APPLYING CMMI-DEV ML3 TO AN AGILE FACTORY: A CULTURE SHOCK OR A GREAT COMBINATION?

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HOW DID IT START?

• With a phone call!

“Seriously? Something must be wrong!”

• Me:

“We are Cegeka, we’re an Agile Software Factory and we’re looking for a CMMI Partner”

• It turns out that Cegeka is very serious and interested by a SCAMPI benchmarking of its development practices, in the context of a major customer program

“I wonder how much a quick hunt for a level they’re looking for”

• Now I feel that we are both afraid!

“Is he another CMMI expert who is going to burden our agility with an overload of bureaucratic documents?”
ABOUT CEGEKA

• Cegeka is an independent ICT service provider that helps its customers throughout Europe with their digital transformation, agile development, trusted cloud solutions and 24/7 managed services

• Cegeka has branches in Austria, Belgium, the Czech Republic, France, Germany, Italy, the Netherlands, Poland, Romania and Slovakia, and employs 3,600 people

• In 2015 Cegeka realized a turnover of €368m

• Visit www.cegeka.com for more information.
Cegeka’s “Agile Software Factory” of 300+ people is based in Belgium (Leuven, Gent) and Romania (Bucharest)

- Established in 2004, sharing the values of Scrum and XP
- Application development and application outsourcing
- Most project implement the “traditional” Scrum method; some larger projects have scaled the practices using the SAFe framework or “Scrum of Scrums”
- Facing some challenges
  - Growing and integrating new people who are less aware of the strong in-house Agile culture
  - Integrating Romanian resources at a fast pace
  - On-boarding new applications outsourced by Cegeka’s customers.
ABOUT INSPEARIT

- International consulting group
  - Head office in Paris
  - 4 locations in Europe and Asia
  - 150 worldwide, 75 in France
  - Total independence from vendors, suppliers, solutions

- 25 years of experience providing transformation services to organizations in support of their business stakes

- A diversified offer
  - By sector: Banking, Insurance, Industries, Energy
  - By service: Audit/appraisals, Training, Change Management and coaching, Interim Management
  - By expertise: Agility, Lean Mgt, Operational Process Improvement / CMMI, Technical Debt
SUPPORTING CHANGE MANAGEMENT IN VARIOUS WAYS

- Agile transformation and Agile coaching
- Lean Management
- Process improvement, interim management
- Project audits and organizations process appraisals
- Information security
DEVELOPING A SHARED MINDSET

• After some discussion re: how CMMI and Agile can co-exist and support each other, we converged towards the following approach
• Take things “one step at a time”

An initial “class C” gap analysis by a joint Cegeka – inspearit team
• To gain mutual understanding
• To support the Cegeka team in gaining awareness of CMMI goals and practices expected for Maturity Level 3
• To recommend improvement actions that benefit Cegeka’s projects and business
THE CLASS C FINDINGS IN A NUTSHELL

- Thanks to Scrum and XP, together with continuous build and integration: robust implementations of Project Management and Engineering, as well as Configuration Management.

- The CMMI practice characterization chart was surprisingly “green” for an organization that had not formally appraised its processes with CMMI before.

- **Improvement opportunities** in the areas of:
  - Risk Management
  - Organizational processes:
    - Maintaining knowledge base of assets
    - Sharing experience across projects
    - Without losing the Agile mindset of self-organizing teams where most people are happy to work.
  - The gaps to work on appeared reasonable, and well aligned with team members’ expectations.
## SCRUM & XP VS. CMMI: AN OVERVIEW

<table>
<thead>
<tr>
<th>PA Category</th>
<th>Process Areas (ML2 &amp; ML3)</th>
<th>Scrum &amp; XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management</td>
<td>Project management (PP, PMC, IPM)</td>
<td>Partially covered by Scrum</td>
</tr>
<tr>
<td></td>
<td>Supplier management (SAM)</td>
<td>Not covered</td>
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<tr>
<td></td>
<td>Risk management (RSKM)</td>
<td>Partially covered by Scrum and XP</td>
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<tr>
<td>Engineering</td>
<td>Requirements (RD,REQM)</td>
<td>Fair coverage by Scrum</td>
</tr>
<tr>
<td></td>
<td>Software engineering (TS, PI, VER, VAL)</td>
<td>Fair coverage by XP</td>
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<tr>
<td>Support</td>
<td>Measurement (MA)</td>
<td>Partially covered by Scrum and XP</td>
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<td></td>
<td>Configuration management (CM)</td>
<td>Partially covered by XP</td>
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<td></td>
<td>Quality assurance (PPQA)</td>
<td>Limited coverage</td>
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<td></td>
<td>Decision (DAR)</td>
<td>Not covered</td>
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<tr>
<td>Process Management</td>
<td>Process definition and improvement (OPF, OPD)</td>
<td>Not covered</td>
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<tr>
<td></td>
<td>Organizational training (OT)</td>
<td>Not covered</td>
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<tr>
<td>Scrum &amp; XP practices</td>
<td>CMMI Process Areas</td>
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<tr>
<td>Release Plan</td>
<td>PP Project Planning</td>
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<tr>
<td>Product Backlog</td>
<td>REQM Requirements Management</td>
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<td></td>
<td>RD Requirements Development</td>
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<tr>
<td>Sprint Backlog</td>
<td>PP Project Planning</td>
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<td></td>
<td>PMC Project Monitoring and Control</td>
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<tr>
<td>Burn Down Chart</td>
<td>PMC Project Monitoring and Control</td>
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<tr>
<td></td>
<td>MA Measurement and Analysis</td>
<td></td>
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<td>Sprint Planning</td>
<td>PP Project Planning</td>
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<tr>
<td></td>
<td>PMC Project Monitoring and Control</td>
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<tr>
<td>Daily Scrum Meeting</td>
<td>PMC Project Monitoring and Control</td>
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<tr>
<td></td>
<td>MA Measurement and Analysis</td>
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<tr>
<td>Sprint Review</td>
<td>PMC Project Monitoring and Control</td>
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<td></td>
<td>VAL Validation</td>
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<td>Sprint Retrospective</td>
<td>IPM Integrated Project Management</td>
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<td></td>
<td>GP3.2 Collect Improvement Information</td>
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## Scrum & XP vs. CMMI (2)

<table>
<thead>
<tr>
<th>Scrum &amp; XP practices</th>
<th>CMMI Process Areas</th>
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</thead>
<tbody>
<tr>
<td>Iterative approach</td>
<td>RD Requirements Development</td>
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<td></td>
<td>VAL Validation</td>
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<tr>
<td>Continuous Integration</td>
<td>PI Product Integration</td>
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<td>CM Configuration Management</td>
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<td></td>
<td>VER Verification</td>
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<tr>
<td>Test-Driven Development</td>
<td>TS Technical Solution</td>
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<td></td>
<td>VER Verification</td>
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<td></td>
<td>VAL Validation</td>
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<tr>
<td>Pair Programming</td>
<td>TS Technical Solution</td>
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<td></td>
<td>VER Verification</td>
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<td></td>
<td>GP2.5 Training</td>
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<tr>
<td>Incremental Design</td>
<td>TS Technical Solution</td>
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<td></td>
<td>VAL Validation</td>
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<td></td>
<td>REQM Requirements Management</td>
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<tr>
<td>Collective Code Ownership</td>
<td>TS Technical Solution</td>
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<td></td>
<td>VER Verification</td>
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<tr>
<td></td>
<td>PP Project Planning</td>
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<td></td>
<td>GP2.5 Training, GP3.2 Improvement</td>
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<tr>
<td>Documentation</td>
<td>CM Configuration Management</td>
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<td></td>
<td>PP SP2.3, PMC SP2.4 Data Management</td>
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<tr>
<td></td>
<td>TS Technical Solution</td>
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WHERE CAN CMMI HELP?

- CMMI brings the discipline of a proven process improvement approach to the Agile practices, and also…

**Upfront**
- Upfront definition of quality requirements (non-functional requirements) according to the project’s and the organization’s business goals
- Support in team construction and skill management
- Establishment of best conditions for high quality product backlog

**During development**
- Strong risk management
- Strong change management and configuration management
- Quality management framework
- Stronger definition of the notion of “done”

**Downstream**
- Organizational use of lessons learned

**For the organization**
- Practice institutionalization
- Practice deployment based on characterized experience
- Capitalization of data for process performance
NEXT STEPS

• Cegeka is currently deploying improvements defined by the operational teams and managers, with the support of the Quality team

• CMMI progress reviews will be performed in the next few weeks, to be followed by a SCAMPI A appraisal at the end of 2017

Gain awareness of the CMMI objectives and assess the current practices

Establish and monitor the required actions to fill the identified gaps

Benchmark the organization in an official SCAMPI appraisal
Questions?
APPENDIX: DETAILS ON SCRUM & XP PRACTICES
• Scrum: a framework for project management
  • Self-managed team
  • Product backlog, release plan
  • Time boxing, sprint, sprint backlog
  • Daily Scrum
  • Burn down chart
  • Shippable product increments

• XP eXtreme Programming: highly disciplined approach to Software Development
  • Quality Practices “to the extreme”
    • Testing: TDD, 100% test ok
    • Peer reviews: Pair Programming
    • Integration: continuous, at each check-in, build ok
    • Validation: customer on-site daily
    • Time-to-market: small releases
  • Maintainability: continuous refactoring, collective ownership, KISS
• Supplier Agreement Management
  • This is not covered by Scrum or XP practices, CMMI recommended practices help to improve supplier selection and management practices

• Measurement and Analysis
  • CMMI MA SG1 makes sure that measurements are aligned with organizational management needs
  • Burn down charts, “information radiator”, strong transparency and communication support some of MA SG2
  • Additional measurements may be needed to support information needs

• Process and Product Quality Assurance
  • The role of Scrum Master includes verifying the adherence to commitments and defined procedures, and resolving non compliances
  • CMMI adds the capitalization of information, the reporting and the systematic analysis of deviations

• Configuration Management
  • Some XP practices deal with code management
  • CMMI CM SG3 adds the notions of integrity management
CMMI ML3, SCRUM & XP

• Requirements Development
  • Scrum enables proactive elicitation and prioritization of requirements
  • Requirements are refined throughout the project with constant interaction with stakeholders
  • Requirements validation scenarios are elaborated as early as the user stories are created
  • CMMI adds the discipline of RD SG3 with systematic requirements analysis for completeness and traceability of allocation

• Technical Solution
  • Delivery in short iterations enables the exploration of alternative solutions, however CMMI makes the decision more traceable and objective (criteria)
  • Agile methods focus on simple and incremental design, while CMMI and other methods may look at more complex and critical architectures
  • XP includes implementation guidelines (refactoring, coding standards, pair programming…)

• Product Integration
  • Frequent product delivery requires early and robust integration procedures and continuous verification of their relevance
  • Agile tools such as continuous integration environments help to industrialize this process
CMMI ML3, SCRUM & XP

• Verification
  • Scrum introduces the strict definition of “done”
  • Other Agile practices and tools, such as quality level commitment, pair programming, automated unit test, continuous integration, collective ownership of code, all contribute to Verification

• Validation
  • Frequent product delivery and customer validation strengthen the alignment of the developed product with requirements and smooth integration in the target environment
  • Automated functional testing also strengthens Validation

• Integrated Project Management
  • Scrum promotes transparency and communication, stakeholder commitments
  • Retrospectives support lessons learned done frequently
  • CMMI adds the notions of systematic process tailoring for the project based on capitalized knowledge of the process usage

• Risk Management
  • Scrum stresses the importance of dealing with risks early
  • The nature of iterative development reduces risk
  • CMMI suggests a more systematic and comprehensive management of risks
CMMI ML3, SCRUM & XP

- Organizational Process Focus
  - Scrum retrospective help to improve the process at the project level
  - CMMI brings the added value of process improvement at the organizational level

- Organizational Process Definition
  - Scrum does not deal with organizational level processes
  - CMMI offers the standardization in alignment with the organization’s business goals, and the process tailoring depending on project needs

- Organizational Training
  - Scrum team organization promotes constant knowledge sharing between team members
  - XP focuses on training during the exploration phase
  - CMMI expands this topic by introducing the organization’s strategic needs and making training plan and delivery management systematic

- Decision Analysis and Resolution
  - Agile often deals with change and can benefit from a formal evaluation of alternatives for selected decisions, as suggested by CMMI