



CE 2007 17/07/07



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

O.ZEPHIR¹, S.MINEL^{1,2}

¹LIPSI/ESTIA, Technopole Izarbel - 64210 Bidart

²IMS, UMR 5218 CNRS, Univ-Bordeaux1 – 33405 Talence



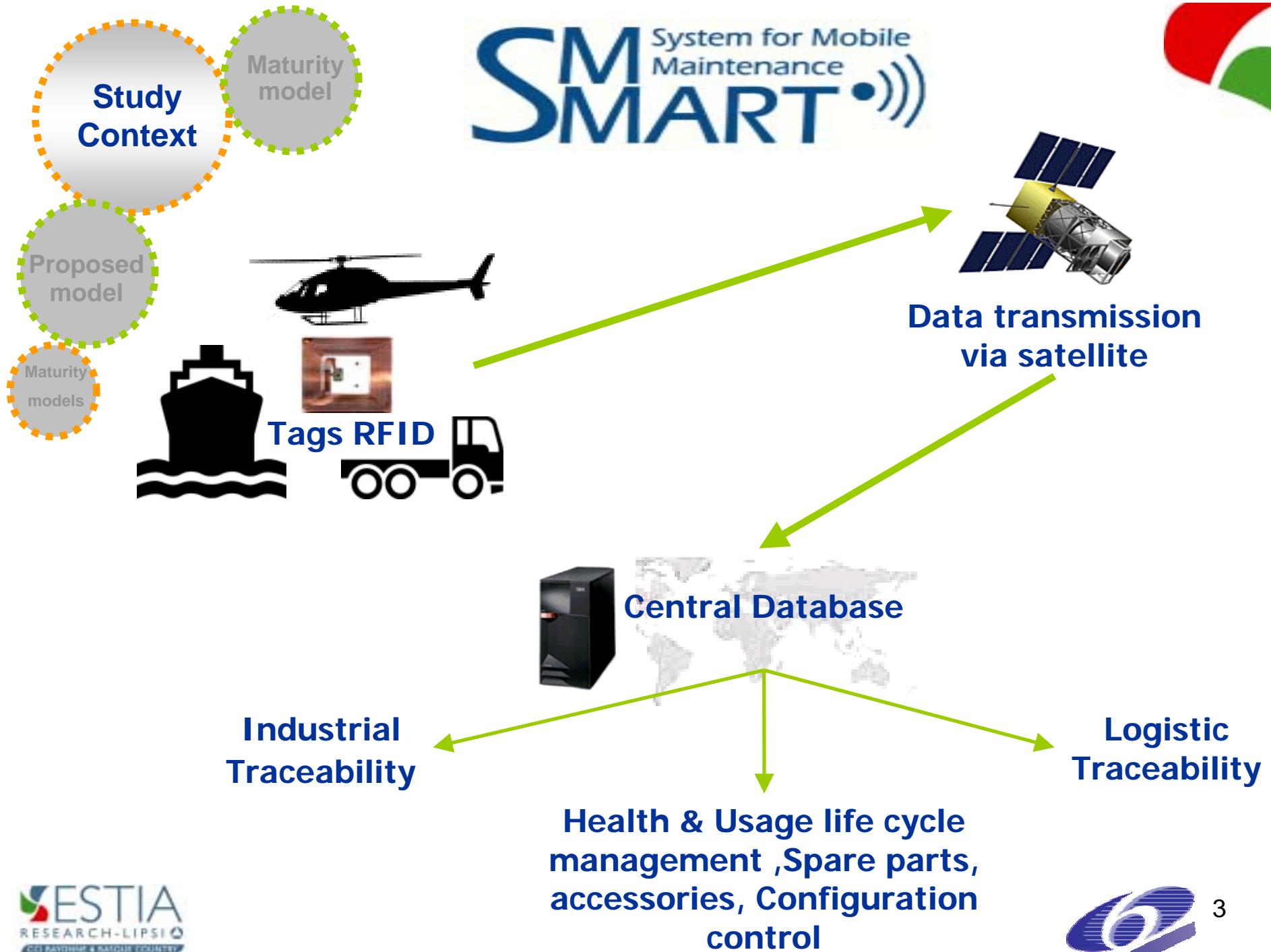
CE 2007 17/07/07

Agenda

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

SM SMART

System for Mobile Maintenance





Study
Context

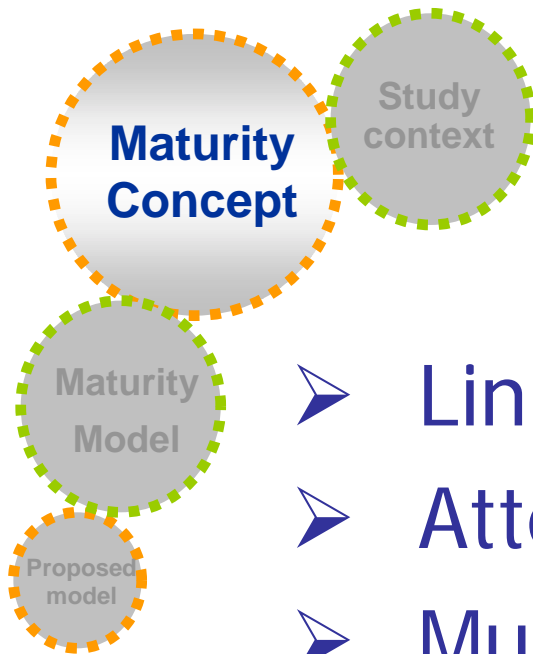
Maturity
model

Maintenance Repair and Overhaul (MRO)

Proposed
model

Maturity
models

- Original Engine Manufacturers (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

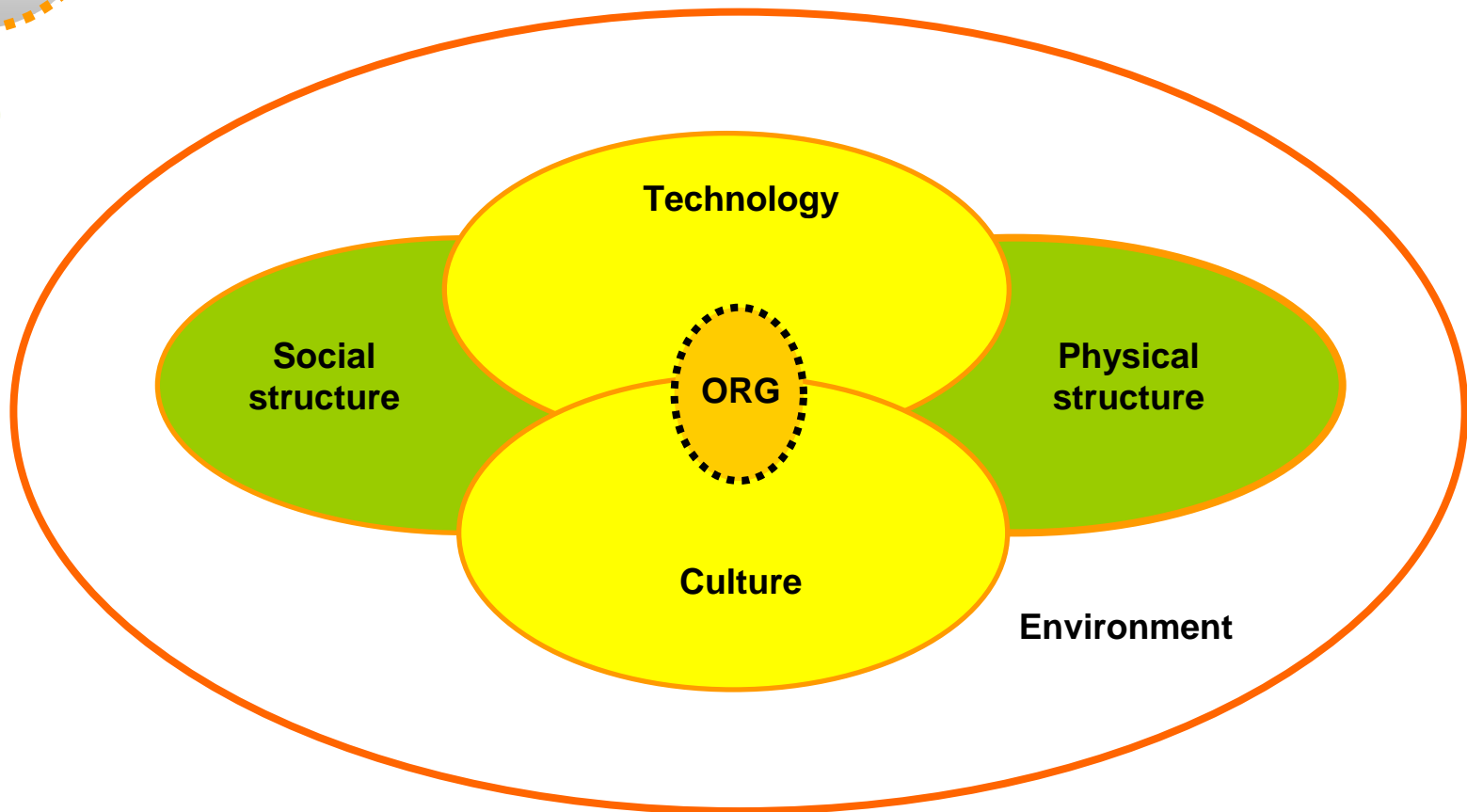
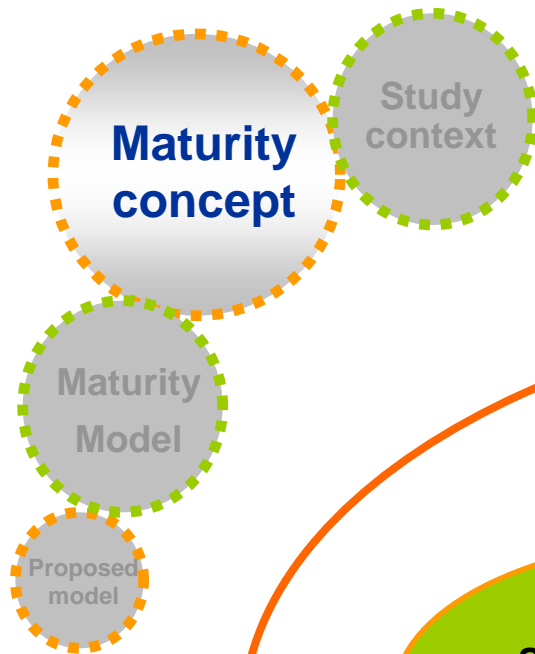
Organizational maturity

EFQM

Baldrige Award



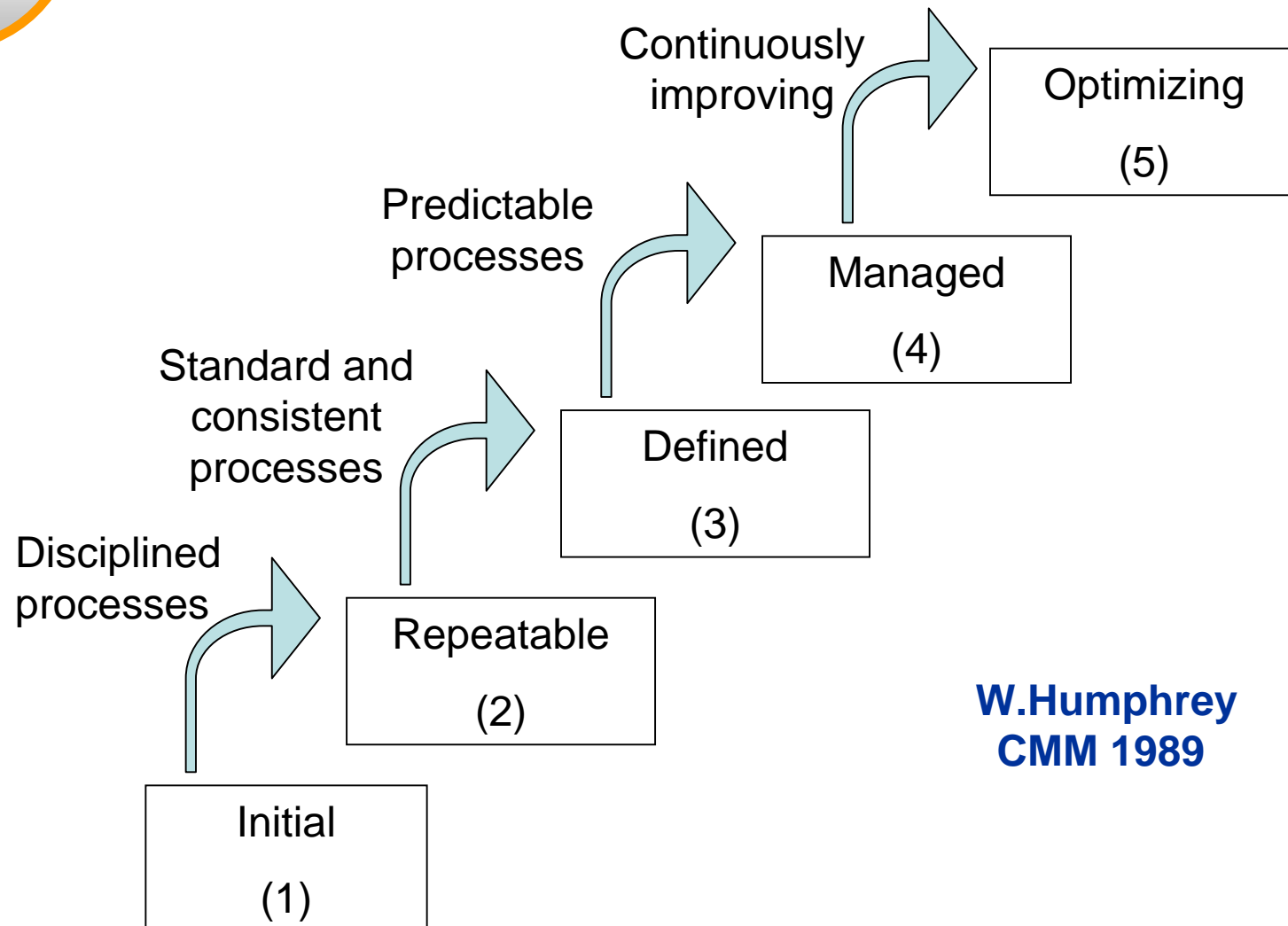
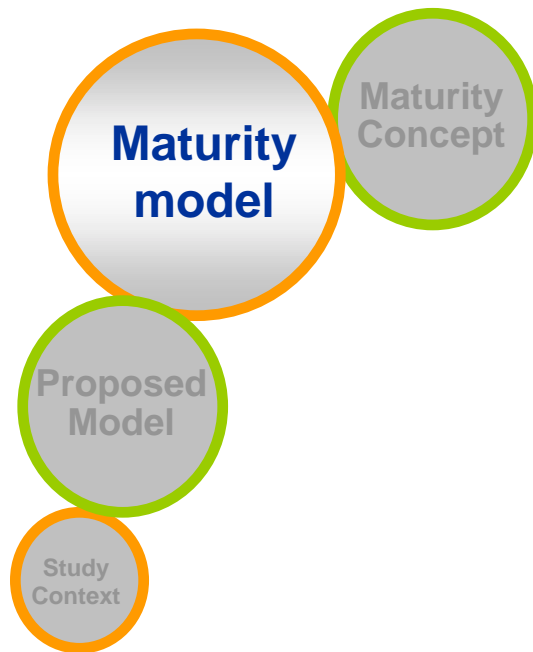
Maturity : a plurality ?



Hatch, 2000



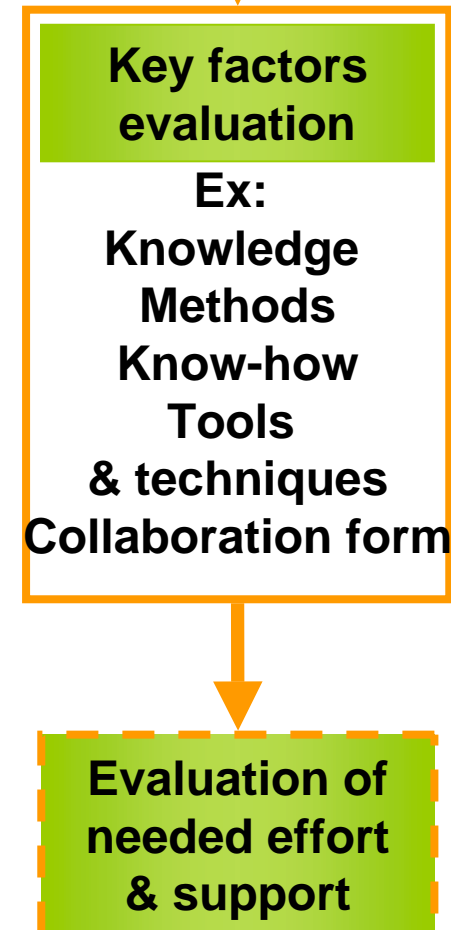
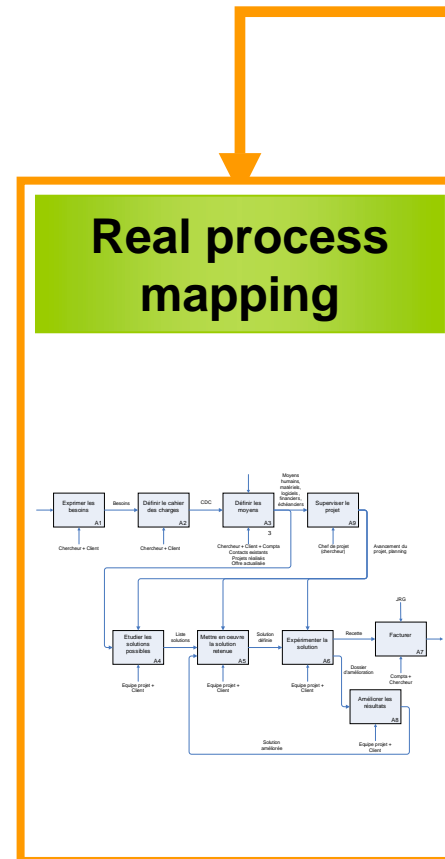
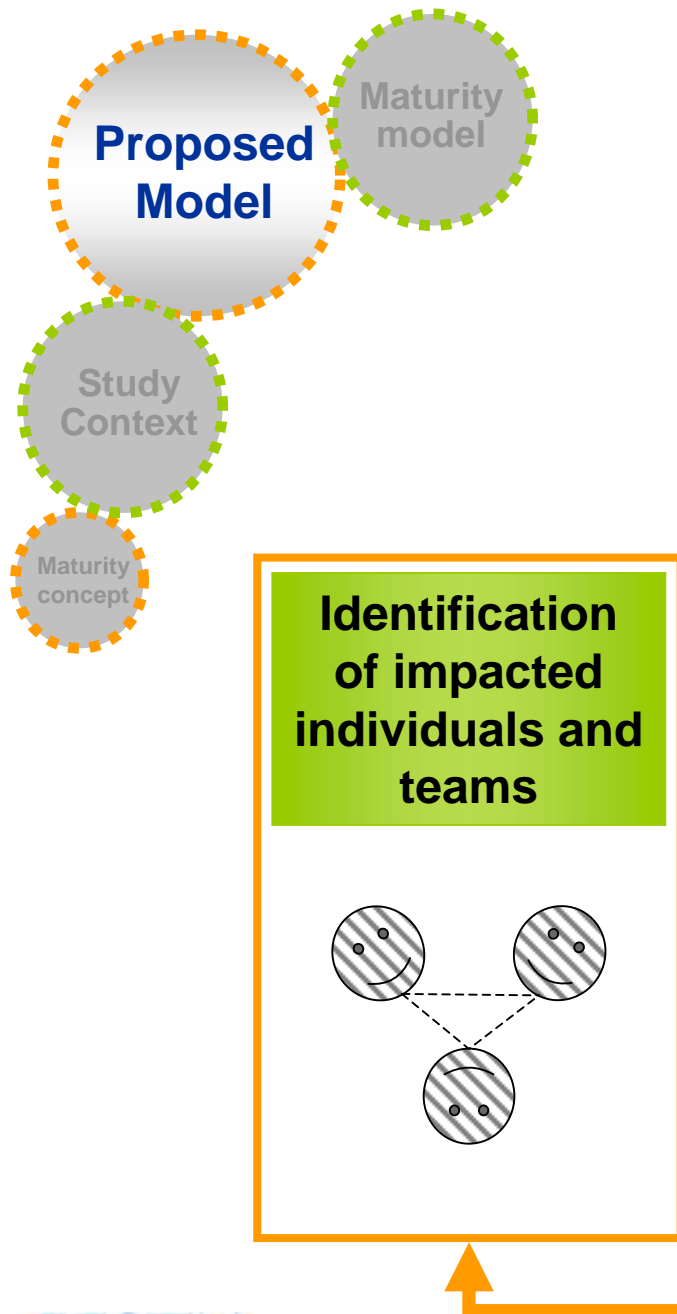
Evolution concept



W.Humphrey
CMM 1989



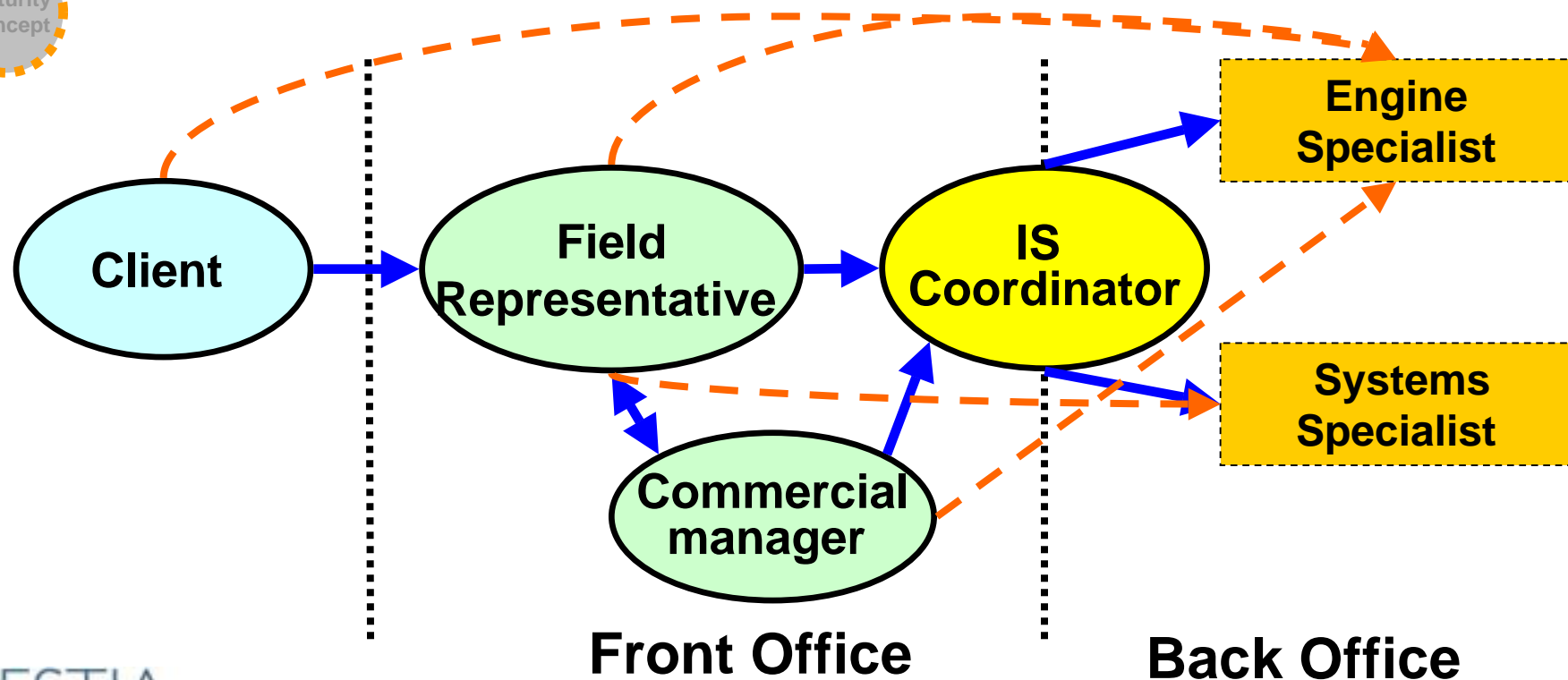
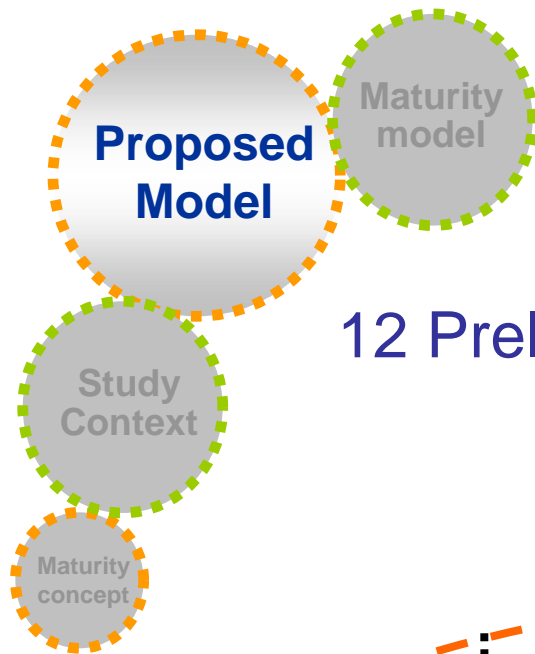
Our evaluation model

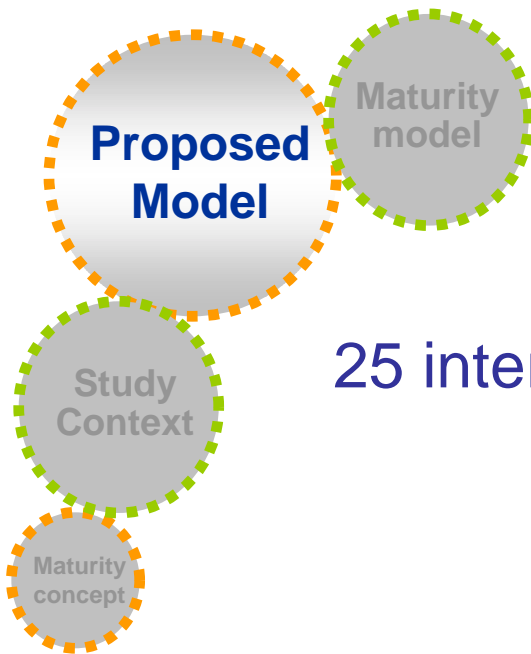




Activated Social Network

12 Preliminary interviews





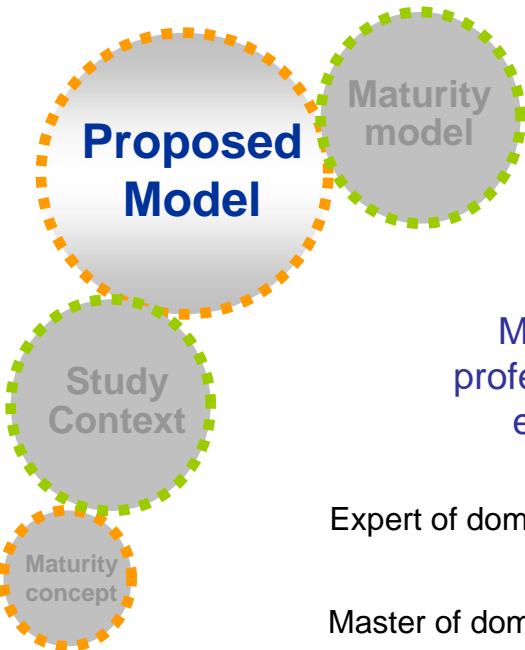
Activity decomposed

25 interviews regrouping 5 professional corps

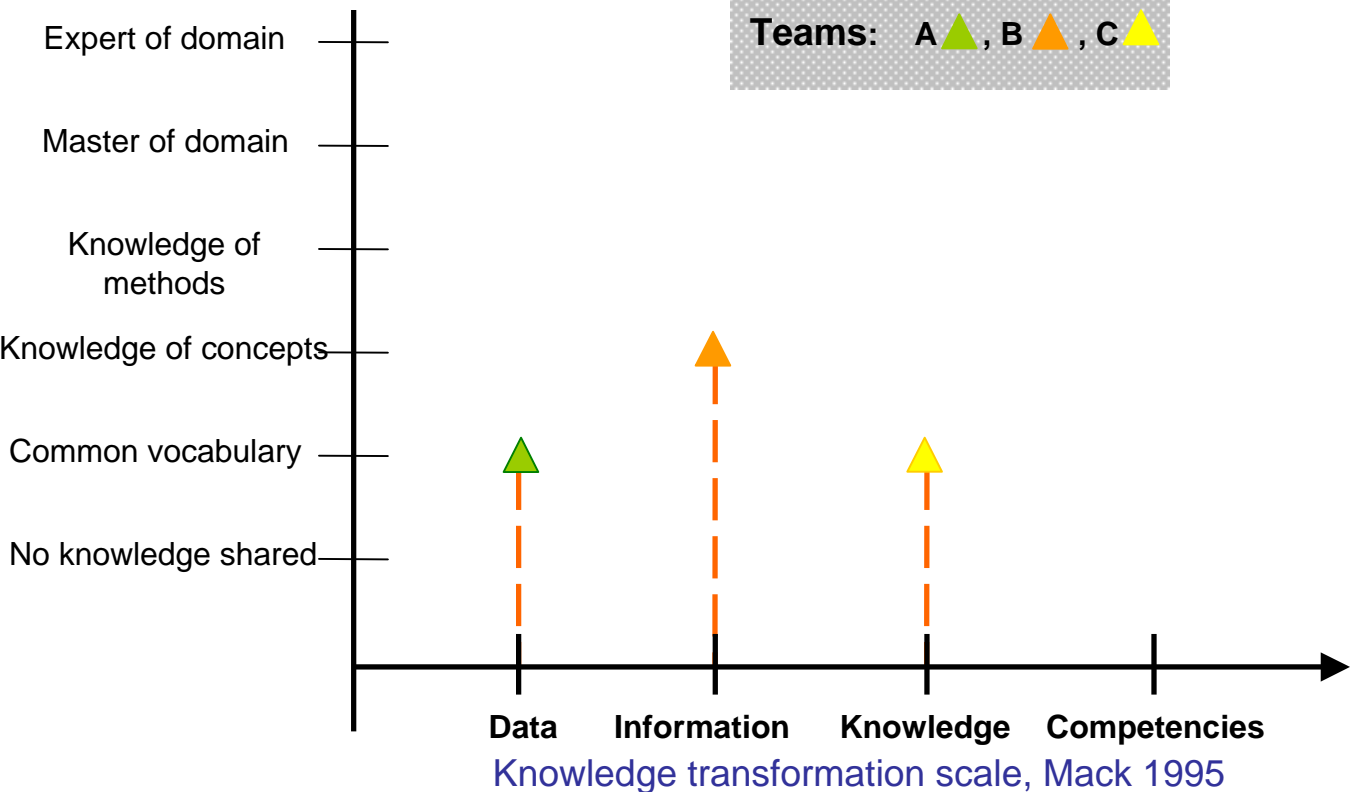
| Trouble shooting activity | Description | Actors Role | | Tools/Data | Critical decisions | Improvement possibilities |
|-----------------------------|--------------------------------------|--------------|---------------|-----------------------------|--|---------------------------|
| | | Respons ible | contrib utor | | | |
| Client call | Client Identification/ Diagnostic | FR | CT/ES | Maintenance manual | Define solution | Unique Database |
| Fault identified | Solution application + Report | FR | CM/ISC | Event Reporting tool | Confirm diagnostic | Knowledge database |
| Fault non identified | Solution Definition | ES/SS | FR/CM/ ISC | Fault identification manual | Tradeoff within financial & time constraints | Spare parts availability |



Our evaluation grid



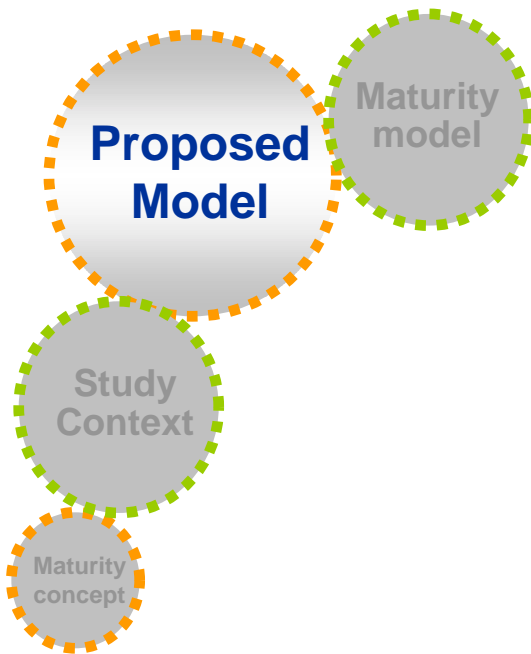
Minel 2004, Within
profession Cooperation
evaluation scale





Job profiles Transformations

Field representative

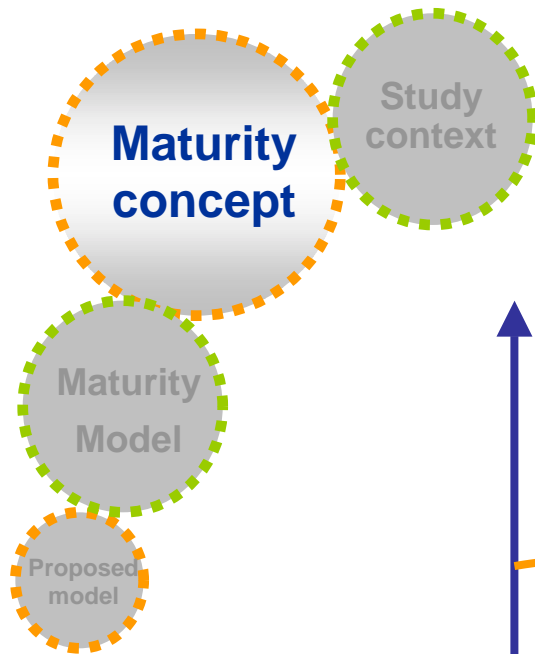


| | | Level of Importance | | | | Evolving Dimensions | | | | Transforming Methods/Tools |
|----------------------|----------------------------|---------------------|---|---|---|---------------------|-------------|-----------|------------|----------------------------|
| | | | | | | Data | Information | Knowledge | Competency | |
| Curative Activities | Faults identification | 1 | 2 | 3 | 4 | X | | | | Electronic Manual |
| | Intervention on site | 1 | 2 | 3 | 4 | | | | X | Mobile Tool |
| | Solution definition | 1 | 2 | 3 | 4 | | X | | | Case base reasoning |
| Proactive Activities | Fleet evolution management | 1 | 2 | 3 | 4 | | | X | | SMMART Database |
| | Audits/Training | 1 | 2 | 3 | 4 | | | | X | Mobile Tool |
| | Methods/Tools Upgrading | 1 | 2 | 3 | 4 | | | | X | Collaboration Meetings |

●—● AsIS
●—● ToBe



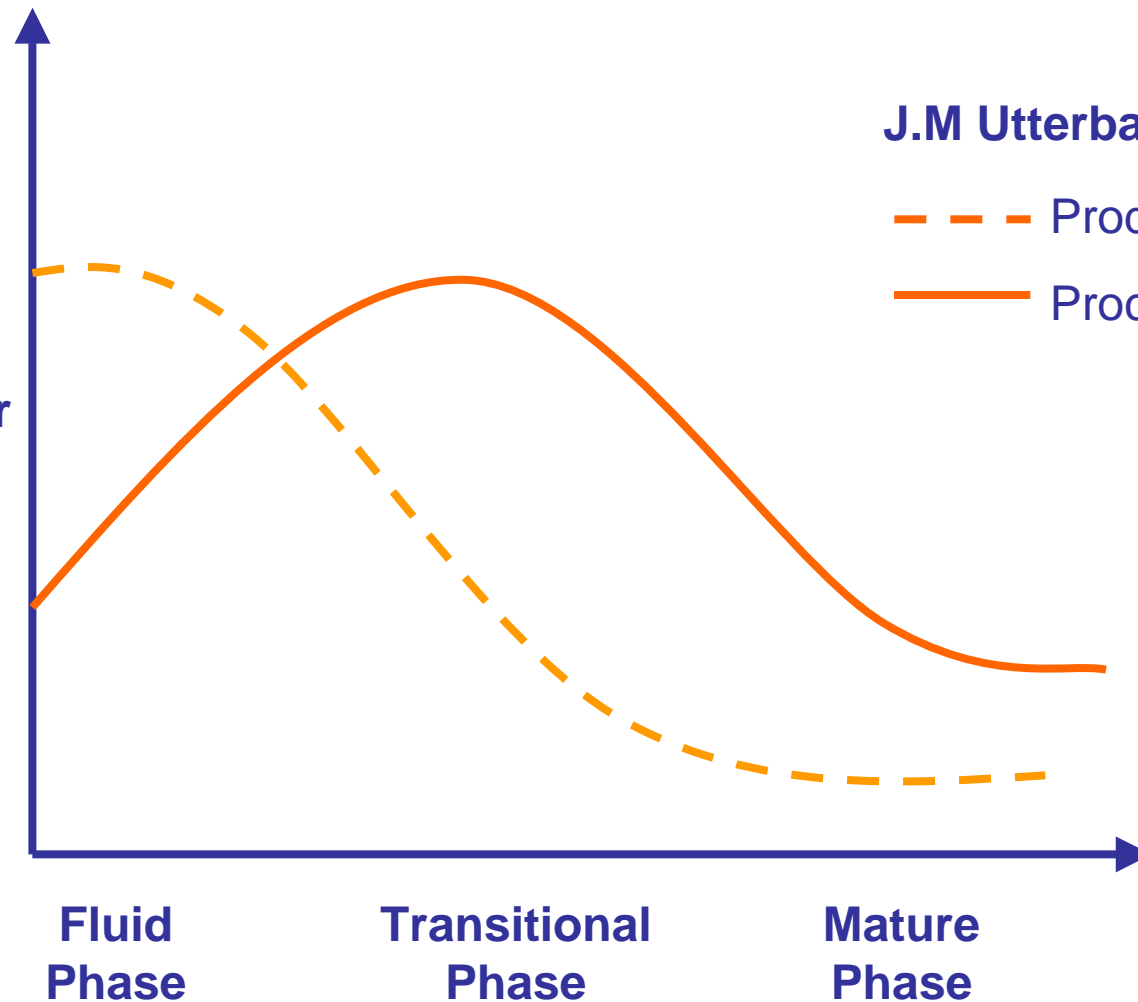
Innovation lifecycle process V/S product



Rate of major
Innovation

J.M Utterback, 1996

--- Product
— Process

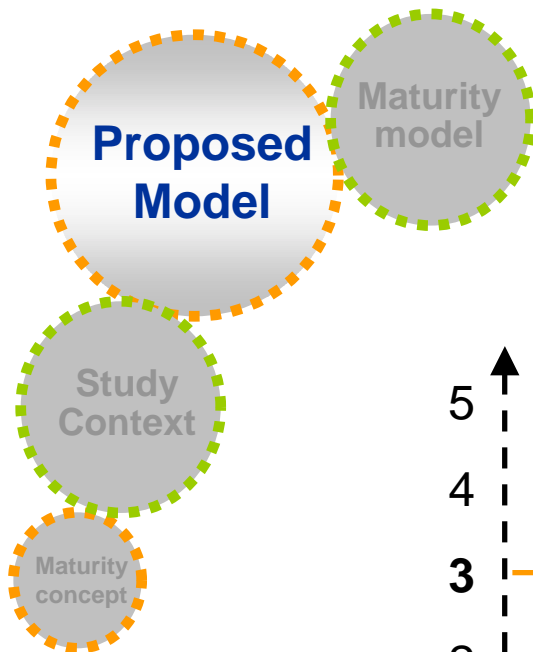


Your questions !!!

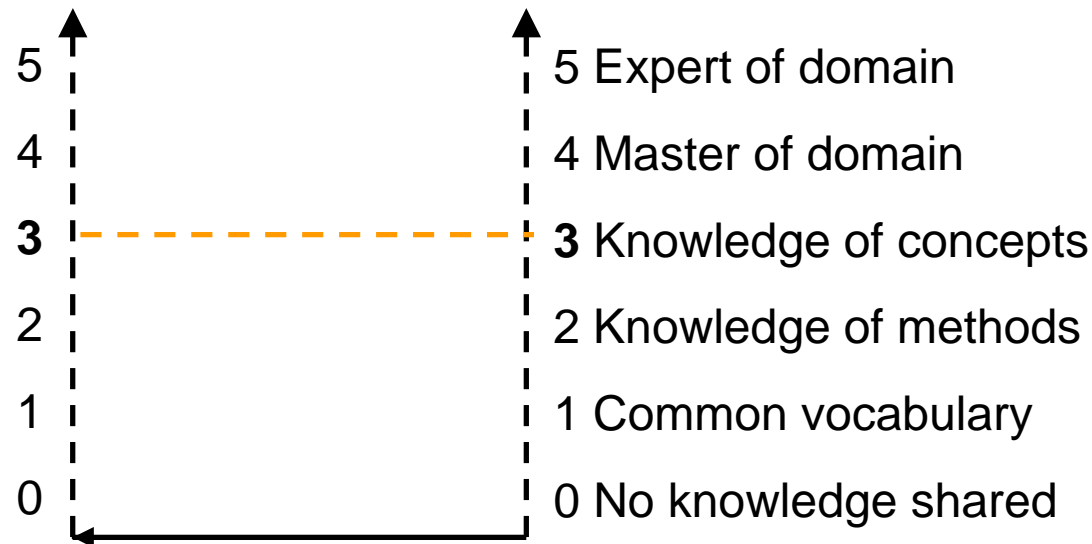
This work has been carried out within the SMMART (System for Mobile Maintenance Accessible in Real Time) project that received funding from the European FP6 Program.

o.zephir@estia.fr, s.minel@estia.fr





Cooperation and information transformation



Within professions Cooperation evaluation scale, S.Minel 2004

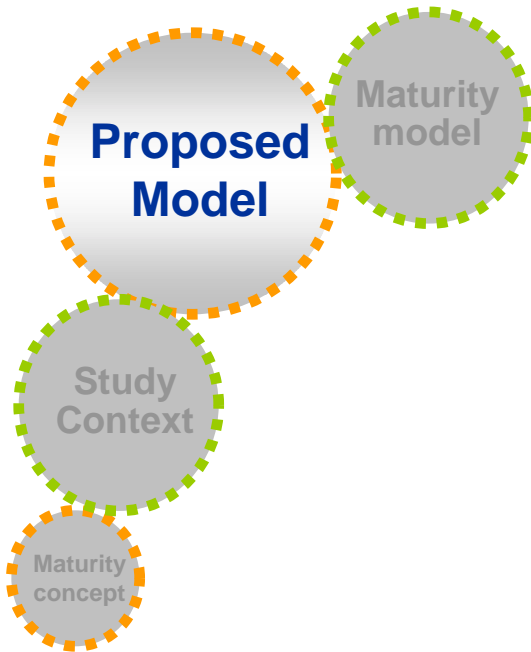


Knowledge transformation scale, Mack 1995



Job profiles Transformations

Field representative



| | | Level of Importance | | | | Evolving Dimensions | | | | Transforming methods/Tools |
|----------------------|----------------------------|---------------------|---|---|---|---------------------|-------------|-----------|------------|----------------------------|
| | | | | | | Data | Information | Knowledge | Competency | |
| Curative Activities | Faults identification | 1 | 2 | 3 | 4 | X | | | | Electronic Manual |
| | Intervention on site | 1 | 2 | 3 | 4 | | | | X | Mobile Tool |
| | Solution definition | 1 | 2 | 3 | 4 | | X | | | Case base reasoning |
| Proactive Activities | Fleet evolution management | 1 | 2 | 3 | 4 | | X | | | Smmart Database |
| | Audits/Training | 1 | 2 | 3 | 4 | | | | X | Mobile Tool |
| | Methods/Tools Upgrading | 1 | 2 | 3 | 4 | | | | X | Collaboration Meetings |

●—● AsIS
●—● ToBe