Towards Contextualizing Agile Processes Decision Making

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Towards Contextualizing Agile Processes Decision Making

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OUTLINE

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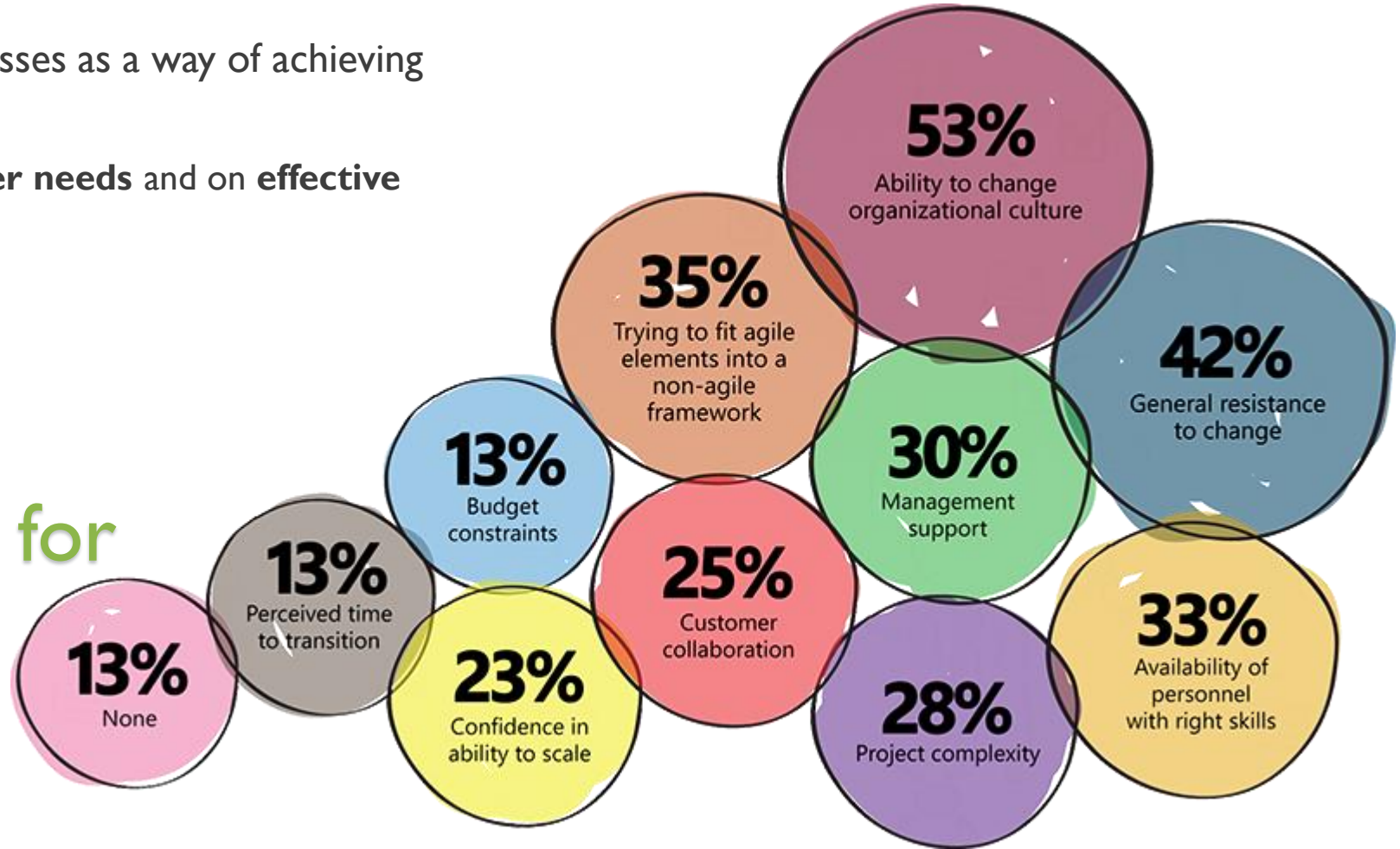
2. Research Goal
3. Background: Guiding approaches for Agile adoption
4. AM-QuICk Approach
   - Overview
   - Process Modeling
   - Context Modeling
   - Illustration
5. Conclusion: Future Work and Threats of Validity

INTRODUCTION

- Widespread adoption of Agile processes as a way of achieving **efficient** Software engineering:
  - avoid waste by focusing on **customer needs** and on **effective collaboration**
  - **maximizing value continuously**
- Growing community

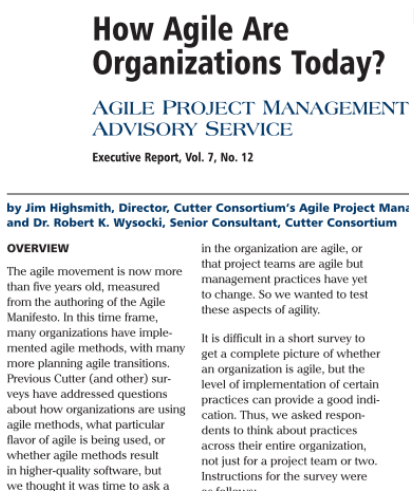
but still many barriers for further adoption …



Source: State of Agile Survey, Version One, 2013

PROBLEM STATEMENT:
AGILE ADOPTION BARRIERS – LITERATURE REVIEW

1. **Lack of evidence, and so confidence**
   - How to measure the impact of practices introduction?
   - What indicators : statistics and data to prove evidence?
2. **Unsuited Environment**
   - How much Agility is required?
   - How to scale? How to assess the ability of scaling Agile?
   - What are the influencing environmental factors?
   - How can we measure them?
3. **Profusion of practices and techniques**
   - How to know / assess which are more suitable? more beneficial?



How Agile Are Organizations Today?

AGILE PROJECT MANAGEMENT ADVISORY SERVICE

Executive Report, Vol. 7, No. 12

by Jim Highsmith, Director, Cutter Consortium's Agile Project Mana and Dr. Robert K. Wysocki, Senior Consultant, Cutter Consortium

OVERVIEW

The agile movement is now more than five years old, measured from the authoring of the Agile Manifesto. In this time frame, many organizations have implemented agile methods, with many more planning agile transitions. Previous Cutter (and other) surveys have addressed questions about how organizations are using agile methods, what particular flavor of agile is being used, or whether agile methods result in higher-quality software, but we thought it was time to ask a

in the organization are agile, or that project teams are agile but management practices have yet to change. So we wanted to test these aspects of agility.

It is difficult in a short survey to get a complete picture of whether an organization is agile, but the level of implementation of certain practices can provide a good indication. Thus, we asked respondents to think about practices across their entire organization, not just for a project team or two. Instructions for the survey were

The Top 10 Burning Research Questions from Practitioners

Sallyann Freudenberg and Helen Sharp

What research do software practitioners really want?

Software practitioners frequently complain that academic research doesn't meet their requirements or expectations—in short, that researchers are wasting their time. At the XP 2010 conference in Trondheim in June, this question was met

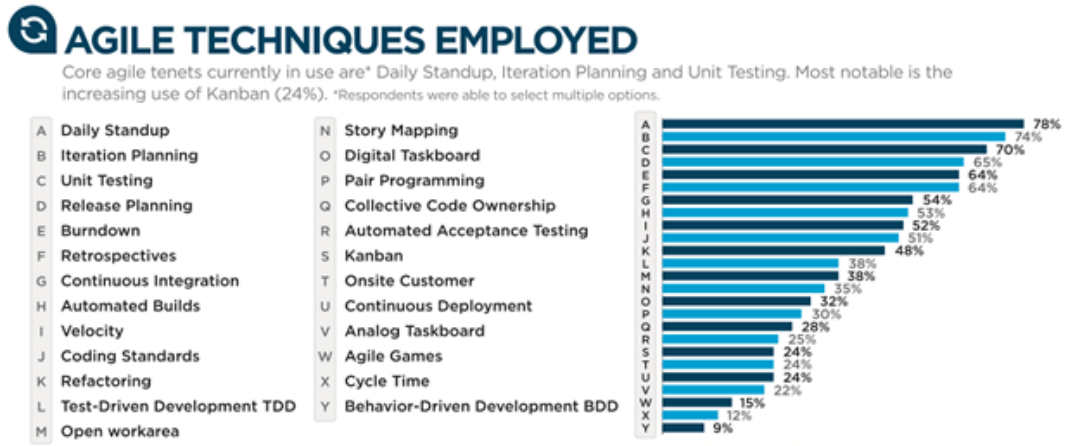
tent of the resear community was tions"—particul addressed by th those of most int

At the panel apply agile techr conference audie log (list) of resea session the follo titioners present question or issue We collected a board (see Figur on their favorite titioners were at about 60 differe

We then use way to organize the item with th those with no ve ously created the

head-on in the context of agile software development in a panel entitled "Is Agile Research Dead in the Water?" The panel and audience identified a worrying disconnect between the research that

- Agile and large projects. (7)
- What factors can break self-organization? (6)
- Do teams really need to always be collocated to collaborate effectively?* (6)
- Architecture and agile—how much design is enough for different classes of problem?* (6)
- Hard facts on costs of distribution (in $, £, €, and so on). (5)
- The correlation between release length and success rate. (5)
- What metrics can we use with minimal side-effects? (5)
- Distributed agile and trust—what happens around 8–12 weeks?* (4)
- Statistics and data about how much money/time is saved by agile. (4)
- Sociological studies—what were the personalities in successful/failed agile teams?* (4)



AGILE TECHNIQUES EMPLOYED

Core agile tenets currently in use are* Daily Standup, Iteration Planning and Unit Testing. Most notable is the increasing use of Kanban (24%). *Respondents were able to select multiple options.

A	Daily Standup	78%
B	Iteration Planning	74%
C	Unit Testing	70%
D	Release Planning	65%
E	Burndown	64%
F	Retrospectives	64%
G	Continuous Integration	54%
H	Automated Builds	53%
I	Velocity	52%
J	Coding Standards	51%
K	Refactoring	48%
L	Test-Driven Development TDD	38%
M	Open workarea	38%
N	Story Mapping	35%
O	Digital Taskboard	32%
P	Pair Programming	30%
Q	Collective Code Ownership	28%
R	Automated Acceptance Testing	25%
S	Kanban	24%
T	Onsite Customer	24%
U	Continuous Deployment	24%
V	Analog Taskboard	22%
W	Agile Games	15%
X	Cycle Time	12%
Y	Behavior-Driven Development BDD	9%

PROBLEM STATEMENT: AGILE ADOPTION BARRIERS – IN-VIVO OBSERVATION

Organization Context

- A middle-sized organization of **2,300 employees**
- IT service : **84 people**, mainly focused on the IT activities of the Walloon payment agency in Belgium
- 15 projects in progress
- **Five units organized by business roles** : Architecture, Quality insurance, Developers, Project managers, Analysis

Study Methodology

- **QUALITATIVE: Semi-structured Interviews :**
  - 2h per. business role unit
  - 2h project retrospective
- **QUANTITATIVE: 2 Questionnaires**
  - 15 project teams
  - 1st Questionnaire **: Analyze the current process** in terms of agility degree : Team organization, Project management, Requirements analysis, Development practices
  - 2nd Questionnaire : **Identify the desired and/or applicable agile practices**
  - **64 participant**
  - **74 % participation rate**

Supported Approach for Agile Methods Adaptation: An Adoption Study

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ABSTRACT

Adopting agile software development methods is a wide and complex organisational change that usually impacts several aspects of the organisation (e.g., its structure, culture, management practices, produced artefacts, technologies in use, etc). In order to successfully handle the several key challenges, it's crucial to understand the organisation context and carefully study the transformation strategies.

This paper presents an agile transformation experience that has been undertaken in a public organisation in Belgium and during which Scrum was applied in two pilot projects. The first project retrospective shows that the change cannot be accomplished only at the team-level without taking into account the overall structure of the organisation and that we must carefully evolve toward a context-specific adapted method. In the second pilot project, we defined structured and repeatable steps to assist the adoption of agile practices. The experience shows the usefulness of such an approach but suggests that automation efforts should be addressed.

The last section of the paper summarizes the issues encountered and presents the AM-QuICK framework [3] which aims at providing a supported approach to guide the agile adoption, adaptation and assessment.

Categories and Subject Descriptors

K.6.3 [**Management of computer and information systems**]: Software Management; D.2.9 [**Software Engineering**]: Management

General Terms

Management, Experimentation

Keywords

Agile Software Development, Agile Process Assessment, Software Process Improvement, Agile adoption, Software Methods Customisation / Adaptation,

MCoSE '14, June 3, 2014, Hyderabad, India

1. INTRODUCTION

While no longer a new phenomenon and while many software companies claim its undeniable benefits, agile software development is still controversial in some circles such as the public IT sector [12]. The main reason for this scepticism is that the public sector reality is perceived as hardly suitable for agile management structures and culture. For instance, the project budgeting in public organisations is managed very tightly (i.e., the government customers want to know up-front how much a system will cost). This may seem to be in contradiction with the "responding to change" agile value. Actually, there is no contradiction with the agile principles and values but with the common agile practice referred to as "fixed time-material contracting"(i.e., paying for work as it gets done).

More generally, regarding the flexibility of the agile values, most of the practitioners state that agile software development methods and practices can be stretched to a broad set of contexts [2] (e.g., by scaling them to distributed teams, larger projects, etc.) insofar the agile adoption strategies are carefully studied.

However, while several agile adoption success stories exist in the literature [10, 11, 7, 9], many of them are too narrowly focused at a specific organisation and cannot be generalised to other organisations with different needs. Understanding the organisation specific context is therefore a key challenge for agile methods adoption (i.e., how to capture the organisational and project's context and how to adapt accordingly?). Assessing the readiness of the organisation to accept cultural change is also crucial to minimize the adoption risks and avoid failure.

Furthermore, organisations aspiring for agility are commonly confronted to the lack of guidance and assistance approaches. The experiences and contributions the agile community practitioners and researchers have reported are valuable but are more often based on teams' intrinsic non-quantified knowledge instead of neutral quantitative elements that would assist the adoption decisions.

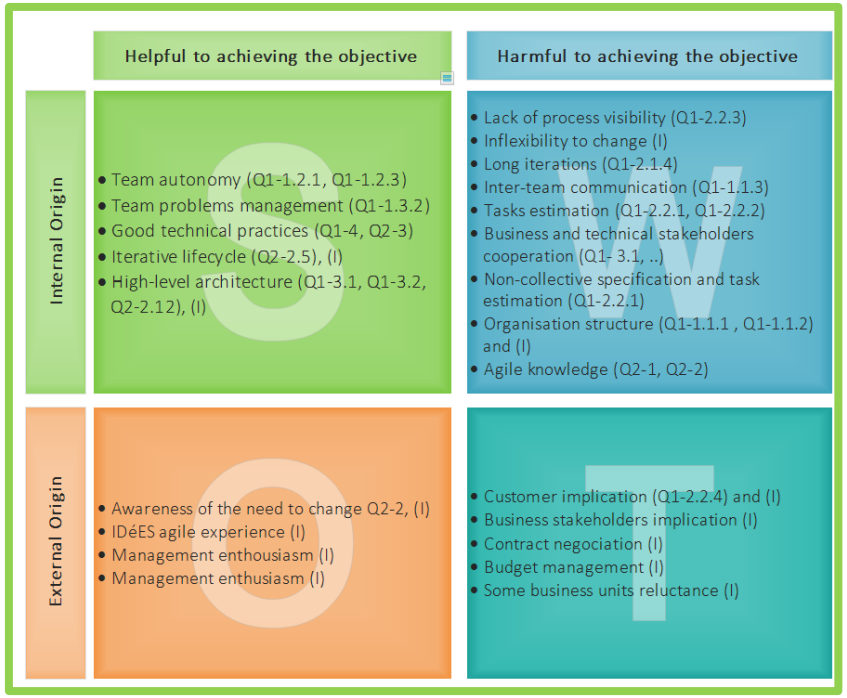
This paper aims to understand the several key challenges of agile software adoption through formalised investigations. It presents an agile transformation experience that has been undertaken in a public organisation in Belgium and during which Scrum was applied in two pilot projects.

In view of the numerous issues that face organisations pursuing agility and the lack of guiding approaches (particularly in the public domain) [16], we propose to generalize the experience and to investigate a supported approach to assist software methodologists in adopting context specific

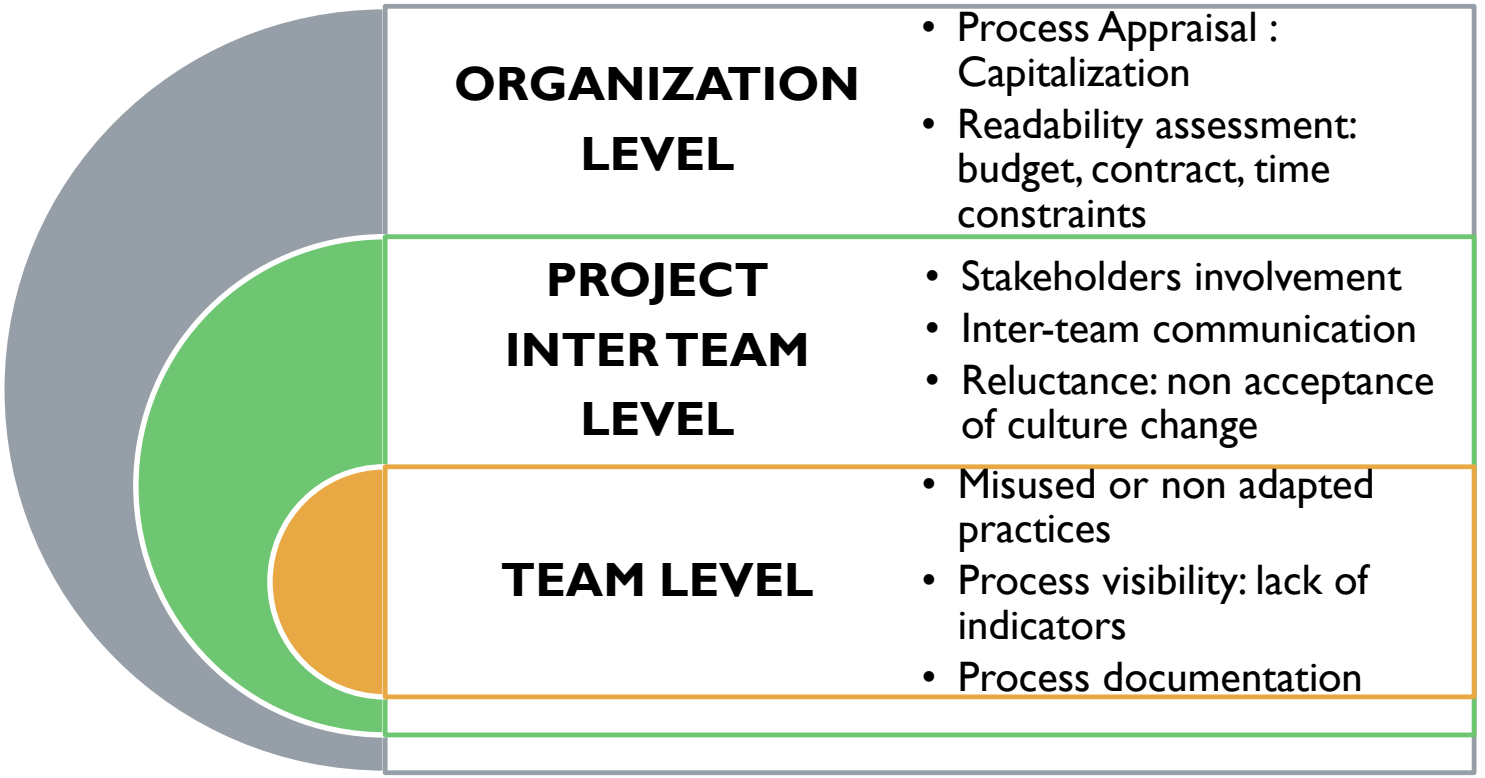
Source: Supported approach for agile methods adaptation: an adoption study, Ayed et al., 2014

PROBLEM STATEMENT:
AGILE ADOPTION BARRIERS – IN-VIVO OBSERVATION

Qualitative Analysis Summary



3-Level Agile adoption barriers



Source: Supported approach for agile methods adaptation: an adoption study, Ayed et al., 2014

PROBLEM STATEMENT
GUIDING APPROACHES – LITERATURE REVIEW

- No structured approaches:
  - based on experts implicit knowledge
  - Non repeatable, difficult to exploit
- Existing structured approaches:
  - just guidelines with repeatable steps
  - no automation

RESEARCH DIRECTION

Research Goal

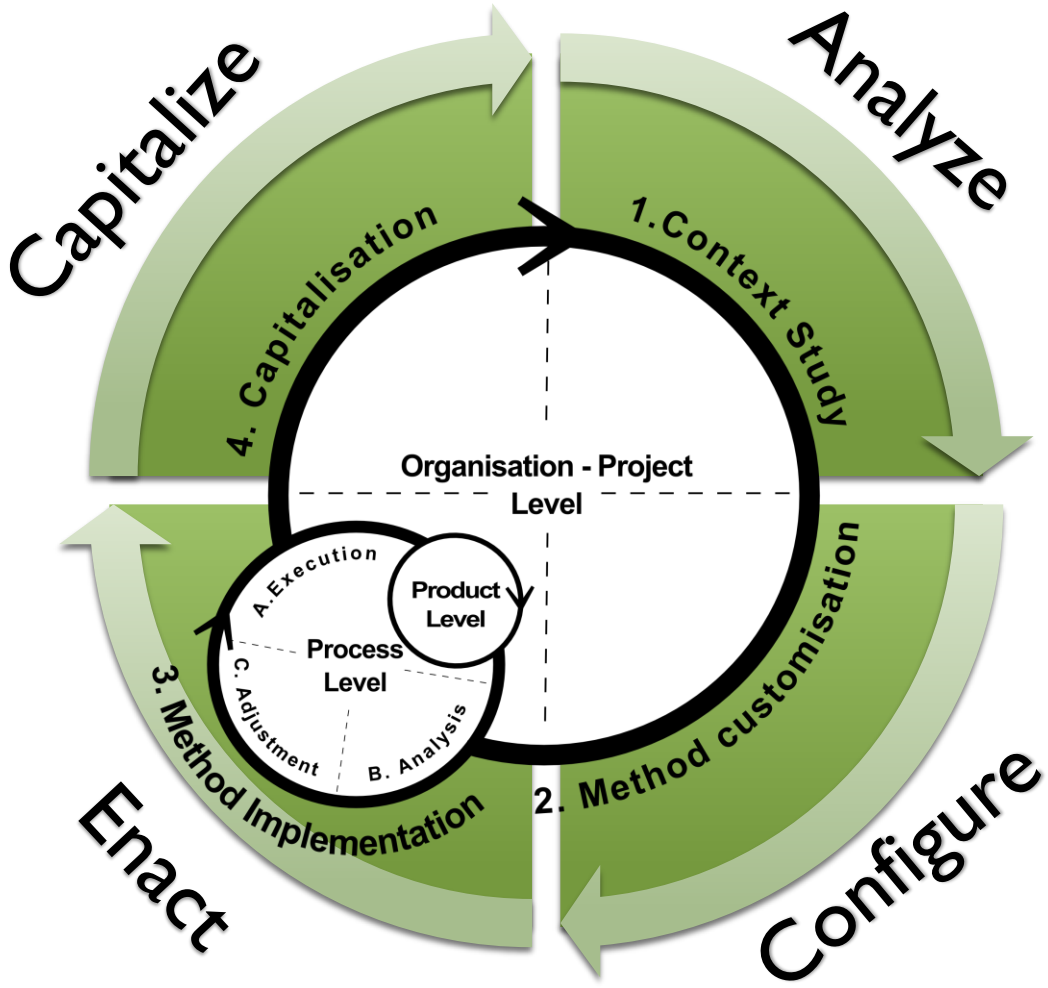
- Investigate an approach for guiding Agile processes adoption and improvement
  - **structured:** repeatable steps
  - based on **objective decision-making** elements

Research Questions

- **RQ1 :** How can we characterize an **Agile Context?** What **attributes** influence Agility?
- **RQ2 :** How can we engineer and/or configure **suitable** Agile processes based on **those attributes**?
- **RQ3 :** How can we e**mpower decision-making with context indicators?**

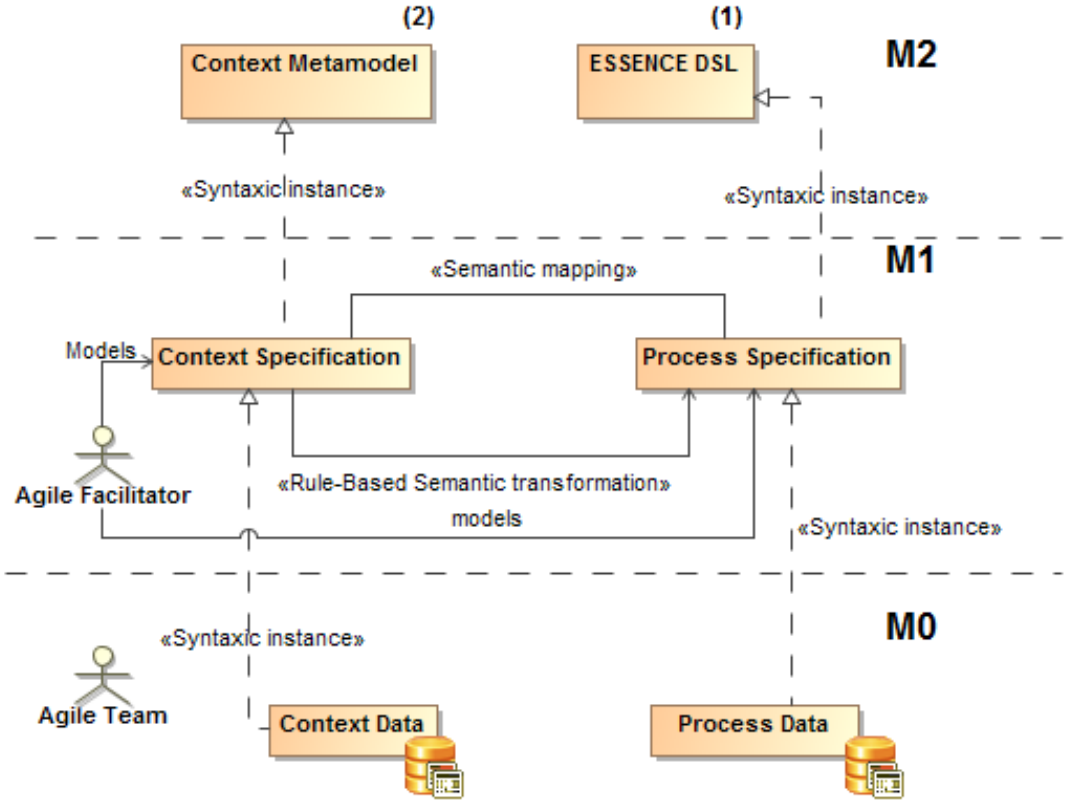
AMQUICK APPROACH
OVERVIEW

- **AM-QuICK Framework**
- **Proposed structured steps (based on QIP):**
  1. **Context analysis :** characterize the context through interviews, GQM-based diagnosis, risk assessment tools, etc.
  2. **Agile Process Configuration:** Selection of suitable practices, Composition
  3. **Enactment:** Enactment of the process, analysis of feedback to allow later adjustments
  4. **Capitalization :** Future incoming projects have to profit from the gained experience



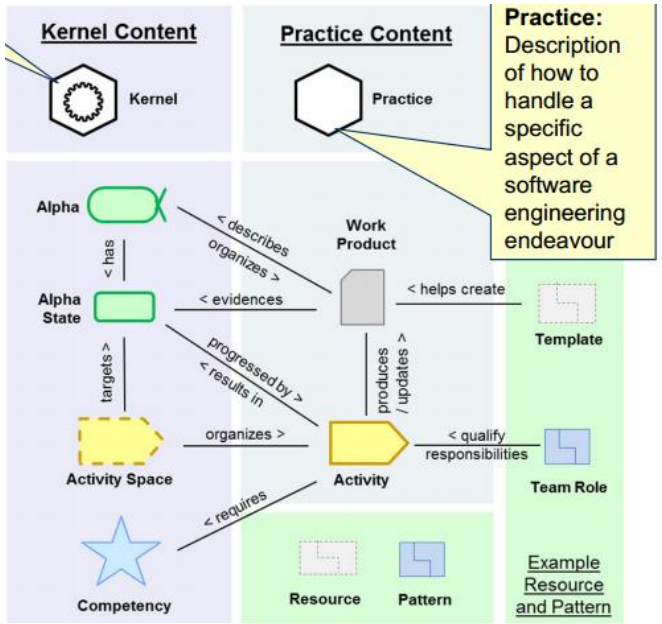
AMQUICK APPROACH COMPONENTS

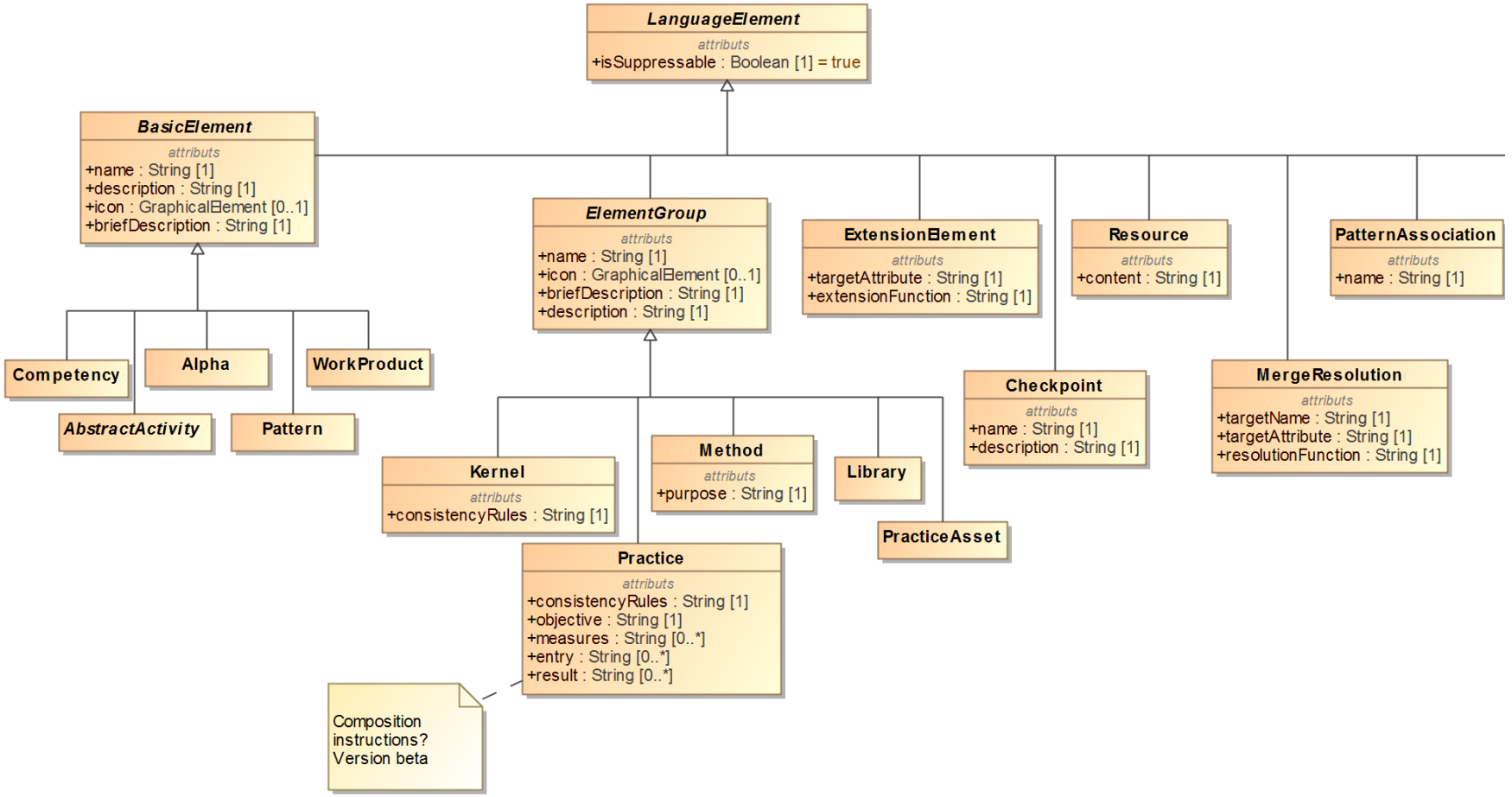
- **Process DSL:** design of process components and relationships
- **Context metamodel:** to describe different context profiles
- **Repository of reusable process components**
- **Rule-based engine (work in progress)**
  - **Knowledge database:** document process engineering rules(adaptation, extension, ..), tacit knowledge of experts and practitioners
  - **Inference engine**



AMQUICK APPROACH: PROCESS MODELING

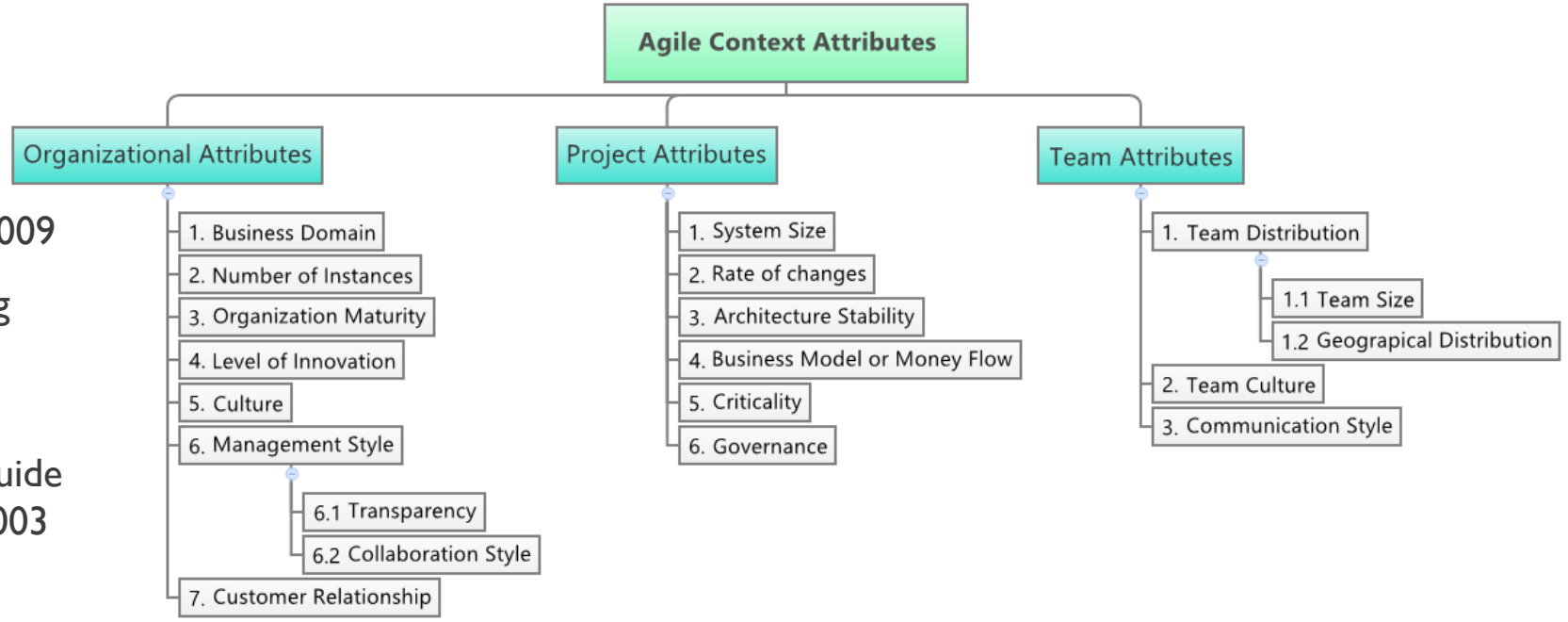
- Simple DSL
- Graphical Notation
- Agile oriented
- Extensible



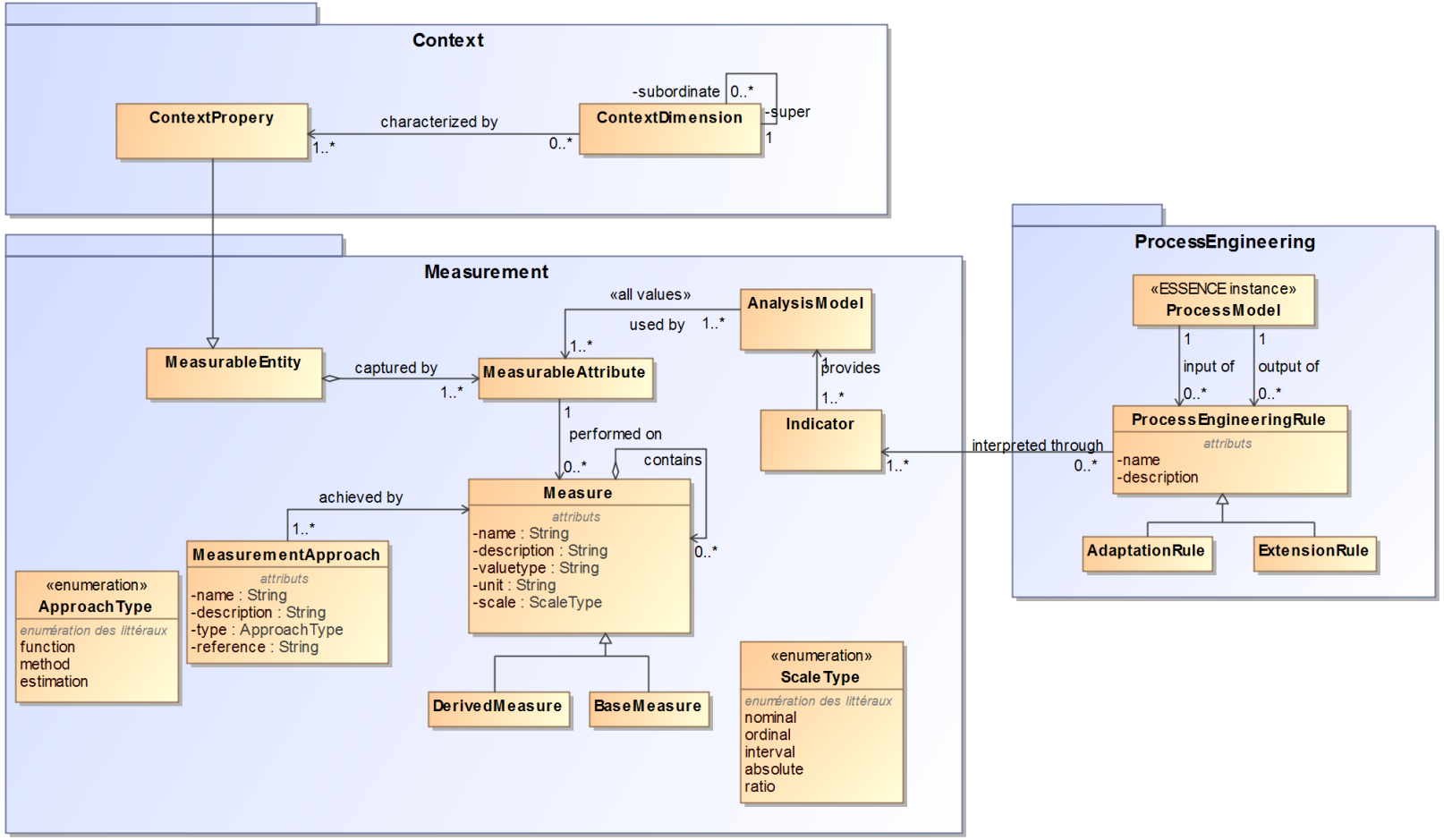


AMQUICK APPROACH: CONTEXT MODELING

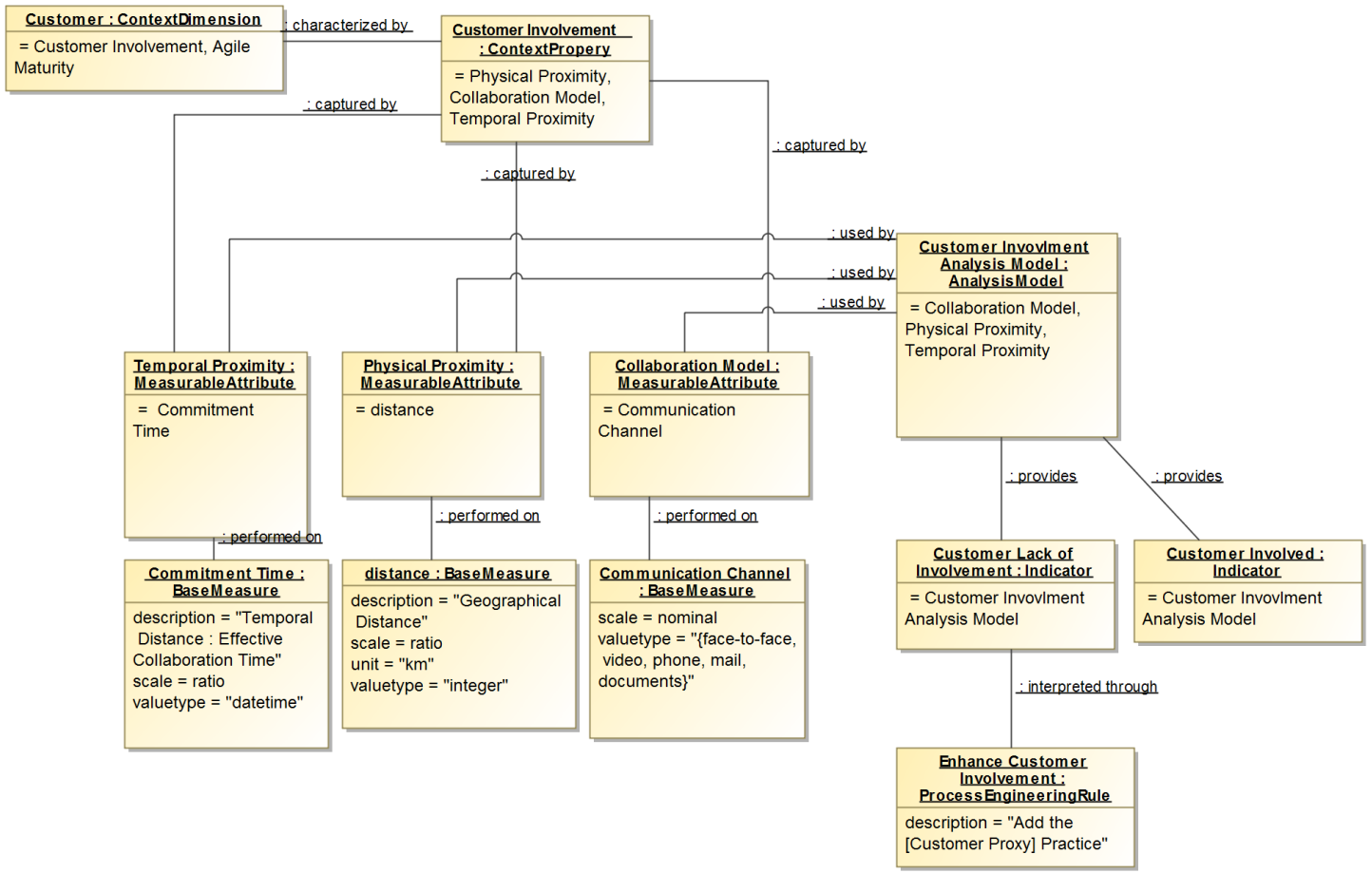
- Context taxonomy:
  - "Contextualizing Agile Software Development", Kruchten 2013
  - "Agile Scaling Factors", S. Ambler 2009
  - "A disciplined approach to adopting agile practices: the agile adoption framework", Sidky et al., 2012
  - "Balancing agility and discipline: A guide for the perplexed", Boehm et al., 2003



AMQUICK APPROACH: CONTEXT MODELING

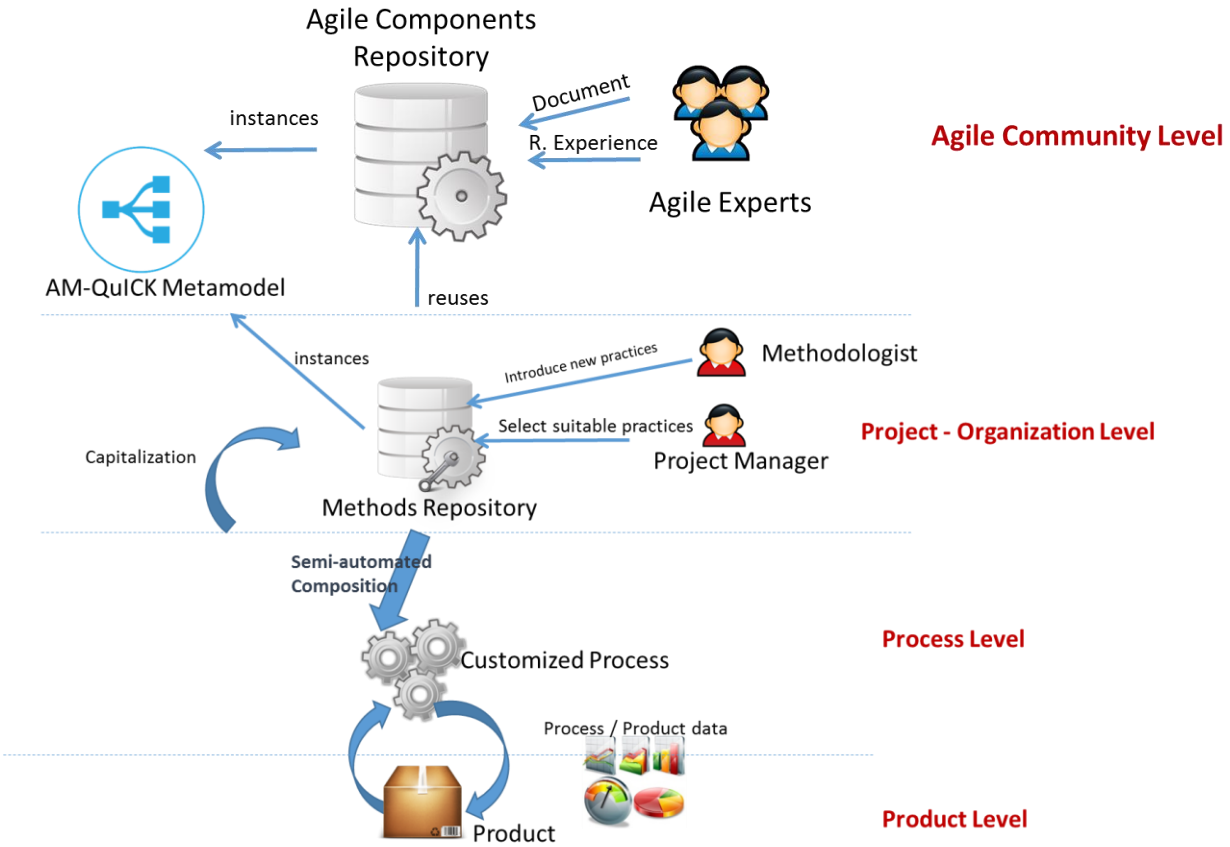


AMQUICK APPROACH:
CONTEXT MODELING: ILLUSTRATION



CONCLUSION AND FUTURE WORK

- Practices Independence :
  - No **BEST** practices but **MOST SUITABLE** practices
  - Practices are **CONTEXTUAL**
- The approach aims to support the **rapid and continuous decision making** to drive the process
- The approach is a way to:
  - **raise up the experts' knowledge**
  - learn from their **intuitive reasoning not to replace it**
  - Raise-up the **process visibility** to the organization level
  - Structure Agile Processes components / share with the community



CONCLUSION AND FUTURE WORK

- Threats of validity
  - some practitioners reluctance: the approach is supported by managers, namely the projects portfolio manger. We still need a lot of communication
  - Assess whether the concerns being addressed by the research match those of practitioners and brings value: An evidence-based research is being conducted (a systematic literature review)
  - Still have to consider: practices for adoption of Agile methods at the organization level
- Future work :
  - Rule-based engine: Suggest decisions according to the evolution of the project data and context

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