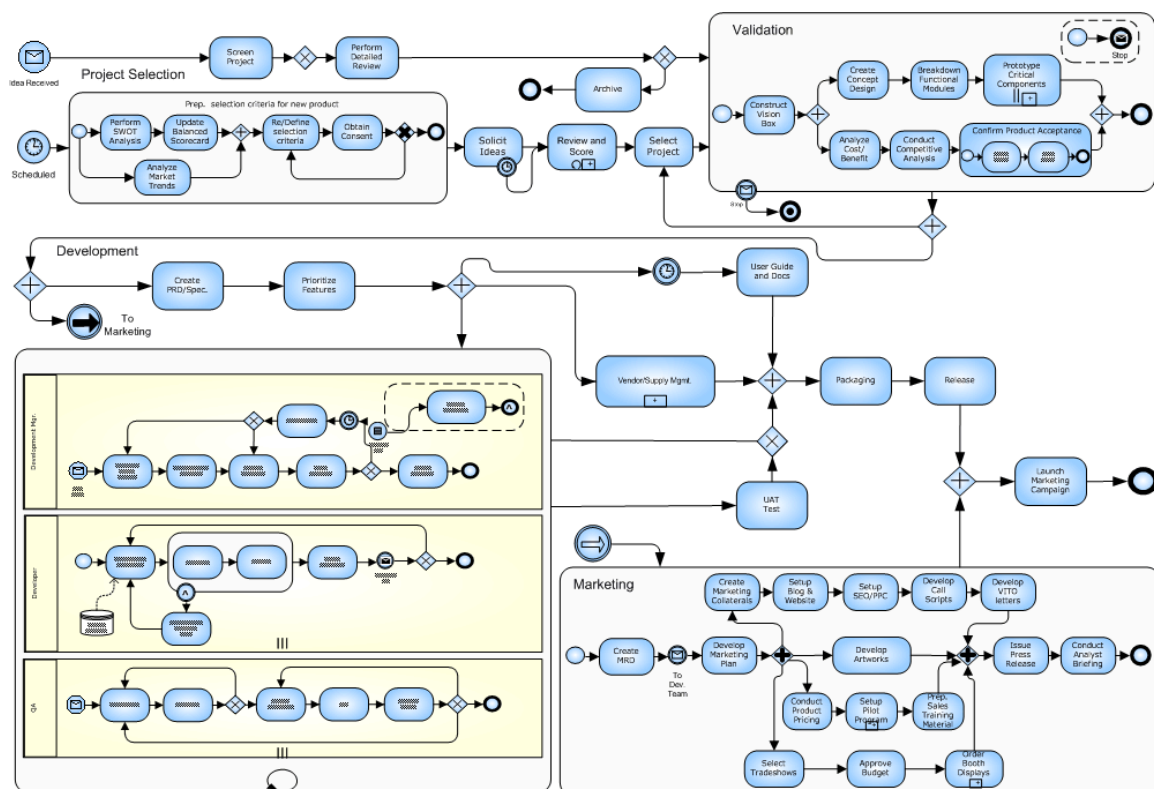
Whether you use Stage-Gate, PACE (Product and Cycle-time Excellence), DFSS (Design for Six Sigma) or any other methodology, at the highest level the NPDI process includes the following core activities, each of which represents a different aspect of NPDI.

1. Project Selection
2. Technical & Business Validation
3. Development & Production
4. Marketing & Sales Enablement

In the following sections we will break down and review each of those aspects as individual subprocesses and activities.

To graphically represent process models all diagrams in this paper are designed based on "Business Process Modeling Notation" (BPMN 2.0) standard. For more details on BPMN please refer to http://www.bpmn.org
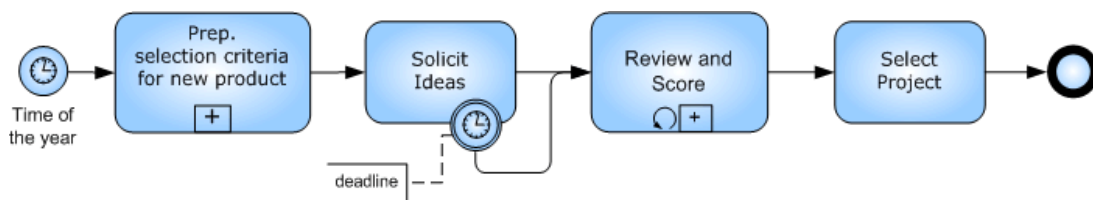
Project Selection

This is about selecting the idea that best aligns with business strategy and objectives. Sometimes also referred to as "discovery and scoping," project selection includes activities such as identifying the opportunity; generating or soliciting product ideas; screening, evaluating and scoring concepts; building business case; estimating resource requirements and finally selecting a project to pursue. The objective is to quickly find the closest match and ensure the technical merits and alignment of market prospects of the project with corporate strategy.

Depending on the industry and the company's culture, this project selection might be executed as predefined, scheduled process or on an on-demand basis—as shown in the sample flows below.
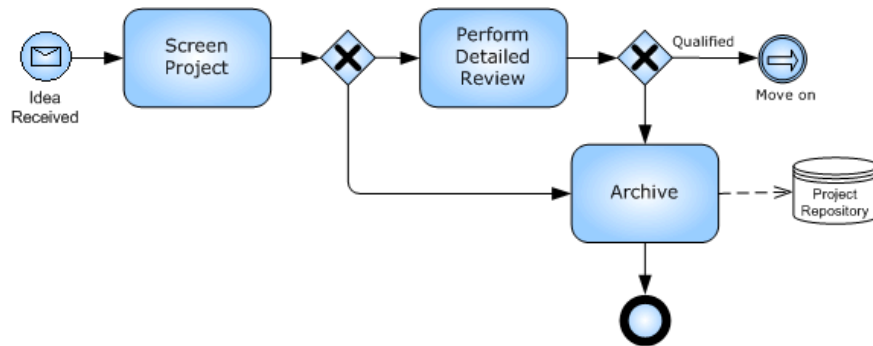

On-demand Model

Scheduled Model

One of the common problems in this phase is that the selected project does not reflect the real business objectives and strategy. Including process steps to formally develop the selection criteria and enforcing the use of these criteria throughout the process would prevent that type of problems from happening.

In many BPM models top-level activities can be decomposed into next level of detail or a "sub-process." The concept of subprocess manifests one of the key cornerstones of BPM: reuse and repeatability.

In the above example the "prepare selection criteria" step can be modeled as a subprocess like the one below.
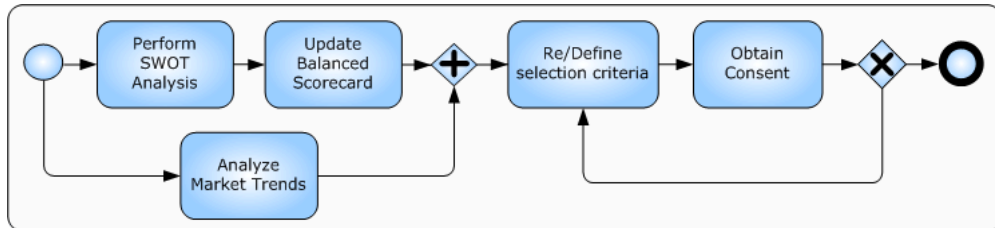
In this case, for instance, the same subprocess can also be used to drive M&A (merger and acquisition) considerations.

Typically the selection criteria are defined as a weighted decision matrix, which is beyond scope of this paper. (See KT [Kepner-Tregoe] or AHP [Analytic Hierarchy Process] for more details]. A decision model is used to ensure all objectives are satisfied according to their importance.

The following example helps to clarify the approach.

| Objective	Weight	Score
Profit Margin	60	
Time to Market	30	
Resource Requirements	10	
…		
Total	100	

Technical and Business Validation

Validation is about proving the concept, both on the technical and the business sides. In-depth assessment of business viability and technical feasibility are performed to ensure a valid business case, customer acceptance and financial merit--to justify the project, resulting in a refined business plan, financial projections, competitive positioning and technical requirements.

This phase includes activities such as competitive analysis, focus groups, prototyping, market research, and, maybe, budget approval.

In this phase the most common reasons for NDPI failure are a) the mismatch of product features with customers' real needs and b) underestimating the challenges.

The most effective approach for addressing those problems is to start with creating a "product vision box" or "concept in context." The purpose is to quickly establish a shared vision among all stakeholders by spelling out the unique selling proposition (USP), benefits, and positioning of the new product. It will ensure that the voice of the customer (VOC) is considered throughout the validation process and that challenges are correctly assessed.
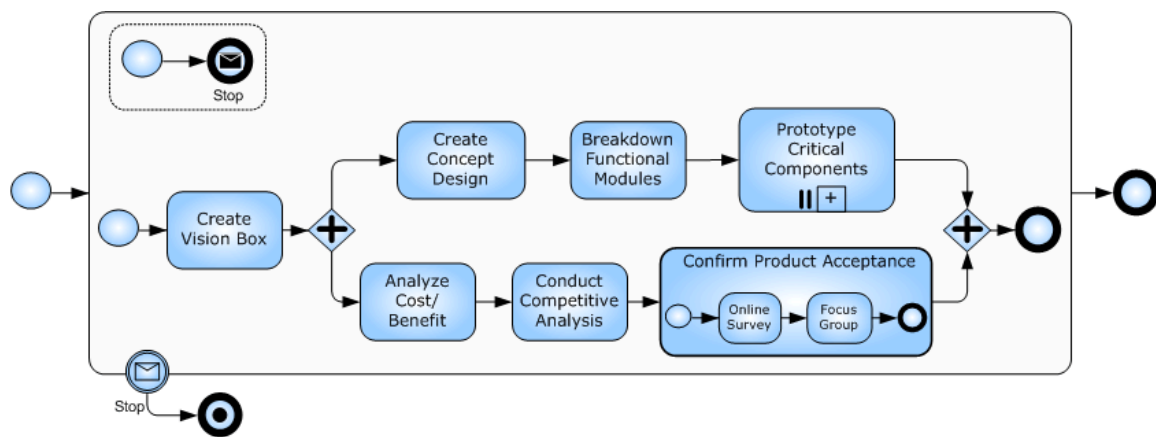
Depending on circumstances and resource availability, activities might be performed in parallel or sequential order. For example, tight engineering resources might result in a rewired process, in which engineering engages only after business case is validated.
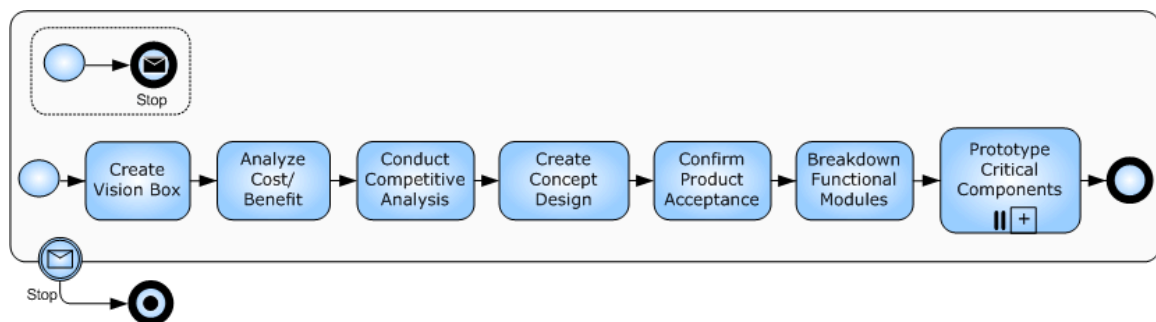

In either case the process can be stopped at any given point to save time and resources.

Development and Production

Projects that match corporate criteria and pass validation will move to the formal development phase, where specifications are transformed into an actual product for commercialization.

This starts with design specification and production planning along with supporting processes such as documentation, quality assurance (QA), and packaging and ends with the actual product ready for release. The production itself might follow a formal methodology such as Scrum in software development or Lean in manufacturing.
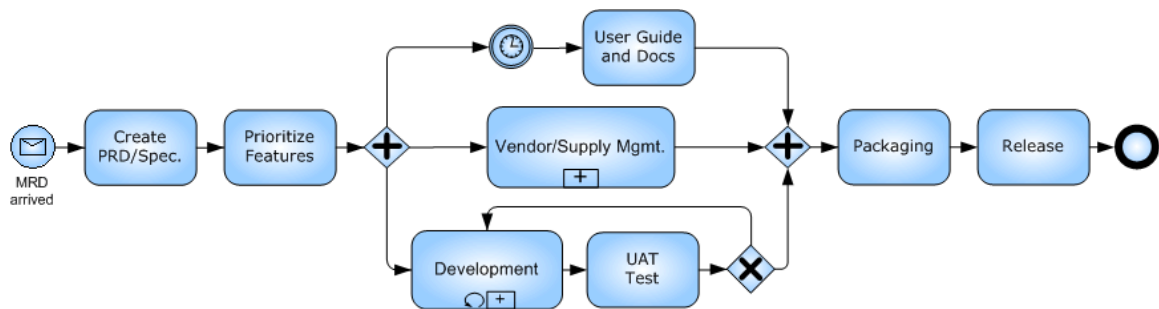
Typically, in this phase problems happen due to miscommunication, misinterpretation of requirements and change management.

In many cases applying an agile methodology to development process can prevent risk and dramatically improve the project results. In an agile environment the development is executed in an incremental and adaptive manner, including a feedback loop with product management, as illustrated below.
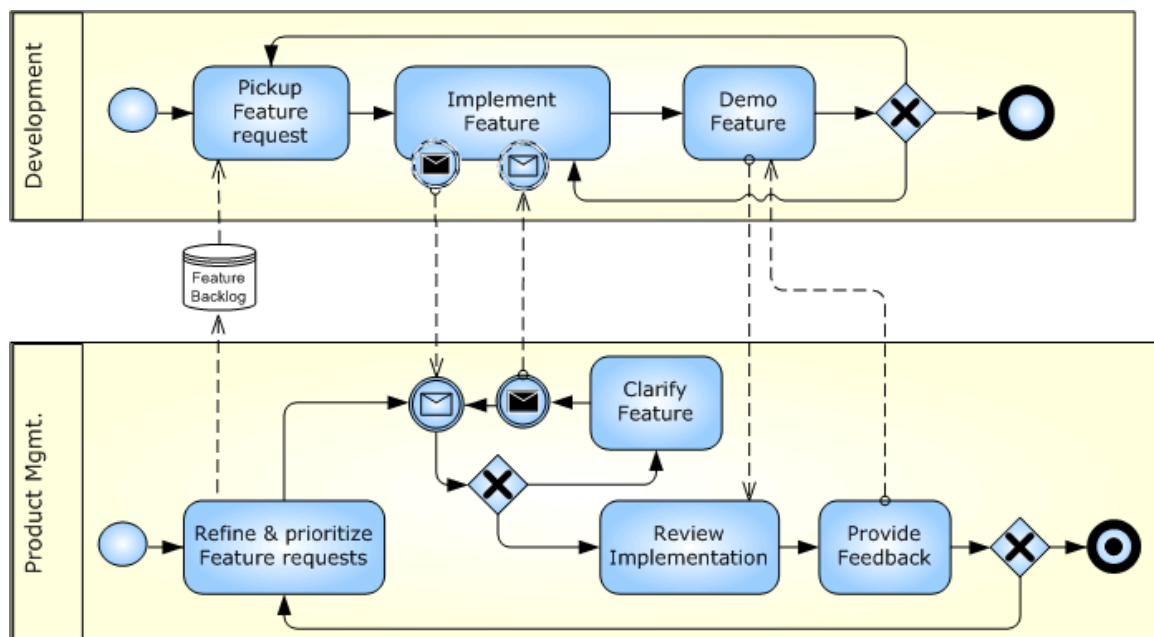
This approach can help in minimizing misinterpretation and waste in course correction while providing product management with the flexibility to react to market and requirement changes.


Course correction approach in traditional vs. agile development process

The actual development process can be broken down further into specific activities for individual roles, as demonstrated below for a software product.
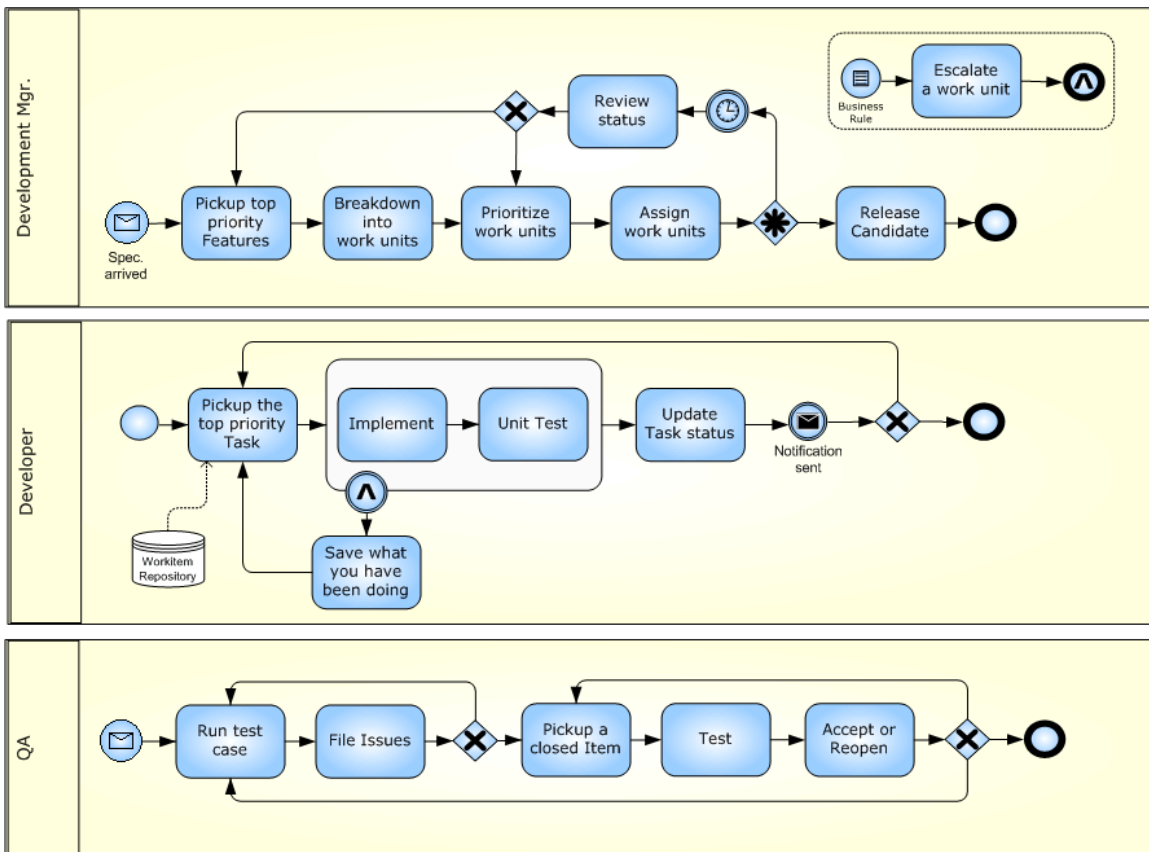
Marketing

The marketing process covers activities involved in generating customer interest and demand, starting from the market requirements document (MRD) to actual product launch and lead generation. This could include inbound marketing, outbound marketing, branding and PR-related activates.
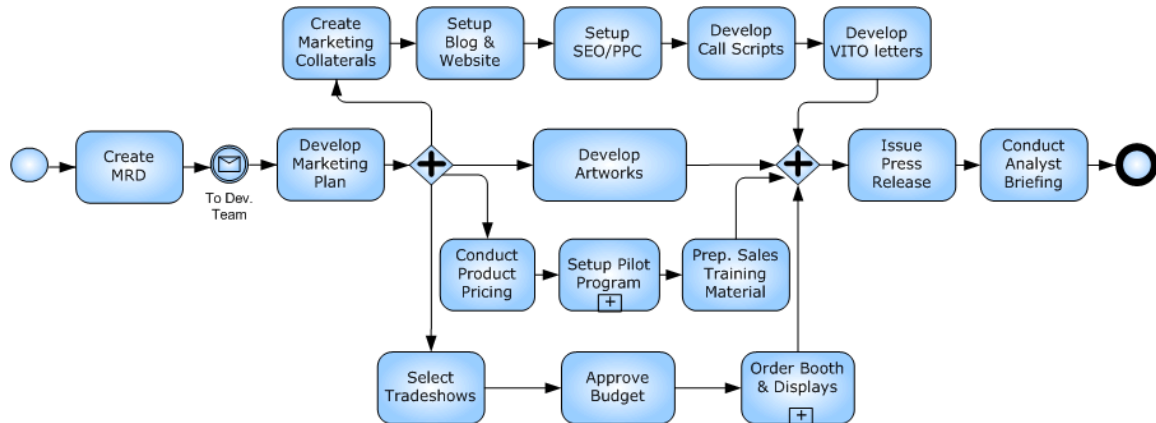
In product marketing the most common challenges are cost management (ROI), right targeting and coordination with sales. (Imagine that the product is launched, but inside-sales is not yet trained!)

While the above model might closely resemble a typical marketing process, one model never fits all. What if, for example, your organization decides to switch from as-needed-basis to a fixed-budget approach to marketing?

One of the central promises of BPM is flexibility. In a process-oriented environment such changes are possible and as easy as switching the order of activities, as illustrated in the following flow chart.
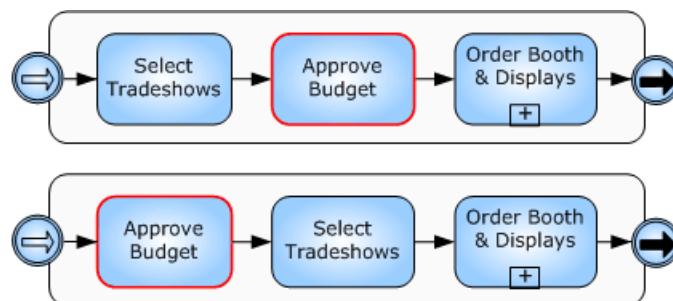
Key Performance Indicators

Throughout NPDI process execution monitoring relevant data and key performance indicators (KPI) can help in taking timely corrective actions to minimize cost while offering opportunities for process improvement.

One of inherent benefits of BPM is the ease of access and tracking of KPIs. Applying BPM principles allows you to define specific goals and means to measure the performance of processes.
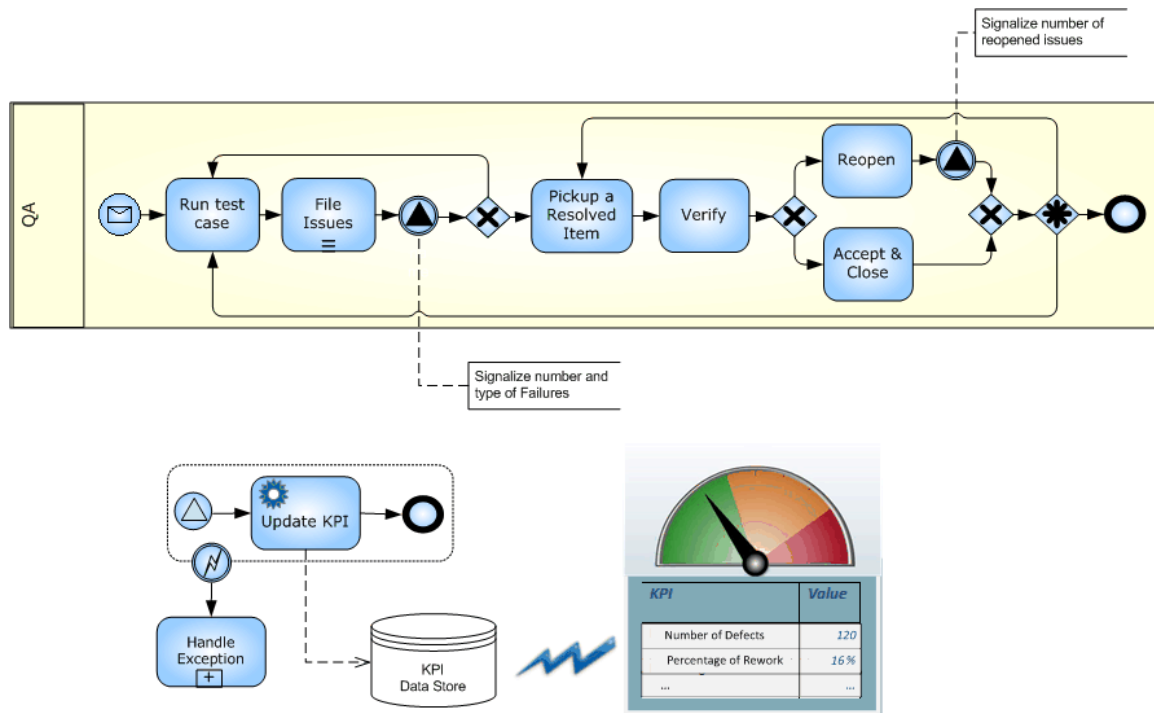
In an automated BPM environment (BPMS) this can be easily done by non-intrusive interception of work, which in addition to KPIs can help in risk management, Service – level-agreements (SLAs) and compliance monitoring. The resulting data is typically available in real time on management dashboards, as shown in above example.

Conclusion

Applying BPM concepts to your business processes not only minimizes the common risks associated with NPDI for current product pipeline, but also facilitates knowledge retention and repeatable success for upcoming NPDI processes..

AUTHOR

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Pejman is a Silicon Valley technology veteran and serial entrepreneur with more than 18 years of progressive experience in providing software expertise and best practices to technology investors, business enterprises, and forward-thinking startups.

Widely known as a leader in the field of Business Process Management and Knowledge Modeling, Pejman has been a key architect of multiple high-profile products, including the award-winning Progress® Savvion™ BPM platform.

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His previous positions include:

> CTO at FinancialCircuit, a company recognized as *the* technological innovator for the financial industry and named the Silicon Valley's Ninth Fastest-Growing Private Company in 2003. (Acquired by LPL)

> CTO and Director of Business Development at TEN (The Enterprise Network), a top Silicon Valley technology incubator hosting more than fifty startups. Pejman managed TEN's R&D as well as advised startups on the issues and trends affecting early stage and emerging growth companies. TEN has helped launch of many companies, including eBay, iPrint, Xros and Vertical Networks.

Pejman holds a B.S./M.S. degree in Computer Science from Dortmund University in Germany and is a Scrum Master (CSM), an internationally certified Project Manager (PMP) as well as a certified Lean Six Sigma Black Belt (SSBB) in continuous business improvement.

He is the author of numerous patents and articles, including "Heptalysis - a methodic approach to venture management" and is an active contributor to organizations such as the American Association for Artificial Intelligence and the American Society for Quality.