Towards Contextualizing Agile Processes
Decision Making

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OUTLINE

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4. AM-QuICk Approach
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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…**

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. Unsuitable 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?
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

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

<table>
<thead>
<tr>
<th>Helpful to achieving the objective</th>
<th>Harmful to achieving the objective</th>
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<tbody>
<tr>
<td>Team autonomy (Q1-1.2.1, Q1-1.2.3)</td>
<td>Lack of process visibility (Q1-2.2.2)</td>
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<td>Team problems management (Q1-1.3.3)</td>
<td>Inflexibility to change (I)</td>
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<td>Good technical practices (Q1-4, Q2-3)</td>
<td>Long iterations (Q1-2.3.4)</td>
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<td>Iterative lifecycle (Q2-2.1-i), (ii)</td>
<td>Inter-Health communication (Q1-1.3, 3)</td>
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<td>High-level architecture (Q1-3.1, Q1-3.2, Q2-2.12), (ii)</td>
<td>Tasks estimation (Q1-2.2.1, Q1-2.2.2)</td>
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<td>Stakeholders involvement</td>
<td>Business and technical stakeholders cooperation (Q1-3.3, 3)</td>
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<td>Inter-team communication</td>
<td>Non-collaborative specification and task estimation (Q1-2.2)</td>
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<td>Reluctance: non acceptance of culture change</td>
<td>Organisation structure (Q1-1.1.1, Q1-1.1.2) and (i)</td>
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<td>Misused or non adapted practices</td>
<td>Agile knowledge (Q2-1, Q2-2)</td>
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<td>Process visibility: lack of indicators</td>
<td>Process documentation</td>
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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 empower 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
- **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
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 manager. 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
# CONTACT INFORMATION

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