Reaching readiness in technological change through the application of capability maturity models principles

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Agenda

- Study Context
- Maturity concept
- Maturity Model
- Potential change maturity model
Study Context

Maturity model

Data transmission via satellite

Central Database

Tags RFID

Proposed model

Maturity models

Industrial Traceability

Logistic Traceability

Health & Usage life cycle management, Spare parts, accessories, Configuration control

System for Mobile Maintenance

SMART
Maintenance Repair and Overhaul (MRO)

- Original Engine Manufactures (OEM’s)
- Reduce maintenance time/
  Maximize operation time
- Measure change capabilities (On troubleshooting activity)
Measurements for what?

- Links with quality
- Attest of a minimum level of service
- Multiple use

Project Management
- PMI PMbook
- Kerzner PMMM

Development of Technical procedures
- SEI CMM
- CMMI

Organizational maturity
- EFQM
- Baldridge Award
Maturity: a plurality?

Hatch, 2000

- Technology
- Physical structure
- Culture
- Social structure
- ORG
- Environment

Maturity concept

Study context

Maturity Model

Proposed model
Evolution concept

Maturity model

Proposed Model

Study Context

Maturity Concept

Initial (1)

Repeatable (2)

Defined (3)

Managed (4)

Continuously improving

Optimizing (5)

Disciplined processes

Standard and consistent processes

Predictable processes

W. Humphrey
CMM 1989

Continuously improving

Optimizing (5)
Our evaluation model

Identification of impacted individuals and teams

Real process mapping

Key factors evaluation
Ex: Knowledge Methods Know-how Tools & techniques Collaboration form

Evaluation of needed effort & support
Activated Social Network

12 Preliminary interviews

Proposed Model
Maturity model
Study Context
Maturity concept

Front Office
Back Office

Client
Field Representative
IS Coordinator
Commercial manager

Engine Specialist
Systems Specialist

Proposed Maturity
model

Context
Maturity
model

Engine
Specialist
Systems
Specialist
# Activity decomposed

25 interviews regrouping 5 professional corps

## Proposed Model

<table>
<thead>
<tr>
<th>Trouble shooting activity</th>
<th>Description</th>
<th>Actors Role</th>
<th>Tools/Data</th>
<th>Critical decisions</th>
<th>Improvement possibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client call</td>
<td>Client Identification/Diagnostic</td>
<td>FR</td>
<td>CT/ES</td>
<td>Maintenance manual</td>
<td>Define solution</td>
</tr>
<tr>
<td>Fault identified</td>
<td>Solution application + Report</td>
<td>FR</td>
<td>CM/ISC</td>
<td>Event Reporting tool</td>
<td>Confirm diagnostic</td>
</tr>
<tr>
<td>Fault non identified</td>
<td>Solution Definition</td>
<td>ES/SS</td>
<td>FR/CM/ISC</td>
<td>Fault identification manual</td>
<td>Tradeoff within financial &amp; time constraints</td>
</tr>
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</table>

## Maturity Model

- **Proposed Model**
- **Study Context**
- **Maturity concept**

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**FR/CM/ISC**

**ES/SS**

**CT/ES**

**Event Reporting tool**

**Fault identification manual**
Our evaluation grid

Minel 2004, Within profession Cooperation evaluation scale

Teams: A ▲, B ▲, C ▲

Maturity concept

Study Context

Proposed Model

Data Information Knowledge Competencies

Knowledge transformation scale, Mack 1995

Expert of domain

Master of domain

Knowledge of methods

Knowledge of concepts

Common vocabulary

No knowledge shared
## Job profiles Transformations

### Field representative

<table>
<thead>
<tr>
<th>Curative Activities</th>
<th>Level of Importance</th>
<th>Evolving Dimensions</th>
<th>Transforming Methods/Tools</th>
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<tr>
<td>Faults identification</td>
<td>1 3</td>
<td>X</td>
<td>Electronic Manual</td>
</tr>
<tr>
<td>Intervention on site</td>
<td>2 3</td>
<td>X</td>
<td>Mobile Tool</td>
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<td>Solution definition</td>
<td>1 2</td>
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<td>Case base reasoning</td>
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<td>X</td>
<td>SMMART Database</td>
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<tr>
<td>Audits/Training</td>
<td>2 3</td>
<td>X</td>
<td>Mobile Tool</td>
</tr>
<tr>
<td>Methods/Tools Upgrading</td>
<td>2 4</td>
<td>X</td>
<td>Collaboration Meetings</td>
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Innovation lifecycle process V/S product

Rate of major Innovation

J.M Utterback, 1996

Product

Process

Fluid Phase

Transitional Phase

Mature Phase

Maturity concept

Study context

Maturity Model

Proposed model

Maturity concept

Study context

Maturity Model

Proposed model
Your questions !!!

This work has been carried out within the SMMART (System for Mobile Maintenance Accessible in Real Time) project that received funding from the European FP6 Program.

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Cooperation and information transformation

Within professions Cooperation evaluation scale, S.Minel 2004

Knowledge transformation scale, Mack 1995
# Job profiles

## Transformations

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- AsIS
- ToBe