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Measuring Operational Resilience

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Topics

CERT Resilience Management Model Overview

What Is the Question? What Should I Measure?

Measurement Defined

Key Measures

Getting Started

CERT-RMM Overview

What is CERT®-RMM?

The CERT® Resilience Management Model is a maturity model for managing and improving operational resilience.

"…an extensive super-set of the things an organization could do to be more resilient."

- CERT-RMM adopter

- **Process improvement for operational resilience**
- **Converges key operational risk management activities: security, BC/DR, and IT operations**
- **Defines maturity through capability levels *(like CMMI)***
- **Improves confidence in how an organization responds in times of operational stress and disruption**

CERT-RMM: 26 Process Areas in 4 Categories

Engineering

ADM	Asset Definition and Management
CTRL	Controls Management
RRD	Resilience Requirements Development
RRM	Resilience Requirements Management
RTSE	Resilient Technical Solution Engineering
SC	Service Continuity

Enterprise Management

COMM	Communications
COMP	Compliance
EF	Enterprise Focus
FRM	Financial Resource Management
HRM	Human Resource Management
OTA	Organizational Training & Awareness
RISK	Risk Management

Operations Management

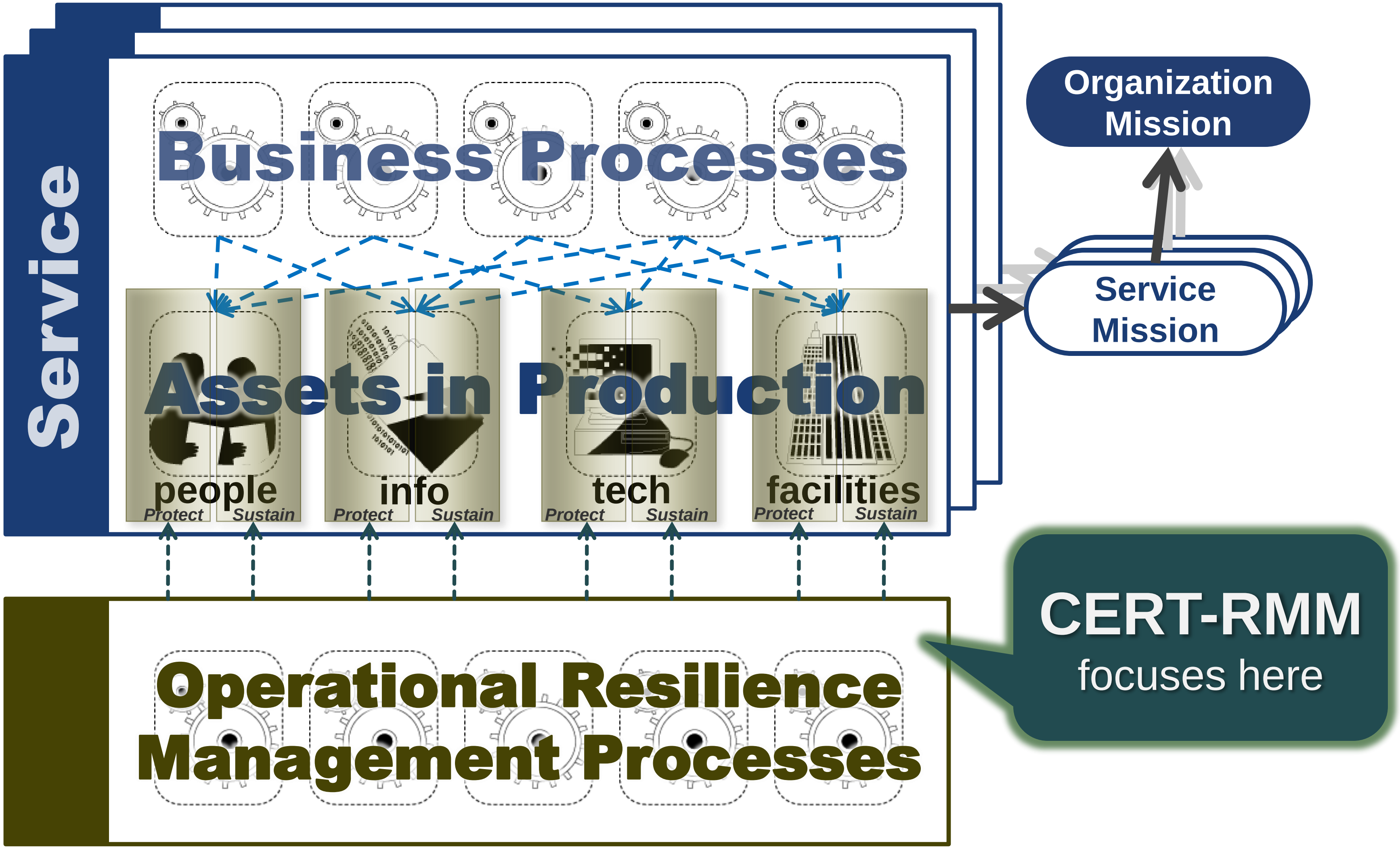
AM	Access Management
EC	Environmental Control
EXD	External Dependencies
ID	Identity Management
IMC	Incident Management & Control
KIM	Knowledge & Information Management
PM	People Management
TM	Technology Management
VAR	Vulnerability Analysis & Resolution

Process Management

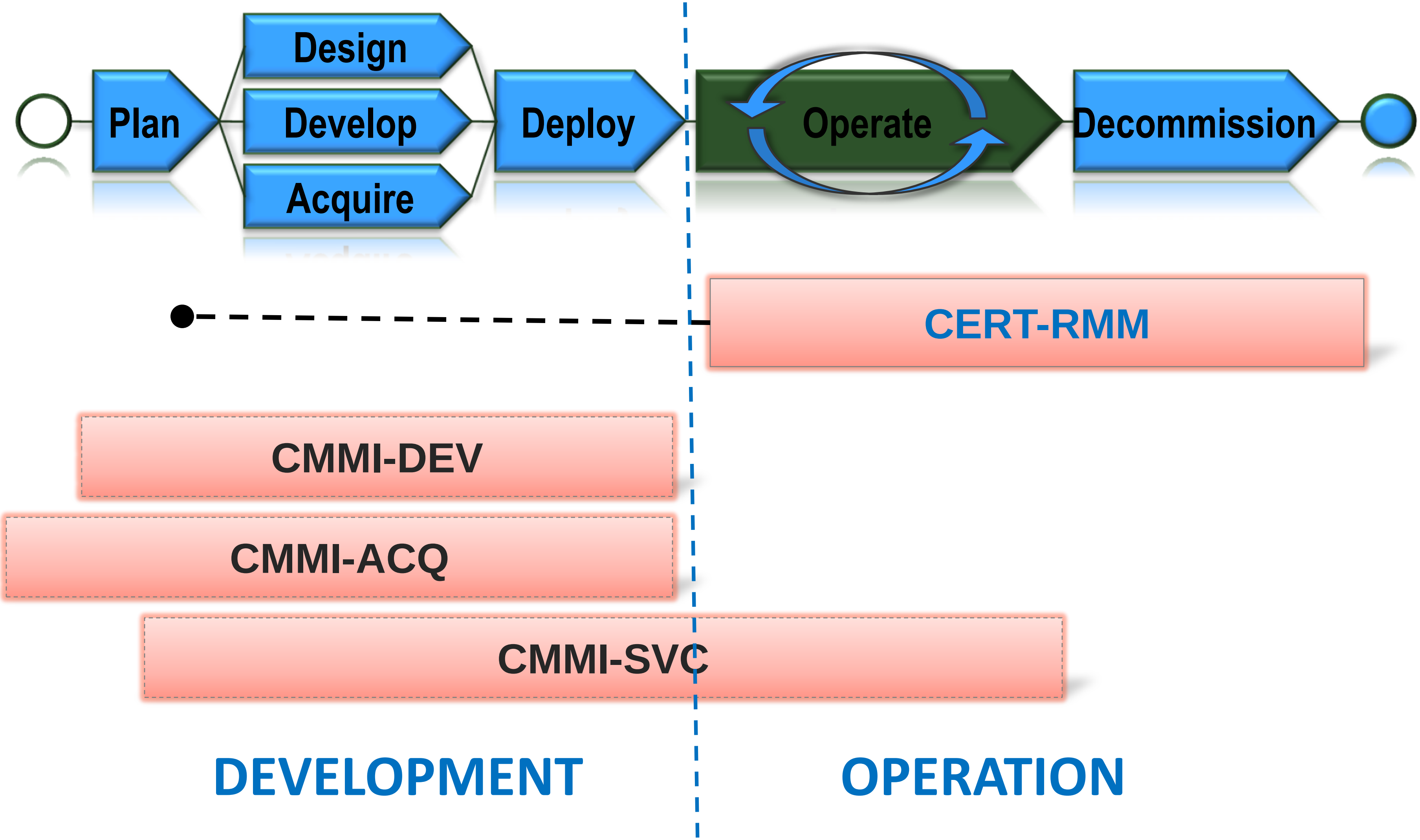
MA	Measurement and Analysis
MON	Monitoring
OPD	Organizational Process Definition
OPF	Organizational Process Focus

Full text of each process area is available for download at www.cert.org/resilience

Organizational Context



For Comparison: CERT-RMM & CMMI



What Is the Question?
What Should I Measure?

How Resilient Am I? - 1

When asked:

- How resilient am I?
- Am I resilient enough?
- How resilient do I need to be?

What does this mean?

How Resilient Am I? - 2

- Do I need to worry about operational resilience?
- If services are disrupted, will it make the news? Will I end up in court? in jail? Will I be able to stay in business?
- Do I meet compliance requirements?
- How resilient am I compared to my competition?
- Do I need to spend more $$ on resilience? If so, on what?
- What am I getting for the $$ I've already spent?

How Resilient Am I? - 3

What should I be measuring to determine if I am meeting my performance objectives for resilience?

What is the business value of being more resilient?

So What? Why Should I Care? (*)

- What decisions would this measure inform?
- What actions would I take based on it?
- What behaviors would it affect?
- What would improvement look like?
- What would its value be in comparison to other measures?

(*) informed by Douglas Hubbard, *How to Measure Anything*, John Wiley & Sons, 2010

What Should I Measure?

Determine **business objectives** and key questions

Define the **information** that is needed to answer the question

Qualify and quantify the information in the form of measures

Analyze the measures and report out

Quantify the **value** of each measure (cost/benefit)

Refine and retire measures as you go

Who, What, Where, When, Why, How

Who is the measure for? Who are the stakeholders? Who collects the measurement data?

What is being measured? As part of what process?

Where is the data/information stored?

When/how frequently are the measures collected?

Why is the measure important (vs. others)? The most meaningful information is conveyed by reporting trends over time vs. point in time measures.

How is the data collected? How is the measure presented? How is the measure used?

Measurement Defined

Measurement Types

Implementation

- Is this process/activity/practice being performed?

Effectiveness

- How good is the work product or outcome of the process/activity/practice? Does it achieve the intended result?

Process performance

- Is the process performing as expected? Is it efficient? Can it be planned? Is it predictive? Is it in control?

Measurement Template

- Measure Name/ID
- Goal
- Question(s)
- Related Processes/ Procedures
- Visual Display
- Data Input(s) (Data elements, Data type)
- Data Collection (How, When, How often, By whom)
- Data Reporting (By, To whom, When, How often)
- Data Storage (Where, How, Access control)
- Stakeholders (Information owner(s), collector(s), customer(s))
- Algorithm or Formula
- Interpretation or Expected Value(s)

A Few Strategic Measures

Given Organizational Objectives . . .

Measure 1

Percentage of resilience “activities”(*) that *do not* directly (or indirectly) support one or more organizational objectives

Measure 2

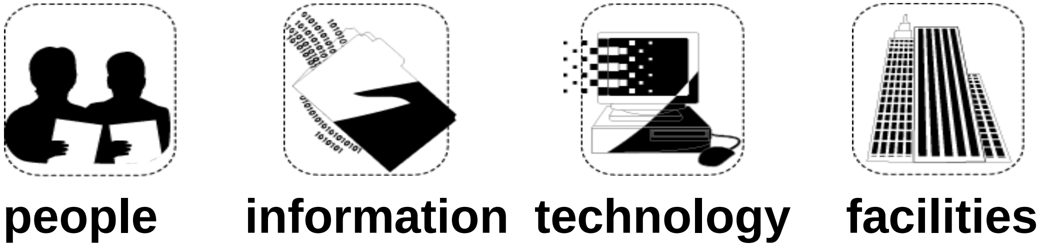
For each resilience “activity,” number of organizational objectives that require it to be satisfied (goal is = or > 1)

(*) “Activity” can be a project, task, performance objective, investment, etc. It represents some meaningful decomposition of the resilience program.

Given High-Value Services and Assets . . .

Measure 3

Percentage of high-value services that *do not* satisfy their allocated resilience requirements(*)



Measure 4

Percentage of high-value assets(+) that *do not* satisfy their allocated resilience requirements(*)

(*) confidentiality, availability, integrity; (+) technology, information, facilities, people

Given Controls . . .

Measure 5

Percentage of high-value services with controls that are ineffective or inadequate

Measure 6

Percentage of high-value assets with controls that are ineffective or inadequate

Given Risks . . .

Measure 7

Confidence factor that risks(*) from all sources that need to be identified have been identified

Measure 8

Percentage of risks with impact above threshold

(*) to high-value assets that could adversely affect the operation and delivery of high-value services

Given a Disruptive Event (*)

Measure 9

Probability of delivered service through a disruptive event

Measure 10

For disrupted, high-value services with a service continuity plan, percentage of services that *did not* deliver service as intended throughout the disruptive event

(*) An incident, a break in service continuity,
a man-made or natural disaster or crisis

Top Ten Strategic Measures

1. Percentage of resilience “activities” that *do not* directly (or indirectly) support one or more organizational objectives

2. For each resilience “activity,” number of organizational objectives that require it to be satisfied (goal is = or > 1)

3. Percentage of high-value *services* that **do not** satisfy their allocated resilience requirements

4. Percentage of high-value *assets* that **do not** satisfy their allocated resilience requirements

5. Percentage of high-value *services* with controls that are ineffective or inadequate

6. Percentage of high-value *assets* with controls that are ineffective or inadequate

7. Confidence factor that risks from all sources that need to be identified have been identified

8. Percentage of risks with impact above threshold

9. Probability of delivered service through a disruptive event

10. For disrupted, high-value services with a service continuity plan, percentage of services that *did not* deliver service as intended throughout the disruptive event

If These Don’t Work For You . . .

Identify the high-level objectives for your resilience program

Define measures that demonstrate the extent to which objectives are (or are not) being met

Make sure the measures you are currently reporting support one or more objectives

Measurement is expensive; collect and report measures that inform decisions and affect behavior

Getting Started

To Get Started

Identify sponsors and key stakeholders

Define resilience objectives and key questions

Determine information and processes that inform these

Define and vet a small number of key measures

Collect, analyze, report, refine

Put a measurement process in place (start small)

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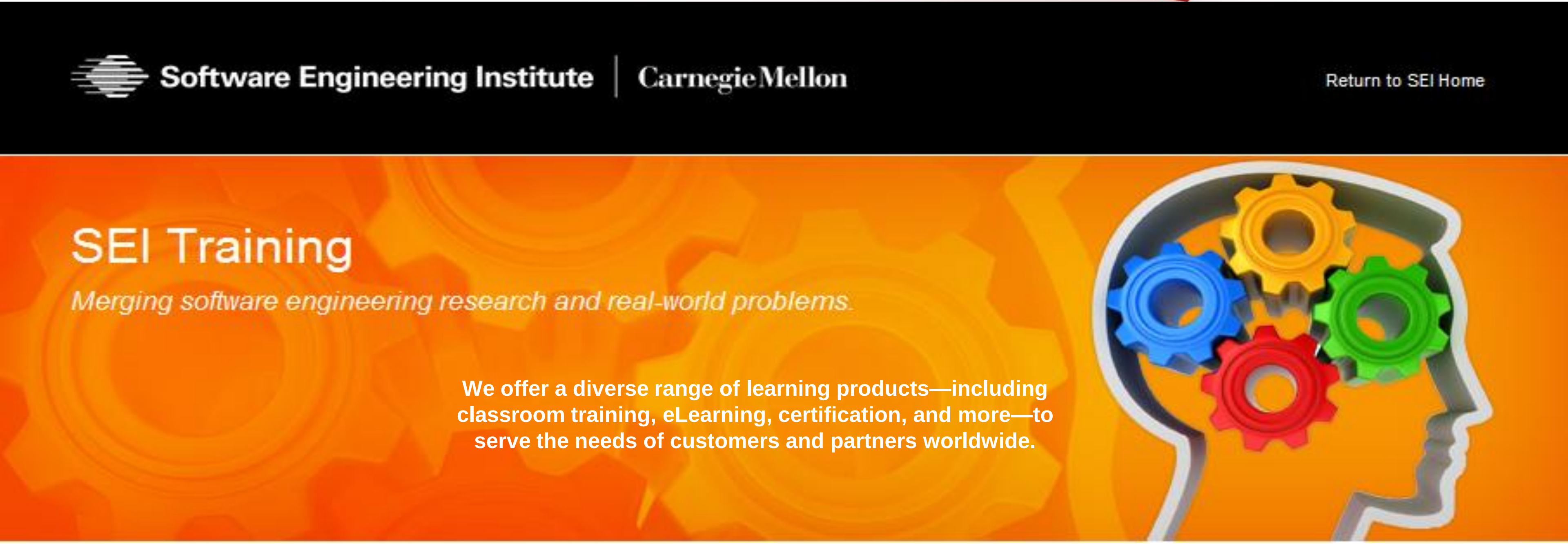

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