

A DATA-DRIVEN APPROACH TO UX-FOCUSED MODEL-BASED ROADMAPMING FOR NEW PRODUCT PLANNING

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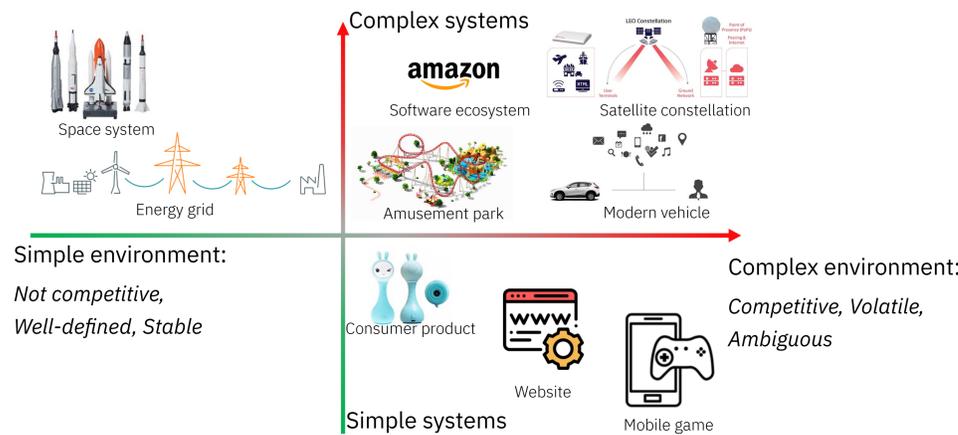
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Abstract: User-experience (UX) focused business needs to survive and plan its new product development (NPD) activities in a highly turbulent environment. The latter is a function of volatile UX and technology trends, competition, unpredictable events, and user needs uncertainty. To address this problem, the concept of design roadmapping has been proposed in the literature. It was argued that tools built on the idea of design roadmapping have to be very flexible and data-driven (i.e., be able to receive feedback from users in an iterative manner). At the same time, a model-based approach to roadmapping has emerged, promising to achieve such flexibility. In this work, we propose to incorporate design roadmapping to model-based roadmapping and integrate it with various user testing approaches into a single tool to support a flexible data-driven NPD planning process.

Context:

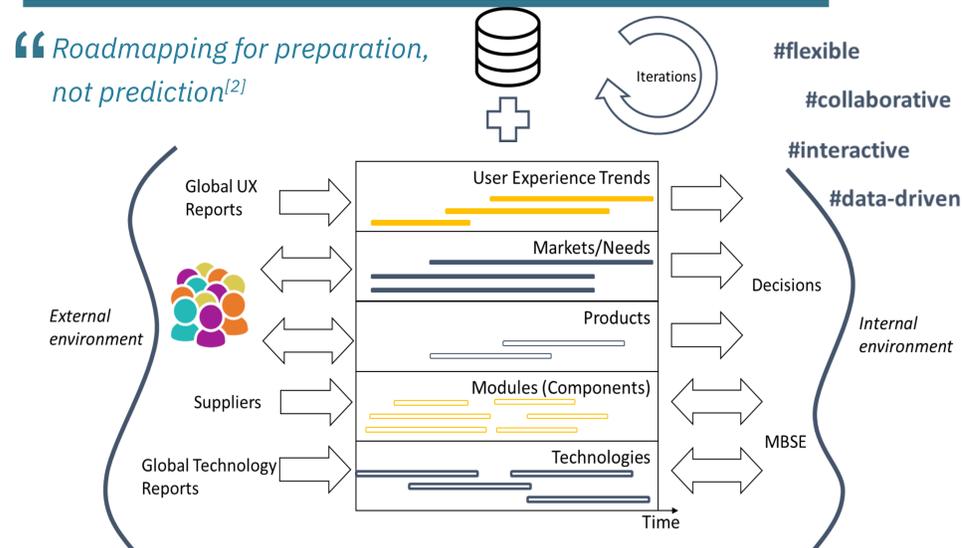
Complexity of systems and complexity of products



User experience is a composite time-dependent concept with many unknowns, which complicates management and planning

Global research question: How to facilitate the new product development and strategic planning activities to create products and services that offer the best user experience on the market?

Proposition: Integrate model-based^[1] roadmapping and design roadmapping^[2]

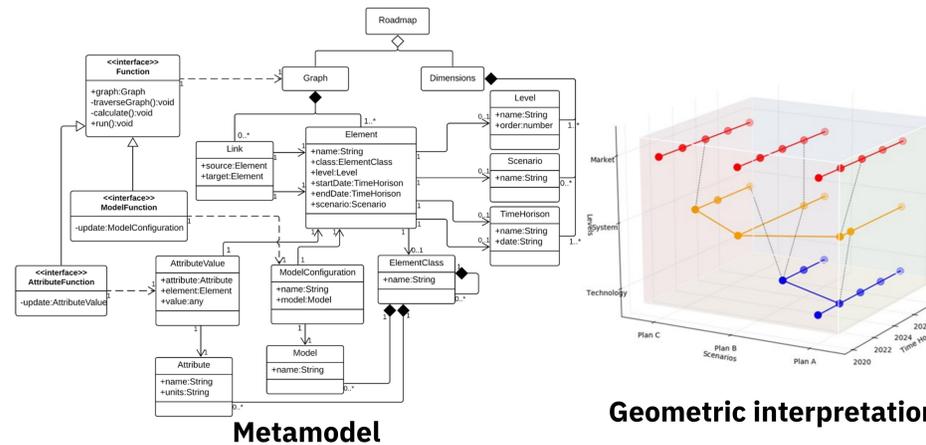


UX-, product-, and technology-related concepts must be stored in a computer as a graph with predefined formal syntax

RQ1: Can we propose a metamodel for the model-based technology roadmapping that will define this field independently from application domain?

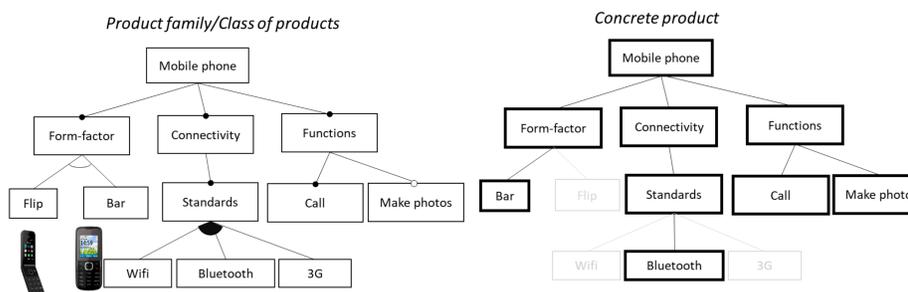
Contribution 1:

Metamodel for model-based roadmapping

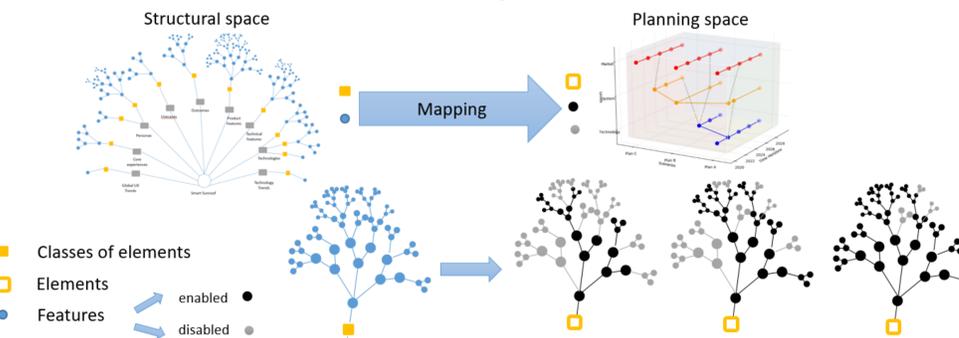


RQ2: How to support user-centered model-based roadmapping?

Contribution 2: Feature-oriented domain analysis as a universal model for UX/product/technology modeling



Feature trees are thoroughly developed; have compact visual syntax; suitable for UX and product modeling

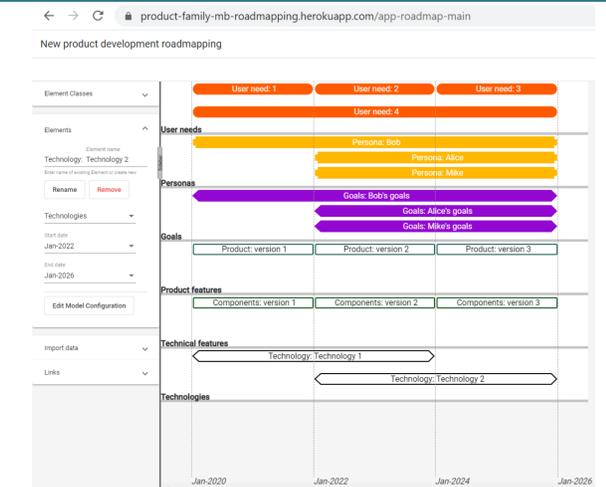


All possible design alternatives

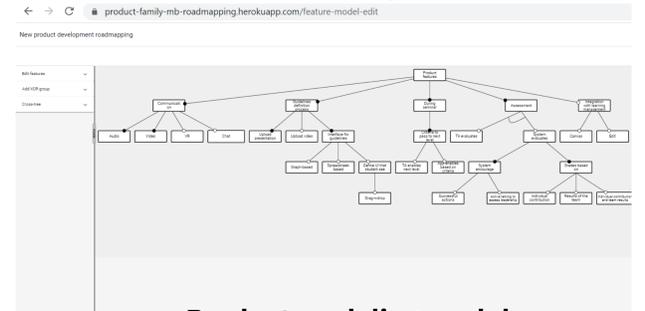
Concrete product configurations (or an evolution of a product line)

Feature tree instantiation represents product versions and configurations, variability in UX, etc. Cross-tree constraints enable consistency checks and requirements traceability.

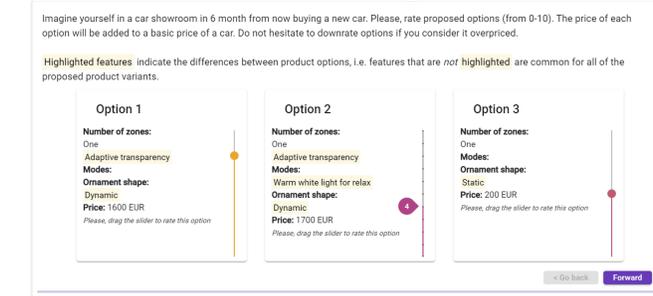
Implementation: Web-based software tool for user-centered model-based roadmapping



Roadmapping module



Product modeling module



User testing module

References:

[1] Knoll, D., Golkar, A., de Weck, O., 2018. A concurrent design approach for model-based technology roadmapping, in: 2018 Annual IEEE International Systems Conference (SysCon). Presented at the 2018 Annual IEEE International Systems Conference (SysCon), pp. 1–6. <https://doi.org/10.1109/SYSCON.2018.8369527>
 [2] Kim, E., Beckman, S.L., Agogino, A., 2018. Design Roadmapping in an Uncertain World: Implementing a Customer-Experience-Focused Strategy: California Management Review. <https://doi.org/10.1177/0008125618796489>