(U) Future Lab Architecture
[GEOHUB & SIGHUB]

MOD-Operations Innovation
23 April 2015
(U) What is GEOHUB/SIGHUB?

- (U) Consolidation of disparate R&D enclaves across the MOD Operations Innovation [OI] Enterprise into a single common environment...

- (U) GEOHUB = USA ONLY
  - WIC, SWIC, MIC Specials Enclave, *STWAN [R&D aspects at Denver]

- (U) SIGHUB = REL TO USA, FVEY
  - CSURF, CSAND, SSE Lab, SAND, PIT, MIC, *XSAF [NRO unique services]
(U) Why are we doing this?

- (U) We need a common, cross-site collaborative, development environment to achieve our cross-site matrixing and cross-aperture objectives...

- (U) The commodity environments will not address our Overheard RF and R&D needs [in the near future]...

- (U) We need to be more efficient and can’t afford to maintain all our current legacy environments...

- (U) We need to have an air-tight security posture and be in line with our mission partners [in particular NSA].

- (U) We need to be agile as we chase dynamic intel priorities
(U) Expectations [Part 1]

+ (U) An OI developer can TDY to any ground satiation or remote in from any factory SCIF and instantly access their development environment.

+ (U) Every developer has access to the same datasets, tools and processors [they are cleared for]...in real time.

+ (U) A user can reach out to our Unique Infrastructure Team at any MGS's for support.

+ (U) A user can spin up a machine and kick-off new projects in minutes [MK370 Crisis]
(U) Expectations [Part 2]

+ *(U)* A developer can satisfy their most extensive processing requirement within this environment.

+ *(U)* A lab chief can decide to expose a prototype to any IC environment [CWE, NSANet, JWICS] in a timely fashion.

+ *(U)* The entire enterprise can leverage any procurement of commercial software from any of the sites [floating licenses].

+ *(U)* Redundancy will be built in where an issue at one-site can be temporarily mitigated by the others.

+ *(U)* The US and FVEY enclaves are tightly coupled and transactions happen in an automated fashion.
(U) Developer "Requirements"

Successful Development Requires Access To and Manipulation Of Diverse Elements

**Development Workspace**

- **Archived Signal Data**
- **Data Sources (Streams and Snapshots)**
- **System Status and Control**
- **Geolocation and View Predictions**
- **GEO Results/Quality Database**
- **Ephemeris**
- **Tasking and System Timeline**
- **Mapping and GEOINT**
- **System "Derived" or Ancillary Data/Information**

**Target Data**
- e.g. "Roadbed" etc

**Results Databases**

**TOPI - Reporting Interface**

**Can be External Agency Network, e.g. NSA Net**

**Software Based SIGINT Processing**
- Prototype or System

**Ops**
- Product

**Tools - Midas, Matlab, etc**

**Legacy Option Trees, Prototypes, and SDPs**
- Tools and Previously Solved Problems/Re-Use
(U) SIGHUB Core Components

- (U) ICD-503 Compliant Admin/Mgmt functions to include continuous monitoring
- (U) Local and cross-site storage options
- (U) Multi-tiered Virtual Desktop Infrastructure
- (U) 24/7 Development factory access via VDI only to ensure no unauthorized raw data movement
- (U) Efficient use of existing site resources to ensure cohesive data representation between Labs and OPS
- (U) Logically isolated "black-box" zone for testing unique hardware products
- (U) 10G non-blocking Network Core
- (U) Use of Cross-Site "best-effort" comms
- (U) Central compute manager to ensure dynamic provisioning including bare-metal resources for high-resource utilization development
(U) Protected Architecture

Conforming, Approved, Security Friendly Template

Long Term, Bottoms Up, Evolutionary Development
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(U) GEOHUB/SIGHUB Mission Space

GEOHUB/SIGHUB CONOP

NRO ISP/ASP

TDF

Analyst
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(U) Development & Limited Ops

GEOHUB/SIGHUB

- Limited OPS
  Prototypes/QRC's
  MOD

- Lab-Dev
  Local Development
  MOD

VDI Only

- Factory Long Lines
  Factory Development
  GED

TRANSITION TO OPERATIONS

On – Site
SIGINT DATA

Off – Site
No SIGINT DATA

Note: Factories that need Pre-D SIGINT locally will use Tribal Fire

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(U) Schedule

+ (U) All GEOHUB systems are installed and ready for use
+ (U) SIGHUB-H and SIGHUB-C is waiting for final network connectivity with CSL-1
+ (U) Multi-year effort to transition legacy into GEOHUB & SIGHUB.
+ (U) Series of RFC's in work for robust GEOINT data access
  + (U) MOPO-165 (Wideband GEOINT)
  + (U) MOPO-168 (Narrowband GEOINT)
  + (U) MOPO-175 (OPIR)
(U) Critical Partners

- (U) Project Lead & Development
- (U) Major Resource Contributor
- (U) Integration, Administration and Management
- (U) Engineering Support & Resources
- (U) Co-consumer of SIGHUB Environment
- (U) GED Support [WBA changes, CTF, NSA Partnerships]

- (U) SIGINT Compliance guidance
- (U) RESOLVE-TURMOIL connectivity
- (U) Engineering Oversight & REDHAWK Framework

- (U) Compliance Services & Ordering Capability
- (U) Existing Functionality [MHE & AlphaPIE]
- (U) Engineering Expertise and OPS Services

- (U) Hardware Infrastructure & Software Stacks
- (U) Engineering Support
- (U) Data Sources & Connectivity

- (U) GEOINT Science and Domain Knowledge
- (U) Existing Functionality, connectivity and data access
- (U) Engineering Expertise
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