# Cruising the Bermuda Triangle of Software Development

*A study about perceived challenges of Belgian software product builders*

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Software is becoming a major driver for innovation in various sectors and has acquired a unique position in the value creation processes of companies [1]. The software ratio increases in many products, and therefore many of them become software intensive. This has implications for the builders of these products as they have to leave their comfort zone of "traditional" product development, and enter the realm of software (intensive) product development.

Between 2004 and 2007, SIRRIS[1] conducted an empirical study at 57 software intensive product builders in Belgium[2]. The goal of the study was to gain insights in how builders of software intensive products perceive the challenges they face in the domain of software engineering. The objective was threefold: (1) to identify the perceived individual challenges of software intensive product builders; (2) to consolidate this information in a set of shared challenges; and (3) to use this information for launching industry-driven research initiatives and advisory services to the Belgian industry.

During the study companies were approached individually to determine their individual challenges. This generated a large pool of individual challenges, most of them formulated within the scope of the various disciplines of software engineering (requirements, testing, quality…). In a next step, these were grouped on the basis of similarity, resulting in a set of shared challenges. Finally, a limited set of key strategic challenges emerged that cross-cut the various disciplines of software engineering. These are challenges that, if mastered efficiently, can result in a competitive advantage for a product builder.

The study revealed a remarkable convergence towards three key strategic challenges, referred to as the Bermuda Triangle of software product development: Product Variability, Flexible Development and Risk Management of Failure:

- Product Variability is the problem of managing the complexity of a product and its large number of possible variants (e.g., because of personalization, regionalization, language…).
- Flexible Development is the problem of managing the speed of the development

[1] SIRRIS is the collective centre of the Belgian technology industry. SIRRIS advises and supports companies on the implementation of technological innovations, enabling them to strengthen their competitive position over the long-term.

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process (i.e., reducing the development lead time).

- Risk Management of Failure is the ability to fully exploit the potential of software in products while at the same time dealing with the high number of potential failures introduced by this software.

In this talk, we will introduce the challenges of Flexible Development and Risk Management of Failure challenges, and focus on the Product Variability challenge in more detail, explaining why variability is becoming more and more important and why companies still perceive managing variability as a challenge, despite the abundant state-of-the-art.

## References

[1] ITEA Blue Book: "European leadership in Software-intensive Systems and Services - The case for ITEA 2". ITEA Office, September 2005. http://www.itea2.org/itea_2_blue_book