4ª CONFERÊNCIA DA QUALIDADE DE SOFTWARE

Panorama Atual e Perspectivas da Qualidade de Software

SMS

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A 4ª edição da Conferência trará um panorama atual da Qualidade de Software no Brasil, com relatos de empresas que obtiveram excelentes resultados na implantação de programas de melhorias de processos e suas perspectivas para os próximos anos.

Venha participar das palestras e debater com especialistas da Engenharia e Qualidade de Software assuntos que podem interessar diretamente à sua empresa.

dias
28 e 29
Setembro 2011

local
SÃO JUDAS
40 ANOS
UNIVERSIDADE

Unidade Mooca - Rua Taquari, 546 - SP

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Principais mudanças SCAMPI v1.3

Antonio Braga
Setembro/11

Servicos Crest – focada em CMMI

- Historico
  - CMMI: 95 avaliacoes (DEV, SVC e ACQ)
  - Cursos oficiais Introducao ao CMMI: 29

- Oferece
  - Avaliacoes SCAMPI C, B e A
  - Modelos CMMI: Development, Services e Acquisition
  - Treinamento
    - Introducao ao CMMI-Dev v1.3
    - Introducao ao CMMI-SVC v1.3
    - Suplemento CMMI Services
    - Suplemento CMMI Acquisition
    - Aprofundamento nas PAs de ML2
    - Aprofundamento nas PAs de ML3
    - Aprofundamento nas PAs de ML5

Empresas avaliadas oficialmente pela Crest (41)

- Ambisig Sistemas - Dev
- Ambisis Sistemas - SVC
- Ação Sistemas
- Augur Intelligence Technology
- Bull
- CITS – Centro Int.Tec.Soft
- Chemtech
- Complex Informatica
- DBC Company
- Defferrari
- Digistar
- Easteq Group
- Everluck
- Foursys
- GPTI
- G&P
- GSW
- Ilegra
- Interact Solutions
- Johnson&Johnson
- Kaizen Sistemas

- LG Informática
- Message Informática
- MJV Informatica
- Montreal Informática (2007)
- Montreal Informatica (2010)
- Red&White IT Solutions
- SCOPUS Tecnologia
- Sênior Sistemas (2008)
- Senior Sistemas (2011)
- Shenzhen Fanwo
- Sistran Informatica
- Synapsis Brasil
- Sysmap
- 7COMm
- Techpeople
- Teclogica
- Unisys Transportation USA
- Unisys Brasil São Paulo
- ZCR Informatica
- Zhuhai Zhengcai

Terminology…

Sampling Factors divide the Organizational Unit into **Subgroups that include Basic Units, which** are sampled along with **Support Functions, to** form the **Organizational Scope – and must meet Data Sufficiency Rules by supplying Artifacts** and **Affirmations as described in the Data Collection Plan.**

Direct and Indirect Artifacts are no longer required from **Focus and Non-Focus Projects –** and the **Appraisal Input is a thing of the past.**

Summary of Changes to SCAMPI Activities

The following activities were added

1.1.2 Determine Data Collection Strategy

1.2.3 Develop Data Collection Plan

1.3.3 Document and Manage Conflicts of Interest

The following activities were substantially revised

1.1.4 Determine Appraisal Scope

1.2.1 Tailor Method

1.3.2 Select Team Members

2.2.1 Examine Objective Evidence from Artifacts

2.2.2 Examine Objective Evidence from Affirmations

2.4.1 Verify Objective Evidence

2.4.2 Characterize the Implementation of Model Practices and Generate Preliminary Findings

Scoping Appraisals and Sampling from the Organizational Unit

SCAMPI V1.2

• Primarily oriented to use of CMMI-DEV & "projects"

• Required documentation and examination of "critical factors"

• Arbitrary minimum number of instantiations set to be 3

• No verifiable criteria for establishing a representative Sample

Professional Judgment and Due Diligence Required

SCAMPI V1.3

• Accommodates all CMMI constellations + People CMM

• Replaced the concept of "critical factors" and elaborated it

• No specific arbitrary minimum instantiations set to be 3

• Quantitative basis for documenting a representative Sample

Professional Judgment and Due Diligence Required

Tailoring, Optional Practices & Guidance

In v1.2, discussions of tailoring were found in many different places:

• Activity 1.2.1 Tailor Method

• Tailoring section of each process (the #.# level)

• Optional Practices section of each activity (the #.#.# level)

• Embedded in many of the Guidance sections of each activity

• Inferred in a number of the Parameters and Limits sections of activities

In v1.3, tailoring options are summarized into one location:

• Parameters and Limits in each activity describe areas that can be tailored

• If the activity warrants documenting the choice as a tailoring option exercised, then it will be found in the tailoring checklist in Appendix H.

• If a choice made does not rise to the level of an explicit tailoring option, then documenting that choice in the appraisal plan will not be required and it is not considered tailoring, it is considered allowable process variation within the method

Checklist Approach to Documenting Tailoring

A consolidated and standardized list of tailoring choices:

- Increases efficiency

- Reduces ambiguity

- Enhances comparability among appraisals

- Consolidated into MDD Appendix H – SCAMPI A Tailoring Checklist

Document the Data Collection Plan

The data collection plan is an important asset which is established and maintained

There are many different sources of strategic and tactical insight that drives planning and re-planning data collection throughout appraisal conduct.

The data collection plan is submitted with the appraisal artifacts to the CMMI Steward.

Data Collection Plan: Incremental Development

Activity 1.1.2 Determine Data Collection Strategy

• The balance of discovery vs. verification expected – at a high level

• Availability of documentation, historical records and work products

• Expected reliance on interviews, presentations and demonstrations

Activity 1.2.3 Develop Data Collection Plan

• Establish the baseline plan which is maintained throughout the appraisal

• Specification of detailed contents is provided in the Parameters & Limits

Activity 1.5.2 Re-plan Data Collection

• Respond to results of the Readiness Review

Activity 2.3.4 Review and Update the Data Collection Plan

• Maintain the plan as data collection continues

• Perform "Managed Discovery" as needed

Areas of Focus

Qualifications of team members

- Prerequisite training requirements
- Background and experience requirements

Team composition

- Balance of different skills/background/experience
- Using internal & external team members

High Maturity Appraisals

- Training and experience
- Composing teams

Team Member Qualifications

SCAMPI V1.2

• Unclear on sequence between appraisal activity and appraisal training

• Unclear on appraisal team training delivery and participation

• Team experience must have an average of 6yrs with 25 yrs in each total

• No minimum experience or verification requirements

SCAMPI V1.3

• Method training must precede coinciding appraisal activity

• Requires at least one team training session with all team members present

• Appraisal method training must be delivered by an SEI certified individual

• Team experience excludes Lead Appraiser

• Minimum experience and verification requirements

Team Member Qualifications

SCAMPI V1.2

• Only cursory guidance provided on use of internal vs. external team members

• No additional requirements for HM appraisals

SCAMPI V1.3

•Activity 1.3.2 Select Team Members adds implementation guidance on constructing the team to enhance credibility and objectivity

– Balance internal vs. external ATMs

– Balance team size vs. expertise

– Security considerations

What is Sampling?

Identify Each One

The colors represent unique combinations of sampling factors, e.g.,
- *Yellow = basic units in location A, supporting customer X*
- *Blue = basic units in location A, supporting customer Y*
- *Red = basic units in location B, supporting customer Y*

Note: some combinations of location and customer don't exist because there are no basic units that fall into those categories
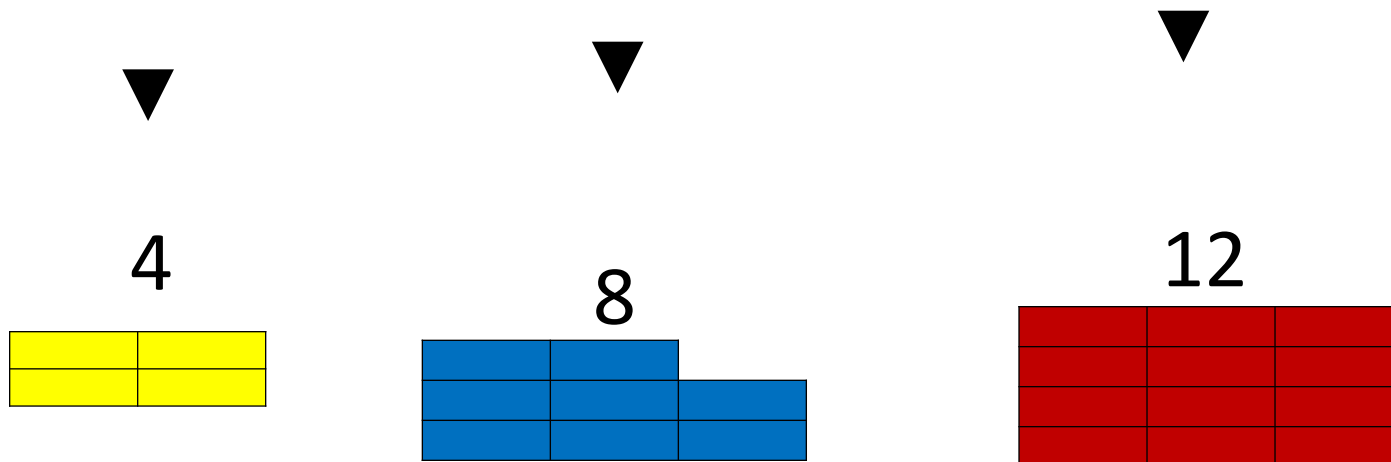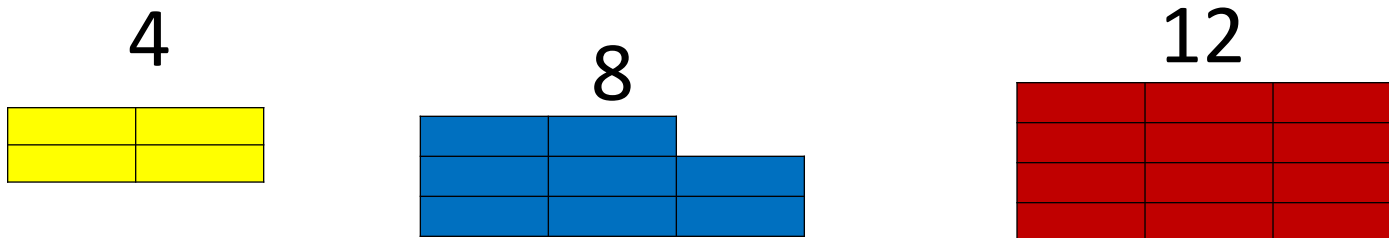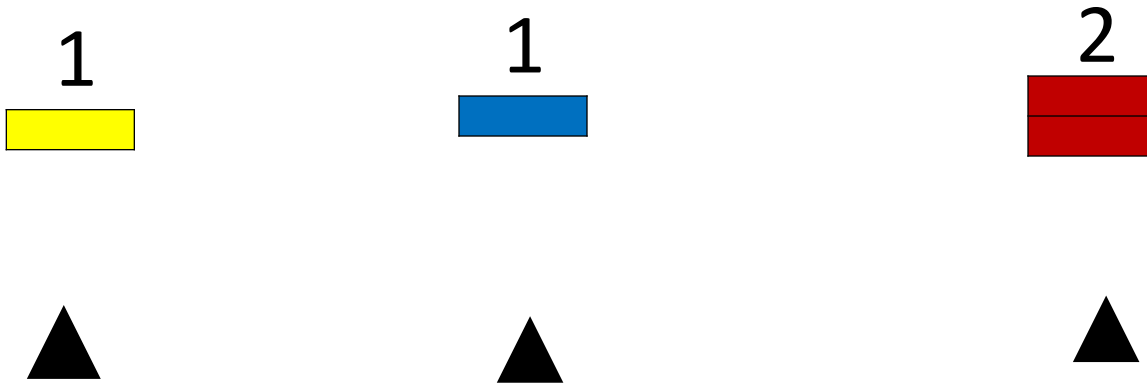
Group the Like Items
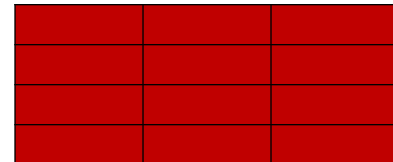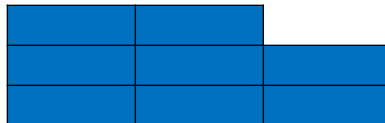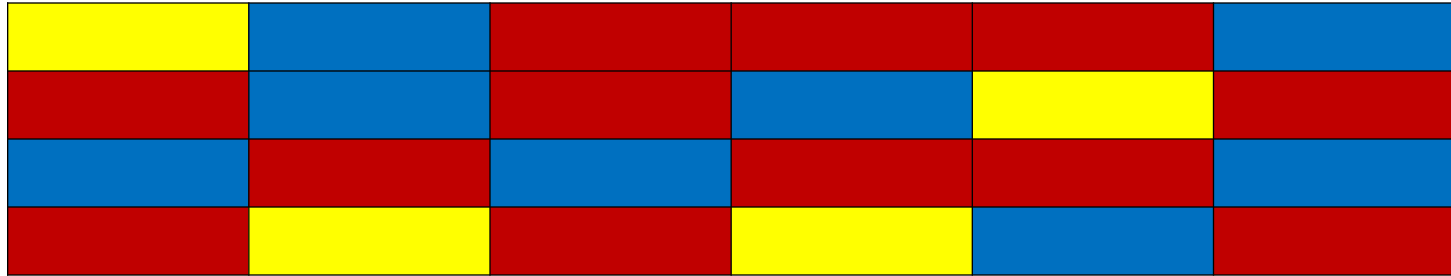
Determine Subgroup Size

The subgroups vary in size
this variation affects the sampling

4

8

12

Sample From Each Subgroup
In Proportion

1

1

2

4

8

12

The Math…

$$\text{Minimum number of Basic Units to be selected from a given subgroup} = \frac{\text{Number of subgroups} * \text{Number of basic units in the given subgroup}}{\text{Total number of basic units}}$$

Subgroup	Count	Sample
1	4	1
2	8	1
3	12	2

Sampling Factors
Defining the organization unit

Identify sampling factors that could affect process implementation

Differences in the way work is performed

can arise from the constraints placed on

the basic unit or support function.

The constraints represent pressures

against which the practices of the

organization must remain resilient.

Required Practice: Document Sampling Factors
Due Diligence and Documentation Requirements

- Standard Sampling Factors: A standard set of potential sampling factors shall be examined for relevance in each appraisal. If a given factor does not apply then this fact shall be recorded in the appraisal plan.

- Other Sampling Factors: The Lead Appraiser, in collaboration with the Appraisal Sponsor, shall seek other potential sampling factors that influence process implementation.

- Documenting Analysis Results: The Lead Appraiser shall document the analysis performed to identify sampling factors and their relevance to the scope of the Organizational Unit(OU) – as well as their role in sampling from the OU to define the Organizational Scope of the Appraisal.

Standard Sampling Factors
Consideration of the following potential sampling factors is required

- **Location:** if work is performed differently in different locations (e.g., countries, cities, sites or installations)

- **Customer:** if work is performed differently depending on the customer served by that work

- **Size:** if work is performed differently based on the size of the basic unit or support Function

- **Organizational Structure:** if work is performed differently in different parts of the organizational structure (e.g., different divisions as depicted on an organization chart)

- **Type of work:** if work is performed differently based on the "type of work" (e.g., system integration, software development, IT-support services, or help-desk)

Defining the Organizational Scope
Identify subgroups based on sampling factors

The set of units from which the sample will be drawn is
partitioned using sampling factors. This identifies
clusters of units that are more similar to each other.
The level of diversity can then be objectively documented.

- There are 2 large, commercial projects with short duration in Los Angeles
- There are ZERO short , DoD projects anywhere in the Organization
- There are ZERO long, Commercial projects anywhere in the organization
- There are 8 small, DoD projects with long duration in Dayton
- There are 4 large, DoD projects with long duration in Los Angeles
- There is 1 small, commercial project with short duration in Los Angeles

Summarizing the Subgroups

2 Large, Commercial projects with Short duration in Los Angeles

1 Small, Commercial project with Short duration in Los Angeles

4 Large, DoD projects with Long duration in Los Angeles

8 Small, DoD projects with Long duration in Dayton

Doing the Math

$$\text{Minimum number of Basic Units to be selected from a given subgroup} = \frac{\text{Number of subgroups} * \text{Number of basic units in the given subgroup}}{\text{Total number of basic units}}$$

Subgroup	Bus/SG
Large, Comm, Short, LA	2
Small, DoD, Short, LA	1
Large, DoD, Long, LA	4
Small, DoD, Long, Dayton	8

4 subgroups, containing 15 total basic units

Doing the Math

$$\text{Minimum number of Basic Units to be selected from a given subgroup} = \frac{\text{Number of subgroups} * \text{Number of basic units in the given subgroup}}{\text{Total number of basic units}}$$

Subgroup	Bus/SG	*4 Subgroups
Large, Comm, Short, LA	2	8
Small, DoD, Short, LA	1	4
Large, DoD, Long, LA	4	16
Small, DoD, Long, Dayton	8	32

4 subgroups, containing 15 total basic units

Doing the Math

$$
\boxed{\begin{array}{l}\textit{Minimum number}\\ \textit{of Basic Units to}\\ \textit{be selected from}\\ \textit{a given subgroup}\end{array}} = \frac{\boxed{\begin{array}{l}\textit{Number of}\\ \textit{subgroups}\end{array}} \; * \; \boxed{\begin{array}{l}\textit{Number of basic units}\\ \textit{in the given subgroup}\end{array}}}{\boxed{\begin{array}{l}\textit{Total number}\\ \textit{of basic units}\end{array}}}
$$

Subgroup	Bus/SG	*4 Subgroups	Div. 15 Basic Units
Large, Comm, Short, LA	2	8	0.533
Small, DoD, Short, LA	1	4	0.267
Large, DoD, Long, LA	4	16	1.067
Small, DoD, Long, Dayton	8	32	2.133

4 subgroups, containing 15 total basic units

Doing the Math

Minimum number of Basic Units to be selected from a given subgroup	=	Number of subgroups	*	Number of basic units in the given subgroup
				Total number of basic units

Subgroup	BUS/SG	*4 Subgroups	Div. 15 Basic Units	Basic Units to Appraise
Large, Comm, Short, LA	2	8	0.533	1
Small, DoD, Short, LA	1	4	0.267	1
Large, DoD, Long, LA	4	16	1.067	1
Small, DoD, Long, Dayton	8	32	2.133	2

4 subgroups, containing 15 total basic units

Changes in Data Coverage Requirements

The following series of requirements have been introduced with v1.3, and replace the framework found in v1.2

- There are no inventory rules tied to direct and indirect artifacts
- Focus projects and non-focus projects are not part of the process
- Practice implementation is not limited to "project-level" and "org-level"
- Alternative implementations of "support functions" are accommodated

The structure used in accounting for sufficient data has been revised. If one applies the old constructs (e.g., DA/IA, FP/NFP) to "count the data collection required," the results will be very confusing.

- There will be situations where 'more projects' supply data, but they supply data on fewer model components
- There will be other situations where 'fewer projects from a given division' supply data, but they supply data on more model components

Assuring Sufficient Data
Coverage criteria are defined for:

- Process Areas

- Basic Units

- Support Functions

These criteria drive the data collection planning, establish requirements, and offer flexibility where needed.

Coverage Rules for Process Areas

Coverage–1: Process area coverage means all the practices

• For continuous models, this may also include different generic practices depending on the target capability level.

Coverage–2: Process areas are implemented in many different ways

• Basic units may 'cover' a lot of process areas in some organizations
• Support functions may 'cover' that work in other organizations
  • Some support functions are 'organization-wide' (e.g., corporate training)
  • Other support functions are 'sub-group-specific' (e.g., division-level-CM)
  • Yet other support functions are a 'hybrid' (e.g., corporate and local EPGs)
• Exceptions exist where process areas are implemented for sets of basic units
  • Project Management Office overseeing a particular type of work
  • Verification and validation 'suite' shared across basic units supporting components of the same system

Coverage Rules for Basic Units

Coverage–1: Broad and deep coverage of at least one basic unit

- All process areas implemented by basic units must be covered
- Both artifacts and affirmations are required for each practice
- Sampling other basic units for "not yet" characterizations

Coverage–2: For larger samples, 50% participation of the subgroup

- If more than two basic units are sampled from the subgroup, this applies
- Both artifacts and affirmations for at least **one process area**

Coverage–3: Minimal participation of the entire subgroup

- If more than one basic unit is sampled in the subgroup, this applies
- Either artifacts or affirmations for at least one process area

Coverage Rules for Support Functions

Coverage–1: Artifacts and affirmations for relevant process areas

• Process areas addressing the work of the support function are all required

• Both artifacts and affirmations are required to cover each process area

Coverage–2: Connection to the basic units

• Support functions that support basic units supply artifacts and affirmations that demonstrate the work performed for at least one basic unit in each subgroup (e.g., QA records for basic units)

Coverage–3: Multiple related support functions

• All instances of the support function within the organizational unit are in scope (e.g., corporate level or division level CM groups)

• Support functions may exist at the "basic unit level," the "subgroup level," the "organizational level" or some other level.

Data Collection Planning

Subgroup	Count	BUs
Large, Comm, Short, LA	2	**1**
Small, DoD, Short, LA	1	**1**
Large, DoD, Long, LA	4	**1**
Small, DoD, Long, Dayton	8	**2**

"X" denotes required data

Art = Artifact

Aff = Affirmation

Subgroup	RSKM		PP		PMC		RD	
	Art	Aff	Art	Aff	Art	Aff	Art	Aff
Large, Comm, Short, LA	X	X	X	X	X	X	X	X
Small, DoD, Short, LA	X	X	X	X	X	X	X	X
Large, DoD, Long, LA	X	X	X	X	X	X	X	X
Small, DoD, Long, Dayton	O	X	O	O	O	O	O	O
	X	X	X	X	X	X	X	X
	4	5	4	4	4	4	4	4

Grato pela atencao

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