

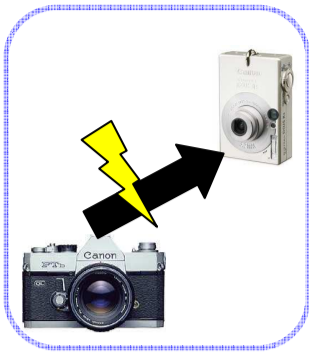
Agile engineering practices to cope with a major product architecture change in a context of intensive innovation

G-SCOP Laboratory
 INPGrenoble,
 46, avenue Félix Viallet,
 38031 GRENOBLE CEDEX - FRANCE
 Email : name.lastname@g-scop.inpg.fr
 Tél.: +33 (0)679 52 87 11



Charlotte Wieder

PCO Technologies
 1, place Firmin Gautier 38000
 GRENOBLE France
<http://www.pcocorp.com/>



Goal

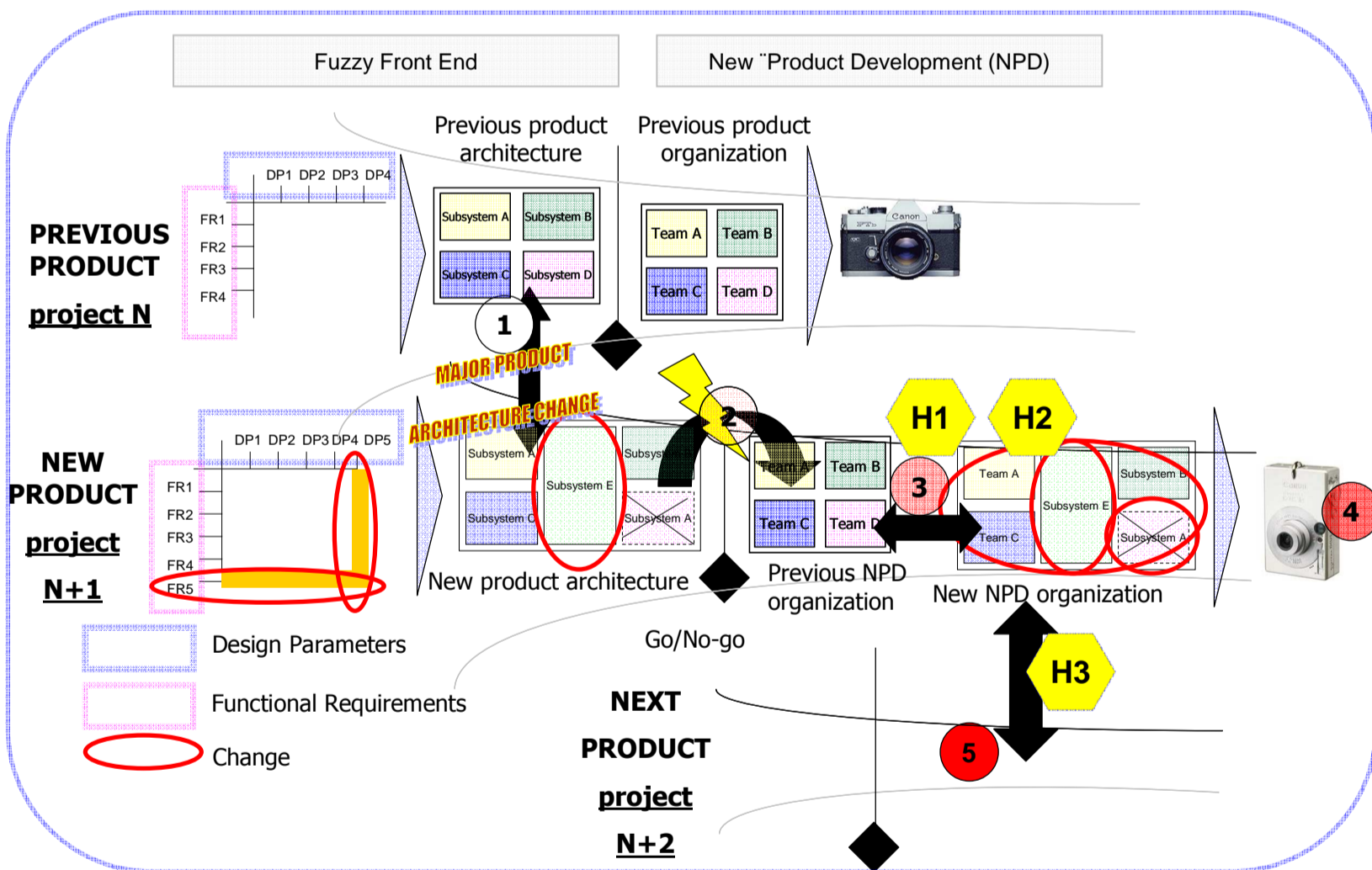
Improve the ability and effectiveness of New Product Development (NPD) to cope with a major product architecture change

Background

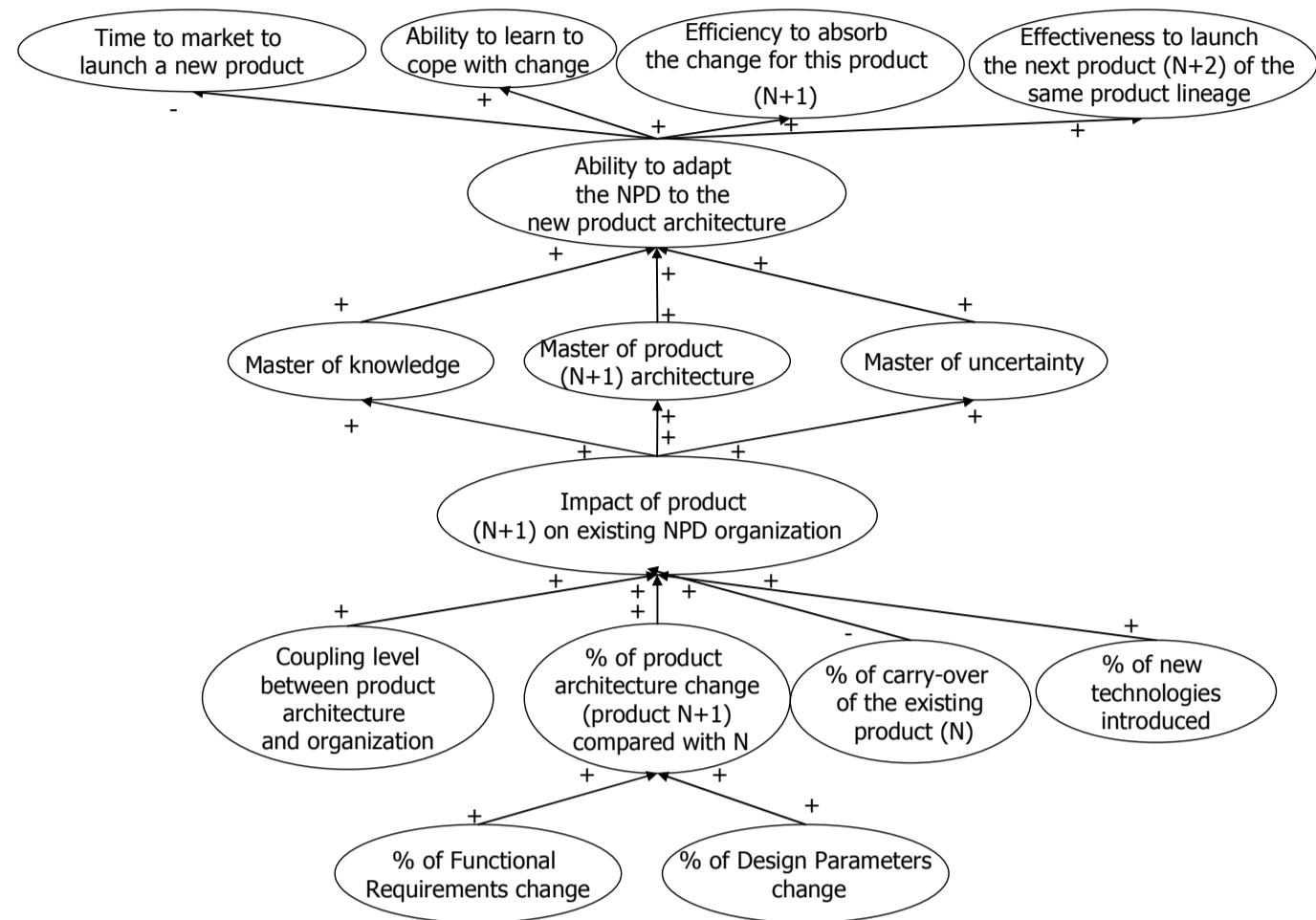
The New Product Development (NPD), as the second phase of the innovation process, is a well formalized process, with well known goals, skills and validation processes. To innovate in a continuous way, innovative design introduces new values, functions, knowledge, skills, which can change the product architecture. Hence, a major product architecture change can « disturb » the routine of NPD and necessitates reconfiguration, to better cope with change and reconfigure the NPD organization.

Main research questions

- 1 How to identify and measure the gap between the new (N+1) and the previous product (N) architecture?
- 2 How to measure the gap between the current and the required Organizational Structure Decisions?
- 3 How to reconfigure the Organizational Structure Decisions and organize the learning phase?
- 4 How to assess if the new organization (N+1) fits well to develop the new product (N+1) ?
- 5 How to capitalize the learning experience on the next projects from the same product lineage?



Reference model



FEW DEFINITIONS

Major product architecture change : can occur at the component, sub-system or the whole architecture of the product. Can change the dominant design.

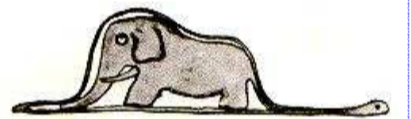


Dominant design : « is characterized both by a set of core design concepts embodied in components that correspond to the major functions performed by the product and by a product architecture that defines the ways in which these components are integrated » [Henderson and Clark, 1990]

Product lineage :

• A major concept, a product family, a set of growing knowledge relative to usage value and disciplines knowledge.

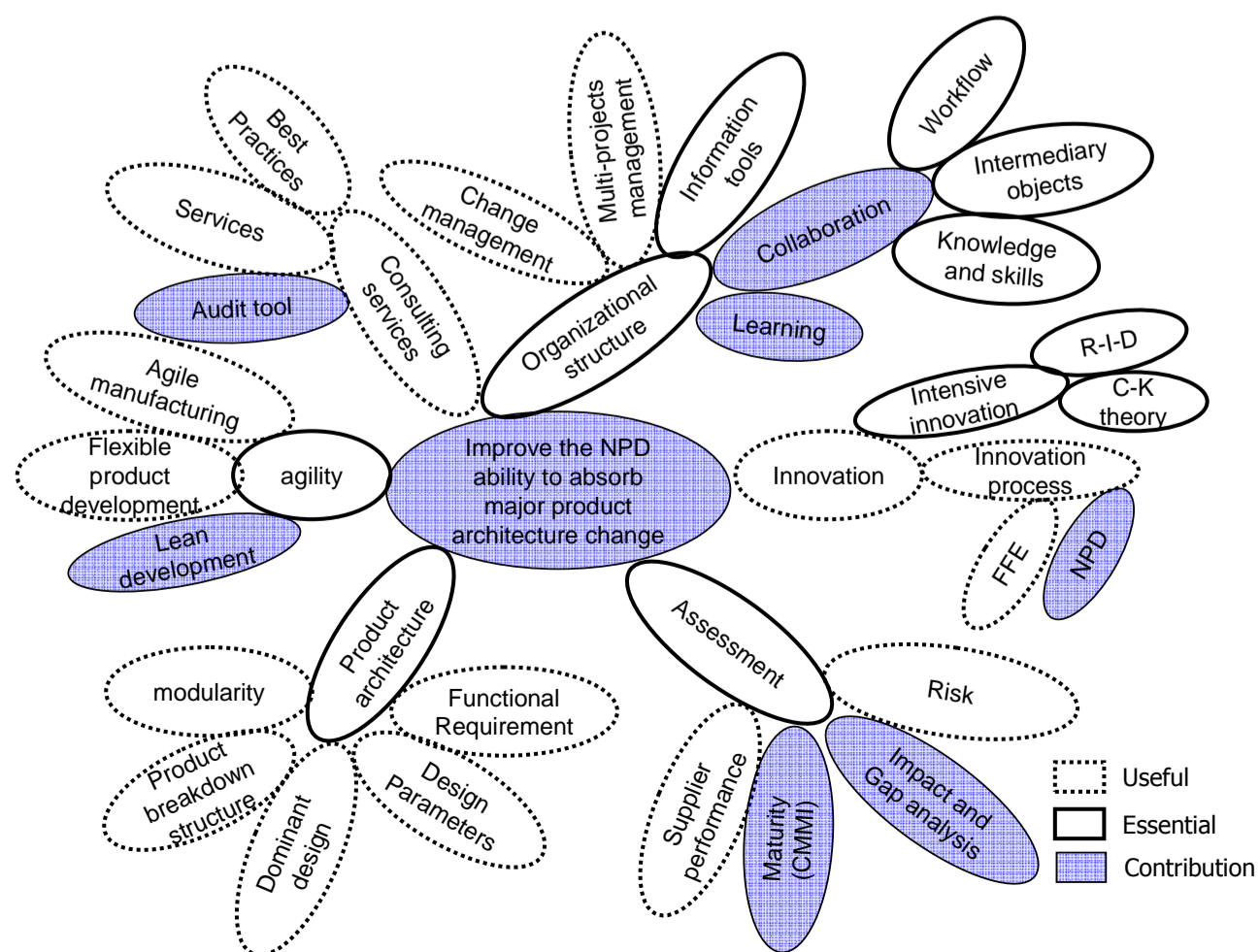
Agility : ability to anticipate and face changes. Ex :



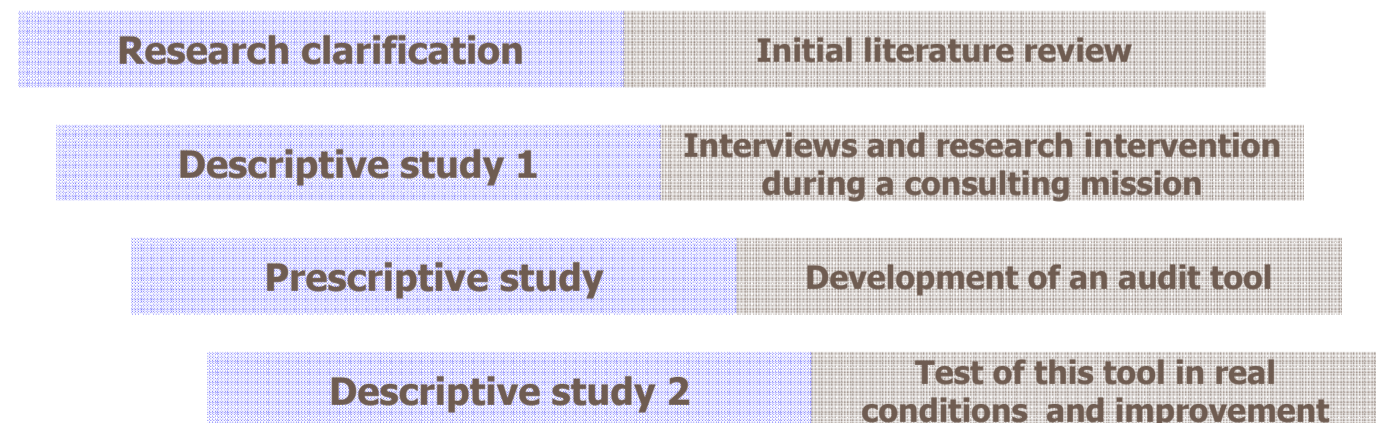
Hypotheses

- H1** A major product architecture change (interface, sub-system, components) might introduce instability and change at the NPD organization level
- H2** It is necessary to reconfigure the organizational structure decisions to adapt it to the new product to develop (new network, workflow and exchange of intermediary object, knowledge and skills...)
- H3** It is possible to capitalize on the learning phase to reuse best practices for next product development within a same product lineage.

Areas of Relevance and Contribution model



Research approach



Expected results

- Typology of the product architecture changes when innovating
- Gap analysis tool mapping product architecture changes with the impacts on organizational structure
- Audit tool to analyze the NPD agility to cope with major product changes
- Best practices defining how to identify, measure and face change