Egypt–SPIN Newsletter

Issue 3, July – Sep 2003

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From the Editor

Welcome to our regular issue of Egypt – SPIN newsletter. As always our newsletter is providing you with a report from the recent steering committee meetings. The steering committee is still discussing how to promote a more disciplined approach to give momentum and power to our software process improvement program which both the government and industry are committed to. We hope that all issues will be resolved and be clear in the near future.

EDS- Egypt was sponsoring the SPIN event on (July 7th ,2003), the event was a great success and we were fortunate to hear from EDS staff and management about their experience in achieving Level 2 (February2003). In this issue Dr. Mohamed El Ashmawy the EDS – Egypt CEO is presenting their case study.

Many thanks to our talented contributors who were volunteering their time to write what you will find in this issue.

Dr. Adel Ghannam is writing his point of view on " **Where Egyptian Software Industry Should Go?** ".

Dr. Hoda Hosney is giving us an article review appeared at ACM April 2003 "**Software Development Method Tailoring at Motorola".**

Marian Tardrous had done a Comparison analysis between CMMI (staged) and SW-CMM (Level 2) this comparison is very important to estimate the effort required to move from SW-CMM to CMMI.

Ahmad Hammad is a new face in Egypt – SPIN newsletter he has 10 years experience as Software Quality Engineer in his article "**Conflict, is it that bad?** " he is discussing when conflict is healthy?

Mohamed Shawky is continuing what he started last issue about **defect free software through inspection**. This issue he is writing under the title " **Institutionalizing the Inspection Process"**

Enjoy all these articles and give us your feedback. We are looking for you all to contribute in this newsletter. We are constantly looking for that as an indicator for success. Send us your ideas for future issues. As reminder you can contact me (Madiha A. Hassan –Smart Village- Egypt) or at mad_abdalla@mcit.gov.eg . Also if you have a colleague how want to receive an electronic mail of our newsletter he can send an email to spin@secc.org.eg asking for registering him as SPIN member.

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Steering Committee Meetings Summary

In the steering committee meeting (15-7-2003) the discussion for the criteria of financial support which **Phase I** companies can receive from MCIT were of 1st priority topics DMS as one of these companies has suggested the following:

- The companies which will receive formal assessment can share X% of its cost, according to the type of service it will offer to **Phase II** companies. Example of these services orientation courses, consultation , helping in generating standards, policies and processes, ……
- The MCIT should encourage community by giving value added incentive to these companies (Phase I) .
- Cost of external consultant to help SMEs would be minimized if each company of Phase I can help 2 SMEs (this mean 2 X 8 SMEs will receive the help & support).

The steering committee has discussed also the issue of measuring the readiness to go for formal assessment. And the time to start the first formal assessment sponsored by MCIT/SECC .

The steering committee agreed to push for applying the local certification as part of regulating the software industry in Egypt.

NB.
Phase I are companies which has started its CMM efforts since 2001 and had done informal assessment or in its way to do it
Phase II are companies which are categorized under SMEs. (or and did n't start its CMM program yet)

Egypt-SPIN Upcoming Events

October, 2003	**Raya Software Case Study**
January, 2004	**ITSoft Case Study**
April, 2004	**ITWORX Case Study**

EDS- Egypt case study

Dr. Mohamed El Ashmawy

Introduction

As the world's largest outsourcing services company, **EDS** is built on a heritage of delivery excellence, industry knowledge, a world-class technical infrastructure and the expertise of its people

EDS is the market leader globally. 40% of all companies that choose an applications service provider choose **EDS**. We support more than 1 million applications and 2.5 billion lines of code. We deliver methodologies and practices developed and refined over 40 years, and standardized worldwide. We support applications in 60 countries and more than 50 languages. We have expert resources to develop and manage applications on any platform, and to integrate multiple platforms.

EDS Egypt is the leading IT services company in the region. We have been serving customers in Egypt, Middle East, Europe, and USA for more than 10 years. Our workforce consisted of more than 100 engineers in 2002, growing to 150 in 2003,targeting 500 in 2005.

EDS Egypt extends **EDS** global services that bring together the world's best technologies to address critical client business imperatives. We also provide strategy, development, implementation, and hosting for clients managing the complexities of today's economy. In February 2003, **EDS Egypt** officially achieved SEI CMM level 2

The SEI CMM ® "The Software Engineering Institute Capability Maturity Model (SEI CMM) is a five level model designed to help organizations identify and prioritize process improvement opportunities. Each higher level represents an increased ability to plan and control projects, software development activities, and organization processes."

CMM L2: How Did We Get There?

The Planning Phase:

Establishing Sponsorship

Obtaining leadership sponsorship is the first step to be performed up ahead. Part of establishing sponsorship is performing a sort of feasibility study & cost/benefit analysis.

MANAGING change (vs. implementing change)

Process improvement is something that affects ALL the organization and requires a lot of discipline. Change is usually a painful process – most people are reluctant to change their old ways and adopt new ones. They must be told up ahead:

- Why the change is mandatory (get everyone's buy-in)
- What is changing & what is not changing
- How their day-today business is going to be affected.. IMPROVED!

Process Improvement

It is advisable that the process improvement efforts/initiative be treated as a project. This means formal planning (based on a gap analysis), monitoring and control of the initiative. Serious consideration must be paid to the people side – anticipating issues and planning for them before they occur (change management)

Building Up The Expertise:

This was performed via:

- Identifying gaps and the required expertise
- Based on a gap analysis, identifying areas of process weakness
- Identifying INTERESTED and DEDICATED people => properly staffing the process improvement initiative. This may not be an easy process. Personnel not skilled enough to be allocated on any project are NOT the best choice.
  - General characteristics should usually include:
    - o High-performers, leaders, charismatic (will work with/influence all the organization)
    - o Highly-skilled in problem-solving
    - o Able to work under stress

- Very good project management and leadership (team management) skills
- Very good communication and presentation skills
- Interested!
- Committed (not just to the organization, but also committed to stay in this role for a long time!)

Use all the training and consultancy available – Invest in committed people! This is where sponsorship comes in!

- Dedicating experts to pass the knowledge and support projects. People identified as future-experts must be given enough time to learn, and the proper time to support and pass their knowledge to others. A lesson learned: develop a process to formally request the support of those experts. Not forgetting new joiners. Process improvement orientation must be provided to all staff. All staff must be trained on the new processes, methods, procedures and tools. It is best to include this also as part of the induction training to new joiners, so that they are not over-looked.
- INSTITUTIONALIZING the change => it becomes the norm and the standard for conducting business. This involves a lot of training, coaching and mentoring. It also involves performance management to re-emphasize and encourage staff to follow the standards, and reward desirable behaviors until they become "the natural thing to do" I.e. the norm. It sometimes also involves Relationship Management – that is advising and training our clients to gain their buy-in and accept our new standards for conducting business. Example: scope management and change requests.

In EDS Egypt, management sponsored and invested in:

Function Point Analysis SME (Subject Matter Expert) (1 CFPS (Certified Function Point Specialist) several counters), to estimate size on all new development projects

Estimation SME: All projects estimate size, effort, cost, duration, staff, and CCRs.

Metrics SME: All projects track size, effort, cost, schedule & duration, staff, CCRs, change, and defects. •We define organizational process goals and objectives, as well as project goals and objectives. Each project must track measures related to the organizational goals and objectives, as well as those related to the project-specific goals and objectives.

Quality Assurance SME: All projects plan for quality assurance & control. Organizational Quality Assurance exists on the project level => reviews against defined criteria, testing, and post-milestones reviews, and exists on the organizational level => planned audits, follow-ups and escalations. QA is managed as a project on the organizational level, with specific reporting to senior management as well as to the corporate.

Configuration Management (CM) SME: CM concepts and tools were deployed on the organizational level (deployment managed as a project)
CM Standards were set on the organizational level (change control procedures, baseline verification procedures, project CCBs, standard libraries, etc.)

Risk Management SME: On the project level => depending on project total estimated project effort, the appropriate risk management methodology is decided. Assumptions, risks and issues are identified and periodically reviewed/analyzed. Critical risks are escalated to senior management in a standard manner.
On the organizational level => organizational management risks are identified and periodically reviewed/analyzed. Critical risks are escalated to the general manager.

Project Management (several PMPs):
PMI concepts adopted by our PMs have been a great help. EDS has also spent some effort to align the terminologies of the CMM with those of the PMI & its global common process
We also have local process experts – that customize the EDS global

common process set for use within EDS Egypt ***Our Assessments:***

L2 Mentored Self-Assessment (MSA) [Nov.-Dec. 2001]

MSA is an EDS assessment method for gap identification – used to explain the CMM KPAs, goals and their key practices, and how they are implemented in the organization, hence identifying the gaps. The self-assessment is usually conducted on-site by 1 lead assessor, includes a site coordinator. In our case, the MSA was conducted remotely (as a workaround for the travel restrictions following Sept. 11th 2001), by 2 lead assessors & a site coordinator.

The documentation was provided on a shared area (via the network), and interviews were conducted over the phone. Our remote MSA followed, more-or-less, the pattern of a Mini assessment (rather than an MSA). We obtained an average score of 6.44

L2 Mini Assessment & L3 MSA - Combined [Apr. 2002]

This is an EDS assessment method – used to score each key practice (on a scale of 1 – 10), to provide insight on the extent of implementation and institutionalization of each key practice.

The assessment is conducted by 2 lead assessors, and a site coordinator. An assessment plan was in place, and an agreement was signed. Also, all the documentation (Organizational Questionnaire, Project Questionnaires and Document Reference Sheets) were filled.

The L2 Mini lasted for 3 days & included some document reviews, and group interviews (3 PMs, 2 MMs, 5 FARs), a consolidation & a scoring session, as well as a final findings presentation. We obtained an average score of 6.7

The L3 MSA lasted for 2 days & it was a group session – a workshop

L2 CBA-IPI [Jan./Feb. 2003]

The CBA-IPI method is an assessment of an organization's s/w process capability by a trained group of professionals, led by an SEI-authorized lead assessor, who work as a team to generate findings and ratings relative to the CMM KPAs within the assessment scope. The findings are generated from data collected from questionnaires, document reviews, and in-depth interviews with Middle Managers, Project Leaders, and s/w practitioners.

It has 2 primary goals:

- Support, enable and encourage an organization's commitment to s/w process improvement
- Provide an accurate picture of the strengths and weaknesses of the organization's current s/w process" (CMU/SEI-99-TR-012)

The approach of the CBA-IPI is to assemble and train a competent assessment team under the leadership of a lead assessor and to conduct a structured series of activities with key people in the organization to understand their problems, concerns, and ideas for improvement.

"The CBA-IPI method is based on the following key principles:

- Use the CMM V1.1 as a process reference model.
- Involve senior management as the assessment sponsor
- Base the assessment on the sponsor's business goals and needs.
- Observe strict confidentiality by guaranteeing no information will be attributed to an individual or project
- Approach the assessment as a collaborative activity between the assessment team and the organizational participants." (CMU/SEI-99-TR-012)
- The **business needs** for process improvement drive the requirements for an assessment.
- The business needs of EDS Egypt were strategic needs. It was mandated by our parent organization as a matter of existence.
- Other factors included:
  - Improving quality
  - Providing increased management insight (and hence control) into the projects
  - More disciplined project management and control
  - Preventing scope creeps, and hence avoiding doing more work we won't get paid for. Any requests made by the client must be made via a formal change request, which is then

estimated and included in our costs and invoices to the client.

Planning for the CBA-IPI

This involved identifying:

- Lead assessor, site coordinator, and assessment team (including local members)
- Assessment scope:
  - Relevant CMM L2 KPAs
  - Projects to be assessed
  - Participants to be interviewed (total of 27)
- Assessment costs
- Special organizational terminology & their CMM equivalent
- Required documentation
- Assessment schedule (pre on-site, and on-site)

The assessment was planned as a project a (a L4 organization). Another external ATM was

The On-Site Period

This involved the following:

- CMM & Assessment Team Training
- Opening Meeting & Site briefing
- Document Reviews
- Interviews
- Data consolidation
- Prepare & present draft findings
- Consolidate feedback & conduct rating
- Prepare & present final findings
- Executive session & wrap-up

Benefits of CMM L2 and Lessons Learned:

- Improved project performance and control
- Senior management has more insight into projects (a clear view of the cost, effort, and resources required to
- Put your best people on implementation & assessment teams, and train them. They then carry these concepts into their day-to-day business
- Assessments stimulate the organization to move forward with process improvement and towards measurement improvement.
- Forever continue to establish and maintain senior management sponsorship, and buy-in of the rest of the management team.

perform projects), and awareness of escalated non-compliances and risks

- Changes to projects are more controlled and project configuration management is under strict control
- By being more process-focused, we can identify key parameters to measure and improve our processes
- Employee morale improved in most cases
- Improved project performance – delivering on time more consistently
- Most customers appreciate improvements in communication & project results – we teach our customers to appreciate our more disciplined approach to project management. This is measured through our customer satisfaction survey.
- Local assessment team members learn the CMM, gain insight into the CMM and carry that knowledge with them into their day-to-day work.

Conclusion:

- CMM L2 is really the starting point
- SPONSORSHIP is the most critical factor for the success of an assessment and process improvement effort.
- Process improvement must be properly staffed and funded
- Organizational goals and objectives must be tied to a strategic business plan.
- All the concepts of Change Management apply to CMM implementation - including education, vision, measurement, etc.

Steps Ahead: Planning for the Next Level

- An action plan is in place for CMM L3 gaps
- PPI team has been re-organized and re-staffed to support the action plan
- Planning for a CMM L3 Mini in Q4 2003

Where Egyptian Software Industry Should Go?

Dr. Adel Ghannam

Introduction

We are at a crossroad and we should not remain there for a long time. The international market is recovering (see Fig.1) and staying at this "non-focus " situation will increase the digital gap between Egypt and the Western world, and may be also with some Arab countries (see Fig.2).

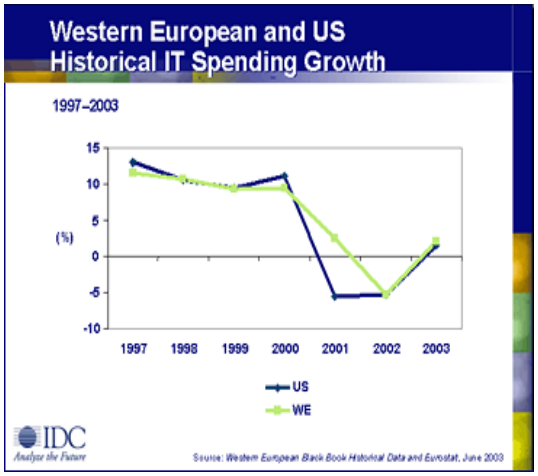


Fig. 1

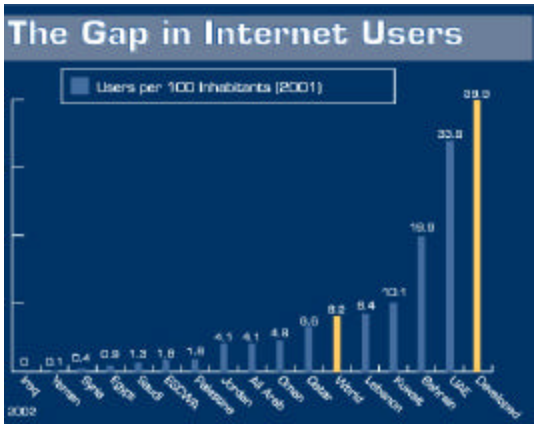


Fig.2

The Choices

The choices should be based on :

1. Shall we focus on Traditional services?
2. Shall we focus on Web services?
3. Shall we focus on Software packages , or bespoke? If packages , which verticals will be selected?

The criteria affecting the selection are based on:

1. Traditional IT Services need good references (training, implementation support ,outsourcing) , because this is the most secure guarantee for the buyer. For this reason , starting up an IT service is a difficult job,
2. Approaching the GATT implementation, multinational companies are expected to penetrate the Egyptian market. The large ones are knocking-down their large products into smaller modules to address the medium and low priced markets.
3. With the current availability of reasonable BW, the above internet gap shows that we have a good opportunity to address a wide range of web services. Funding, however, is an impeding factor that should be removed. Adding to the funding availability, a market research study that addresses the following, will help in getting positive results:
   1) The maturity level of different sectors
   2) The buying behavior.
   3) The policies of the multinational to address Egypt and the ME in each vertical (Is it focus on product selling , services, or both ?)

   The availability of software developer is not a problem any more (this is the result of a Skill Gap Analysis project , conducted by the USAID, announced recently in July 2003. On the other hand ,the projects shows that we have shortage in Project managers, Product managers, Architect , and designers.

4. Software packages need a good market forecast, and a " product quality stamp". The quality stamp is a much quicker solution than the CMM. Nevertheless, the CMM should remain the back bone strategy.

The Proposed Direction:

1. The traditional services for the software products is a way to capitalize on the expected multinational penetration. However, state's rules should oblige these multinational companies to outsource these services to Egyptian companies, and not to do it themselves using Egyptian manpower. In this way , we create a sustainable national business.
2. Packages need accurate market forecast .IT market researches are expensive, whether locally or internationally. These researches are needed to focus the limited investments. Without that , it is "Shooting in the Dark". It is up to the government to find a national mechanism to subsidize the company's marketing expenses.
3. We are the largest country in the region, and the need to deliver services through the web is secured. The above mentioned impeding factors should be quickly removed.
4. Software testing unit should be established as soon as possible to accredit the products. I don't expect to see the ROI effect of the CMM program, before at least two years
5. Bespoke will remain a function in the government IT demand. Most of the time , the government needs can only be satisfied by bespoke systems. However, new procurement rules are required,that match the nature of the software.

We are the largest country in the region, and I estimate that we have about 10000 developers in their most productive period of their life (age between 25 and 35), and another 10000 over 35 years. We can work in many of the above directions, if not all.

We need to do more and plan less. I don't mean working without plan, but plan for short period (<6 months)- act- monitor progress and new technology- correct- plan again. We are talking about "What we want to do more than doing"

Software Development Method Tailoring at Motorola

***Authors**:* Brian Fitzgerald, Nancy L. Russo and Tom O'Kane
***Appeared in**:* Communications of the ACM April 2003, Vol. 46 No. 4

Dr. Hoda M. Hosny

In this article the authors address the issue of software development method tailoring and they site the Motorola Cork (Ireland) plant's experience with its fundamental software process, the Cork Organizational Standard Software Process (OSSP).

They start out by stating that it is now widely accepted that methods should be tailored to the actual needs of the development context and also the fact that there is very little by way of practical guidance to inform developers as to what steps of the method to modify or omit. Because of the consequentially known disparity between the official development process and the actual behavior of developers in practice, they went on to conduct a case study of a high profile, successful software development organization (at the Motorola development facility in Cork) and to draw lessons on tailoring that they believe could be applicable to organizations worldwide.

They found that the software development process at Motorola involves a number of discrete components which comprise three different levels : a broad ***industry*** level; a more specific ***organizational*** level; and the individual ***project*** level.

The ***industry level*** reflects the fact that the components are available more or less universally to any organization developing software, in that they are part of the public domain. The two basic elements on which the studied organization grounds its development method are the IEEE 1074 software standard and the V software lifecycle model (V-SLCM). The IEEE 1074 standard is a very detailed one that prescribes a set of activities deemed mandatory for the development and maintenance of software. It comprises six high-level stages, 17 process steps and 65 activities within these process steps. Also it is complementary to the Capability Maturity Model (CMM), which is very important in Motorola as a means of assessing the maturity of their development process, and also as a mechanism to introduce improvements to that process.

At the ***Organizational level***, a number of software processes exist that are specific to the various parent divisions within the company and naturally they influence the Cork process. Each of the divisions has configured their software process to suit their particular development. It is also recognized at the organizational level that some development projects in the future might require processes that are not accommodated by the current method; hence the inclusion of the Future Project Processes component.

Based on these considerations, the overall Cork Organizational Standard Software Process (OSSP) is constructed in such a way that it is characterized by a good deal of tailoring. However, this tailoring is at a macro level, and the specifics of the individual projects have not yet been factored in. At the organizational level, the main emphasis is on creating a trusted, rigorous and reliable software process that satisfies the sequencing aspects of the software life-cycle model (in their case the V model). This results in a prescription for a consistent method of performing software development activities, including the sequencing of activities and the interfaces between them.

According to the authors, the OSSP covers the development life-cycle from initiation until the roll-out and close of the project. Activities that span the life cycle, such as project management, quality assurance, customer support, and training are also included. The CMM key process areas are also explicitly factored into the method at this level. The development process itself is measured and monitored in an extremely public manner. Throughout the offices of the organization are charts and graphs that indicate progress on various measures. All

of these initiatives enforce the software method culture.

Following the construction of the OSSP, a phase of micro-level tailoring of the method takes place at the Project level. This is where the project-specific characteristics are factored in. In essence, certain elements of the OSSP are chosen depending on the operational needs of the project. Since the OSSP elements cover all aspects of the software process, including those project specific practices (e.g. project planning), and those non-specific practices (e.g. training or process improvement), the project-specific elements of the OSSP must be selected to address the operational needs of the project.

The ***project level*** software lifecycle includes software standards, procedures, tools, methods and templates. The project manager is responsible for this level of tailoring.

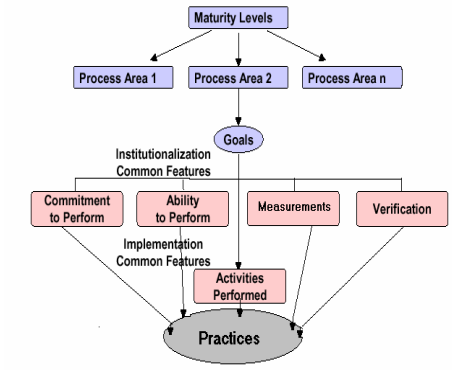
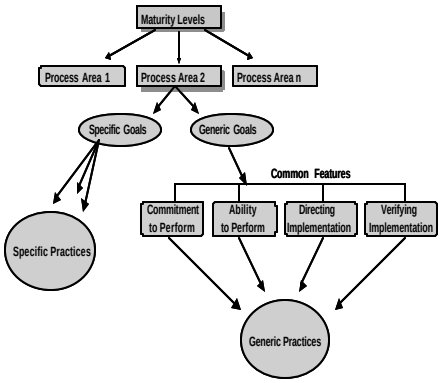
Specific characteristics or features of the actual project under development are then considered and further refinements to the project lifecycle are duly made. Some of these tailoring decisions are made at the start of the project and recorded in the project plan. For example, if a particular software feature is judged to be particularly complex, it may be decided to produce a high level design and a low level design specification, as opposed to a simpler detailed design specification. Other tailoring decisions are made dynamically in the course of the project.

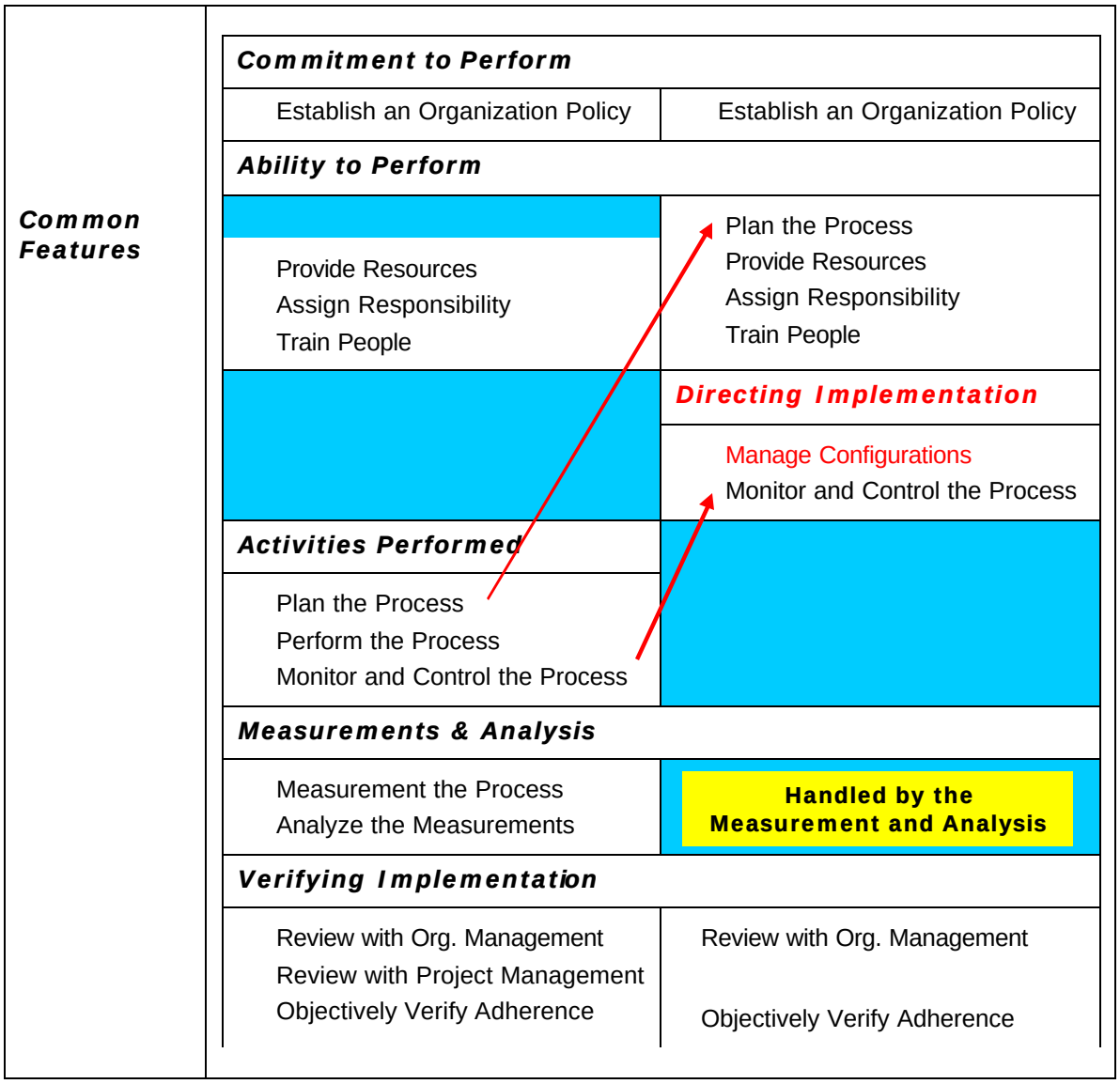
Tailoring at this level also applies to areas that are non-project specific. For example, a change to the test process may or may not require piloting based on an impact assessment of the process change. Another example might be to grant a developer a waiver from a particular training course if the developer satisfies certain criteria.

In their final implications, the authors see in this case study an organization that recognized both the advantages to be gained from using a standardized software development method and the need to provide a method that is tailored to fit the specific requirements of each development project. They state that the OSSP is reasonably stable and that it is expected to evolve over time since the capability to evolve is built into the model. They also agree that the dual level of tailoring allows the valuable CMM elements to be incorporated, but without sacrificing any local strengths of the development process. In conclusion they see that the method provides both the advantages of standardization and the flexibility to cater for changes in the development environment.

CMMI-SE/SW staged representation level 2 Compared to SW-CMM level2

By: Marian Tadros

	CMMI staged representation level2	***CMM level2***
Components	• Maturity Level • Process Area • Generic Goal • Specific Goal • Generic Practice • Specific Practice	• Maturity Level • Key Process Area • Institutionalization Goal • KPA Goal • Key practices from institutionalization common features • Key Practice from Activities Performed Common Features • Examples
Structure		
Level 2 KPAS	• Requirements management • Software project planning • Software project tracking & oversight • Software subcontract mgmt • Software quality assurance • Software configuration Management • Measurement and Analysis	• Requirements management • Project planning • Project Monitoring and Control • Supplier Agreement Management • Product & Process Quality Assurance • Configuration Management



Mapping of CMMI –SE/SW/IPPD Staged V1.1 (Level 2) to SW-CMM V. 1.1

CMMI Process Area	CMMI Goal	CMMI Practice	CMM Goal/ Common Feature Level	
Requirement Management	SG1	SPs (1.1,1.2,1.3,1.4,1.5)	**Level 2**	RM Goals 1,2 RM Ac 1,3 SCM Ac 5 SPT&O Ac 2

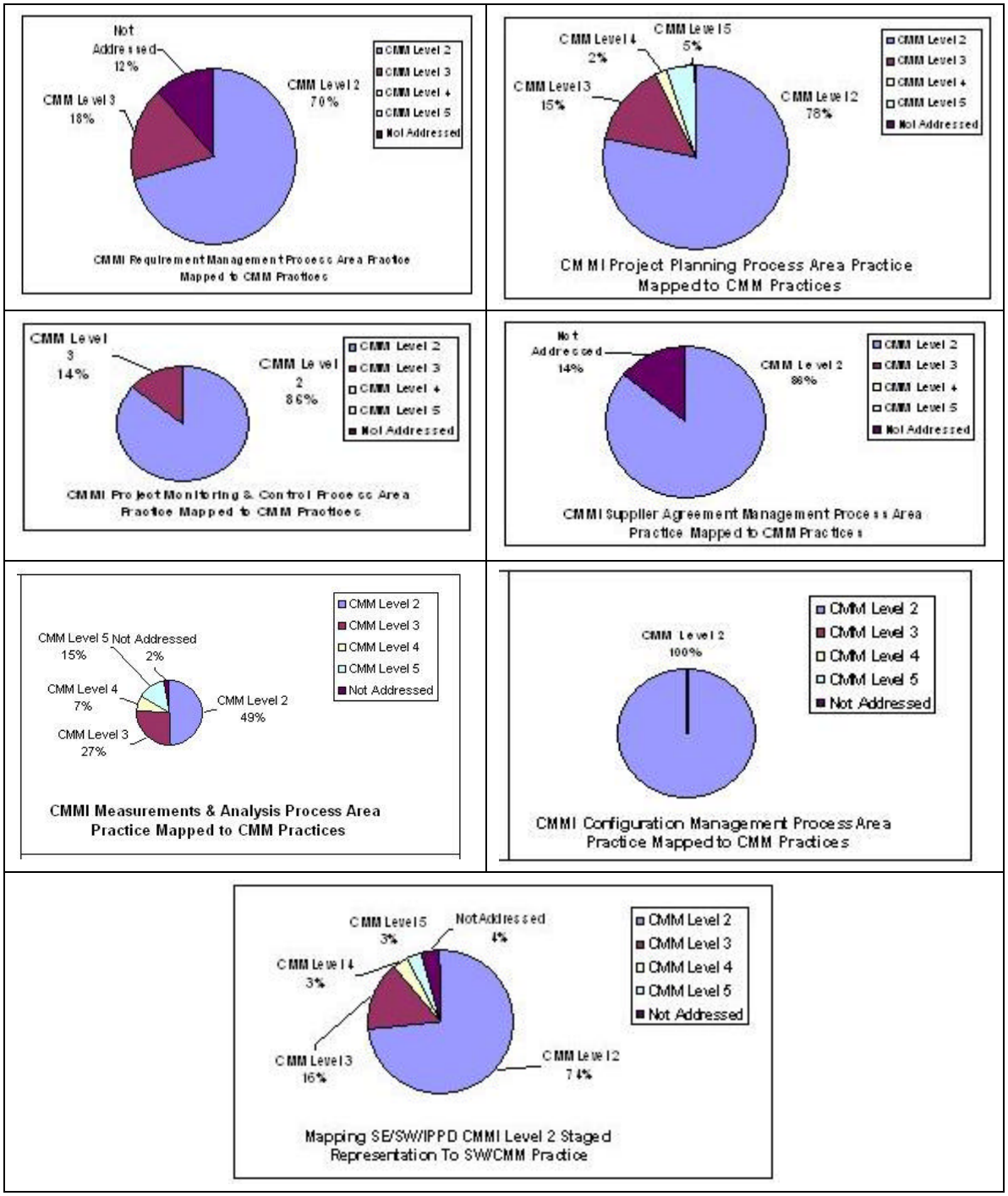
			Level 3	IC Goal 1 IC Ac 1, SPE Ac 2,10
	GG2	GPs (2.1,2.3,2.4,2.5,2.6,2.8,2.9,2.10)	**Level 2**	RM Co 1 RM Ab 1,3,4 RM Me 1 RM Ve 1,2,3 SCM Goal 2
		GPs (2.2,2.7)		Not Addressed
Project Planning	SG1	SPs (1.1,1.2,1.3,1.4)	**Level 2**	SPP Goals 1 SPP Ac 5,7,9,10,14
	SG2	SPs (2.1,2.2,2.3,2.4,2.5,.6,2.7)	**Level 2**	SPP Goal 2 SPP Ac 1, 3, 6,7,8,11,12,13,14 SPI&O Ab 1 SPI&O Ac 2,5,6,7,8,11,
			Level 3	SPE Ab 1 TP Ac 1 ISM Ac 3
			Level 4	QPM Ac 1,2,3
	SG 3	SPs (3.1,3.2,3.3)	**Level 2**	SPP Goal 2,3 SPP Ac 1,3,4,6,12,14 SCM Ac 1,2 SSM Ac 1 SQA Ac1
			Level 3	IC Goal 1 IC Ac 3,4,6 TP Ac 1
			Level 4	QPM Ac 1 SQM Ac1

			Level 5	DP Ac 1 PCM Ac 3 TCM Ac1
	GG 2	GPs (2.1,2.2,2.3,.4,2.5,2.6,2.7,2.8,2.9,2.10)	**Level 2**	SPP Co 1,2, SPP Ab 3,2,4 SPP Ac 1,3,6,7,9,10,11,12 SPP Me 1 SPP Ve 1,3 SPT&O Ab 1 SPT&O Ac 2 SCM Goal 2
Project Monitoring and Control	SG1	SPs (1.1,1.2,1.3,1.4,1.5,1.6,1.7)	**Level 2**	SPT&O Goals 1 SPT&O Ac 1,4, 5,6,7,8,9,10,11,12,13 SPT&O Ve 3
			Level 3	ISM Ac 6,9,10,11
	SG2	SPs (2.1,2.2,2.3,)	**Level 2**	SPT&O Goal 2 SPT&O Ac 5,6,7,8,9
	GG 3	GPs (3.1,3.2,3.3,3.4,3.5,3.6,3.7,3.8,3.9,3.10)	**Level 2**	SPT&O Co 1,2 SPT&O Ab 1,2,3, 4,5 SPT&O Ac 1,2,12,13 SPT&O Me 1 SPT&O Ve 1,2,3
			Level 3	ISM Ac 9,11
Supplier Agreement Management	SG1	SPs (1.1,1.2,1.3)	**Level 2**	SSM Goal 1, 2,3 SSM Ac 2,6
		SP (1.1)		Not Addressed

	SG2	SPs (2.2,2.3)	**Level 2**	SSM Ac 3,7,8,9,12,13
		SPs (2.1,2.4)		Not addressed
	GG 2	GPs (2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.8,2.10)	**Level 2**	SSM Co 1,2 SSM Ab 1,2,3 SSM Ac 1,3,6,7,8,9 SSM Me 1 SSM Ve 12,3 SCM Goal 2
Measurements & Analysis	SG1	SPs (1.1,1.2,1.3,1.4)	**Level 2**	SPT&O Ac 5,6,7,8,9,11 SCM Goal 2
			Level 4	QPM Co 1 QPM Ac 1,2,3,4,5,6
	SG2	SPs (2.1,2.2,2.3,2.4)	**Level 2**	SPT&O Ac 11 SPP Ac 1,5
			Level 3	OPD Ac 5
			Level 4	QPM Ac 4,5,6
			Level 5	TCM Ab 4
	GG 2	GPs (2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.8,2.10)	**All KPAs**	Ve 1,2,3
			Level 2	SCM Goal 2
			Level 3	OPF Ab 2,3 OPF Ac 2
			Level 4	QPM Co 1 QPM Ac 1,2 QPM Ab 2,3,4 SQM Ab 1,2,3
Process & Product Quality	SG1	SPs (1.1,1.2)	**Level 2**	QA Goal 2 SQA Ac 4,5

Assurance			**Level 3**	SPE Me 1,2 SPE Ve 3
	SG2	SPs (2.1,2.2)	**Level 2**	SQA Goal 4 SQA Ac 4,5,6,7
	GG 2	GPs (2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.8,2.10)	**Level 2**	SQA Co 1 SQA Ac 1, SQA Ab 1,2,3,4 SQA Me 1 SQA Ve 1,3 SCM Goal 2 SCM Ac 9
			Level 4	SQM Ac 1,2
Configuration Management	SG1	SPs (1.1,1.2,1.3)	**Level 2**	SCM Goal 2 SCM Ac 2,3,5,7
	SG2	SPs (2.1,2.2)	**Level 2**	SCM Goal 2,3 SCM Ac 5,6
	SG3	SPs (3.1,3.2)	**Level 2**	SCM Goal 3 SCM Ac 4,8,10 SCM Ve 3
	GG 2	GPs (2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.8,2.10)	**Level 2**	SCM Goal 2 SCM Co 1 SCMAc 1,2,9 SCM Ab 1,2,3,4.5 SQA Me 1 SCM Ve 1,4

Mapping SE/SW/IPPD CMMI Level 2 Staged Representation Process Arias Practice To SW/CMM Practice



Conflict, is it that bad?

Ahmed Hammad

Conflict is a part of life. There are conflicts of needs, wants, preferences, interests, opinions, beliefs and values. Conflicts are rooted in the way we are created: the diversity of human beings… So conflict is not avoidable.

Conflict is not necessarily bad. Conflicts can be productive, creating deeper understanding and respect, or they can be destructive and harmful. How the conflicts get resolved is the critical factor in determining whether a relationship will be healthy or unhealthy.

Actually conflict is necessary to get high performance; the absence of conflict is a strong indication of a problem and will degenerate into low performance. Fig.1 shows the relation between conflict and performance. The figure shows that too many conflicts and few conflicts decrease performance severely, but moderate amount of conflicts increases performance significantly.

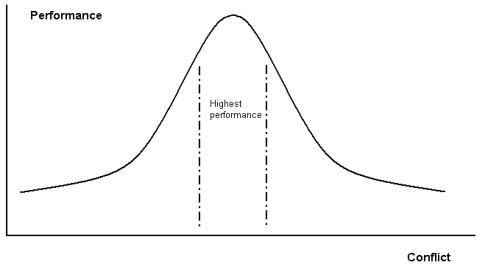


Fig. 1

Sometimes we intentionally create conflict for better performance, as example, the conflict between software developers and software quality assurance. While the development team focuses on finishing the project and closing issues, the quality team is focusing on finding defects in the processes and products. The success of the quality team is to find the largest number of defects which conflicts with the project manager and programmers task as they are focusing on closing issues and finishing the product. This is a very good example of creating conflict for better performance.

In teams, conflict almost exists at all levels, as example between the customer and the software development team, between the project manager and quality manager, between testers and programmers, between employer and the employees, between investor and the community, and between sales and development. These conflicts are not necessarily bad. The team should manage these conflicts for better understanding and agreements to let everyone win. Following is a step for healthy conflict resolution.

Healthy Conflict Resolution

1. Identify the problem or issues: Have a discussion to understand both views of the problem, conflicts, needs and preferred outcomes. Clarify to each other exactly what the conflict or problem involves. Here are some hints:
   a. Listening and not interrupting in order to be able to hear one another's concerns.
   b. Summarizing what you have heard to be sure that concerns have been clearly conveyed.
   c. Focusing on the problem and not the person. Maintaining respect for the individual while acknowledging disparate points of view will open the door to a considered resolution.
   d. Use “I…” statements: This helps you be perceived as expressing yourself so that you are heard and understood, and makes other person more aware of your needs
   e. Avoid "YOU..." statements: They come across as attacking which creates defensiveness and counter attack and make the other person more focused on protecting themselves.
2. Generate several possible solutions: Use creative and integrative approach, both parties think creatively about several possible solutions without evaluating them. List all possible solution weather one of the parties agrees on or not.

3. Evaluate the alternative solutions: Narrow down the list to the solution that is accepted to both of you and meets the project objectives and the organization policy and other constraints.
4. Consensus on the best solution: Consensus is the keyword here, both parties try to agree on a solution, if there's no way to agree on a solution, the issue can be escalated to the next level of management for judgment.
5. Follow-up: Follow up to be sure the application of the solution produces the expected results, in case of deviation, changes can be made to the solution, but sure any changes should also be agreed on or escalated.

As a conclusion, conflict is not necessarily bad, moderate conflict and healthy conflict resolution are important to achieve the highest possible performance and quality.

Institutionalizing the Inspection Process

Mohamed Shawky

In the last issue, a quick overview of the inspection procedure was presented in the article Defect-Free Software through Inspections. In this issue, we will provide suggestions on how to institutionalize and implement the inspection process in a software organization and how to fit it in the software development life cycle.

There are four main steps that organizations can take to institutionalize the inspection procedure. Namely, creating and documenting the process, training the users of the process, using the process, and improving it.

Creating and Documenting the Process

The first step in institutionalizing the inspection process is to document the process. Software organizations usually need to tailor the general inspection process according to the nature of the projects they work on, and to the way their projects are structured. Engineers involved in the software development activities ought to be involved in creating the inspection process they use. This allows them to produce the most suitable process for the kind of projects they develop, and results in a process that is more natural for the rest of the engineers to adopt.

A typical inspection process document would include the following:

- A general description of the inspection procedure
- A description of each of the roles involved in the inspection
- A detailed description of the steps of the inspection procedure
- Process entry and exit criteria (for each work product to be inspected, requirements, design, test documents, as well as code)
- Checklists needed for all steps of the process
- Forms needed to perform the inspection procedure

Process Awareness and Training

Awareness sessions are important to help engineers who have never done inspections before understand the importance of inspections in producing quality software, and in shortening the development cycle. Such awareness should reduce the possible resistance typically expressed by engineers against adopting a new process.

A process is of no use if it is not used properly. In order for engineers to be able to use the process effectively, they need to be trained on how to use it. Many engineers tend not to read process documents, and hence training becomes critical in delivering the information required to conduct successful inspections. Mock inspection sessions are good training tools to help engineers get a feel of how inspection meetings should be conducted. Since the role of the moderator in the inspection process is a pivotal one, more senior engineers would typically make better moderators. However, moderators need to have special training on how to conduct inspection meetings in an effective manner.

It is important to note that the inspection procedure is becoming a standard topic in software engineering courses in North American universities. So, the culture of inspections is being entrenched in software engineers from early on, even before they join the industry.

Effectively Executing the Process

Management should make sure to plan for inspections in their project plans, assign resources for that activity, and direct the execution of the process, ensuring that the exit criteria of the process is fulfilled, and is used as part of the entry criteria for the following processes in the software life cycle. Part of the management's role in ensuring the effective execution of the process is to analyze the inspection data to ensure that inspections were conducted in an effective manner. Inspection defect data is used to assess the effectiveness of the inspections, and the quality of the product during each development phase, but should not be used for personal performance appraisal. The following is an example of

inspection defect data that would be reported from the inspection process:

- *Defect Severities:* Major/Operational, Minor, Investigate
- *Defect Types:* Logic, Interface, External Interface, Program Language Usage, Data Usage, Error Handling, Coding Standard, Code Comments, Maintainability, Performance/Memory, Systems Interface, Design Rationale, Usability/Human Factors, Design Standard, Usage Scenario, User Interface
- *Defect Reason:* Missing, Wrong, Extra, Incomplete, Unclear
- *Defect Origin:* RFQ, System Requirements, Software Requirements, System Design, High Level Design, Low Level Design, Coding, Testing, Integration, Bad Defect Fix, User Document, Other

Improving the Process

In order the ensure the continual effectiveness of the inspection process, the process should be continuously measured through data reported from the inspections, and through feedback provided from users of the process. Engineers are typically eager to provide feedback, raise issues and provide solutions if they feel that their concerns are taken into consideration and are being addressed by management. Such feedback, when provided in a disciplined and systematic mechanism, can drive the improvement process, whereby the inspection process is guaranteed to be always effective in producing its intended goals with minimum overhead cost to the product.