Introduction to CMMC Level 1 requirements

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May 15, 2020

WPI Wisconsin Procurement Institute
A Procurement Technical Assistance Center (PTAC)

What we know - Current Cyber Obligations

Contractual requirements - today

- 52.204-21 - Basic Safeguarding of Covered Contractor Information Systems (FCI) – 15 elements
- 252.204-7008 - Compliance with safeguarding covered defense information controls
- 252.204-7012 - Safeguarding Covered Defense Information and Cyber Incident Reporting (CUI)
  - Adequate security | NIST 800-171 r2 | Malware | Incident Id, investigation* & Reporting
- DON – Geurts memos – CDRL requirements
- Other requirements

*If required – if there has been an incident that meets defined threshold.

Information Security Obligations/Requirements

Equally Important & Related

- 252.204-7000 – Disclosure of Information
- DOD Directive 5230.25 Withholding of Unclassified Technical Data from Public Disclosure
- DOD Instruction 5230.24 Distribution Statements on Technical Documents
- Canadian Technical Data Control Regulations (TCDR)
- State Department, Directorate of Defense Trade Controls
- Commerce Control List (CCL) – Red Flag Questions
- DLA Requirements –
  - DLA Export Control Data Access - JCP

Cyber's relation to other Federal programs

- *Other safeguarding or reporting requirements.* The safeguarding and cyber incident reporting required by this clause in no way abrogates the Contractor's responsibility for other safeguarding or cyber incident reporting pertaining to its unclassified information systems as required by other applicable clauses of this contract, or as a result of other applicable U.S. Government statutory or regulatory requirements.

252.204-7012 (October 2016) Safeguarding Covered Defense Information and Cyber Incident Reporting. Paragraph (l)

Without a Secure Foundation All Functions are at Risk

https://www.acq.osd.mil/cmmc/docs/CMMC_v1.0_Public_Briefing_20200131_v2.pdf

CMMC – DoD's perspective

The CMMC is outlined for our program managers in DOD instruction 5000.CSA, the new adaptive acquisition framework. The CMMC is also influencing program protection plans and DoDI 80 -- 8500.01 and 8510.01, which both focus on the protection of I.T. and information systems.

The CMMC establishes security as the foundation to acquisition and combines the various cyber-security standards into one unified standard.

Department of Defense Press Briefing by Undersecretary of Defense for Acquisition and Sustainment
Ellen M. Lord
Oct. 18, 2019

What we don't know

- New DFARs (replace/modify – in addition to) 252.204-7012
- Definitions of/examples of products/services contained in each level
- Examples of good-acceptable policies/procedures*
- Certification process – "is there more than one correct answer?"
- Timing
  - Inclusion in RFQs/RFPs
  - Specified CMMC v1.2
  - Assessor process, engagement, scheduling, cost
  - CMMC Level repository, access to and/or use
- Clarity with respect to trainers/consultants/etc
  - "Oklahoma Land Rush" – caveat emptor

*Level 1 does not specify documentation but…?

Considerations for Certification

- An official visitor contacts the company for the purpose of reviewing your cyber policies and procedures (CMMC).
- A meeting is set up.
- What do you provide this individual?
- What documentation should you be keeping and be able to provide?
- Should there be training records?
- How do these policies and procedures interface with other programs and requirements?
- How are these systems tested and/or exercised?

Comparison of Level – 1 :: Level - 5

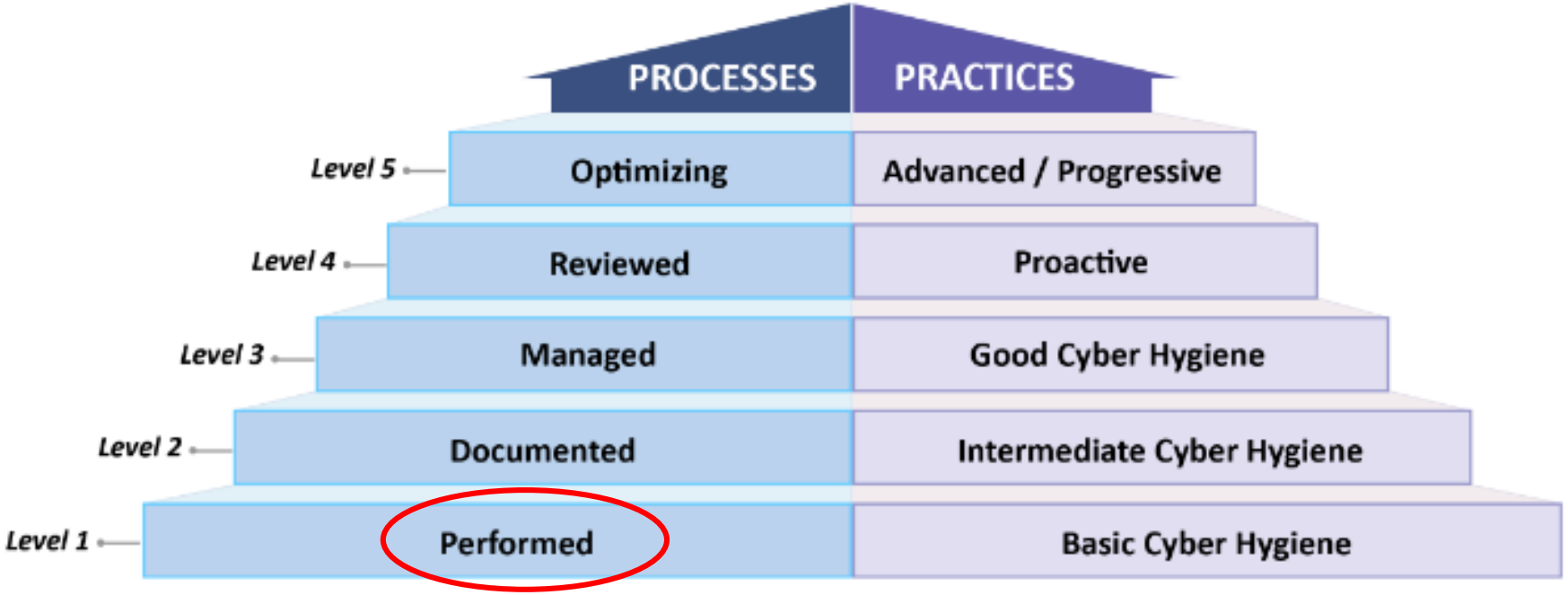


Figure 2. CMMC Levels and Descriptions

https://www.acq.osd.mil/cmmc/docs/CMMC_ModelMain_V1.02_20200318.pdf

New DFARS

Open DFARS Cases as of April 03, 2020

Case Number	Part Number	Title	Synopsis	Status
2019-D041		Strategic Assessment and Cybersecurity Certification Requirements	Implements a standard DoD-wide methodology for assessing DoD contractor compliance with all security requirements in the National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations and a DoD certification process, known as the Cybersecurity Maturity Model Certification (CMMC), that measures a company's maturity and institutionalization of cybersecurity practices and processes. Partially implements section 1648 of the FY20 NDAA.	01/15/2020 DARC agreed to draft proposed DFARS rule. Case manager processing.

CMMC Model v1.02 Release

- The Department is updating the documentation for CMMC Model v1.0 to correct administrative errors identified since January 31, 2020. The itemized list of corrected errata, as well as a more accessible version of the model (i.e. tabular format in Excel), are provided with the release of CMMC Model v1.02. The Department has made no substantive nor critical changes to the model relative to v1.0.

The Source!

CMMC Model overview briefing:

CMMC Model Briefing PDF

CMMC Model v1.02:

CMMC Model PDF

CMMC Model v1.02 Appendices:

CMMC Model Appendices PDF

CMMC Model v1.02 (Appendix A) in tabular format:

CMMC Model (Appendix A) Excel

CMMC Model Errata:

CMMC Model Errata PDF

https://www.acq.osd.mil/cmmc/draft.html

Certification – resources/information

Home CMMC Standard (Official Page) FAQ Glossary Stakeholders

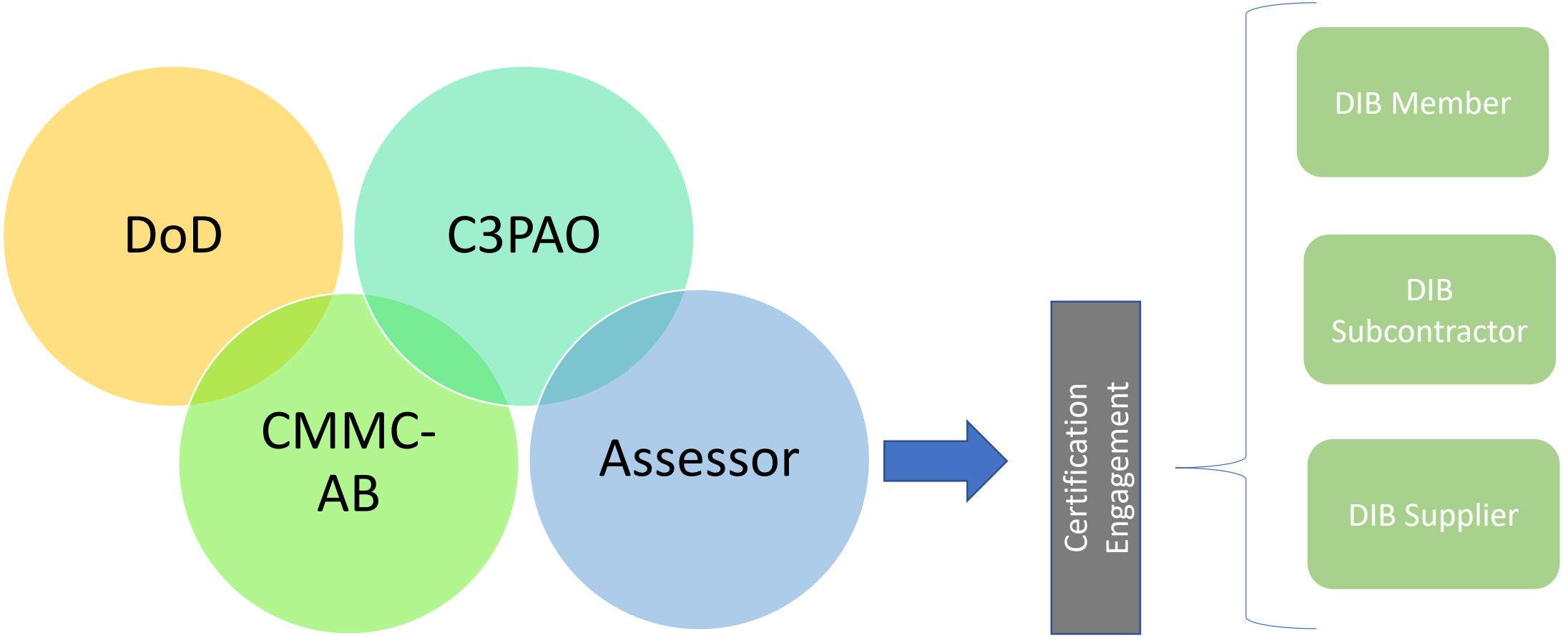
Board of Directors Working Groups Speaking Engagements

CMMC Accreditation Body

(Cybersecurity Maturity Model Certification)

https://www.cmmcab.org/

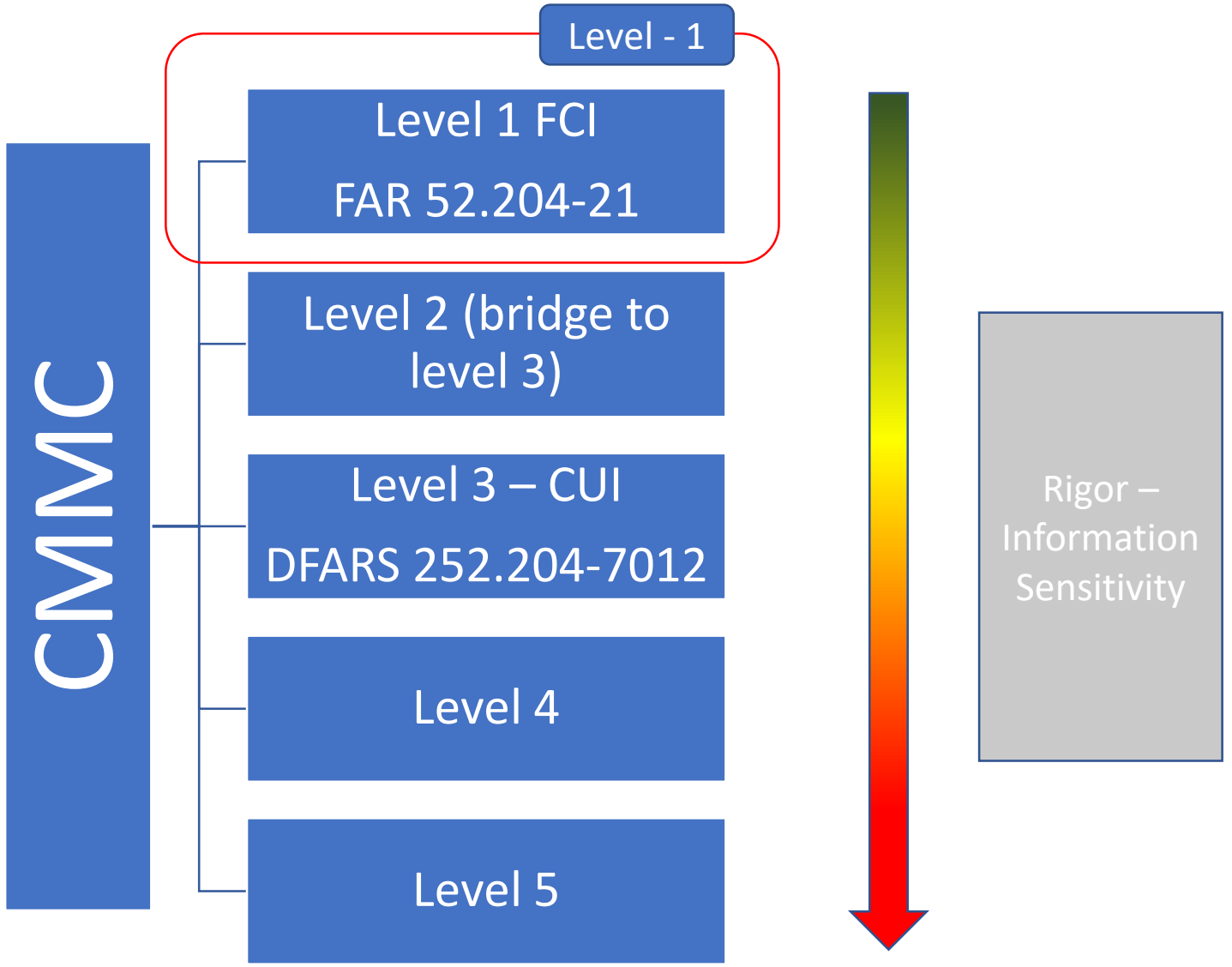
Entities and Relationships



With respect to Third Partys

CMMC Third Party Assessment Organizations (C3PAOs) and CMMC Training

- The Department is aware that some entities have made claims of being able to provide CMMC certifications for the purposes of contracting with the DoD. The requirements for becoming a CMMC Third Party Assessment Organization (C3PAO) are not yet established. As a result, there are no third-party entities at this time that have been credentialed to conduct a CMMC assessment which will be accepted by the CMMC Accreditation Body. Similarly, at this time, only training materials or presentations provided by the Department will reflect the Department's official position with respect to the CMMC program.



CMMC – Levels overview

- Level 1:Safeguard Federal Contract Information (FCI)
- Level 2:Serve as transition step in cybersecurity maturity progression to protect CUI
- Level 3:Protect Controlled Unclassified Information (CUI)
- Levels 4-5: Protect CUI and reduce risk of Advanced Persistent Threats (APTs)

CMMC Levels and Associated Focus

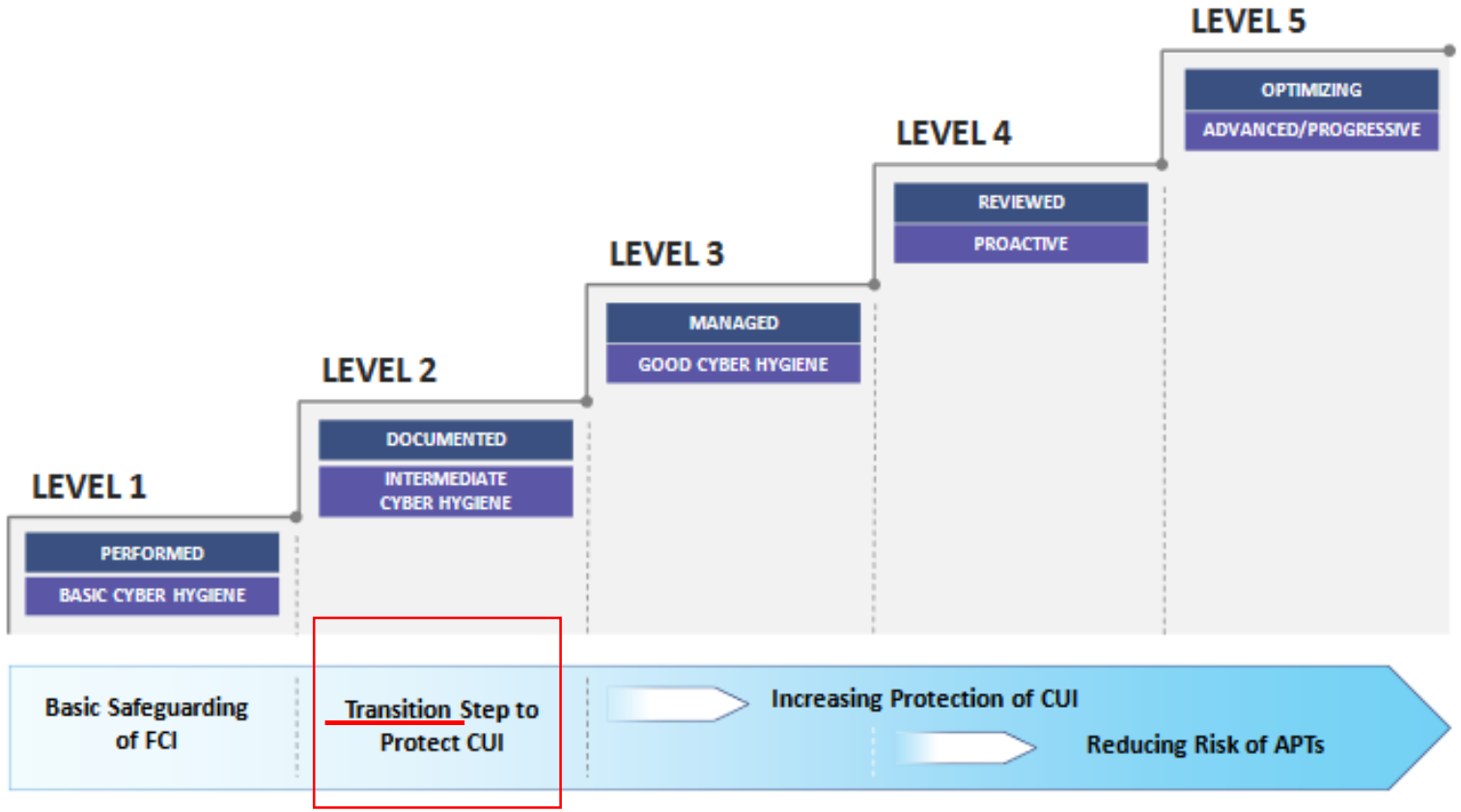


Figure 3. CMMC Levels and Associated Focus

CMMC - Domains

Source for CMMC Practices Per Level

CMMC Level	Number of Practices Introduced at CMMC Level	Source			
		48 CFR 52.204-21	NIST SP 800-171r1	Draft NIST SP 800-171B	Other
1	17	15*	17*	–	–
2	55	–	48	–	7
3	58	–	45	–	13
4	26	–	–	11	15
5	15	–	–	4	11
Total	**171**	**15**	**110**	**15**	**46**

*Note: 15 safeguarding requirements from 48 CFR 52.204-21 correspond to 17 security requirements in NIST SP 800-171.

Key Definitions relative to CMMC

- Federal Contract Information (FCI): FCI is information provided by or generated for the Government under contract not intended for public release [3].
- Controlled Unclassified Information (CUI): CUI is information that requires safeguarding or dissemination controls pursuant to and consistent with laws, regulations, and government-wide policies, excluding information that is classified under Executive Order 13526, Classified National Security Information, December 29, 2009, or any predecessor or successor order, or Atomic Energy Act of 1954, as amended [4].

References

- Basic safeguarding requirements for FCI specified in Federal Acquisition Regulation (FAR) Clause 52.204-21
- Security requirements for CUI specified in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171 per Defense Federal Acquisition Regulation Supplement (DFARS) Clause 252.204-7012 [3, 4, 5].

CMMC Level - 1

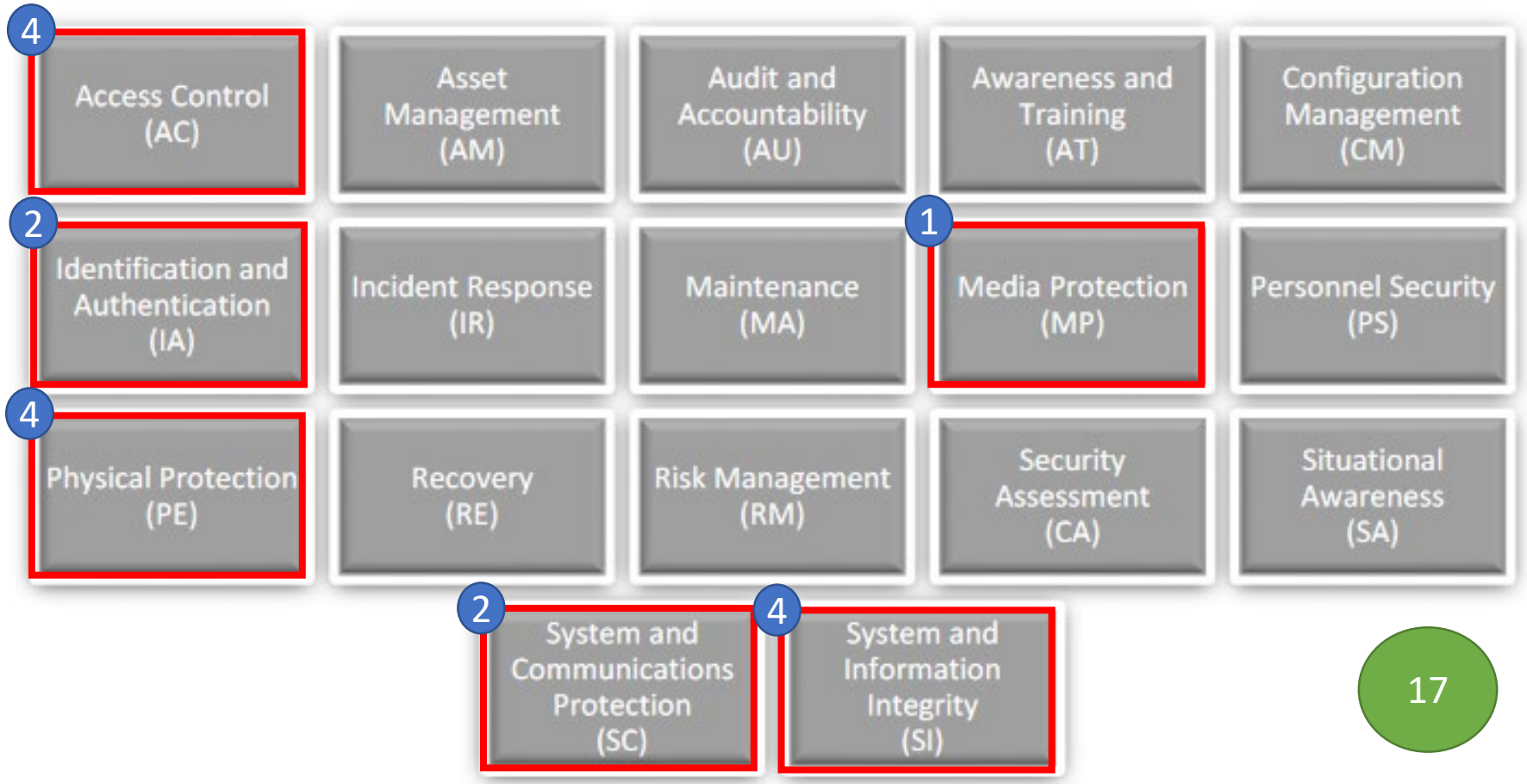
- Processes:

Performed Level 1 requires that an organization performs the specified practices. Because the organization may only be able to perform these practices in an ad-hoc manner and may or may not rely on documentation, process maturity is not assessed for Level 1.

- Practices:

Basic Cyber Hygiene Level 1 focuses on the protection of FCI and consists only of practices that correspond to the basic safeguarding requirements specified in 48 CFR 52.204-21 (“Basic Safeguarding of Covered Contractor Information Systems”) [3].

CMMC – Domains (Level-1)



Process Maturity Requirements

B.2.1 Process Maturity Level 1

There are currently no maturity processes at Level 1.

B.2.2 Process Maturity Level 2

ML.2.999: Establish a policy that includes [DOMAIN NAME].

DISCUSSION FROM SOURCE: CERT RMM V1.2

Develop and publish organizational policy for the process.

Establish the organizational expectations for planning and performing the process, and communicate these expectations via policy. The policy should reflect higher level managers' objectives for the process.

CMMC CLARIFICATION

A policy is a high-level statement from an organization's senior management that documents the requirements for a given activity. It is intended to establish organizational expectations for planning and performing the activity, and communicate those expectations to the organization. Senior management should sign policies to show its support of the activity.

https://www.acq.osd.mil/cmmc/docs/CMMC_Appendices_V1.02_20200318.pdf; page B-2

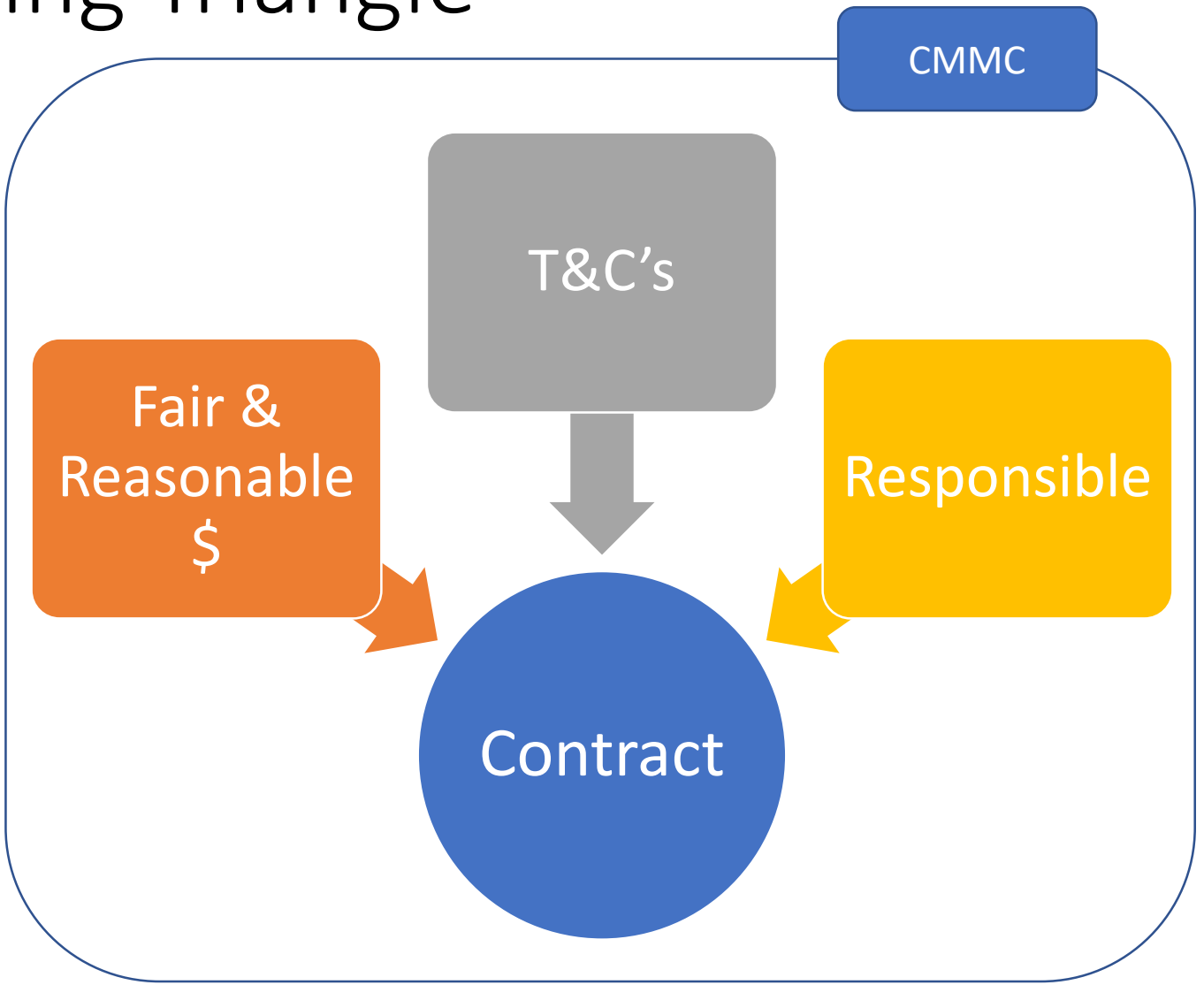
Critical Thinking – recurring theme

- Computer
- Network
- Voice – traditional/VOIP
- Web site
- Storage
- Individuals
- Documents

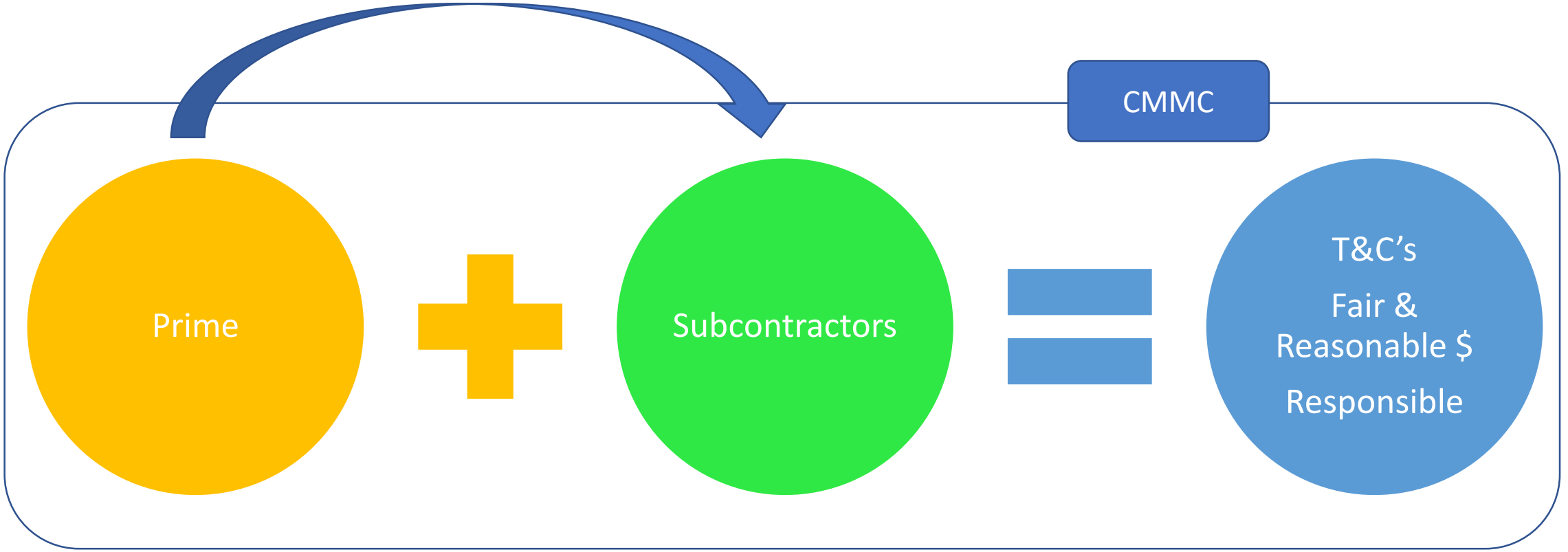
Information Security - today

- Categories of information –
  - Federal Contract Information
  - Covered Defense Information = CTI & CUI
  - Controlled Unclassified Information
  - Impact Level
  - Export Controlled
    - JCP
    - ITAR
    - Other
  - Corporate – internal
  - Customer – contract/proprietary

Contracting Triangle

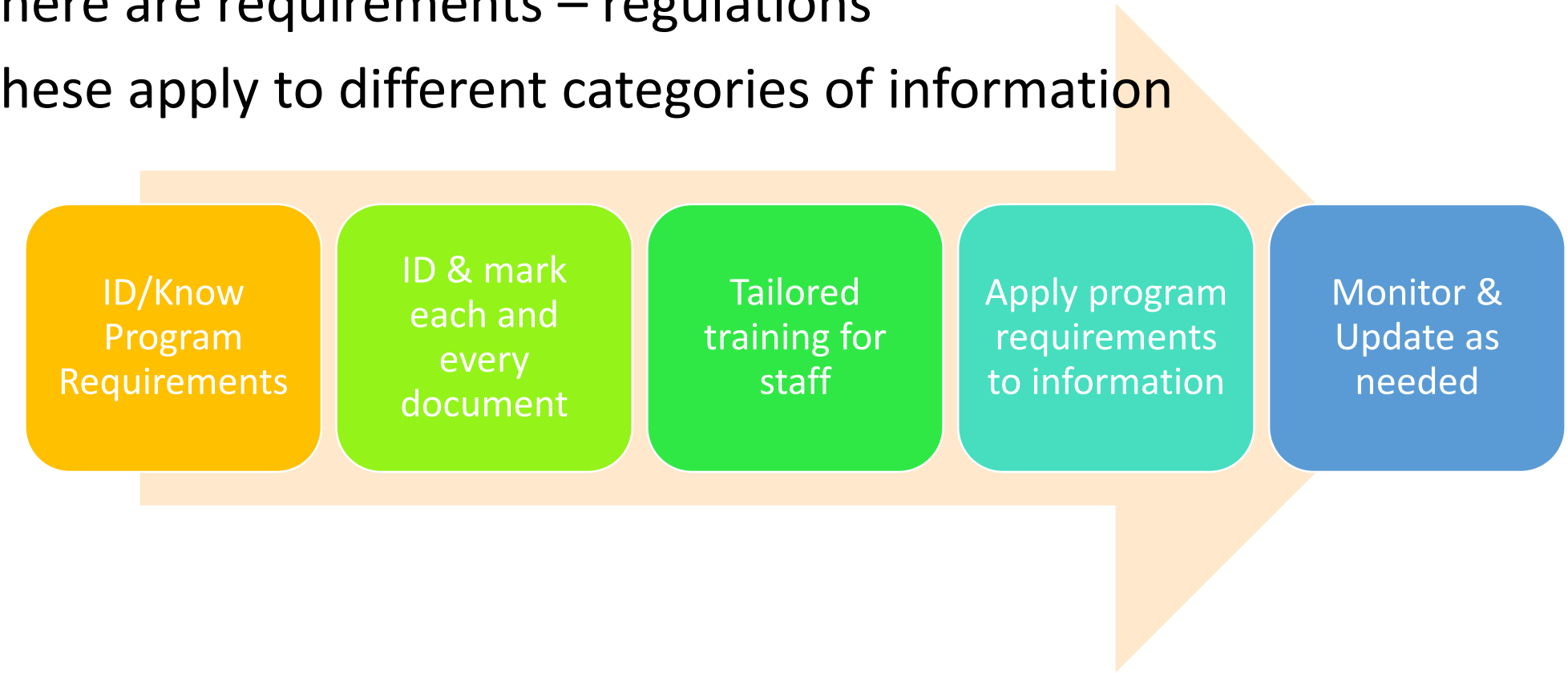


Contracting Equation

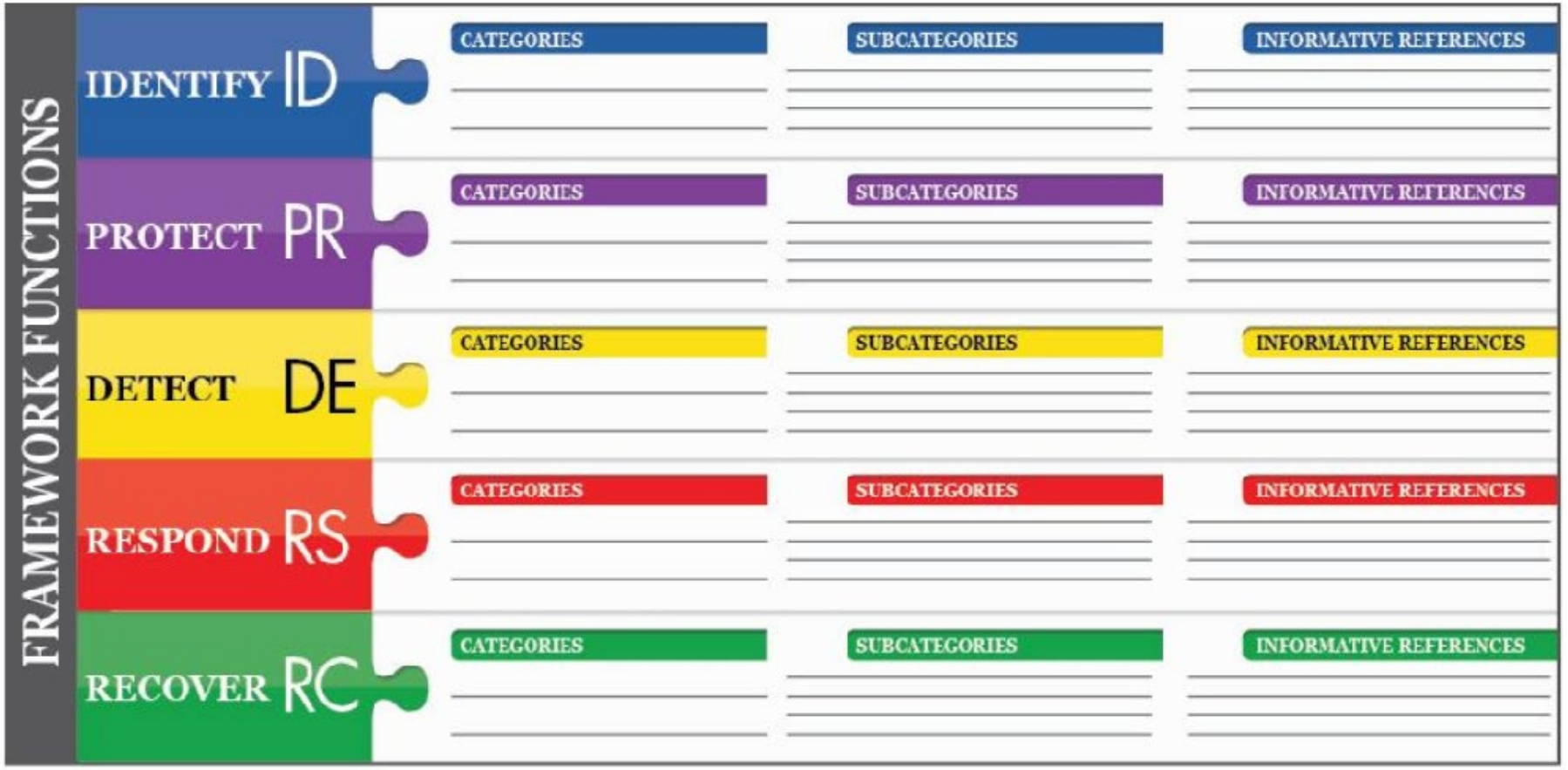


Commonalities

- There are requirements – regulations
- These apply to different categories of information



Cybersecurity Framework v1.1



Cybersecurity Framework v1.1 - https://doi.org/10.6028/NIST.CSWP.04162018 pg. 6

Cybersecurity Framework

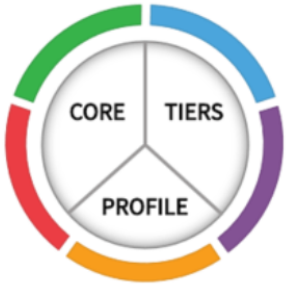
- **Framework** +
- **New to Framework** +
- **Perspectives** +
- **Success Stories** +
- **Online Learning** +
- **Evolution** +
- **Frequently Asked Questions** +
- **Events and Presentations** +
- **Related Efforts (Roadmap)**
- **Informative References** +
- **Resources** +
- **Newsroom** +
- **Related Programs**

CONNECT WITH US

Framework Version 1.1

The Cybersecurity Framework is ready to download.

Learn More



New to Framework

This voluntary Framework consists of standards, guidelines and best practices to manage cybersecurity risk.

Learn More

Online Learning

Intro material for new Framework users to implementation guidance for more advanced Framework users.

Learn More

https://www.nist.gov/cyberframework

Cybersecurity Framework – key elements

- **Identify**–Develop an organizational understanding to manage cybersecurity risk to systems, people, assets, data, and capabilities.
- **Protect**–Develop and implement appropriate safeguards to ensure delivery of critical services.
- **Detect**–Develop and implement appropriate activities to identify the occurrence of a cybersecurity event
- **Respond**–Develop and implement appropriate activities to take action regarding a detected cybersecurity incident.
- **Recover**–Develop and implement appropriate activities to maintain plans for resilience and to restore any capabilities or services that were impaired due toa cybersecurity incident.

Framework for Improving Critical Infrastructure Cybersecurity; CSF v1.1, 2018; pg 7-8

C001- Establish system access requirements

- AC.1.001
  Limit information system access to authorized users, processes acting on behalf of authorized users, or devices (including other information systems).
  - FAR Clause 52.204-21 b.1.i
  - NIST SP 800-171 Rev 1 3.1.1
  - CIS Controls v7.1 1.4, 1.6, 5.1, 14.6, 15.10, 16.8, 16.9, 16.11
  - NIST CSF v1.1 PR.AC-1, PR.AC-3, PR.AC-4, PR.AC-6, PR.PT-3, PR.PT-4
  - CERT RMM v1.2 TM:SG4.SP1
  - NIST SP 800-53 Rev 4 AC-2, AC-3, AC-17
  - AU ACSC Essential Eight

C001- Establish system access requirements

AC.1.001: Limit information system access to authorized users, processes acting on behalf of authorized users, or devices (including other information systems).

DISCUSSION FROM SOURCE: DRAFT NIST SP 800-171 R2

Access control policies (e.g., identity- or role-based policies, control matrices, and cryptography) control access between active entities or subjects (i.e., users or processes acting on behalf of users) and passive entities or objects (e.g., devices, files, records, and domains) in systems. Access enforcement mechanisms can be employed at the application and service level to provide increased information security. Other systems include systems internal and external to the organization. This requirement focuses on account management for systems and applications. The definition of and enforcement of access authorizations, other than those determined by account type (e.g., privileged verses non-privileged) are addressed in requirement 3.1.2 (AC.1.002).

CMMC CLARIFICATION

Control who can use company computers and who can log on to the company network. Limit the services and devices, like printers, that can be accessed by company computers. Set up your system so that unauthorized users and devices cannot get on the company network.

Example 1

You are in charge of IT for your company. You give a username and password to every employee who uses a company computer for their job. No one can use a company computer without a username and a password. You give a username and password only to those employees you know have permission to be on the system. When an employee leaves the company, you disable their username and password immediately.

https://www.acq.osd.mil/cmmc/docs/CMMC_Appendices_V1.02_20200318.pdf; page B-10

C002 - Control internal system access

- AC.1.002
  Limit information system access to the types of transactions and functions that authorized users are permitted to execute.
  - FAR Clause 52.204-21 b.1.ii
  - NIST SP 800-171 Rev 1 3.1.2
  - CIS Controls v7.1 1.4, 1.6, 5.1, 8.5, 14.6, 15.10, 16.8, 16.9, 16.11
  - NIST CSF v1.1 PR.AC-1, PR.AC-3, PR.AC-4, PR.AC-6, PR.PT-3, PR.PT-4
  - CERT RMM v1.2 TM:SG4.SP1
  - NIST SP 800-53 Rev 4 AC-2, AC-3, AC-17

C004 - Limit data access to authorized users and processes

- AC.1.003
  Verify and control/limit connections to and use of external information systems.
  - FAR Clause 52.204-21 b.1.iii
  - NIST SP 800-171 Rev 1 3.1.20
  - CIS Controls v7.1 12.1, 12.4
  - NIST CSF v1.1 ID.AM-4, PR.AC-3
  - CERT RMM v1.2 EXD:SG3.SP1
  - NIST SP 800-53 Rev 4 AC-20, AC-20(1)

C004 - Limit data access to authorized users and processes

- AC.1.004
  Control information posted or processed on publicly accessible information systems.
  - FAR Clause 52.204-21 b.1.iv
  - NIST SP 800-171 Rev 1 3.1.22
  - NIST SP 800-53 Rev 4 AC-22

C015 - Grant access to authenticated entities

- IA.1.076
  Identify information system users, processes acting on behalf of users, or devices.
  - FAR Clause 52.204-21 b.1.v
  - NIST SP 800-171 Rev 1 3.5.1
  - CIS Controls v7.1 4.2, 4.3, 16.8, 16.9
  - NIST CSF v1.1 PR.AC-1, PR.AC-6, PR.AC-7
  - CERT RMM v1.2 ID:SG1.SP1
  - NIST SP 800-53 Rev 4 IA-2, IA-3, IA-5

C015 - Grant access to authenticated entities

- IA.1.077
  Authenticate (or verify) the identities of those users, processes, or devices, as a prerequisite to allowing access to organizational information systems.
  - FAR Clause 52.204-21 b.1.vi
  - NIST SP 800-171 Rev 1 3.5.2
  - CIS Controls v7.1 4.2, 4.3, 16.8, 16.9
  - NIST CSF v1.1 PR.AC-1, PR.AC-6, PR.AC-7
  - CERT RMM v1.2 TM:SG4.SP1
  - NIST SP 800-53 Rev 4 IA-2, IA-3, IA-5
  - UK NCSC Cyber Essentials

C024 - Sanitize media

- MP.1.118
  Sanitize or destroy information system media containing Federal Contract Information before disposal or release for reuse.
  - FAR Clause 52.204-21 b.1.vii
  - NIST SP 800-171 Rev 1 3.8.3
  - NIST CSF v1.1 PR.DS-3
  - CERT RMM v1.2 KIM:SG4.SP3
  - NIST SP 800-53 Rev 4 MP-6

C028 - Limit physical access

- PE.1.131
  Limit physical access to organizational information systems, equipment, and the respective operating environments to authorized individuals.
  - FAR Clause 52.204-21 b.1.viii
  - NIST SP 800-171 Rev 1 3.10.1
  - NIST CSF v1.1 PR.AC-2
  - CERT RMM v1.2 KIM:SG4.SP2
  - NIST SP 800-53 Rev 4 PE-2

C028 - Limit physical access

- PE.1.132
  Escort visitors and monitor visitor activity.
  - FAR Clause 52.204-21 Partial b.1.ix *
  - NIST SP 800-171 Rev 1 3.10.3 *
  - CERT RMM v1.2 AM:SG1.SP1 *
  - NIST SP 800-53 Rev 4 PE-3 *

*detailed in separate slide

Limit physical access PE.1.132

- FAR 52.204-21
  - (ix) Escort visitors and monitor visitor activity; maintain audit logs of physical access; and control and manage physical access devices.
- NIST 800-171 r1
  - 3.10.3 Escort visitors and monitor visitor activity.
  - DISCUSSION Individuals with permanent physical access authorization credentials are not considered visitors. Audit logs can be used to monitor visitor activity.

Limit physical access PE.1.132

AM:SG1.SP1 Enable Access

- Appropriate access to organizational assets is established based on resilience requirements and appropriate approvals.
  - Access privileges and restrictions describe the level and extent of access provided to identities. Access privileges should be commensurate with the various roles represented by an identity but concurrently must be congruent with the resilience requirements of the assets to which the privileges are granted. Access privileges are assigned and approved by asset owners based on the role of the person, object, or entity that is requesting access. Asset owners are the persons or organizational units, internal or external to the organization, that have primary responsibility for the viability, productivity, and resilience of a high-value organizational asset. It is the owner's responsibility to ensure that requirements for protecting and sustaining assets are defined for assets under the owner's control.

CERT Resilience Management Model – CERT-RMM Version 1.2; page AM | 3

Limit physical access PE.1.132

Partial copy

PE-3 PHYSICAL ACCESS CONTROL

Control: The organization:

a. Enforces physical access authorizations at [*Assignment: organization-defined entry/exit points to the facility where the information system resides*] by;

   1. Verifying individual access authorizations before granting access to the facility; and

   2. Controlling ingress/egress to the facility using [*Selection (one or more):* [*Assignment: organization-defined physical access control systems/devices*]; *guards*];

b. Maintains physical access audit logs for [*Assignment: organization-defined entry/exit points*];

c. Provides [*Assignment: organization-defined security safeguards*] to control access to areas within the facility officially designated as publicly accessible;

d. Escorts visitors and monitors visitor activity [*Assignment: organization-defined circumstances requiring visitor escorts and monitoring*];

e. Secures keys, combinations, and other physical access devices;

f. Inventories [*Assignment: organization-defined physical access devices*] every [*Assignment: organization-defined frequency*]; and

NIST SP 800-53 Rev. 4 page F-128

C028 - Limit physical access

- PE.1.133
  Maintain audit logs of physical access.
  - FAR Clause 52.204-21 Partial b.1.ix
  - NIST SP 800-171 Rev 1 3.10.4
  - NIST SP 800-53 Rev 4 PE-3

Look for wording that indicates documentation is/will be required.

C028 - Limit physical access

- PE.1.134
  Control and manage physical access devices.
  - FAR Clause 52.204-21 Partial b.1.ix
  - NIST SP 800-171 Rev 1 3.10.5
  - CERT RMM v1.2 KIM:SG4.SP2 – see next slide
  - NIST SP 800-53 Rev 4 PE-3

KIM:SG4 Manage Information Asset Confidentiality and Privacy

The confidentiality and privacy considerations of information assets are managed.

- Confidentiality and privacy are fundamental resilience requirements for information assets. These requirements are unique to information assets because the inadvertent or intentional disclosure of information to unauthorized staff can result in significant consequences to the organization, including reputation damage, harmful effects to customers and stakeholders (such as identity theft), and legal and financial penalties

C039 - Control communications at system boundaries

- SC.1.175
  Monitor, control, and protect organizational communications (i.e., information transmitted or received by organizational information systems) at the external boundaries and key internal boundaries of the information systems.
  - FAR Clause 52.204-21 b.1.x
  - NIST SP 800-171 Rev 1 3.13.1
  - NIST CSF v1.1 PR.PT-4
  - NIST SP 800-53 Rev 4 SC-7
  - UK NCSC Cyber Essentials

C039Control communications at system boundaries

- SC.1.176
  Implement subnetworks for publicly accessible system components that are physically or logically separated from internal networks.
  - FAR Clause 52.204-21 b.1.xi
  - NIST SP 800-171 Rev 1 3.13.5
  - CIS Controls v7.1 14.1
  - NIST CSF v1.1 PR.AC-5
  - NIST SP 800-53 Rev 4 SC-7
  - UK NCSC Cyber Essentials

C040 - Identify and manage information system flaws

- SI.1.210
  Identify, report, and correct information and information system flaws in a timely manner.
  - FAR Clause 52.204-21 b.1.xii
  - NIST SP 800-171 Rev 1 3.14.1
  - NIST CSF v1.1 RS.CO-2, RS.MI-3
  - CERT RMM v1.2 VAR:SG2.SP2
  - NIST SP 800-53 Rev 4 SI-2
  - UK NCSC Cyber Essentials
  - AU ACSC Essential Eight

Should there be documentation?

C041 - Identify malicious content

- SI.1.211
  Provide protection from malicious code at appropriate locations within organizational information systems.
  - FAR Clause 52.204-21 b.1.xiii
  - NIST SP 800-171 Rev 1 3.14.2
  - CIS Controls v7.1 8.1
  - NIST CSF v1.1 DE.CM-4
  - CERT RMM v1.2 VAR:SG3.SP1
  - NIST SP 800-53 Rev 4 SI-3
  - AU ACSC Essential Eight

How would you show that this has been done?
What defines appropriate locations?

C041 - Identify malicious content

- SI.1.212
  Update malicious code protection mechanisms when new releases are available.
  - FAR Clause 52.204-21 b.1.xiv
  - NIST SP 800-171 Rev 1 3.14.4
  - CIS Controls v7.1 8.2
  - NIST CSF v1.1 DE.CM-4
  - CERT RMM v1.2 VAR:SG3.SP1
  - NIST SP 800-53 Rev 4 SI-3

How do we track of?
How can it be shown that the protection is current as of a specific date?

C041 - Identify malicious content

- SI.1.213
  Perform periodic scans of the information system and real-time scans of files from external sources as files are downloaded, opened, or executed.
  - FAR Clause 52.204-21 b.1.xv
  - NIST SP 800-171 Rev 1 3.14.5
  - CIS Controls v7.1 8.4, 8.7
  - NIST CSF v1.1 DE.CM-4
  - CERT RMM v1.2 VAR:SG3.SP1
  - NIST SP 800-53 Rev 4 SI-3

What, when, how, familiarity with/training & documentation

Suggestions – moving forward

- List all required elements
- Describe current position and/or processes
- Download/print all references for each requirement
- Compare
- Determine gaps
- Take internal/external actions to close gaps
- Identify resource – monitor
- Establish periodic review period

References

- FAR 52.204-21 – entirety https://www.acquisition.gov
- NIST 800-171 r1 - https://csrc.nist.gov/publications/detail/sp/800-171/rev-1/final
- NIST 800-171 r2 - https://csrc.nist.gov/publications/detail/sp/800-171/rev-2/final
- NIST SP 800-53 Rev 4 - https://csrc.nist.gov/publications/detail/sp/800-53/rev-4/final
- NIST CSF v1.1 - https://doi.org/10.6028/NIST.CSWP.04162018
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