



## Commercial Technology Transition Office (CTTO) *Partners in Technology Transition*



Presented at:  
**Navy-Industry R&D  
Partnership Conference  
August 03, 2004**

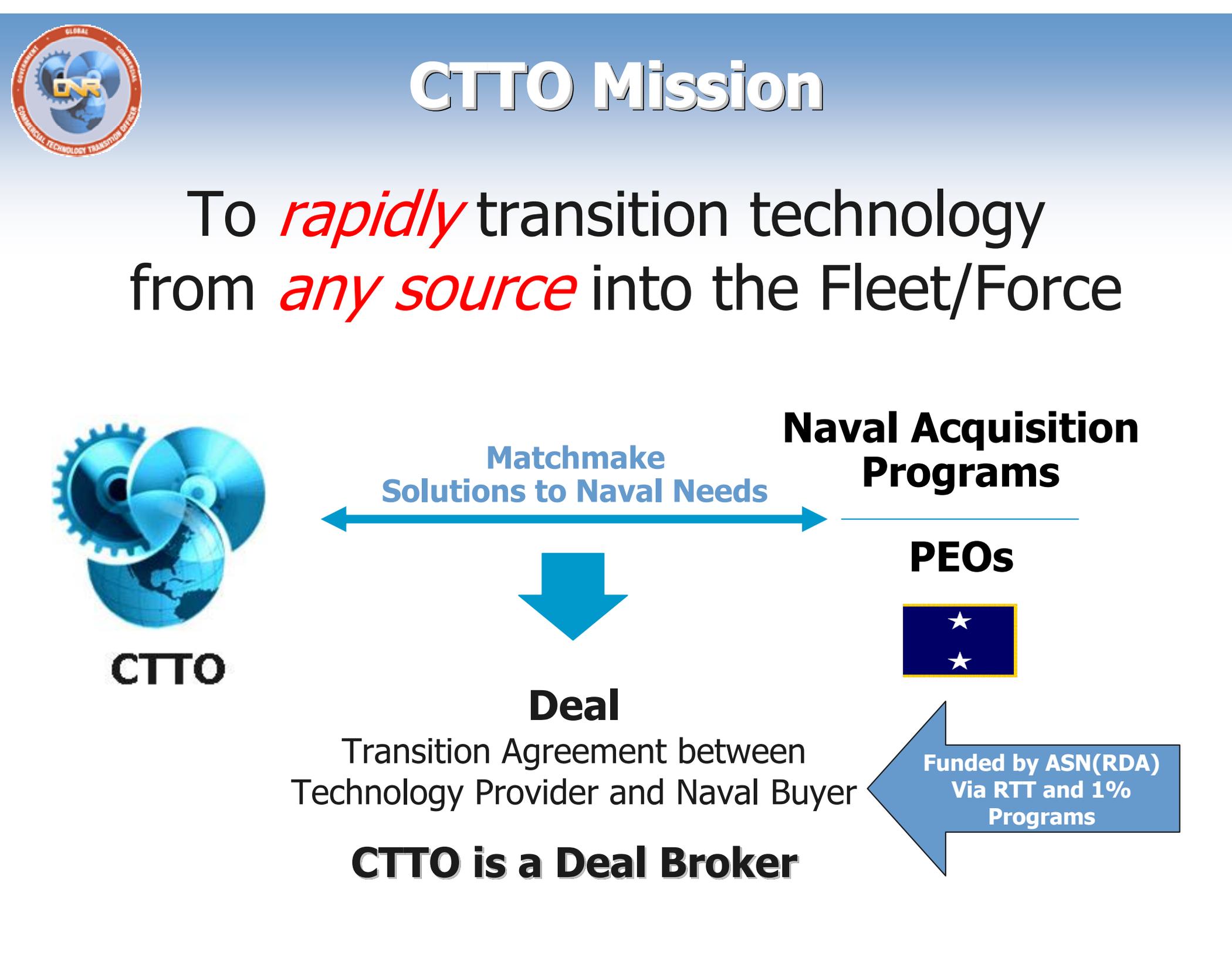
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# Invitation to Industry

## Ø Utilize CTTO to help :

- ID real Navy Requirements and customers for technology solutions offered by Industry
- Address funding gaps that impede technology transition
- Broker and assist in funding “deals” involving multiple stakeholders

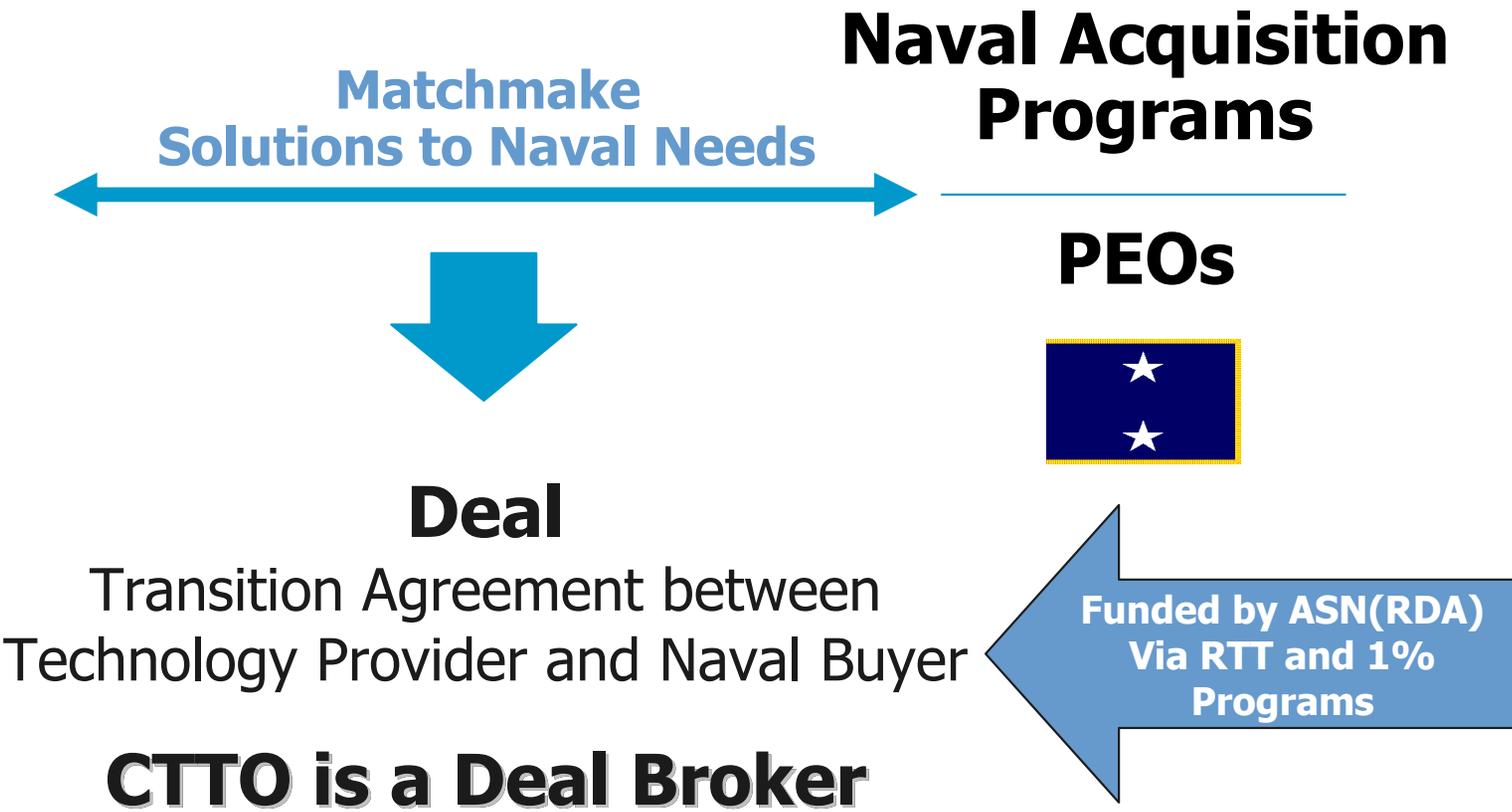


# CTTO Mission

To *rapidly* transition technology from *any source* into the Fleet/Force



**CTTO**



**CTTO is a Deal Broker**



# How We Do It:

The CTTO compelling mission is to rapidly transition the best technologies from any source into Department of the Navy programs by:

- Exploiting the commercial value of Naval Intellectual Property
- Applying commercial solutions in innovative ways
- Leveraging venture capital and talent for Department of the Navy applications

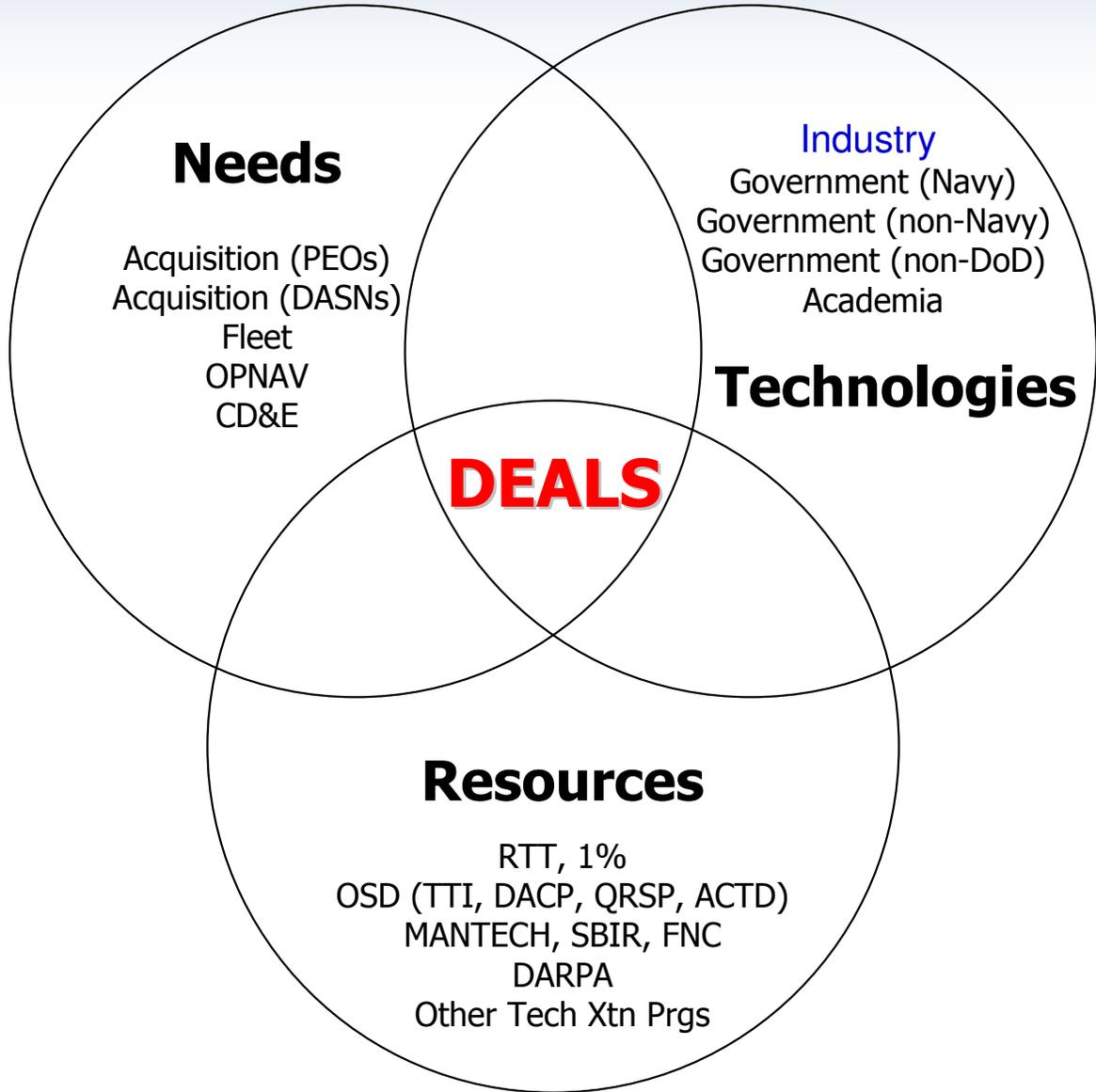


# "Spin-In"

- Concept of bringing commercial technologies into naval programs.
  - Presents a novel and energizing challenge.
  - Can only be accomplished by constant contact with Industry and the Venture Capital (VC) community
  - Encourage visits and Inquiries from Industry



# Deal Components





# CTTO Deal Characteristics

## ∅ **Transition Requirements**

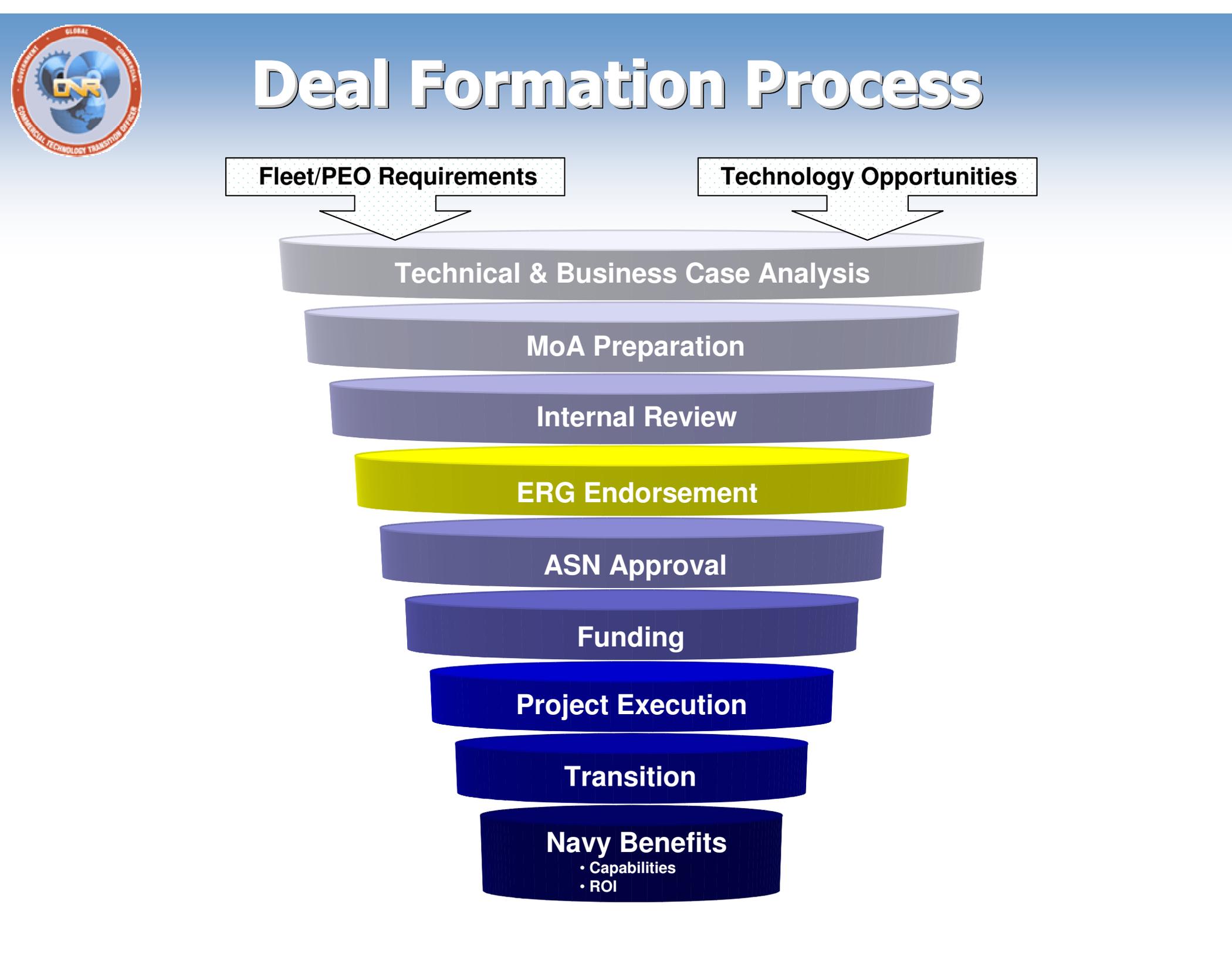
- Firm commitment to purchase or POM (or high priority POM issue)
- Two years or less into the Fleet/Force

## ∅ **Support Requirements**

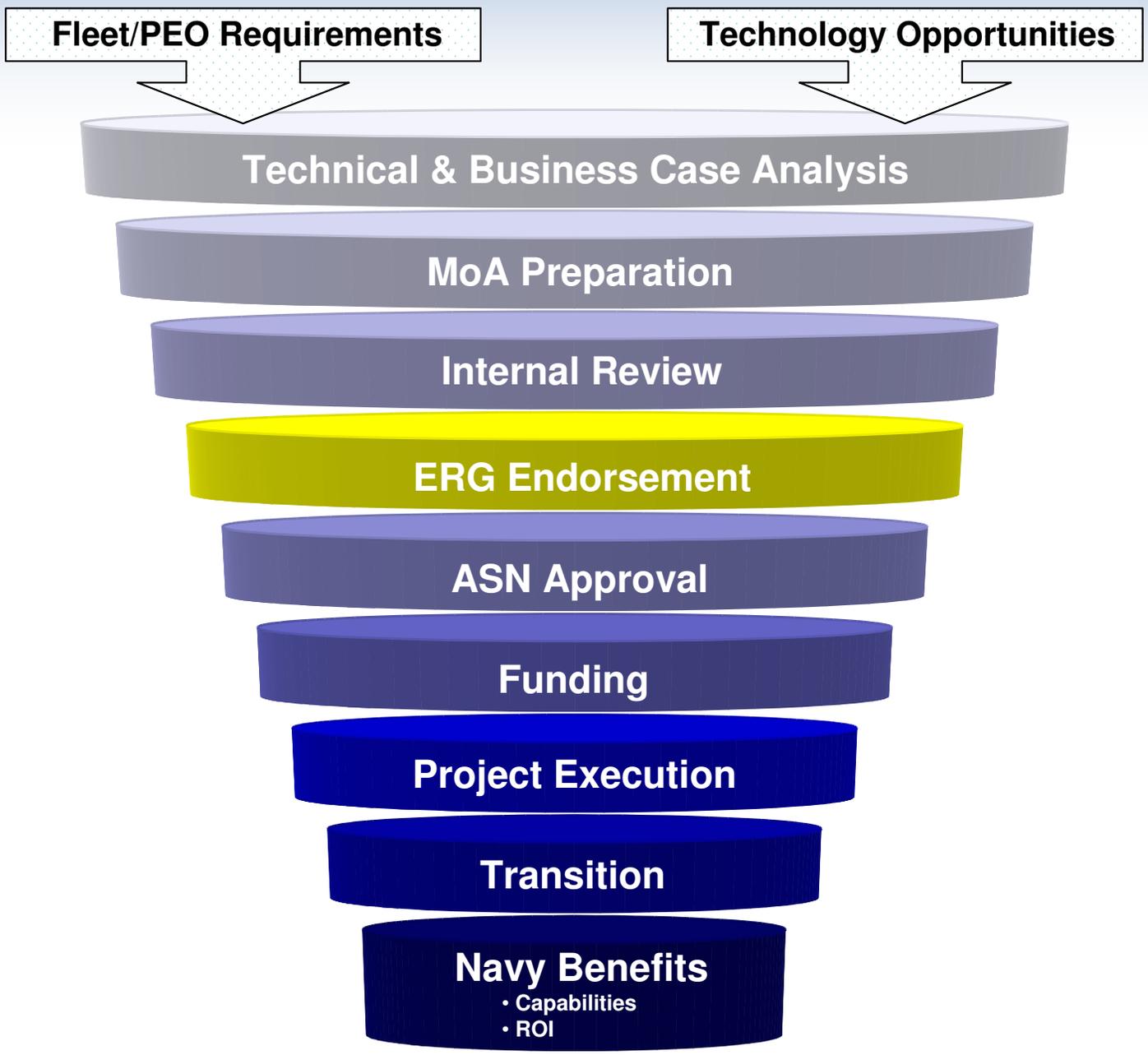
- Requirement and Resource Sponsorship (OPNAV)
- Acquisition Sponsorship (PEO/PM/DRPM)
- Fleet Sponsorship

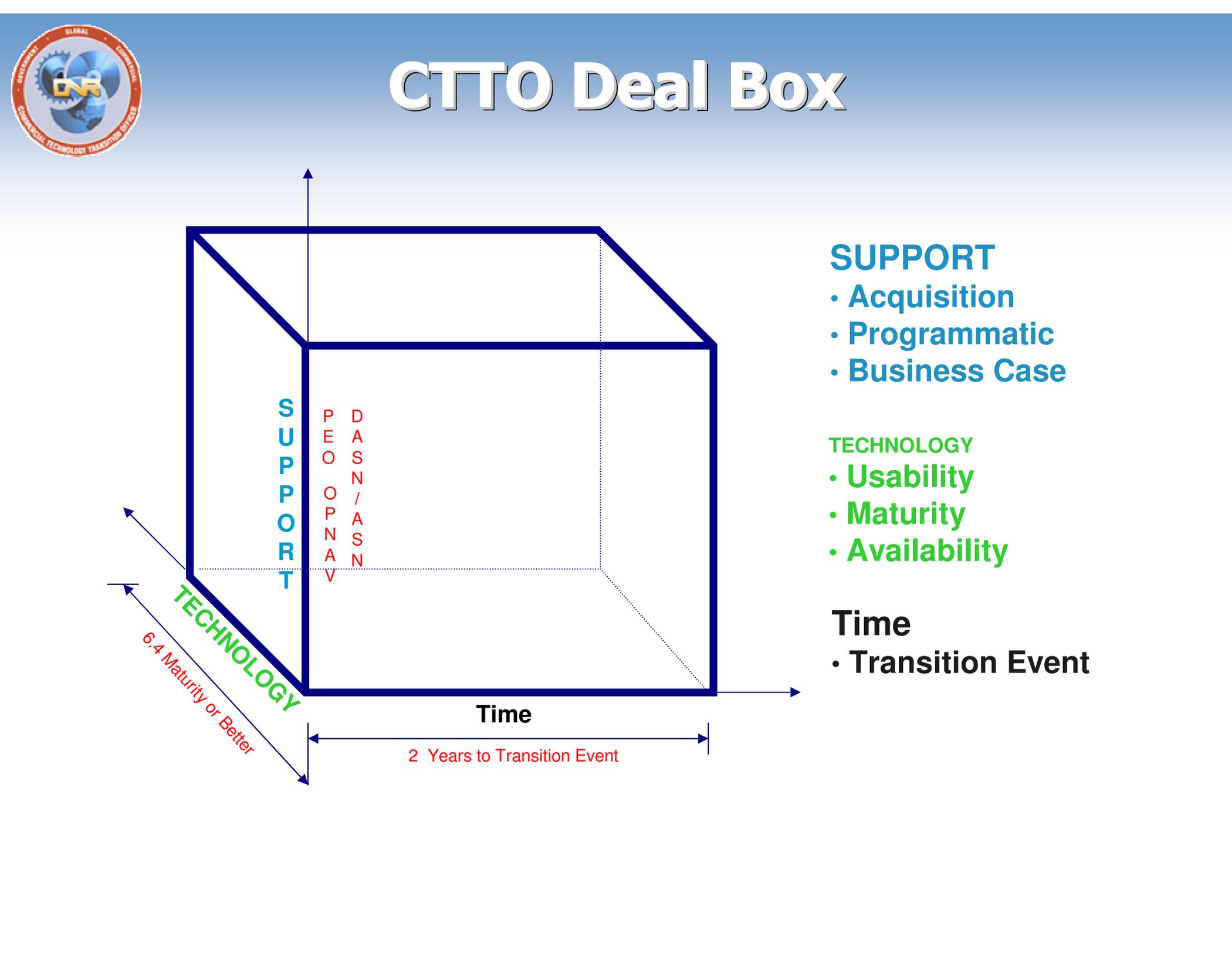
## ∅ **Deal Feasibility**

- Mature technology (TRL)
- Viable technology provider
- Supportable funding profile
- Return on Investment (capability, TOC, urgent need, etc.)

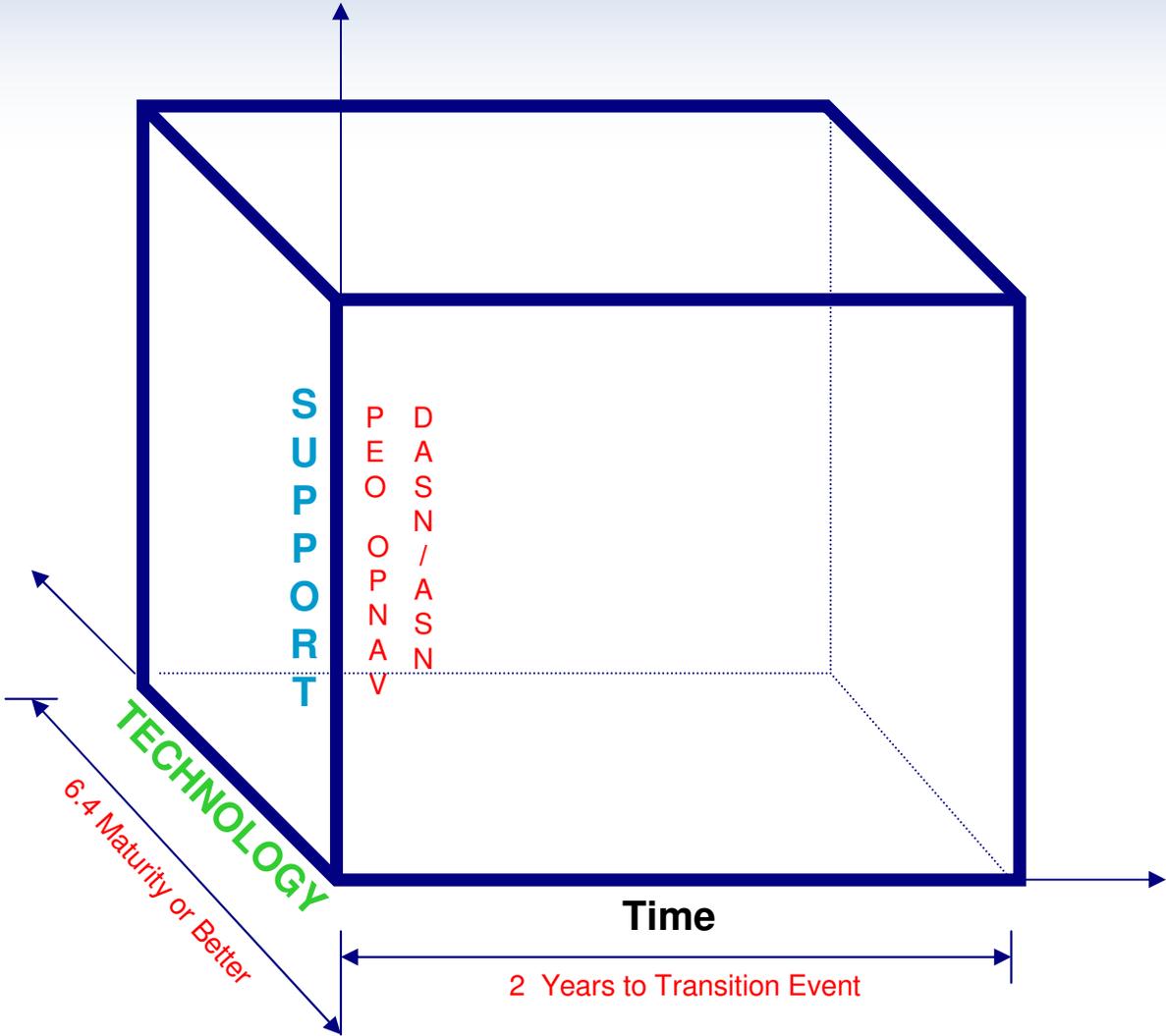


# Deal Formation Process





# CTTO Deal Box



## SUPPORT

- Acquisition
- Programmatic
- Business Case

## TECHNOLOGY

- Usability
- Maturity
- Availability

## Time

- Transition Event



# Current Focus Areas

## ∅ **Power**

- Generation, Distribution, Management

## ∅ **Sensing**

- Data Processing, Monitoring, Targeting

## ∅ **Autonomous Vehicles**

## ∅ **C4I (FORCEnet)**

- IA, Network Mgt/Security, Interoperability, Collaborative Tools

## ∅ **Logistics**

- Asset Visibility, Materials Handling, Maintenance & Repair, Obsolescence...



# FORCEnet Focus Area

## ∅ FORCEnet

- Common, Persistent Maritime Picture – improving shared situational awareness across the force
- Computer Network Defense and Information Assurance – assured info
- Ubiquitous Communications and Network Infrastructure – bandwidth management, IPv6, etc.
- Data Link Management & Architecture – improving data link throughput
- Joint Combat ID – IFF and Blue Force Tracking
- Persistent and Pervasive ISR



# Contact CTTO:

Office of Naval Research  
Commercial Technology Transition Officer  
800 N. Quincy Street  
BCT 3 #530  
Arlington, VA 22203

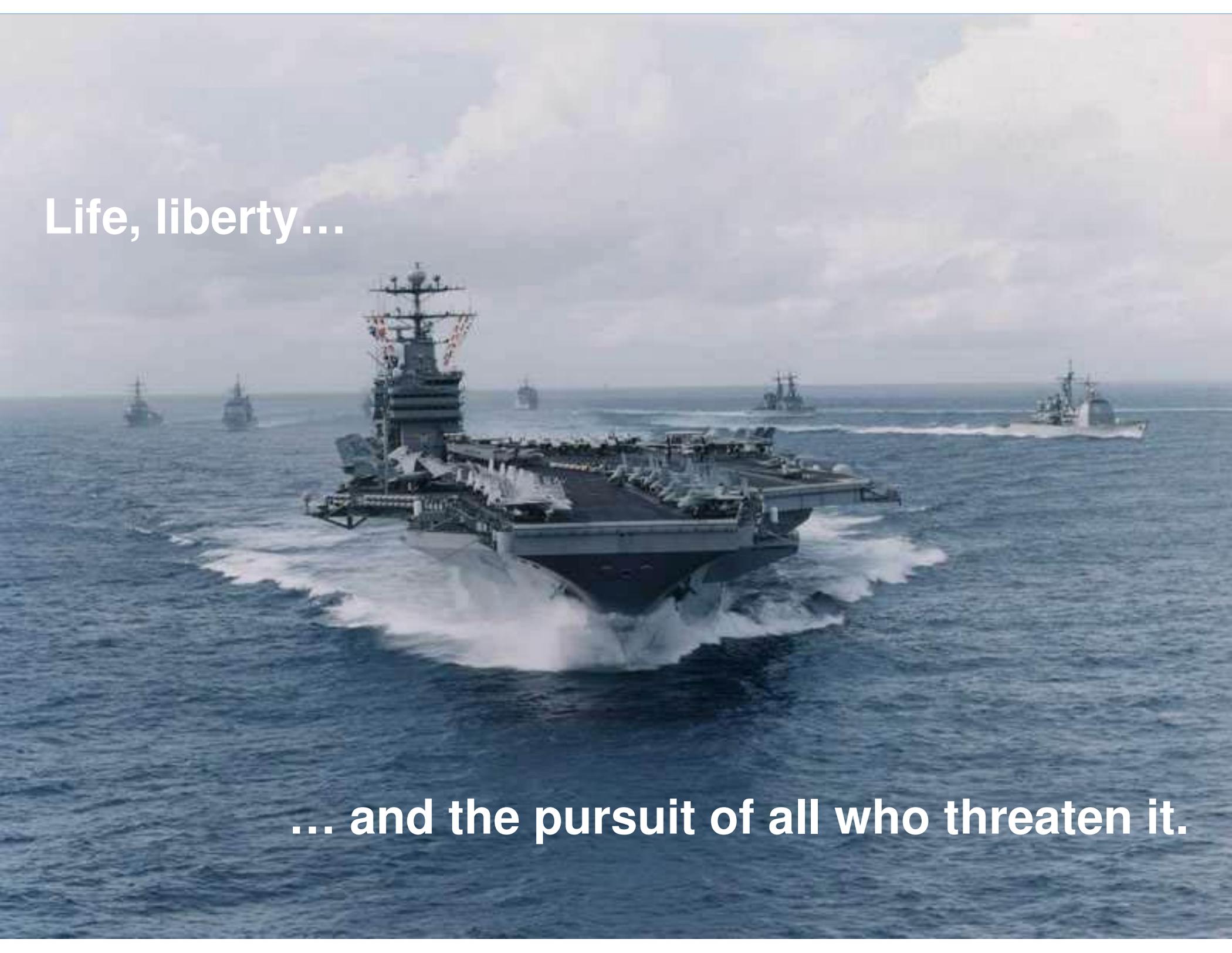
Tel 703-696-1300

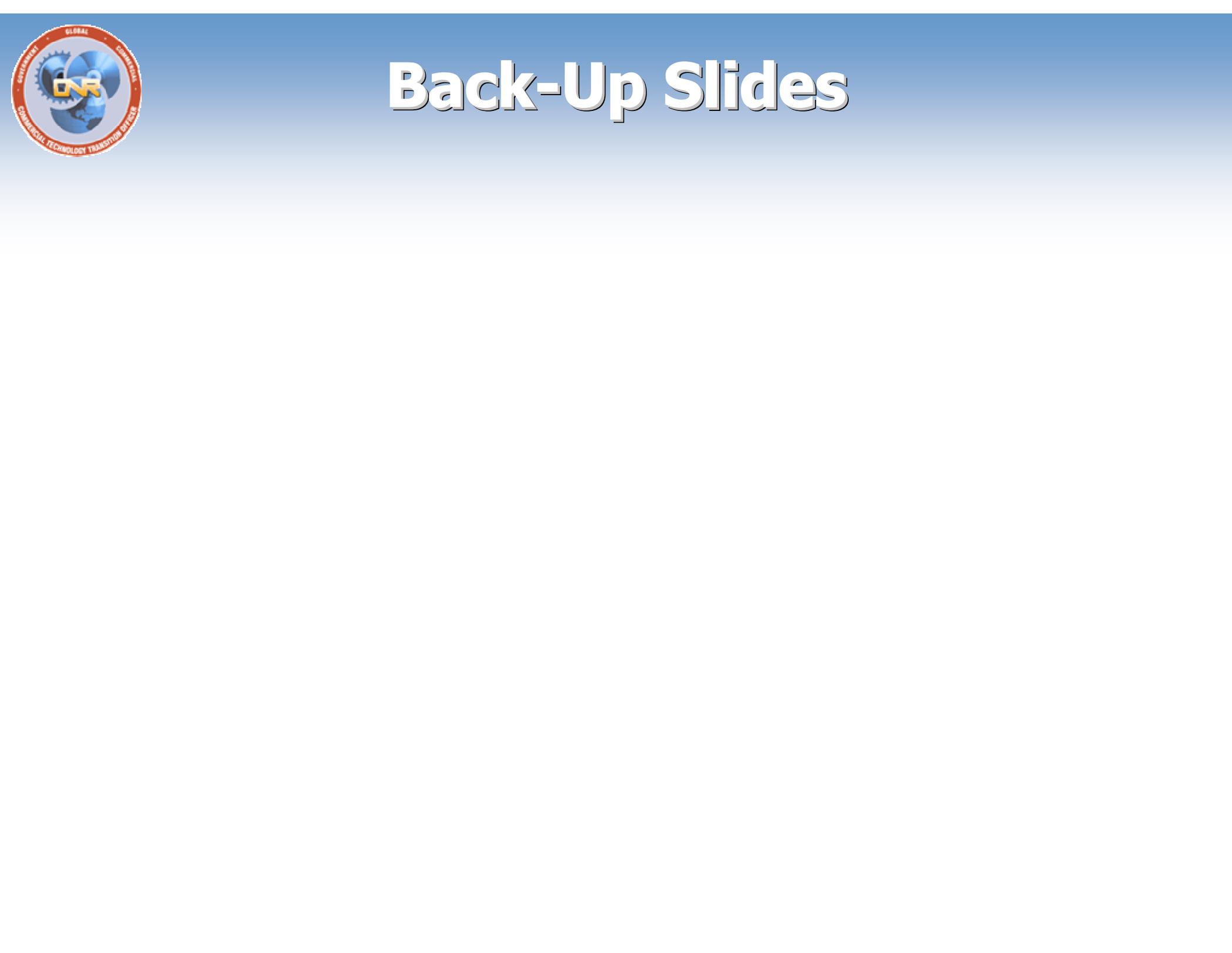
Fax 703-312-0704

Email: [CTTO\\_WebContact@onr.navy.mil](mailto:CTTO_WebContact@onr.navy.mil)

**Life, liberty...**

**... and the pursuit of all who threaten it.**





# Back-Up Slides



# Results of Previous Deals

<u>Deal Description</u>	<u>Partners</u>	<u>Date Approved</u>	<u>CTTO Funding</u>	<u>Transition Status</u>
All Optical TB-29 Towed Array	ASTO/ONR 321	04/20/00	15.079	Transition Success
Forever-ready Trident D5 Battery Technology	SSP/ONR 33	05/15/00	2.700	Transition Success
Fiber Optic Interconnect Network Technology for F/A-18 E/F	PMA 209/PMA 265	07/17/00	7.600	Transition Success
Virginia Class Multi-Level Security (MLS)	PMS 401/PMS 450	12/28/00	3.950	Transition Success
Environmentally Adaptive (EA) Algorithms for AN/SQQ-89 Sonar	PMS 411/ONR 32	04/09/01	3.265	Transition Success
HSLA-65 Steel for CVNX	PEO(CV)/ONR 33	08/15/01	1.325	Transition Success
Spray Cooling Technology for AAV/EA-6B	AAAV/EA6B	03/01/00	5.389	Partial Success. AAV Only
Commercial Emulator for E-2C Mission Computer	PMA 231	08/10/01	11.100	Transition in-progress
Synthetic Aperture Sonar (SAS) for LMRS	PMS 403	12/05/00	8.600	Probable Transition
Advanced SEAL Delivery System (ASDS) Battery	PMS 395/ONR 333	05/22/00	5.900	Probable Transition
Intelligent Shock Mitigation/ Isolation System (ISMIS) for LPD-17	PMS 317	05/03/01	3.400	Probable Transition
Universal Communication Interface Module	MCSC	09/05/01	14.809	Probable Transition
Titanium Nitride Coating (T58 Compressor Blades)	AIR 4.4	10/14/03	0.850	Probable Transition
Automated Wiring Analysis	AIR 6.0/AAIPT	08/07/02	1.800	Continuing
Advanced Rapid COTS Insertion/Maintenance Free Operating Period	PMS 425	08/14/02	5.000	Continuing
Wave Division Multiplexing/Fiber Optic Network for EA-6B	PMA 234	03/28/01	10.000	Partial Success/ No Transition
Precision Terrain Aided Navigation (PTAN)	PMA 265	07/17/00	8.100	Transition Delayed/Req. Change
Reactive Material Enhanced Warhead (RMEW)	PMS 422/ONR 35	03/28/00	9.700	No Transition/Req. Change
Water Tight Doors	PEO(CV)/ONR 332	06/26/01	2.000	Terminated
		<b>TOTAL</b>	<b>120.567</b>	



# Previous Results Summary

	<b><u>No. of Deals</u></b>	<b><u>\$M</u></b>	<b><u>% (\$)</u></b>
<b>Transition Success</b>	<b>6</b>	<b>33.9M</b>	<b>28%</b>
<b>Partial Success</b>	<b>1</b>	<b>5.4</b>	<b>5</b>
<b>Transition In-Progress</b>	<b>1</b>	<b>11.1</b>	<b>9</b>
<b>Probable Transition</b>	<b>5</b>	<b>33.6</b>	<b>28</b>
<b>Continuing Projects</b>	<b>2</b>	<b>6.8</b>	<b>6</b>
<b>No Transitions</b>	<b>4</b>	<b>29.8</b>	<b>24</b>
<b>TOTAL</b>	<b>19</b>	<b>\$120.6M</b>	<b>100%</b>



# Where to Start?

## **Request for CTTO Funding**

The questions below are intended to quickly identify a match between the Navy requirement and the objectives and capabilities of the CTTO so that the process can be started. It is not intended to be an exhaustive proposal. Please keep responses brief. The entire questionnaire should not be more than 1-3 pages. Please return to Leo Plonsky at [plonskl@onr.navy.mil](mailto:plonskl@onr.navy.mil). Or call at 703-588-0068.

- Submitted by:**
- Phone:** **e-mail:**
- 
- Project Name:**
- Problem Description:**
- Proposed Solution (if known):**
- Work to be performed (This is not meant to be a SOW; Merely a general description. Describe deliverables, if known.):**
- Requiring Activity:**
- Reason for requested CTTO funding (as opposed to program office or other sources):**
- Estimated Funding Requested (by FY. Two years is max):**
- Cost Share (if any):**
- Describe the transition/acquisition event expected at the conclusion of this project:**
- Prior to funding, this proposal will require an MOA between ASN (RDA) and a PEO or Fleet Commander. Is there buy-in for this proposal at that level?**



# Typical Deal

# Gas Turbine Electric Start System

## OPERATIONAL NEED

- Pneumatic start system accounts for 28% of all engine failures.
- \$1.8 M material repair/replacement cost
- Starter systems are critical components for ship's propulsion and power generation systems, which enable ship's weapon systems.
- Atlantic and Pacific Fleet Commanders Priority item as part of the Fleet Top Management Actions/Top Maintenance Issues.
- No Gas Turbine R&D funding available
- Program of Record: Naval Marine Gas Turbines

## IMPACT IF NOT ADDRESSED

- Surface Ships will continue to use Pneumatic Starters due to unavailability of R&D Funding.
  - Resulting in degradation of ships ability to perform its mission.
  - Starters are classified as Type C3 & C4 CASREP
- New Ship Acquisitions will carry maintenance and failure burdens of current pneumatic starters.
- Opportunity to achieve significant starter system enhancement coupled with space and weight reduction will be missed.

## PROPOSED SOLUTION

- Replace pneumatic start systems with gas turbine electric starter systems (GTESS).
- Commercial electric starters have demonstrated operational and low maintenance capabilities.
- Electric Starters reduce each GT starter system by approx. 14,000 pounds & 400 sq. ft.
  - Weight Reduction of 49 Tons per DDG-51 Class Ship
  - Space Reduction of 2,800 sq. ft. per DDG-51 Class Ship

## BUSINESS CASE

- Eliminate Material replacement costs of \$1.8M/year
- Projected saving of \$6.3M over 6 year GTESS deployment schedule.
  - \$1.8M annual savings after that period.
- ROI payback is 1.8 years
- The GTESS hardware is reconfigurable for all variants of gas turbine engines
- 594 Gas Turbine Engines Fleet deployed.
- Opportunity to positively impact migration towards all-electric ship.



# Typical Deal

# Gas Turbine Electric Start System

## TECHNICAL READINESS

- Technical Readiness Level 7. The prototype has been operationally tested on the DDG-51 Land Based Engineering Site
- GTESS weight and space reduction achievable with advanced microprocessors
- NAVSEA Technical Warrant holder endorses technology improvement
- GTESS has no impact on existing ship systems.

## BUSINESS READINESS

- Federal Opportunities Technology Search
- GT OEM involvement in GTESS development and deployment.
- GTESS is endorsed by the Marine Gas Turbine Steering Committee
- Hamilton Sundstrand manufacturer of commercial GTESS units.

## TRANSITION SUMMARY

- Twelve GTESS are programmed to be deployed per year for FY-06 thru FY-11.
- Logistic Package Development, including Technical Manuals, Training criteria and NAVSUP support funded by NMGT PM
- Naval Marine Gas Turbine Program Manager controls, plans and budgets funding for deployment of GTESS units

## PROGRAMMATICS

Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
GTESS Modification	█																		
Logistics/Training							█	█											
Land Based Testing									█	█									
Shipboard Testing											█	█	█	█	█	█	█	█	
Program Management	█																		

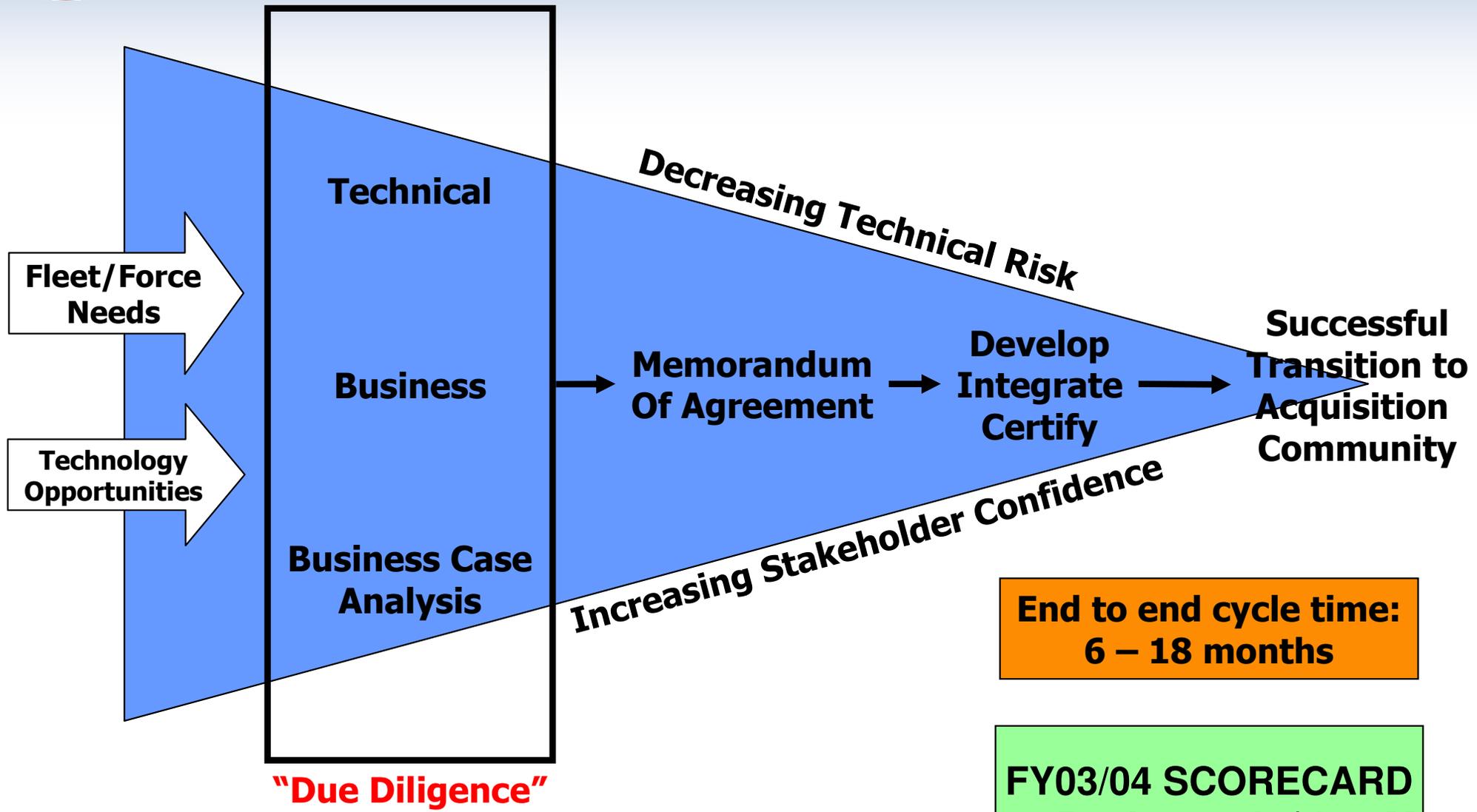
Decision/Off-Ramp Milestones:

- Weight & Size Reduction at GTESS Modification
- Successful GTESS Operation at Land Based Testing and Shipboard Testing

<u>Funding</u>	<u>FY04</u>	<u>FY05</u>	<u>FY06+</u>	<u>FY07-11</u>
ASN(RDA)	\$0.650M			
Marine Gas Turbine Cost Share		\$0.075M	\$0.075M	
Marine Gas Turbine Acquisition			\$2.4M	\$12.0M



# Dealmaking Process Overview



**End to end cycle time:  
6 – 18 months**

**FY03/04 SCORECARD  
14 Deals worth \$25.4M**

**Adapted from process used by  
CTO / VC communities**



# Previous Results Summary

