



THE LINK BETWEEN FISHERIES MANAGEMENT AND MARITIME SECURITY

2018 Fusion Center Workshop and Table Top Exercise

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Chief of Party,

The Oceans and Fisheries Partnership (USAID Oceans)

Tetra Tech

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WHO ARE WE?



ENR
Engineering News-Record

8 #1 engineering rankings,
including Water, Environmental
Consulting/Studies

3rd ranked environmental
firm working outside
the US

7th ranked engineering
firm in international
market

28 other top
10 rankings

\$2.8 billion
ANNUAL REVENUE

FOUNDED IN
1966



Publicly
traded on
NASDAQ as



WORKED
ON **60,000**
PROJECTS IN FY2017



400
OFFICES
WORLDWIDE



17,000

ASSOCIATES

WORKING IN
MORE THAN



100
COUNTRIES

ISO 27001:2013, 20000:1-2011, 9001:2015 certifications,
CMMI Level 3 (Dev) appraisal and **TS** facility clearances

20+ year corporate-wide DOD support initiative covering all four service branches

WHAT WE DO – PRIMARY SERVICES



WATER

Coastal and Marine Resources Management
Drinking Water
Groundwater
Wastewater Treatment
Water and Agriculture
Water Resources
Wet Weather Infrastructure/CSOs



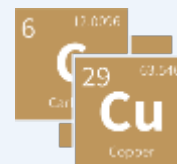
ENVIRONMENT

Air Quality
Environmental Compliance
Environmental Management
Remediation
Waste Management and Energy Conversion
Emergency and Disaster Management and Community Resilience



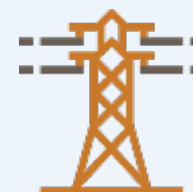
INFRASTRUCTURE

Airports and Aviation
Buildings
Communication Systems
Dams and Levees
Ports, Harbors, and Waterfront
Transportation
Information and Data Technologies



RESOURCE MANAGEMENT

Industrial
Mining and Minerals
Oil and Gas



ENERGY

Conventional Generation
Emerging Renewables
Energy Efficiency
Microgrids
Hydropower
Nuclear
Solar
Transmission and Distribution
Utilities and Market Analytics
Wind



INTERNATIONAL DEVELOPMENT

Agriculture and Food Security
Environment and Climate
Urbanization
Infrastructure and A-E
Governance
Rule of Law
Security and Stabilization
Land Tenure and Property Rights
Health and Education
Analytics, Monitoring and Evaluation
Other Service Lines

1. **Investigation:** fisheries and maritime security
2. **Summary Results:** significant correlations
3. **Building Solutions:** combatting IUU fishing

1. Investigation: fisheries and maritime security

- How do fisheries (including IUU fishing activities) **relate** to maritime security?
- What are the **implications** of fisheries on local, national, and regional security?

- **2003 - 2015:** Investigate **relationship** between fisheries scarcity, competition, and conflict
 - 2003 – 2015: **Southeast Asia** (*Indonesia, Malaysia, Philippines, Thailand, Vietnam; $n=738$*)
 - 2010 – 2013: **West Africa** (*post-conflict Liberia and Sierra Leone; $n=513$*)



1. Investigation: fisheries and maritime security
2. **Summary Results:** significant correlations

Sources: Pomeroy *et al.* 2007; Muawanah *et al.* 2012

■ Observed correlations:

<i>Variable</i>	<i>Fish Wars (2003-06)</i>		<i>Revisited (2009-10)</i>	
Co-management approach used	-	*	-	*
Proportion of income from fisheries	+	**	+	***
Perceived resource condition (currently)	+	*	+	**
Food security	-	*		
Village/comm-level conflict (civil unrest)	+	***		
Peace & order; acceptable level of crime	-	**		

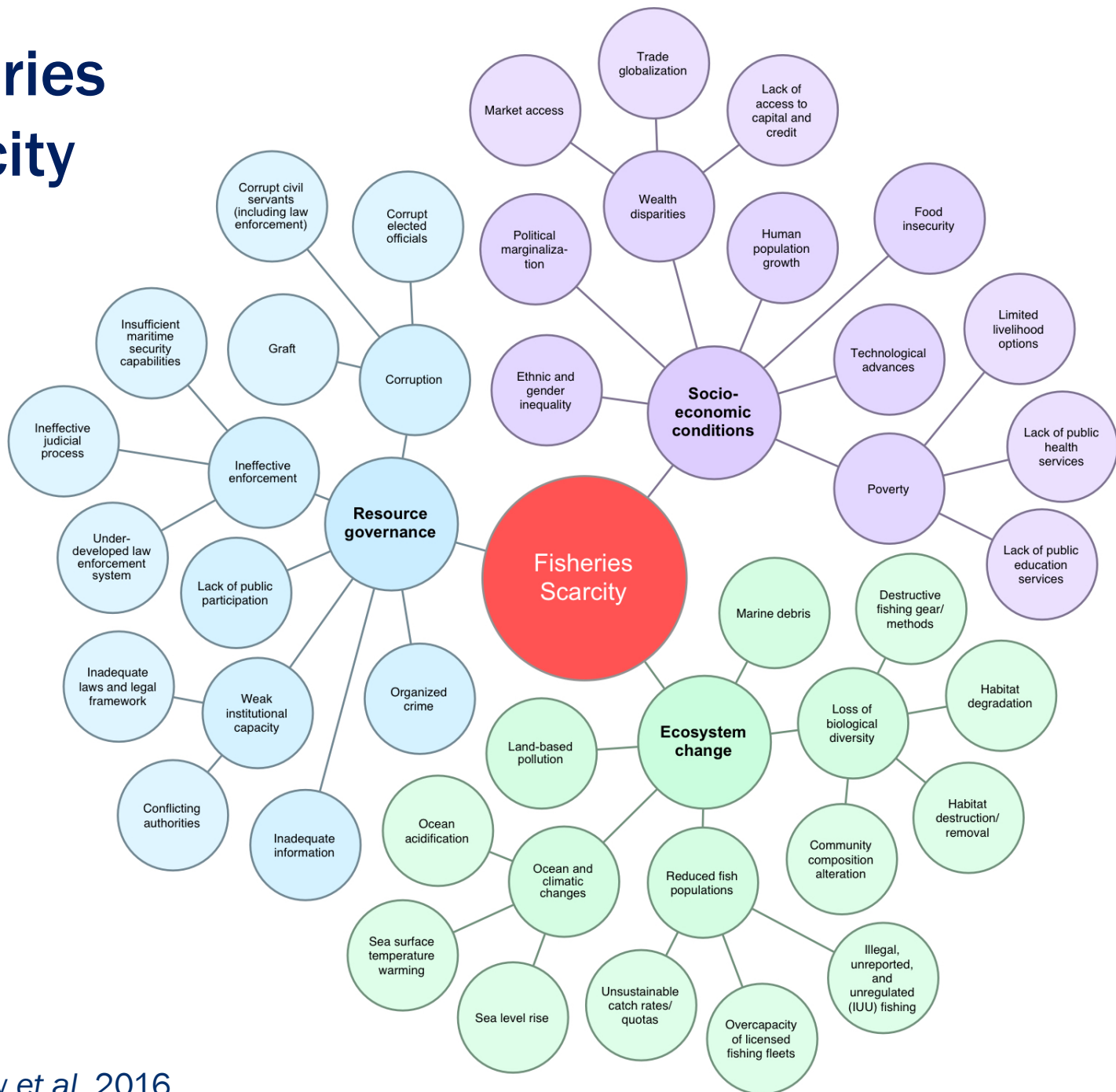
* $p < 0.1$; ** $p < .05$; *** $p < .01$

+ = positively correlated; - = negatively correlated

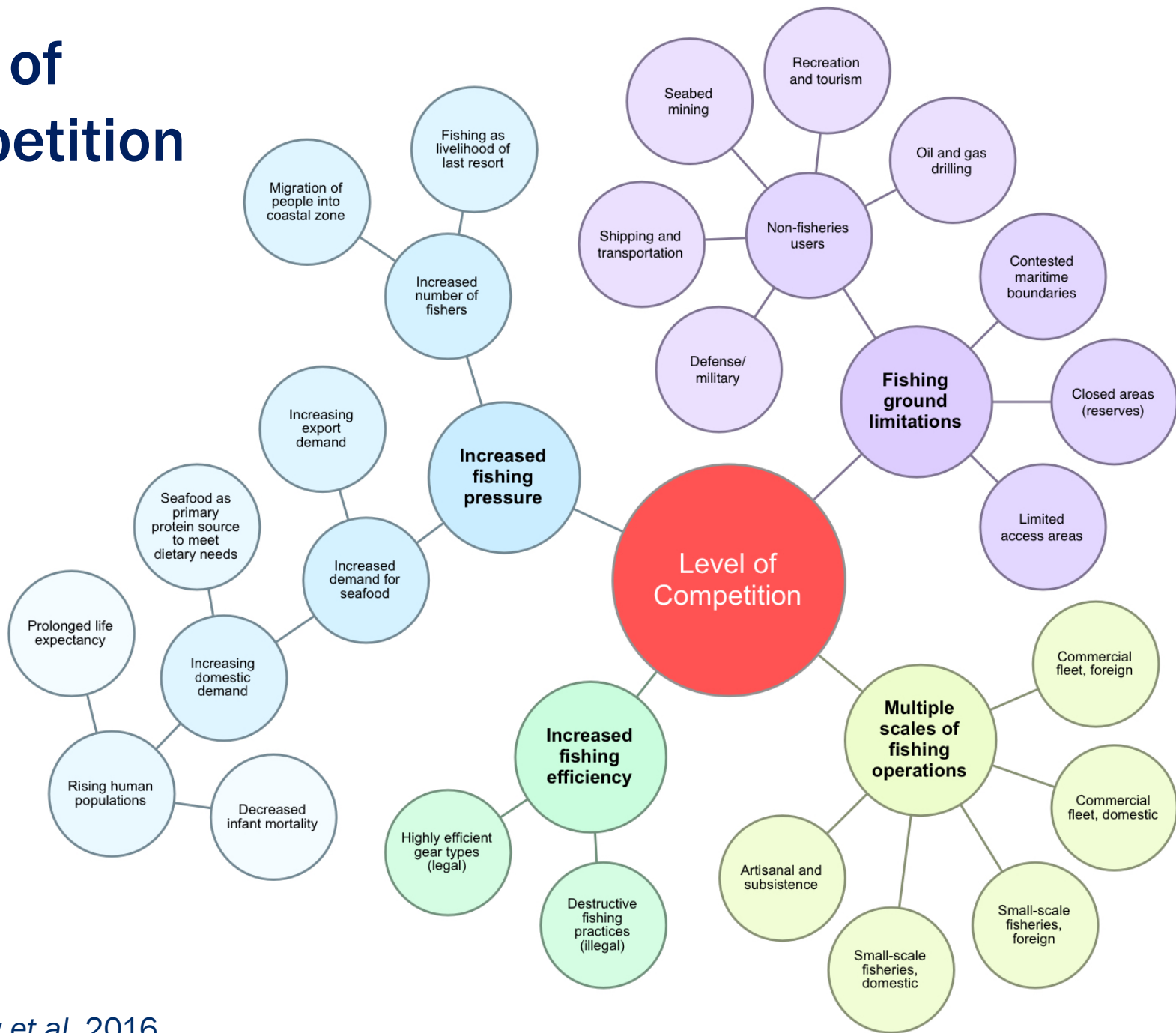
- Conceptualized ‘fish wars’ cycle:



Fisheries Scarcity



Level of Competition



Level of Conflict



Sources: Pomeroy et al. 2016; Pomeroy and Parks 2017

■ Emergence of fisheries conflict **typology**:

<i>Conflict type</i>	<i>Drivers</i>	<i>Examples</i>
Violence between fishers (same scale)	Scarcity; fishing restrictions; IUU fishing	Marine reserve incursions; use of illegal gears
Violence among fishers (different scales)	Overlapping fishing grounds; foreign fleets	Vessel collisions; gunfire between foreigners & locals
Maritime crime	Limited livelihood options; corruption; ineffective MCS	Smuggling/trafficking; piracy; enforcer bribes
Armed conflict	Civil war; insurgency; inter-state conflict	Conscription by militia; ideological extremism
Civil unrest	Economic insecurity; political instability	Public protests; rioting; coup d'état

1. Investigation: fisheries and maritime security
2. Summary Results: significant correlations
3. **Building Solutions:** combatting IUU fishing
 - o *Oceans & Fisheries Partnership (USAID Oceans)*

- Purpose: to combat **IUU fishing** and seafood fraud, to promote **sustainable fisheries**, and conserve **marine biodiversity**.
- Regional: 10 ASEAN + 6 CTI-CFF countries
- 5-years: May 2015 – May 2020
- Testing: electronic catch documentation and traceability (eCDT) systems



USAID
FROM THE AMERICAN PEOPLE



**CORAL TRIANGLE
INITIATIVE**
ON CORAL REEFS, FISHERIES
AND FOOD SECURITY

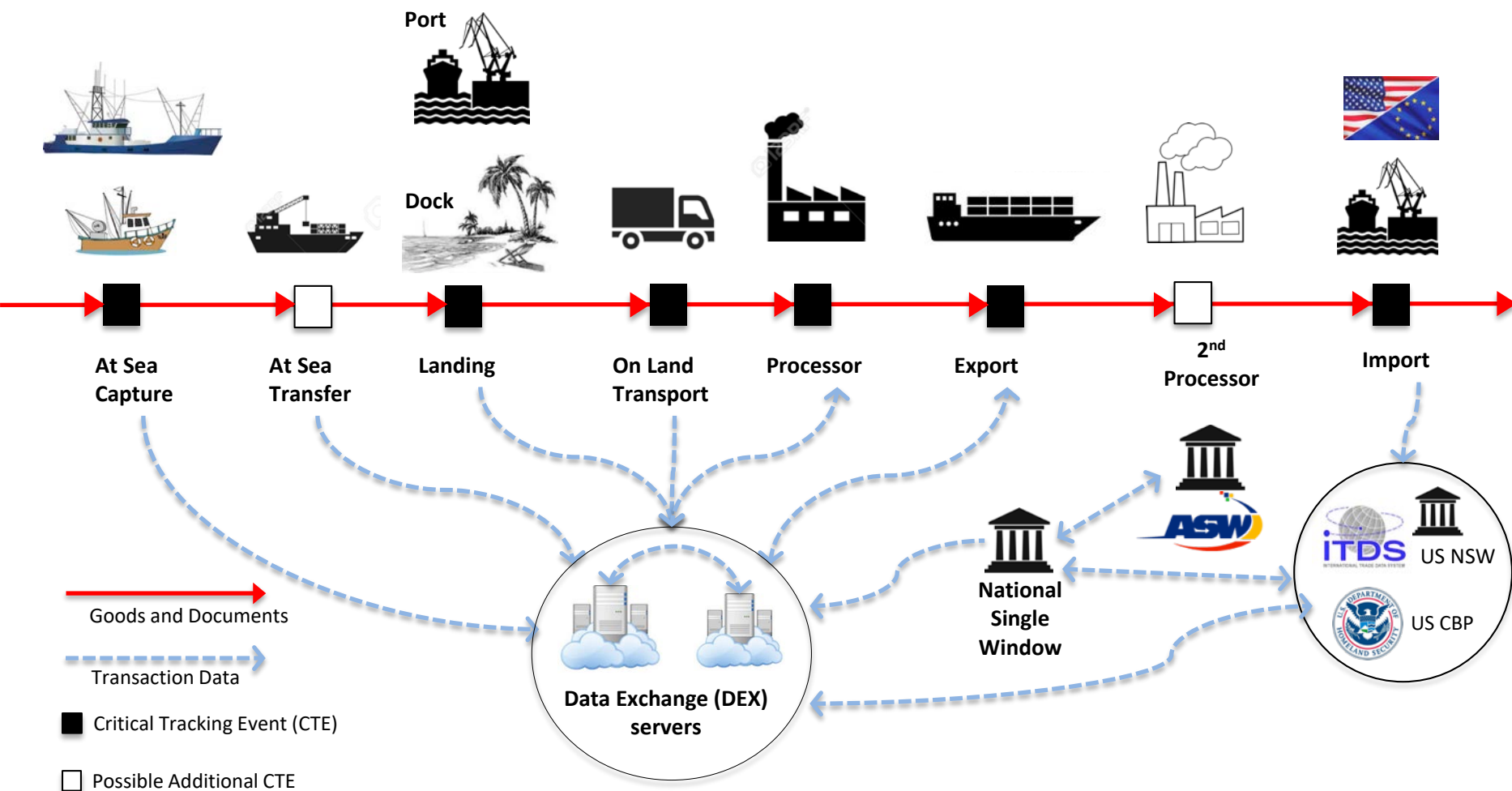
Satellite



Cellular



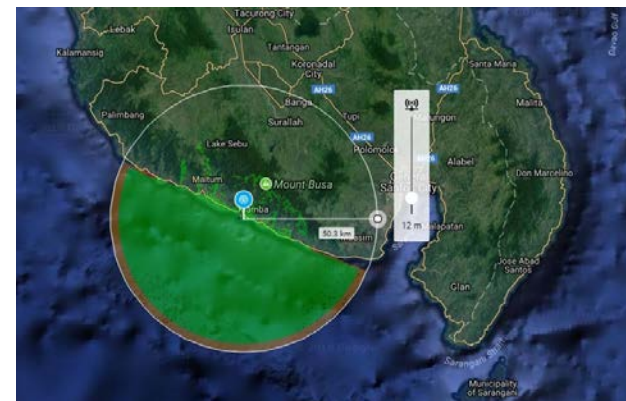
Information Sharing via eCDT



USAID Oceans – *fishing vessel tracking*



Small-scale/
municipal fishing
operations



USAID Oceans – *fishing vessel tracking*

Medium/large commercial fishing operations



1. Investigation: fisheries and maritime security
2. Summary Results: significant correlations
- 3. Building Solutions: combatting IUU fishing**
 - o *Oceans & Fisheries Partnership (USAID Oceans)*
 - o *Additional initiatives*

- Data analytics and geospatial visualization
- Machine and deep learning; e.g., automated Causal Assessment Screening Tool (CAST)
- Artificial neural networks for prediction uncertainty and real-time risk analysis
- Pattern matching and anomaly detection techniques for compliant, illicit, and fraudulent behavior monitoring

- ✓ **Investigation:** fisheries and maritime security
- ✓ **Summary Results:** significant correlations
- ✓ **Building Solutions:** combatting IUU fishing

John E. Parks

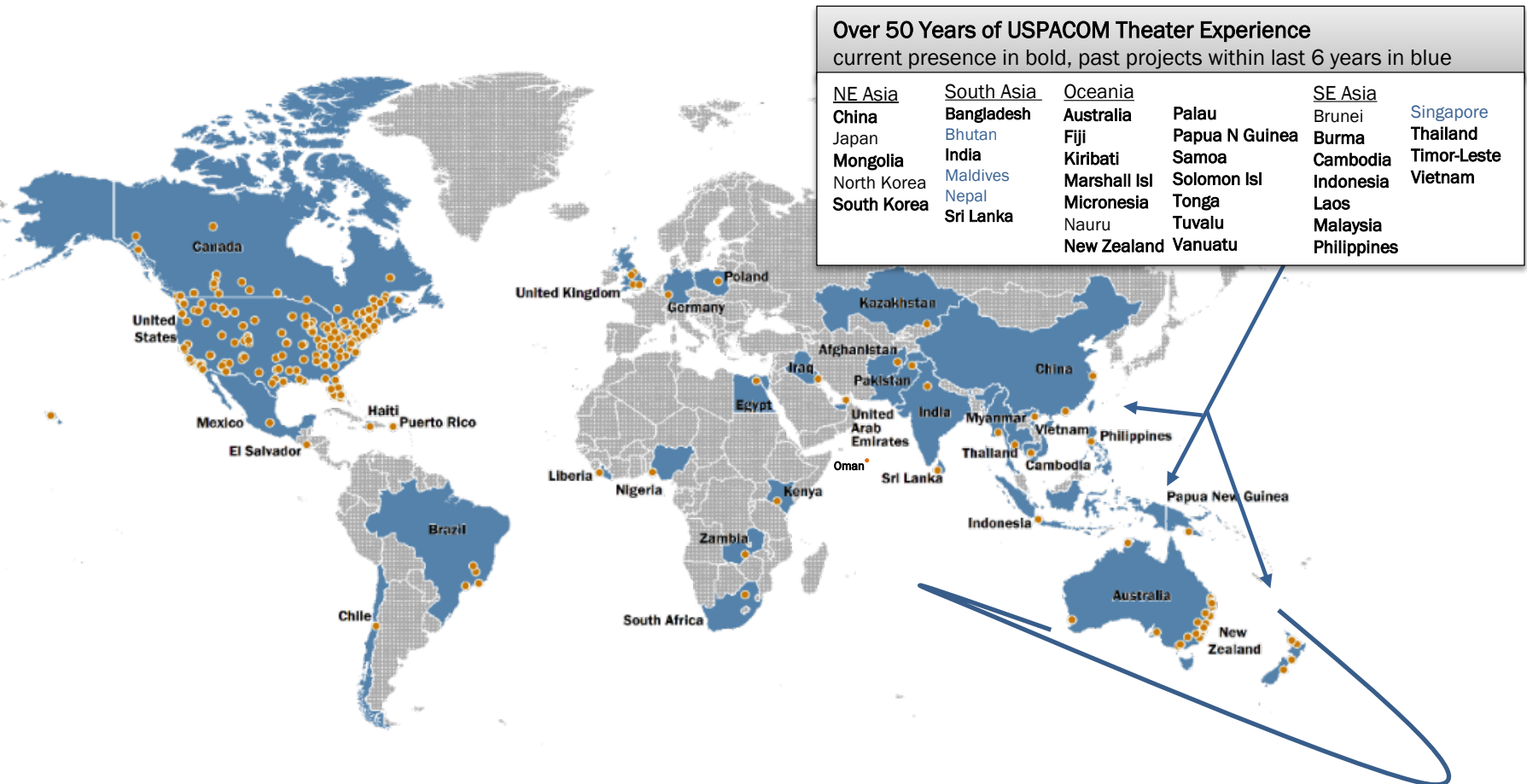
Chief of Party

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MORE THAN 400 PERMANENT OFFICES WORLDWIDE



Illustrative Information Technology Experience



TECHNOLOGY EXPERTISE

BUSINESS INTELLIGENCE

- Reporting
- Querying
- Alerting

DATA SCIENCE and ANALYTICS

- Statistical Analysis
- Forecasting
- Predictive Modeling
- Optimization
- Data Mining
- Big Data
- Visualization
- Machine Learning
- GIS and Geomatic Services

SECURE COMMUNICATION

- VOIP
- Red Switch
- LAN Mobile Radio
- SATCOM and Navigation
- Command and Control Center Design and Installation

TECH APPLICATIONS FOR

- Global Criminal Justice
- Port Security
- CBRN and Narcotic Detection

DATA MANAGEMENT

- IaaS
- Cloud
- Virtualization
- DB Mgmt & Admin
- Storage Management

INTEGRATION

- SOA, API, Web Services
- Systems architecture engineering, and consolidation
- Software Development (Agile, Open Source)

ENTERPRISE MANAGEMENT

- Enterprise architecture and planning
- Network operations and defense
- System administration
- Application software support
- Cyber - Security engineering and information assurance
- Disaster recovery
- Infrastructure engineering, installation, and support
- Consolidation and migration services
- Program management

REPRESENTATIVE FEDERAL CUSTOMERS



DoD



DISA



U.S. Navy



DLA



NGA



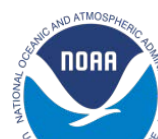
USAF



U.S. Army



EPA



NOAA



DOJ



DOEd



DOS



DOC



DOT



DHS



U.S. Department of Transportation
Federal Highway Administration



U.S. Department of Transportation
Federal Railroad Administration

