Topic: A04-132

Scalable Network Technologies, Inc.

Scalable Analysis Environment for Underwater Communication Networks
SCALABLE provides network design and analysis tools that enable customers to develop, test and deploy, large enterprise wired/wireless networks in a simulated environment. Working with the Forward-Deployed Energy and Communications Outpost (FDECO) Innovative Naval Prototype (INP) team to develop technologies for extended unmanned underwater vehicle (UUV) operations, SCALABLE's innovative Joint Network Emulator (JNE)/EXata modeling tools provide accurate energy and communication representations with Live, Virtual and Constructive simulation capabilities for development, experimentation, testing, and validation of algorithms, protocols, hardware, and operational scenarios. Specific advantages of JNE/EXata include the scalability its high fidelity model library allowing large, distributed communication networks to be modeled using standard computing hardware, and its comprehensive commercial and military asset libraries that include ground, air, space, and underwater communication protocols.

Technology Category Alignment:
Synthesis/Analytics/Decision Tools
Cyber
Unmanned Ground and Sea Vehicles
Modeling, Simulation & Test Infrastructure

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SYSCOM: ONR
Contract: N68335-17-C-0161

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-17-C-0161

Department of the Navy SBIR/STTR Transition Program

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Scalable Analysis Environment for Underwater Communication Networks

Scalable Network Technologies, Inc.

WHO

SYSCOM: ONR

Sponsoring Program: SPAWAR

Transition Target: FDECO

TPOC:
Pedro Forero
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Other transition opportunities:
CDMaST (DARPA) and PMW 770 Undersea Integration Program Office
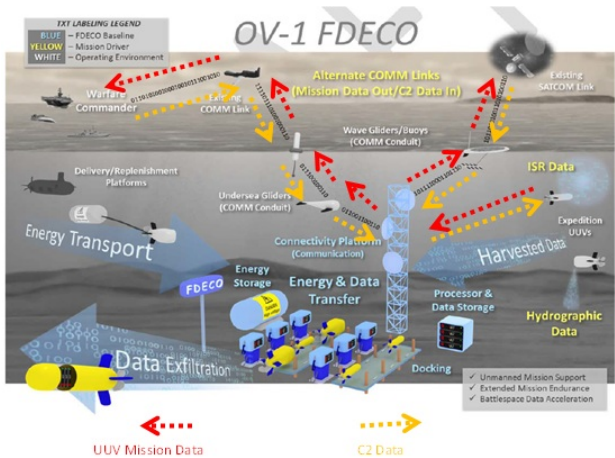
FDECO INP OV1 taken from 'FDECO Design Reference Mission V1.0'

WHAT

Operational Need and Improvement: Forward-Deployed Energy and Communications Outpost (FDECO) Innovative Naval Prototype (INP) is developing a capability for supporting extended unmanned underwater vehicle (UUV) operations by providing energy and communication services. Need: develop the FDECO Integrated Simulator (FINS) providing Live, Virtual, and Constrictive (LVC) modeling and simulation capability to support development, experimentation, testing, and validation of algorithms, protocols, hardware, and operational scenarios in support of the execution plan of FDECO.

Specifications Required: Develop a capability which will comprise a plurality of libraries with appropriate communications and networking protocols that reflect extant and future undersea communication systems relevant to FDECO.

Technology Developed: FDECO Integrated Simulator (FINS) will utilize the EXata/JNE simulation platform to seamlessly integrate the different simulations of FDECO functions for a comprehensive system of systems simulation and enable command and control (C2) of outpost operations.

Warfighter Value: FINS will enable architectures and technologies to be compared quantitatively using operational criteria to identify the most promising candidates. Subsequently, the model will be available for risk mitigation in the development phase and for network operations, mission planning, configuration management and operations optimization in the FDECO deployment phase. The model will also inform decisions on reducing development and life cycle costs.

WHEN

Contract Number: N68335-17-C-0161 **Ending on:** February 28, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
T-I: Network and Communication Models	Low	Validation and TPOC acceptance	TRL: 4-6	February 2017
T-2: Overall Command & Control (OCC) LVC Model & Interface	Med	Validation and TPOC acceptance	TRL: 4-6	March 2017
T-3: Constructive Outpost Dev Env (CODE) Models	Med	Validation and TPOC acceptance	TRL: 4-6	May 2017
T-4: Scenario Development	Med	TPOC Acceptance	TRL: 4-6	June 2017
T-5: Demonstrations	Low	Summary Overview and TPOC Accept	TRL: 4-6	July 2017

HOW

Projected Business Model: SCALABLE is a successful small business that provides a unique solution to measure the operational impact, and cyber implications, of network-enabled command and control systems. The company was founded to transition DARPA–funded technology developed at UCLA and has since had continued success in the transition of its funded research into commercial products. SCALABLE has established a successful track record of SBIR technology commercialization.

Company Objectives: SCALABLE will develop a software modeling and simulation capability using the JNE/EXata communications simulation platform to support development, experimentation, testing, and validation of algorithms, protocols, hardware, and operational scenarios in support of the execution plan of the FDECO INP. The focus of this effort on the modeling and simulation of communication and networking protocols, and algorithms associated with the netted operations of multiple FDECOs, UUVs, and other software and hardware components form the FDECO system architecture.

Potential Commercial Applications: FINS will be incorporated into the Joint Network Emulator (JNE), a GOTS library that uses the EXata network simulator platform. JNE and StealthNet are two GOTS libraries that have been developed over the past 5-7 years using EXata. These libraries are available to the DoD and contractors at no additional cost. JNE was funded by Army, Navy, and the Joint communities under a contract originally awarded by the JPEO Joint Tactical Radio System (JTRS) and is now monitored by SPAWAR System Center – Pacific. StealthNet was funded as an S&T project and has now transitioned to the Navy-led Cyber TASE CTEIP program.

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