Carrier Technology Management (CARTECH) Overview

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Presentation Objective

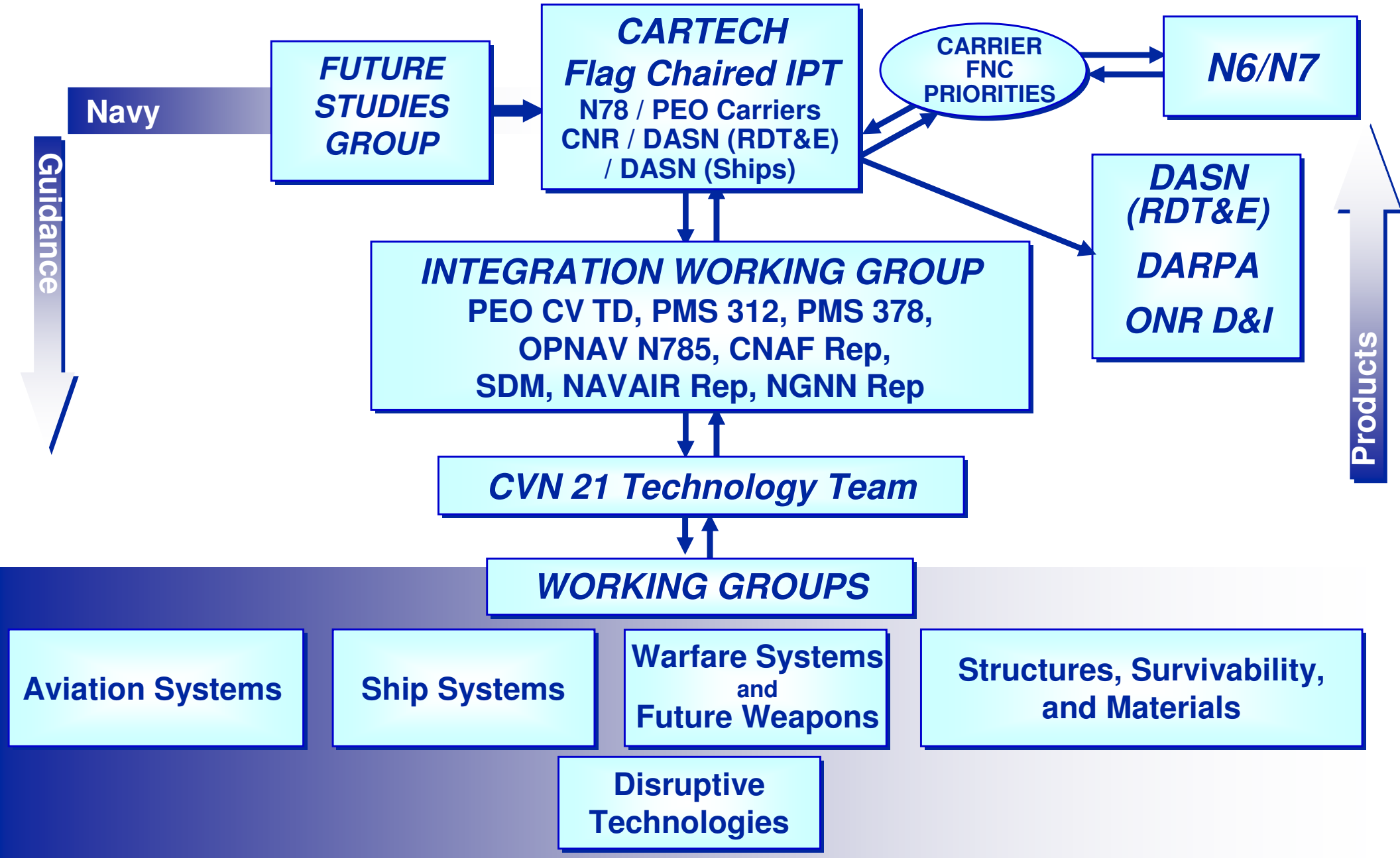
- Provide an introduction to the Carrier Technology Management (CARTECH) Process
  - Background / Vision
  - Organization
  - Process
  - Products
  - Carrier Capability Needs
  - Summary

Background

- CARTECH is a management process for carrier technology insertion
  - Provides a structured approach for the evaluation of new technology
  - Is intended to identify and influence S&T funding for future capability

Accelerate Technology to the Warfighter to fill critical capability needs

CARTECH Organization



CARTECH Process Overview

Capability Requirements

(CVN 21 ORD KPP,
MCP/NCP Gaps, and OAG Top Ten)

Technology Assessments

- Relevance to CVN 21 Capability Requirements
- Technical Maturity, Cost, and Schedule
- Ship Integration Impact
- Business Plan Feasibility

Integrated S&T Recommendations

- Future Naval Capability (FNC) S&T programs
- Non-FNC S&T programs
  - ONR Discovery and Invention (D&I) and DARPA
  - DASN (RDT&E) Rapid Technology Transition
- PEO Carriers S&T needs
- Other S&T initiatives

ONR
DARPA
Industry
Warfare Centers

Technology Sources

CARTECH Products

- Technology Assessments
- Technology Transition Priority Lists
- Technology Roadmaps
- Technology Transition and Cooperative Development Agreements

Focus is on identifying and protecting S&T for Hull 2 and future hulls, but with an eye toward backfit opportunities for in-service carriers

CVN 21 Capability Needs

CVN 21 ORD Key Performance Parameters

Sortie Rate	**Interoperability**
Electrical Capacity	**Manpower Reduction**

Service Life Allowance (Weight and K_G)

Design Enhancements

Lightweight, Damage-Resistant Materials
Consolidated Energy Storage
High Power Switching
Advanced Cooling
Advanced Noise Reduction/Control
Hydraulic/ Electric Actuators

Warfare Systems Improvements

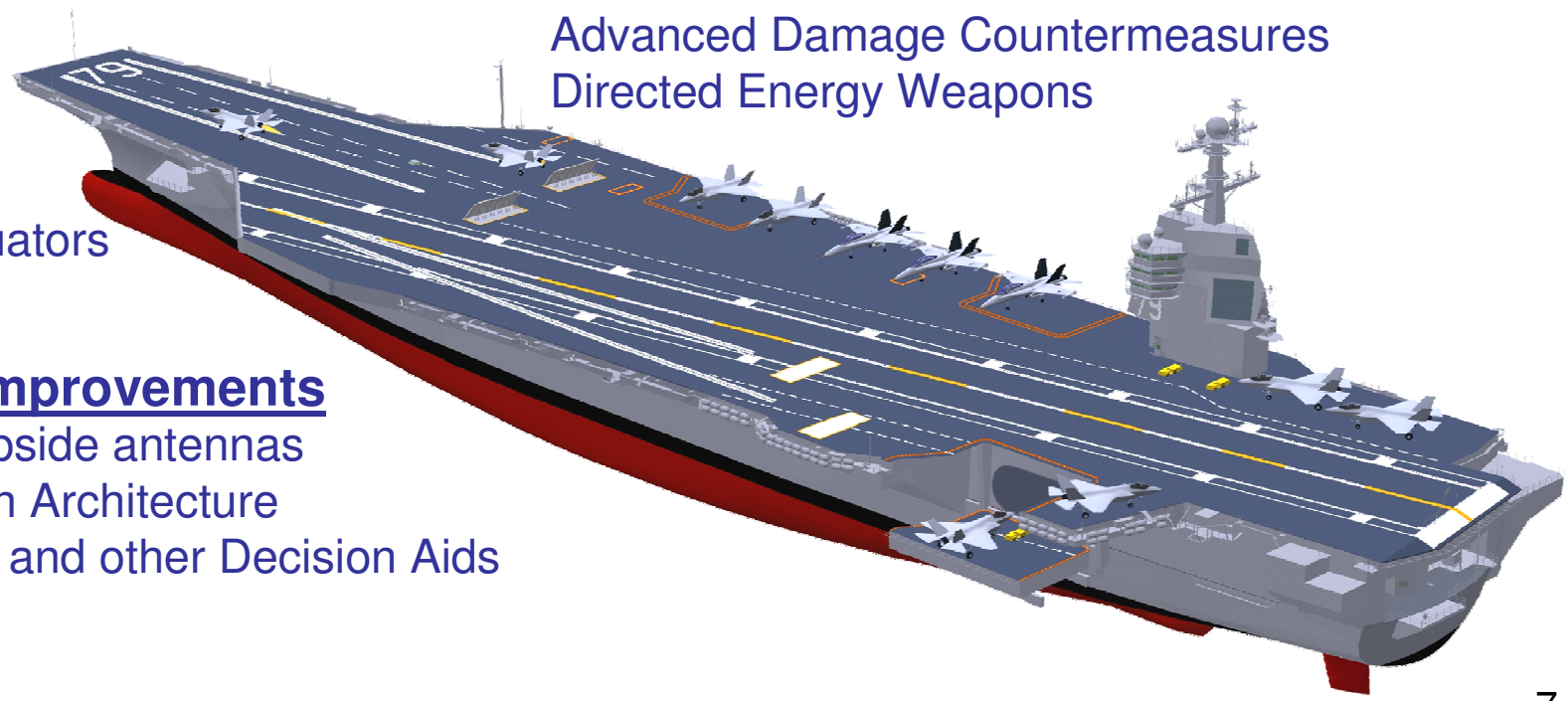
Reduced number of topside antennas
Network Systems Open Architecture
Carrier Strike Planning and other Decision Aids

Enhanced Weapons / Material Movement

Magazine and Storeroom Automation
Advanced Weapons and Materials Movement
Automatic Aircraft Tracking

Advanced Ship Self Defense / Survivability

Advanced Point Defense Weapons
Advanced Force Protection Measures
Advanced Damage Countermeasures
Directed Energy Weapons



In-Service Carrier Capability Needs

Lifecycle Management of Ships Systems

- Equipment reliability in high temperature environments
- Power distribution & control systems reliability
- Seawater systems Resistance to degradation by biological organisms
- Improved surface coating and preservation materials

Warfare Systems

- Hardware & software designs that use open architecture
- Smart networks and software applications that enhance decision-making and provides real-time status information to reduce manning and training costs
- Consolidate tactical and communications antennas and topside support structures to reduce maintenance and manning requirements

Aircraft Support

- Multi-level security of mission systems and logistics information
- Off-ship bandwidth management (operational & logistical)
- Wireless connectivity within skin of ship for asset identification (UID/RFID) interface
- Reconfigurable bulkheads and foundations for mission systems, support equipment and supply storage
- Lightweight aircraft tiedowns
- Flight Deck and 03-level noise suppression/reduction
- Low maintenance night vision device (NVD) compatible lighting systems
- Lightweight material for aircraft fueling hoses
- More reliable and less manpower-intensive weapons transporters
- Improved weapons packaging solutions with less dunnage

CARTECH Summary

- Focusing technology identification efforts on needs that have reasonable expectation of transition funding
  - Consistent with CVN 21, Hull 2, and follow ship design efforts

- The CARTECH process has been successful in securing additional S&T investment against critical carrier needs

- The CARTECH process is maturing and changing as we gain experience

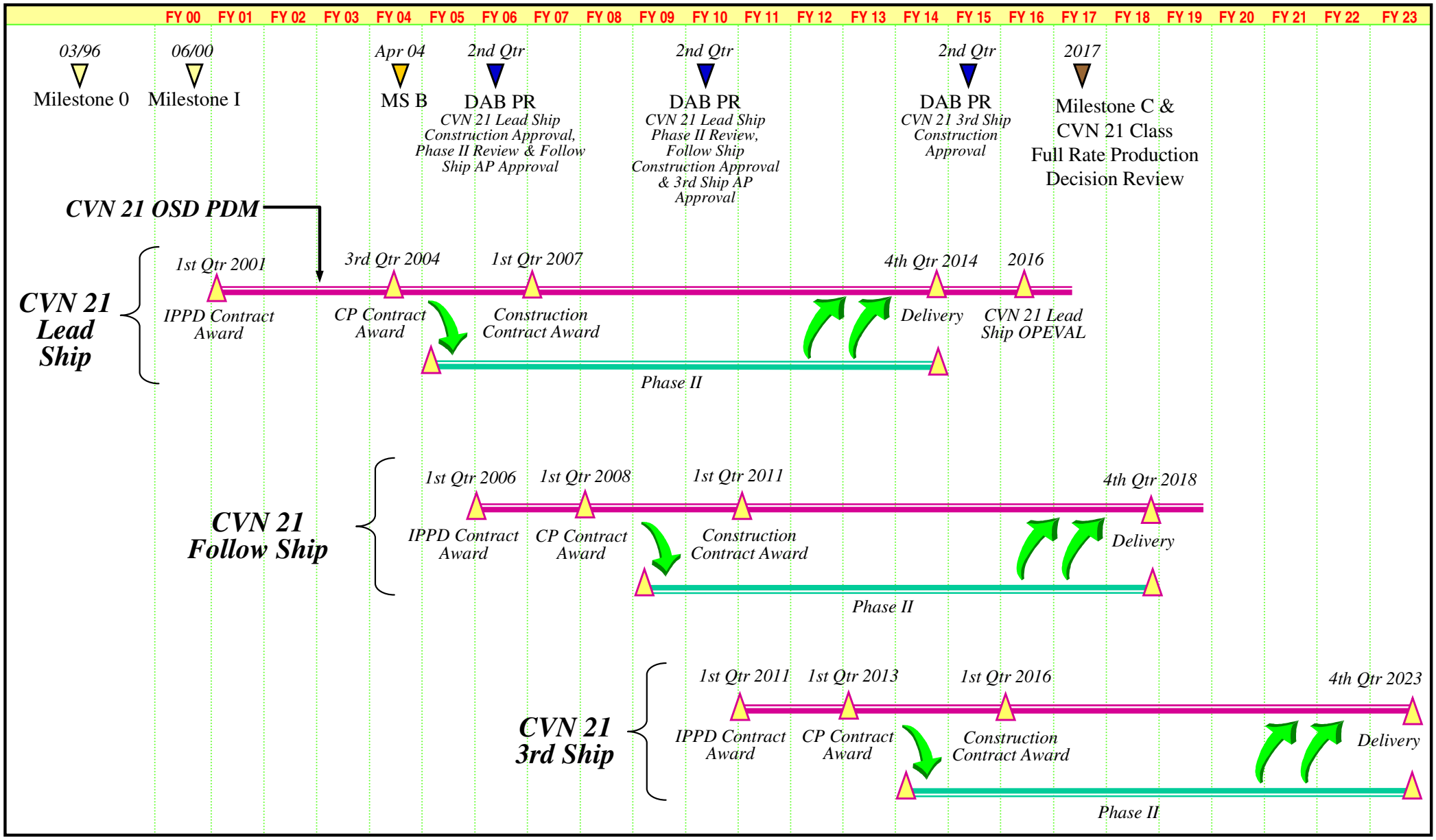
CARTECH Points of Contact

CARTECH Management	Dr. Charles Milligan (PEO Carriers CTO) Mr. George Stimak Paul Everson	milligancd@navsea.navy.mil stimakgf@navsea.navy.mil peverson@spa.com	(202) 781-0433 (202) 781-2410 (703) 578-6342

CARTECH Working Group	Example Focus Areas	POC	Email	Phone
Aviation Systems	Sortie Rate, Flight Deck automation, Weapons Storage / Movement / assembly	Butch Thompson	bthompson@spa.com	(703) 824-4577
Ship Systems	Material Storage / Movement, Advanced Cooling	Dan Groghan	groghad@syntek.org	(703) 588-0063
Structures, Survivability, and Materials	Lightweight materials, coatings, damage resistance and control	Alan Dillman	adillman@spa.com	(703) 824-4504
Warfare Systems	Antennas, Networks, Integrated Warfare Systems	Gary Smith	gsmith@spa.com	(703) 578-5665
Disruptive Technologies	Nanotechnology	Gary Smith	gsmith@spa.com	(703) 578-5665

Backup Material

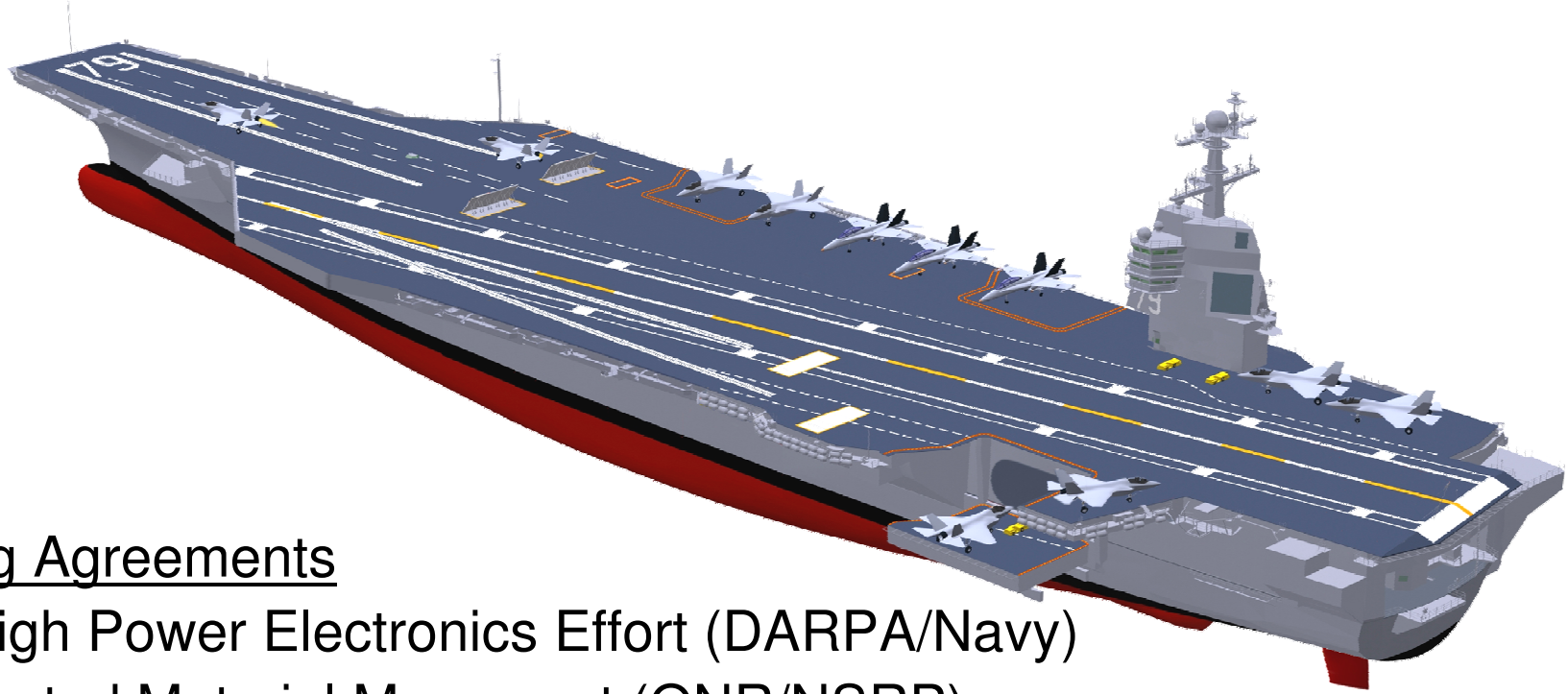
CVN 21 Schedule



Recent CARTECH Successes
Cooperative Agreements Negotiated

Completed Agreements

- Passive Jet Blast Deflector (JBD) (DARPA/Navy)
- Aviation Weapons Inventory Management System (DASN (RDT&E))
- Portable Fluid Analyzer (PFA) (DASN (RDT&E))

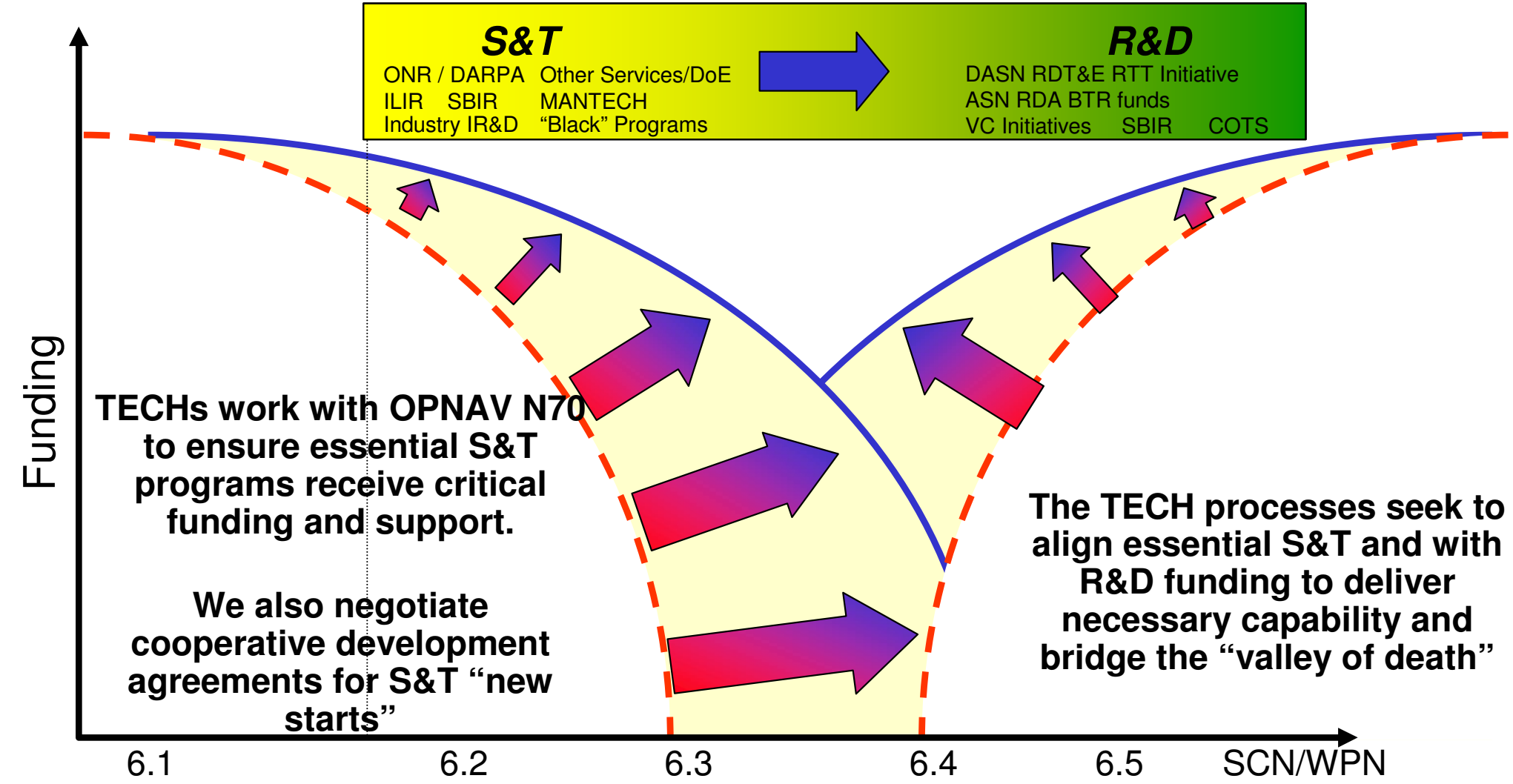


Pending Agreements

- SiC High Power Electronics Effort (DARPA/Navy)
- Automated Material Movement (ONR/NSRP)
- Advanced Damage Countermeasures (ONR)

The CARTECH process has resulted in cooperative agreements that are anticipated to result in an additional ~$28M in FY04 S&T funding for critical carrier needs (~$120M FY05-08)

X-TECH: Technology Transformation



The X-TECH objectives are to:

1. narrow or eliminate the "Valley of Death" between S&T efforts and program efforts

2. Focus S&T Community efforts toward validated carrier, submarine, surface ship, and aviation technology needs.