A LEAN and RACI Approach to CMMI for Services (CMMI-SVC)

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OUTLINE

▼ Background about SPAWAR Systems Center Pacific

▼ Why this approach?

▼ What is RACI?

▼ How to populate RACI?

▼ Mapping RACI into CMMI SVC Specific Practices

Space & Naval Warfare Systems Center Pacific – SSC Pacific

▼ DOD US NAVY Organization

- 4000 + Scientists & Engineers
- Located in San Diego, and throughout the Globe

Mission ~ Information Dominance

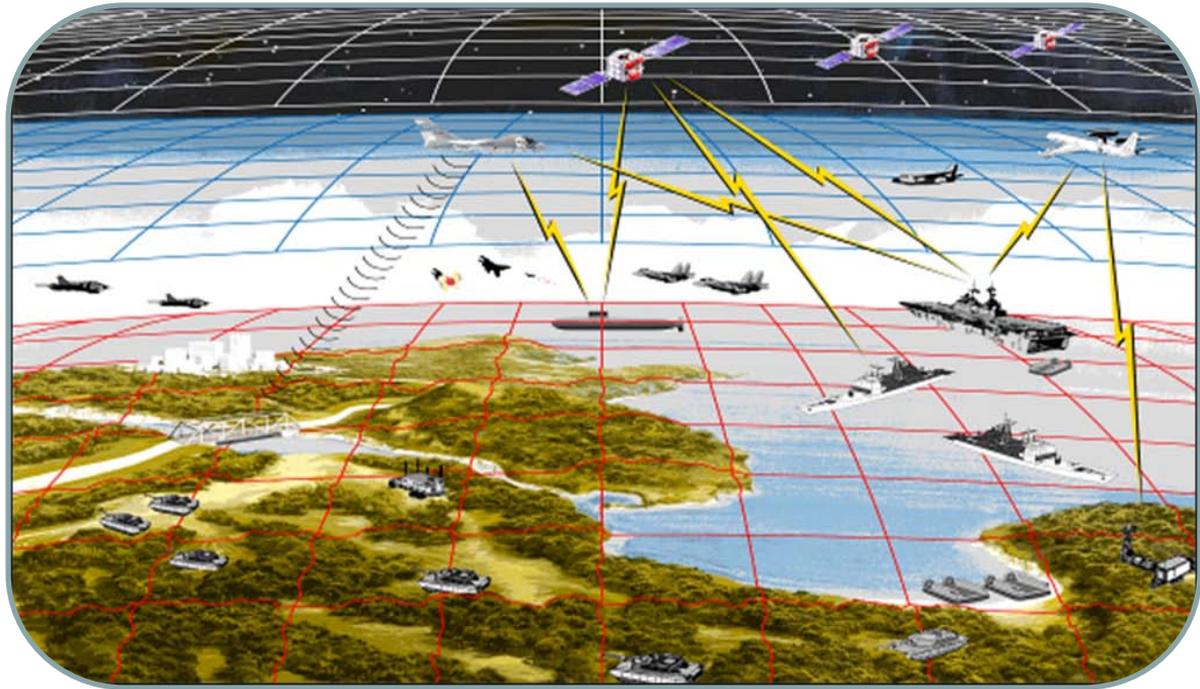Design, Build, and Sustain C4ISR Information Dominance Systems

(Radar, Networks, Command and Control, Crypto Devices, Satellites communications, Submarines Electronic Systems, etc…)

Systems Engineering for Mission Success

Reliability

Availability

Maintainability

SSC Pacific CMMI Timeline

1988
- Implemented Software (SW) Capability Maturity Model CMM - predecessor of CMMI model.
- Systems Engineering Process Office (SEPO)

2000
- Attained SW-CMM Level 3 in October 2000.
- SSC PAC transited from SW-CMM to CMMI- DEV model and continues with its process improvement road.

2009
- Implementing CMMI-SVC ML2 model 1.2 for Services projects
- Achieve CMMI-DEV ML3 on 2012

SSC Pacific CMMI SERVICES

▼ Diversity of projects involved in systems engineering services, Research and Development (R&D), logistic, maintenance, sustainment, etc.

▼ Some are non-product-oriented projects do not maximize the benefits of CMMI-DEV initiative

▼ 2009 adopted CMMI-SVC, version 1.2 to improve the projects' performance and quality for non-product-oriented projects

Approach to gather Artifacts for CMMI?

▼ Traditional

- Mapping business process into the CMMI Model
  - Business must learn, and speak CMMI
  - Steep learning curve
  - Time consuming

▼ Lean

- Begin with the existing "as-is" business process mapping
  - Ask the questions to gather the artifacts:
    1. What process is been performed?
    2. How is the process being performed?
    3. Why the process is been performed?
    4. Who are the process role-players?...

Example of "as-is" Business Process
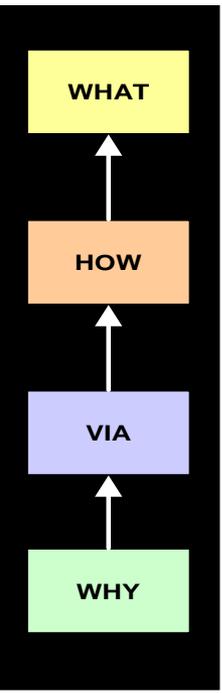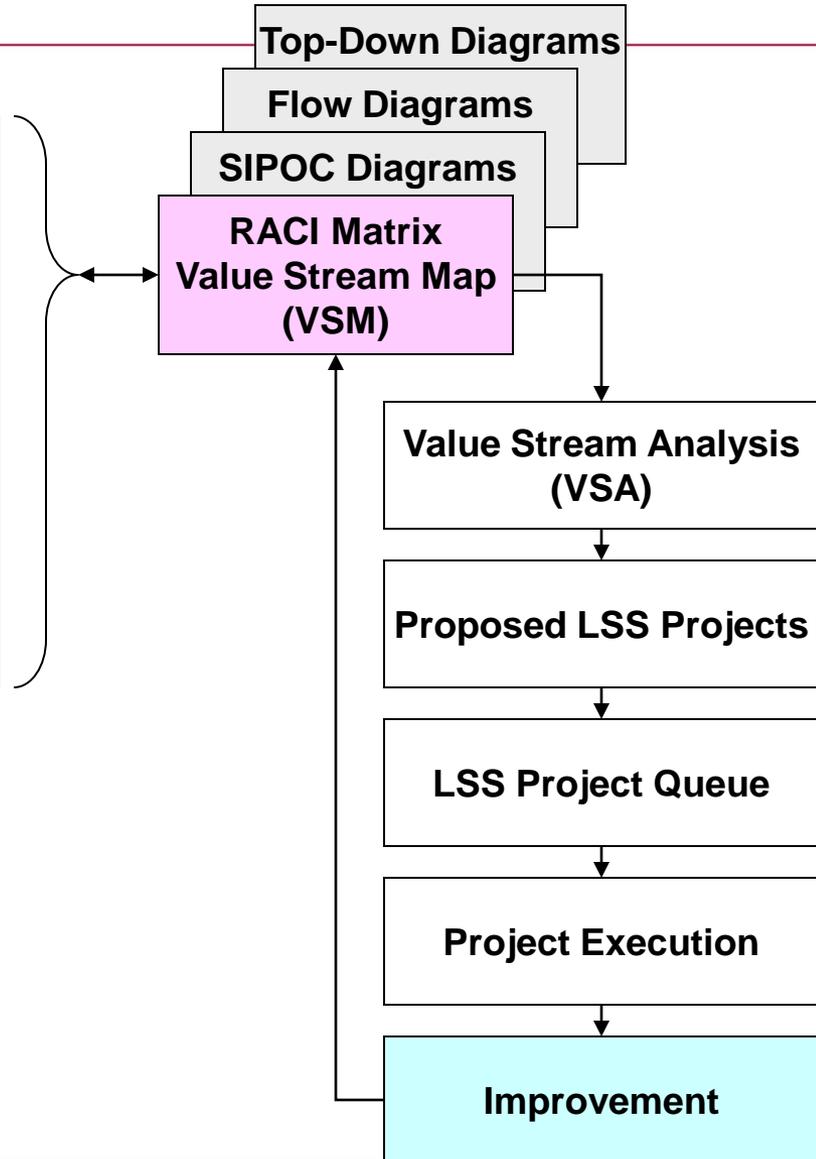
WHAT	Functions
HOW	Processes
VIA	Functionaries & Tools
WHY	Drivers, Purpose Requirement REFERENCES & reasons (e.g., Best practices)

Work Plan Task Management

Pre-Planning	Funds Management
Design Review	Cost Est V&V
POA&M Development	Actual Cost MRN&C
SKED De-confliction	Biz Mgt Grp
CETracker Review	CETracker
SPIDER Review	ERP
FPY Hot Wash Review	EVM Reports
Performance Agreements	Performance Agreements
GFE/GFM Timelines	Minimize Est-to-Act Cost Var

Continuous Process Improvement
A Concept of Operations (CONOPS)

Organizational Aspect	Functions	Processes
BUSINESS (What we do, day-to-day)		
OPERATION (How we do What we do IAW Policies & Processes)		

Top-Down Diagrams

Flow Diagrams

SIPOC Diagrams

RACI Matrix Value Stream Map (VSM)

Value Stream Analysis (VSA)

Proposed LSS Projects

LSS Project Queue

Project Execution

Improvement

What is RACI Matrix?

- ▼ Pronounced "racy" or "rack-y"
- ▼ A.K.A. RACI-ARCI Matrix
  - ▪ Although ARCI more accurately reflects left-to-right hierarchical roles, RACI seems to be the acronym most widely used in industry
- ▼ Useful in project management
  - ▪ WHO does WHAT, WHEN
- ▼ Useful in Continuous Process Improvement (CPI) and Lean/Six Sigma; facilitates "as-is" to "to-be" organization planning and process management
  - ▪ WHO does WHAT, WHEN, WHY
  - ▪ CTQ Outcomes; Time & Cost per process step; etc.
- ▼ Used to assign or describe cross-functional process-related roles
- ▼ Used to develop business rules for process streamlining & automation

Basic RACI Matrix

Responsible

Those who do work to achieve the task. The role of Responsible includes support, which is to provide resources to complete the task. Responsible is about doing the work; several, or all, may share responsibility. Responsible is linked to the function(s) assigned to execute a particular activity. The degree of responsibility is determined by the Accountable person.

Accountable

(Also Approver or final Approving authority) Those who are ultimately accountable for the correct and thorough completion of the task. Accountable is the one to whom "R(s)" are accountable. There must be only one **A** specified for each task. The role of Accountable may include Responsible; in other words, it is not unusual that the one who is Accountable for a task is also Responsible to do the work to achieve the task. Accountability cannot be delegated.

Consulted

Those who must be 'consulted' before decision or activity is finalized. A two-way communication (a negotiated consensus).

Informed

Those who must be notified about the completion or output of decision or activity. A one-way communication.

RACI Matrix Nautical Example
(Basic scheme)

R A C I   **Nautical Example**

A tool for assigning cross-functional roles.

R RESPONSIBLE   Responsible is about doing the work; several, or all, may share responsibility.
A ACCOUNTABLE   Accountable is defined as 'the buck stops here'; only one individual can be accountable.
C CONSULTED
I KEEP INFORMED

MISSION/CHARTER TASK

"To Ready & Deploy the Ship"

| MILESTONE / TASK	CAPTAIN	NAVIGATOR	1/2 OFFICER	CHIEF ENGINEER	PURSER	STORES PROVISIONS	PORT AUTHORITY		
1 CHART ROUTE	C	R/A	I			I			
2 ORDER PROVISIONS	C			C		R/A			
3 ORDER FUEL	C			A		R			
4 GAIN APPROVAL TO LEAVE	A			R	R	R			
5 SET SAIL	A	C	R	I					
6 TAKE CONTROL FROM PILOT	R/A				I		I		

Functions
are assigned roles in the process.

Activities
include all the tasks that need to be completed, as well as the decisions that need to be made.

Mapping RACI – CMMI Process Areas

PROCESSES	PROCESS STEPS Executed by Primary & Secondary / supporting Competencies (Roles) --->￼ (As possible, start with an ACTION VERB; e.g., Conduct, Review; Develop; Provide, Analyze, Test, Validate, Verify, Certify, Approve, Deliver, etc.)	CMMI/PA	PM/CHENG	Software Team	Subject Matter Expert	Install Lead	CM
CPI LSS RACI MATRIX							
11th Annual CMMI Technology Conference							
Pr S1 S2 S3 S4 S5							
Software Support Activity (SSA)							
	1. Review request for update/change to established system configuration.	REQM 1.1	A	R	C		
	2- Determine cost and feasibility of implementing the change.	MA 1.4	I/C	R			
	3- Review applicable requirements documentation	REQM		R	C		
	4- Determine if an available COTS solution exists.	MA 1.4	I/C	R			
	5- Select the best solution condidate(s).	MA 1.1	I/C	R	C		
	6- Determine if the cost of implementation over $50K?	MA 1.2	I/C	R			
	6a- If NO, then go to step 8						
	6b- If Yes, then next step.						
	7- Complete a white paper for submission with the Preliminary ECP/ECR		I/C	R			
	8- Request appropriate forms from the appropriate CM analyst.			R			
	9- Copy the SSA templates into a new folder created specifically for the software ECP/ECR in "Working Software ECPs/ECRs".						R
	10- Fill in the appropriate form after the SSA ECP/ECR forms have been filled in by a SSA rep.		I	C			R

Project-to-Process-Agent Interactions:
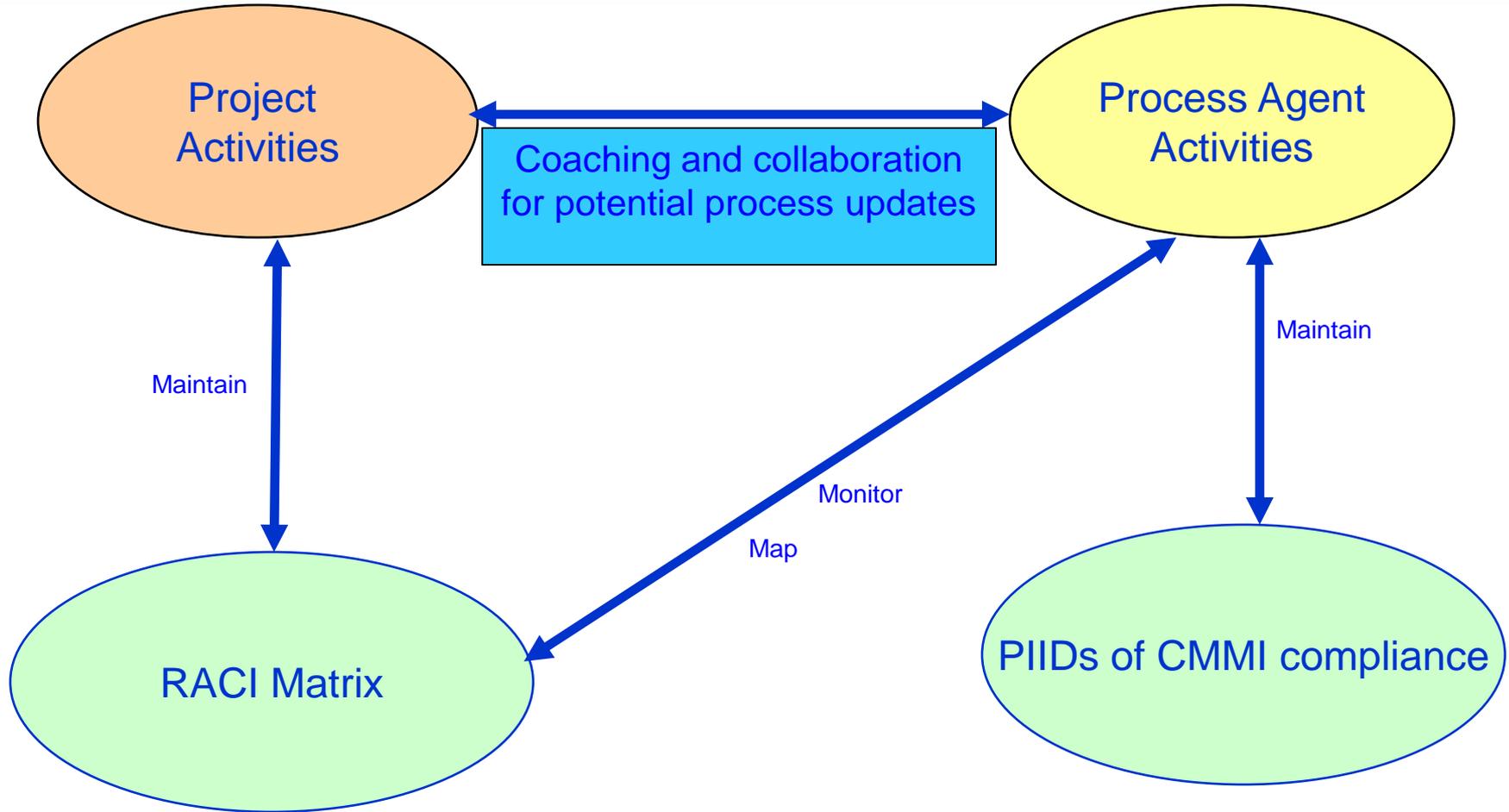
RACI ~ CMMI Workbook

▼ Mapping CMMI practices to RACI matrix
- Completed by the Process Group (PG) who are experts in CMMI structure and content
  - CMMI practices (as mapped) cited within RACI matrix first
    - Can be easily identified and initially cited in broad percentages within project instantiations (work areas)
  - Next CMMI table of process implementation indicators (PII) is populated with RACI content
    - links to data in the RACI matrix content
  - Identify model gaps within RACI matrix and CMMI table and provide feedback to project staff in broad percentages first
    - Additional detail may or may not be deemed relevant

RACI ~ CMMI Workbook

▼ Mapping CMMI practices to RACI matrix

- Gaps may be with respect to the RACI template itself or its content

- Gaps are explained to staff in project terminology based on project needs and objectives

▼ "Main product" is an improved organization with evidences provided in updated and improved RACI matrices

▼ "By product" is a populated CMMI Process Improvement Indicator (PII) table with current artifacts of implementation organized and current for appraisal purposes

Overarching RACI Matrix

▼ There will be gaps from RACI because of its as-is business nature and content

- Gaps are to be analyzed for project relevance, not automatically addressed or even assigned as action items without a "business case" first
- If gaps result in business-case actions to be addressed, there will be facilitative communication to the project using their own pre-existing (non-CMMI) work terminology

Thank you !!!

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