Using CERT-RMM in a Software and System Assurance Context

Julia Allen
SEPG NA 2011
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Agenda

What is the CERT Resilience Management Model (CERT-RMM)?

Model Building Blocks

CERT-RMM for Assurance

What is CERT-RMM?

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

- Process improvement for operational resilience
- Converges key operational risk management activities: security, BC/DR, and IT operations
- Operations phase focus
- CMMI architecture
- Continuous representation
- 26 process areas
- Defines maturity through capability levels

CERT-RMM Building Blocks

Foundational concepts of the model

Operational resilience

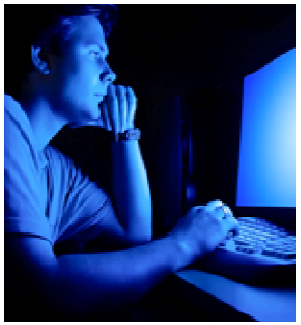
Resilience: The physical property of a material when it can return to its original shape or position after deformation that does not exceed its elastic limit
[wordnet.princeton.edu]

Operational resilience: An ***emergent*** property

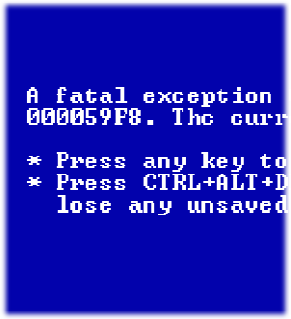
Operational resilience and operational risk

Operational resilience emerges from effective **operational risk management**

Operational risk categories:



Actions of people

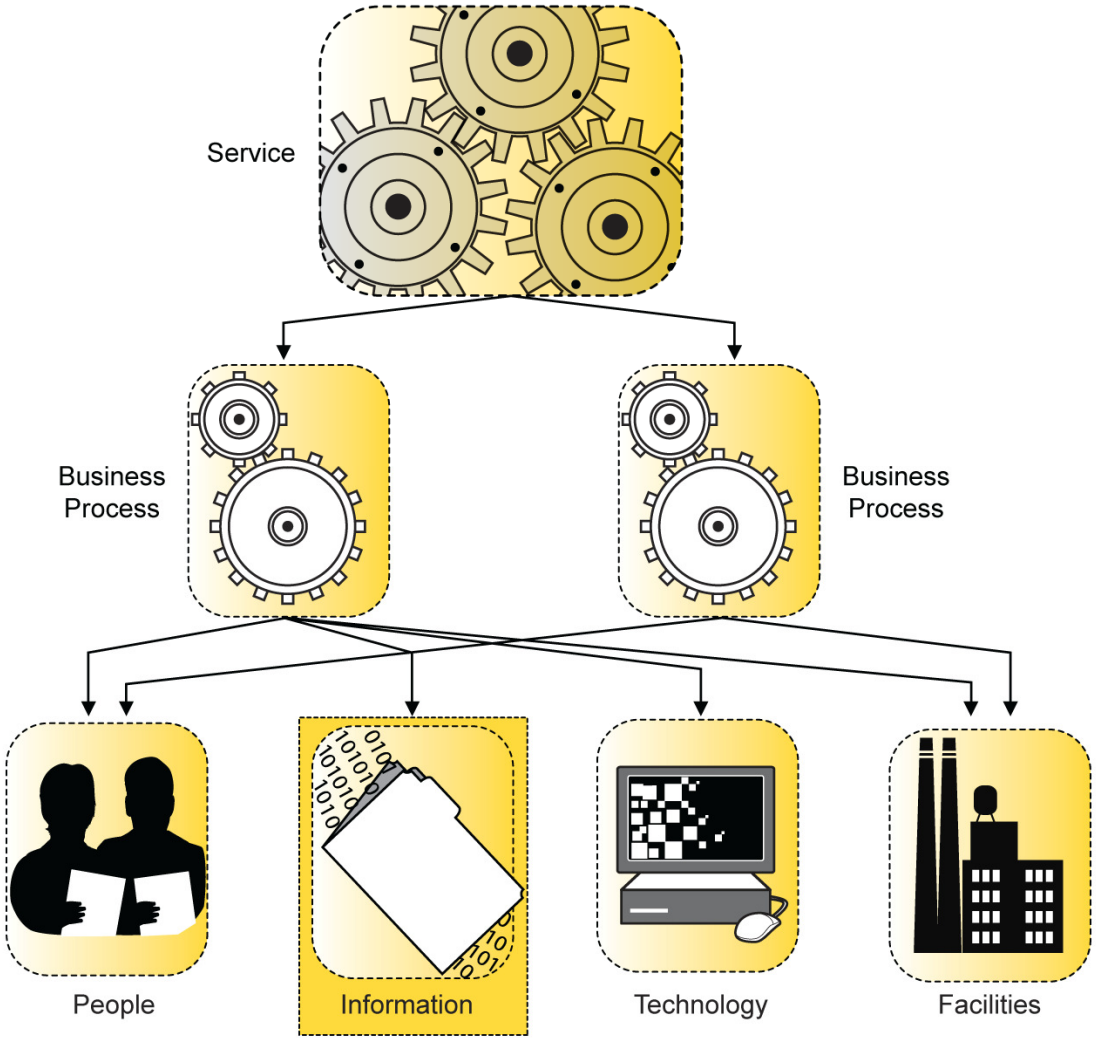


Systems and technology failures

Failed internal processes

External events

CERT-RMM foundational elements



Services in CERT-RMM

The resilience of **high-value services** ensures the resilience of the **mission.**

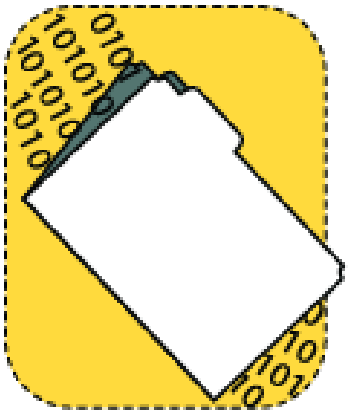
Service resilience is a factor of **asset resilience**—if an asset is disrupted or fails, the service may suffer.

Service resilience is the object of CERT-RMM processes.

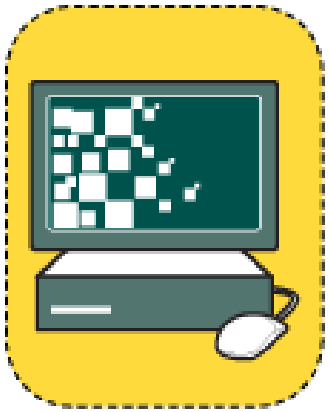
Assets

CERT-RMM focuses on four types:

People



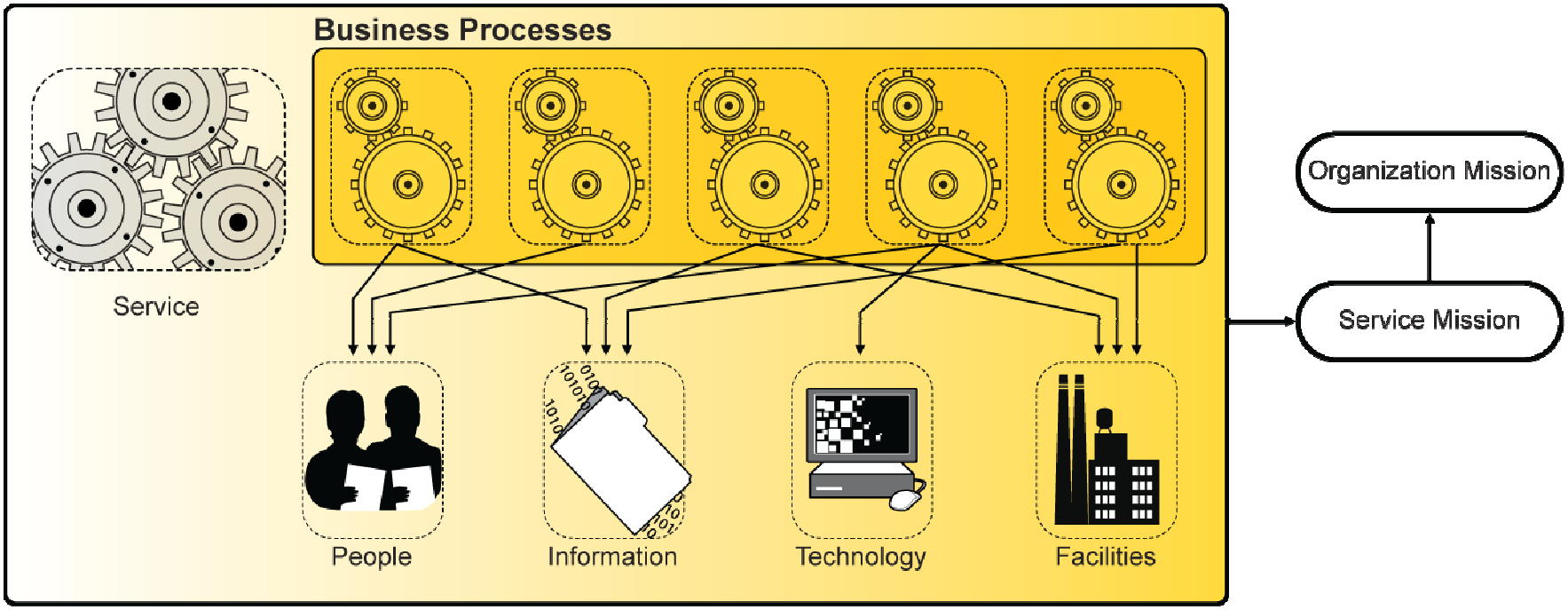
Information



Technology

Facilities

Assets supporting the mission

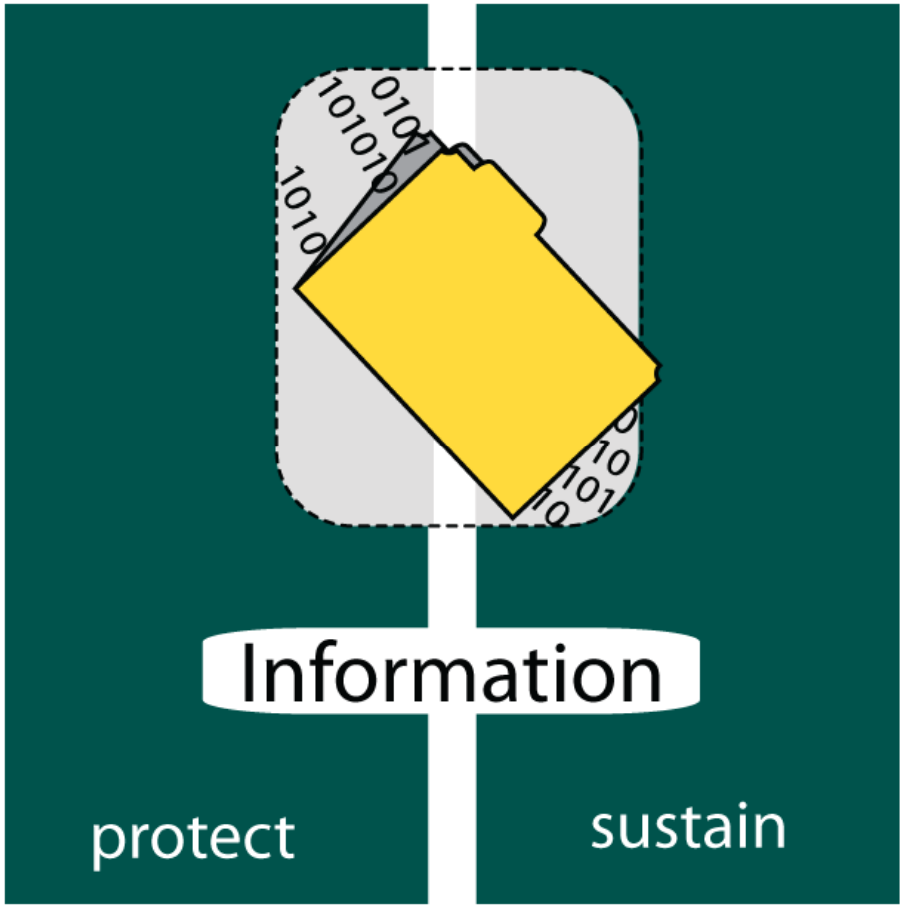


Operational resilience starts at the asset level

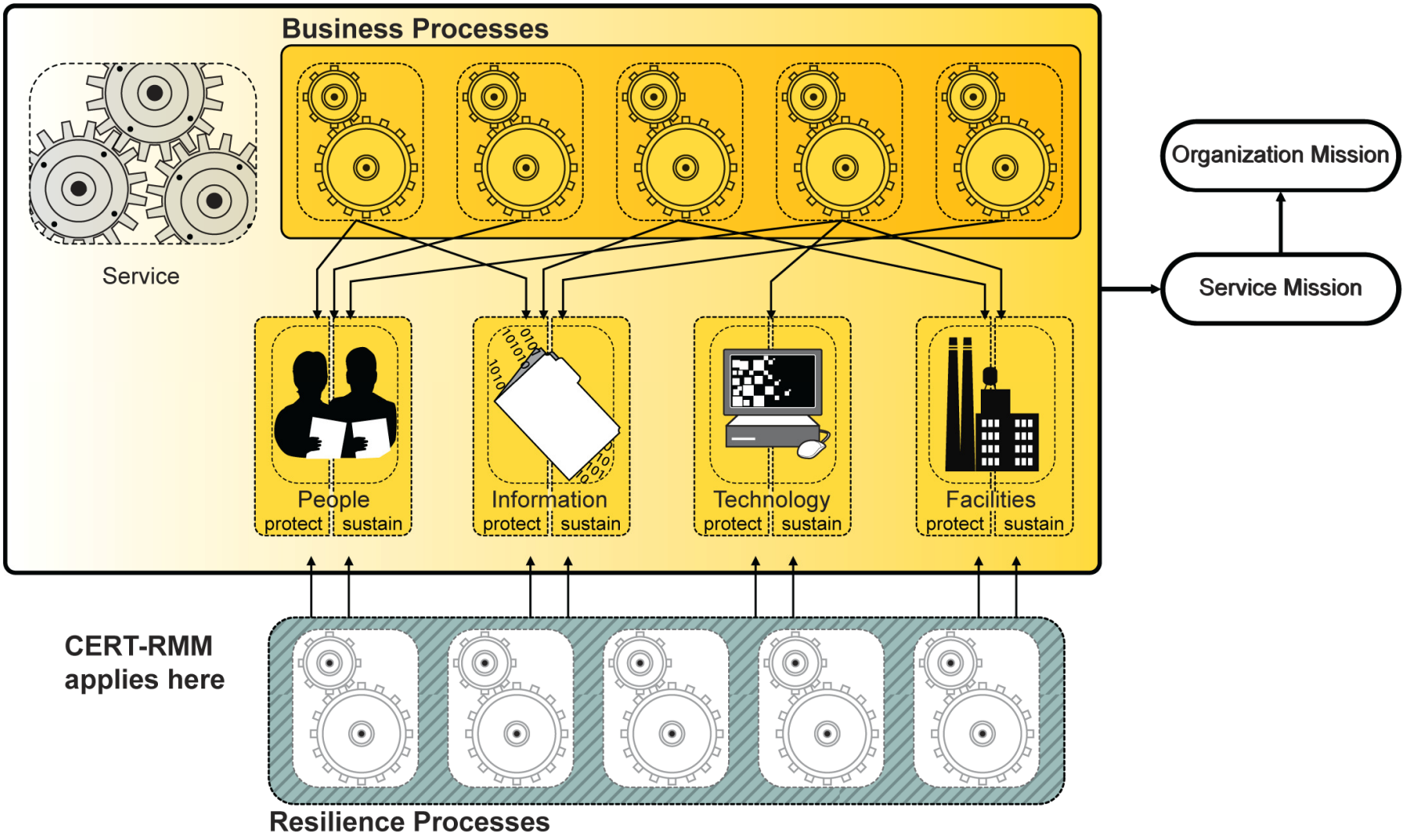
Protect assets from threats

Make them sustainable under adverse conditions

Optimal mix depends on the **value of the asset** and the **cost of deploying and maintaining the strategy**



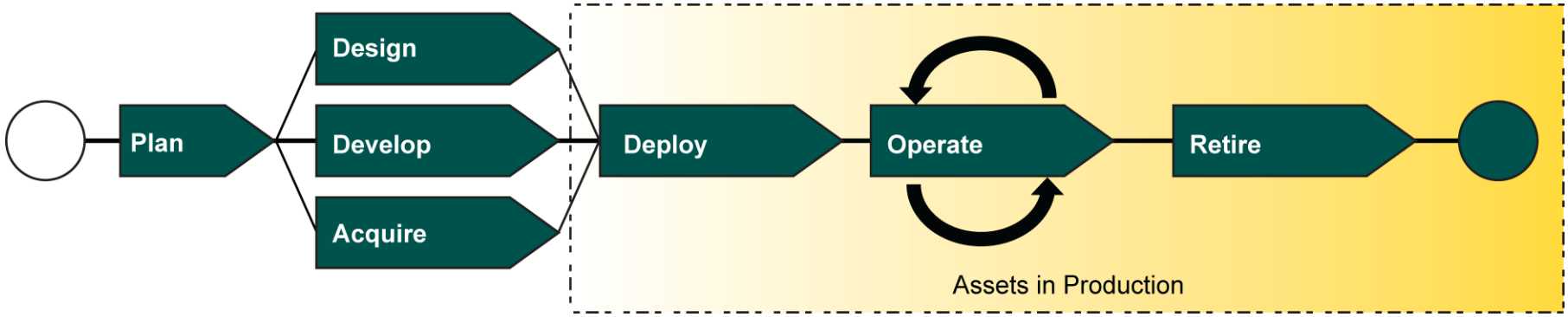
Organizational context for resilience activities



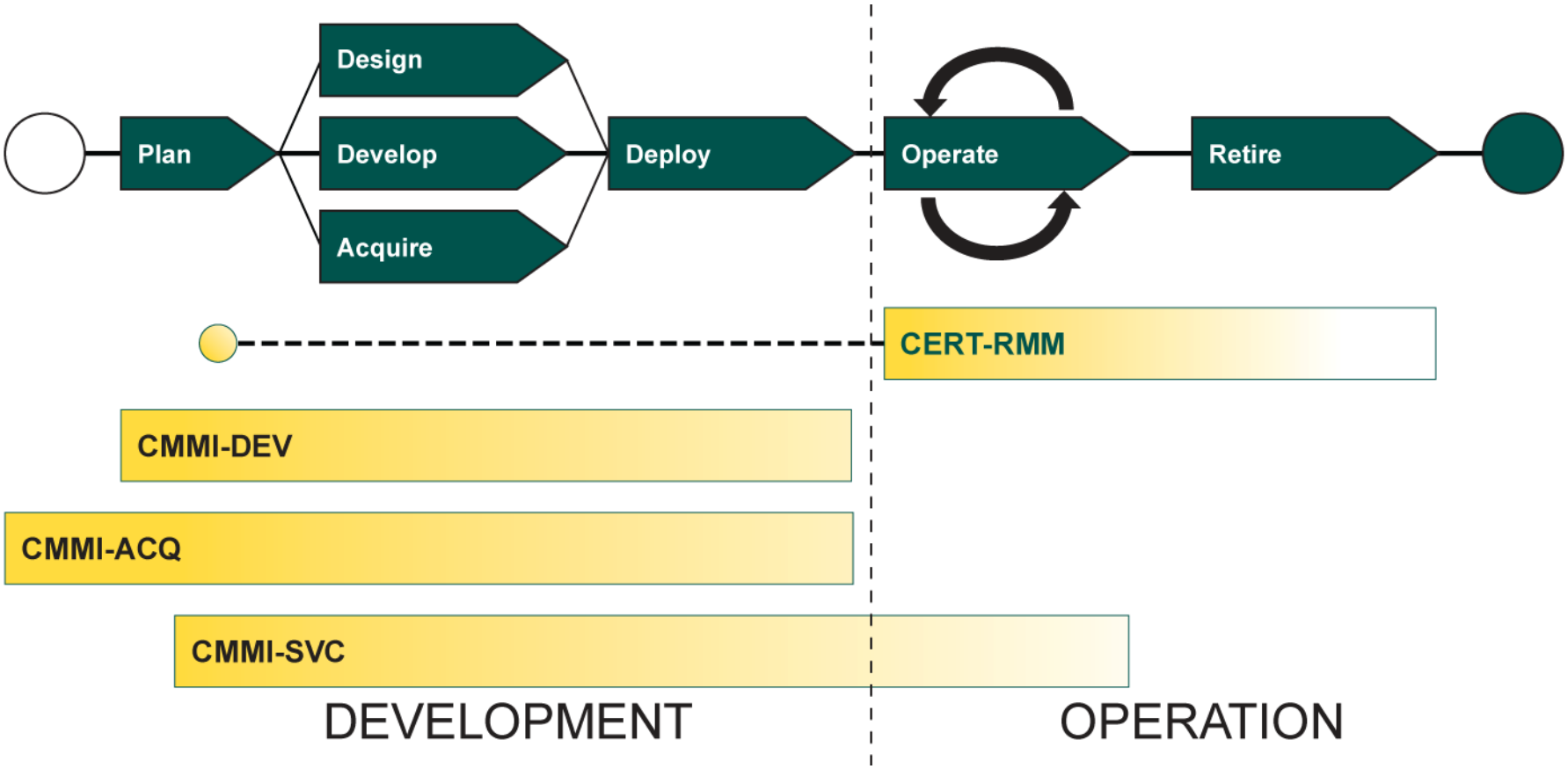
CERT-RMM for Assurance

Focusing CERT-RMM on early life-cycle activities for building resilience in

CERT-RMM focus in the life cycle



For comparison: CERT-RMM and CMMI



RTSE – Resilient Technical Solution Engineering

Ensure that software and systems are developed to satisfy their resilience requirements

RTSE specific goals

Goal	Goal Title
RTSE:SG1	Establish guidelines for resilient technical solution development
RTSE:SG2	Develop resilient technical solution development plans
RTSE:SG3	Execute the plan

RTSE: Building in versus bolting on

Requires organizational intervention

Extends resilience requirements to assets that are **to be developed**

Creates requirements for quality attributes

Attempts to reduce the level of operational risk

Extends across the life cycle

RTSE: Design and test for resilience

- Perform resilience controls during planning and all life cycle phases
- Specify and maintain resilience requirements
- Design resilience-specific architectures
- Adopt secure coding practices
- Minimize weaknesses and vulnerabilities (defects)
- Design test criteria to attest to asset resilience
- Test for resilience during assembly and integration
- Design and exercise service continuity plans during the development process

RTSE influences

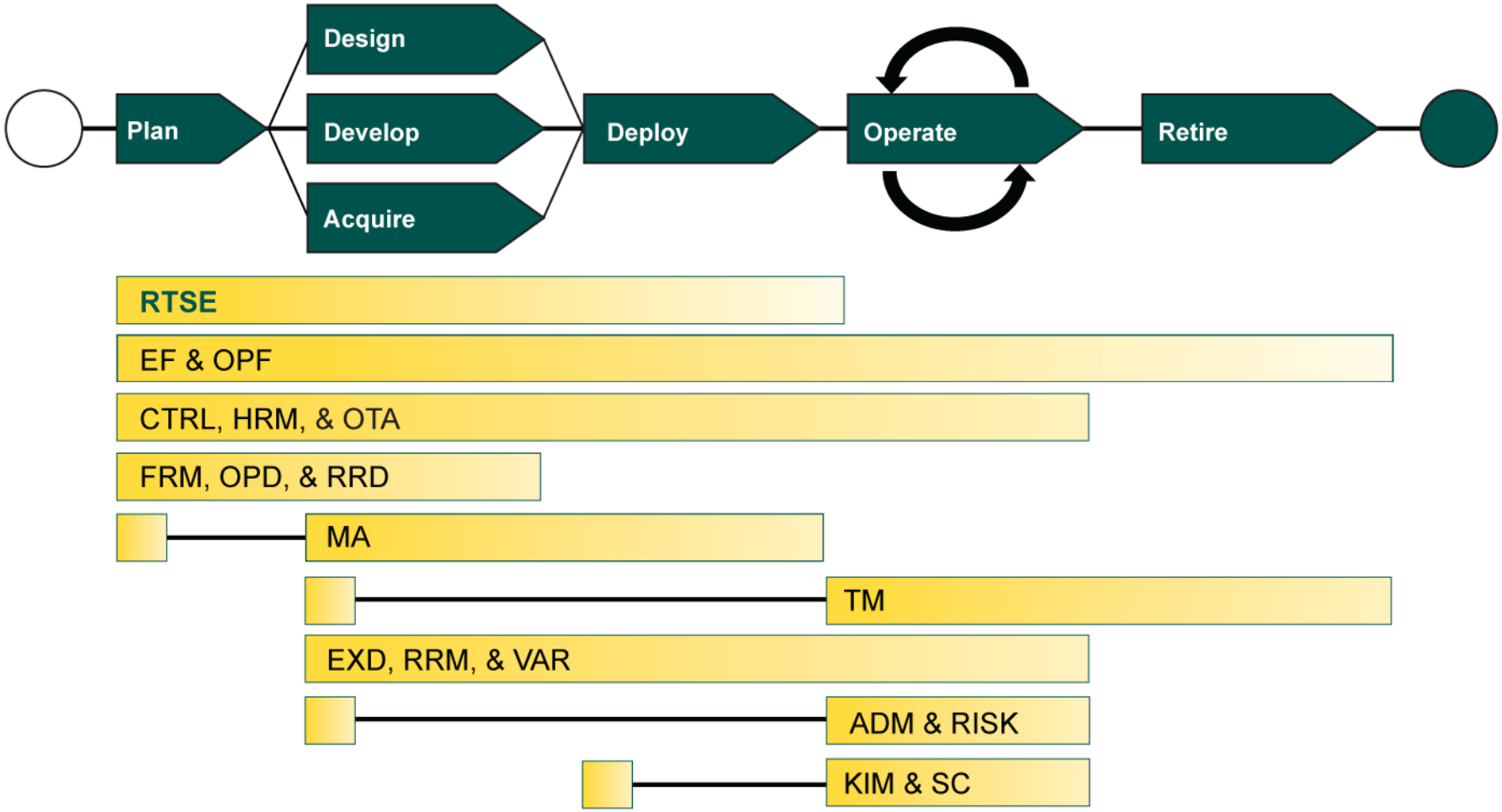
BSIMM2
bsimm.com

Open Web Applications Security Project (OWASP)
Software Assurance Maturity Model
www.owasp.org

Microsoft Security Development Life Cycle
www.microsoft.com/security/sdl/

DHS **Process Reference Model for Assurance Mapping to CMMI-DEV V1.2**
https://buildsecurityin.us-cert.gov/swa/procresrc.html

CERT-RMM for software assurance



CERT-RMM assurance view

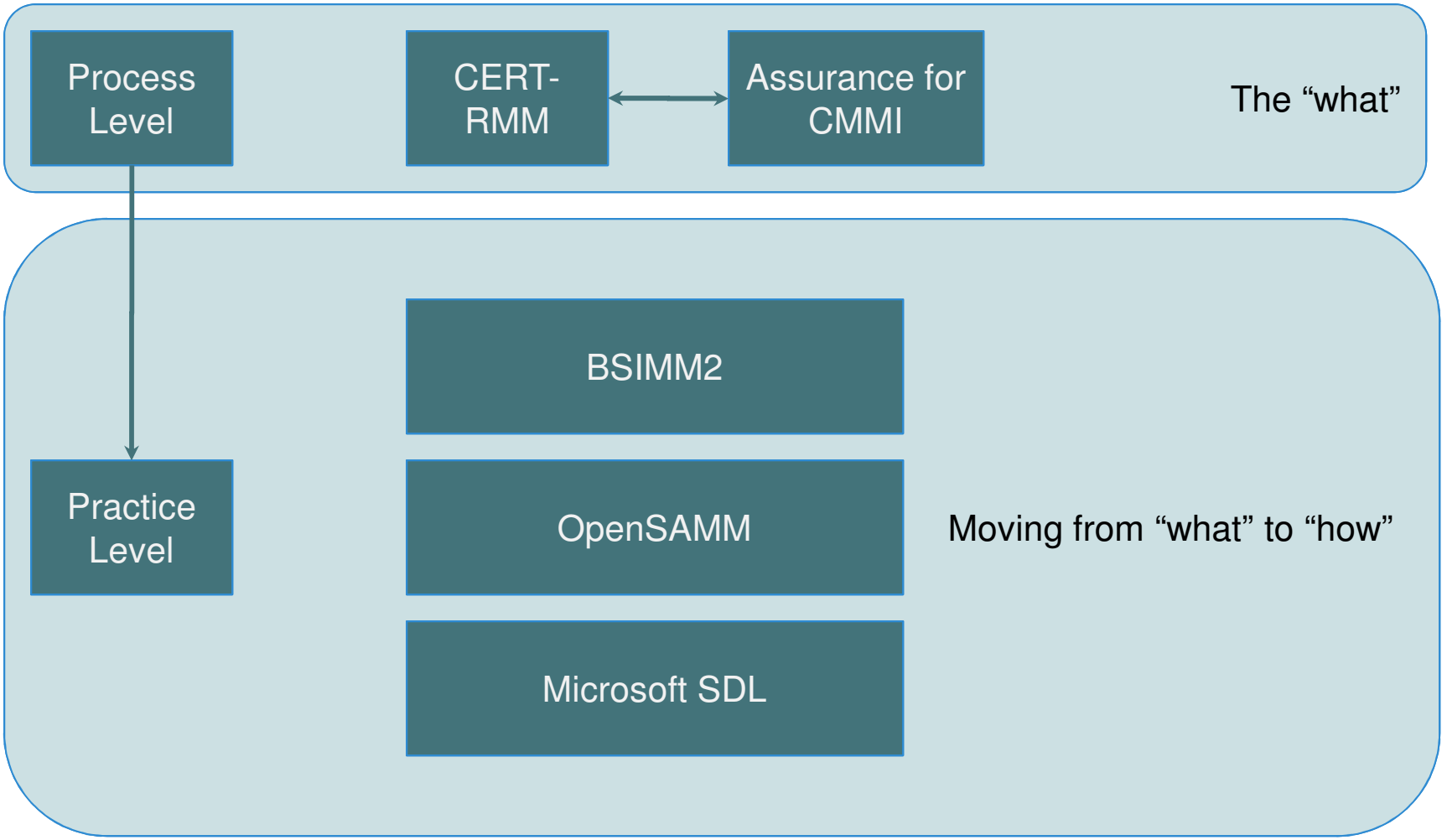
Engineering	
ADM	Asset Definition and Management
CTRL	Controls Management
RRD	Resilience Requirements Development
RRM	Resilience Requirements Management
RTSE	Resilient Technical Solution Engineering
SC	Service Continuity

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

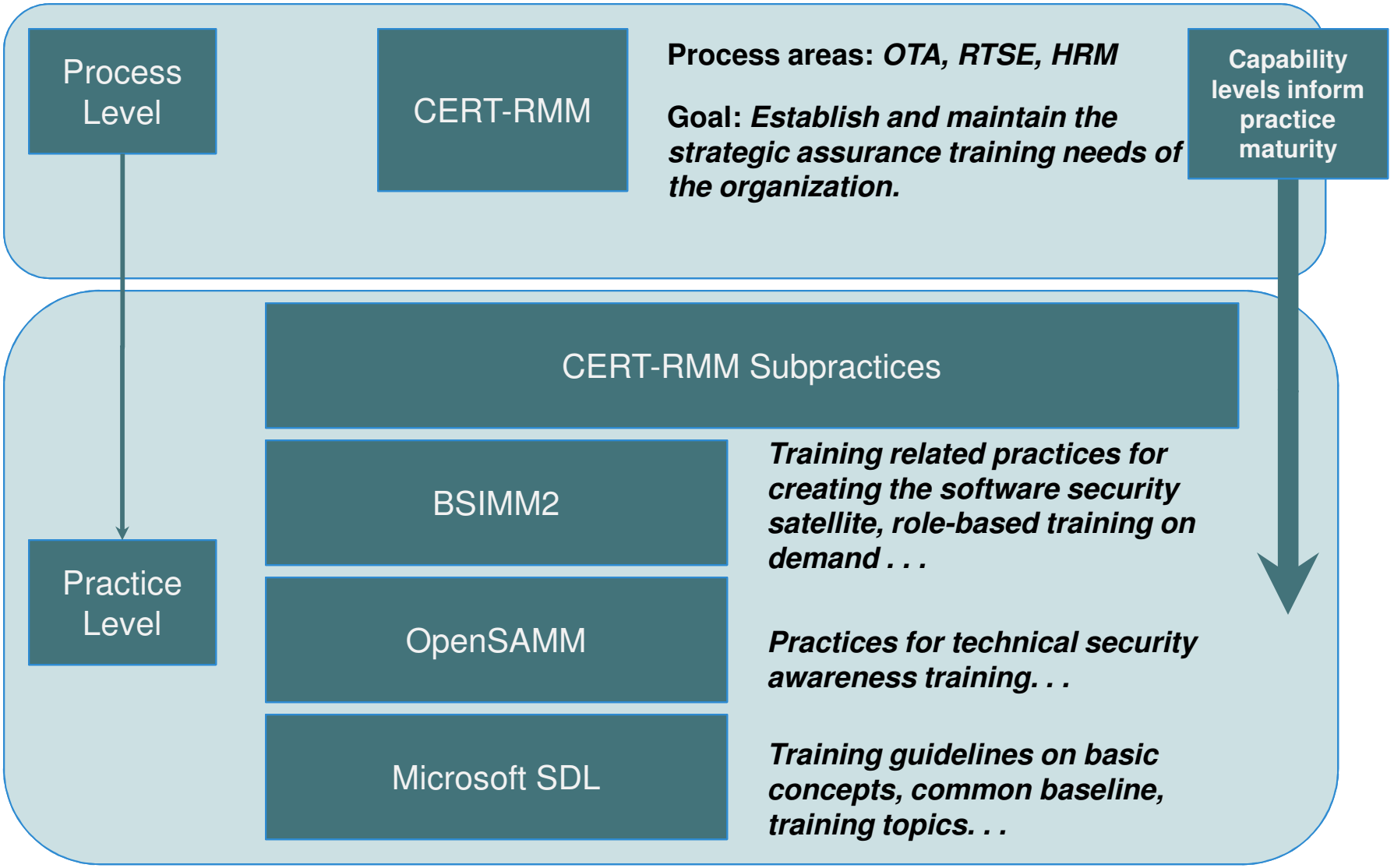
Operations Management	
AM	Access Management
EC	Environmental Control
EXD	External Dependencies Management
ID	Identity Management
IMC	Incident Management & Control
KIM	Knowledge & Information Management
PM	People Management
TM	Technology Management
VAR	Vulnerability Analysis & Resolution

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

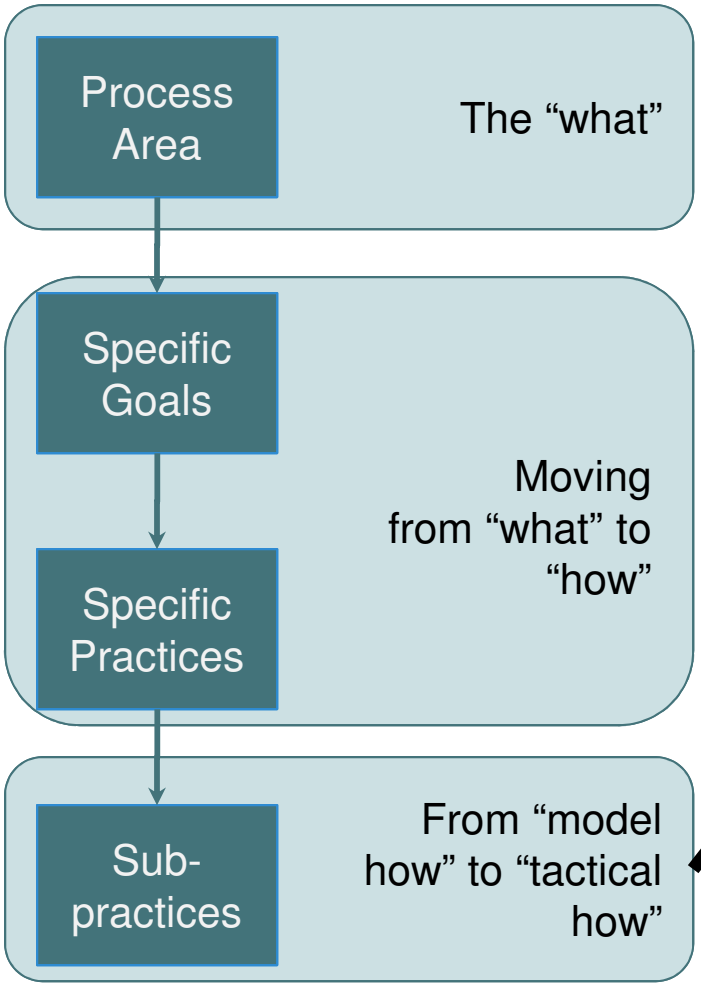
Framing process to practice



Example – Training and Awareness



CERT-RMM links to codes of practice



Codes of Practice:

- **BS25999-1: 2011**
- **CMMI v1.2**
- **CMMI for Services**
- **CobiT 4.1**
- **COSO ERM**
- **DRII GAP**
- **FFIEC BCP Handbook**
- **ISO 20000-2:2005**
- **ISO 24762:2008**
- **ISO 27002:2005**
- **NFPA 1600 (2007)**
- **PCI DSS v1.1 (2006)**

Resources

Training

Introduction to the CERT Resilience Management Model (3-day course)

- Public courses (Pittsburgh and DC)
- Private onsite courses

Appraiser and instructor training in development

CERT-RMM User Group Annual Series

- Quarterly 2-day workshops
- Focus on CERT-RMM implementation
- CERT-RMM Coach Certification option

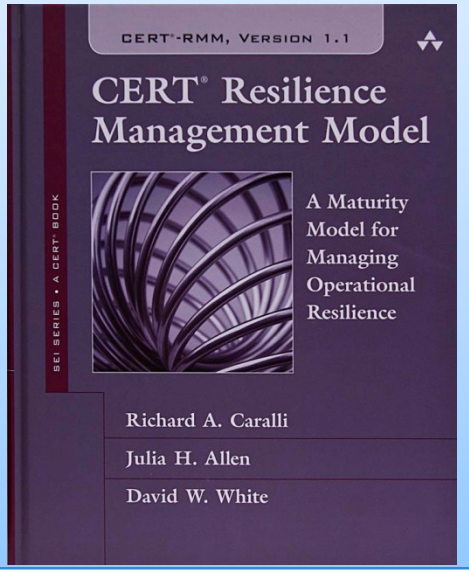
Website

www.cert.org/resilience

Book

Includes full model (v1.1) plus adoption guidance and perspectives of real-world use of the model

www.amazon.com/CERT-Resilience-Management-Model-RMM/dp/0321712439



Support

Engage CERT-RMM team to lead appraisals, provide implementation coaching, pilot CERT-RMM Compass, or deliver custom training

CERT-RMM contacts

Rich Caralli
RMM Architect and Lead Developer
rcaralli@cert.org

David White
RMM Transition Lead and Developer
dwhite@cert.org

Lisa Young
RMM Appraisal Lead and Developer
lry@cert.org

Julia Allen
RMM Developer/Measurement Team Lead
jha@sei.cmu.edu

Richard Lynch
Public Relations — All Media Inquiries
public-relations@sei.cmu.edu

SEI Customer Relations
customer-relations@sei.cmu.edu
412-268-5800

Joe McLeod
For info on working with us
jmcleod@sei.cmu.edu

http://www.cert.org/resilience/

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