

# The Battle for the Right Features or: How to Improve Product Release Decisions?<sup>1</sup>

---

*Guenther Ruhe  
Expert Decisions Inc.*

*ruhe@expertdecisions.com*

## **Abstract:**

A release is a major (new or upgraded) version of an evolving product characterized by a collection of (new, corrected or modified) features. The terms “product release planning” refers to the process of deciding which features will be offered, and if so, in which of the future product releases.

This article describes the *Why*, *What* and *How* for improving the process of product release planning. The emphasis is on a systematic and transparent process which is combining the intuition of the human decision-maker with the capabilities of a process-centric support tool.

## **Planning for the right feature**

Features are the “selling units” of a product. Failure to provide the “right” features at the “right” time typically has strong impact on customer satisfaction and consequently on business success. In order to provide the “right” features at the right time, proper understanding of the market needs is required. This includes understanding stakeholders’ priorities, i.e., how important the different features are judged by the different customers and stakeholders. In case the expected and most requested features are not offered in a release, the product is likely to fail in the market. Systematic release planning includes the analysis of the customer needs and provides a pathway to match these needs as well as possible with the time and resources available.

Decisions studied in release planning are part of product management, an emerging discipline that aims at improving the whole process of development ranging from product requirements to design, implementation, product launch, and maintenance. In its essence, release planning is the process of defining the functionality of a sequence of product releases as part of incremental development. Customers and stakeholders are continuously asking for more features or revision of existing ones. But: Which ones to finally select for the next release and why? And: Which features are not attractive enough and are better left out (or postponed)? These and other questions are addressed by the release planning process.

---

<sup>1</sup> This article is partially based on content that is described in more detail in the authors recent book [Ruhe ‘10]

Release planning is illustrated in Figure 1. Release  $k$  accommodates a collection of features taken from the original feature data base. [Wiegers '03] defines a product feature as a set of logically related requirements that provide a capability to the user and enable the satisfaction of business objectives. More and more features are added in subsequent releases called  $k$ ,  $k+1$  and  $k+2$ .

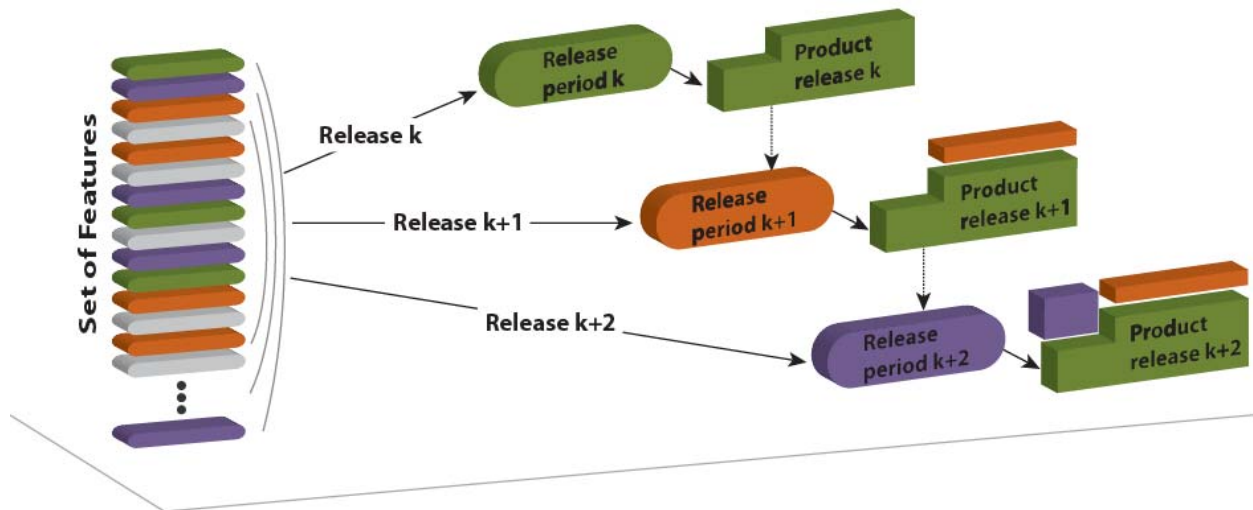


Figure 1. Assigning features to consecutive product releases.

## What makes release planning so difficult?

Release planning is a very complex problem including different stakeholder perspectives, different competing objectives and different types of constraints. Release planning is impacted by a huge number of inherent constraints. Most of the features are not independent from each other. Furthermore, resource and budget constraints have to be fulfilled for each release. The overall goal is to find a set of “most promising” features and their assignment to a sequence of releases. The goal is to maximize stakeholder satisfaction in terms of criteria such as value, time-to-market or frequency of use. The topic of investigation is uncertain and difficult in its very nature:

- **Features are not well specified and understood:** There is usually no formal way to describe the features. Non-standard format of feature specification often leads to incomplete descriptions and makes it harder for stakeholders to properly understand and evaluate features.
- **Dynamic change:** Features potentially change as the project progresses. If a large number of features increase the complexity of the project, their dynamic nature can pose another challenge. Other parameters such as the number and priorities of stakeholders, resource capacities and effort estimates, also change with time - adding to the overall complexity.

- **Size and complexity of the problem:** Size and complexity are major problems for project managers when choosing release plans - some projects may have hundreds of features. The size and complexity of the problem are one reason to look for appropriate computer support in the planning process.
- **Uncertainty of data:** Meaningful data for release planning are hard to gather and/or uncertain. Specifically, estimates of the available effort, dependencies of features, and definition of preferences from the perspective of involved stakeholders are difficult to gauge.
- **Availability of data:** Different types of information are necessary for actually conducting release planning. Some of the required data are available from other information sources within the organization.
- **Constraints:** A project manager has to consider various constraints while allocating the features and requirements to various releases. Most frequently, these constraints are related to resources, schedule, budget or technology.
- **Unclear objectives:** 'Good' release plans are hard to define at the beginning. There are competing objectives such as cost and benefit, time and quality, and it is unclear which target level should be achieved.
- **Stakeholders and their opinions:** In most cases, stakeholders are not sufficiently involved in the planning process. This is especially true for the final users of the system. Stakeholder, if involved in the process, may have different opinions and priorities with respect to the different features.

Figure 2 illustrates the difficulties. Four dimensions of difficulties are categorized referring to the different types of constraints, the nature of information available, the competing objectives, and the size and complexity of the problem.

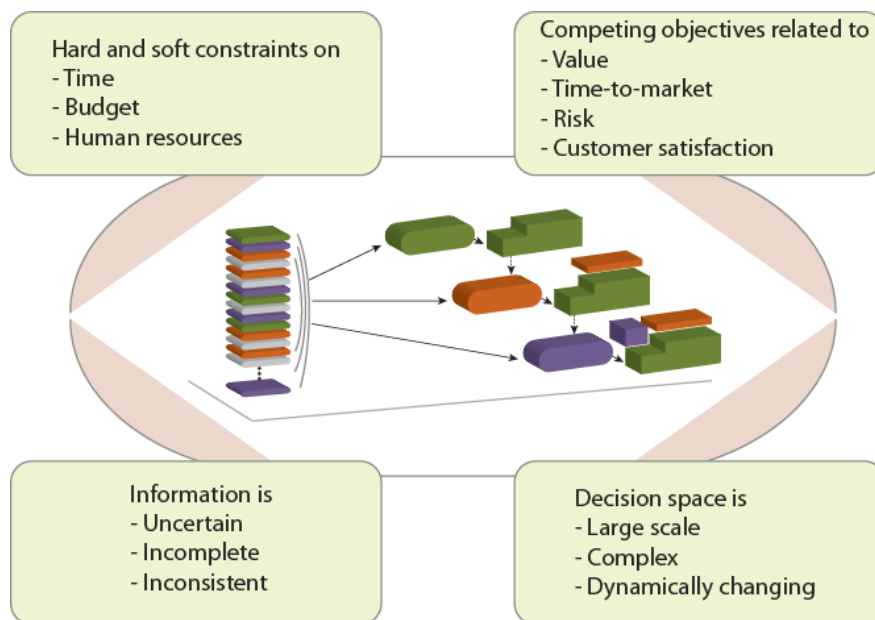


Figure 2. Difficulties with release planning.

## Why is intuition not enough for planning product releases?

Intuition is an important part of human decision-making. Depending on the nature of the decisions to be made, it plays more or less a substantial role in real-world decision-making scenarios. Intuition and experience are also necessary and important for making release decisions. However, the size and complexity of the problem, and the possibility of forgetting to consider the most relevant factors in the planning process, makes it risky to decide just based on individual judgment or methods of trial and error. There is substantial risk that such decisions are misdirecting. This is because they ignore important aspects of the whole process.

However, the more complex, uncertain, and unstructured a problem situation seems to be, the more there is a need to not rely solely on intuition, because the increasing complexity creates greater risks for doing the wrong things. So the issue is not whether to use intuition or rigor and science. What is needed is the synergy between the two worlds. While this is easy to admit, the hard part is: How to actually achieve this synergy. At its highest level of abstraction, the book [Ruhe' 10] describes a constructive answer for creating synergy between art (referring to intuition and experience) and science for the sake of making better release decisions.

## What is the difference between optimized and ad hoc release plans?

Often, the delivered product is far different from what the customers expect, leading to customer dissatisfaction. According to [Standish '09], “only about 20% of the features and functions specified get used”. This tendency of overwhelming the user with features relates to the belief that “the more features a product, the better the product”. Too many (unused) features are not only a waste of effort, but they can also confuse the user. Besides, the complexity of the product is growing, which eventually has an impact on its performance.

A second deviation from customer expectation refers to the lack of offering expected features. Even if only 20% of the features offered are really used, are these the ones expected by the users and customers? Consciously or unconsciously ignoring customer expectations increases the risk of losing these customers. A careful analysis of customer needs is mandatory for business success.

Release planning is a complex problem. Even for a small problem with 20 features and a planning horizon of three releases, there are already about a trillion combinatorial possibilities to assign each of features to three possible releases (or to decide to postpone some of them). Each of these different options creates different degrees of stakeholder satisfaction and different levels of resource usage. To select the most attractive among those alternative(s) from a large search space is substantially difficult, especially if you also consider dependencies between the features and you need to fulfill given resource or budget constraints.

Ad hoc decision-making essentially relies on human experience and intuition. While both capabilities are important, they cannot replace systematic generation and evaluation of alternatives as done in an optimization approach. The chances of ending up with a planning alternative that does not utilize resources in the best possible way, and even exceeds given capacities, is high for the ad hoc approach. Even when combined with spreadsheet

computations, there is much higher risk to miss opportunities when compared to a plan generated via an optimization approach.

## How to achieve optimized release decisions?

Decision-making is the very foundation of an enterprise, and sound decision-making is absolutely necessary for gaining and maintaining competitive advantage [Forman and Selly '01]. The impact of making wrong or poor decisions in which features are delivered to your customers might be catastrophic. ReleasePlanner™ [RP '10] is an industry proven decision support system. It is based on cutting edge research with in total more than 35 person years of R&D effort. The system provides support for most of the aspects of a systematic and transparent release planning approach.

The main difference between ReleasePlanner™ and the variety of existing commercial tools is related to the fundamental difference between “Administration of objects” and “Intelligent search for the best possible alternatives”. Intelligent search includes administration but is not limited to that. This capability to conduct intelligent search also facilitates systematic elaboration and analysis of planning scenarios with varying parameters for resource capacities, effort or importance. From looking at the different pairs of problems and solution parameters, the user can expect a better insight into the problem solving situation, e.g., the system supports human decision-making.

## Conclusions

The added value of following a systematic release planning process and the supporting tool ReleasePlanner™ has been demonstrated in various industry projects. It relies on one or more of the following factors:

- More successful products with higher match of customer expectations
- Better understanding of main differences and commonalities in stakeholder priorities
- Less time needed to perform planning and subsequent rounds of re-planning
- Higher commitment of stakeholders because of their involvement in the process
- Higher acceptance of proposed plans because of higher transparency of decisions
- Faster adjustment to changed conditions by re-running planning processes under modified settings

## References

[Forman and Selly '01]

Forman, E. H. and Selly, M. A., *Decision by Objectives: How to Convince Others That You Are Right*, World Scientific Press, 2001

[RP '10]

ReleasePlanner™, Expert Decisions Inc., [www.releaseplanner.com](http://www.releaseplanner.com)

[Ruhe '10]

Ruhe, G., *Product Release Planning – Methods, Tools and Applications*. CRS Press, appears in June 2010.

[Standish '09]

Standish Report, Solutions for Enterprise Project and Portfolio Management, The Standish Group International, Inc., 2009,

[Wiegers '03]

Wiegers, K., *Software Requirements*, Microsoft Press, 2003