CMMI and KANBAN...is it possible?

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Strongstep | CEO

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About Pedro Castro Henriques

Strongstep | CEO and Co-Founder

Worked in 9 European countries and in Africa in process, tools and organization improvement in software development & services.

More than 17 years of experience, including consulting in software engineer; Telecom, health and education sector – Ericsson Sweden, FEUP, Altran…

Teacher at the master in engineering, services and management (MESG @ FEUP)

Hobbies & Activities: travel, inline-skating, snowboarding, meeting new cultures & people, loves new challenges!

Spoke at Tedxporto “Dreams – The innovators best friend”
About Alexandrina Lemos

Strongstep | Senior Consultant

Software Quality and Process Improvement experience in international companies. Experience in definition, management and maintenance of CMMI projects (Development and Services) in international companies

Internal and external audits coordination and execution

Definition, maintenance, certification and renewal of Integrated Management System of the company as Team Leader of Processes team

Experience with agile projects

Hobbies & Activities: read, travel, play with my nephews, continuous learning
European Leading Company in Portuguese language

Sum of 80 Years experience in Process Improvement

10 employees

Number of customers: More than 40

Geographical locations: Portugal & Mozambique
We are a company specialized in software engineering that contributes to the improvement of software quality in Portugal and in the world.

We want to induce a positive change in organizations. This will represent a step with a strong, sustainable and innovative way - a STRONG STEP.

Projects portfolio:
Process improvement with CMMI DEV ML2, L3, L5, CMMI SRV, TSP/PSP, combining agile/CMMI, Six Sigma, NP4457, Kanban, Scrum, ITIL, PMBOK, ISTQB, RUP, ITMark.
Some of Strongstep customers
Introduction
Agile Past

- Agile
- XP
- Scrum
Agile Present

Agile Ecosystem

- Agile UX
- Dev-OPs
- Product Discovery
- Scrum
- Kanban
- Lean
- Lean Startup

Agile

XP
SCRUM and KANBAN applicability

Scope Focused

Production Line Kanban
(ex.Manufacturing)

Repeatable (Specialist)

Support Kanban
(ex.Help - Desk)

Interrupted & Divergent Needs

IT Kanban
Dev + Maintenance + Support

Exploratory Innovation (Generalist Swarming)

Scrum

Scrum + Kanban

CMMI Institute
EMEA 2015
CMMI

1. Process unpredictable, reactively managed
   - Initial: Project success depends on individual performance

2. Projects managed, based on defined plans
   - Managed: Activities are managed

3. Processes defined, with performance managed
   - Defined: Work done according to processes

4. Process and projects managed based on measures
   - Quantitatively Managed: Processes and activities are managed based on measures

5. Continuous organizational focus on innovation and improvement
   - Optimized: Organizational strategy
Kanban

Japanese word which literally translates as “signboard” or “billboard” and was forged in the Toyota’s manufacturing control challenges during the 1950s.

Kanban system

A number of kanban (or cards) equivalent to the (agreed) capacity of a system are placed in circulation. One card attaches to one piece of work. Each card acts as a signaling mechanism.
Kanban

• **Visualize the workflow**
  - Split the work into pieces, write each item on a card and put on the wall
  - Use named columns to illustrate where each item is in the workflow

• **Limit Work In Progress (WIP)** – assign explicit limits to how many items may be in progress at each workflow state

• **Measure the lead time** – (average time to complete one item, sometimes called “cycle time”), optimize the process to make lead time as small and predictable as possible
Kanban

To Do
5

Dev
3

Test
2

Release
3

Done!

FLOW
At the beginning
Strategy

• Could start by **CMMI** as a model and then are interested in evolving their processes to more agile

Or

• Could start by **KANBAN** and then refine and formalize their processes
The Challenge

- The main challenge is to **change the mindset** of the people.

- The need for CMMI, usually, because the company feels it needs to get organized and grow in maturity and capacity.

- The typical goal/challenge is implementing **Kanban and obtaining a light implementation that maps with CMMI**.

- To combine a Timebox vs Event Driven approach.
The Challenge

Refinement

<table>
<thead>
<tr>
<th>To Do 5</th>
<th>Dev 3</th>
<th>Test 2</th>
<th>Release 3</th>
<th>Done!</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>F</td>
<td>D</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>G</td>
<td>E</td>
<td></td>
<td>A</td>
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<tr>
<td>J</td>
<td></td>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FLOW

Retrospective
## The Challenge

<table>
<thead>
<tr>
<th>PP</th>
<th>PMC</th>
<th>REQM</th>
<th>MA</th>
<th>CM</th>
<th>PPQA</th>
</tr>
</thead>
</table>
| **Estimates:**  
- Priorization  
- Cycle Time & Lead Time historic  
- Whole project historic | Daily meetings | Item’s decomposition | Cycle Time | Tools | Audits |
| **Commitment plan** | Refinement meeting | Board management | Lead time | Tracking card board | |
| | Retrospective meeting | | | | |
| | Content prioritization | | | | |
| | Work in progress (WIP) | | | | |
PP – Commitment Plan example

Team
<<Name of the team>>

Team Management
<<Manager Name>>

Organization of the work
<<Name>>

Stakeholders
Name
Name
Name
Name
Name
MA - example
## Checklist de Auditoria - Processo Kanban

### Avaliação de Processo: Kanban

<table>
<thead>
<tr>
<th>Questão</th>
<th>Pts</th>
<th>Obtenção da Informação</th>
<th>Avaliação</th>
<th>Não Conformidade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foi elaborado o Kanban Commitment Plan e está armazenado corretamente?</td>
<td>1</td>
<td>Verificar a existência do Kanban Commitment Plan e se está corretamente armazenado</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foi efetuada a Revisão do Kanban Commitment Plan?</td>
<td>1</td>
<td>Verificar o histórico do Kanban Commitment Plan</td>
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<td></td>
</tr>
<tr>
<td>Foi efetuada a reunião de priorização?</td>
<td>1</td>
<td>Verificar a existência da Ata da reunião de priorização</td>
<td>Descrição ou Código da Não Conformidade...</td>
<td></td>
</tr>
<tr>
<td>As solicitações foram divididas em UTs homogêneas e descritas na ferramenta de trabalho?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As tarefas colocadas no quadro de trabalho no estado &quot;A Fazer&quot; são as mais prioritárias?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foram feitas reuniões diárias?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foram realizados os fechos semanais?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foi realizada a reunião de retroativa?</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Estão a ser monitorizados os riscos identificados de acordo com o planeado?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>É efetuada adequadamente monitorização das métricas identificadas, de acordo com a periodicidade definida no Kanban Commitment Plan?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Todos os registos e análise das métricas foram armazenados?</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Avaliação de Artefato: Ferramenta de Trabalho

<table>
<thead>
<tr>
<th>Questão</th>
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<th>Não Conformidade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ferramenta de trabalho está atualizada?</td>
<td>1</td>
<td>Ferramenta de Trabalho - TAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A ferramenta de trabalho está sincronizada com o Quadro de Trabalho?</td>
<td>1</td>
<td>Ferramenta de Trabalho - TAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existem limites definidos para os estados &quot;A Fazer&quot; e &quot;Em Execução&quot;?</td>
<td>1</td>
<td>Ferramenta de Trabalho - TAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Está a ser feito um registro do esforço efetivo de cada UT?</td>
<td>1</td>
<td>Ferramenta de Trabalho - TAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Os riscos (equipa/UT) estão identificados?</td>
<td>1</td>
<td>Ferramenta de Trabalho - TAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A identificação de riscos envolve toda equipa e os restantes Stakeholders?</td>
<td>1</td>
<td>Ferramenta de Trabalho - TAB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Avaliação de Artefato: Quadro de Trabalho

<table>
<thead>
<tr>
<th>Questão</th>
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</tr>
</thead>
<tbody>
<tr>
<td>O Quadro de trabalho está atualizado?</td>
<td>1</td>
<td>Quadro de Trabalho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O Quadro de trabalho está sincronizado com a Ferramenta de Trabalho?</td>
<td>1</td>
<td>Quadro de Trabalho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As informações contidas nos cartões estão corretas e são suficientes de acordo com o Template definido?</td>
<td>1</td>
<td>Quadro de Trabalho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Os fichas estão em bom estado?</td>
<td>1</td>
<td>Quadro de Trabalho</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Avaliação de Artefato: Kanban Commitment Plan

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
Artefact evaluated: Work Board

• Is the work board updated? Are the cards on correct states?

• Is the work board synchronized with Work Support Tool?

• Are the cards in good conditions?
Kanban

1. Preparation
   1.1 Backlog control
   1.2 Work Units management
   1.3 Fill Work Board

2. Execution
   2.1 Pull Work Units “In Development”
   2.2 Pull to “Transition”
   2.3 Pull to “Done!”
   2.4 Update Work support tool
   2.5 Daily meeting

3. Monitoring and Control
   3.1 SOS management
   3.2 Work Units reprioritization
   3.3 Weekly close
   3.4 Retrospective meeting

Pre-Board

On-Board

While-Board
Board Example
Board Example
Board Example
The goals

- Implementing Kanban and obtaining a light implementation that maps to CMMI
- Having processes that help our customers to deliver with less errors
- Improve capacity planning and delivery time
- Getting a certification that is recognized internationally
- Better communication between development and maintenance teams
- Continuous improvement!
The Plan

→ Year 1

JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  JAN

CMMI Project Presentation

→ Year 2

Phase 1

Initial Appraisal

Level 2 Processes Definition and Piloting

Phase 2

Processes Rollout

Intermediate appraisal

Phase 3

Readiness Review

SCAMPI A Appraisal Level 2

Project Monitoring

Change Management
The Appraisal

• The certification will take place this year

• Strongstep have been working in improving customer processes for several years

• **Kanban implementation was another challenge** that we overcame to improve customer benefits
The Results!

- Faster deliveries
- Higher team motivation and proactivity
- Bottlenecks become clearly visible in real-time – which can enable proactive actions
- Optimized process adapted to this nature of work
- Much better communication between development and maintenance teams
Lessons Learned

- **Two different approaches** (CMMI Dev/Kanban) implemented/integrated at the same time

- *(Some people say that CMMI is heavy)* so we implemented a complementary flexible solution for services small tasks *(Kanban)* without losing CMMI best practices already in place

- **Involving the whole team** was a critical success factor

- The same team can use a **powerful combination of both approaches**
Lessons Learned

• No methodology is complete

• No tool is perfect

• There's no silver bullet

• Search, pilot and implement the best of several worlds:
   – methodologies and tools

Our advice: try, try, try!
Conclusion

As David J. Anderson said:

“Cultural change is perhaps the biggest benefit of kanban”
Conclusion
Next Steps

• Continuous improvement as we are talking about a big company, so implementations take time

• CMMI for Services