



HARNESSING THE POWER OF TECHNOLOGY for the **WARFIGHTER**

NSWC Crane Innovation Ecosystem
Brooke Pyne, Technology Transfer (T2) Manager
Tim Cornwell, Customer Advocate
October 2018

CAPT Oesterreich, USN
Commanding Officer
NSWC Crane

Dr. Brett Seidle
Technical Director
NSWC Crane

Distribution Statement A: Distribution approved for public release; distribution unlimited.

HARNESSING THE POWER OF TECHNOLOGY FOR THE WARFIGHTER




Innovation Evolution

*Through the
Years...*

2014

CALL TO ACTION...

- What If....
- Where could it lead...

"If you are working on something that you really care about, you don't have to be pushed. The vision pulls you."
— Steve Jobs

2015

WE are on a JOURNEY...




Naval Research Enterprise S&T at NSWC Crane

...YOU have an important role!

2016

Innovation is who we are...

It's our language
Crane Integrated Command Strategy
"Apply our culture of innovation to create game-changing and agile naval enterprise solutions."

It's our heritage **NAVSEA** *It's our future*
WARFARE CENTERS
CRANE

It's our vision
"deliver solutions through innovation..."

2017

NAVSEA
WARFARE CENTERS
CRANE

We at NSWC Crane exist to provide the American Warfighter with solutions to their toughest technical challenges in order to better equip them with a DECISIVE advantage over our Nation's adversaries.

Create a culture of innovation that values leadership and employee engagement.	Integrate capabilities and processes to create efficient and effective execution of our mission.	Innovate game changing and agile solutions.
Ethos	Execution	Excellence

Vision Statement
Combating our nation's greatest threats, NSWC Crane is the indispensable mission expert, leveraging our deep technical heritage to deliver solutions through innovation and strategic partnerships.

HARNESSING THE POWER OF TECHNOLOGY FOR THE WARFIGHTER

2018

*Expanding the
Innovation
Ecosystem!*

Distribution Statement A – Approved for public release

What is an Innovation Ecosystem?

- Innovations are rarely achieved by lone inventors
- More often, innovations are the product of interactions of members of a community or ecosystem, who build and extend upon one another's ideas
- Through freely sharing ideas, members of an ecosystem can collectively create additional innovation



Accelerate Tech Development & Transition

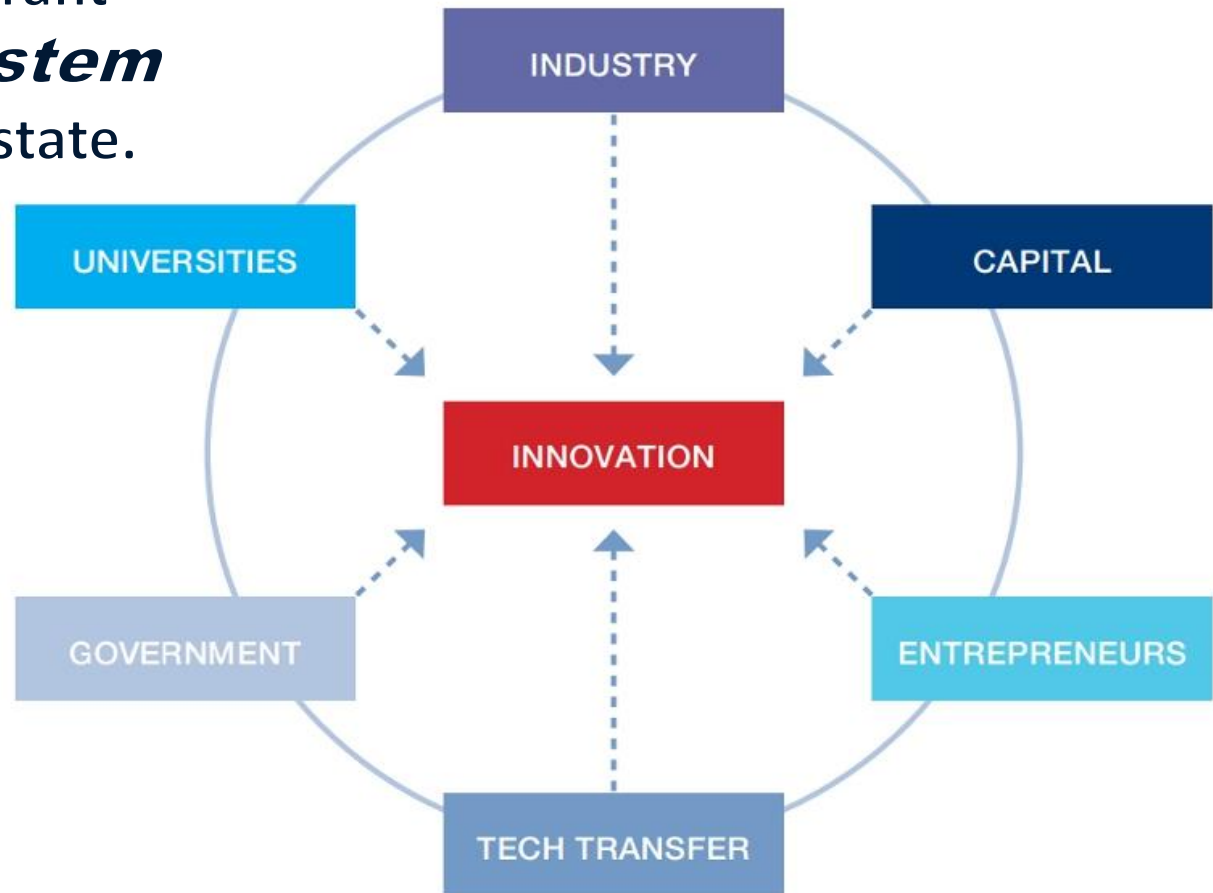
Sull, D. (2015, May). The simple rules of disciplined innovation. *McKinsey Quarterly*.

Jackson, D.J. (2017). What is an innovation ecosystem. National Science Foundation. Retrieved from: erc-assoc.org/sites/default/files/download-files/DJackson_What-is-an-Innovation-Ecosystem.pdf

Distribution Statement A – Approved for public release

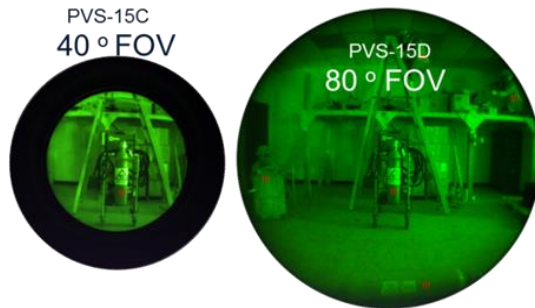
Innovation Ecosystem – Big Picture

Accelerate and enable the development of a vibrant ***Innovation Ecosystem*** across the region and state.



Distribution Statement A – Approved for public release

- (1) Committed Leadership
- (2) Dedicated Resource Investments
- (3) Deliberate Collaboration



First to Field Decisive Capabilities!

Committed Leadership

- ✓ Innovation Central to Command's Guiding Principles & Vision
- ✓ Goal: Create a culture of Innovation that values leadership and employee engagement



The graphic is a vertical poster for NAVSEA Warfare Centers Crane. At the top is the NAVSEA logo. Below it is a paragraph: "We at NSWC Crane exist to provide the American Warfighter with solutions to their toughest technical challenges in order to better equip them with a DECISIVE advantage over our Nation's adversaries." Below this are three blue rectangular boxes, each with a red circle around its top text. The first box is titled "Ethos" and contains the text "Create a culture of innovation that values leadership and employee engagement." with a circular icon of a word cloud. The second box is titled "Execution" and contains the text "Integrate capabilities and processes to enable efficient and effective execution of our mission." with a circular icon of a magnifying glass over a bar chart. The third box is titled "Excellence" and contains the text "Innovate game changing and agile solutions." with a circular icon of a circuit board. At the bottom is the "Vision Statement" section, which reads: "Combating our nation's greatest threats, NSWC Crane is the indispensable mission expert, leveraging our deep technical heritage to deliver solutions through innovation and strategic partnerships." The phrase "to deliver solutions through innovation and strategic partnerships." is underlined in red. At the very bottom, there is a small line of text: "Distribution Statement A - Approved for Public Release; Distribution Unlimited" and a larger line: "HARNESSING THE POWER OF TECHNOLOGY FOR THE WARFIGHTER".

NAVSEA
WARFARE CENTERS
CRANE

We at NSWC Crane exist to provide the American Warfighter with solutions to their toughest technical challenges in order to better equip them with a DECISIVE advantage over our Nation's adversaries.

Create a culture of innovation that values leadership and employee engagement.

Integrate capabilities and processes to enable efficient and effective execution of our mission.

Innovate game changing and agile solutions.

Ethos

Execution

Excellence

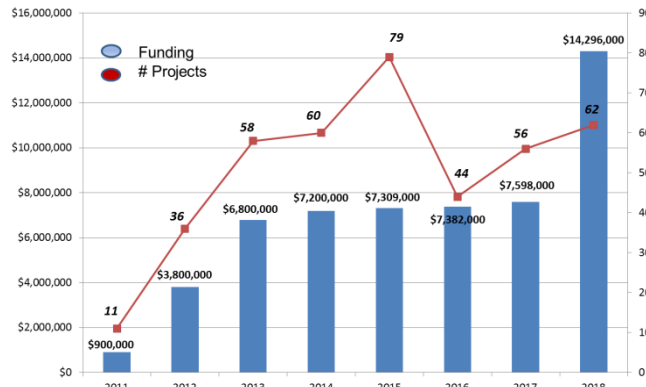
Vision Statement

Combating our nation's greatest threats, NSWC Crane is the indispensable mission expert, leveraging our deep technical heritage to deliver solutions through innovation and strategic partnerships.

Distribution Statement A - Approved for Public Release; Distribution Unlimited

HARNESSING THE POWER OF TECHNOLOGY FOR THE WARFIGHTER

Dedicated Resource Investment



- ✓ Naval Innovative Science & Engineering (NISE) Program
- ✓ Mission Oriented Research
- ✓ Intellectual Capital Development
- ✓ Physical Capital Investment in Innovation Labs

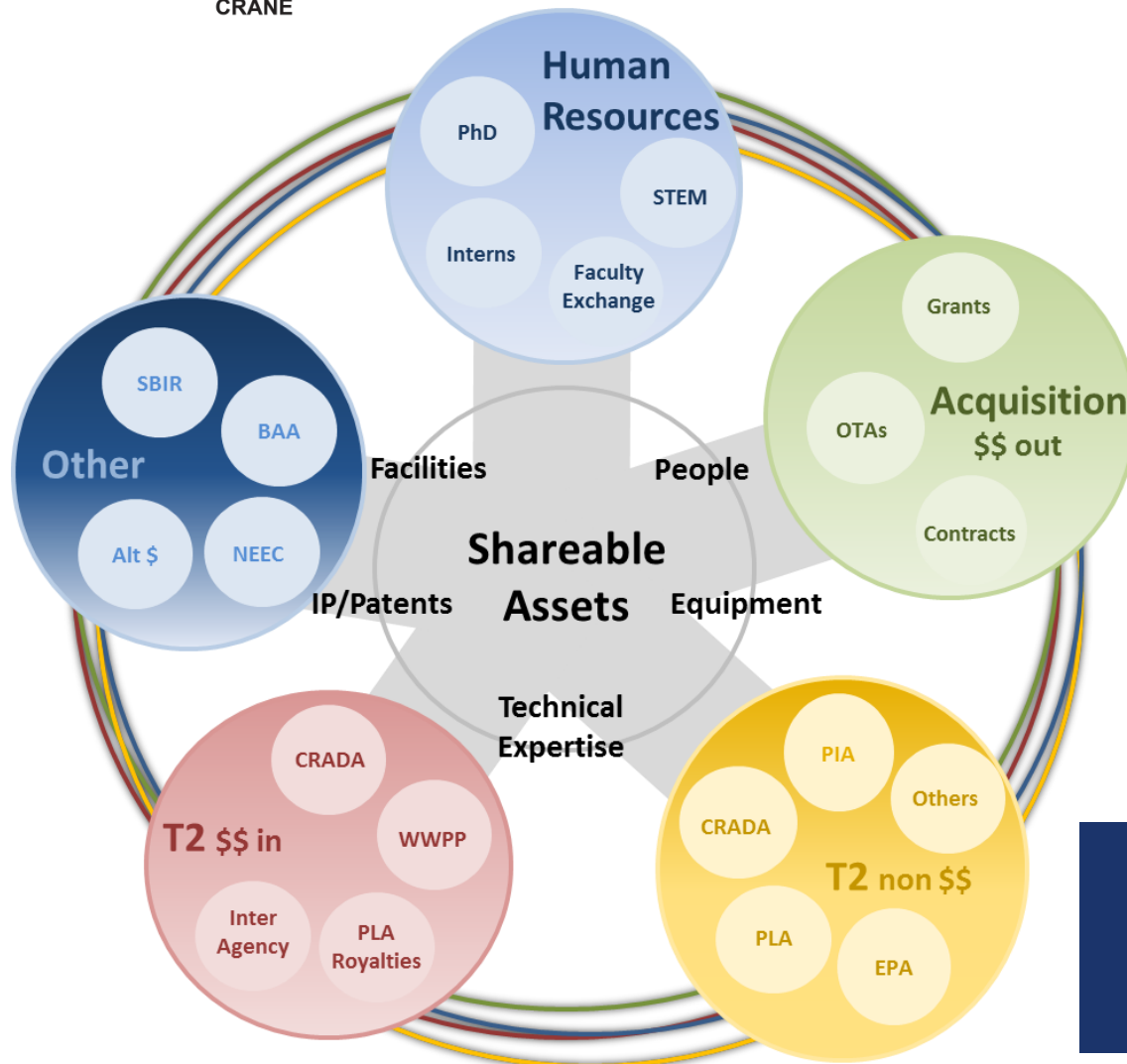


STAR

RIPL



Deliberate Collaboration – PARTNERING!



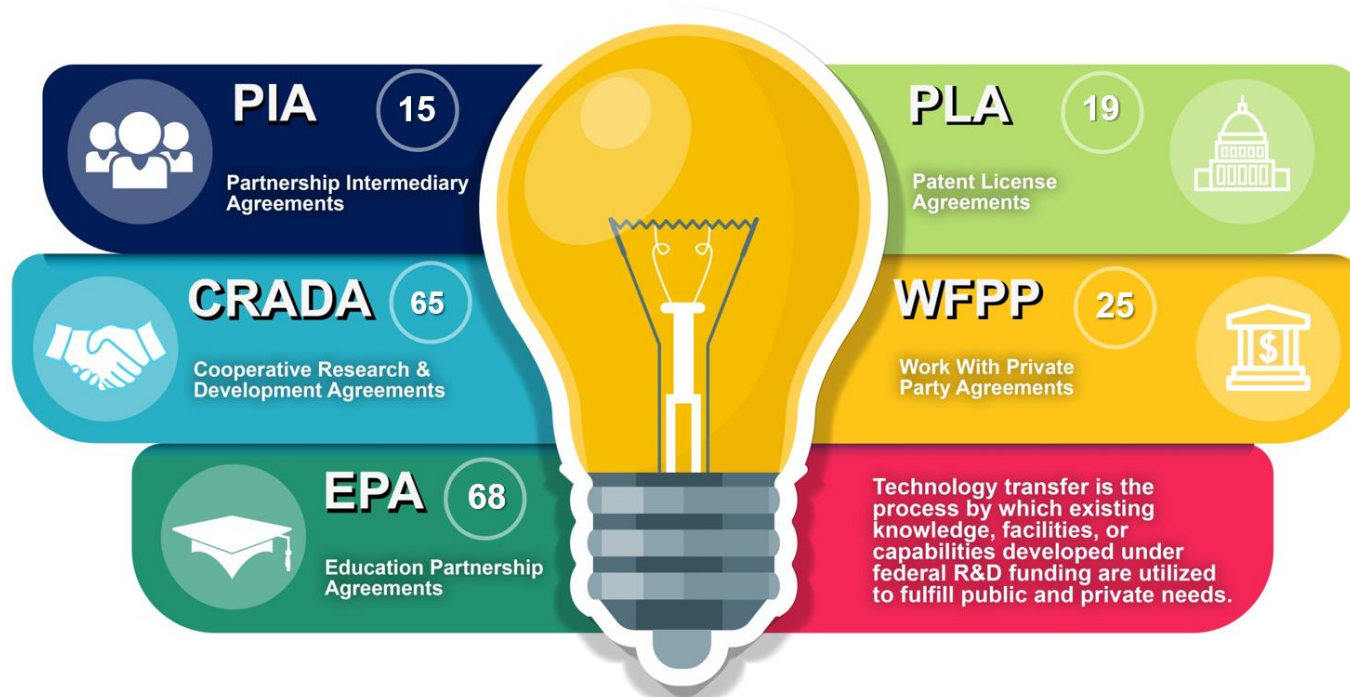
Strategic Partnerships

1. Identify desired outcome
2. Determine appropriate partnership vehicle
3. Weigh risks & benefits
4. Negotiate tasking, terms & conditions
5. Execute

Innovation Ecosystem - Leveraging Partnering Opportunities

Deliberate Collaboration Through T2

T2 | TECHNOLOGY TRANSFER

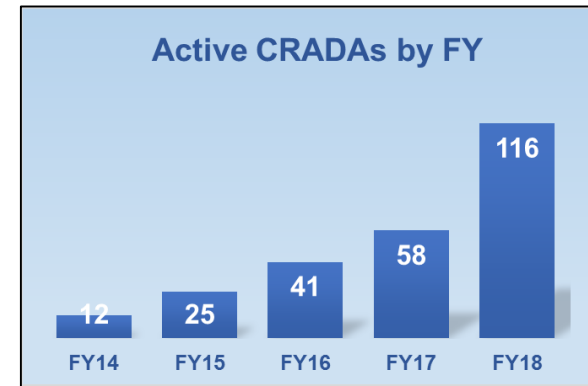


Distribution Statement A – Approved for public release

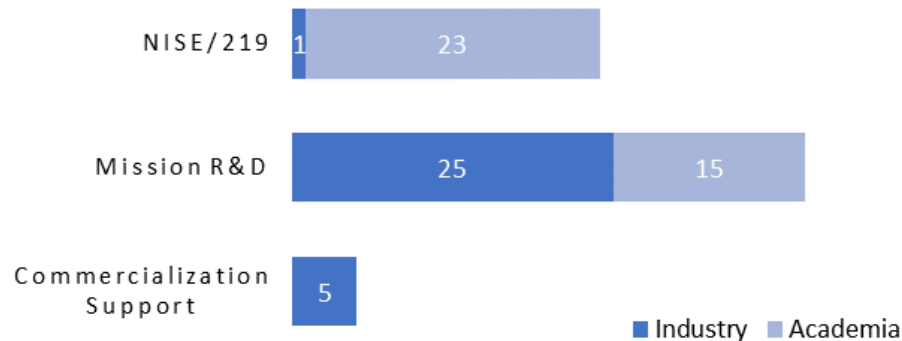
T2 Driving Strategic Collaboration

Expanded Alignment and Utilization of CRADAs

- **116** Active CRADAs in FY18
- Since FY14:
 - **800% increase** in total active CRADAs
 - Over **1000% increase** in new CRADAs



Leveraging Partners to Fuel Innovation



- Promoting collaboration to maximize value to S&T investments
- Leveraging critical partners to enhance warfighting mission
- Facilitating the transfer of federally developed technology for economic impact

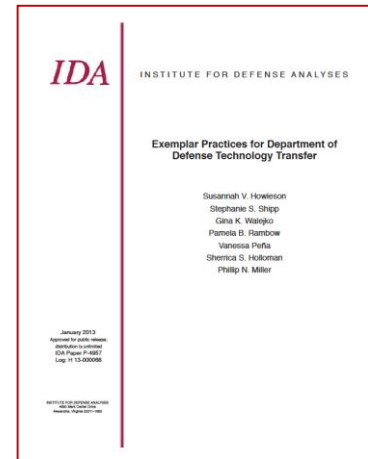
What Makes Our T2 Program Work?

Robust Intellectual Property (IP) Portfolio

- 552 Pieces of IP
- Broad scope of technical expertise
- Prototyped and Fielded = Shorter “time to market”
- Inventor/Experts available

Nationally Recognized Best Practices

- **Partnership Network** – Leveraged Resources!!
 - Academia
 - Partnership Intermediaries (PIAs)
 - Industry
 - **Innovation Discovery** – Uncovering & protecting innovation
 - **University Involvement** – Law Student interns
- Military 2 Market / Tech Commercialization Academy



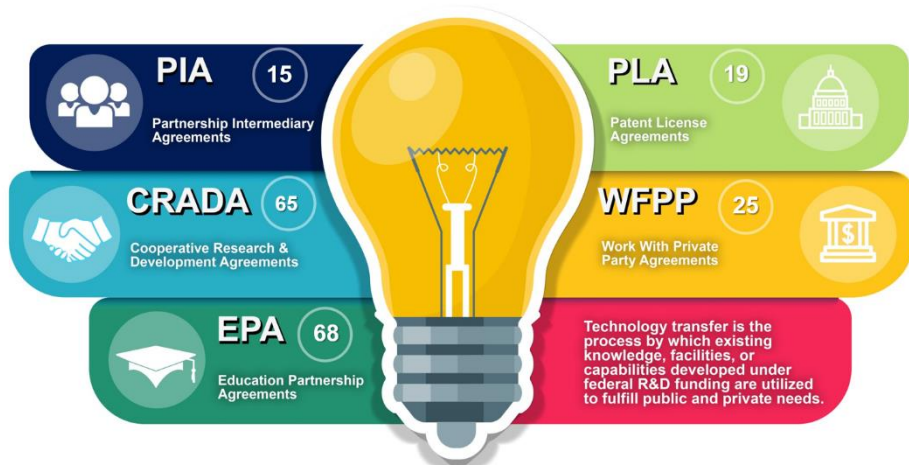
*Institute for Defense
Analysis (IDA) Report:
**Exemplar Practices for
Department of Defense
Technology Transfer***

<https://www.ida.org/idamedia/Corporate/Files/Publications/STPIPubs/ida-p-4957.ashx>

Distribution Statement A – Approved for public release

Deliberate Collaboration T2 Summary

T2 | TECHNOLOGY TRANSFER



Leveraging T2 for enhanced mission effectiveness through technology innovation and collaboration – **Deliberate Collaboration!!**

207
Active T2
Agreements

STRATEGICALLY ALIGNED EXTERNAL PARTNERSHIPS

- ❑ Delivering Rapid Innovation
- ❑ Providing Game Changing Solutions

Deliberate Collaboration – Organic Partnering

Scope: In support of P-8A Poseidon aircraft NSWC Crane has partnered with NAS Jacksonville's Fleet Readiness Center (FRC-SE) for support of the ASX-8 system ((EO/IR) formerly the MX-20HD) as Crane serves as the Fleet Support Team (FST) and FRC-SE as the Organic Repair Depot.

(ASX-8 pictured below and identified to the right)



NSWC Crane engaged directly with FRC-SE, and jointly worked to develop a teaming atmosphere where Crane performs the FST technical work as the Subject Matter Experts for the programmatics, engineering & logistics and FRC-SE performs Organic Depot Repairs.



- Crane and FRC-SE are leveraging past experiences with predecessor system (the MX-15) which has saved and continues to save the taxpayer money by eliminating additional/redundant FST activities.
- Crane serves as the Technical Authority for standing up the Depot at FRC-SE.
- In concert, Crane and FRC-SE conduct Systems Engineering Technical Reviews for Depot Stand up and work together to solve supportability issues via Engineering Investigations and/or troubleshooting, repair and testing of ASX-8 and it's associated components.

Deliberate Collaboration – Organic Partnering

NAVSEA Warfare Centers USMC Collaboration Team



- Established in 2007 as the USMC Community of Interest to promote collaboration and facilitate engagement with USMC stakeholders
 - Senior USMC advocates assigned by their Warfare Center Division Leadership



- Purpose
 - Increase awareness of Warfare Center capabilities and benefits to the USMC
 - Entry point into Warfare Centers for new USMC Customer and new USMC initiatives
 - Promote collaboration among the Warfare Center Divisions
 - Maintain ongoing commitment to support Marine Corps
- Goals
 - Develop a long term support strategy to determine Warfare Center resources, processes and professional development needs in support of USMC strategic and programmatic goals
 - Ensure the appropriate Warfare Centers are collaborating on USMC products and services
 - Decrease cost, risk and unnecessary redundancy
 - Increased success of USMC RDT&E, acquisition and sustainment efforts
 - Improve effectiveness and efficiency

Distribution Statement A – Approved for public release

Deliberate Collaboration – Organic Partnering



Scope: In support of P-8A Poseidon develop twelve ALQ-240(V)1 Electronic Surveillance Measures System CASS Operational Test Program Sets (OTPS)



NSWC, Crane divided the workload between four Navy sites: NSWC Crane, FRC-E (Cherry Point), FRC-SE (Jacksonville), and FRC-SW (North Island)

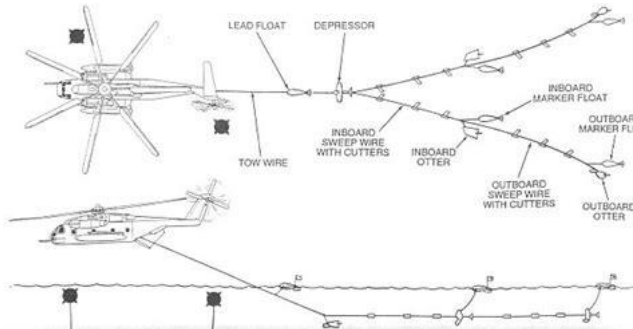
- Timeline for CASS OTPS development effort could not be met with available NSWC, Crane personnel resources
- Sharing development work with the NAVAIR CASS OTPS development/FST community ensures the community maintains technical expertise
- CASS OTPS developed at a significantly lower cost compared to OEM estimate
- Each site conducts Systems Engineering Technical Review for another site reducing the cost of administering the execution of the workload
- Partnering allows best practices of the NAVAIR CASS OTPS development community to be shared

Deliberate Collaboration – Organic Partnering



NSWC Crane fabricated components, and welded a quantity of (15) MK-103 cutter rack assemblies.

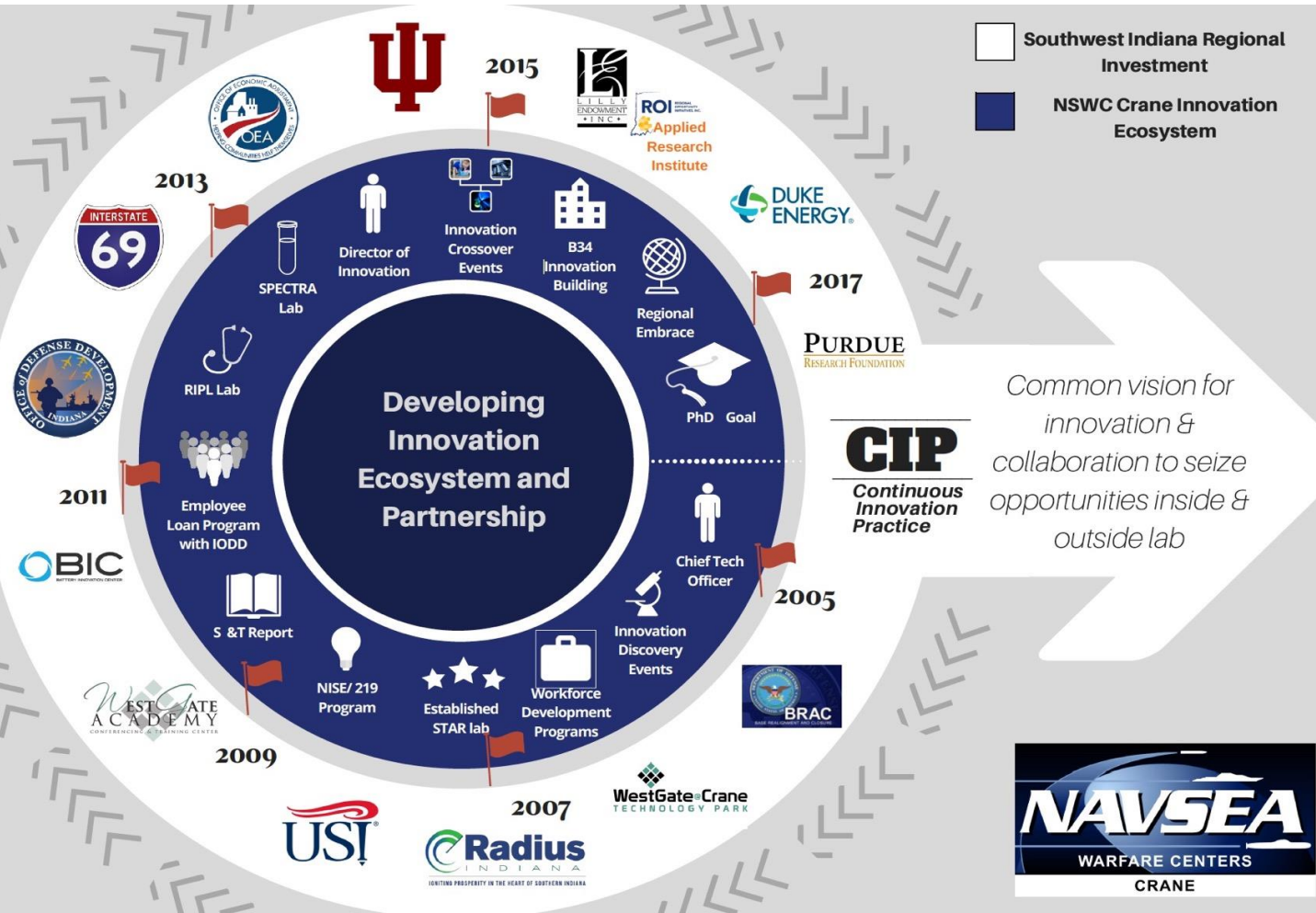
NSWC Crane partnered with NSWC Panama City providing certified welders and approved welding and repair processes to weld 6000 series aluminum. The Fleet had an urgent need for system repairs with no readily available spares.



NSWC Crane teamed with NSWC Panama City to provide fabrication/welding capabilities for a special dive platform utilized for mechanical mine sweeping on the SH-53E Sea Dragon.

Organic partnering was leveraged to the Fleets benefit. This partnering arrangement delivered final product 4 months in advance of final delivery if the partnering arrangement did not exist. Additionally a savings of \$68K was realized.

Innovation Ecosystem – Accelerating Delivery



Innovation Ecosystem Success Factors

- ✓ Committed Leadership
- ✓ Dedicated Resource Investment
- ✓ Deliberate Collaboration



* CIP Graphic created in partnership with University of Sothern Indiana

Distribution Statement A – Approved for public release