



Naval Aviation Enterprise Chief Technology Officer (CTO) Organization

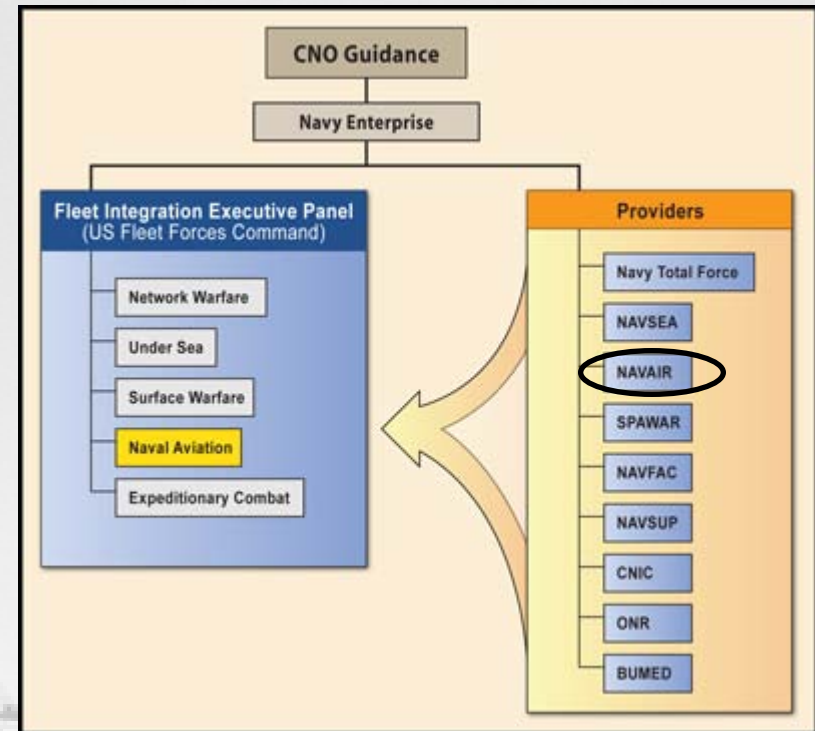
Ms. Rebecca Ahne, NAE Deputy CTO





Naval Aviation Enterprise

The Naval Aviation Enterprise (NAE) is a warfighting partnership in which interdependent Naval Aviation issues affecting multiple stakeholders are resolved on an enterprise-wide basis. Between the Navy and Marine Corps, our Enterprise includes over 183,000 people, 3,700 aircraft, 11 aircraft carriers and executes a budget in excess of \$40 billion. Focusing these resources to provide our country with the necessary warfighting readiness expected to meet national policy and priorities is a shared responsibility of each member of the Enterprise.



NAE CTO also serves as the CTO for

- Naval Air Systems Command (NAVAIR) and PEOs
- Naval Air Warfare Centers (NAWC)



Naval Aviation Platforms/Programs

ASN (RD&A)
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT & ACQUISITION)

CNO
CHIEF OF NAVAL OPERATIONS

PEO(JSF)
JOINT STRIKE FIGHTER

PEO(T)
TACTICAL AIRCRAFT PROGRAMS

PEO(A)
AIR ASW, ASSAULT, & SPECIAL MISSION PROGRAMS

PEO(U&W)
STRIKE WEAPONS & UNMANNED AVIATION

COMMANDER, NAVAL AIR SYSTEMS COMMAND
AIR-1.0



JOINT STRIKE FIGHTER



PMA213



PMA265

- T-44
- T-2
- TH-57
- T-39
- TC-12

FLEET SUPPORT PROGRAM MANAGER
COORDINATION ON REQUIREMENTS AND RESOURCES



PMA290



P



PV



PMA259

PMA262

PMA263



PMA

PMA

PMA



PMA209



- KC-13
- AIR C
- ADVAI
- DISPL
- COMM
- SURVI
- MANA
- COMM
- TACTI

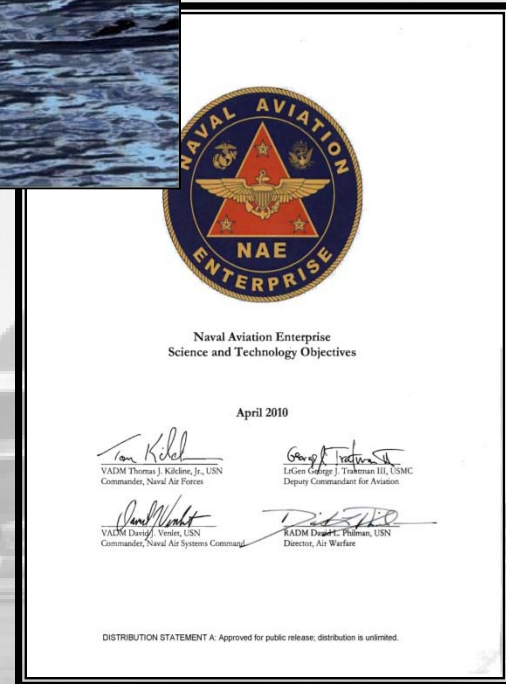
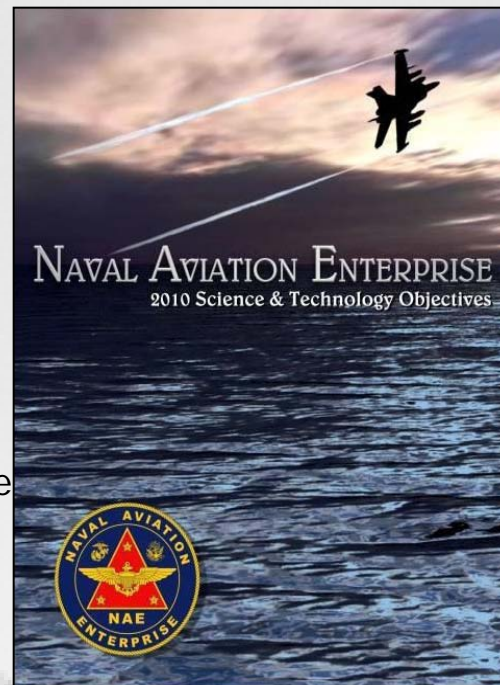




NAE Science & Technology Objectives



- Provides guidance for the NAE to facilitate the alignment of available science and technology development investments with the technology requirements of Naval aviation.
- Represents the goals of the NAE S&T program
 - Used as the baseline for identifying, prioritizing, aligning and synchronizing S&T investment efforts throughout the Enterprise.
- Represents a broad strategy that provides focused direction for the future while retaining sufficient flexibility to allow the S&T community to meet emerging challenges.
- Identifies 11 Capability Gaps supported by 34 NAE S&T Objectives (STOs)
 - USMC Aviation STOs included
- Document signed by
 - Commander, Naval Air Forces
 - Deputy Commandant for Aviation
 - Commander, Naval Air Systems Command
 - Director, Air Warfare
- Updated biennially; next edition available April 2012



Available online at: <http://www.public.navy.mil/airfor/nae/Documents/2010%20STO.pdf>



S&T Objective Road Mapping

◆ 4 Levels of Road mapping

- Acquisition* – Defines capability needs specific to each platform and maps/aligns with POM cycles
- Platform S&T – Identifies where S&T can contribute to the needs identified on the Acquisition roadmap, identifies and maps current workload/projects to those needs
- S&T Objectives – Defines the critical capability gaps for each S&T Objective, decomposes capabilities needs into technology investment areas, identifies & maps current workload/projects, and identifies where future work may be required to achieve required capability
- Laboratory Core Capabilities – Defines those technologies considered core to the NAWC laboratory research and engineering workforce and facilities, maps current workload/projects and identifies where future work is required

* Acquisition Road maps are being developed by Program Offices



Deploy and Employ Forces (DEF) STO 3



- **STO Number:** DEF STO 3
- **Title:** Improved Vertical Delivery – Systems enhancements
- **Statement of Need:** Vertical delivery systems enhancements that improve ability to operate in the intended environment are required to increase tactical effectiveness, safety and survivability. Includes aerial delivery and internal/external cargo handling systems.
- **Why Required:** Military success is often dependent on a commander's ability to effectively maneuver and mass forces, to support and reinforce deployed or embarked units, and to quickly react to changes in the tactical situation. Additionally, Naval forces rely heavily on efficient, effective vertical lift for resupply and sustainment.

METRICS	Baseline	0-5 Years	5-10 Years	15+ Years
INCREASE SITUATIONAL AWARENESS				
SA Enablers (Sensors)				
Data Fusion				
Displays				
Redistribution of Downwash				
EMBARK/DEBARK				
Reduce time to Embark (Full Payload)		10%	20%	30%
Reduce time to Debarck (Full Payload)		10%	20%	30%
SPEED (External Loads)				
Increase speed for Ext Loads				
Helicopter		10%	25%	50%
Tiltrotor		10%	25%	50%
Unmanned Vertical Replenishment			Demonstrated	Deployed
DEVELOP SAFETY SYSTEMS				
Airframe/Crew Airbags				
Improve Crashworthiness Seats/Structure				
IMPROVE SURVIVABILITY				
Susceptibility				
Vulnerability				
Active Protection Systems				

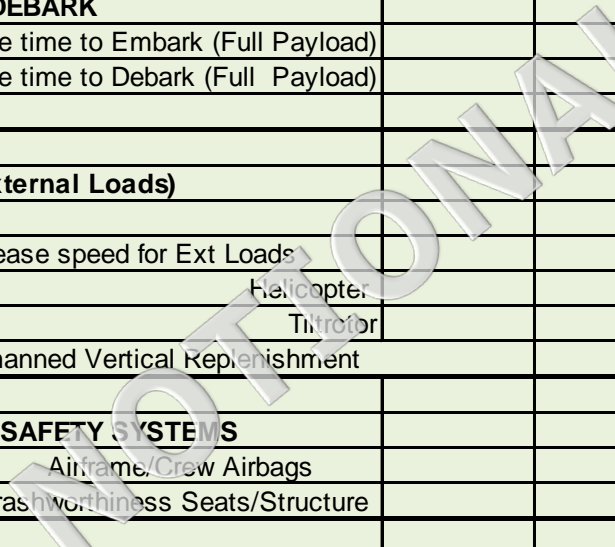
Type A - Fully Coupled Flight Control Augmentation
Type B - Uncoupled Flight Control Augmentation

Class 1
Aircraft state sensors (e.g., GPS/INS) and cockpit displays provide additional piloting cues and improved situational awareness.

Class 2
Display of digital terrain and aircraft self-reports for improved situational awareness. (Primarily for en-route phase)

Class 3
Near real-time situational awareness of ground-based obstacles and terrain. "See and Remember" sensors; synthetic vision.

Class 4
Real-time situational awareness of stationary and mobile obstacles including nearby aircraft and terrain. "See Through" sensors; enhanced vision.





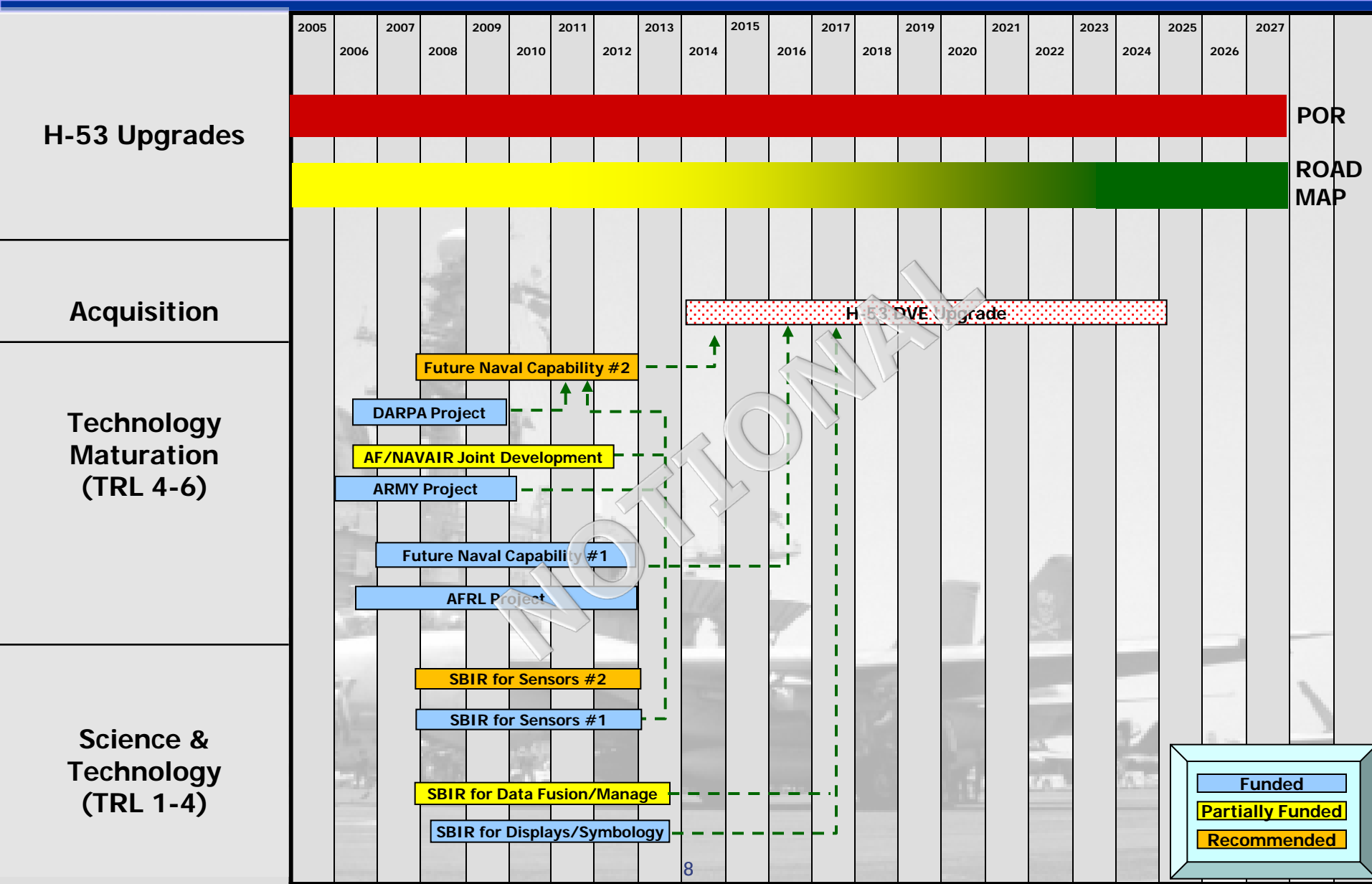
DEF STO 3 - Taxonomy



Improve Active Protection Systems	
	Task Name
1	DEF STO 3 - SYSTEMS ENHANCEMENTS
2	
3	<input type="checkbox"/> IMPROVE SITUATIONAL AWARENESS (Brownout/Whiteout/Fog/Rain)
4	<input type="checkbox"/> Redistribution of Rotorwash/Flow Field Modification
11	<input type="checkbox"/> Develop "See Thru" Technologies
37	<input type="checkbox"/> Develop Tactile Cueing Systems
39	<input type="checkbox"/> Develop Terrain/Obstacle/Traffic Warning Systems
42	<input type="checkbox"/> Develop Improved Flight Controls
49	
50	<input type="checkbox"/> IMPROVE EMBARK/DEBARK TIMES
51	Reduce Embark Time
52	Reduce Debark Time
53	
54	<input type="checkbox"/> IMPROVE EXTERNAL LOAD CARRYING CAPABILITY
55	Increase Speed for external loads
56	<input type="checkbox"/> Develop Autonomous or Unmanned Vertical Replenishment Capability
58	
59	<input type="checkbox"/> IMPROVE SAFETY
60	<input type="checkbox"/> Develop Crashworthy Systems
69	<input type="checkbox"/> Develop Floatation & Stability Systems
71	
72	<input type="checkbox"/> IMPROVE SURVIVABILITY
73	<input type="checkbox"/> Suceptability
77	<input type="checkbox"/> Reduce Vulnerability
84	<input type="checkbox"/> Improve Active Protection Systems



DEF STO 3: See "Thru" Solution for Degraded Visual Environment





Summary



- ◆ NAE Chief Technology Officer (CTO) is responsible for providing oversight and strategic management of the NAE S&T investment portfolio
- ◆ NAE CTO monitors health of S&T portfolio and progress toward delivery of capability through the use of S&T Objective Roadmaps
- ◆ Goal is to integrate/link S&T Objective Roadmaps into Acquisition Roadmaps
 - Allows insight into our programs and provides a strategic framework for all stakeholders

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Centennial of Naval Aviation 1911-2011

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and celebration of the
United States Sea Services!**