



Automotive Customers - Extract



How Mature are Maturity Models?

Embedded Eclipse Day

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Stuttgart, 25 June 2009

Maturity

- Personal development
 - Product
 - Processes
 - ...
-
- Want to be able to “rank” a characteristic of a system based on defined criteria → model

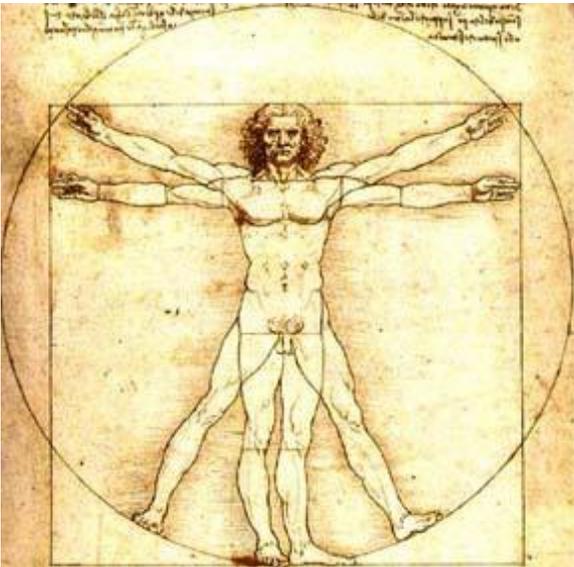
Model

- Psychology – development of personality
 - Development stages of a product
 - Probability of acceptable outcome
 - ...
-
- Defines some sort of measurement framework
 - Experience based

Maturity

Model

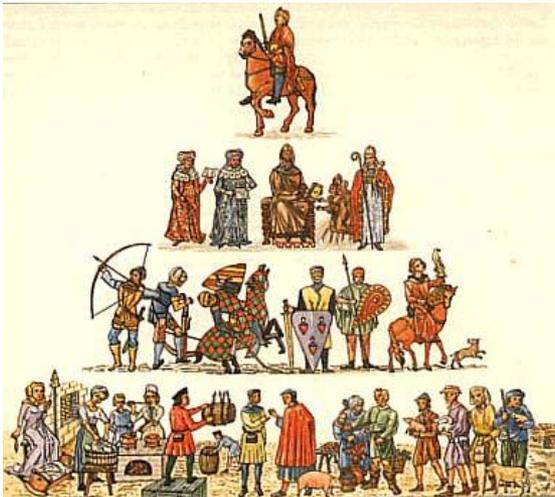
- Purpose
- Rules of deployment



Maturity

Model

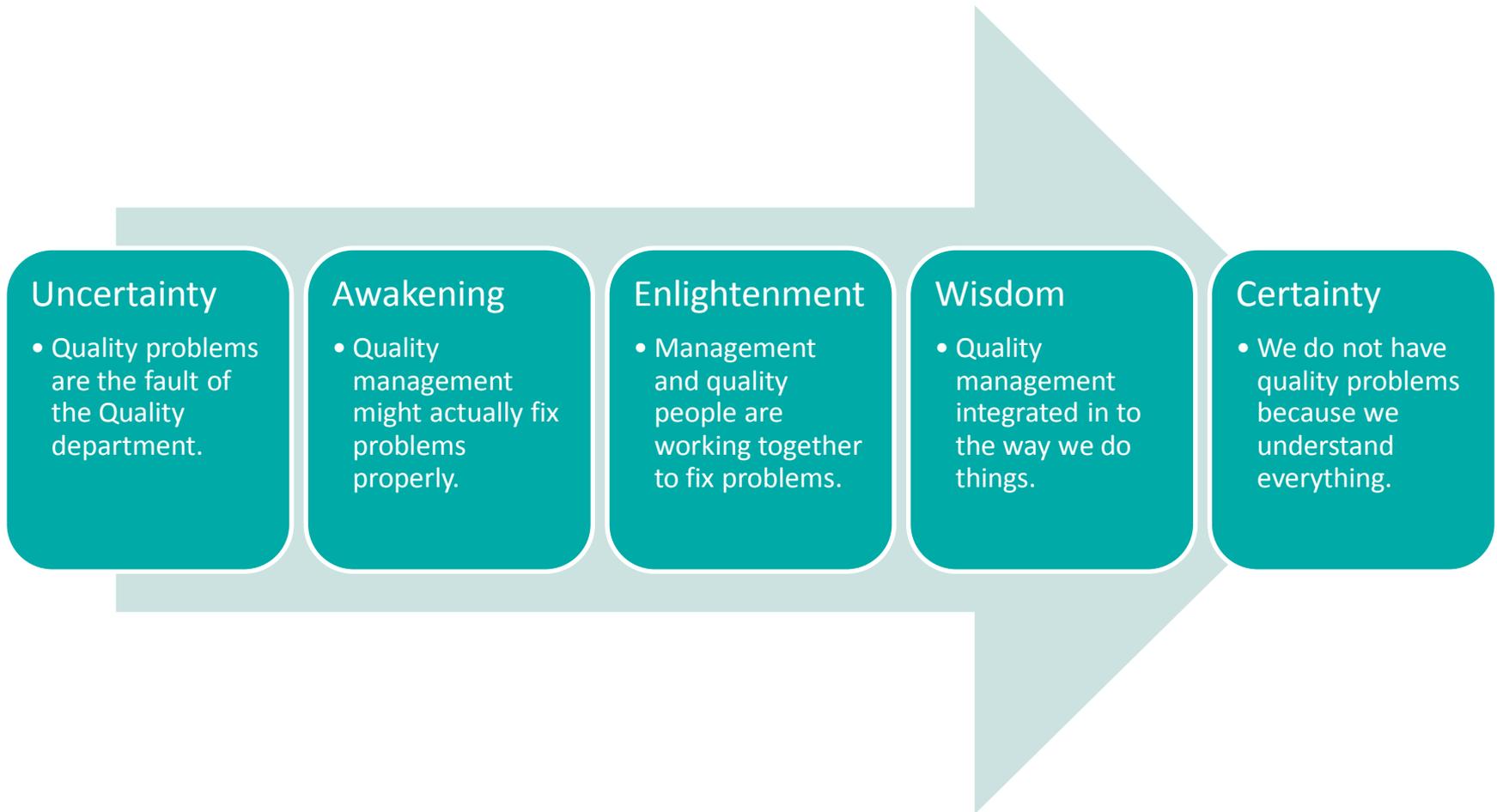
- Ability to deliver quality products on time
- Supplier evaluation



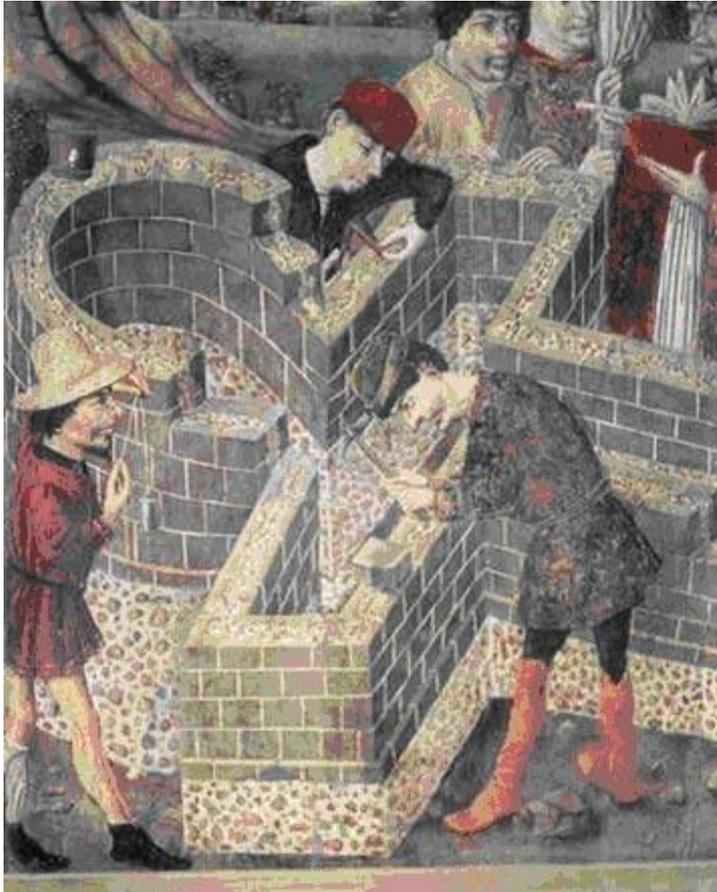
?

Quality Management Maturity Grid

[Phil Crosby, Quality is Free, 1979]

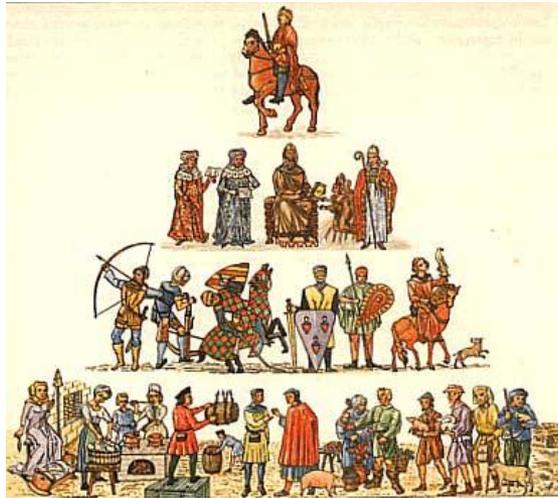


$$\text{Quality}_{\text{product}} = f(\text{Quality}_{\text{process}})$$



Maturity

Model



Evolution of Process Maturity

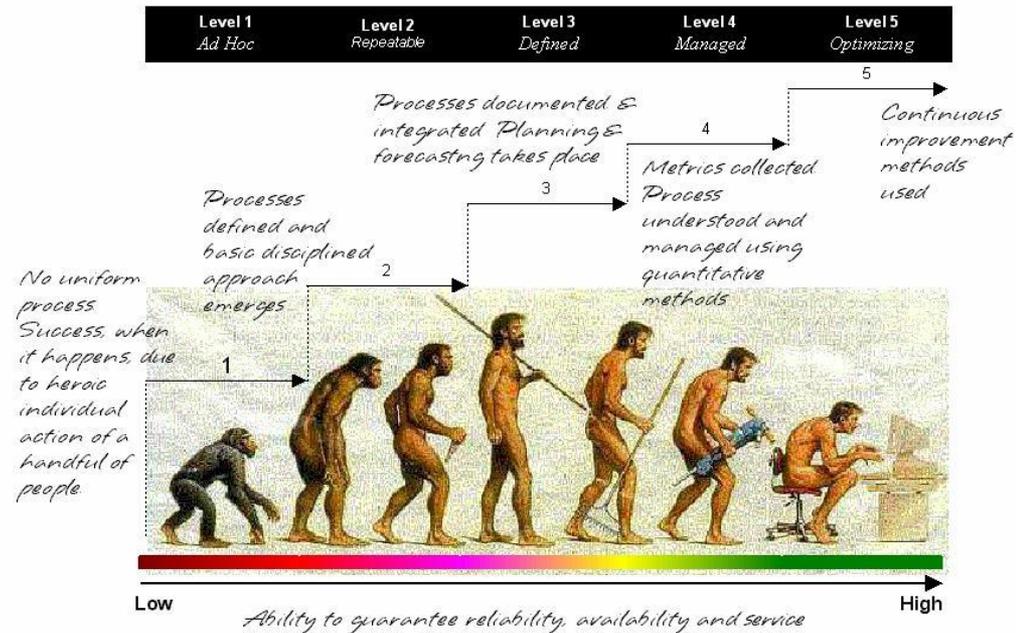


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Automotive SPICE™

Process dimension of Automotive SPICE™ compared to ISO/IEC 15504

Management Process Group (MAN) MAN.1 Organizational alignment MAN.2 Organization management A MAN.3 Project management MAN.4 Quality management A MAN.5 Risk management A MAN.6 Measurement	Engineering Process Group (ENG) A ENG.1 Requirements elicitation A ENG.2 System requirements analysis A ENG.3 System architectural design A ENG.4 Software requirements analysis A ENG.5 Software design A ENG.6 Software construction A ENG.7 Software integration A ENG.8 Software testing A ENG.9 System integration A ENG.10 System testing ENG.11 Software installation ENG.12 Software and system maintenance	Supporting Process Group (SUP) A SUP.1 Quality assurance A SUP.2 Verification SUP.3 Validation A SUP.4 Joint review SUP.5 Audit SUP.6 Product evaluation A SUP.7 Documentation A SUP.8 Configuration management A SUP.9 Problem resolution management A SUP.10 Change request management
The Acquisition Process Group (ACQ) ACQ.1 Acquisition preparation ACQ.2 Supplier selection A ACQ.3 Contract agreement A ACQ.4 Supplier monitoring ACQ.5 Customer acceptance A ACQ.11 Technical requirements A ACQ.12 Legal and administrative requirements A ACQ.13 Project requirements A ACQ.14 Request for proposals A ACQ.15 Supplier qualification	Resource & Infrastructure Process Group (RIN) RIN.1 Human resource management RIN.2 Training RIN.3 Knowledge management RIN.4 Infrastructure	Operation Process Group (OPE) OPE.1 Operational use OPE.2 Customer support
Supply Process Group (SPL) A SPL.1 Supplier tendering A SPL.2 Product release SPL.3 Product acceptance support	Process Improvement Process Group PIM.1 Process establishment PIM.2 Process assessment A PIM.3 Process improvement	Reuse Process Group (REU) REU.1 Asset management A REU.2 Reuse program management REU.3 Domain engineering

A Automotive-SPICE

new HIS-Scope

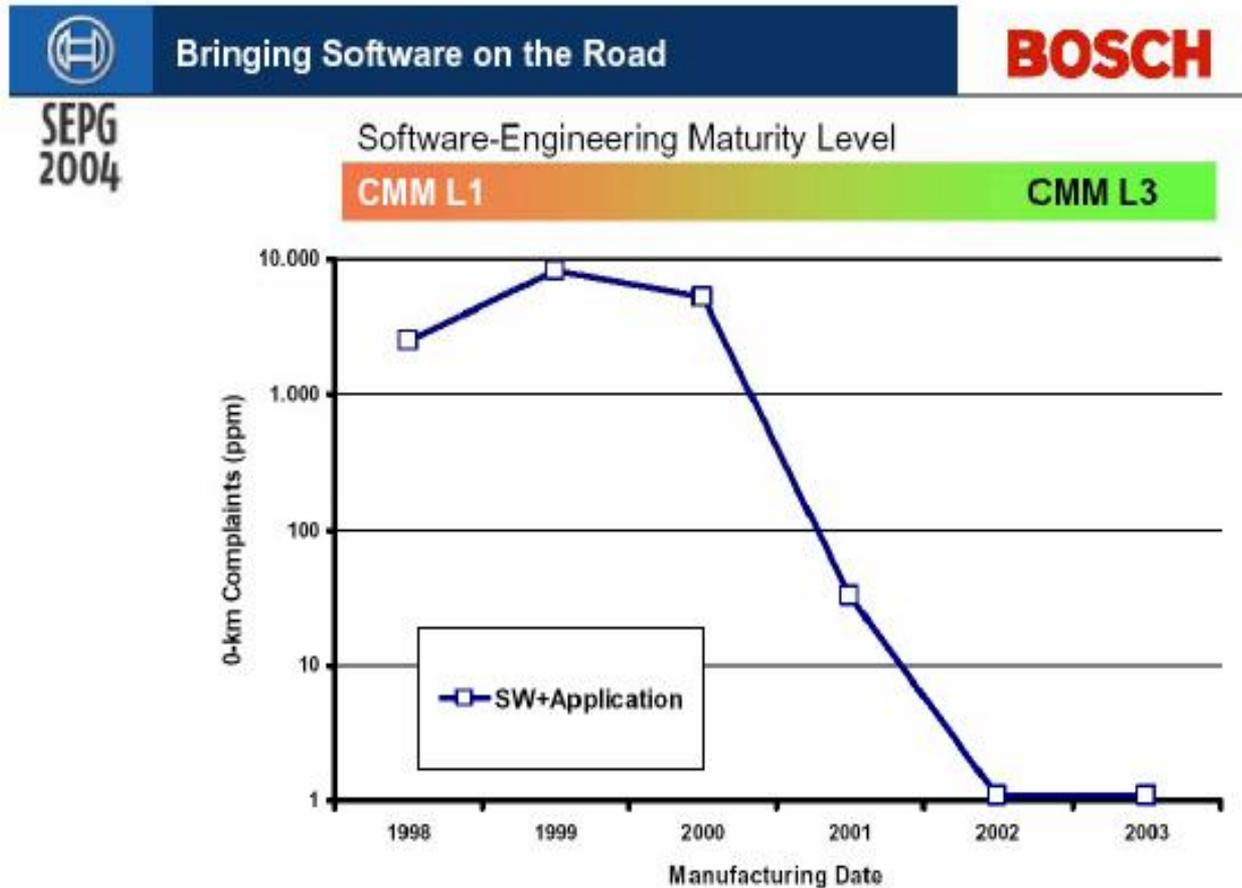
not included in IS

Model is free of charge (after registration) available at www.automotivespice.com

Process Maturity



Quality impact of higher process maturity



March 9, 2004

Data: As per 17.09.2003, all Customers

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CREA

Higher process capability increases product maturity.

Result of correlation.

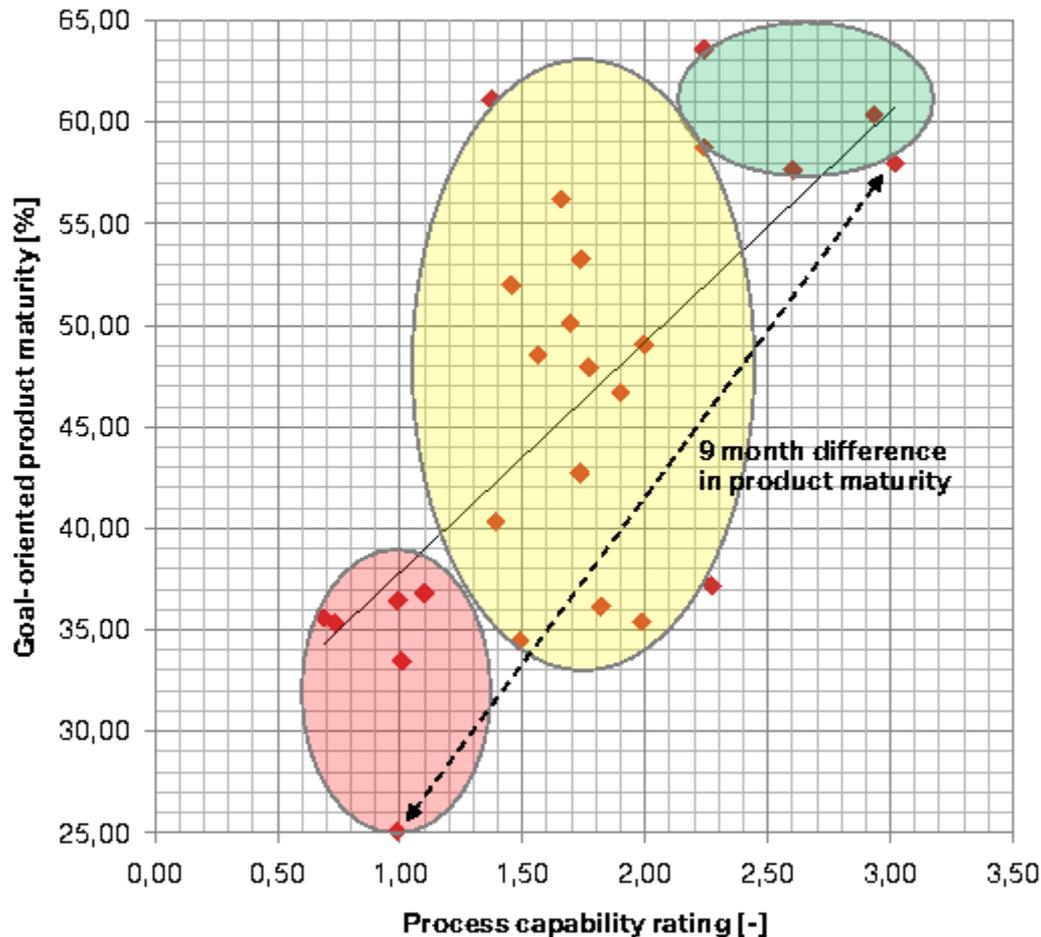
History

Expectations on suppliers

SPICE results & experiences

Product maturity & process capability

Summary



Identified Clusters

- Cluster 1: Low process capability, late product maturity.
- Cluster 2: Transition phase, project management incomplete, product maturity differs.
- Cluster 3: High process capability, early product maturity.

Clear correlation between goal-oriented product maturity and process capability.

So – is there a problem?



AUTOMOTIVE APPLICATIONS

POWERTRAIN CONTROL

- Engine Management Systems
- Fuel injection and ignition control
- ECU design and development
- Battery Management System
- Climate Control, HVAC

INFOTAINMENT SYSTEMS

- Audio / Video Codec implementations
- MOST D2B gateways
- Speech recognition, media exchange interface

DRIVER INFORMATION SYSTEMS

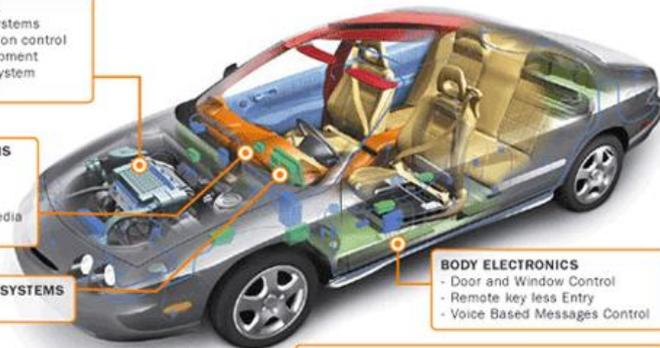
- Instrument Clusters

BODY ELECTRONICS

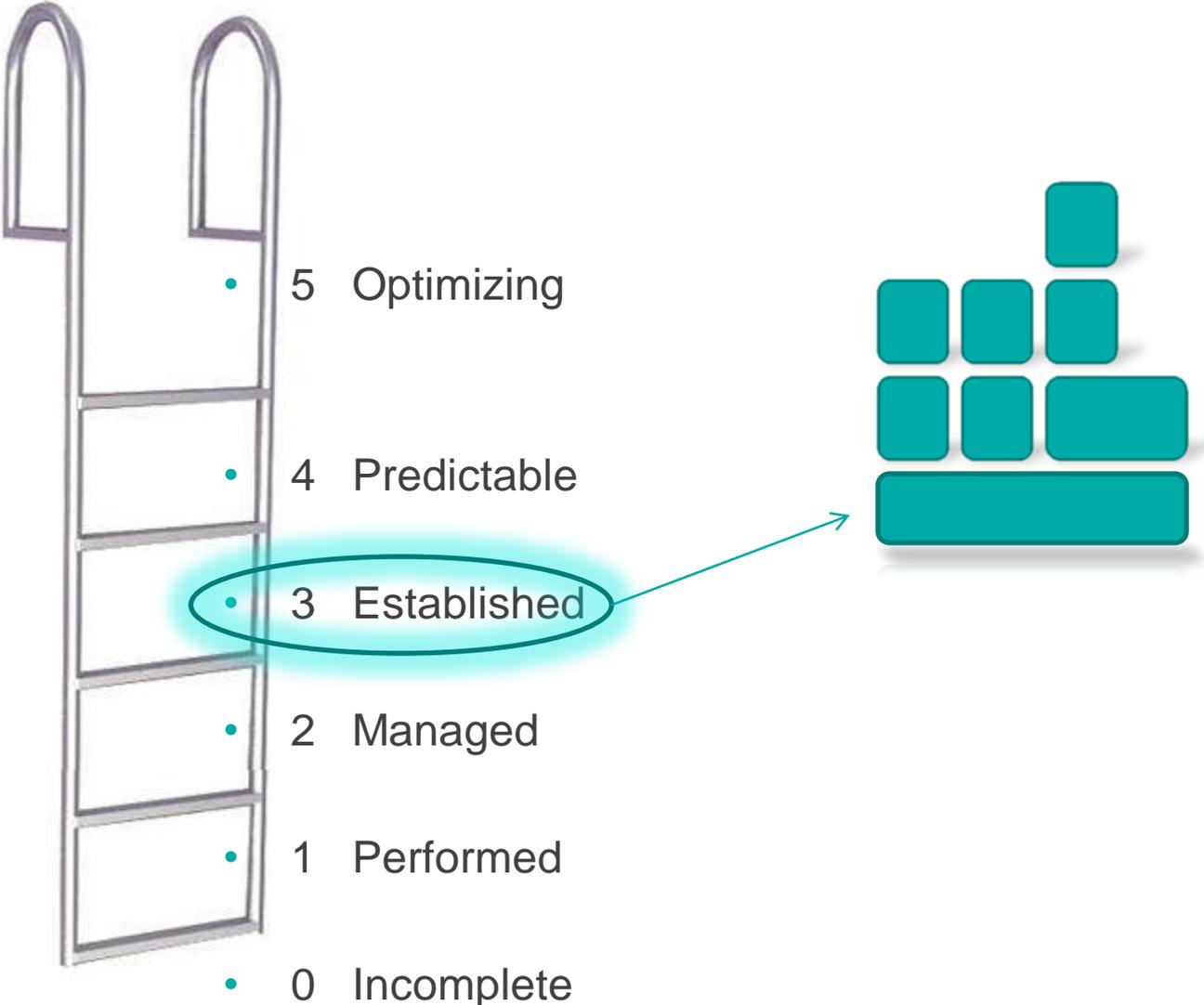
- Door and Window Control
- Remote key less Entry
- Voice Based Messages Control

PC-BASED SUPPORT TOOLS

- Fleet performance data analysis
- Advanced diagnostics of EMS / VMS fault data
- H-I-L test equipment upgrades
- Heavy duty vehicle configuration



Process Maturity



Process Fortress

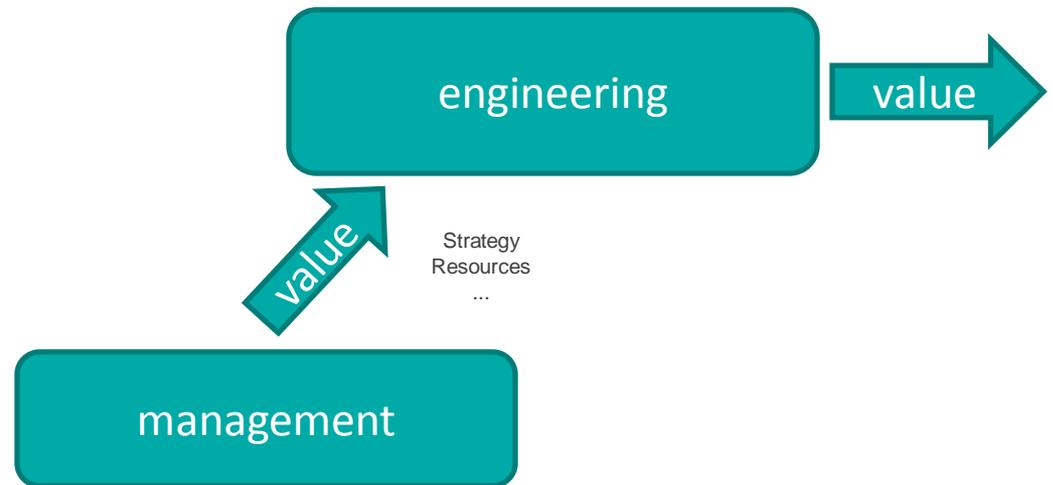
Our processes will last!



Fast delivery of products requires Agile organisations

- Processes connect, they are not for control
 - Maturity models are ok
 - Their users may be immature
-
- We need the Inverse of Conway's Law
 - Fast delivery of interdependent products can only be achieved by networked agile organisations

“Open Organisations” “Value Orientation”



Control is good, trust is better.

Lenin⁻¹