SPAWAR FLEET READINESS DIRECTORATE (SPAWAR)

Acquisition Research Panel #9:
Enabling Cybersecurity

26 APR 2017

Naval Postgraduate School

Acquisition Research Symposium

Rear Admiral John W. Ailes

Deputy Commander

Space and Naval Warfare Systems Command (SPAWAR)

Fleet Readiness Directorate

Agenda

Topic	Presenter	Time
Introduction of Presenters	RDML Ailes	1530 – 1535
Chair's Opening Remarks	RDML Ailes	1535 – 1545
Cybersecure Modular Open Architecture Software Systems for Stimulating Innovation	Walt Scacchi	1545 – 1600
Security Measurement – Establishing a Confidence that System and Software Security is Sufficient	Carol Woody	1600 – 1615
Decision Support for Cybersecurity Risk Assessment	Hanan Hibshi	1615 – 1630
Q & A		1630 – 1700

Presenters

CHAIR

RDML John W. Ailes, USN
Deputy Commander, Space and Naval Warfare Systems Command (SPAWAR)
Fleet Readiness Directorate

PRESENTERS

- **Dr. Walt Scacchi**
  - University of California, Irvine
    - *Cybersecure Modular Open Architecture Software Systems for Stimulating Innovation*
- **Dr. Carol Woody**
  - Software Engineering Institute
    - *Security Measurement – Establishing a Confidence that System and Software Security is Sufficient*
- **Hanan Hibshi (Ph.D. student)**
  - Carnegie Mellon University
    - *Decision Support for Cybersecurity Risk Assessment*

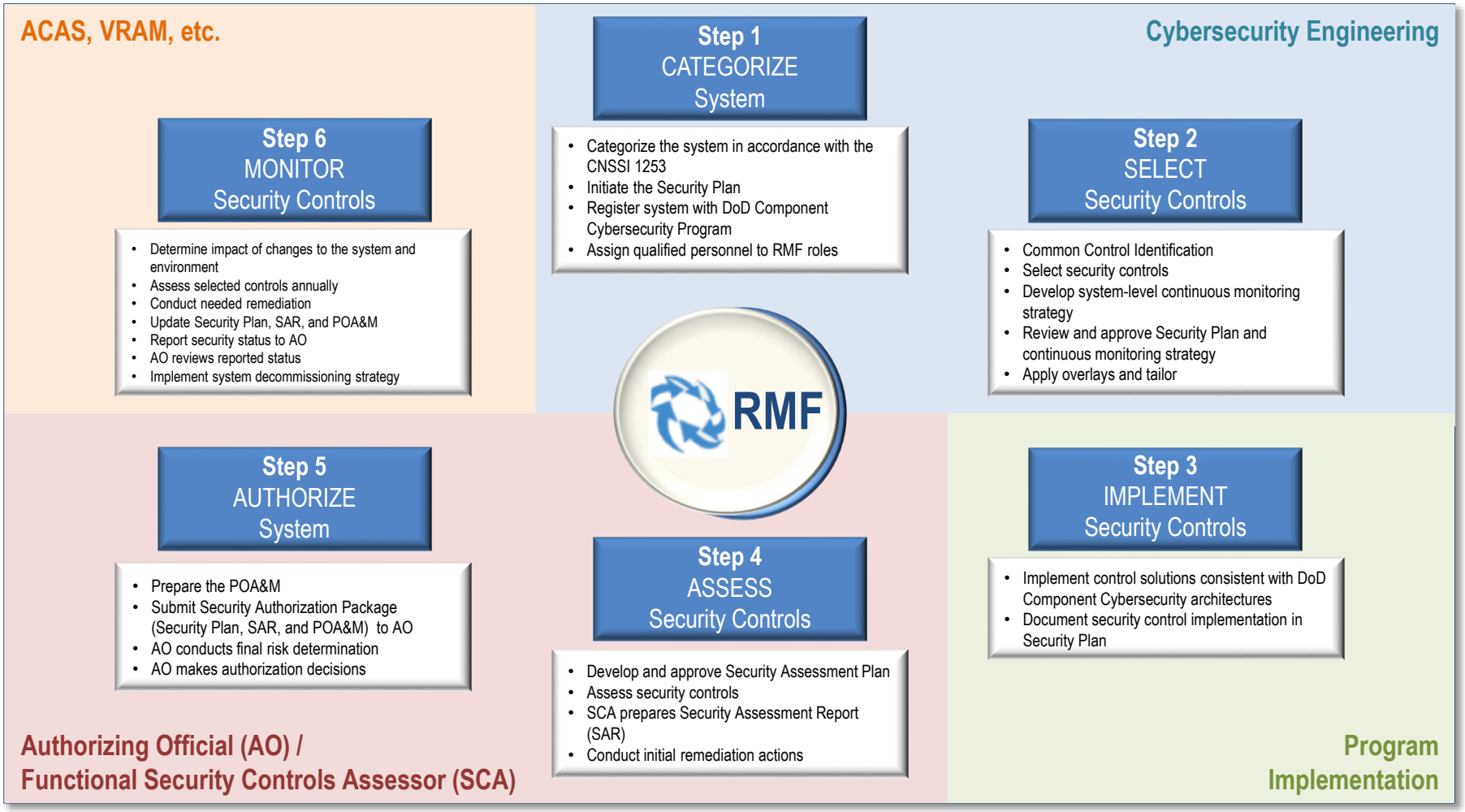
Fleet Approach to Cybersecurity

Progress Indicators

- Scan and patch focus
- Delivering cyber baselines
- Created vulnerability dashboard
- Cyber Warfare established as new mission area in revised Surface Force Readiness Manual
- Created personal qualifications standards
- Cyber training courses established
- Placing engineers onto ships

Risk Management Framework

Process Overview



Risk Management Framework Intended to Provide Greater Insight into Cyber Risk

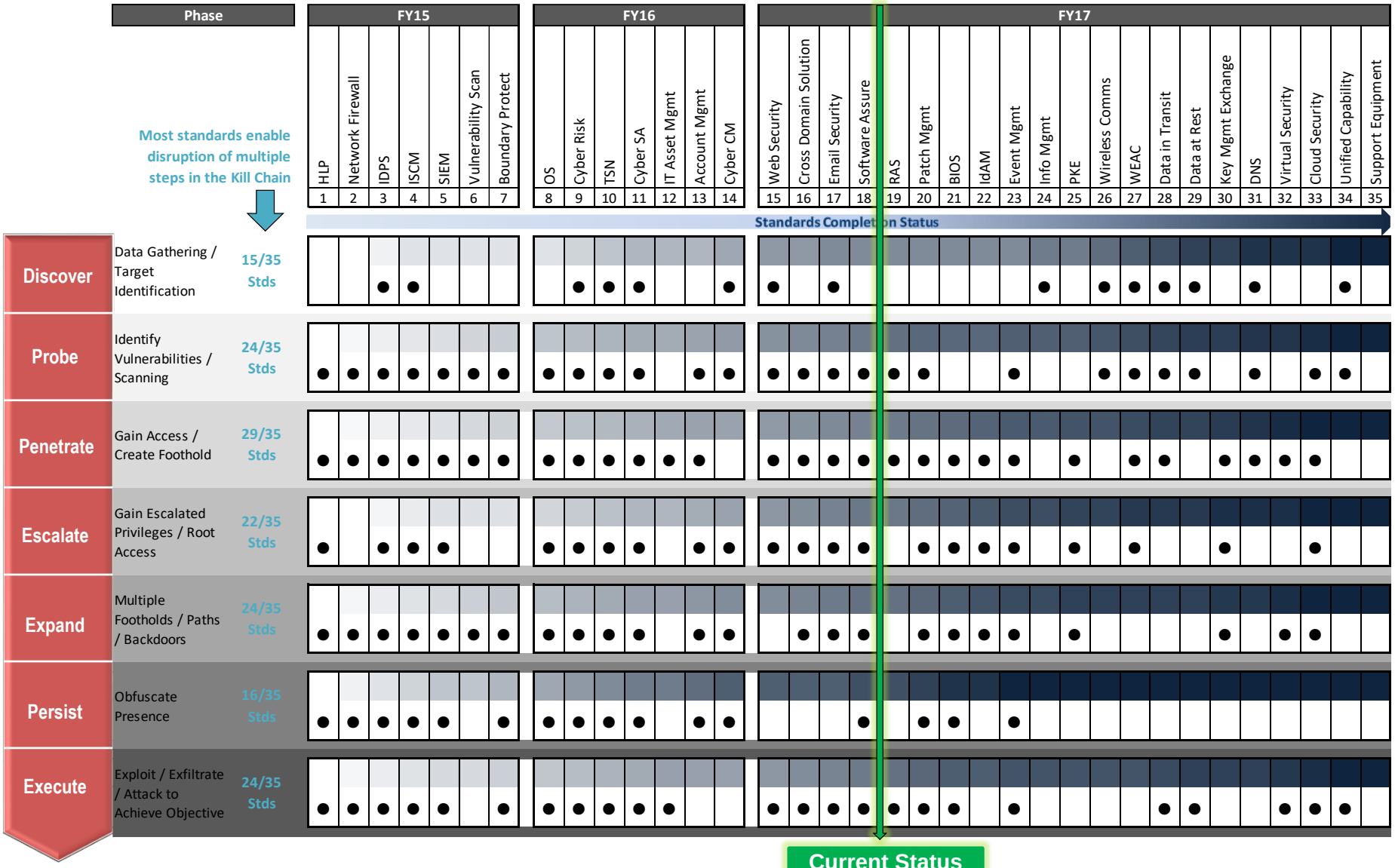
CYBERSAFE Certification

CS Enclave Design Certification(s)	+	- DFIA compliance - "Platform" Cyber Test Plan - "Platform" Boundary Security Policy	=	**CS Platform Certification** Integrated into proven platform Certs (NWSCP, Airworthiness) with additional CS assurance
CS System Design Certification(s)	+	- DFIA compliance - "Enclave" Cyber Test Plan - "Enclave" Boundary Security Policy	=	**CS Enclave Design Certification** In alignment with DFIA and SoS architectural view
CYBERSAFE Risk Assessment with penetration testing	+	**RMF**	=	**CS System Design Certification** RMF with additional CS assurance

Leverage Existing, Proven Processes to the Maximum Extent Possible

IA Standards Designed to Disrupt Cyber Kill Chain

Roadmap to IA TA Standards Development



Cybersecurity Dashboard

Cybersecurity Readiness Report

PERSPECTIVE: Site Group | SITE GROUP: NAME | VIEW: Summary

Cybersecurity Readiness Report

1

Site	Scan Periodicity	Assets Scanned	Scan Integrity	Unassigned Assets	Current AV Definitions	Vulns/Asset (Site Owned)	Vulns/Asset (POR Owned)	Vulns/Asset (Inv Reqd)	Vulns/Asset (All)
USS SHIP	10 / 10	123 / 124 (99.2%)	99.2%	0	15 / 116 (12.9%)	4.52	19.93	4.12	28.58
USS SHIP	4 / 12	105 / 106 (99.1%)	97.2%	99	97 / 99 (98%)	1.48	117.93	1.96	121.37
USS SHIP	6 / 10	106 / 198 (53.5%)	50.0%	0	95 / 174 (54.6%)	4.96	18.62	0.99	24.59
USS SHIP	10 / 10	1024 / 1050 (97.5%)	94.7%	31	562 / 624 (90.1%)	2.69	12.59	0.85	16.15
USS SHIP	9 / 10	132 / 133 (99.2%)	96.2%	0	6 / 124 (4.8%)	0.33	11.16	0.65	12.14
USS SHIP	7 / 9	124 / 139 (89.2%)	87.8%	0	93 / 109 (85.3%)	2.21	17.28	0.75	21.26
USS SHIP	7 / 10	89 / 98 (90.8%)	88.8%	0	76 / 83 (91.6%)	9.93	22.42	7.19	39.54
USS SHIP	10 / 12	140 / 140 (100%)	95.0%	6	113 / 118 (95.8%)	6.07	23.39	2.05	31.51
USS SHIP	9 / 9	134 / 134 (100%)	99.3%	0	113 / 113 (100%)	1.76	11.75	0.57	14.11

Vulnerability per Asset:
Green: Less than 2.5
Yellow: Greater than or equal to 2.5, but less than 3.5
Red: Greater than 3.5

Ship's Force Responsibility

Program of Record Responsibility

Holistic Approach to Cyber Security

NWSCP
Air-Worthiness

Ship / Shore / Sub / Air

CYBERSAFE

Integration &
Interoperability

RMF
CYBERSAFE

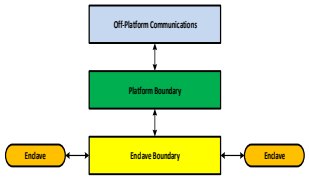
Enterprise
Architecture

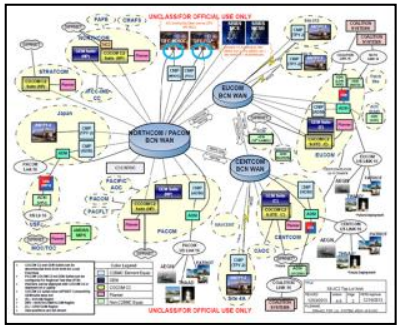
Systems
Engineering

End-to-End /
Mission Thread

Platforms

Enclaves





Systems

Components

Presenters

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