

How Much Configuration Management is Good Enough?

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Presented at [CM Trends](#)
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Agenda

- Quick Introductions
- Scientific Methods
- Closer look at CM targets
- How to Begin with SAE-EIA-649C
- Conclusions

Introductions

- About CMstat
 - www.cmstat.com
 - <https://cmstat.com/cmsights-news-posts>
- About Lisa
 - VP Product Development – CMstat
 - Adjunct Instructor – CMPIC
 - Participating in SAE G-33 and IEEE Standards Reviews

How much CM is Enough?

- Are you doing 'good enough' CM?
- The Federal Information System Controls Audit Manual (FISCAM)
 - US Government guide for conducting audits of Information Systems
 - Calls for every government agency to establish the '**minimally acceptable**' system configuration requirements and ensure compliance with them.
- Can we do this for CM? Should we do this for CM?
- Are the 40 principles of SAE-EIA-649C our 'bare minimum' definition of CM?

Let's Begin the Investigation

- In developing this presentation, I reviewed the 40 principles in the standard and rewrote them in my own words. I then went back and highlighted words that were key concepts that the principles addressed.
- From that I've come up with the starting point of elements and concepts that are needed to cover what the standard is looking for.

Showing my work

CM1 - Imp Balanced Continuous CM Thru Lifecycle

CMP1 - Context & Environment of Product (Person, Service, SW, Facility)

CMP2 - Result of Planning must be captured, i.e. CMP

CMP3 - Assign Responsibilities & Resources

CMP4 - Establish Metrics - goal is continuous improvement

CMP5 - Establish Procedures & Imp - Means Document Them, Run

CMP6 - TRAIN

CMP7 - Check Assess to maintain health

CMP8 - Flow down to Suppliers

CMP9 - Manage Data - CM Staff, Storage, Protection, Distribution & Backup, Access

CI1 - ID Product Whole Lifecycle - Basis for all else

CI2 - Product Config Info must be managed

CI3 - CAGE CODES on Data

CI4 - Uniquely ID Product

CI5 - SNs unique

CI6 - "

CI7 - Lot #s

CI8 - Product ID enablement has to enable processes (Imp'd Issues)

CI9 - Product Structure - or options data & enable processes (Imp'd Issues)

CI10 - Need Release Process to allow Validation was done & avoid confusion

CI11 - Est. Its a one to basis for Change Mgmt

CI12 - BL & App. Chg = Current App Config

CI13 - Manage Interfaces like any other Product 'element'

CI14 - Use CSs if they help you filter/organize data

CCM1 - Chg done via measurable, systematic process

CCM2 - Chg Just used to justify spending resources to investigate and may be to make Chg

CCM3 - unique ID Chg Record

CCM4 - Classify Chg - Basis must have, Also determines Route.

CCM5 - Chg Record must document all Tech. & Schedule considerations

CCM6 - Must Evaluate Tech, Sched, etc. BEFORE decision to proceed

CCM7 - Chg App MUST come from someone who can spend \$ otherwise inefficient

CCM8 - Must implement exactly as Approved & documented (w/ exceptions)

CCM9 - Variances are Changes

CSA1 - CSA gives accurate, timely Communication of all Prod Related Stuff WHOLE Lifecycle

CSA2 - Capture data in CMDB as you go - don't do double duty/data entry

CSA3 - Use Metrics to Improve

CVA1 - Verify CM Processes to make sure they continue to be used/Run correctly

CVA2 - Check that Product is what it's supposed to be

CVA3 - Verify that upon chg completion, Product data, Product & Support Assets are ALL in sync

CVA4 - Audits are summation of Verification - Balancing Checkbook

CVA5 - Audits establish current App Config - Specific purpose for this audit

Word Cloud Analysis



Lisa's Analysis

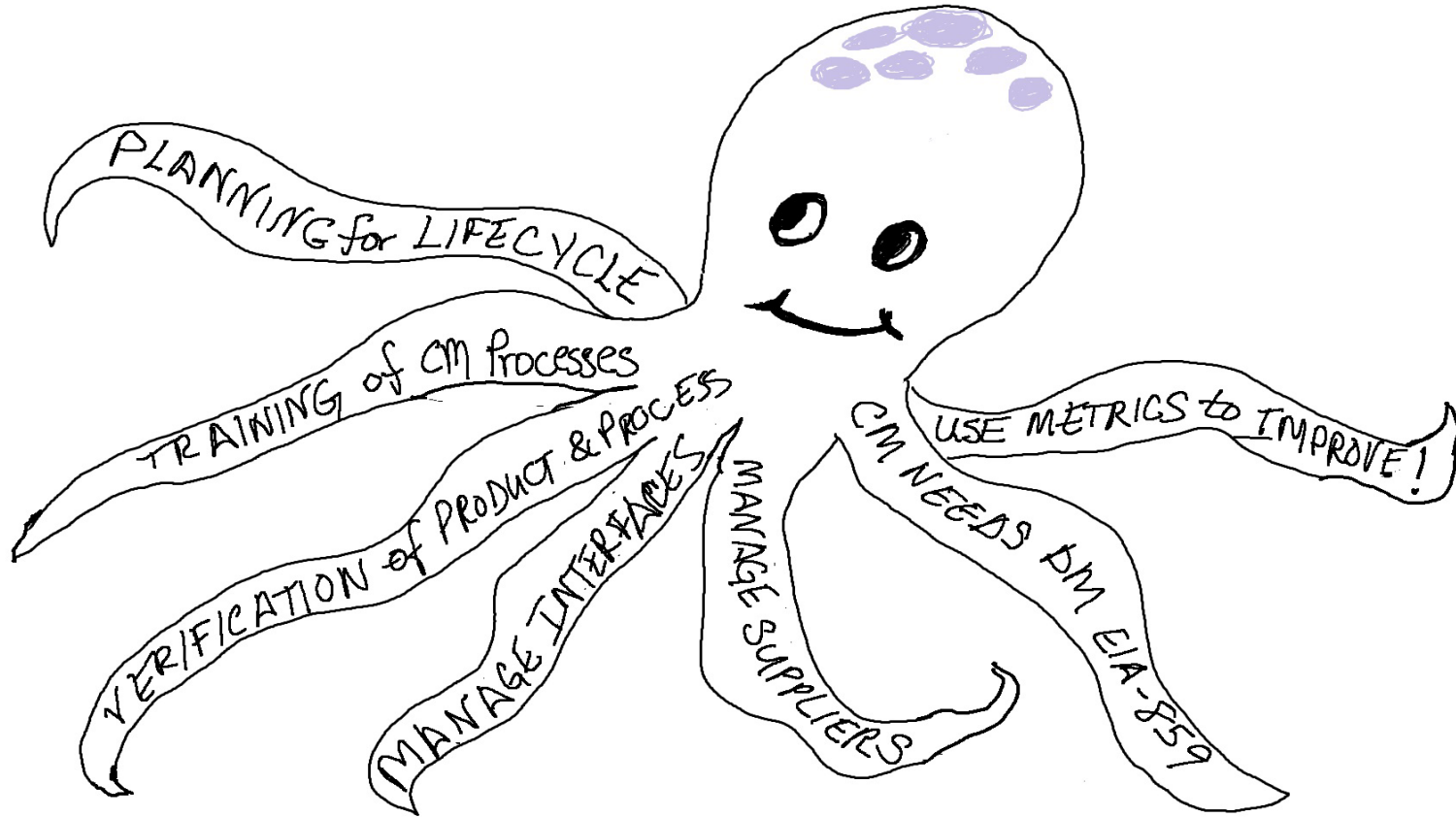
These are the crucial functions within the 5 pillars for 'Good CM'

- **Planning for Environment** over whole **Lifecycle**
- **Metrics/Measure** Product and CM Processes
- **Training** of CM and CM-related processes
- **Verification** – do the Checks!
- **Data** Management (See SAE-EIA-859) is **Configuration Information** Management
- **Supplier** Management
- **Interface** Management
- **Unique Identification** – Product and Configuration Information

It was then that I realized.....

CM is an Octopus!

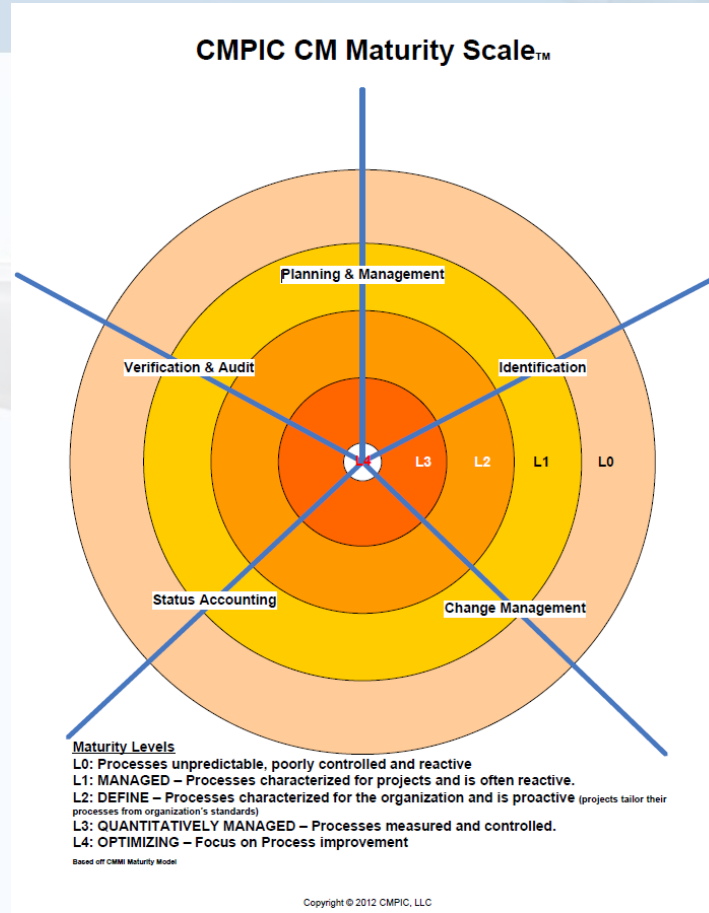
cm.stat



As I should have expected...

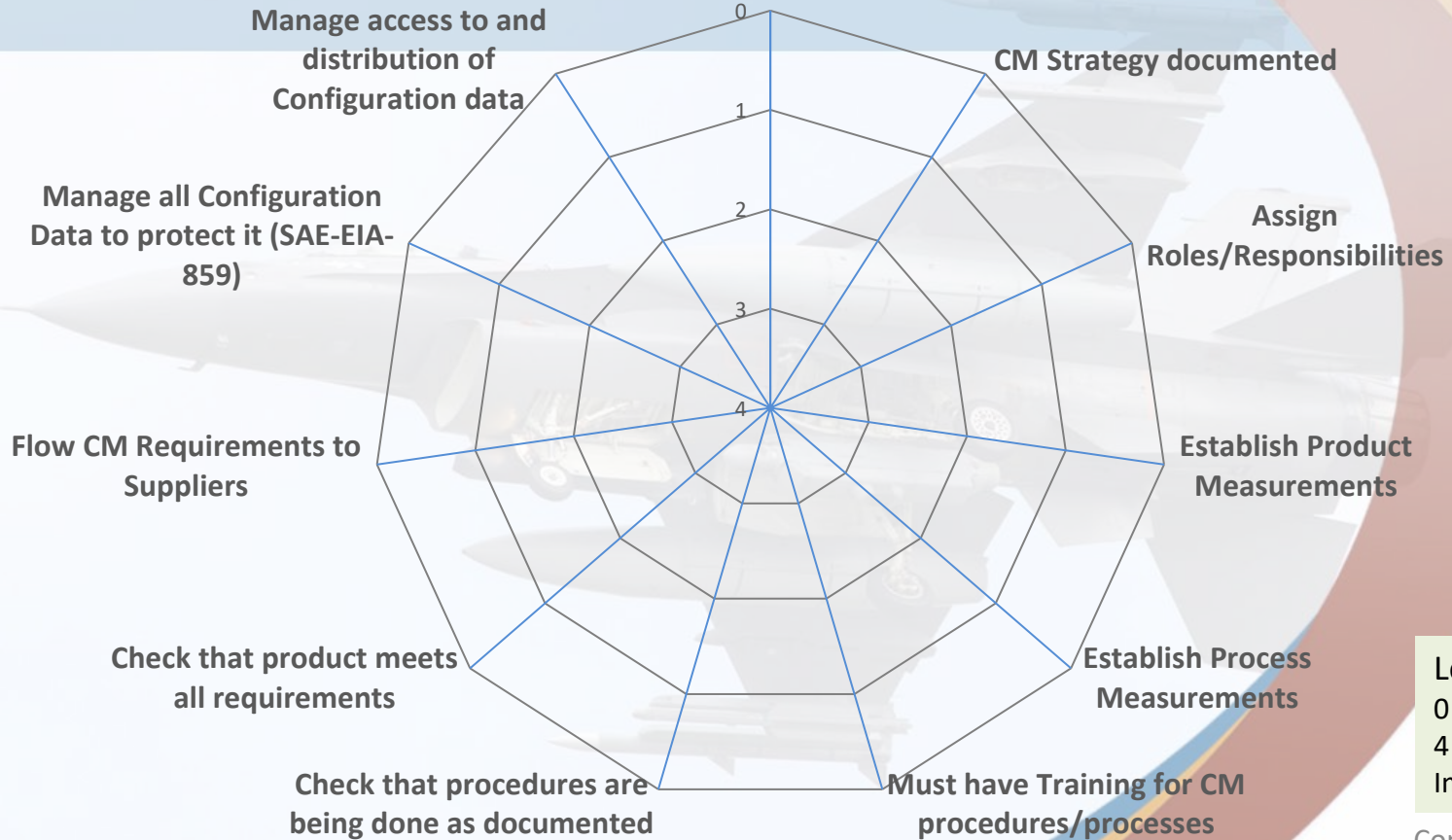
- These key words came from the CM 1 and the Planning and Management principles
- Remaining principles support these key ideas

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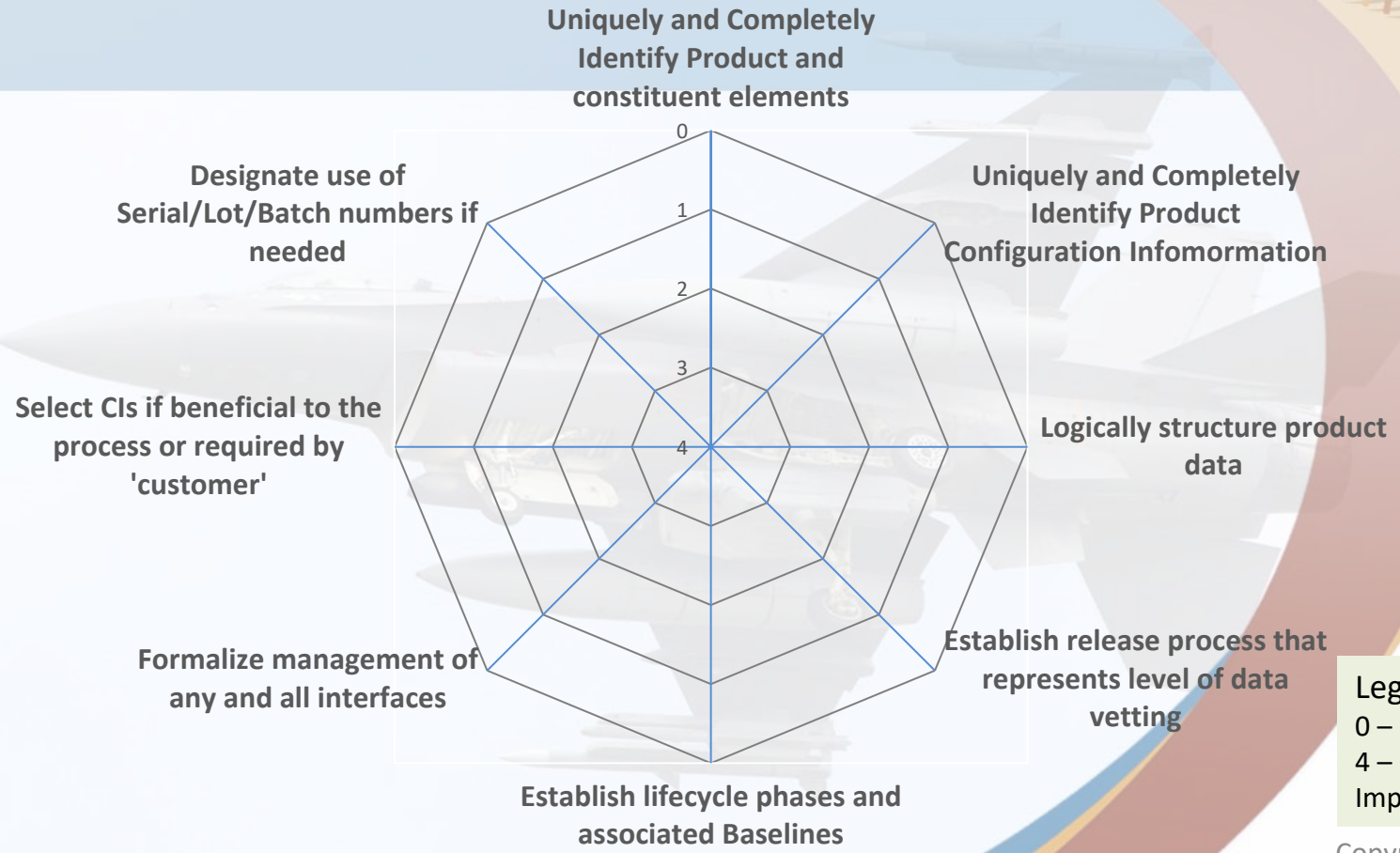
Aiming for Bullseyes – Planning and Management

Balanced CM applied throughout entire lifecycle



Legend:
0 – does not exist
4 – Continuous Improvement ongoing

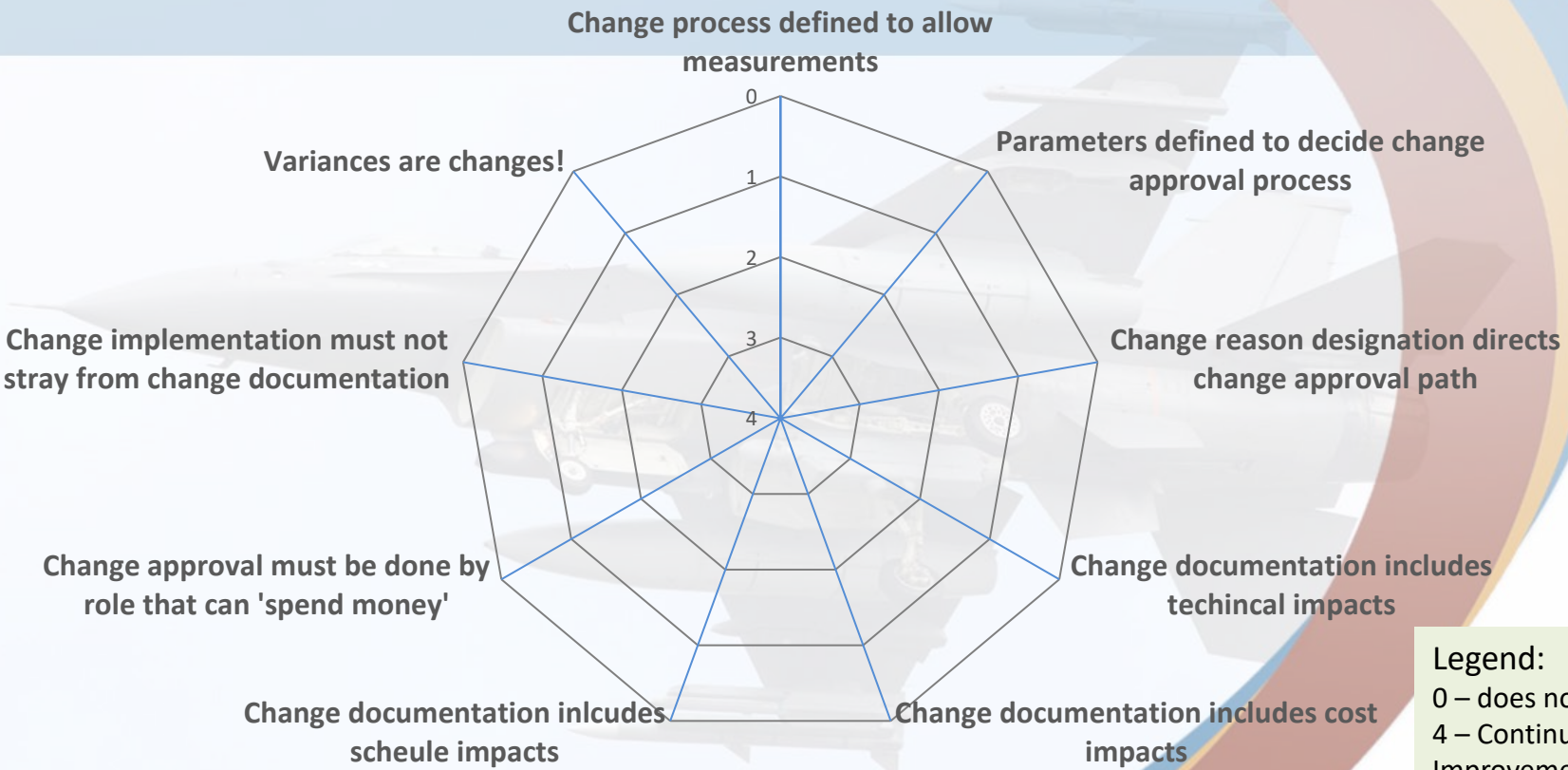
Aiming for Bullseyes - Configuration Identification



Uniquely and Completely Identify Product Configuration Information

Legend:
 0 – does not exist
 4 – Continuous Improvement ongoing

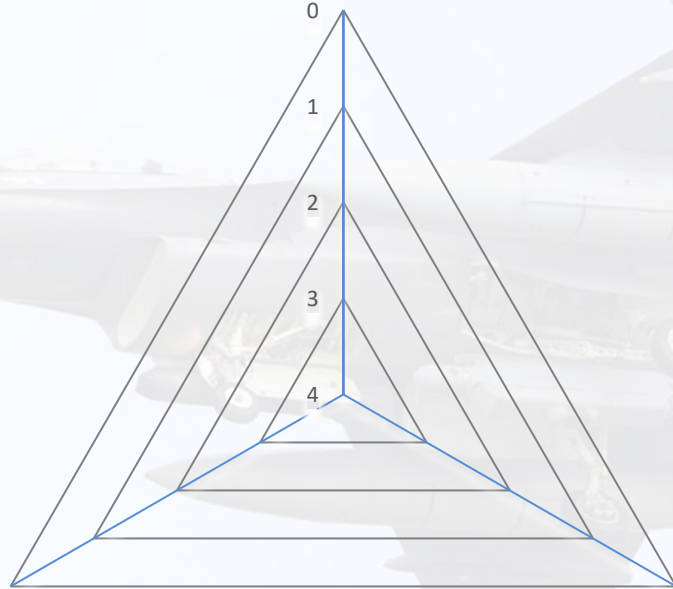
Aiming for Bullseyes – Configuration Change Management



Legend:
0 – does not exist
4 – Continuous Improvement ongoing

Aiming for Bullseyes – Status Accounting

CM information must be kept accurate and timely



Use metrics to improve!

Be efficient in capture of CM data

Legend:
0 – does not exist
4 – Continuous Improvement ongoing

Aiming for Bullseyes – Verification & Audit

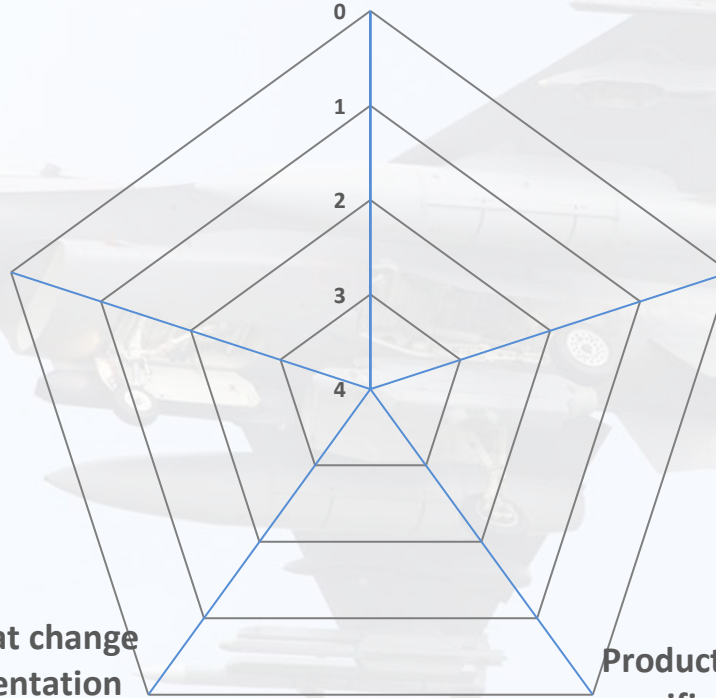
CM processes must be
verified for efficacy

Use Audits in process of
establishing product
release

CM processes must be
validated to produce
desired product

Check that change
implementation
produced desired
product

Product must be
verified per its
requirements



Legend:
0 – does not exist
4 – Continuous
Improvement ongoing

So how do we get started?

1. Define the Lifecycle
2. Determine Context and Environment
3. Identify all applicable regulations
4. Then use Planning principles to begin laying out the roadmap
5. Use remaining principles for each of the pillars to flesh out the processes

“With a little help from my friends”

-John Lennon and Paul McCartney, 1967

- Keep in mind that CM does not have to own all of these processes – some may be taken care of by Quality, IT, DM, etc.
- Each of these elements of CM are like onions... they have layers. There is always improvement to be made.

Conclusions

- SAE-EIA-649C Planning principles identify high-level Best Practices for CM
- Any missing links in CM functions break the continuity needed for establishing Truth, Trust, and Traceability. Making digital thread, MBSE impossible AND puts the product at risk. Which is why....
- There is no 'Minimally Acceptable' level for CM. The principles in SAE-EIA-649C give us all of the pieces that fit together like LEGOs to form a resilient, comprehensive strategy for the best possible resulting 'product'
- 'Minimally Acceptable' would imply a static state but 'Good CM' needs the opposite – an ever-evolving improving set of processes.
- So begin with defining the lifecycle and then use the principles as a guide
- CM is an Octopus that needs all of its tentacles!

Thank You!

For more on this and other CM topics,
watch for our CMSights Blog:

<https://cmstat.com/blog/>

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