

Verrollot, J., Kaikkonen, H., Leinonen, T., Tolonen, A., Kokkonen, T., Siddique, A.,
Hänninen, K., Härkönen, J. & Haapasalo, H. at the University of Oulu, Finland

Rapid Product Development Handbook



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Jordan Verrollot
Harri Kaikkonen
Tarja Leinonen
Arto Tolonen
Tatu Kokkonen
Abduraheem Siddique
Kai Hänninen
Janne Härkönen
Harri Haapasalo

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ABBREVIATIONS

CRM	Customer Relations Management
DfX	Design for Excellence
ECM	Engineering Change Management
ERP	Enterprise Resource Planning
IRR	Internal Rate of Return
KPI	Key Performance Indicator
NPD	New Product Development
NPV	Net Present Value
PDM	Product Data Management
PPM	Product Portfolio Management
RaDe	Rapid Product Development
RRC	RaDe Relevance Check

PREFACE

Fundamentally new products are created using New Product Development (NPD) processes, which have been designed to be repeatable in order to reduce risks, cost and non-quality. However, milestone-driven NPD projects have been criticised to be too linear, too rigid and too planned for small and dynamic projects that require reacting quickly to sudden product development needs. Phases and milestones may stop the project for unnecessary long times hindering the possibilities of conducting the development rapidly. Generally, companies are facing pressures to supply new products constantly and rapidly to the market. This emphasises that the ability to react to specific customer needs through the product range is seen as a vital success factor in global competition. Nevertheless, despite the extensive research on the methods to improve the process of developing new products, limited attention has been paid to small and fast product development projects, especially in the business-to-business environment.

Rapid product development (RaDe) is a new type of agile product development model answering these challenges. The RaDe concept as such has lately been researched and developed at the University of Oulu. This handbook composes tools and concepts that have been conducted during Rapid Development I & II –research projects and have already been presented in various journal articles, doctoral dissertations and master’s theses. The target of this handbook is to provide tangible means for companies to react to urgent product development needs. First, RaDe as a product development model is presented among other product development models. Furthermore, preconditions, enablers and steps for RaDe implementation are presented with related management and teamwork practices.

1 INTRODUCTION

1.1 Rapid product development as a new product development model

Rapid product development (RaDe) is meant to supplement traditional, milestone-driven product development models. When assessing the magnitude of product development projects, RaDe is compliant with projects that are minor to *medium New Product Development* in broadness. In scope, *rapid productisation* is smaller than RaDe. In rapid productisation, customer requests are fulfilled by forming new configurations from existing sales items. In Engineering Change Management, modifications invisible to customers are made by generating new version items (Figure 1).

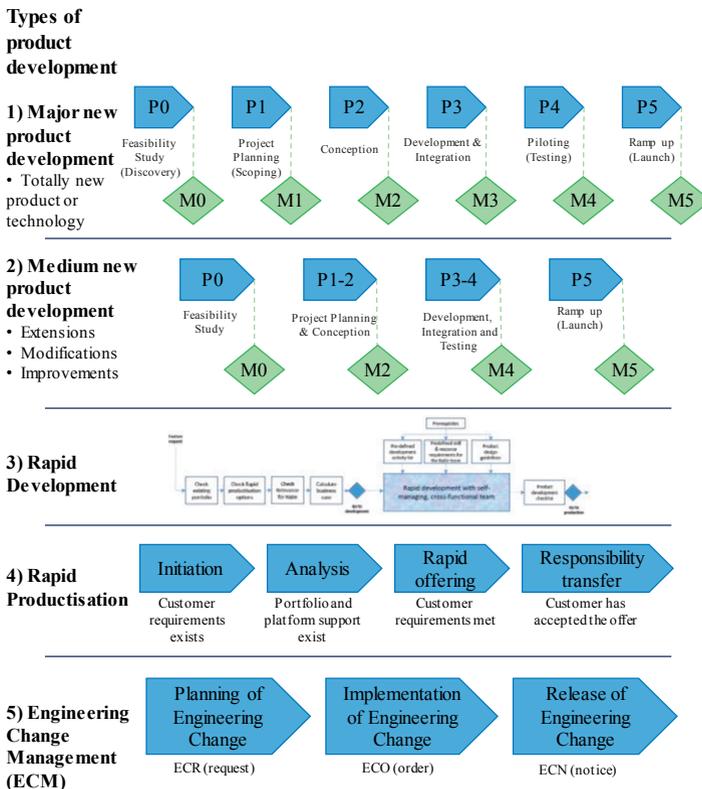


Figure 1. Product development models of different scales.

1) Scope of major NPD

The major NPD process can be used to create new product platforms, product families or individual products that require new technologies or otherwise differ vastly from existing products. The scope of changes in NPD can include all levels of the product portfolio on both the commercial and technical side. However, existing components or sales items can be used as parts of the developed new products. The products developed by major NPD include new sales items, and typically, changes are required for supply chain (SC), sales, marketing and care services. Major NPD has the longest lead times among product development models. Lead-times up to several years are typical in complex projects (Figure 2).

As an example, a chainsaw manufacturer can use major NPD when developing a completely new chainsaw, which utilises new technologies and/or platforms and is significantly different from the company's existing chainsaw offering.

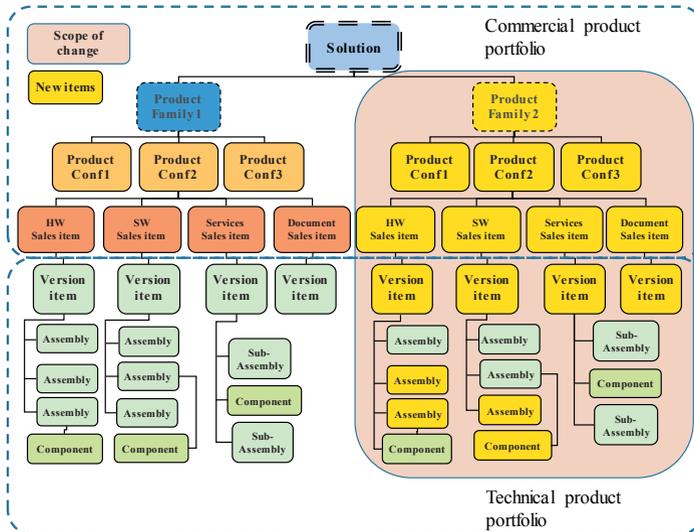


Figure 2. Scope of major NPD.

2) Scope of medium NPD

A medium NPD is utilisable in product development projects that require major changes in design but do not create new platforms or involve major technological changes. In smaller organisations, medium and major NPD may utilise the same process. The scope of changes in medium NPD can be both on the side of the commercial and technical product portfolio. Existing components and assemblies should be utilised where possible. Same as major NPD, medium NPD also generates new sales items and may require changes to supply chain, sales, marketing, and care service processes. The lead-time of medium NPD projects is naturally shorter than in major NPD, typically between 6 – 12 months (Figure 3). In chainsaw manufacturer’s point of view, medium NPD is a valid option when the development work is based on an existing product but still includes fundamental changes such as new casing and technical changes to the engine.

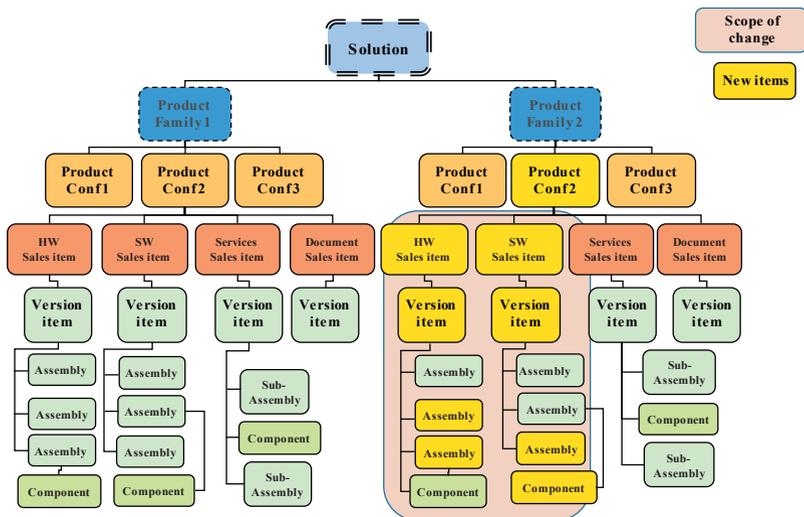


Figure 3. Scope of medium NPD.

3) Scope of RaDe

The essence of RaDe is the creation of new sales items and/or product configurations based on minor technical modifications on existing products. The trigger for making such changes can be an internally identified need for an improved product or a customer request for a modified new variant of an existing product. Fundamentally, RaDe projects result in new sales items. A new sales item combined with other new or existing sales items allows the generation of new product configurations as well. If the technical product improvement does not require the generation of a new sales item, the scope is limited to an engineering change management (ECM) process. Products developed by RaDe should utilise the existing supply chain processes because changes in the supply chain may significantly increase the lead-time of the product development project. RaDe is targeted for quick responses and thus the RaDe project lead-time is considerably shorter than in major and medium NPD projects (Figure 4). For example, a chainsaw manufacturer could utilise RaDe for example when modifying existing chainsaw by changing the bar chain to a more durable one and changing the colour of the casing.

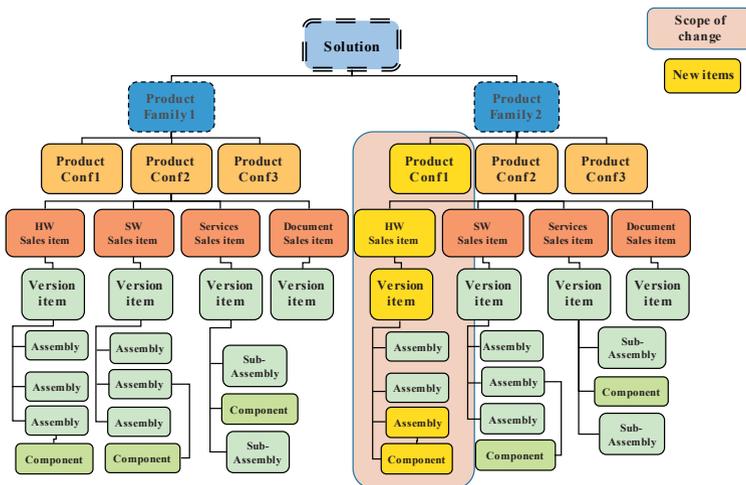


Figure 4. Scope of RaDe.

Rapid Development Handbook paves the footpath for companies facing challenges with their capability to response to urgent product development needs. This book brings together practices and tools researched in Product Management research group at the University of Oulu, many of which have already been presented in scientific publications. As such, this book aims to clarify practices and operational models used in small-scale incremental product development projects. Main challenges addressed are lost business opportunities due to delayed product development activities, inefficient use of product development resources and confusion and delays in ongoing product development projects.

