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## 2010 Pacific Operational Science & Technology Conference & Exhibition

*"Integrating Technologies to Fill Capability Gaps - S&T Support for Soft Power"*

Honolulu, HI

16 - 18 March 2010

Wednesday, March 17, 2010

### Sustainable Transition for Soft Power Tools

- Dr. Peter Crouch, Dean, School of Engineering, University of Hawaii
- Mr. Wes Freiwald, President, Pacific Defense Solutions
- Mr. Steven Loui, President, Pacific Marine
  - 1) Sea Flyer Honolulu Windows Media Audio/Video file
  - 2) NAV1 Swath Windows Media Audio/Video file
  - 3) Dropstitch Windows Media Audio/Video file
  - 4) B65 pilothouse Windows Media Audio/Video file
  - 5) Sea Flyer High Fly Windows Media Audio/Video file
  - 6) Mid Foil Underwater RealPlayer MPEG Video
  - 7) BR51 Windows Media Audio/Video file

### Government Response to HA/DR

- Ms. Susan Reichle, Senior Deputy Assistant Administrator for USAID's Bureau for Democracy, DCHA
- COL Steven Seng, 3<sup>rd</sup> Division Artillery Command Singapore

### Defining a Need for Soft Power Tools

- LTG (USA, Ret) E.P. Smith, Director, APCSS

### Building Community Resilience

- LT Gen (USMC, Ret) John Goodman, Director, Center for Excellence in Disaster Management and Humanitarian Assistance
- Mr. Earl Wyatt, Director, Rapid Fielding Office
- CAPT Robert Gusentine, SOCPAC J3

Thursday, March 18, 2010

### Building Maritime Partnerships

- RDML Stephen Mehling, Chief of Staff 14<sup>th</sup> Coast Guard District
  - 1) Antipiracy Windows Media Audio/Video file
- CAPT Michael Fierro, Assistant Director for Police, Resources and Strategy for US Naval Forces Europe and Africa - US Sixth Fleet
- Mr. Jim Churchill, International C41 Integration Program Manager, PEO C41

### Soft Power Tools

- RADM Nevin Carr III, Chief Naval Research
- BG Harold Greene, Deputy Commander, RDECOM
- Dr. Kim, Executive Vice President Agency for Defense Development, ROK

### USAPACOM Component Perspective on Soft Power

- BG Alan Lynn, Commanding General, 311<sup>th</sup> Signal Command (T), USARPAC

- RDML Steven Ratti, Director, JIATF-W
- Dr. George Kailiwai III, Director, Resources and Assessment (J8)

# Pacific Operational Science & Technology Conference

**Monday 15 March 2010**  
*Hilton Hawaiian Village*

1000-1200 COCOM Meeting  
Hibiscus Suite

1300-1600 Early Sign-in and packet pickup

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# Pacific Operational Science & Technology Conference

**Tuesday 16 March 2009**

*Classified Sessions*

*Theater Challenges and Solution Initiatives*

*Hickam AFB Theater*

- 0700 Sign-in**
- 0730 Continental Breakfast**
- 0800 Admin Remarks Welcome**  
*Lt Gen (Ret) Lawrence Farrell, Jr.*, President and CEO, National Defense Industrial Association (*Confirmed*)  
*Mr. James Burdell*, Science and Technology Advisor, USPACOM (*Confirmed*)  
*Dr George Ka'iiliwai*, Director, Resources and Assessment, USPACOM (*Confirmed*)
- 0820** New USPACOM IPL Brief
- 0905** TBD (Theater Threat Brief)
- 0935** Results from Electronic Warfare Capabilities Based Assessment/Functional Solutions Analysis
- 1015 Break**
- 1045** ISR Task Force
- 1115** High Altitude Transition Team
- 1145 Lunch - Hickam Enlisted Club** (5-10 minute walk from theater)
- 1315** ASW RoadMap – **TBD**
- 1335** MDA/IAMDO RoadMap
- 1405** Cyber Command
- 1435 Break**
- 1500 Facilitated discussion: Is USPACOM getting what it needs from the National Initiatives?**
- 1630 Adjourn – Return to Hilton Hawaiian Village**
- 1700-1830 Social – Hilton Hawaiian Village**

# Pacific Operational Science & Technology Conference

**Wednesday 17 March 2010**

*Requirements and Tools to Address Soft Power  
Challenges  
Hilton Hawaiian Village*

## **0700 Session Check in and Continental Breakfast**

### **0800 Opening Comments**

**Mr. James Burdell**, Science and Technology Advisor, USPACOM

*(Confirmed)*

**Senator Daniel Inouye**, United States Senator, Hawaii *(Recorded Remarks - Confirmed)*

### **0800 Sustainable Transition for Soft Power Tools**

0800 **Jennifer Sabas**, Chief of Staff, Senator Inouye's Office *(Confirmed)*

0820 **Dr Peter Crouch**, Dean, School of Engineering, University of Hawaii *(Confirmed)*

0900 TBD

0920 TBD

0940 TBD

### **1000 Break**

### **1030 Government Response to HA/DR**

1030 **General (USAF, Ret) Charles Holland**, Former Commander, U.S. Special Operations Command *(Confirmed)*

1050 **AMB (Ret) Charles B Salmon, Jr.**, Foreign Policy Advisor, APCSS *(Invited)*

1110 **COL William Coultrup**, Commander, JSOTF-P *(Confirmed)*

1130 **Ms. Susan Reichle**, USAID *(Confirmed)*

1150 Singapore (TBD)

### **1210 Lunch**

**Keynote Speaker: TBD**

### **1300 Defining a Need for Soft Power Tools**

1300 **Brig Gen (USAF, Ret) Edwin "Skip" Vincent**, Former USPACOM Mobilization Assistant *(Confirmed)*

1320 **Mr David Neyland**, Director, DARPA TTO *(Confirmed)*

1340 DPC (Maui)

1400 **LTG (USA, Ret) E.P. Smith**, Director, APCSS *(Confirmed)*

1420 TBD

**1440 Break**

**1500 Building Community Resilience**

1500 **LtGen (USMC, Ret) John Goodman**, Director, Center for Excellence in Disaster Management and Humanitarian Assistance (*Confirmed*)

1520 **MG David A. Morris**, Deputy Director, Joint Capability Development Directorate, USJFCOM (*Tentatively Confirmed*)

1540 **CAPT Robert Gusentine**, SOCPAC J3 (*Tentatively Confirmed*)

1600 **Mr Earl Wyatt**, Director, Rapid Capability Office (*Tentatively Confirmed*)

1620 TBD

**1645 Adjourn**

**1730 Social**

**1830 Banquet**  
**Keynote Speaker (TBD)**

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# Pacific Operational Science & Technology Conference

**Thursday 18 March 2009**  
Senior Leader Perspective  
Requirements and Tools to Address Soft Power  
Challenges  
*Hilton Hawaiian Village*

## **0700 Session Check in and Continental Breakfast**

**0800 Lt Gen Daniel Darnell**, Deputy Commander, USPACOM (*Tentatively Confirmed*)

## **0830 Building Maritime Partnerships**

- 0830 **AMB Brian Curran**, Former Ambassador to Haiti (*Invited*)
- 0850 **Mr. Mark Andress**, Director, Navy MDA (*Tentatively Confirmed*)
- 0910 **Mr. Jim Churchill**, PMW-740(*Confirmed*)
- 0930 **CAPT Michael Fierro**, CNE-C6F (*Confirmed*)
- 0950 **RDML Stephen Mehling**, Chief of Staff, 14<sup>th</sup> Coast Guard District (*Confirmed*)

## **1010 Break**

## **1030 Soft Power Tools – Panel I**

- 1030 **Mr Daniel Piccuta**, USPACOM J9 (*Confirmed*)
- 1050 **Dr. C.K. Park**, President, Agency for Defense Development, ROK (*Confirmed*)
- 1110 TBD
- 1130 TBD
- 1150 **Dr Robert Clark**, Chief Defense Scientist, Defence Science and Technology Organisation, Australia (*Tentatively Confirmed*)

## **1210 Lunch – Keynote Speaker (TBD)**

## **1310 Soft Power Tools – Panel II**

- 1310 **MajGen Randolph D Alles**, USPACOM J5 (*Confirmed*)
- 1330 **RADM Nevin Carr**, Chief of Naval Research (*Confirmed*)
- 1350 **BG Harold Greene**, Deputy Commander, RDECOM (*Confirmed*)
- 1410 **Mr. Wendell Banks**, Director, Plans and Programs, AFRL (*Confirmed*)

## **1430 Break**

**1450 USPACOM Component Perspective on Soft Power**

1450 **BG Alan Lynn**, Commanding General, 311<sup>th</sup> Signal Command (T)  
USARPAC (*Tentatively Confirmed*)

1510 **Maj Gen Douglas H. Owens**, Vice Commander, PACAF (*Invited*)

1530 **ADM Patrick M Walsh**, Commander, PACFLT (*Invited*)

1550 **LtGen Keith J Stalder**, Commanding General, MARFORPAC (*Invited*)

1610 **RDML Steven Ratti**, Director, JIATF-W (*Invited*)

**1630 Closing Remarks**

**1640 Conference Adjourns**

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UNIVERSITY  
of HAWAI'I®  
MĀNOA

# Technology Transfer: a University Point of View

by

Peter E. Crouch  
Dean of Engineering

UH Manoa

March 17 2010

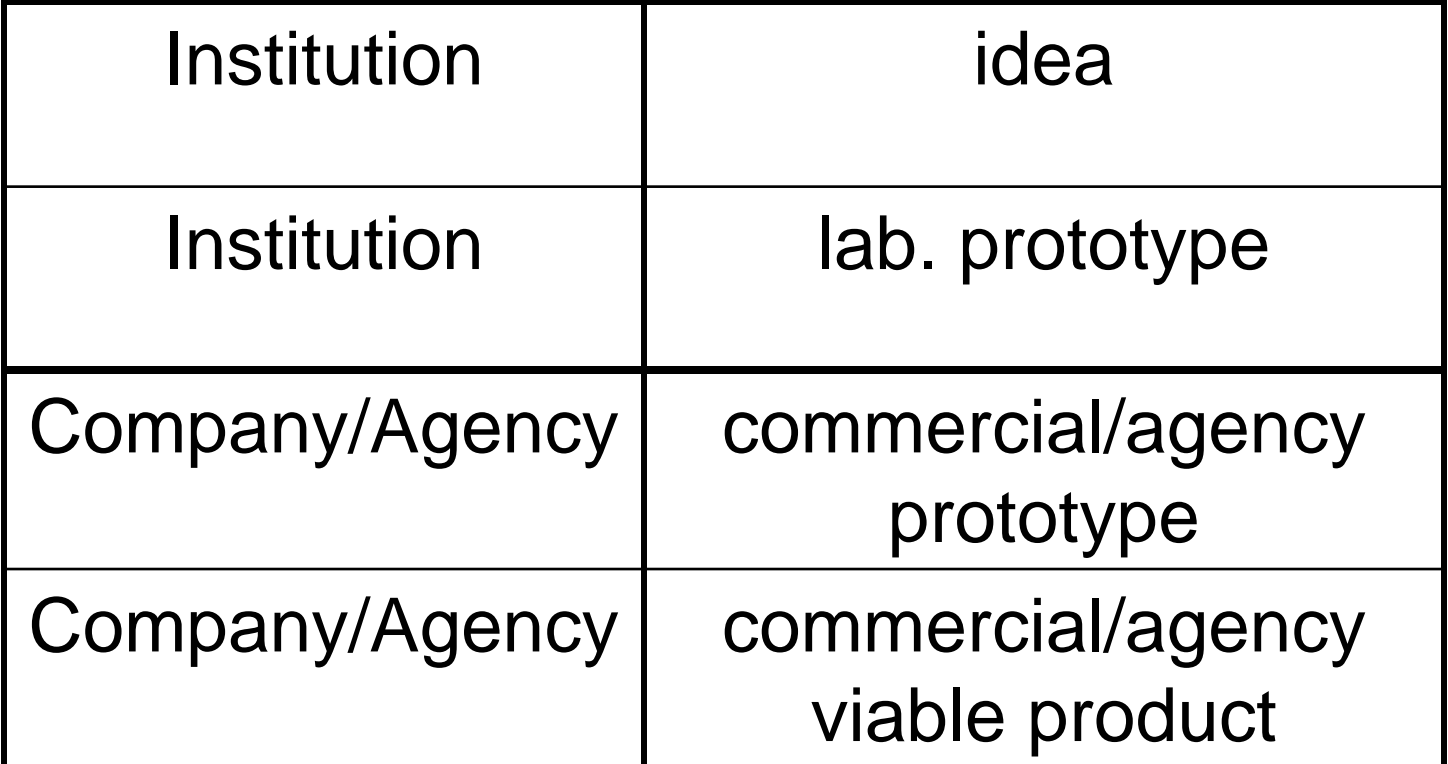
- Technology Transfer:
  - A personal perspective
- A few remarks about Soft Power and Improving Tech Transfer Process
- Remarks about the process at UH Manoa and a few examples

# The Process

Transition of an Idea to a “viable product”

– either a commercial product, or an agency product, or both!

Investment level  
Increases  
Transition



Institution	idea
Institution	lab. prototype
Company/Agency	commercial/agency prototype
Company/Agency	commercial/agency viable product

# Pasteur's Quadrant

## Donald E. Stokes

What should **“the right”** University faculty be striving for?

Consideration of Use

Quest for  
Fundamental  
Understanding

	No	Yes
Yes	Niels Bohr	Louis Pasteur ↑
No		Thomas Edison

# Creating Innovative Solutions: A DHS view – Tara O'Toole undersecretary for DHS S&T

- Deep understanding of the problem: operational, reality and limitations
- Far reaching recognition of the universe of possible solutions
- Testing and Evaluation – “tinkering”
- Improvement

# Tech-Transfer

- **We've done it before**: Long tradition of Tech Transfer at universities...best exemplified by DARPA (initiated the internet and many military innovations) – Now ARPA-E in Energy
- Faculty in science and engineering need a context for their work to be useful...they need to be attached to a **community of practice** depending on the field - Clinicians, NIH research directors, DoD research directors, DHS research directors, NIH, DoD and DHS customers, & companies that manufacture for these customers

# Tech-Transfer

- Faculty/Researchers can “push” ideas/IP into a community or ideas/IP can be “pulled” from faculty/researchers – who is pulling? Incentives?
- University/Institute can let faculty/staff take their own work to market “with rules” – “Stanford model”

And/Or

- University/Institute can “engage” the tech transfer process on behalf of the faculty/staff member – “Columbia model”
- These competing models add friction to the process – especially Hawaii

# Tech-Transfer

- As technology content and system complexity increase then commercialization/agency adoption becomes harder and more expensive
- Companies working with Universities to transition technology must usually either buy or seek exclusive license for IP – hard for companies to judge when/if to do this because most ideas do not result in commercially viable or agency viable products

# Tech-Transfer

- Belief – some/many Agency challenges can be solved by low technology and/or simple system solutions:
- e.g. DHS seeking to pick low hanging fruit in their search for S&T solutions – ease of transfer to agency commercially viable products
- e.g. Industrial/Commercial design has a long history of providing instant commercial rewards for good ideas with little technical sophistication – prompts search to replicate this success for Agency needs?
- e.g. I-phone – matches industrial design & high tech innovation

# Soft Power Considerations

- May be some “low hanging fruit” as in DHS case
- May be “lower tech” than the sophisticated DARPA examples
- May be able to involve students more in the development of solutions— students are not employees of the university and hence slightly easier to negotiate with on IP (but they have advisors who are!)
- Probably better suited to small business – where systems and technology sophistication is lower



# Improving the Tech-Transfer process

- Help connect faculty with community of practice – especially the end user and companies – important for faculty to “meet the military user” – e.g. DHS efforts
- Faculty are not great at existing technology assessment - important for solution trade off considerations – how to get this? – work with users!
- Better funding/knowledge of the “transition”- Involve faculty in SBIR/STTR like processes – needs better ties between faculty and **(small/medium)** companies

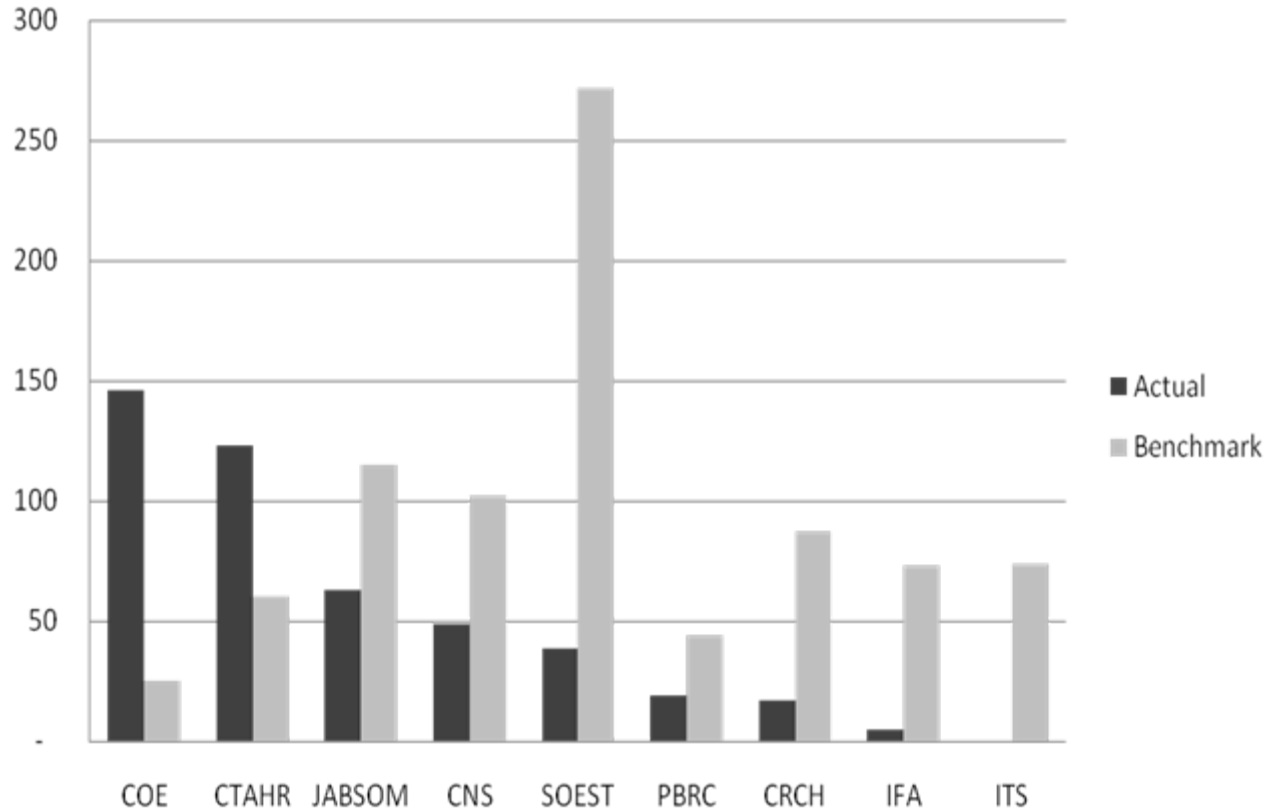
# A UHManoa / College of Engineering View



- UH Manoa is a very successful **Science Focused** university – especially astronomy and oceans
- It is **not** an engineering focused University – Engineering is a relatively small enterprise at UH Manoa
- Next slide demonstrates that Engineering outperforms other units at UH Manoa in invention disclosures – absolutely and in regard to the other productivity measures
- Does **not** mean that Engineering is good at Tech transfer, or transfers technology in the “right” areas for Hawaii – but its faculty try hard!

# UH Invention Disclosures - 1996 to 2009

## Actual vs. Benchmark



## Flash Carbonization

Michael Antal, Professor of Renewable Energy Resources at Hawai'i Natural Energy Institute (used to be in Engineering) - developed a technology that can use virtually any type of green waste, including corn cobs, coconut husks, and switch grass, to produce fuel cell grade charcoal.

Has patented flash carbonization reactor. The chamber is stuffed with green waste and then pressurized. When ignited, a high-temperature flash fire rapidly incinerates the green waste, converting it into charcoal. The process has been licensed to a number of companies in different markets in Hawai'i and the US.

## "SiloXel" Nanocomposite Coating for Aluminum Corrosion Protection

A novel silicone-based, hybrid ceramic-polymer nano-coating has been developed by Profs. Lloyd Hihara and Atul Tiwari at the Corrosion Research Lab. in Hawaii.

The coating has low viscosity, long term stability and durability, antifouling and water repellent qualities, and UV and corrosion resistance in marine environments. A manufacturer of conversion coatings that are used to pre-treat aluminum is testing the technology and reports that the coating is out performing the current industry standard product.

## Pipeline Micro

Prof. Weilin Qu, Director of the College of Engineering's Micro-Scale Thermal/Fluid Laboratory, was a founder of Pipeline Micro, a Hawai'i-startup that was based on a liquid cooling system developed at the University of Hawai'i and licensed by the company.

Pipeline Micro develops small and efficient liquid cooling systems for consumer and home electronics products, including video graphics cards, computers, and various appliances. Its liquid cooling systems use a patented thermal system design that dramatically improves heat transfer, stabilizes temperature, and enables products to run faster, perform longer, and use less energy.

# Examples

## Adama Materials

Adama Materials is an early-stage, Hawaii-based, materials company focused on the commercialization of patent-pending nanotechnologies to produce novel nanoresins developed by Prof. Mehrdad Nejhad, Director of the College of Engineering's Composites, Smart Structures, and Nanotechnology Laboratories.

Adama seeks to redefine high performance materials, by creating the next generation of lighter, tougher, and stronger land/sea/air vehicles, windmill blades, and sporting equipment.



**Wednesday, 17 March 2010**

# **Requirement and Tools to Address Soft Power Challenges**

## **Panel: Building Community Resilience**

### **▪ Panelists**

- LtGen (ret.) John F. Goodman – COE**
- MG David A. Morris – USJFCOM**
- Mr. Earl Wyatt – OSD-AT&L**
- CAPT Robert Gusentine – SOCPAC**

# HA/DR - Soft Power - & - Tools - to Address Soft Power Challenges



- Unifying Concept to achieve positive change
- Common Framework to coalesce effects
- Common Framework to assess Progress toward Enduring Outcomes

To enable planning, execution and assessment

**-- In order to do what --**



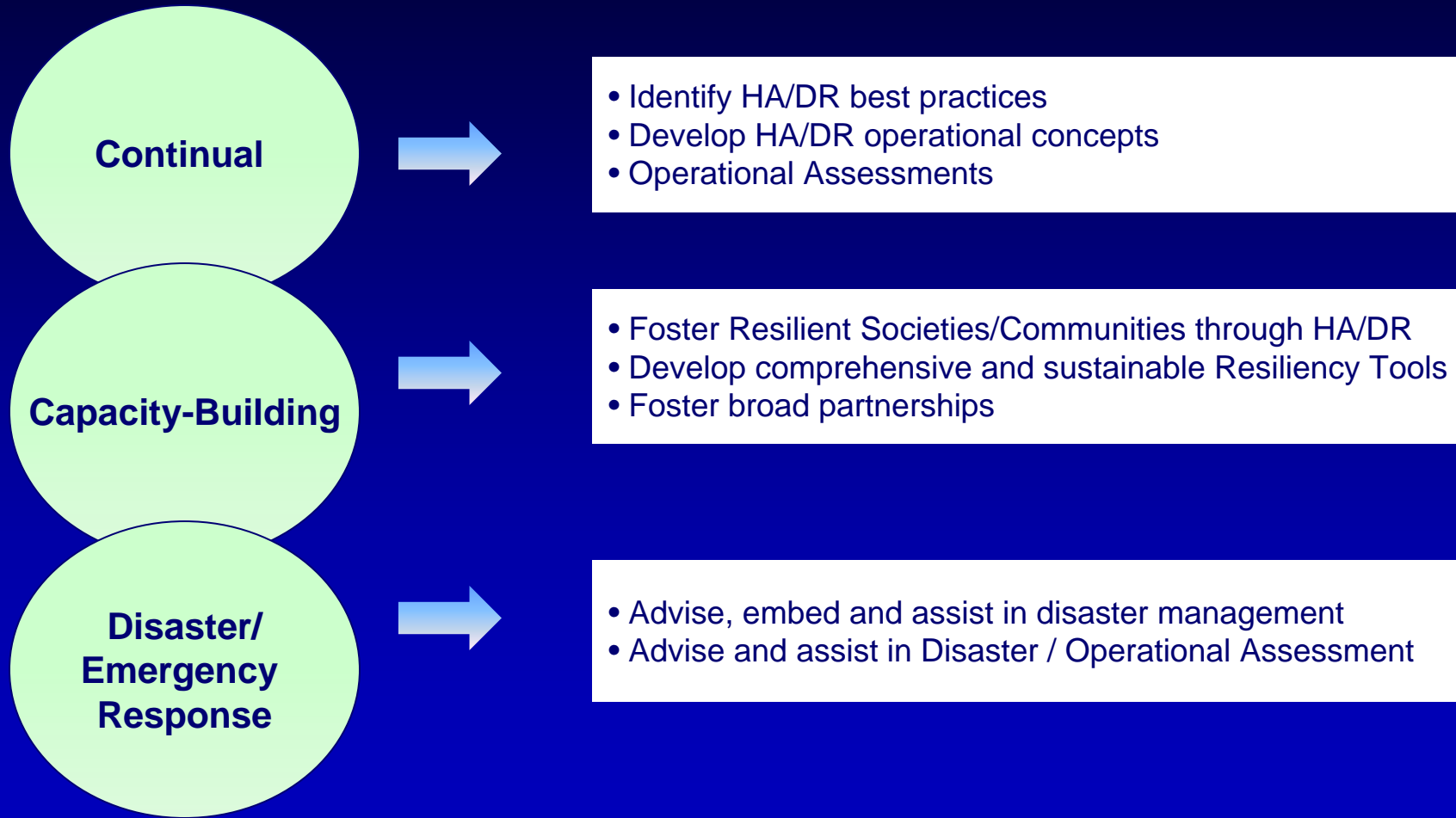
# Who we are

We are the U.S. Center for Excellence in Disaster Management and Humanitarian Assistance (COE) directed to educate, train, research, and assist in disaster management and humanitarian assistance operations:

- Department of Defense organization with a global mandate
- Reports to U.S. regional combatant commands
- Established in 1994
- Government funded
  - Broad funding authority
- Partner with U.S. agencies and Departments
- Partner with:
  - International Countries
  - International Organizations
  - Non-government Organizations
  - Foundations
  - Institutes
  - Universities
  - Private Sector

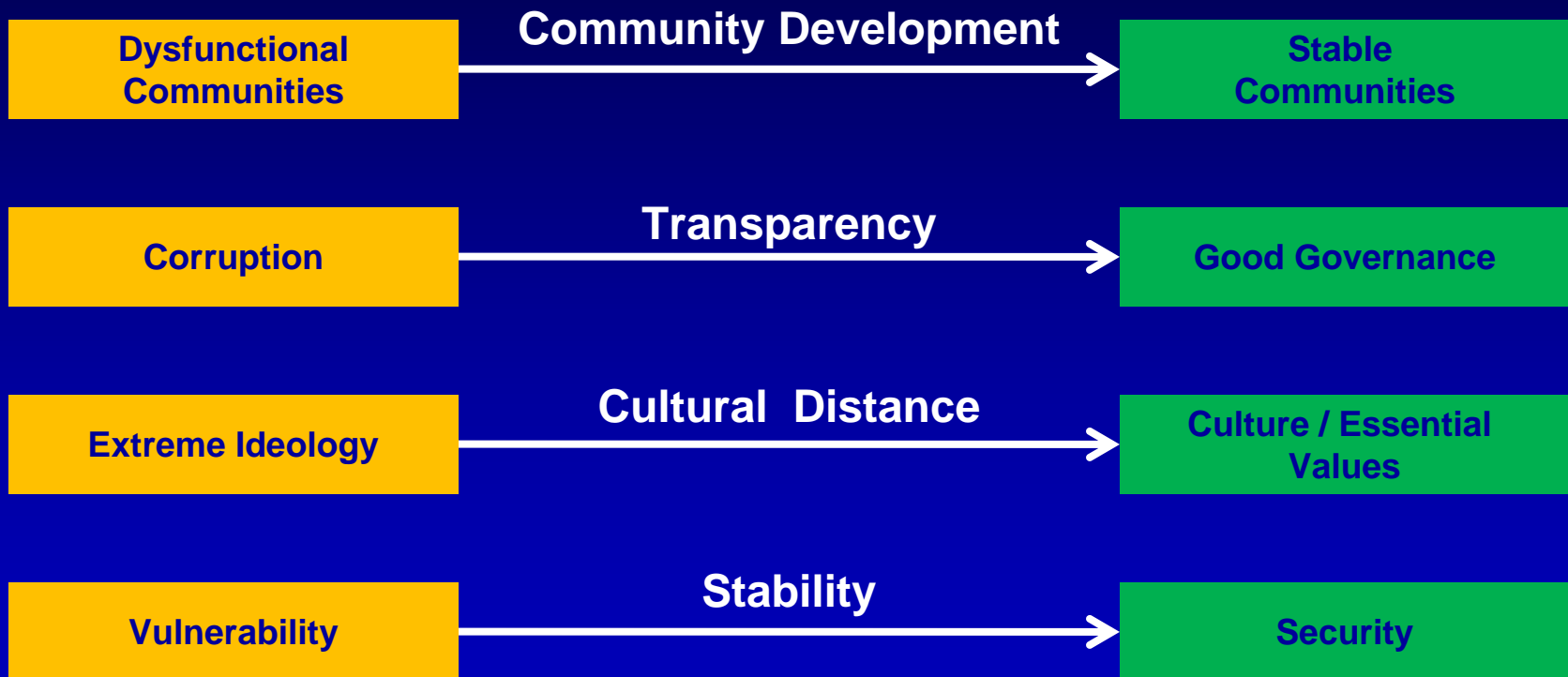


# Operational Approach to Foster Resiliency





# Soft Power Influence to Foster Resilient Societies & Communities





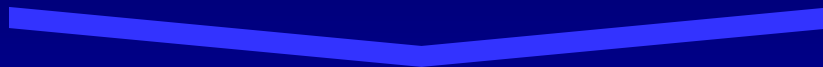
# Defining Phase 0 HA/DR

## Supporting Concept

**Foster Resilient Societies /  
Communities**

Enabling Functions:

- Interagency Coordination
- Civil-Military Coordination



## Functional Concepts

**Development /  
Risk Management**

**Risk Mitigation**

**Response, Recovery  
& Transition**

**Development /  
Revitalization**

**Human  
Development &  
Resiliency**

## Strategic Outcomes

**Effective and  
Responsible  
Governance**

**Sustainable &  
Broad-based  
Growth**

**Effective Support of  
Social Capacity**

**Strengthened  
Vibrant Society**

**Robust Defense &  
Law Enforcement**



# Risk Assessment

## Preparedness Risk Assessment

### Criteria

- Coherent plans for Disaster Management
- Rehearsal and exercises for plans
- Capable of Information management
- Capable of effective Interagency collaboration

### NATIONAL DISASTER MANAGEMENT CAPACITY



### FORECAST FOR DMHA



## Forecasting Challenges



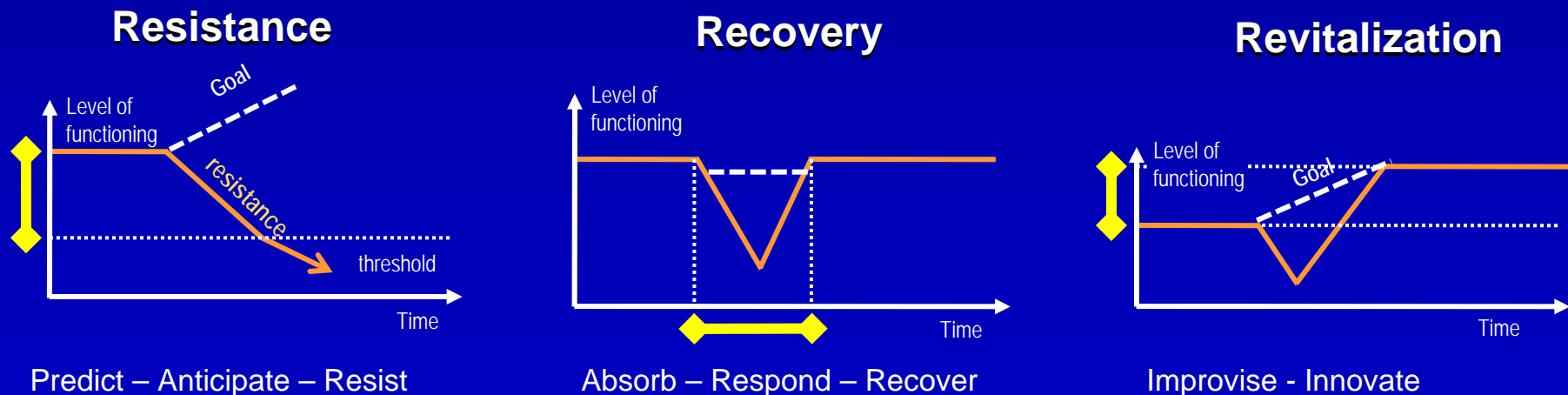
# Operational Concept

## Fostering Resilient Societies/Communities

### Characteristics of Resilience

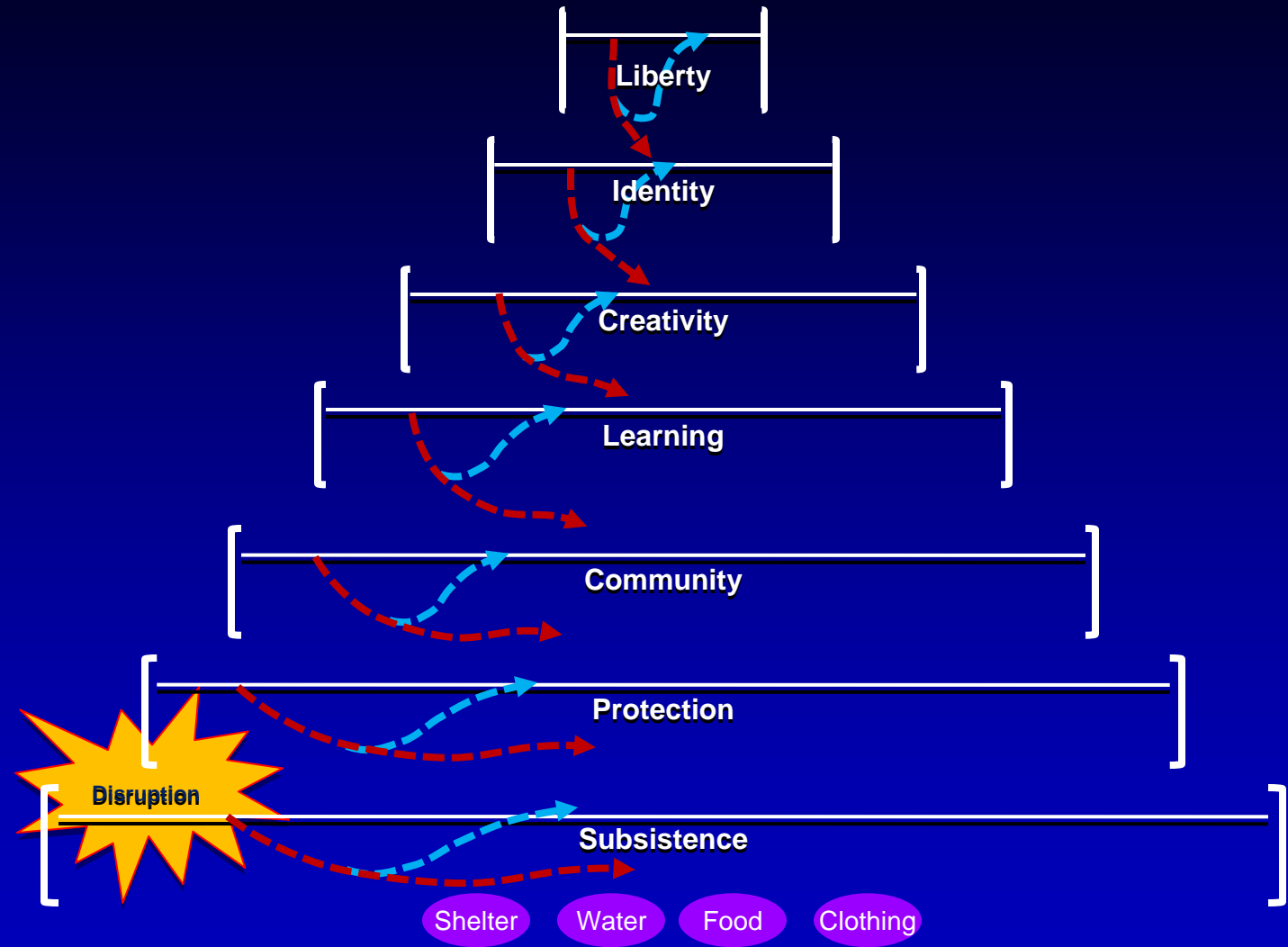
- Collective Will
  - Maintains functioning when faced with adversity
  - Returns to baseline functioning as quickly as possible
  - Revitalizes disrupted sectors through innovation

### Resiliency: Characteristics of Successful Societies / Communities





# Understand the Characteristics and Hierarchy of Societal Functioning



**Resist**

**Respond**

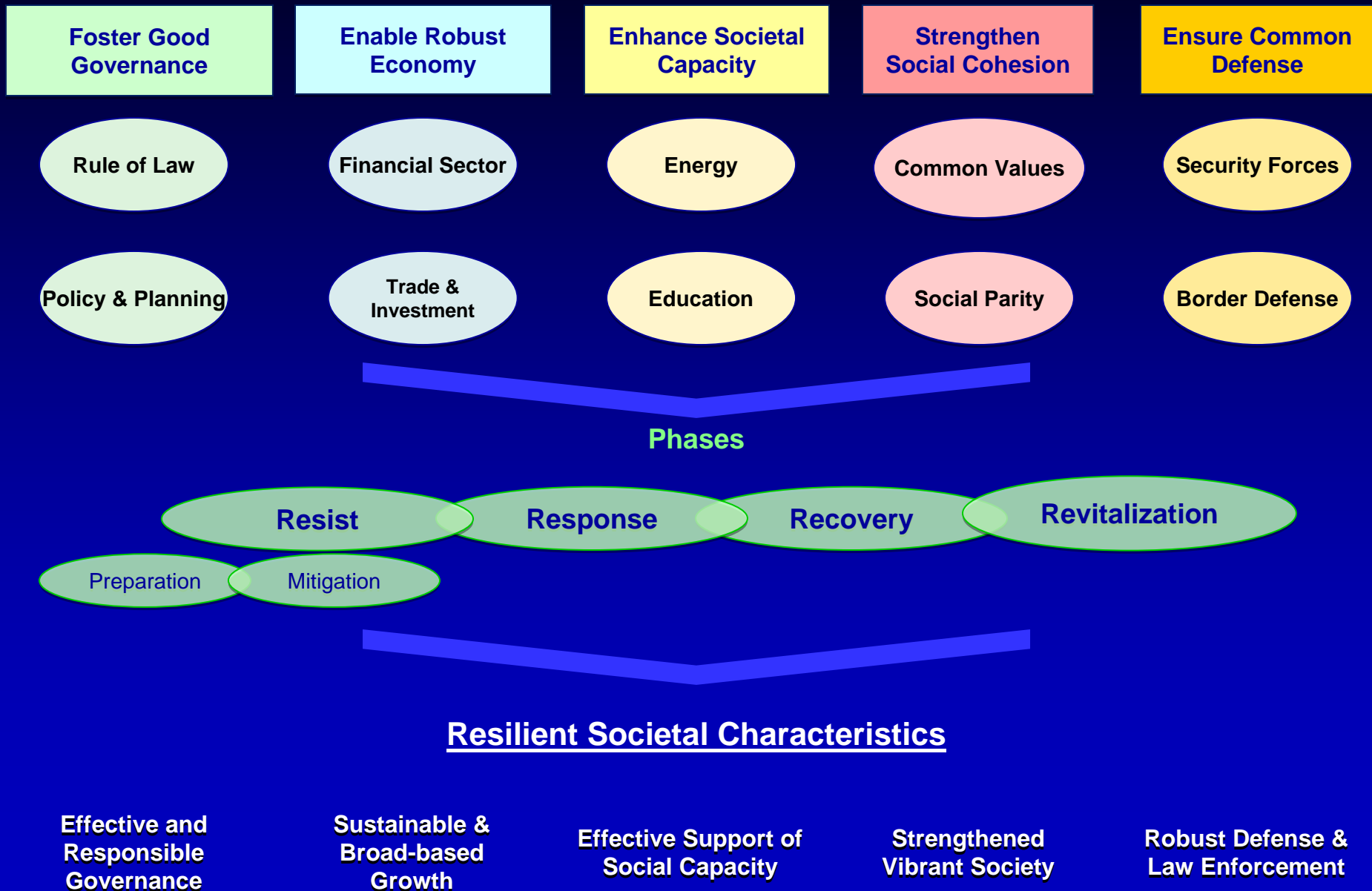
**Recover**

**Revitalize**





# Resilient **Society** Framework & Functioning



# Resilient Community Framework & Functioning



Enhance Societal Capacity

Strengthen Knowledge Assets

Enable Resource Independence

Create Social Cohesion

Foster Good Governance

Humanitarian Assistance

Education

Economy

Cultures, attitudes & motivations

Leadership

Public Health

Communication & Information

Sustainable Development

Social Parity

Security

Phases

Resist

Response

Recovery

Revitalization

Preparation

Mitigation

Resilient Community Characteristics

Safe and durable society

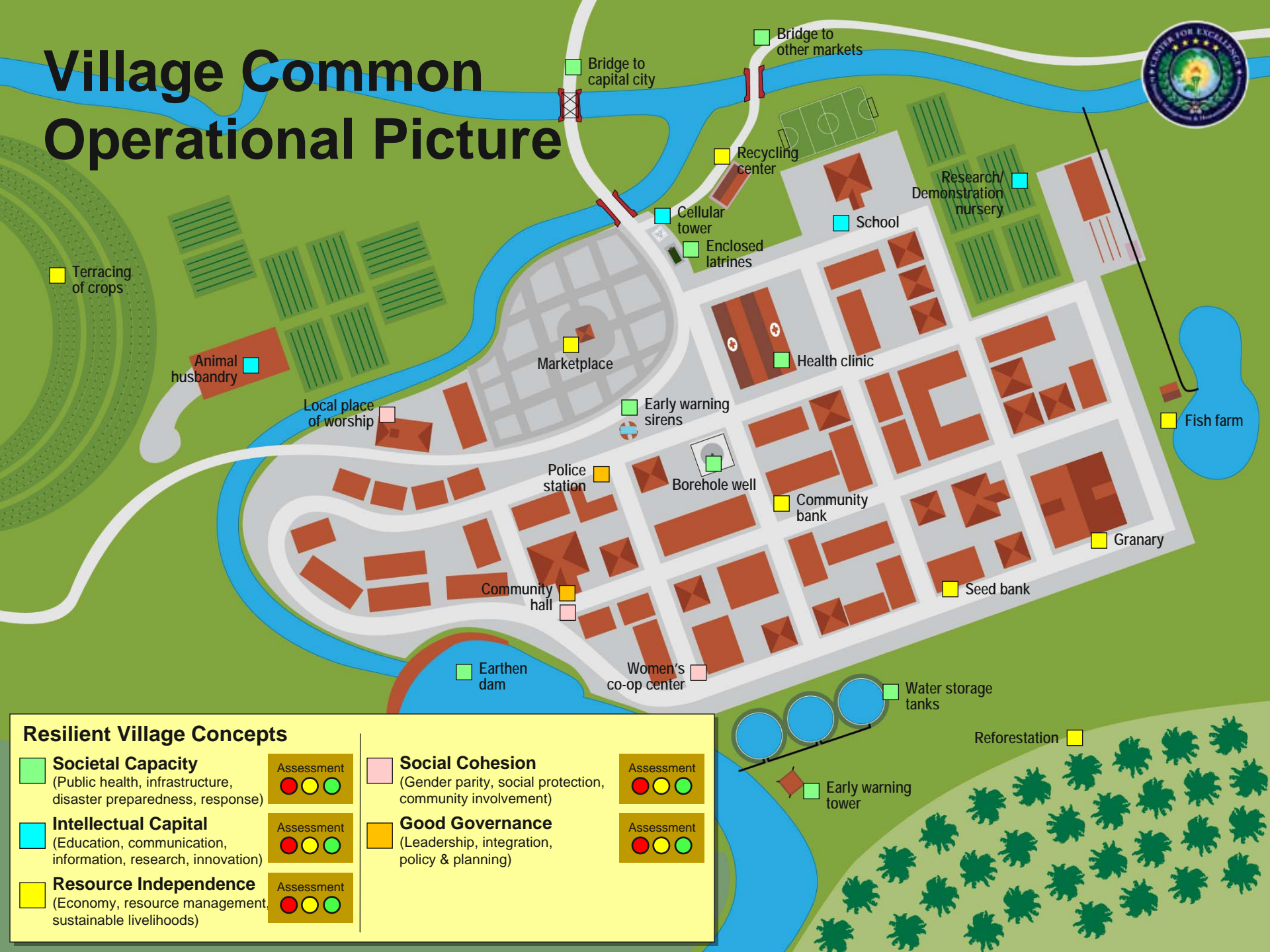
Socially responsible, sporting individuals

Strong and stable families

Human dignity upheld

Inspired and committed youth

# Village Common Operational Picture



Terracing of crops

Animal husbandry

Local place of worship

Marketplace

Early warning sirens

Police station

Borehole well

Community hall

Women's co-op center

Earthen dam

Community bank

Recycling center

Cellular tower

Enclosed latrines

Bridge to other markets

Bridge to capital city

School

Health clinic

Research Demonstration nursery

Fish farm

Granary

Seed bank

Water storage tanks

Early warning tower

Reforestation

## Resilient Village Concepts

- Societal Capacity**  
(Public health, infrastructure, disaster preparedness, response)
- Intellectual Capital**  
(Education, communication, information, research, innovation)
- Resource Independence**  
(Economy, resource management, sustainable livelihoods)

Assessment

● ● ●

Assessment

● ● ●

Assessment

● ● ●

- Social Cohesion**  
(Gender parity, social protection, community involvement)
- Good Governance**  
(Leadership, integration, policy & planning)

Assessment

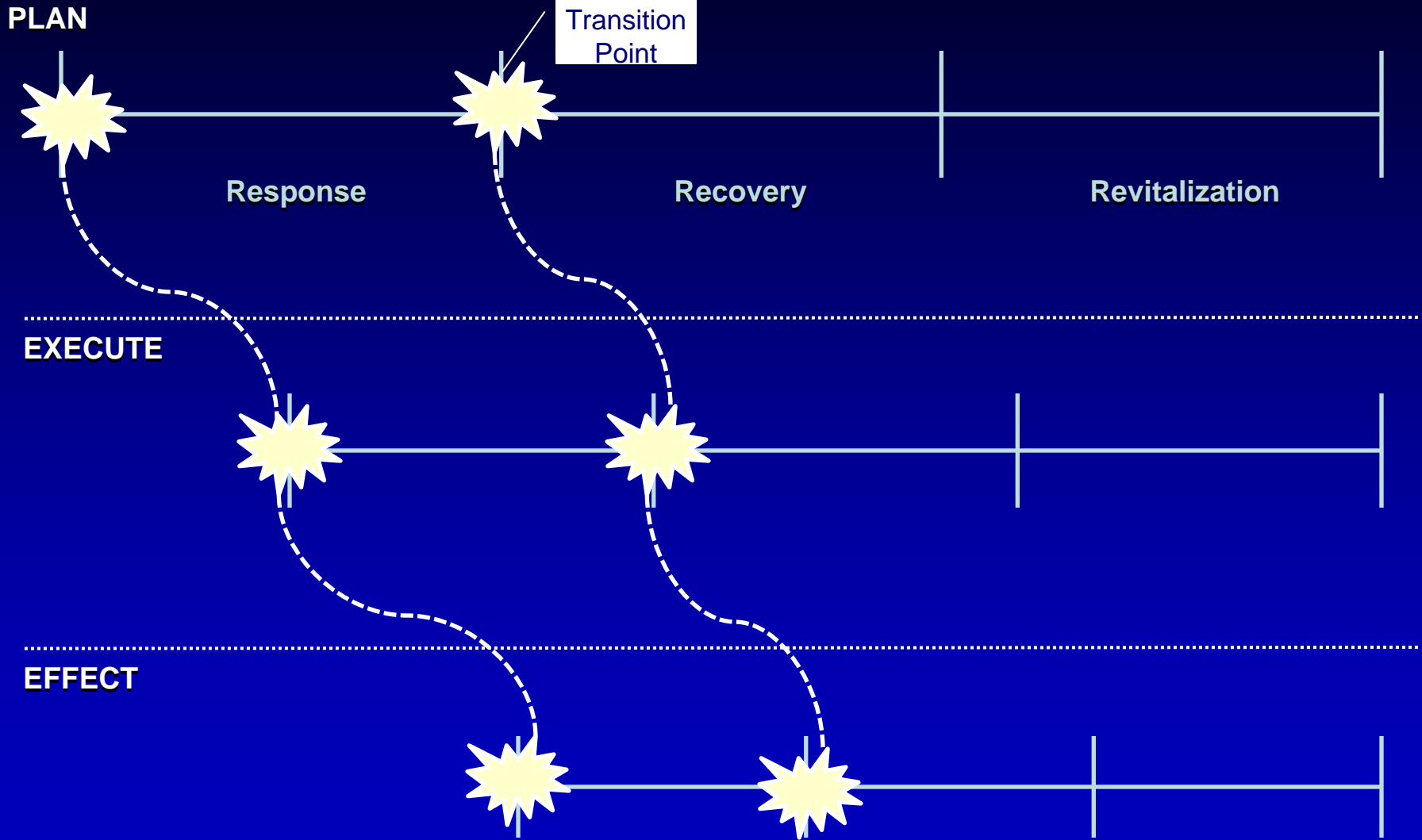
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Assessment

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# Creating a Common Framework

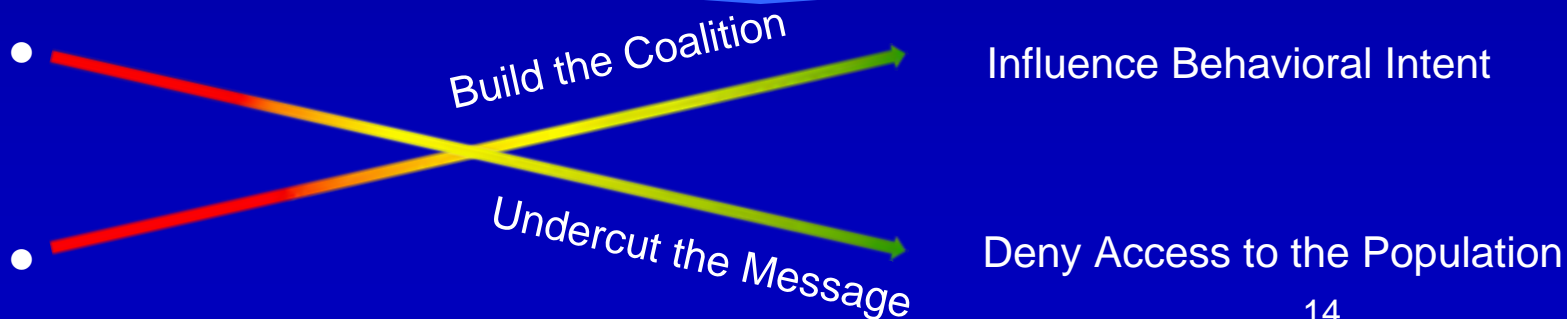




# Common Soft Power Framework



## The Method



# Measuring the Effect of Soft Power



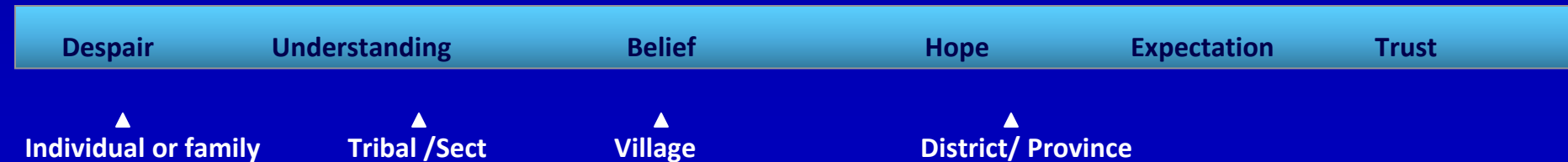
## Countries



## Traditional Audiences within a Country

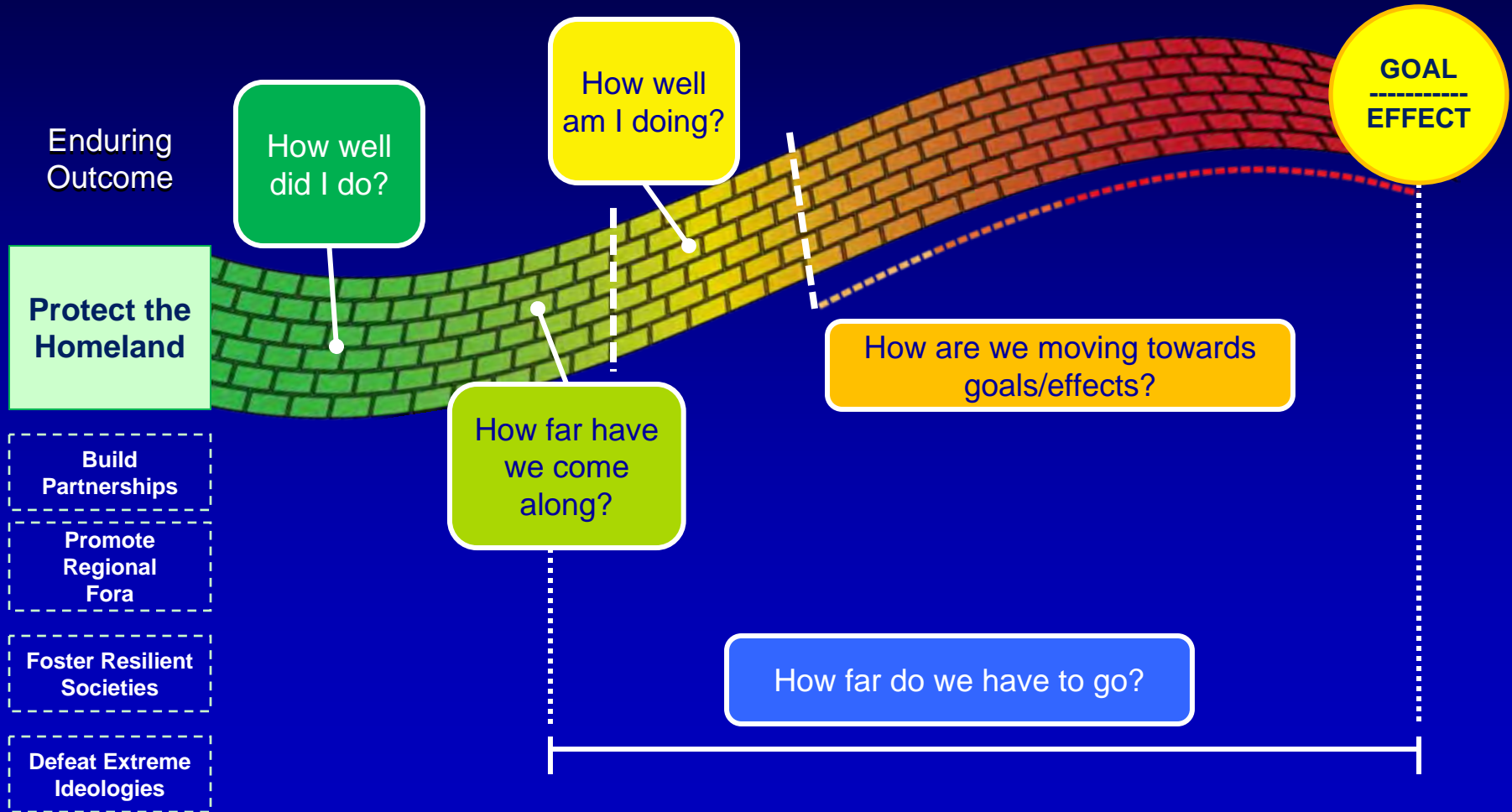


## Affiliations / Confederations





# Operational Assessment



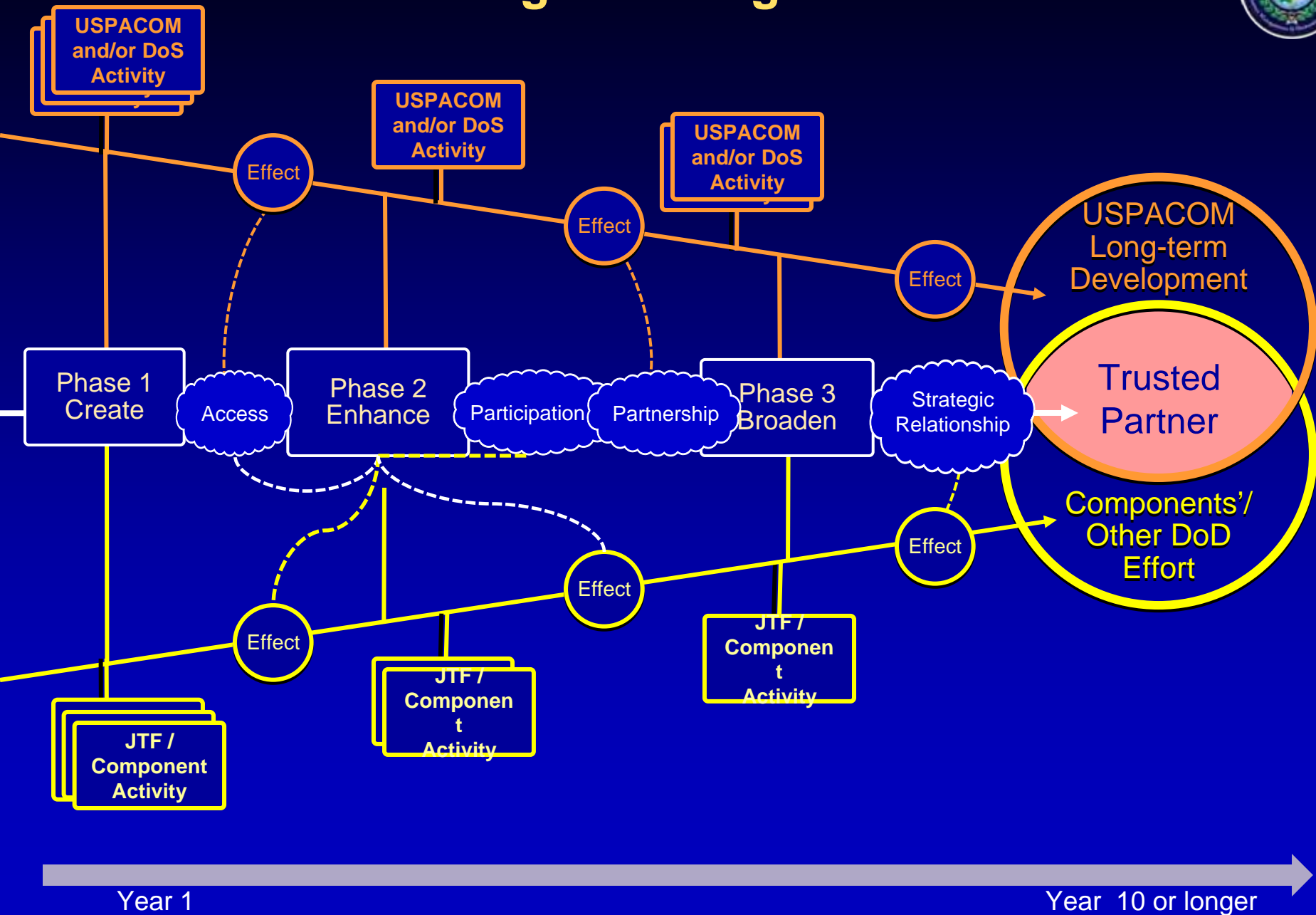


# Assessment

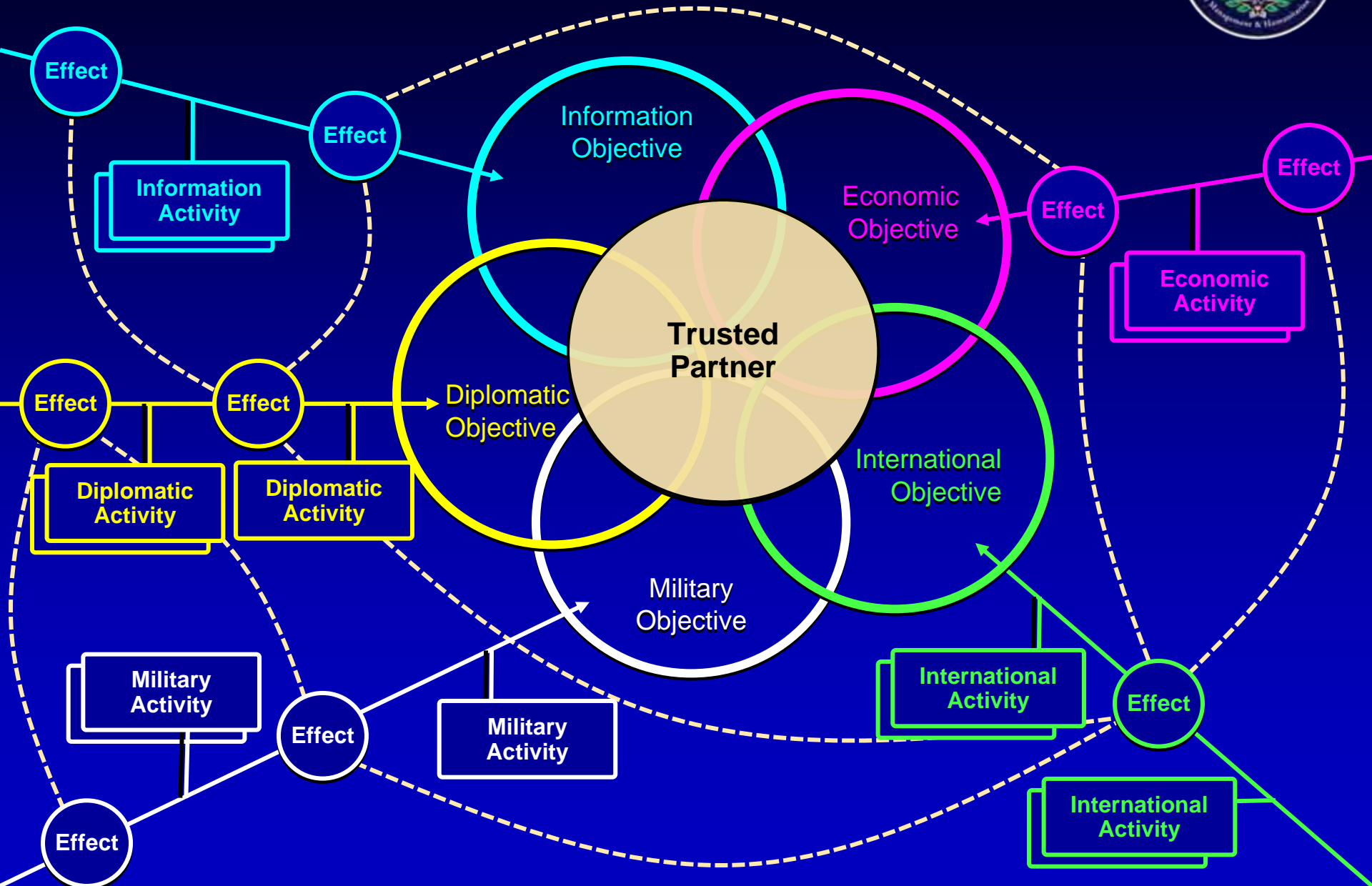




# Building Enduring Influence



# Aggregating Soft Power Effects





# Discussion

Be

wh

of

us

2 things we'll refrain from saying...

- "We need to share intelligence better"
- "Whole-of-government-approach"

icles

Rome

Istanbul

London

Paris

Berlin

New York

Palo Alto

10,000 ft AGL

Communities are very complex organisms

### My intent...

1. Say something clever – hold your attention
2. Incite thought and discussion
3. Get full credit for participating in the conference

- 7 characteristics of resilient communities
- 5 things we need to be effective

Soft Power Tools to do what...?

community

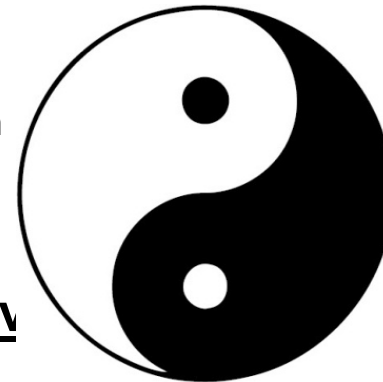
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**characteristics of resilient communities**

Soft Power Tools must enable us to address the complexity of communities

- Disaster preparedness and survival resources
- Expectations (hope)
- Social cohesion (respect, trust, commitment)
- Personal investment
- Information
- tensile-strong infrastructure...something left to start with
- Global connectivity (he ain't heavy....)

intangible



**Understand the environment**

**Make smart and timely decisions** effective

- **Understand my environment**
- **Make smart decisions**
- An enterprise of action-figures
- Employ relevant resources
- More verbs than nouns (action – Royal Bank of Scotland)

tangible

- 51% world population
- 36 nations encompassing about half the earth's surface
- 3,000 languages
- World's six largest armed forces (China, Russia, U.S., India, North Korea, South Korea)
- World's three largest economies (U.S., Japan, China)
- Source of about one-third of U.S. trade
- 15 time zones
- Most of the world's Muslims



# Understand the environment

Informed Dictionary	Aware Great American Novel
------------------------	-------------------------------

afghanistan

eastern kenya

Soft Power Tools must enable us to address the complexity of communities

decisions about fuzzy things, like

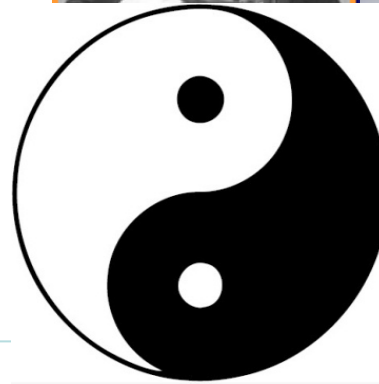
Observe  
Orient  
Decide  
Act



indonesia

William Butler Yates

intangible



tangible

2009

"... I threw a penny to find out if I might love"

1910

ing for you  
personality  
predictors of  
p success."

# Make smart and timely decisions

## Operational acupuncture

everything, everywhere matters all the time...

It is all about the humans.

And it is our ability to understand them in their local environment within an increasingly global context that enables us to make smart and timely decisions about cultivating resiliency and advancing the human condition

# Our last Cold Start

0846 on 11 September 2001 was essentially our 'cold start' in the War on Terror. The American people will not tolerate another one. The overall finding of the 9-11 Commission was that our primary vulnerability was created by a failure of imagination. The speed and power of our ideas will now be our principal strength.

## SOJ3 Planning Guidance

Be audacious and creative in planning

Solve the problem as soon and from as far away as possible

Think & plan outward from a potential event—backward / forward—across space and time.

Disaggregate the problem and identify opportunities

Continuously *multiply our options* and *network our effects*

Cheat the enemy at every opportunity and cede them no advantage

Shape enemy behavior to make them more targetable

Shape the environment to make US interests less vulnerable

Exploit our capacity to *Out-think*, *Out-decide* and *Out-network* the enemy

Consider our imagination now as our primary force multiplier

## Always remember:

The American people expect us to be tough

They expect us to be good at our job

They expect us to serve with Honor

*CAPT R V Gusentine, USN  
Director for Operations  
Special Operations Command Pacific*

“The first three socio-economic revolutions were all based on things – the plow for the agrarian revolution, the motor for the industrial revolution and the computer for the information revolution. Perhaps the time has come for the world to consider a fourth revolution, aimed no longer at objects but at understanding the most precious resource on earth – ourselves.”

**Dr. Michael Dertouzos, MIT**

# Commercializing Ship Research via the “Decisive Demonstrator”

Presented by Steven Loui, Navatek Ltd.

17 March 2010

Pacific Operational Science & Technology Conference



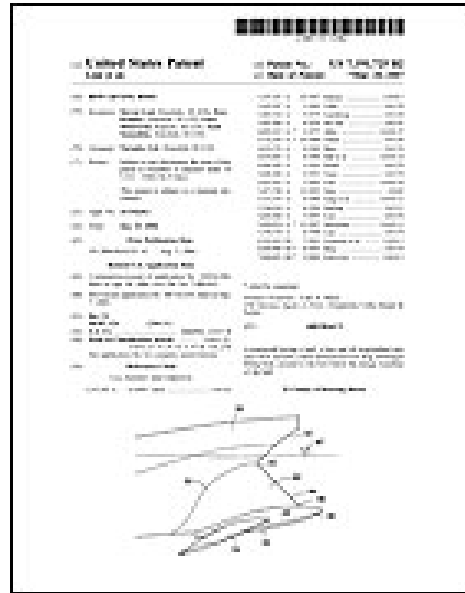
**1970:** Ferro-cement sport fisher



**2010:** Bladerunner-BR 51



## Advanced Technology



22 U.S. and Foreign patents

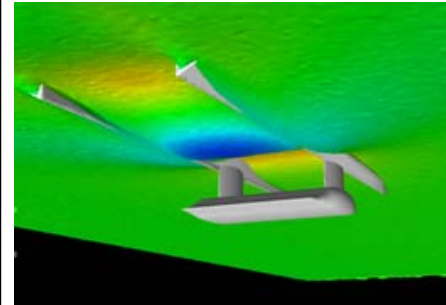


The Royal Institution of Naval Architects

International Reputation Within Field



Superior Design and Optimization Tools



## Rapid Prototyping

Shipyard to Build Demonstrators



Ideal Test Conditions

## At-Sea Validation



## Strategic Partnerships



LOCKHEED MARTIN



NORTHROP GRUMMAN





*Navatek ETM® Inflatable  
vs. Industry Benchmark*

Def. “**Settling or ending something such as a debate, controversy, or contest.**”

**Hawaii is Ideal Test Grounds:**  
varied sea conditions to validate performance (deep, open ocean, coastal, sheltered bays and lagoons)

## **Effective but Expensive**

## **Requires Strategy to Secure Capital**

- Company internal funds
- Investor funds
- Prototyping contracts

# X-Craft

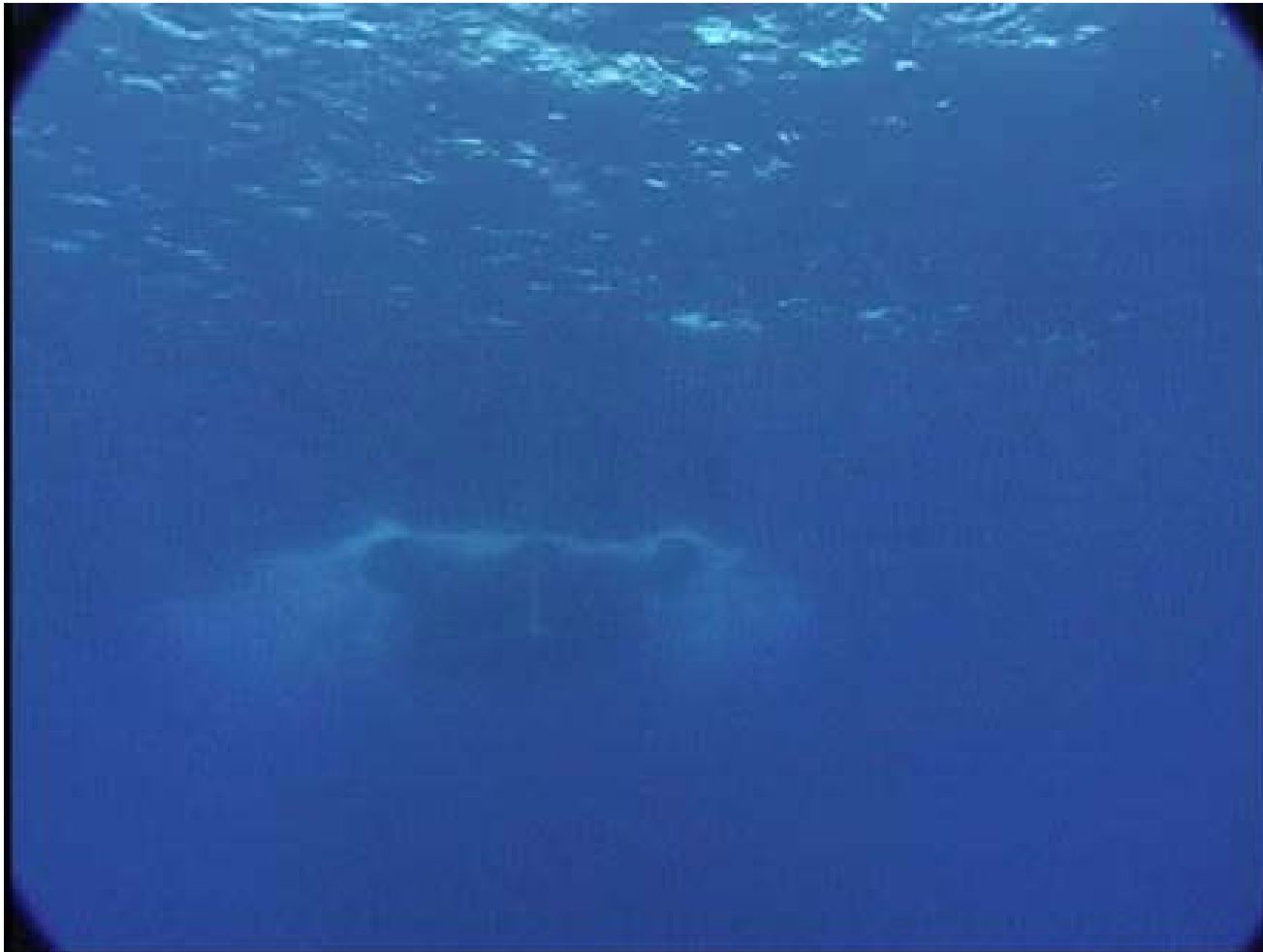
- **Concept Validation**



## Demonstrator Purpose

Resolve science and engineering first principles

*Navatek Midfoil lifting body ship*



# Y-Craft

- **Technology Validation**

SWATH Navatek I



## Demonstrator Purpose

- Tech Transferability
  - Predictability
  - Acceptability
- Maintainability
  - Functionality
  - Style-ability



Navatek II



Kilo Moana (UH)



Damen SWATH Ferry (Holland)

# Justifying the Risk/Cost of Demonstrator

**EASY:**  
Navatek BR-51

Performance gap well-identified

BR-51 technology offers clearly superior performance

Large market size, lack of competition

Intellectual property (IP) protection



**Navatek Bladerunner 51**  
Air Entrapment Monohull



**Fabio Buzzi 55 SC**  
Deep-V Hull

**VS.**

**Higher Fineness Ratio = Higher Speed Efficiency, Better Seakeeping**

(Fineness Ratio: Length divided by running beam measured at hull chine)



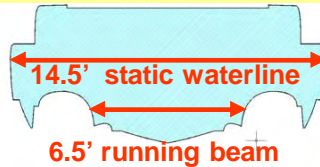
Length 51' divided by running beam 6.5' = **7.84**



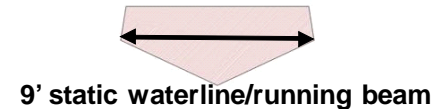
Length 54' divided by running beam 9' = 6.0

**VS.**

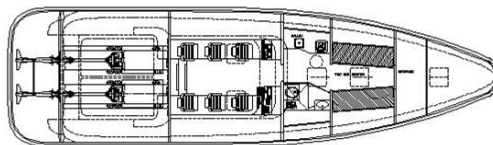
**Wider Beam at Rest = Higher Weight Carrying, Better Static Stability**



**VS.**

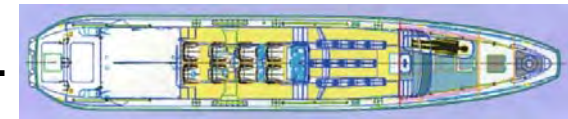


**Wider Beam Overall = More Usable Deck Space**



14.5' Beam X 51' Length = **740 sf.**

**VS.**



9' Beam X 54' Length = 486 sf.

# Justifying the Risk/Cost of Demonstrator

**HARD:**

**HYSWAC/Sea Flyer**

Alternative ways to verify the S&T issues?

- Computer validation?
- Small-scale testing?

Technology synergies? e.g. ability to test advanced polymer drag reduction

U.S. Navy *Sea Flyer* Large-Scale Lifting Body Demonstrator



“Communicate your value statement clearly and concisely”

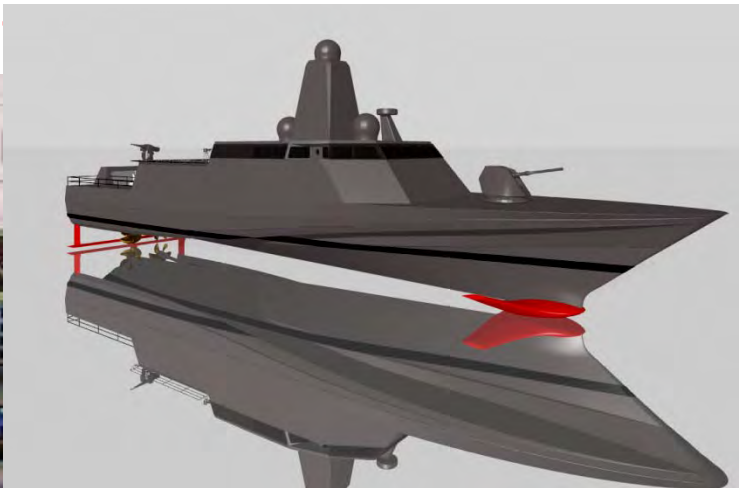
**Vertical Acceleration**  
~.17 grms

	<b>BLB-65</b>	<b>BLB-200</b>
$\lambda$		3.100
Length (m)	19.82	61.44
WL (m)	18.90	58.37
Disp (tonnes)	26.42	787
Speed (knots)	<b>23</b>	<b>40.5</b>
Froude No.(WL)	0.870	0.872
Wave ht.(m)	<b>2.012</b>	<b>6.2</b>
wave period (sec)	5	8.8
wave length (m)	39.0	121.0
wave vel. (m/sec)	7.80	12
Encounter period (sec)	1.99	3.66

*BLB-65 Seakeeping Demo*



**Sea State 6**



**Initial technology transition overseas often easier/effective/appropriate**



**Bladerunner-51 Sets Round-Britain Speed Record: 1,691 miles in 27 hours and ten minutes (62 mph average), beats prior record by almost 4 hours**



**BR-51 TIMELINE**

**2005:** Prototype sets Round-Britain Record, **international commercialization** started

**2006-2009:** **U.S. patent lawsuit** disrupts marketing

**2010:** **Patent lawsuit won;** all appeals against decision are dismissed

**2010:** Prototype retrofitted with Navatek patented ride enhancement system (ARES) for **Singapore** demonstrations

**Use Technology Insertion to extend useful life/value of demonstrator**

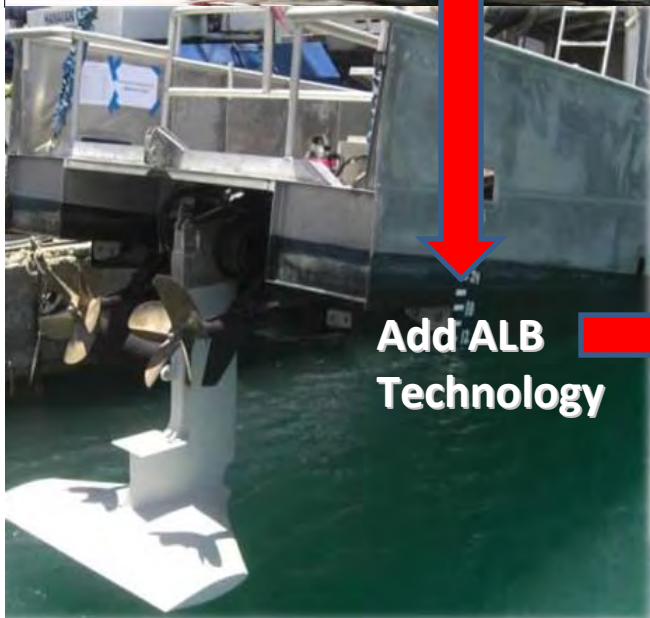
**Navatek ETM<sup>®</sup> 11m demonstrator**



**U.S. Navy 11m ASW USV**



**Navy SBIR**



**Add ALB Technology**





*“Three ships is a lot of ships. Why can’t you prove the world is round with one ship?”*

***Innovate, Persevere...and Don't Run Out of Funding!***

# Haiti Relief & Recovery



**Accomplishments of Emergency Relief,  
Recovery Initiatives and  
Issues for Conditions Based Decisions**

# Accomplishments of Emergency Relief

- **Search and Rescue:** Largest and most successful in history.
- **Water:** 1.2 million have access to treated water, a 50% increase from pre-earthquake levels.
- **Health:** Emergency medical needs treated (more than 80,000 patients seen) while building foundation for long-term care. 56 of 59 health facilities have surgical capability.
- **Food:** USAID's largest emergency urban feeding program reached 3 million people, prioritizing women.
- **Shelter:** 1.29 million were in need of shelter assistance following the earthquake, 70% of which now have access to basic shelter.
- **WASH:** Only 21% of Port au Prince residents had access to modern sanitation prior to earthquake. Public and private partners expanding capacity rapidly.
- **Communications:** Restored 80% of mobile phone network within one week.
- **Jobs:** 5,000 daily temporary jobs created within first 2 weeks. Now providing approximately 14,000 jobs per day.
- **GOH:** Strong partnership established early in response. Communications and technical support provided.



# Lessons Learned: The First 9 Weeks

- **Fog of Relief**
- **Logistics is Lynchpin to Success**
- **Insufficient Systems/Resources – Ad Hoc Approach**
- **Interagency Role and Responsibilities**
- **Exercise/Plan jointly and with international partners**
- **Fine line between emergency response & dependency**
- **Capitalizing on donations and volunteers**
- **Build local ownership from Day 1 – NGOs and Govt**
- **Three Ds key to Success**

# Next 90 days: Relief to Recovery

## A race against time / rains

- **Transitional Shelter and Sanitation:** Evacuate, decongest and increase drainage in 19 high density camps before April 15<sup>th</sup> and encourage safe return to homes. Sanitation slowest sector aims to achieve 1 latrine per 50 Haitians by June. 3,673 constructed, aiming for 7,000+ by mid-April. (IOM, UN Habitat)
- **Food:** Target 2 million vulnerable people with a one month ration, transitioning to work programs and protecting local markets. (WFP)
- **Health and Education:** Vaccination and primary care priorities. Strengthen emergency surveillance system to track outbreaks. Preposition medical supplies in advance of rains. Work to reopen schools. (Canada, Unicef, PAHO)
- **Maintain Infrastructure:** Repair Haiti-DR road and continue seaport repairs. (JTF-H)



## Work with partners to set the stage for reconstruction

- **Jobs:** Increase employment to 25,000 Haitians/day; transition from rubble removal to strategic tasks (watersheds) and opportunities outside Port-au-Prince.
- **Food Security:** Increase agricultural incomes by promoting seeds, fertilizer and support for 200 farmer associations and improving market access by repairing roads.
- **Health System:** Develop six centers of excellence for post-trauma care and ensure prosthetics/orthotics availability for 2,500-4,000 amputees. Expand surgical and ER capacity and improve access to primary health care for 80% of Haitians.
- **Governance:** GoH moves into former US embassy and launch “Ministries in a Box.”

# Goal: Protect Displaced, Vulnerable Populations

## 1. Move people to flood safe sites

- Secure Land (GoH) - Approx 300 HA
- Prepare Sites (IOM) – 19 sites, 7 priority sites
- Move families - > 140,000 people
- Communicate approach (MINUSTAH, GoH)

## 2. Protect families in settlements from (severe weather)

- Decompress/Decongest (IOM)
- Improve drainage (USAID/JTF)
- Sanitation & hygiene, public health (UN)

## 3. Settlement Security (MINUSTAH/GOH)

- Monitor gang activity
- Protect children and women
- Address night security gaps

## 4. Key USG supporting efforts

- US led CSC is principal decision-making authority
- Planning jointly with DoD to ensure capabilities exist to execute plan



# Contingency planning with DoD to ensure success

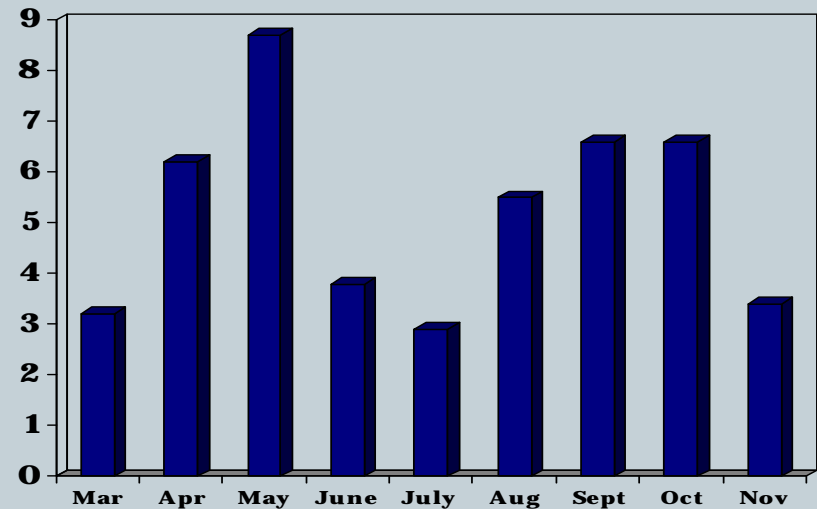
## Major concerns are:

1. Heavy rains
2. Hurricanes
3. Breakdown of civil society/governance

## Detailed scenario planning underway (UN/NGOs/USG):

- MINUSTAH is capable, however, has limitations – (i.e. medium lift helos not all weather/night capable)
- Historical precedent in Haiti indicates unique DoD support in the past – (i.e. MEU deployed with 19 all-weather helicopters)
- Weather analysis indicates 2010 will be “more severe” than average year (i.e. Haiti will get hit by a moderate to severe hurricane)
- Therefore, we see a need for specialized DoD presence (planning, command and control) as well as a **rapid response capability** (within 48 hours)

Average Rainfall in Haiti (inches)



Hurricane Climatology & 2010 Forecast

Atlantic Basin	Climatology		2009 Summary		2010 Forecast
Named Storms	9.6	>	6	<	11-16
Named Storm Days	49.1	>	24	<	51-75
Hurricanes	5.9	>	3	<	6-8
Hurricane Days	24.5	>	23	<	24-39
Intense Hurricanes CAT 3 or >	2.3	>	2	<	3-5

**2010 above average hurricane season**





# “Defining a Need for Soft-Power Tools”

Ed Smith  
Director,  
APCSS



# APCSS Mission and Vision

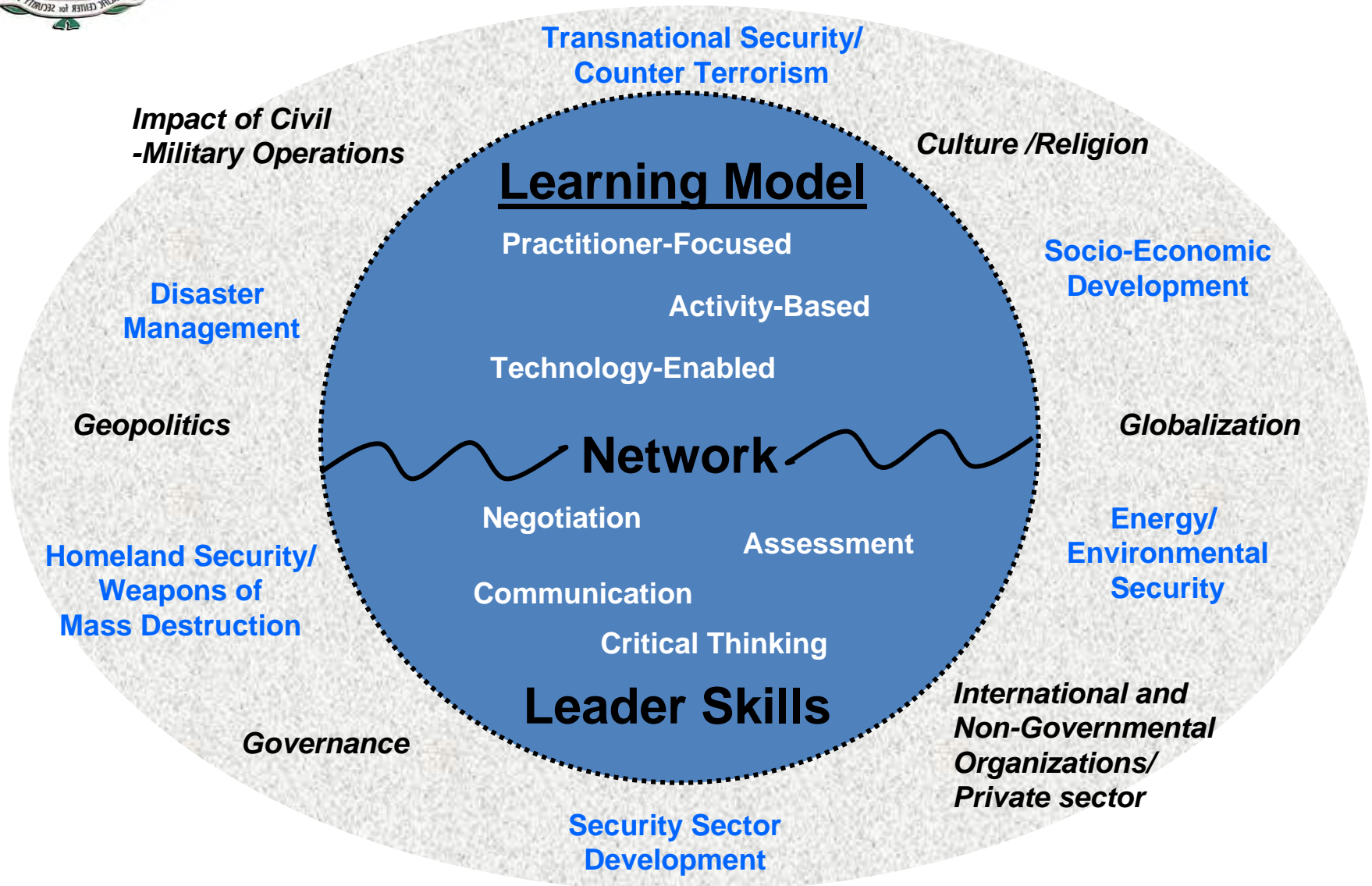
**Mission:** To educate, connect, and empower security practitioners to advance Asia-Pacific security.

**Vision:** Setting the standard for innovative international executive education and leader/organizational development which advancing multi-national security cooperation and capacity-building.

- ✓ **Venue of choice** for security-cooperation education
- ✓ **Sought-after facilitator** of security solutions
- ✓ **Catalyst** for leader and organizational capacity-building
- ✓ **Key node** within the security-analysis and strategic-understanding community
- ✓ **Connector** of communities of expertise and influence



# Security Environment - Focus Areas





# Formal Relationships

## OSD

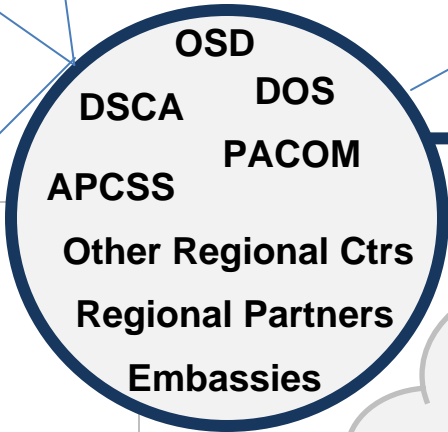
- Policy Guidance and Oversight
  - South Asia
  - Asian and Pacific Security Affairs
- Regional Centers
  - APCSS
  - GCMC
  - NESAC
  - CHDS
  - ACSS
  - Global Center

## DSCA

- Executive Agent
  - Programming/Budget
  - Personnel
  - Administrative
  - Logistics
  - Mission Support

## DOS

- Country Team
  - EAP and SA
- USAID
- SCRS



## APCSS

## PACOM

- Operational Control
- Memorandum of Understanding
  - Personnel Security Services
  - Command Support
  - Administrative
  - Information Assurance
  - Civilian Personnel Services
  - Secure Comms, Equipment and Services
  - Civilian and Military Authorizations
  - Military Personnel Support

## Building Partnership Capacity

- 4700+ Alumni
- 45 Alumni Associations
- “Expanding/Modernizing”



# Informal Relationships



UNIVERSITY OF HAWAII  
MĀHĀMĀLAMA  
1907  
UA MAU KE EA O KA 'ĀINA I KA POHO

University of Hawaii  
Disaster Management



NDU



Pacific and Asia  
Affairs Council




United Nations

SPP

State Partners (TAG)



Pacific Disaster Center



NPS



Maui High  
Performance  
Computer Center



East-West Center

**Alaska/Mongolia**  
Focus: Civ-Def

**Washington/Thailand**  
Focus: Port Security


**Oregon/Bangladesh**  
Focus: Civ-Mil/HADR

**Hawaii/Indonesia**  
Focus: Civ-Def/HADR

**Guam/Philippines**  
Focus: HADR

**Idaho/Cambodia**  
Focus: Peace Keeping

**Future Partners**  
- Tonga, Sri Lanka,  
Vietnam and Oceania



Center of Excellence



Service SSC



Pacific Forum Center  
for Strategic and  
International Studies



Hawaii National Guard



## Soft Pwr + Hard Pwr = Smart Pwr

“We must use what has been called smart power: the full range of tools at our disposal—diplomatic, economic, military, political, legal, and cultural—picking the right tool, or combination of tools, for each situation.”

Secy of State H. Clinton



# Soft Power Tools State of Affairs

**A soft power arms race?**



# Soft Power Tools State of Affairs

**If we do have a “race,” what to do?**



# Soft Power Tools

**How do we know we're successful?**



## Soft Power Tools

**The APCSS educational experience:  
“Empower.”**



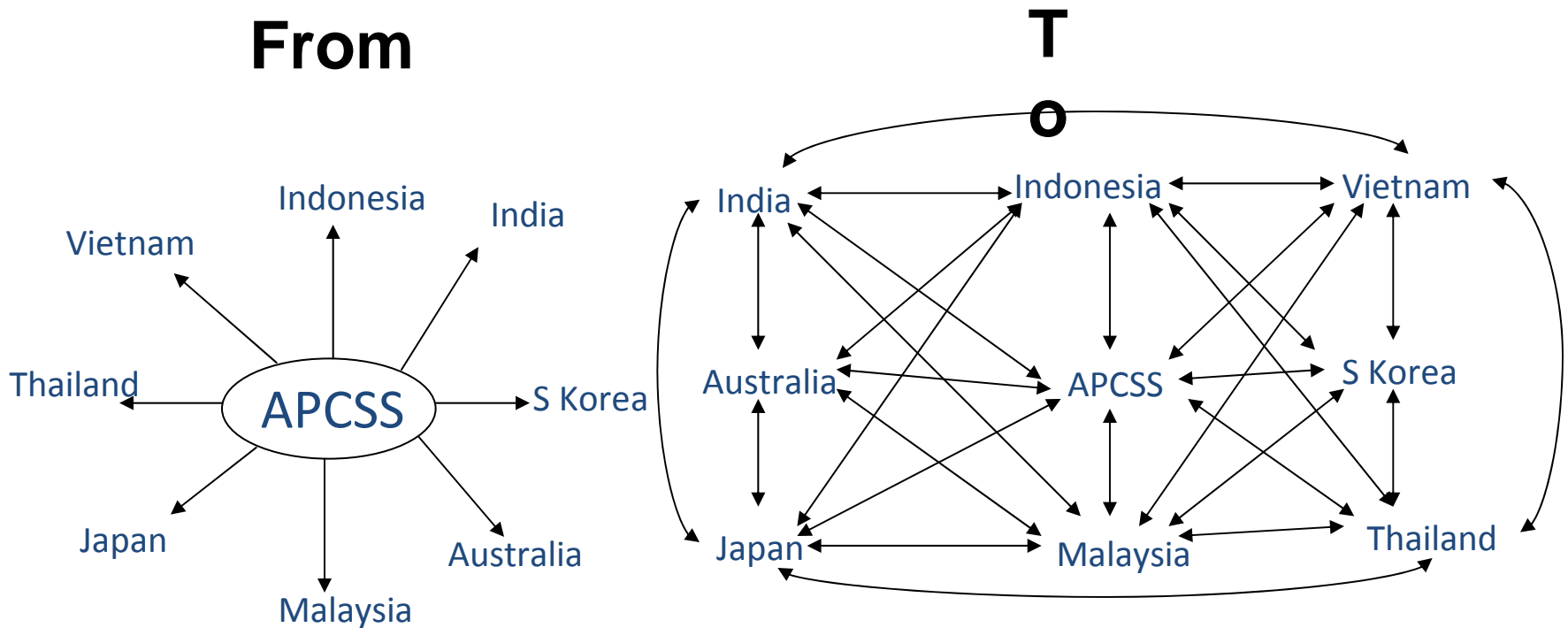
# Soft Power Tools

**The APCSS educational experience:  
“Connect.”**



# Soft Power Tools

## The APCSS educational experience: Capacity building.





# Government Response To HADR



**Presenter:**  
**COL Steven Seng Wei San**  
**Commander 3rd Division Artillery**  
**Mission Commander**

# Earthquake Facts



**1<sup>st</sup> Earthquake**  
 Date-Time : 30 Sep, 1816H  
 Magnitude : 7.6

**2<sup>nd</sup> Earthquake**  
 Date-Time : 1 Oct, 0952H  
 Magnitude : 6.8

- **13 out of 19** District in W. Sumatra Province were affected in the earthquake.
- Estimated losses: **US\$2.3 billion**
  - **279,000** house destroyed & damaged
  - Fatalities and Casualties:
    - Death 1115 (Padang Pariaman 675; Pariaman 37; Padang 313; Agam 80)
    - Severe 1214
    - Slightly 1688

# Local Responses

- **BNPB (National Agency for Disaster Management) called off SAR efforts on 5 Oct; transited to Relief and Rehabilitation efforts**
  - 7 days after disaster strike; difficult to find survivors after initial 72-hours
  - Health Ministry warned of potential spread of diseases due to decomposed bodies and water; and hence the need to trans it to next phase quickly
  - Will set up a Rehabilitation & Reconstruction Board (BRR)
  - NGOs/IOs focus shifted from disaster relief to healthcare
  - All 21 SAR teams (local & foreign) completed inspections of 31 sites in Padang and reported no signs of life
  - Most SAR teams packing up and scheduling their exits
- **Additional Rp6 trillion (US\$630 million) allocated for reconstruction**
  - Rp4 trillion (US\$420 million) to repair destroyed houses
  - Rp1 trillion (US\$105 million) to re-construct public facilities
  - Rp1 trillion (US\$105 million) to re-construct roads, bridges & other infrastructure.
  - *US\$108.5 mil - Amount allocated by Indonesian government for Yogyakarta earthquake in 2006*
  - *US\$6.5 bil - Amount raised from Indonesian government and foreign governments/ NGO/ IO for Aceh Tsunami in 2004*

# Our Considerations

- Regional Assistance
- Alienate Human Suffering
- Meaningful Contributions

# Our Deployment

## Delivering HA Supplies



## SCDF



**Msn/ NAST Comd & MFA Rep (Mr Gavin Chay)** handed over the following to **Vice Governor of Padang** on 3 Oct 09:

- \$50K GE (tentages, blankets, ground sheets).
- \$20K medical supplies.

A **42-man** strong SCDF Disaster Assistance and Relief Team (DART) was deployed into Padang on 2 Oct 09:

- Deployed and commence operations at Padang.
- Completed search and evacuation operation on 6 Oct 09 upon UNDAC announcement of transition.
- Repatriated on 8 Oct 09.

# Our Deployment

## Medical Aid



## Constructions Aid



### Accident & Emergency (A&E) Cases

- Pariaman Public Hospital: 366
- Koto Bangko Mobile Clinic: 751

### Surgical Cases

- Pariaman Public Hospital: 102

Total Patient Load: **1219**

### Pasir Padang

- MDK construction from 11 . 14 Oct by a 16-man Engr Sect. Used as temporary shelter in replacement of damaged clinic.

### Koto Bangko

- MDK construction from 11 . 15 Oct by a 14-man Engr Sect. Used as temporary shelter in replacement of damaged polyclinic.

# Key Takeaways

- **Time Factor**
  - Flights In
  - Info Accuracy
  - Transportation
- **Local Sensitivities**
  - Deployment
  - Integration
  - Construction
- **Integrating With IO/NGOs**
  - Ground Appreciation
  - Complementary Service
  - Logistics



# A Small Business Paradigm For Sustainable Technology Insertion

3-17-2010

Wes Freiwald  
President & CEO PDS, LLC

Pacific Defense Solutions, LLC (PDS)

A Hawaii Company

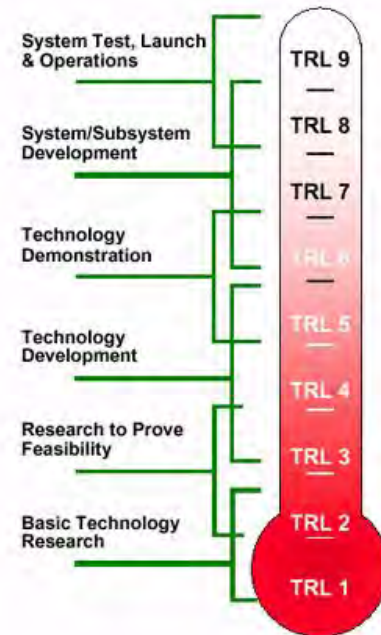


# Background

- **Incorporated in Hawaii in 2006**
- **Began business in earnest in fall of 2006**
  - Founders came from large Aerospace
- **Major motivation was more flexibility to grow in the Pacific region market**
- **Another motivation was to provide a greater sense of stewardship to the technology community**
- **Started with five employees, now in the process of hiring numbers 24 & 25, could pass 30 within next year**

# Focus

- Focus on what we know – specifically the DoD customer base
- Compete with mainland companies for POM programs
- Don't desire venture capital (VC) infusion
- Prudent but moderate growth strategy
  - Reduce risk, focus on high TRL transition
- Other important considerations
  - Credit and Member capital is tight
  - Typical profit margins for defense contractors relatively small therefore development of cash flow takes time



# Technology Transition Keys

- Thoroughly understand customer base needs, including *Requirements, Shortfalls, Schedules and Budgets*
- Continuously seek intersecting points of capabilities and technologies with customer base needs
- Don't stretch far from core technologies and capabilities
- Avoid the “build and peddle it” philosophy
  - We take this a step further and focus on “Must Haves”
  - “Nice to Haves” often become “Unfunded”

# *Requirements*

Know the  
“Must Haves”  
or  
“Most Dear”

Fundeds

A yellow Caterpillar wheel loader is shown in the process of dumping a large amount of dark, granular material (likely coal or ore) into a red wheelbarrow. The wheelbarrow is positioned in the foreground and has the word "Fundeds" written on its side. The background features a large, dark, rocky hillside under a clear blue sky. The overall scene is set in an industrial or mining environment.

# Simple Paradigm We Use for Guidance

<p><b>Current Customer Base Current Technologies</b></p> <p><b>(Funds On-contract)</b></p>	<p><b>Current Customer Base New Technologies</b></p> <p><b>(IRAD)</b></p>
<p><b>New Customer Base Current Technologies</b></p> <p><b>(Marketing)</b></p>	<p><b>New Customer Base New Technologies</b></p> <p><b>(Marketing &amp; IRAD)</b></p>

# **Technology Transition Strategies have been Developed for Product Concept (Research) to Market (Operations)**

- **Technology Transition Strategies**
  - Product Development Institute
  - Harvard (I/II)
  - National Research Council
  - LeanTEC/AFRL, NASA, etc, etc
- **Common Factors Amongst Technology Transition Strategies include**
  - Early market feedback
  - Iterative Development
  - Flexible processes
  - Rapid prototyping

# Know The Market – Assume The Competitors Do

- **Is the technology important? Has it been done?**
- **Successful technology transition requires “a thorough understanding of the stakeholders needs” - MIT/LL**
- **Tie to specific needs, i.e., Roadmaps, Strategic Plans, Shortfalls, etc:**
  - **Strategic Planning Guidance (SPG)**
  - **Joint Programming Guidance (JPG)**
  - **Combatant Command (COCOM) Integrated Priority Lists (IPLs)**
  - **Capabilities Investment Strategy**
- **You’ll hear a lot about needs at this conference**

# Additional Market Considerations

- **Does technology fit within Service/Agency policies?**
  - Example: New chemical could reduce wear on operational equipment, but disposal regulations and/or associated costs may be prohibitive
  - Example: Use of pulsed lasers for ranging of satellites, however, policy forbids laser illumination of most satellites
- **Does technology fit within existing CONOPS?**

# Small Business

- **Flexible, Responsive**
  - Opportunity identification to proposal submittal in < 24hrs
- **Not process encumbered**
  - Manage our own rates, cost structures, etc – no “flow downs”
- **SB programs**
  - SBIRs, Subcontracting to primes
- **Primes with large contracts are in excellent position for next generation of systems they are delivering**
  - Work with primes to become a “preferred provider”
- **Work with multiple primes**

# Suggestions for Small Businesses

- **Understand the processes and timelines**
  - **Planning, Programming, Budgeting and Execution (PPBE) Process**
    - **Planning (P)** - creating a strategy for future needs/capabilities and anticipated receipts
    - **Programming (P)** - deciding what needs to fund and where to accept risk
    - **Budgeting (B)** - detailed pricing of the things you will put resources against
    - **Execution (E)** - approval and funding of the budget and the actual outlay of capital
  - **Encourage staff involved with managing or developing business to take DAU courses**

# Summary

- **Transitioning Technology is difficult**
  - Focus on solid opportunities
  - Don't assume “build it and they will come”
  - Know the “Must Haves” ... this is hard work!
- **Even with customer pull and funding, transition is hard**
  - “Less than 40% of [R&D] technology projects that are intended to transition actually do so” – AFRL
- **Performance is crucial**
  - “Technologies that transition must transition on schedule ... and meet technical and cost goals” – AFRL

# Backup

# TRL Levels

- TRL 9 - Actual system "mission proven" through successful mission operations**
- TRL 8 - Actual system completed and "mission qualified" through test and demonstration in an operational environment**
- TRL 7 - System prototyping demonstration in an operational environment)**
- TRL 6 - System/subsystem model or prototyping demonstration in a relevant end-to-end environment**
- TRL 5 - System/subsystem/component validation in relevant environment**
- TRL 4 - Component/subsystem validation in laboratory environment**
- TRL 3 - Analytical and experimental critical function and/or characteristic proof-of- concept**
- TRL 2 - Technology concept and/or application formulated**
- TRL 1 - Basic principles observed and reported**



# ONR

*Revolutionary Research . . . Relevant Results*

## Sharpening the Edge

Serving the Next Generation Warfighter . . . Now



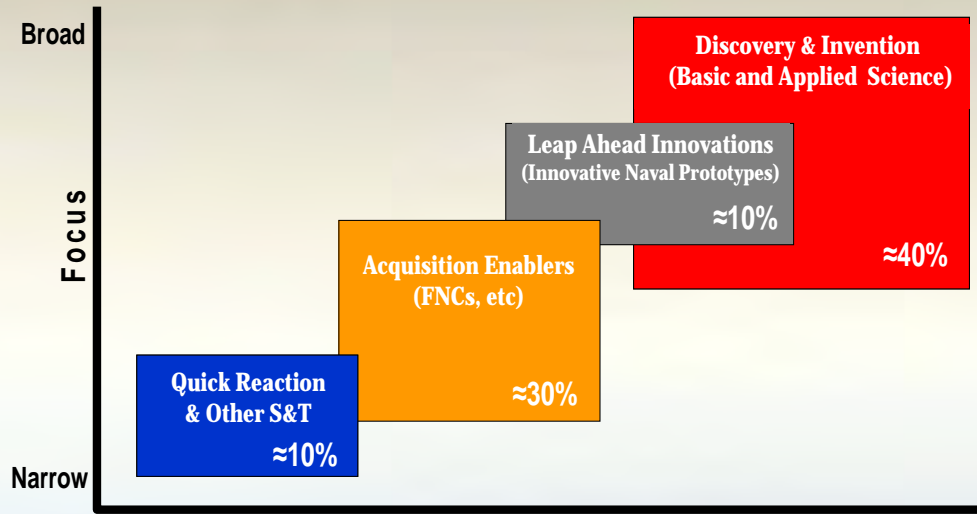
**RADM Nevin P. Carr Jr., Chief of Naval Research**

**PACOM S&T Conference**

**18 March 2010**



# Naval S&T Strategic Plan

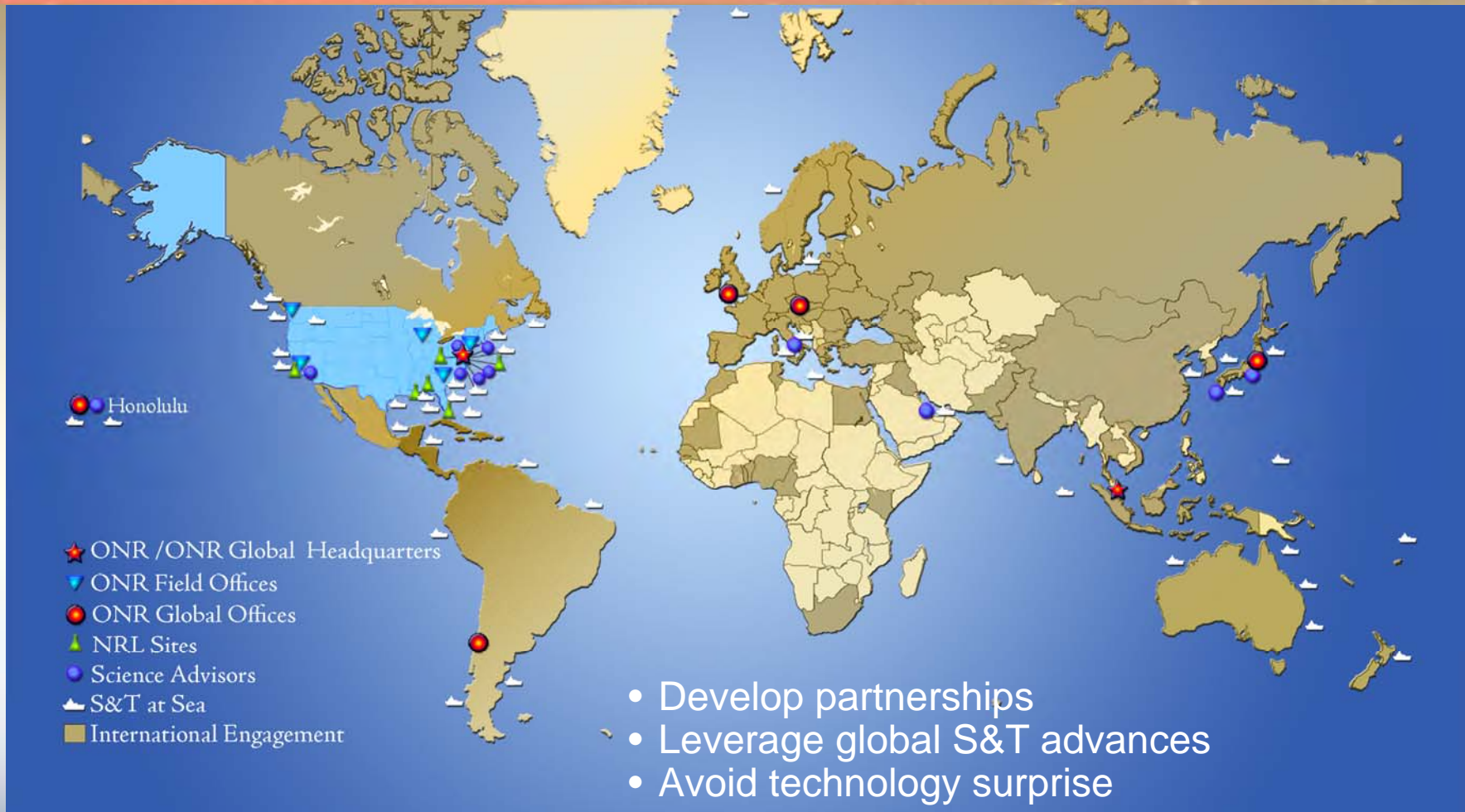


## Focus Areas

- Power and Energy
- Operational Environments
- Maritime Domain Awareness
- Asymmetric & Irregular Warfare
- Information Superiority and Communication
- Power Projection
- Assure Access and Hold at Risk
- Distributed Operations
- Naval Warfighter Performance
- Survivability and Self-Defense
- Platform Mobility
- Fleet/Force Sustainment
- Total Ownership Cost



# ONR Global



# International Science Program Tools

- **Visiting Scientist Program:** Introducing new S&T ideas to Naval Researchers
  - FY09: Scientists from 24 countries ... 64 visits
- **Conference Support Program:** Workshops with high Naval impact
  - FY09: 98 Conferences in 34 countries
- **Naval International Cooperative Opportunities Program:** International scientists addressing Naval S&T challenges
  - FY09: 23 NICOPs in 12 countries



## Alternative Energy:

- Ground Renewable Expeditionary ENergy System (GREENS) provides mobile solar power for USMC
- Microbial Fuel Cells (a Time Magazine 2009 Innovation of the Year)
- Fuel Cell Vehicles – Testing hydrogen Fuel Cell vehicles at Camp Pendleton and Quantico



## Desalinization:

- Expeditionary Unit Water Purification (EUWP) is deployable on a C-130, and can produce over 100,000 gallons of water/day while using 65% less energy



## Energy Neutral Buildings:

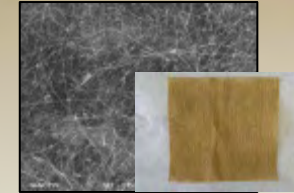
- Provide low cost, energy self-sufficient facilities that are easy to install and can be left behind
- Experimental Forward Operating Base (ExFob) is testing USMC solutions for generating power, water and shelter



-Lighter  
-Longer lasting  
-More power

## Hemostatic Agents

- Two areas of research: (1) An absorbable synthetic-fibrin dressing to control bleeding, and (2) a spray-dried infusible plasma product.



Syn-Fibrin Dressing



Spray-Dried Plasma

## Closed Loop Fluid Delivery System

- Develop a fluid resuscitation system that automatically adjusts the amount of fluid provided based on blood pressure.



## Infectious Disease Research

- Navy Medical Research Unit (NAMRU-3) located in Cairo, Egypt conducts research with partners to improve surveillance and response to diseases of critical public health importance
- NAMRU-2 is located in Jakarta, Indonesia

-Medical responsiveness  
-Patient stability  
-Patient transportability



# Training

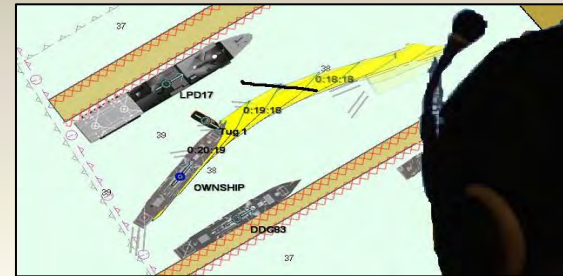
## Socio-Cultural:

- Future Immersive Training Environment (FITE) creates and reinforces complex decision making skills in culturally relevant virtual scenarios
- Infantry Immersive Trainer (IIT) is a mixed reality trainer that prepares USMC for Iraq/Afghanistan



## Seamanship:

- Conning Officer Virtual Environment (COVE)



## Language Learning:

- Integrated System for Language Education and Training (ISLET) tests new Arabic language training technology
- Rapid tactical language and cultural training uses innovative intelligent tutors and games (Tactical Iraqi developed with DARPA)



## Simulation Experiments (SIMEX):

- SIMEXs help develop tactics, techniques and procedures for new technologies and sensors. Provides valuable training for Irregular Warfare in a controlled environment.

- Address cultural factors
- Improve knowledge/skills
- Reduce training time



**Program Executive Office  
Command, Control, Communications,  
Computers and Intelligence (PEO C4I)**

**1206 Interoperability and Sustainment Challenges**

**“Building Maritime Security Capacity in Partner Nations”**

James Churchill  
Program Manger  
International C4I Integration (PMW 740)  
18 March 2010

***Information Dominance  
Anytime, Anywhere...***





# Agenda



- Section 1206 description
- Section 1206 Case Value
- Issues and Implications
- Status
- Attain Interoperability
- Summary



# Section 1206 Description



- Section 1206 of National Defense Authorization Act for FY06 authorized US Government support to build capacity of a foreign country's national military to conduct counterterrorist operations or to participate in stability operations with US Armed Forces
- 1206 Projects
  - COCOM Prioritized
  - FMS process used to implement
  - Funded with US Operations & Maintenance (O&M) dollars
    - Generally two-year programs



# PMW 740 Section 1206 Case Value



<b>1206 Fiscal Year</b>	<b>PACOM C4I AOR Total \$</b>	<b>PMW 740 1206 Case Total \$</b>
2006	\$30,000,000	\$35,500,000
2007	\$45,580,000	\$46,546,000
2008	\$40,040,307	\$51,693,307
2009	\$15,365,868	\$34,083,080
Total	\$130,986,175	\$167,822,387

# Southeast Asia PEO C4I MDA Programs





# MDA Products

- MDA (Section 1206 Projects)
  - Maritime/Coastal Surveillance Stations (MSS)
    - Ground Stations
  - MDA Regional Command Center Upgrades
  - Day/Night Cameras, X & S Band Radars, AIS
  - HF/VHF Radios
  - CENTRIXS
  - Broadband Network Upgrades
  - Concept of Operations (CONOPS)
  - Training

- GPOI
  - Peace Support Operations Collaboration Center (PSOCC)
  - Computers, servers, projectors
  - Software
  - Training





# NDAA Section 1206 Implications



- Acquisition Authority
  - Acquisition Command roles and responsibilities do not include negotiation of international information sharing agreements
- Legal Authority
  - Goods and Services are provided with “no strings attached”
    - No reciprocity requirement
    - No “quid pro quo” requirement
  - Provision of goods and services does not obligate USG to further offers
    - No assurance of out-year sustainment resources
    - No assurance of out-year training resources



# 1206 Partner Nation Interoperability Barriers



- Maturing Information Technology (IT) basis within military forces
  - Partner Nation military “career development” generally unlike that of US forces
  - Typically limited IT operations, maintenance or administration experience within enlisted ranks
- Varied Education and Training basis within military forces
  - Knowledge, Skills and Abilities (KSAs) typically centralized within command structure
- Limited operations and sustainment budgets (Military labor is cheap; equipment is unobtainable)
- Sites often in austere environments in response to threat axes
- Few nations, or national militaries, have similar “Concepts of Operation” to the US Military.





# Sovereignty Implications

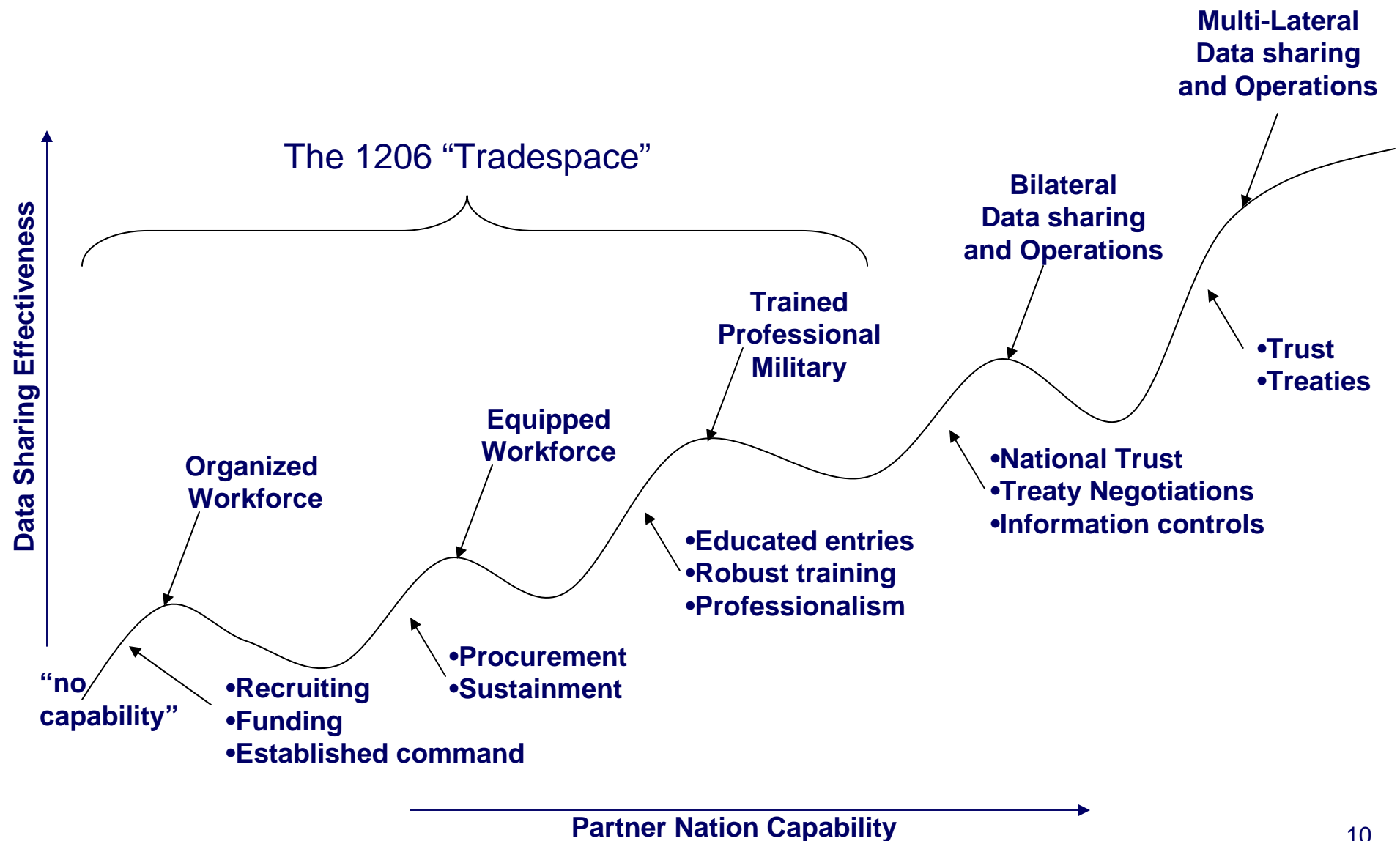


- Technology is delivered to partner nations for their use...as they see fit
  - May not match with US desires
  - Regardless of what they “want” to do, may be limited in what they “can” do
- Recipient nations may be unwilling to “share” anything with nearest neighbors
- Recipients may expect that US will pay the out-year costs in order to keep the system in operation
- Nations typically desire to maximize use of “In Country” resources / products / concepts





# Engagement Continuum





# 1206 MDA Delivered



- Over 2 dozen Maritime Surveillance Systems & Command Centers to PACOM AOR
- COTS systems
  - **Good:** commercial standards, wide variety of service providers, low overall cost, minimized ITAR issues
  - **Other:** only does what industry needs, not “plug and play” with US DoD proprietary systems, not “hardened” to military spec
- Sovereign nation systems
  - Located in partner nation buildings / spaces, manned and operated by partner nation military members
  - Not “automatically” connected to US networks / systems
  - Often identified by partner nations as operating at a “classified” level





# Attaining Interoperability (cont)



- Data/interoperability agreements needed
- Equipment delivered to partner nations is NOT the problem
  - Sensors are capable of “exporting” data in accordance with commercial standards.
    - i.e., AIS data in NMEA standard message format “could be” forwarded from either individual stations or from regional centers.
  - Communications equipment operates on “commercial frequencies.”
    - i.e., individual sites or regional centers “could” come up on a specified HF or VHF frequency to perform comms checks
- US-side systems MAY be a problem
  - Unclear how exactly to “import” data from partner nation, uncovered, unencrypted, network environments into US environments



# Summary



- Invested over \$130M in PACOM AOR MDA via 1206
- Improved military to military relationships with recipient nations
- Sustainment not automatic
- Information sharing



# Defense Green Technology of KOREA

**March 18th 2010**

**Dr. In Woo Kim**  
**Agency for Defense Development**

# Contents

**ADD Introduction**

**1. Green Growth**

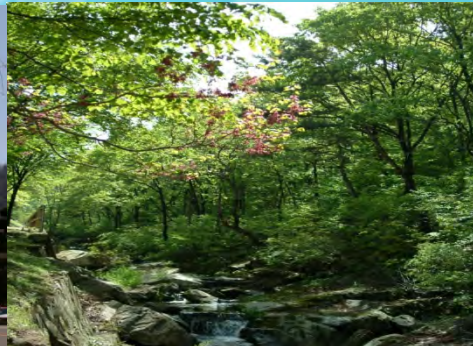
**2. Defense Green Technology**

**3. Strategy of Korea**

**4. Hybrid Electric Combat Vehicles**

**5. Conclusion**

# Introduction of ADD



# Mission

Agency for Defense Development

Introduction | Weapon System/Technology | Test & Evaluation | Purchase & Bid

AGENCY FOR DEFENSE DEVELOPMENT

Be the Core the self-reliant Defense through World-Class Technology Competency

**PRESIDENT'S MESSAGE**

AGD WILL DO ITS BEST TO BE THE WORLD-CLASS ADVANCED AGENCY THROUGH INNOVATION ESPECIALLY IN R&D ENVIRONMENT.

**INTERNATIONAL BIDDING**

Technical Assistance for Prec.	2010.03.24
KGGB Wind Tunnel Testing(Fre.	2010.02.18
2010 oversea's journal	2009.10.23
1.5 INCH SIX-COMPONENTS MOME	2009.09.03

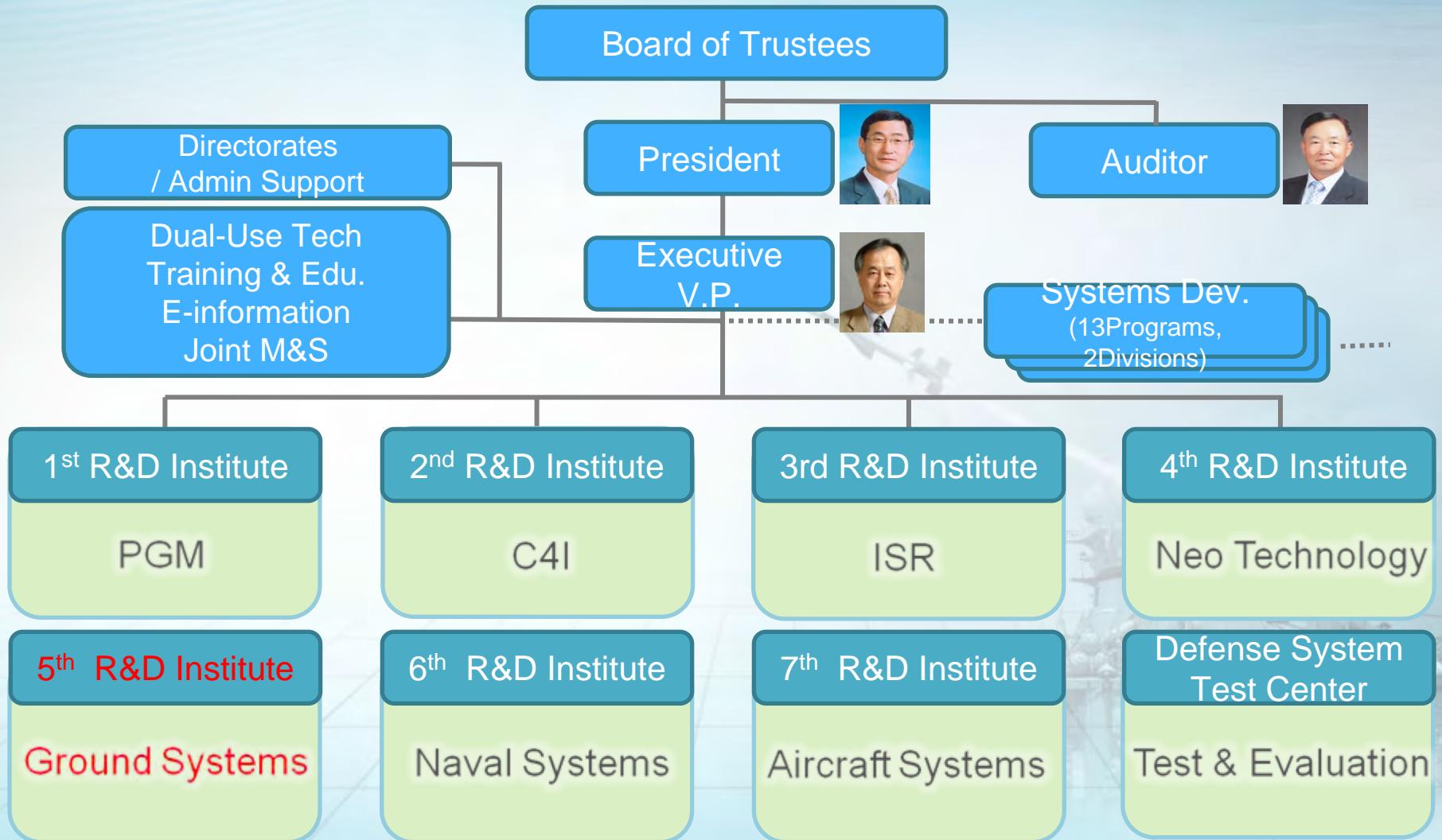
**MASTERPIECES TOP10**

AGD AGENCY FOR DEFENSE DEVELOPMENT

CATALOG | MEDIA

To Research, Develop, Test and Evaluate Weapon systems, Equipments, and Related Technologies to Reinforce Defense Capability for Self- reliant National Defense.

# Organization



# Resources

- **Laboratories : 56 labs**



EMI/EMC



Underwater  
acoustic



Wind Tunnel

- **Proving Grounds : 4 sites**



Changwon



Darakdae



An-Heung

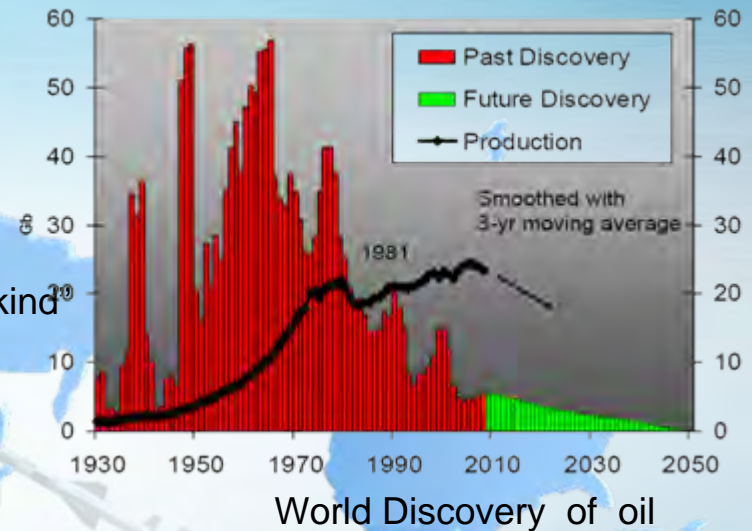
# 1. Green Growth

# Environmental crisis and Resource shortage

## • The end of oil-era

- Oil production is already at its max
- In 2050 able to supply 3 billion people

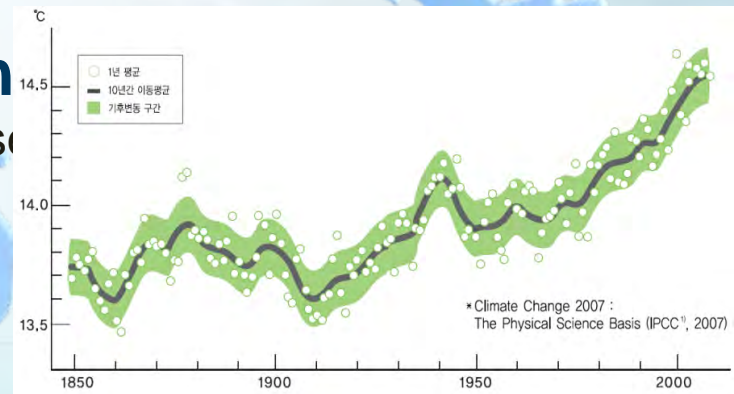
□ Dr. Campbell, "Peak Oil - A Turning Point for Mankind"  
EVS24, May 2009



## • Clear evidence of global warming

- In the 21C, 6.4°C temp. rise, 59cm sea level rise compared to industrial revolution
- When temp. rises 1.5~2.5°C, 20~30% species extinct

□ IPCC 4<sup>th</sup> special report, 2007  
(IPCC : Inter-governmental Panel on Climate Change)



World average temperature

# Foreign Policies of Green Growth



- Initiative in the green market by developing green technology
- R&D by government + Commercialization by industry



- Carbon zero by 2050
- Formulation of green revolution plan in 2008



- Germany : R&D of renewable energy
- France : Policy for minimizing of climate change



- National vision of low carbon in 2008
- Cool Earth (Energy reformation technology plan) in 2008



- Enactment of a law on renewable energy in 2006
- R&D on low-carbon technology leading by government by 2050

# Korean Green Growth



“Green Growth” is a sustainable development that can reduce the greenhouse gases and environmental pollution...



# Green Korea '10~ '50 Plan

**World 5<sup>th</sup>  
Green Pioneer country**

## Green Tech & Industrial power

- Green Technology
- Increasing Exports
- Creating Green jobs
- Secure new growth engine

## A world's 7<sup>th</sup> green growth leading country

- Supporting to developing country in Asia
- Improving nation's image

## Infrastructure for green growth

- Establishment infrastructure using green growth national industries

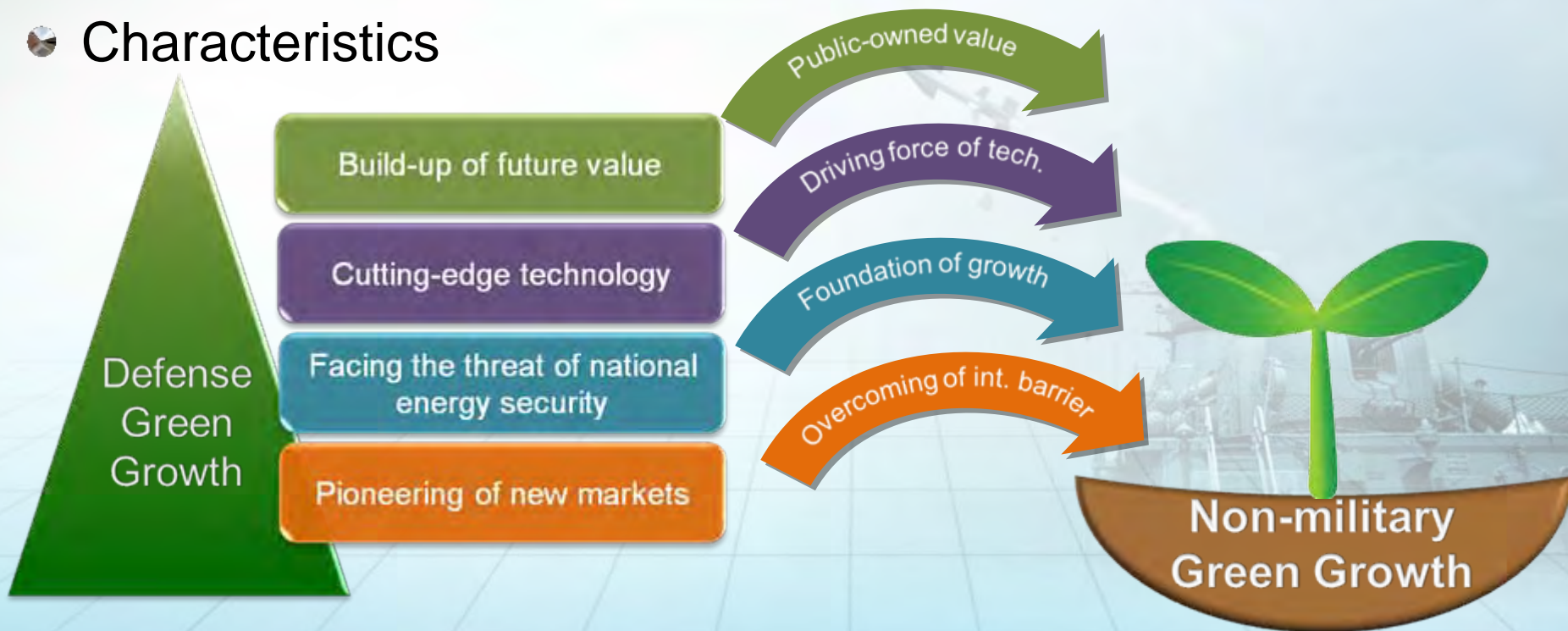
## 2. Defense Green Technology

# Defense Green Growth

## ● Definition

Green growth in the field of defense based on green technology and clean energy to build up military strength

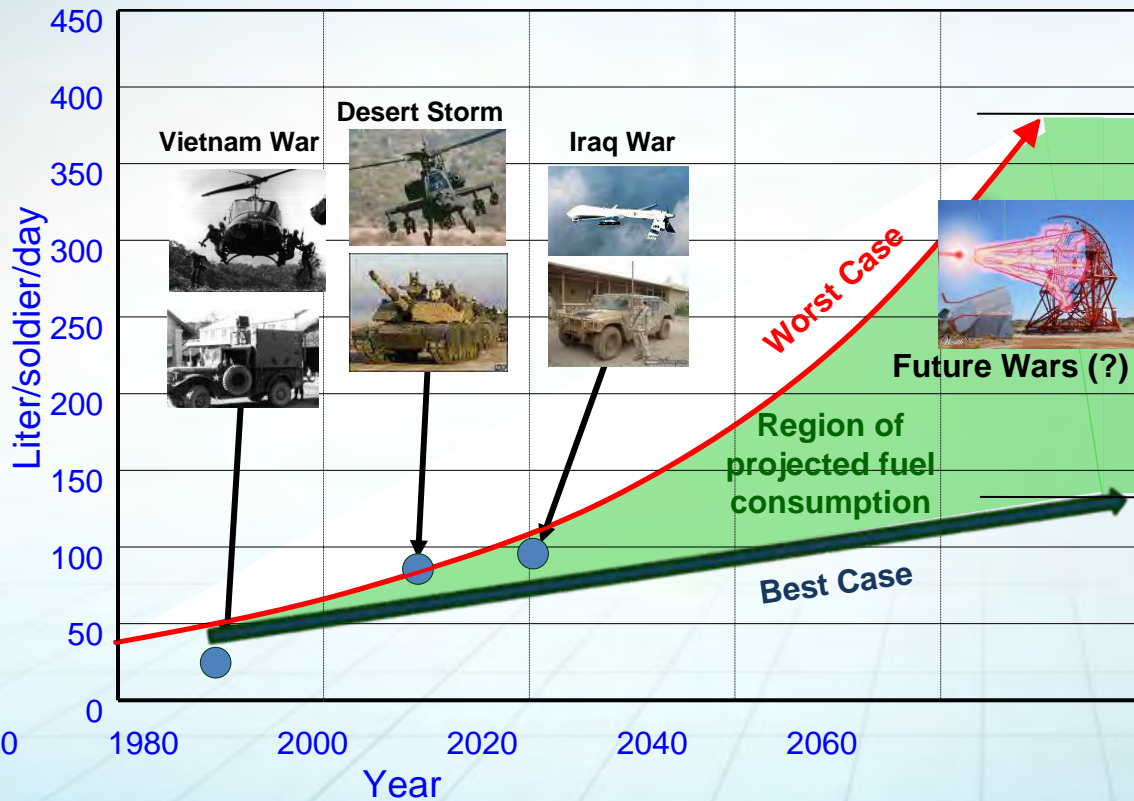
## ● Characteristics



# Why Defense Green Growth?

## Energy security

< Military Per Capita Fuel Consumption >



Green technology for future wars



Fuel cell



Hybrid electric propulsion platform



High efficient aircraft platform

⋮

□ Report of the Defense Science Board Task Force on DoD Energy Strategy (2007, US)

# 3. Strategy for Defense Green Technology

# Strategy for Defense Green Technology

Low CO<sub>2</sub> , Green Growth

Preparation for post oil-era

Development of GT leading national green growth



**Track 1**

**Barrack &  
Green energy**



**Track 2**

**Low carbon platform  
using clean energy**



**Track 3**

**Operating & Training  
based on M&S**

# Track 1 Barrack life & Defense R&D based on green energy



- Defense green acquisition
- Green infrastructure
- Green barrack linking green new deal

Collapsible solar power module

Fuel cell for submarine

Piezoelectric & thermoelectric elements for soldiers

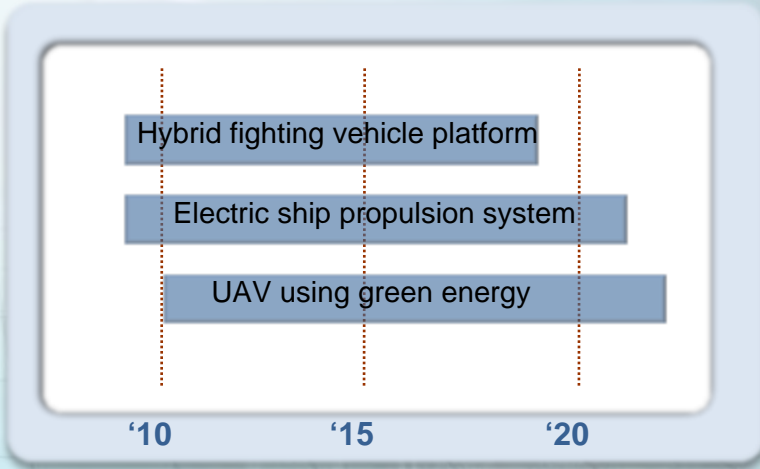
Integrated power source

'10                      '15                      '20

# Track 2 Platform using clean energy with low carbon emission



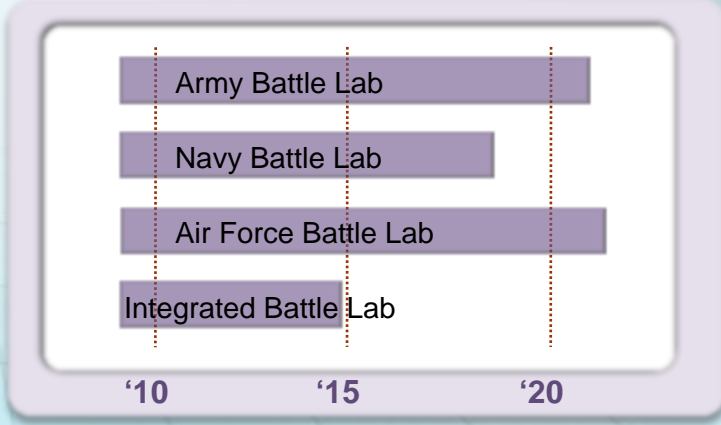
- Weapon development linking GT
- Hybrid/fuel-cell fighting vehicle
- Electric ship propulsion system
- Aircraft using clean energy



# Track 3 Operating & Training based on M&S

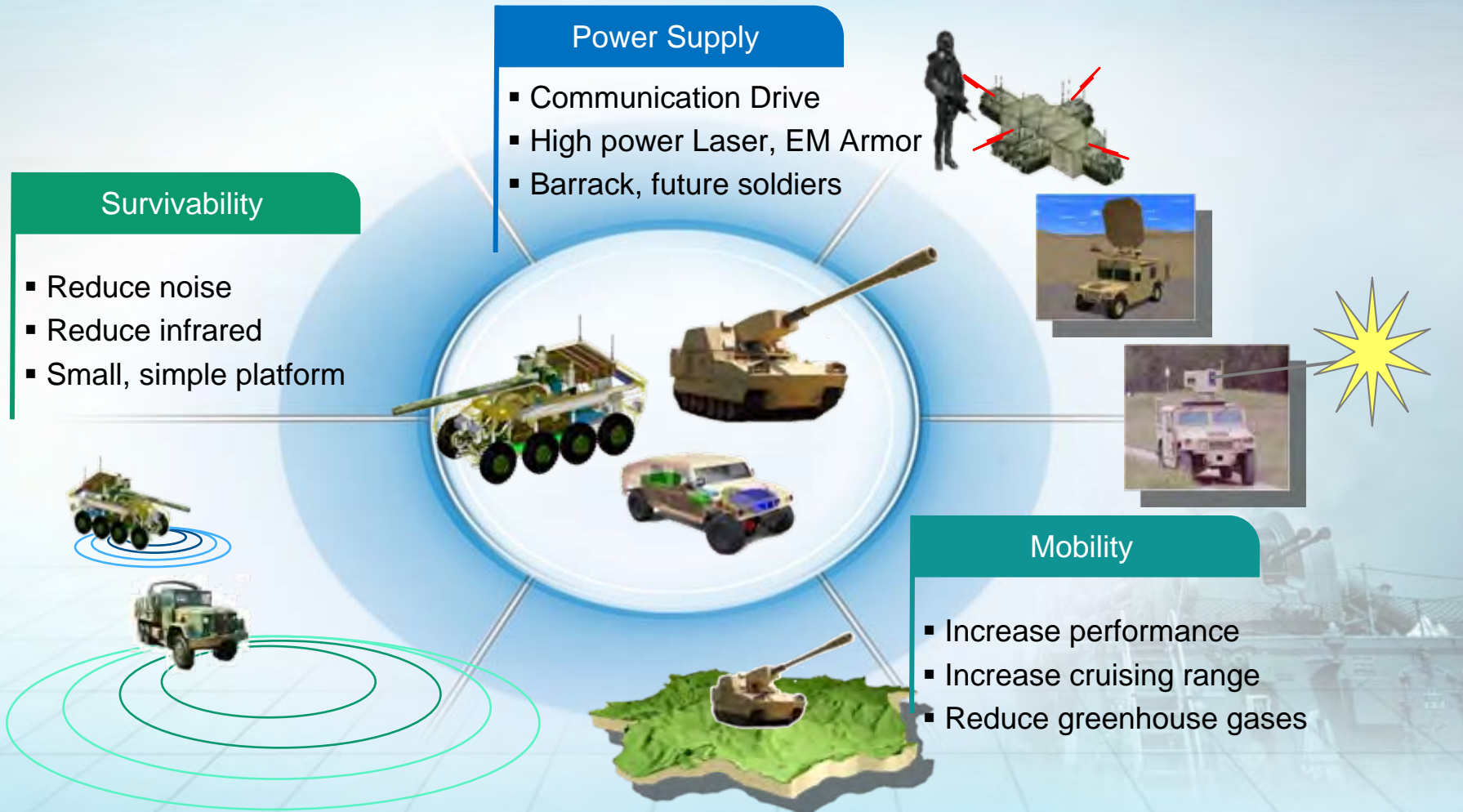


- Maximization an effect of training & operating
- Training infrastructure based on M&S
- Green power management in peace time
- IT-based battle lab

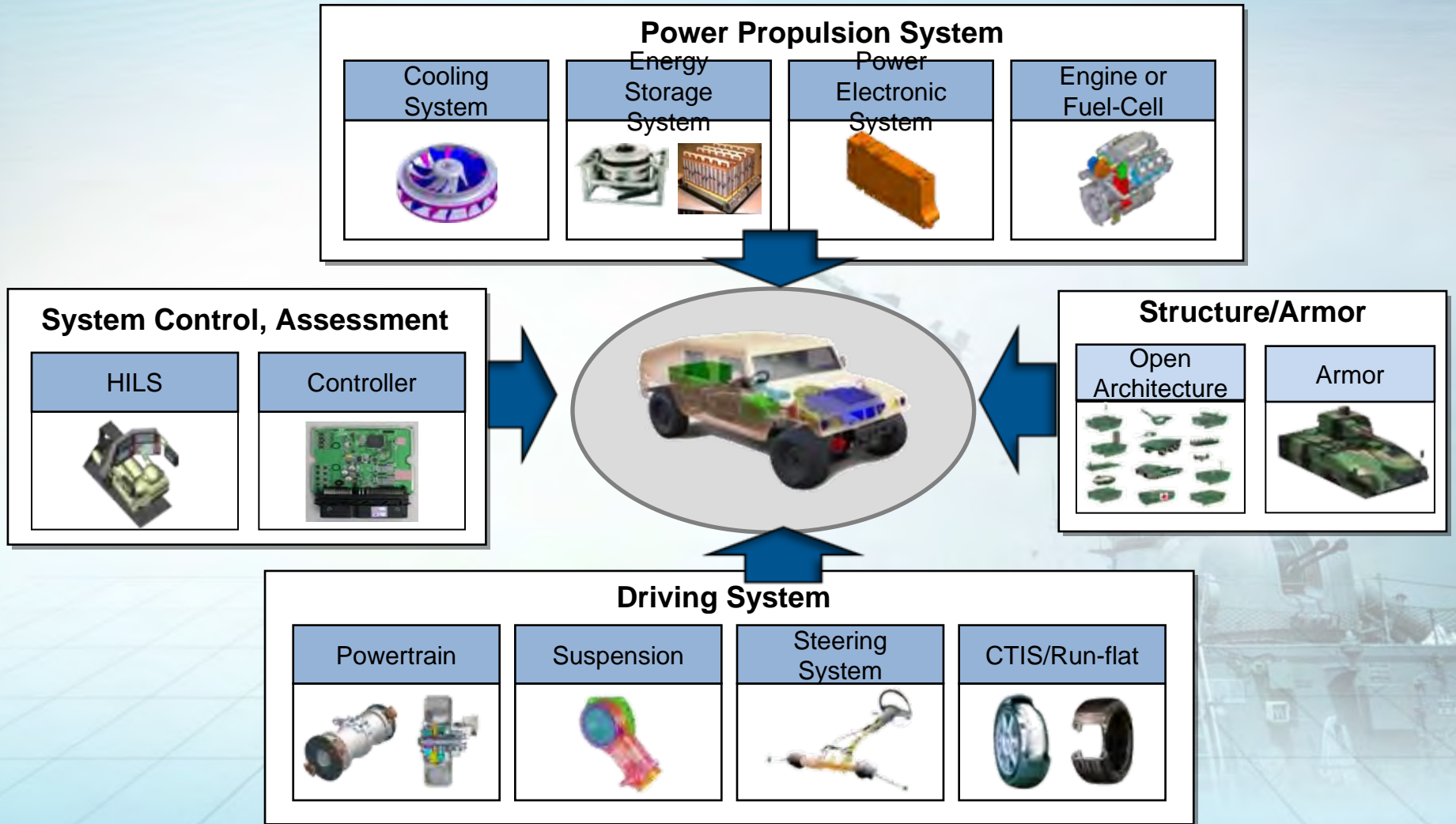


# 4. Hybrid Electric Combat Vehicles

# Merits of Hybrid Electric Combat Vehicles



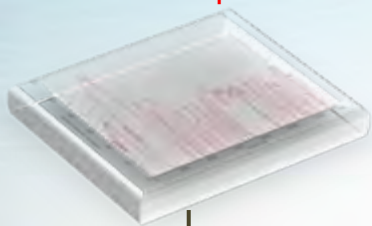
# Core Parts of HECV



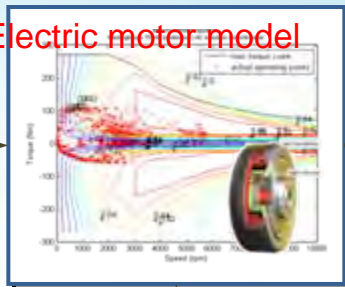
HILS : Hardware-In-the-Loop Simulation  
CTIS : Central Tire Inflation System

# Hybrid Operating Software

Mission profile



Electric motor model

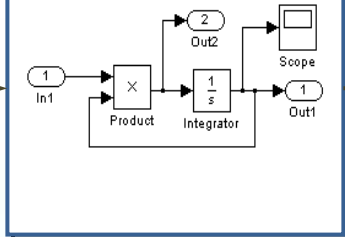


Terrain profile

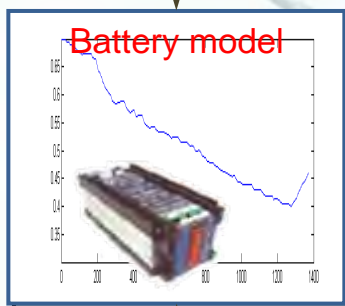


Driver

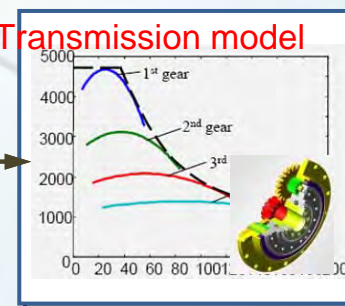
Control algorithm



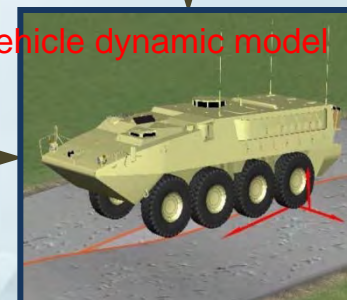
Battery model



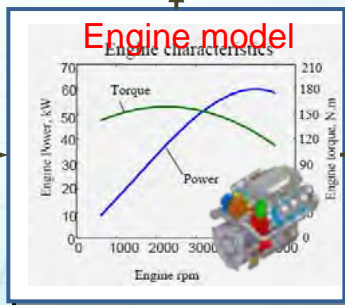
Transmission model



Vehicle dynamic model



Engine model



# 5. Conclusion

## “Green Growth”

1. Positive effect on environment, economy, national defense
2. Strengthening the Global partnership
3. Defense green growth leading country
4. Suggest strong supports on green globe



**Thank you**



*U.S. Army Research, Development and Engineering Command*



***TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.***

**PACOM S&T Conference**

**BG Harold Greene**

**Deputy Commanding General, RDECOM**

**18 MARCH 2010**



# RDECOM Forward Elements



## European Division

## Pacific Division

## Central Division

**RDECOM Forward Element ATLANTIC**  
*London, UK*

**RDECOM Forward Element PACIFIC**  
*Tokyo, Japan*

**RDECOM Forward Element AMERICAS**  
*Santiago, Chile*

**USAREUR**  
Heidelberg, GE

**V CORPS**  
Heidelberg, GE

**JMTC**  
Grafenwohr, GE

**USAITC Atlantic-France**  
Paris, France

**USAITC Atlantic Germany**  
Bonn, Germany

**21<sup>st</sup> TSC**  
Kaiserlautern, GE

**USECOM**  
Stuttgart, GE

**USAFRICOM**  
Stuttgart, GE

**SETAF**  
Vicenza, IT

**MNF-I/MNC-I/3A**  
Baghdad, IQ

**ISAF**  
Baghrum, AF

**USFK / EUSA**  
Seoul, ROK

**ALCOM / USARAK**  
Anchorage, AK

**I CORPS**  
Ft Lewis, WA

**USAITC Pacific-Singapore**  
Singapore

**USAITC Pacific-Australia**  
Canberra, Australia

**USPACOM / USARPAC**  
Oahu, HI

**USNORTHCOM**  
Peterson AFB, CO

**AMC-FAST HQ**  
Ft Belvoir, VA

**FORSCOM**  
Ft McPherson, GA

**USJFCOM**  
Norfolk, VA

**XVIII ABN CORPS**  
Ft Bragg, NC

**TRADOC**  
Ft Monroe, VA

**USCENTCOM**  
MacDill AFB, FL

**USSOCOM**  
MacDill AFB, FL

**NTC**  
Ft Irwin, CA

**USAITC Americas-Canada**  
Ottawa, Canada

**USAITC Americas - Argentina**  
Buenos Aires, Argentina

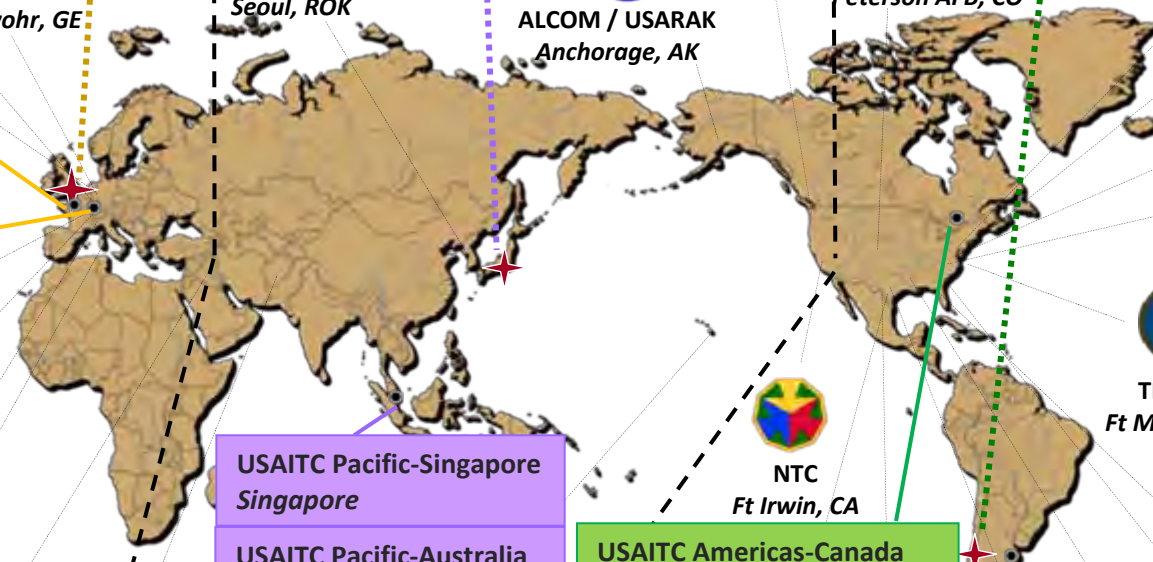
**USARNORTH**  
Ft Sam Houston, TX

**USARSO**  
Ft Sam Houston, TX

**III CORPS**  
Ft Hood, TX

**JRTC**  
Ft Polk, LA

**USSOUTHCOM**  
Miami, FL



Technology Search

International Agreements

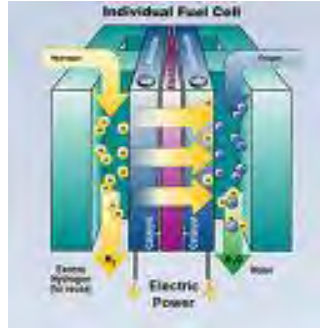
UAVs



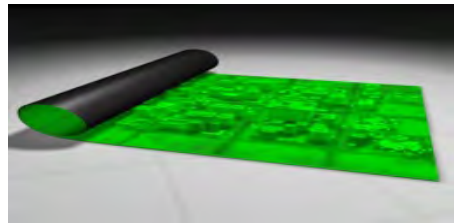
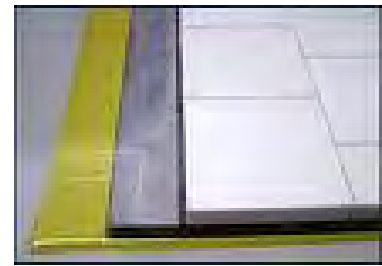
Robotics



Fuel Cell



Armor



Holographic Maps



American, British, Canadian, Australian and New Zealand Armies' Program



"Optimizing Coalition Interoperability"  
[www.abca-armies.org](http://www.abca-armies.org)

Field Assistance in Science and Technology (FAST) Advisors

Standardization and Interoperability



# Soft Power – PAC Engagement



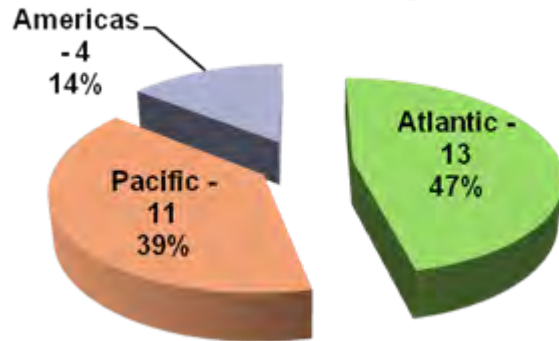
Technology Focus Areas
Survivability / Lethality
Networks
Sensors
Power and Energy
Mobility / Logistics
Human Dimension / Training



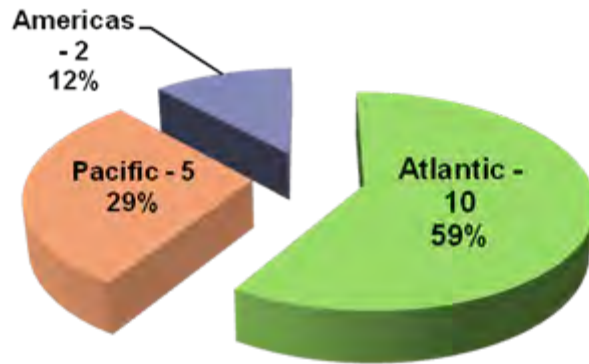
Regional Partners	Data Exchange Annex	Project Agreements
Japan	13	0
Australia	12	0
Korea	10	2
Singapore	8	2
India	3	0
Taiwan	3	0

Upcoming Events / Initiatives
Multi Autonomous Ground-robotic International Challenge (MAGIC 2010)
Project Agreement with Singapore on Portable Fuel Cell Technology – P&E for deployment
More ESEPs and FAST Advisors Assigned to AOR

## ESEPs by AOR



## ESEPs by AOR in U.S.



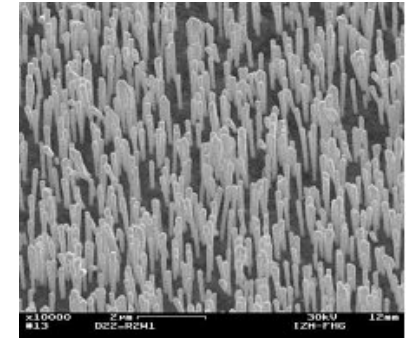


## RDECOM - Seed Funds:

- Thin Film Materials For Photo Voltaic Applications
- Experimental study of the dwell-penetration transition in various types of ceramic armor materials



MEMS



Nano Materials

Armor Development



Power and Energy

## RDECOM - Conference Support:

- International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2010)
- Western Hemisphere Information Exchange Alternative Fuels & Unmanned Systems Conference





- Major investments in relationships with MOD's throughout AOR
- FAST Advisors imbedded with warfighters to link emerging requirements with near-term solutions
- Extensive work with academic community in India, Singapore, Hong Kong, and Japan on Fuel Cell, photo-voltaic and storage power technology
- International Agreements / S&T Collaboration
- Mil to Mil Engagements, Personnel Exchanges
- Seed Funding, Conference Support, S&T Grant Funding
- Tech Search

## Results:

- R&D cost savings
- Strong Regional Relationships
- Support to COCOM and ASCC Theater Security Cooperation Objectives



# **2010 PACIFIC OPERATIONAL SCIENCE AND TECHNOLOGY CONFERENCE AND EXHIBITION**

**“Integrating Technologies to Fill Capability Gaps—  
S&T Support for Soft Power”**

**Dr. George Kailiwai III  
Director, Resources and Assessment (J8)**

**March 18, 2010**



**E komo mai!**

**Welcome!**



**‘Ainokea**



**Aloha kakahiaka  
kakou!**

**Good morning  
everyone!**



poi



**pipi**



**pipi kaula**



pua'a



**pua'a kalua**



**lau**



**lau lau**



**cheekeen long rice**



# **2010 PACIFIC OPERATIONAL SCIENCE AND TECHNOLOGY CONFERENCE AND EXHIBITION**

**“Integrating Technologies to Fill Capability Gaps—  
S&T Support for Soft Power”**

**Dr. George Kailiwai III  
Director, Resources and Assessment (J8)**

**March 18, 2010**



# Washington Place





# Energy as a Tool of Soft Power?

- **US-Japan Clean Energy Action Plan:  
Hawaii-Okinawa Clean Islands Partnership**
- **Task Force Meeting, March 29-30, 2010**
- **Stakeholders**
  - **Dr. Phyllis Yoshida, Deputy Assistant Secretary  
for International Energy Cooperation**
  - **Honorable Linda Lingle, Governor of Hawaii**
  - **Honorable Duke Aiona, Lt Governor of Hawaii**
  - **Several representatives from Japan and  
Okinawa**

# What is “Soft Power”?



- **Posit a definition:**
  - “Soft power is influencing others to act in mutual interest by appealing to shared values”
    - Culture, political values, and foreign policies
- **Compared to “Smart Power” and “Hard Power”**

# Which “Power” is Best?



- Choosing which power(s) to use depends upon what effect(s) we’re trying to achieve
- Soft power is more about winning the peace
  - Longer-term effects
  - Moral high ground
- Borrowing Brilliance, David Kord Murray
  - Root cause analysis: “Why is a problem a problem?”
    - Root problems for warfighting seem to point to higher level problems best addressed by soft power

# What Role Does S&T Play in Soft Power?



- Most nations value the development and prosperity that scientific and technological advances bring
  - First, how do we equip our PACOM ambassadors to engage across the theater?
  - Second, how do we use S&T to initiate and improve broader military-to-military engagement and interoperability with our allies and strategic partners?
- There is so much more we can do, and at PACOM we are open to any and all S&T partnership opportunities that we can tie to our our most pressing challenges across our strategic and operational portfolios.
  - Be cautious of unintended effects/consequences



**Mahalo!**

**Thank you!**

# Common Challenges and Mutual Opportunities



**POW/MIAs**



**Humanitarian Assistance**



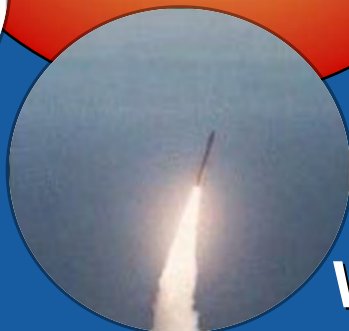
**Disaster Relief**



**Terrorism / Extremism**



**Weapons Proliferation**



**Maritime Security**



# Common Challenges and Mutual Opportunities



**POW/MIAs**



**Humanitarian Assistance**

**Disaster Relief**



- Medical Cooperation
- Engineering Projects

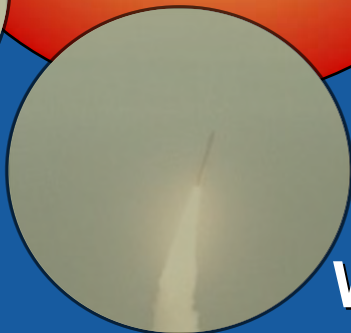
**Terrorism / Extremism**



**Maritime Security**



**Weapons Proliferation**



# Common Challenges and Mutual Opportunities



**POW/MIAs**



**Humanitarian Assistance**



**Disaster Relief**

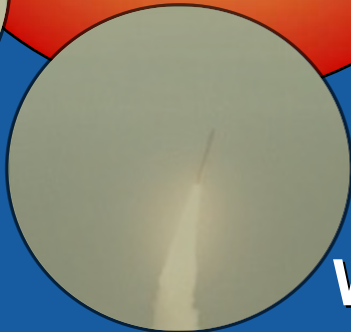
- Disaster Response
- Capacity Building



**Terrorism / Extremism**



**Maritime Security**



**Weapons Proliferation**

# Common Challenges and Mutual Opportunities



**POW/MIAs**



**Humanitarian Assistance**



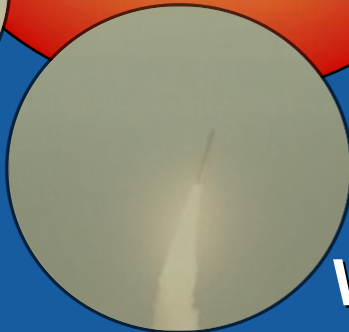
**Disaster Relief**

- Law Enforcement
- Information-sharing
- Tailored Exercises

**Terrorism / Extremism**



**Maritime Security**



**Weapons Proliferation**

# Common Challenges and Mutual Opportunities



**POW/MIAs**



**Humanitarian Assistance**



**Disaster Relief**

**• PSI / UNSCR Enforcement**



**Terrorism / Extremism**



**Maritime Security**



**Weapons Proliferation**

# Common Challenges and Mutual Opportunities



**POW/MIAs**

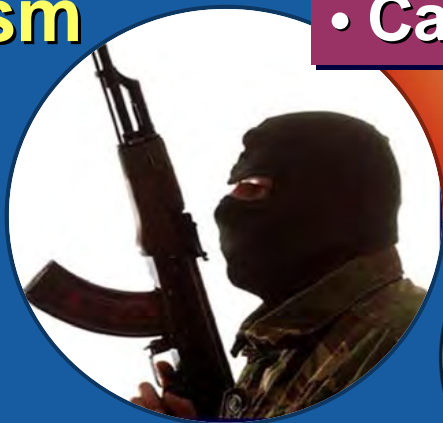


**Humanitarian Assistance**



**Disaster Relief**

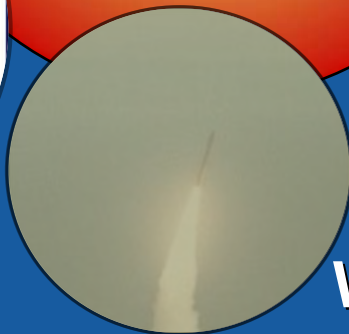
**Terrorism / Extremism**



- Cooperation
- Capacity Building



**Maritime Security**



**Weapons Proliferation**

# Common Challenges and Mutual Opportunities



Humanitarian Assistance



Disaster Relief



- Recovery
- Accounting

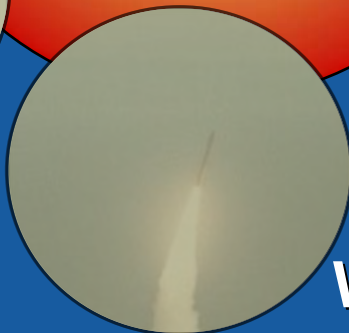
POW/MIAs



Terrorism / Extremism



Maritime Security



Weapons Proliferation

# Common Challenges and Mutual Opportunities



**POW/MIAs**



**Humanitarian Assistance**



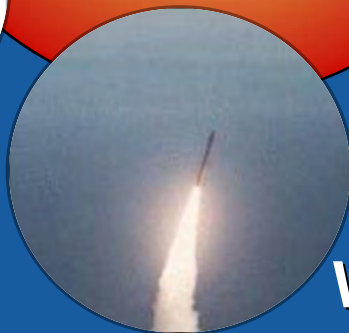
**Disaster Relief**

**DISCUSSION**

**Terrorism / Extremism**



**Maritime Security**



**Weapons Proliferation**



# The Power of Soft Power





# Building Maritime Partnerships

- RDML Steve Mehling – USCG 14<sup>th</sup> District
- Mr. William Wesley – COMPACFLT (N5)
- Mr. Jim Churchill – PEO C4I Program Manager
- CAPT Michael Fierro – USN Sixth Fleet

Asst. Director for Policy, Resources and Strategy  
for US Naval Forces Europe and Africa

# U.S. Coast Guard Fourteenth District



*Building Maritime  
Partnerships*

*RDML Steve Mehling*

*CHIEF OF STAFF, 14TH COAST GUARD DISTRICT*

*18 March 2010*

*where  
east*



*meets  
west*

# Why Build Maritime Partnerships?

- Strengthen regional cooperation & maritime safety
- Collaborate with foreign nations and regional organizations to enhance port security
- Strengthen maritime law enforcement capacities in Pacific Island Countries



# Samoa Tsunami



FEMA  
PACOM  
PACAF / PACFLT  
GOV American Samoa  
Hawaii National Guard  
QUAD Partners

# International Port Security Visits



Port of Tamatave  
Madagascar



Papua New Guinea

# Secretariat of the Pacific Community/U.S. Coast Guard Partnership



Samoa Joint Visit



# South Asia and Africa Regional Port Security Cooperative (SAARPSCO)



# Regional Cooperation = Enforcement

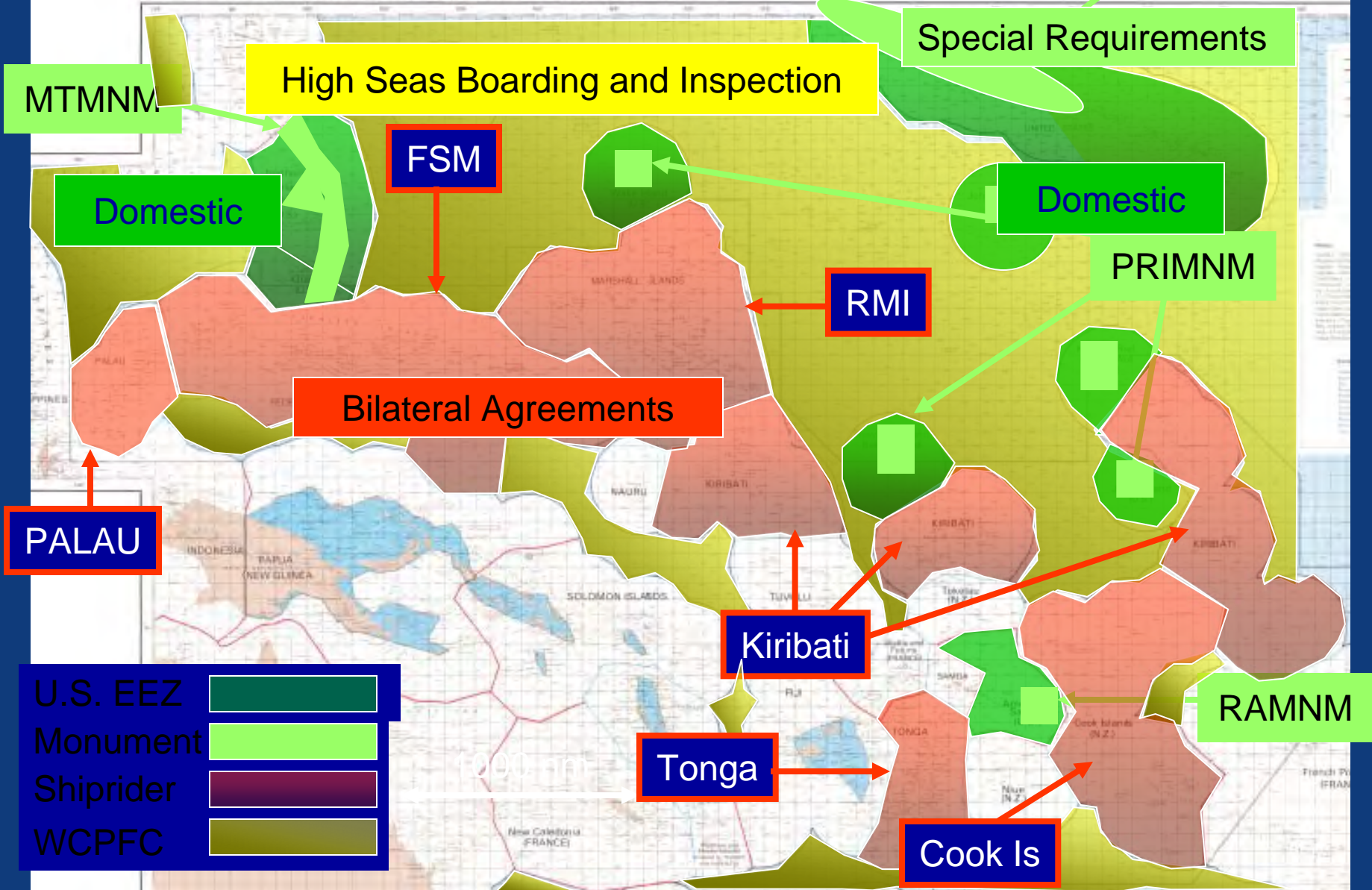


2009

Dramatic growth in jurisdictional complexity

PMNM

Claimed and Potential Maritime Zones in the Central and South Pacific



MTMNM

High Seas Boarding and Inspection

Special Requirements

Domestic

FSM

Domestic

PRIMNM

RMI

Bilateral Agreements

PALAU

Kiribati

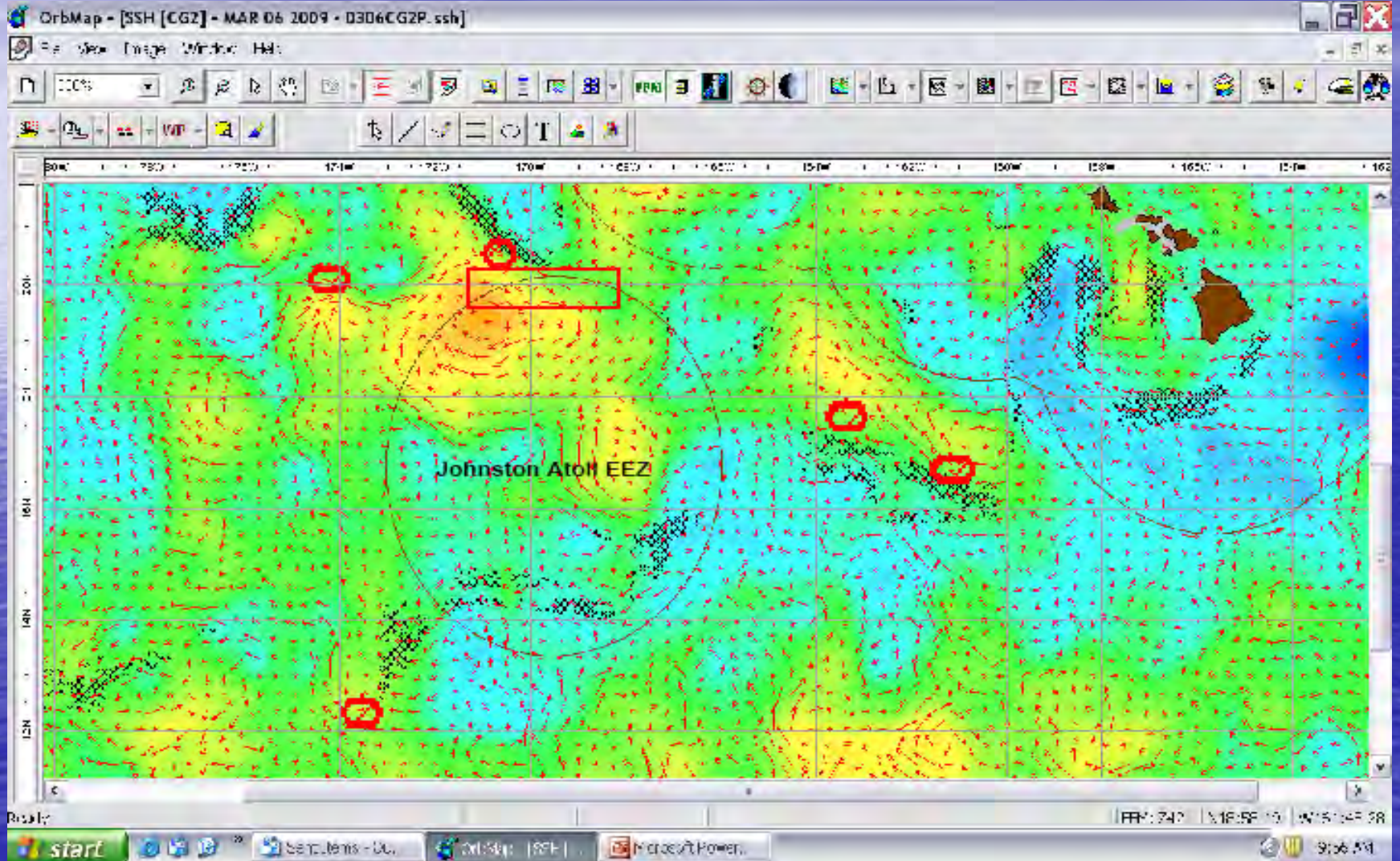
Tonga

Cook Is

RAMNM

- U.S. EEZ
- Monument
- Shiprider
- WCPFC

# SeaStar Technology







# USN / USCG / Pacific Island Patrol Boat Partnerships





# Quad Talks/QUAD Website

The Quadrilateral Defence Coordination Talks bring together stakeholders in the South Pacific to develop multilateral approaches to enhance maritime security in Oceania.

USA

Australia

New Zealand

France

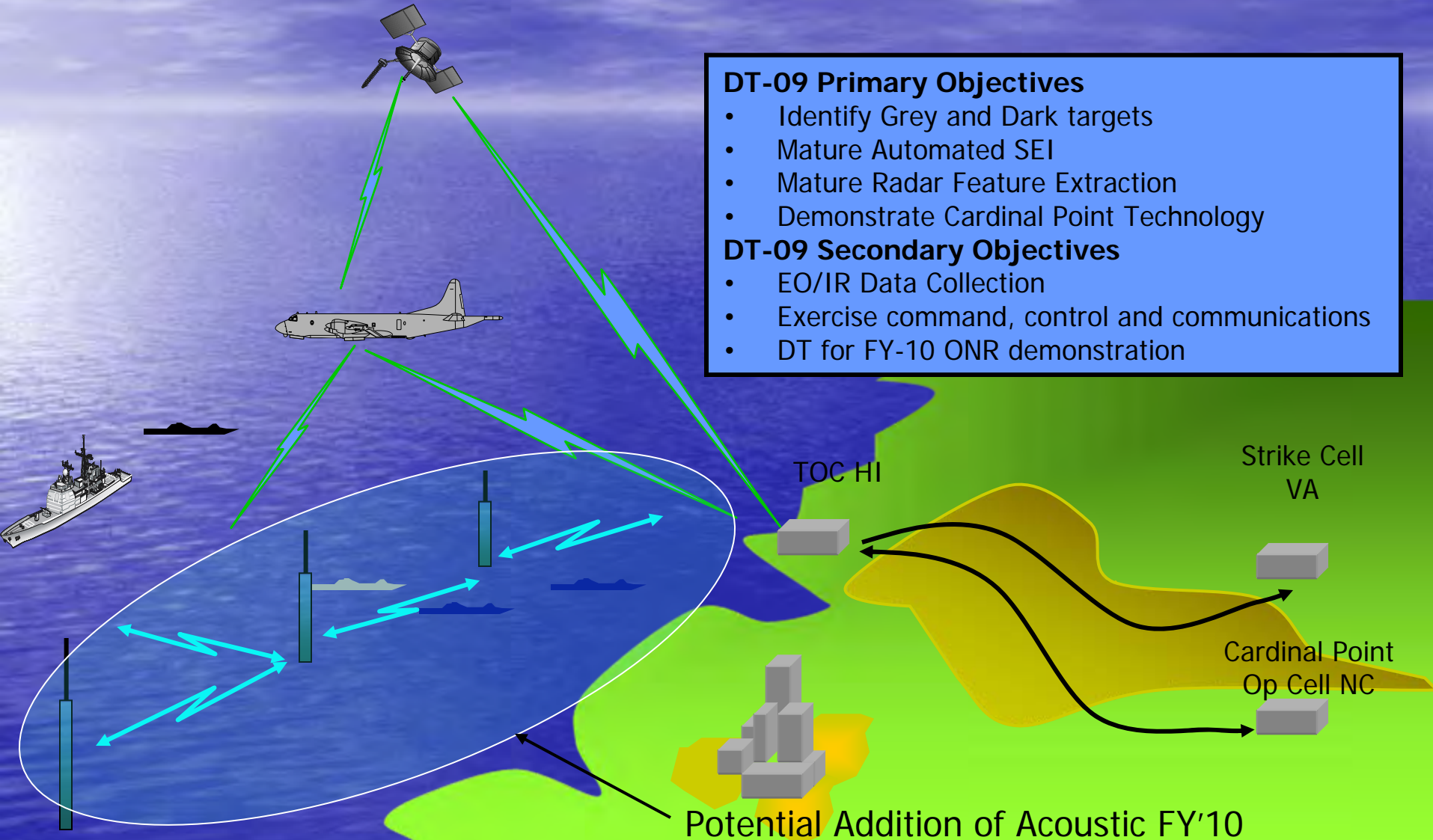


# Partnerships For Search & Rescue (SAR)



- DoD Assets in Hawaii, Guam, and Japan
- Automated Mutual-Assistance Vessel Rescue System (AMVER)
- Bordering International Rescue Coordination Centers (tsunami relief, etc.)

# ONR Extended Area ISR Project



# *ONR Extended Area ISR Project*

- Partnering for C4ISR research
  - Automation of sensors and controls
  - Automation of Tactical Identification
  - Automated sensor understanding
- Developmental Test objectives:
  - Identify and assess grey and dark targets (little or no identifying data)
  - Mature sensor control algorithms
  - Exercise network and communication links



# Partnership with U of HI CIMES

- Rapid deployment harbor mapping system
  - Map harbors to assist in maritime trade restoral after a port disaster.
- HF RADAR project.

# S.T.E.M. Partnerships

- U.S. FIRST Robotics
- Partnerships in Education
- S.T.E.M. Fairs



# IMET TRAINING OPPORTUNITIES

## Resident Training Courses in U.S.

120 courses available

## Mobile Training Team (MTT) Visits

Search and Rescue, Maritime Law Enforcement and other MTTs available

## USCG International Training Handbook

<http://www.uscg.mil/hq/g-ci/affairs/handbook/ITH%2011.1%20CD.doc.pdf>





# Partners Make it Happen!



