

Assessment of Maintenance using a Software Maintenance Maturity Model (*S^{3m}*)

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In cooperation with Alain April

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List of Topics

- 1) Background
- 2) Overview of the **S**^{3m} model
- 3) Examples of use

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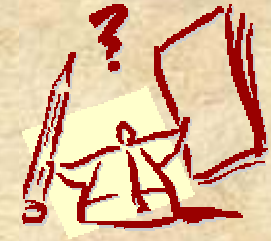
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Background



- **CMM and CMMi focus**
 - Software Development and Maintenance **Projects**
 - Teams of developers
- **Software Maintenance Processes (SWEBOK) ?**
 - Transition
 - Service Level Agreements
 - Acceptance/Rejection of Change and Corrective Requests
 - Planning Maintenance activities
 - Supporting operational software

Previous Work



Year Software Engineering CMM proposals

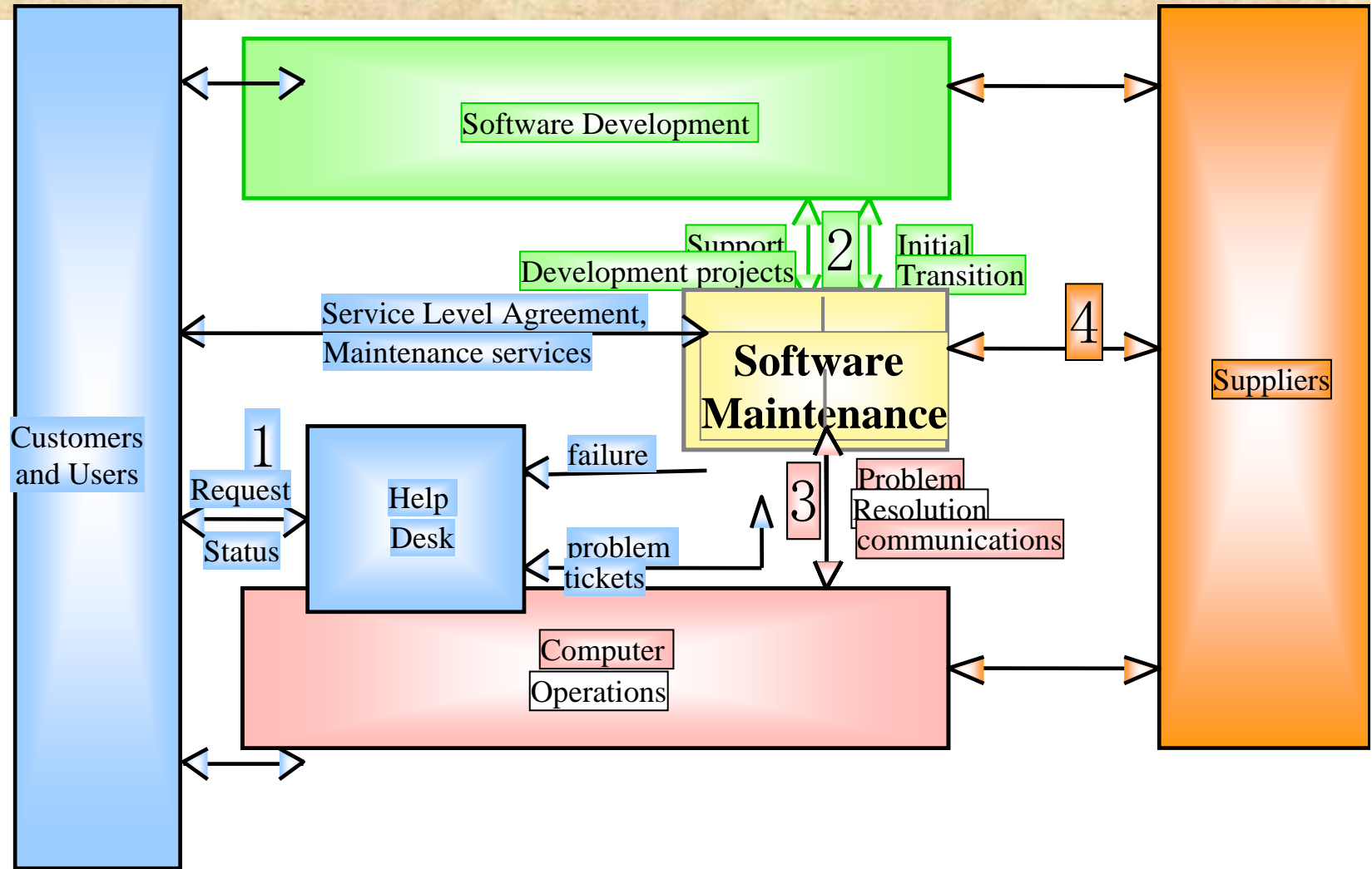
1991	Bootstap
1992	Trillium
1993	CMM©
1994	Camélia , automated testing (Kra94)
1996	TMM (Bur96), Zit96 , Dov96
1997	Som97
1998	Esi98, Top98, Baj98
1999	Wit99, Vet99, Sch99
2000	Cob00 , Str00, Bev00, Lud00
2001	Kaj01d & 01e , Ray01, Sch01, Luf01, Tob01, Sri01
2002	CMMi® , Nie02 , Mul02, Vee02, Pom02, Raf02, Sch02, Ker02, Cra02

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S³m Context (Scope)



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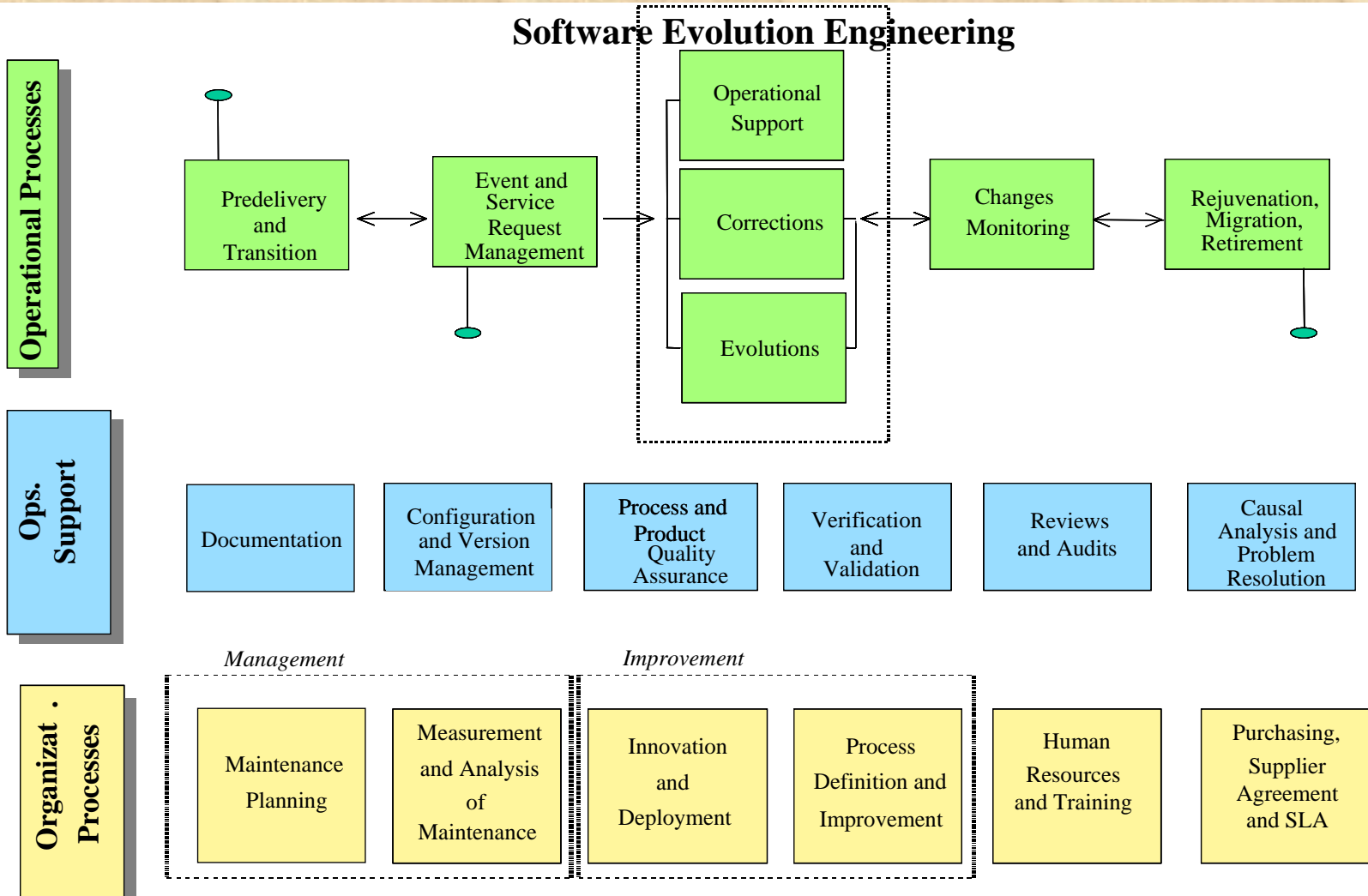
3) Examples of use

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S³m Process Model



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Architecture alignment to CMMi

CMMi Process Domains

Process Management

Project Management

Engineering

Support

SM^{CMM} Process Domains

Process Management

**Maintenance Request
Management**

Evolution Engineering

**Support to
Evolution
Engineering**

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S³m – Resulting KPA's

SM ^{CMM} Process Domains	Key Process Areas of Software Maintenance
<p>Process Management</p>	<ol style="list-style-type: none"> 1- Maintenance Process Focus 2- Maintenance Process/Service definition 3- Maintenance Training 4- Maintenance Process Performance 5- Maintenance Innovation and deployment
<p>Maintenance Request Management</p>	<ol style="list-style-type: none"> 1- Request & Event Management 2- Maintenance Planning 3- Monitoring & Control of maintenance requests 4- SLA & Supplier Management 5- Quantitative Maintenance Management
<p>Evolution Engineering</p>	<ol style="list-style-type: none"> 1- Transition 2- Operational Support 3- Evolution & Correction of software 4- Verification and Validation
<p>Support to Evolution Engineering</p>	<ol style="list-style-type: none"> 1- Configuration Management 2- Process and Product Quality Assurance 3- Measurement, Decision Analysis 4- Problem Management and Causal Analysis 5- Rejuvenation/Retirement Engineering

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Level	Level Name	Risk	Interpretation
0	Non-Existent	highest	no sense of process
1	Initial	Very high	ad-hoc maintenance
2	Repeatable	High	basic request-based
3	Defined	Medium	state of the art
4	Managed	Low	advanced measures
5	Optimized	Very Low	advanced improv.

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- **S^{3m} Model in numbers**
 - **4 Process Domains**
 - **18 KPA's**
 - **74 Roadmaps**
 - **443 Practices with supporting text and references**

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S³M – Roadmaps



A domain

Evolution Engineering

its KPAs:

- 1- Transition
- 2- Operational Support
- 3- Evolution & Correction of software
- 4- Verification and Validation

its Facets describe different aspects of a KPA

- 1) Communications with the developer, the owner and the purchasing agent.
- 2) Management of the transition process.
- 3) Control of training and knowledge transfer during transition
- 4) Prepare documentation transfer (includes source code and outstanding problem reports)
- 5) Participate in user and acceptance tests

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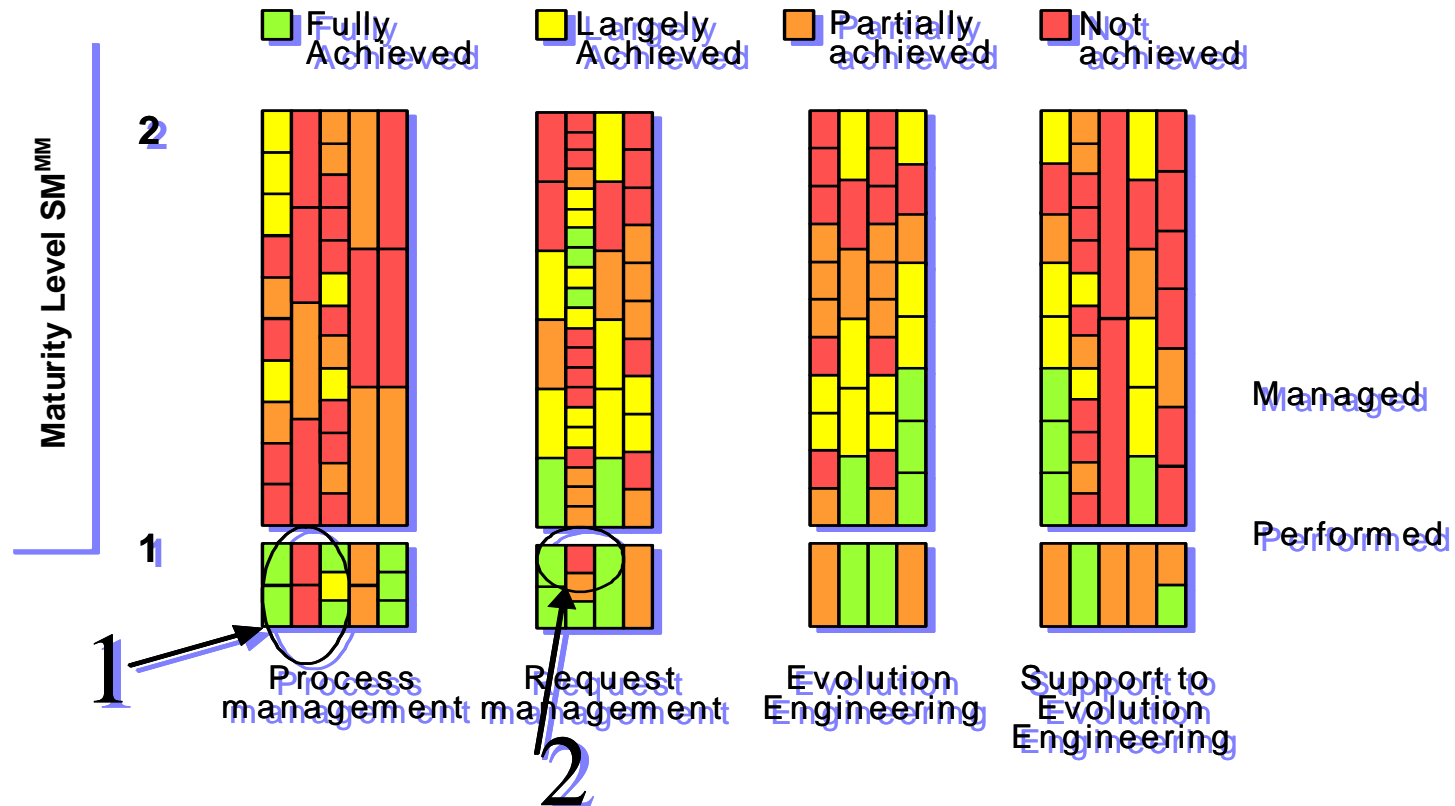
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S³m Usage



- ◆ Consolidated Maturity Profile for Level 1 and 2 maturity



- ◆ Identification of 2 company process improvement projects

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S³m Usage

Process Domain	Process Area	Level 0 Question	Rating	% Completed
Process management	Maintenance process focus	1.0.1	Yes	0%
	Maintenance process/service definition	2.0.1	Yes	0%
	Maintenance training	3.0.1	Yes	0%
	Maintenance process performance	4.0.1	Yes	0%
	Maintenance innovation and deployment	5.0.1	Yes	0%
		5.0.2	No	100%
	5.0.3	No	100%	
Total				29%
Event/request management	Event/request management	1.0.1	Yes	0%
	Maintenance planning	2.0.1	Yes	0%
	Requests/software monitoring and control	3.0.1	Yes	0%
	SLA and supplier agreements management	4.0.1	Yes	0%
Total				0%
Evolution Engineering	Predelivery and transition services	1.0.1	No	100%
	Operational support services	2.0.1	No	100%
	Software evolution and correction services	3.0.1	No	100%
	Verification and validation	4.0.1	No	100%
Total				100%
Support to Evolution Engineering	Configuration and version management	1.0.1	No	100%
	Process, service and software quality assurance	2.0.1	Yes	0%
	Maintenance measurement and analysis	3.0.1	Yes	0%
	Causal analysis and problem resolution	4.0.1	Yes	0%
	Software rejuvenation, migration and retirement	5.0.1	Yes	0%
Total				20%
Level 0 Rating:				37%

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Process Domain	Process Area	Level 1 Question	Rating	% Completed
Process management	Maintenance process focus	1.1.1	L: Largely Achieved	68%
		1.1.2	F: Fully Achieved	93%
	Maintenance process/service definition	2.1.1	L: Largely Achieved	68%
		2.1.2	L: Largely Achieved	68%
	Maintenance innovation and deployment	5.1.2	L: Largely Achieved	68%
		5.1.3	L: Largely Achieved	68%
Total				36%
Evolution Engineering	Pre-delivery and transition services	1.1.1	F: Fully Achieved	93%
	Operational support services	2.1.1	F: Fully Achieved	93%
	Software evolution and correction services	3.1.1	F: Fully Achieved	93%
	Verification and validation	4.1.1	F: Fully Achieved	93%
Total				93%
Support to Evolution Engineering	Configuration and version management	1.1.1	F: Fully Achieved	93%
Total				15,5%
Level 2 Rating:				36%

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S³m Usage

Process Domain	Process Area	Roadmap	Level 2 Question	Rating	% Completed
Evolution Engineering	Operational support services	Ad hoc requests/reports/services	2.2.6	L: Largely Achieved	68%
	Software evolution and correction services	Evolution/Correction	3.2.5	F: Fully Achieved	93%

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References

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Thank You !



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