

RT¹⁰ Overview

June 2006

Current Challenges – Why Innovate?

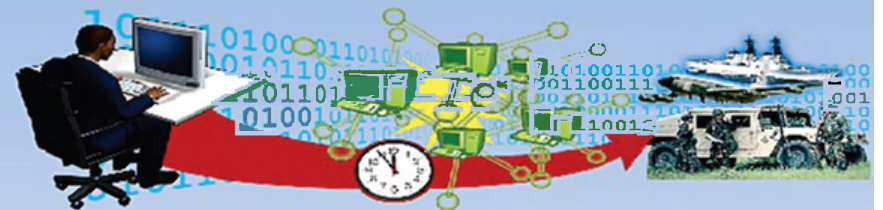
- ▶ **Network is converging and dataflow is increasing**
- ▶ Pushing everything back means front-end filtering → dropped data
- ▶ Substantial lag to process, store, and query data
- ▶ Restricted geo-spatial capabilities (not just because of the hardware)
- ▶ Manual correlation between SIGINT, HUMINT, SIGACTs
- ▶ Non-integrated toolsets
- ▶ No comprehensive theater knowledge base
- ▶ Non-optimal collaboration between analysts
- ▶ Manually intensive production processes
- ▶ Cannot scale / work targets in volume
- ▶ Reaching limits of legacy systems
- ▶ Analysis takes a lot of time

Think: Atlantic Monthly vs. CNN scrolling bar

RT-10 Goals

- ▶ Overall Objective: Order of magnitude improvements in real-time SIGINT architecture for the U.S. Cryptologic System, initially focused on national and tactical intelligence in Baghdad, to enable **better** decisions in **less** time

- ▶ Providing:
 - Access to **more comprehensive data**
 - Immediate access to local data sets, with query back to NSA
 - Integrated Analytic Workflow, with **better tools**
 - Real time Alerting: National and Tactical
 - Automation of tasks → Query to Dissemination
 - Distributed Analytic Collaboration
 - Scalability
 - **Integration** across brigade-level SIGINT capabilities



Tools and Workflow

▶ Better Tools

- New relationship visualization w/temporal capabilities
- Real-time geo-spatial alerting framework
- Web-based applications optimized for speed in a distributed environment
- Partnership with Green Dragon to identify and inject new COTS/GOTS technologies in **much less** time

▶ Integrated Framework

- Work in any tool of choice, seamlessly switch to alternative views (think development → presentation)
- Automated, one-click mentality from query to dissemination
- Developers available to react to analyst needs and inject new capabilities

Substantial Improvements in Data Access

► Initial

- Traditional Data Sources (Global Reach touching NSA databases)
- SCS GSM collection
- Tactical GSM Accesses
- Checkpoint Data
- HUMINT / All-Source derived SIGINT Selectors (parsed CIA TDs, DOD IIRs, TAREX, DOCEX)
- Local knowledge base

► Future

- Fully-integrated Iraqi DNI Data flows (initially accessible through separate web interface)
- OBELISK / LETC GSM Coverage
- WISPYKNIT, VICTORYUNIFORM and other special source

Think: Know everything we collectively know, and faster

VoiceRT: Index / Search of Voice Cuts

- ▶ Goal: Better filtering and selection using latest generation of voice-processing technologies
 - Perform phonetic indexing on 1 million voice cuts per day
 - Run incoming cuts against 1000 individual voice prints to drive real-time filtering and selection
 - Optimizes linguist scarce time, does not replace linguists

- ▶ Increases efficiency of available linguists
- ▶ Allows analysts to affect collection priorities and react to changing linguistic / word patterns
- ▶ Possible future integration with checkpoint collection (voice / biometrics)

Real time Alerting: National and Tactical

- ▶ **Real-time alerting on hard selectors**
 - Creating a knowledge base within the collection architecture
 - Drives selection and filtering
 - Provides relevant information to war fighter in seconds
- ▶ **Algorithms to Detect and Alert from Patterns of Interest**
 - Constant enrichment of incoming data flows based on NSA and GCHQ-developed algorithms
 - Robust framework to allow analysts to submit / modify / reject existing techniques
 - Capability to extend algorithms to correlate and react to friendly actions, geospatial and geotemporal vicinity, etc.

Dedicated effort to identify and detect new potential targets based on known behavioral patterns

Automation of Standard Tasks

► One-Click Report Generation

- Chaining diagram
- Products containing target
- Frequent calling list
- Temporal trends
- Geospatial trends



► One-Click Alert-to-Analysis

- Alerting framework fully integrated with analytical toolsets
- Geospatial / Temporal / Network views of data

► One-Click Analyst Actions

- Drive collection through interface to EDB / Keycard
- Effortlessly affect knowledge base confidence / details

Checkpoints

- ▶ Provide advanced sensors to generate checkpoint metadata:
 - Active cell phone interrogation
 - Active RF Illumination: goal to fingerprint vehicles, identify threats (artillery shells, ammunition, gun barrels, electronic triggers)
 - 360 degree imagery
 - Chemical and radiological detectors
- ▶ Fed real time to tip and cue other Ints

- ▶ Proof of concept in vicinity of BIAP, tentatively checkpoint 538 on Route Irish
- ▶ Operational test, tentatively checkpoint 502 near Abu Ghurayb

Implementation

▶ Construct the JIOC-I “SIGINT Brain”

- Distributed Databases in Baghdad and Ft Meade
- Aggregate Metadata from tactical and national collection, focusing on GSM for initial efforts
- Massive data flows: 50 Million+ GSM metadata events / day
- Content access from all possible collectors
- Integration: “Know what we know”

▶ Timeline

- End June – Initial site surveys, theater coordination
- 15 July – Hardware Ships
- 1 August – Hardware Arrives, People begin arriving
- 15 August – System Online
- 31 August – Data Flowing
- 15 September – IOC

Achieving Success with Spins

► Spin Methodology:

- Iterative activity consisting of a series of spins
- Each 90-day spin expands capability
- Demonstration of integrated capabilities
- Application of new and existing technologies
- Make discoveries and apply lessons learned to future spins



RT¹⁰ Spin Schedule

Spin 1: August 2006

- System Installed
- JUGGERNAUT Data
- Initial Software Testing

Spin 2: Nov 2006

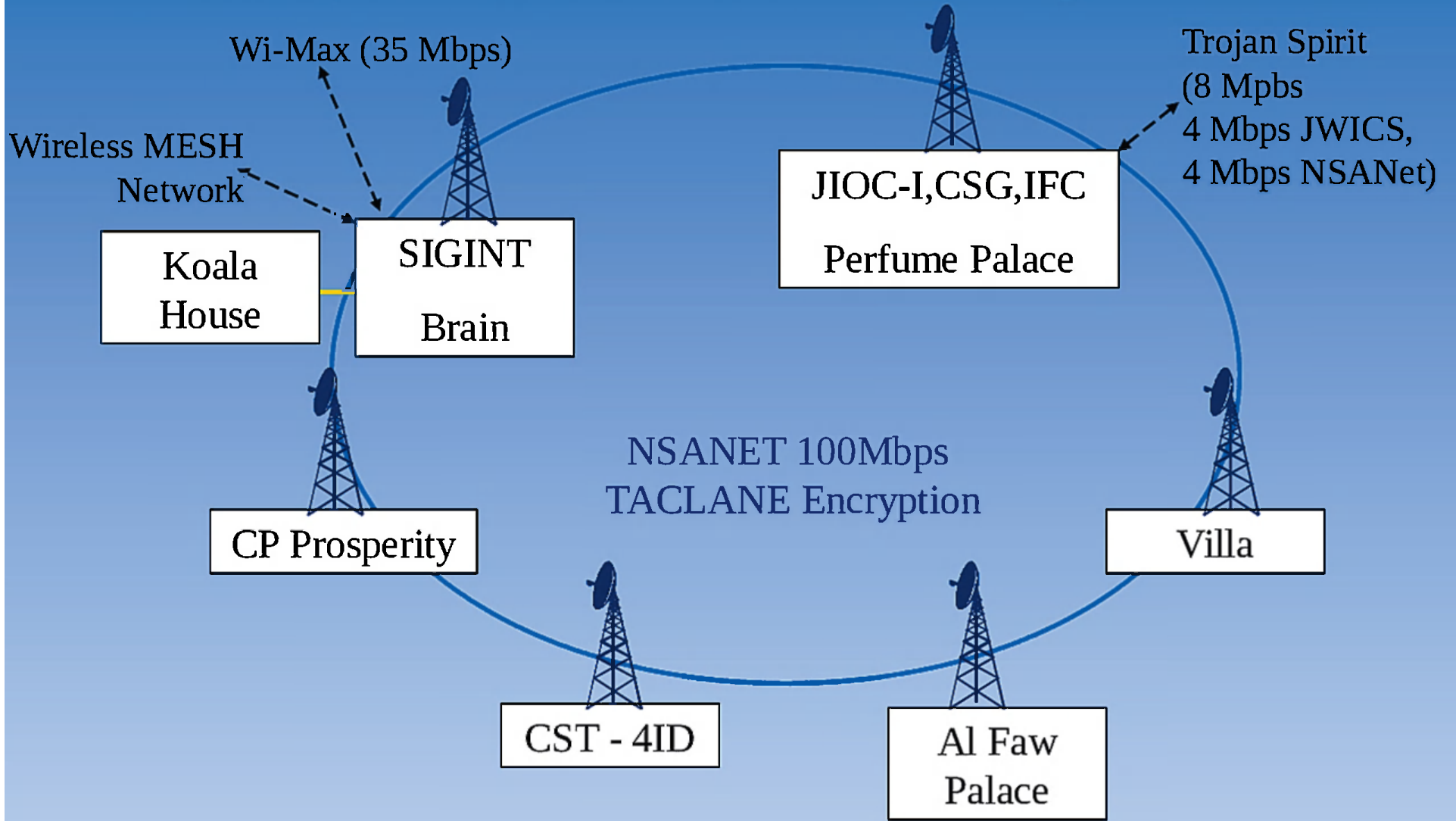
- Demonstration of integrated capabilities
- Cable / FORNSAT Integration
- Enhance Checkpoint Capability
- Analyst-Identified Areas of Improvement

Spin 3: Jan 2007

- Analyst-Driven Modifications
- Next-Generation Analytical Tools



RT¹⁰ Line of Sight Microwave Network Wi-Max, Mesh, NSANet Connectivity



RT¹⁰ Analytic Nodes

- ▶ Iraq
- ▶ MOC
- ▶ NSA Product Lines
- ▶ NSA-G
- ▶ COBRA FOCUS

GSM Architecture & Access Points

