Network Centric Warfare for Coalition Integrated Defense Against Terrorism

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Corporate Overview

• Founded in March 1996 by Senior Researchers at Johns Hopkins University/Applied Physics Lab
• Core Business is the Design and Development of C4ISR Software Products for Military Use
• 165 Employees and Growing
• Headquarters in Laurel Maryland, Offices in Kauai, HI and Norfolk, VA
• Specializing in Network-Centric Warfare and C2 Systems
• Over 50 Percent of Staff have Advanced Engineering Degrees (MS or PhD)
• Merger with Raytheon made Solipsys a Wholly-Owned Subsidiary in 2003
Problem...

- Challenge: to provide an integrated international, real-time sensor information dissemination system to defend against terrorism
  - Multiple governments, jurisdictions, organizations
  - Multiple networks with restricted collaboration
  - Myriad of encryption systems
  - Limited and diverse communications
  - Intelligence Boundaries
  - Real-time data distribution
  - Distributed Command Authority
Tactical Component Network (TCN)

- A software application suite for real-time sensor collaboration that provides:
  - Open Architecture framework
    - Employs a well defined API that facilitates component based systems integration
    - Hardware independence allows for a scaleable application
  - Communications flexibility
    - Patented “Goal oriented” algorithms enable data exchange that eliminates redundant information, optimizing use of available bandwidth
    - Not tied to a specific radio or device
    - Extensible to multiple communication paths

- Demonstrated and robust technology
  - Four years of lab, land-based and deployed test and assessment
  - Meets requirements ranging from target engagement to situation awareness
  - Demonstrated support for 3rd party component development
TCN Approach

• Sensors and communications resources collaborate to form a Single Integrated Picture (SIP)
  • Data distribution based on user-defined accuracy requirements (smart pull vs push technique)
  • Data is created and delivered in a source independent form (supplier can be anonymous and users can be segregated based on a need to know)
  • Addition of new sensor, communications device or application program does not require change to other network participants (extensible, interoperable)

• Supports simultaneous, real-time collaboration between Joint and Coalition network participants in support of the Global Information Grid (GIG)

• Incorporates and extends mission-centric network architectural concepts to meet users needs
TCN Architectural Components

- **TCN Foundation Applications**
  - Data Conditioner (DC): Data abstraction layer for sensors and comms devices
  - CORE Synthesis/XFACT: TCN fusion and collaboration
  - Tactical Display Framework (TDF): Battle management and C2 display
  - Multi Source Correlator Tracker (MSCT): Data link integration, legacy system interfaces, dissimilar source correlation and tracking

- Sensor Server, Comms Server, and Mission Apps (depicted in green) are developed by third party (e.g., LM for AEGIS, NG for E2C, Boeing for AWACS, etc.)
TCN – Coalition Military Application

**TCN Local Network**

- Support time critical communications among peer-to-peer participants
- Aggregate bandwidth shared between participants based on user needs

**TCN Global Network**

- User connectivity is not constrained by Line of Sight - Global reachback
- Secure real-time data available via LEOs or other overhead assets
- Hub provides access control, database support, processing enhancements and central applications
Hub Components/Functions

- Operating System
- Connection Manager
- Database Managers
  - Theater Data
  - Geographic Data
  - Cultural Features
- Data Archive
- Access Control
  - Traffic
  - Multilevel Access
  - Coalition Access
- Gateway Management
TCN Local/Global Operation

GLOBAL HUB

Users & Data Providers
- TCN-Local
- Command Centers
- First Responder's
- Intelligence Sources
- NATO/OTAN
- Military Air Picture
- Air Traffic Control
- Coalition Partners
- Interpol

Apps
- App
- App
- App
- App
Summary

• Solipsys specializes in high performance fully customizable COTS software components that can be used individually for point solutions (displays, correlators, simulation tools, etc.) or coupled together to form a complete hardware-independent C2 system appropriate for each echelon of command

• Full TCN Brief available for download at: www.solipsys.com

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