



The Naval Fires Network (NFN) Converged Architecture

Presented to:

NDIA Interoperability Conference

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C2I and Combat Support

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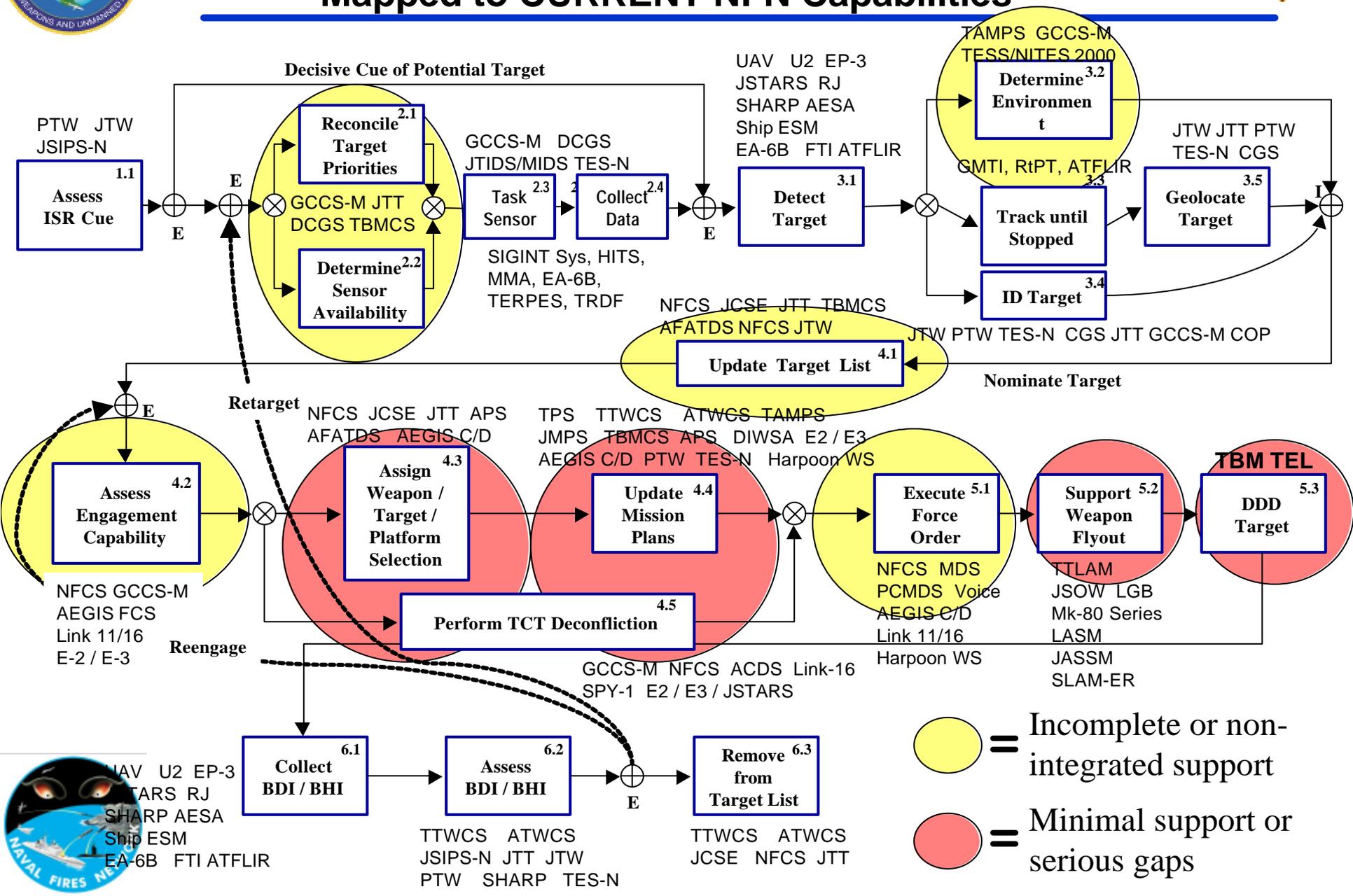
26 March 2002





TBM TEL TST Scenario

Mapped to CURRENT NFN Capabilities



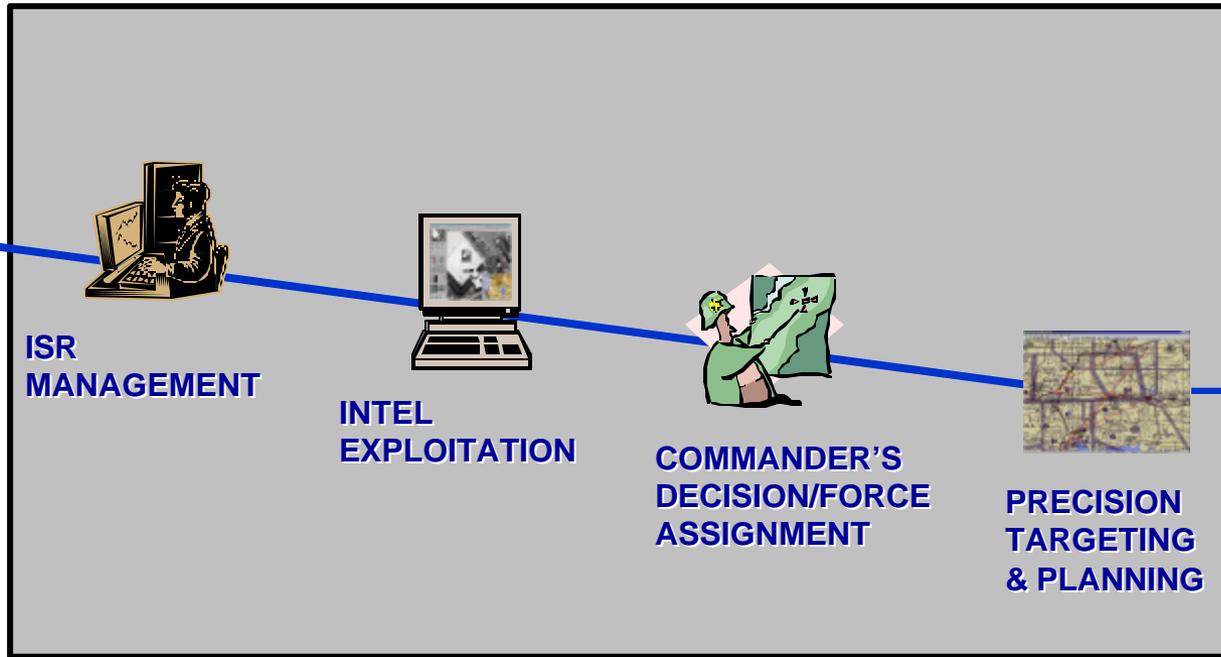


What is NFN/TCT

Functional Capabilities



**SENSORS
&
DATALINKS**

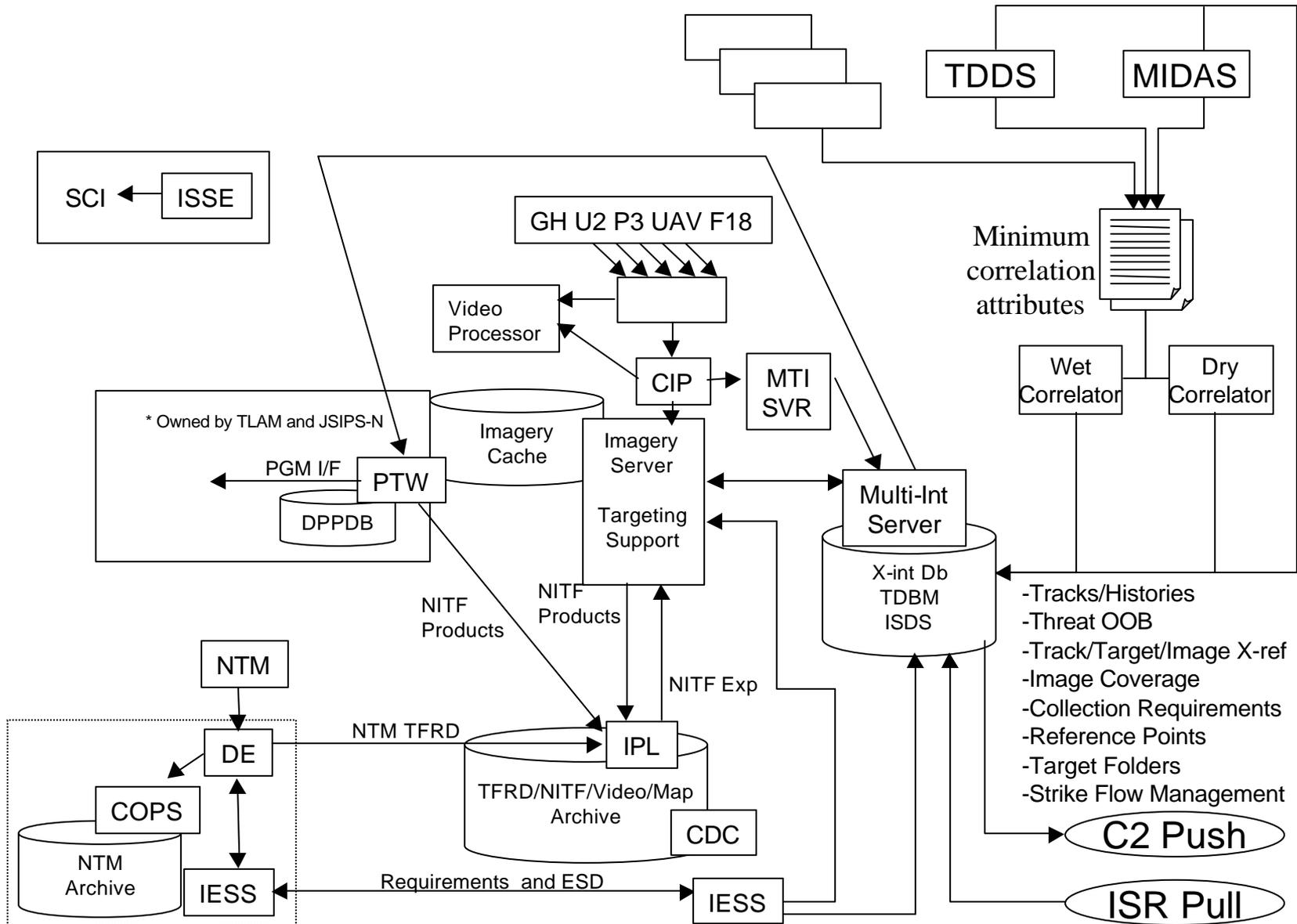


- Supports end-to-end architecture for time sensitive targeting
- Merges ISR/targeting/mission planning/situational awareness
- Includes timely interfaces to sensors and weapons systems
- Includes NAVAIR, NAVSEA, and SPAWAR programs



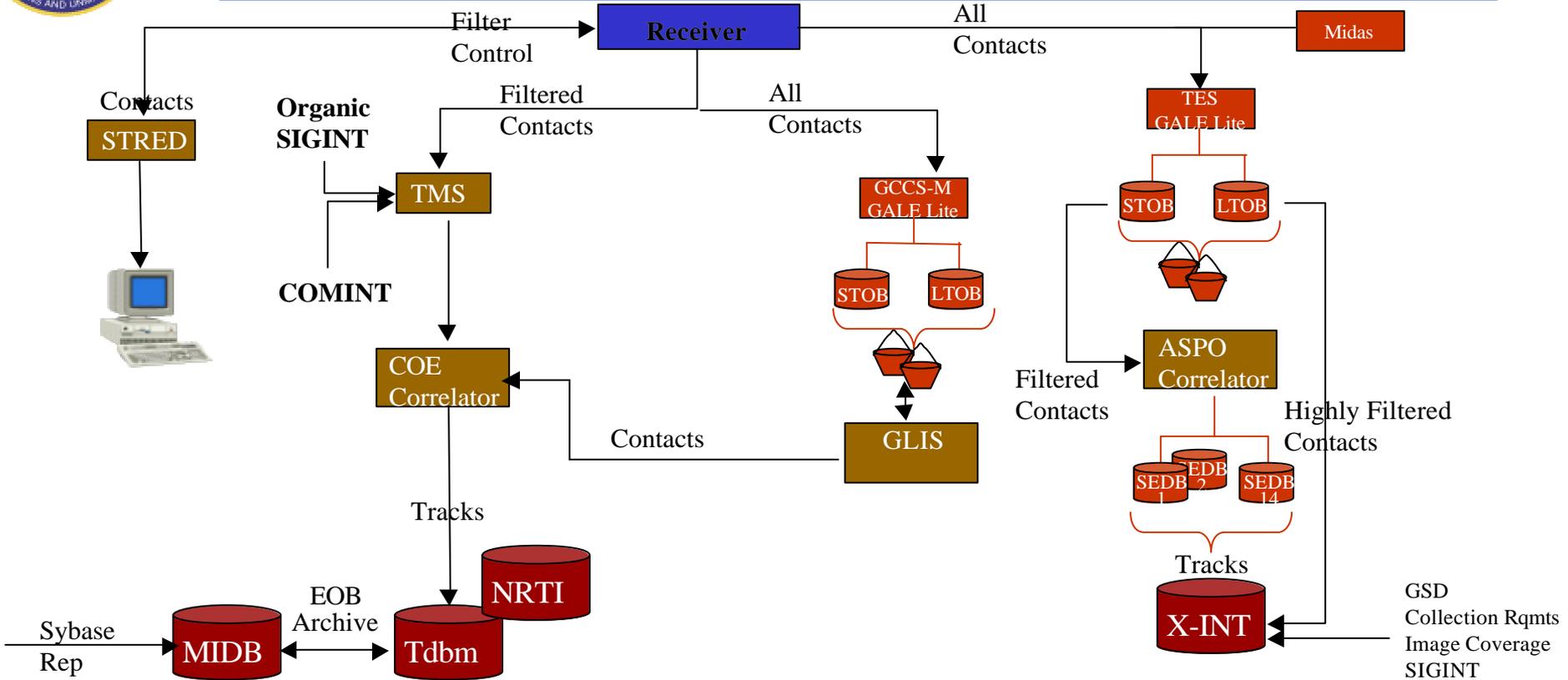


Objective NFN Architecture





ELINT Processing in TES and GCCS

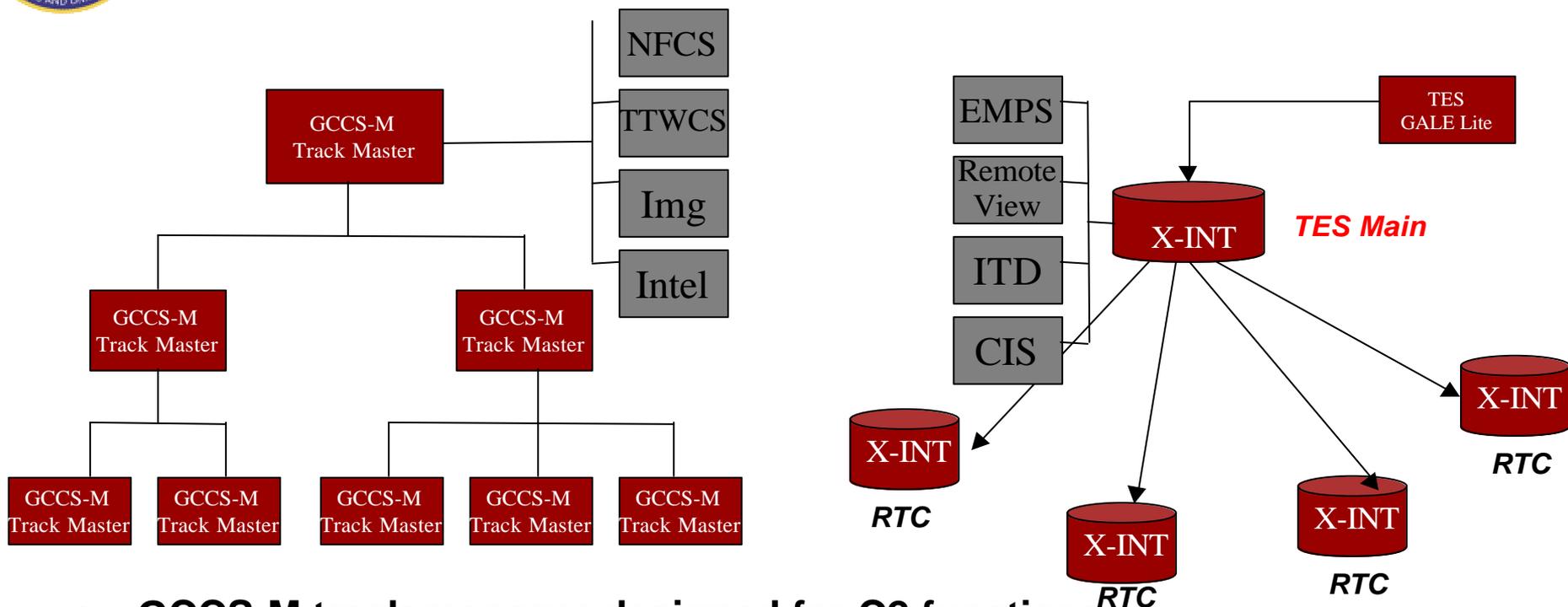


- **ELINT processing & different uses of GALE Lite**
 - TES-N = GALE as ELINT pre-processor
 - GCCS-M = historical ELINT analysis with COE correlator
- Differences in ELINT correlators (wet vs. dry); GCCS-M includes COMINT
- Processing limitations in GCCS-M
- Requires merging correlation functions in concert with C2 distribution framework





Track Management and Distribution

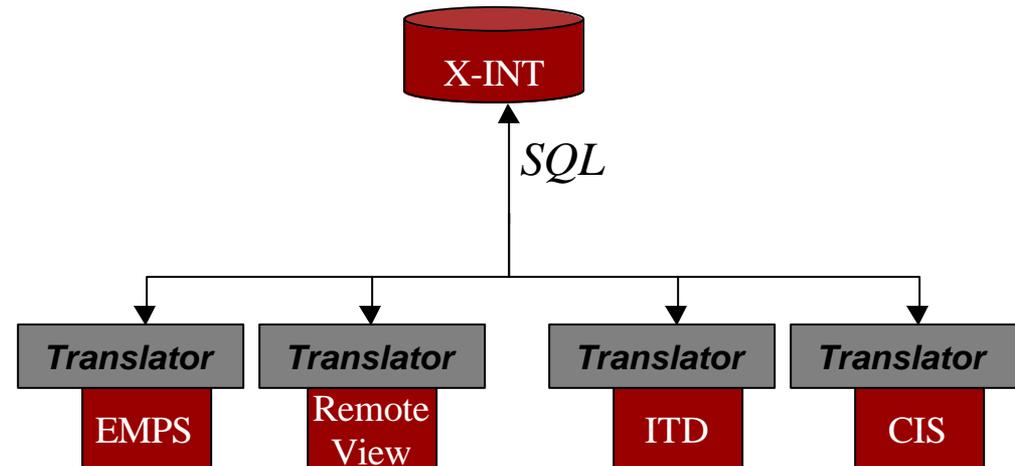
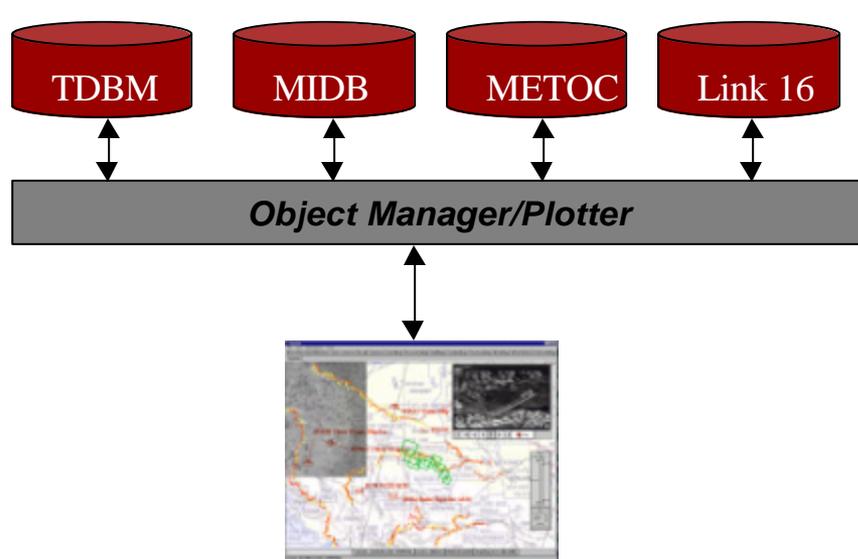


- **GCCS-M track manager designed for C2 functions**
 - Distributed track management
 - Platform, Unit, ELINT, Link, ATO/ACO, Overlays
 - Evolved from current FOTC/OTCIXS to IP transmission
 - Limiting architecture (e.g., new track types, correlators, track quantities)
- **TES-N focus on ISR management makes it ill-suited for C2**
 - All XINT clients are **read-only views** into the XINT database (including RTCs)
 - **Highly extensible** to new track types and quantities





Display Mechanics

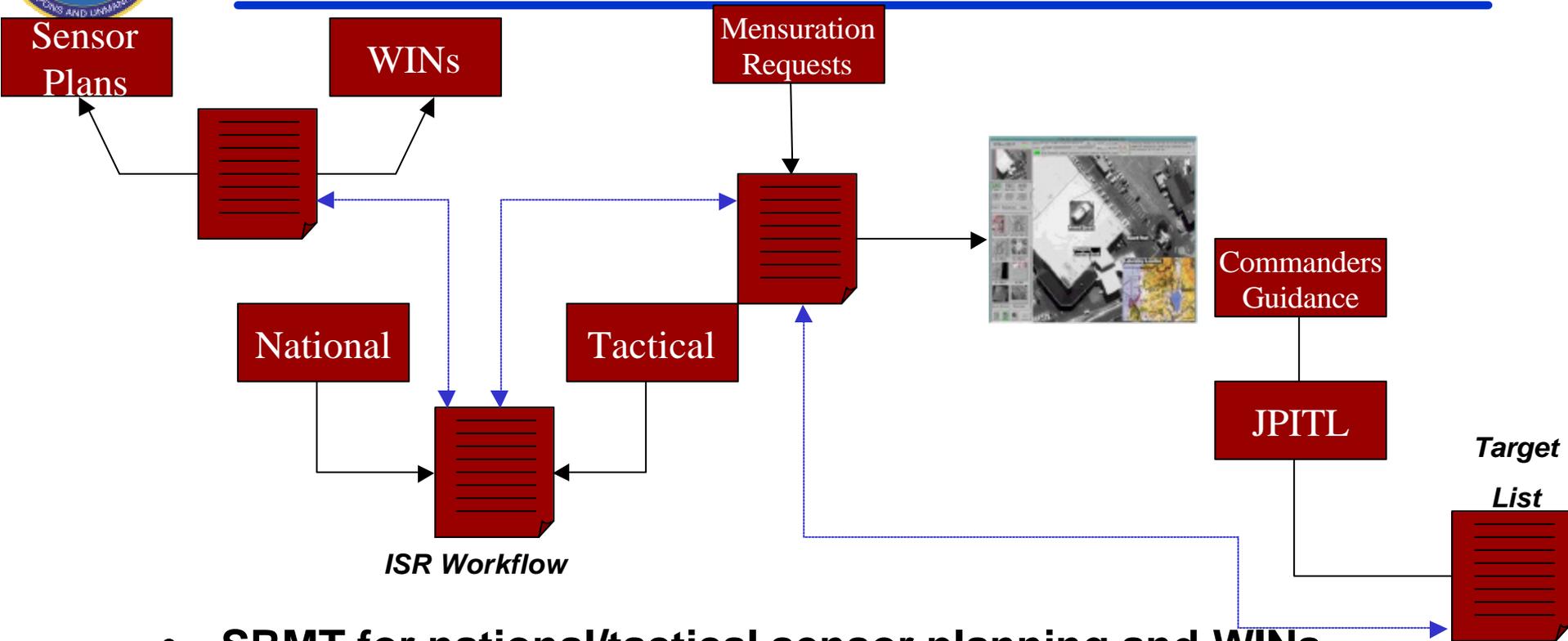


- **TES-N has immense flexibility to display “acetate overlays” on multiple display surfaces**
 - GSD files, SHAPE files, GRAPHREPs, etc.
- **TES-N requires all plotting requests to be expressed through the XINT mechanism**
 - No real connection to data producers
- **GCCS-M allows external Dbs/objects to independently plot (and control) their own objects**
 - Display environment is flexible to plotters, but not to display surfaces (only those that understand JSymplot)





Workflow & “Strikeflow” Software

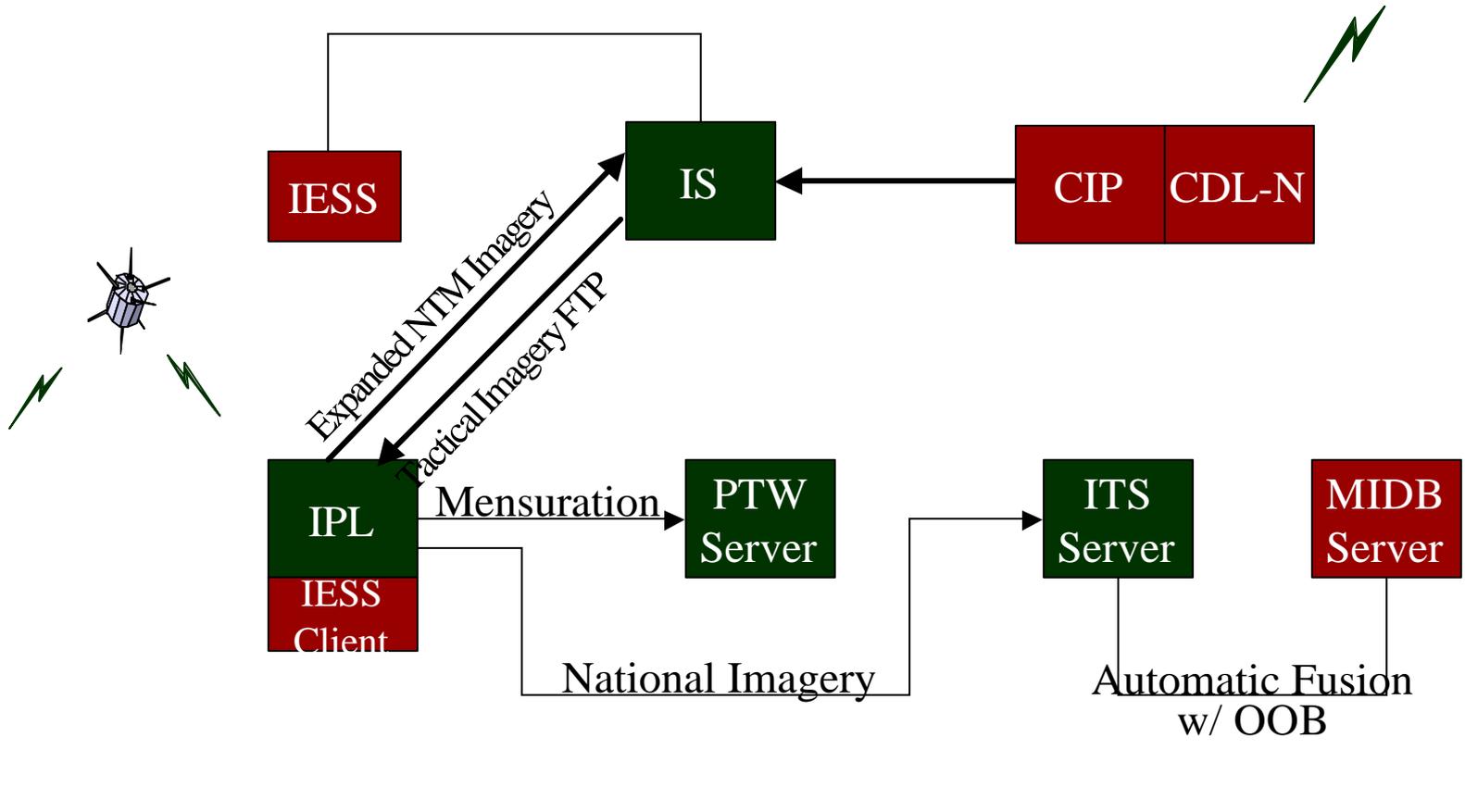


- SRMT for national/tactical sensor planning and WINs
- TES-N Workflow designed for ISR needs
 - Managing collection and analysis of national/tactical imagery (e.g., CRs, IIRs, etc.)
- JSIPS-N Targeting products for mensuration needs
 - Aimpoint generation work list
- JTT is designed for overall theater target management and prioritization





Imagery Servers



- **Active cache for handling imagery**

- TES-N for national and tactical imagery management
- JSIPS-N for national imagery mensuration requirements
- GCCS-M for imagery association with OOB/COP





Screeners

- **Differing capabilities**
 - TES-N = well-integrated multi-INT display on screener, auto chipping, and sensor control through TSM
 - TIS = processing of Navy's primary tactical sensor, SHARP
- **Technical**
 - Preservation of the integrated screener/sensor capabilities in TES (e.g. TSM, CIS, DBO) while enabling other non-discriminatory capabilities to be augmented by others?
 - E.g., DCRsi, RAIDs, DSS for SHARP, ViTEC plug-in?
 - Integrating TIS "good ideas" into TES-N WFM?
 - E.g., AIT library
- **Acquisition and Political challenges**





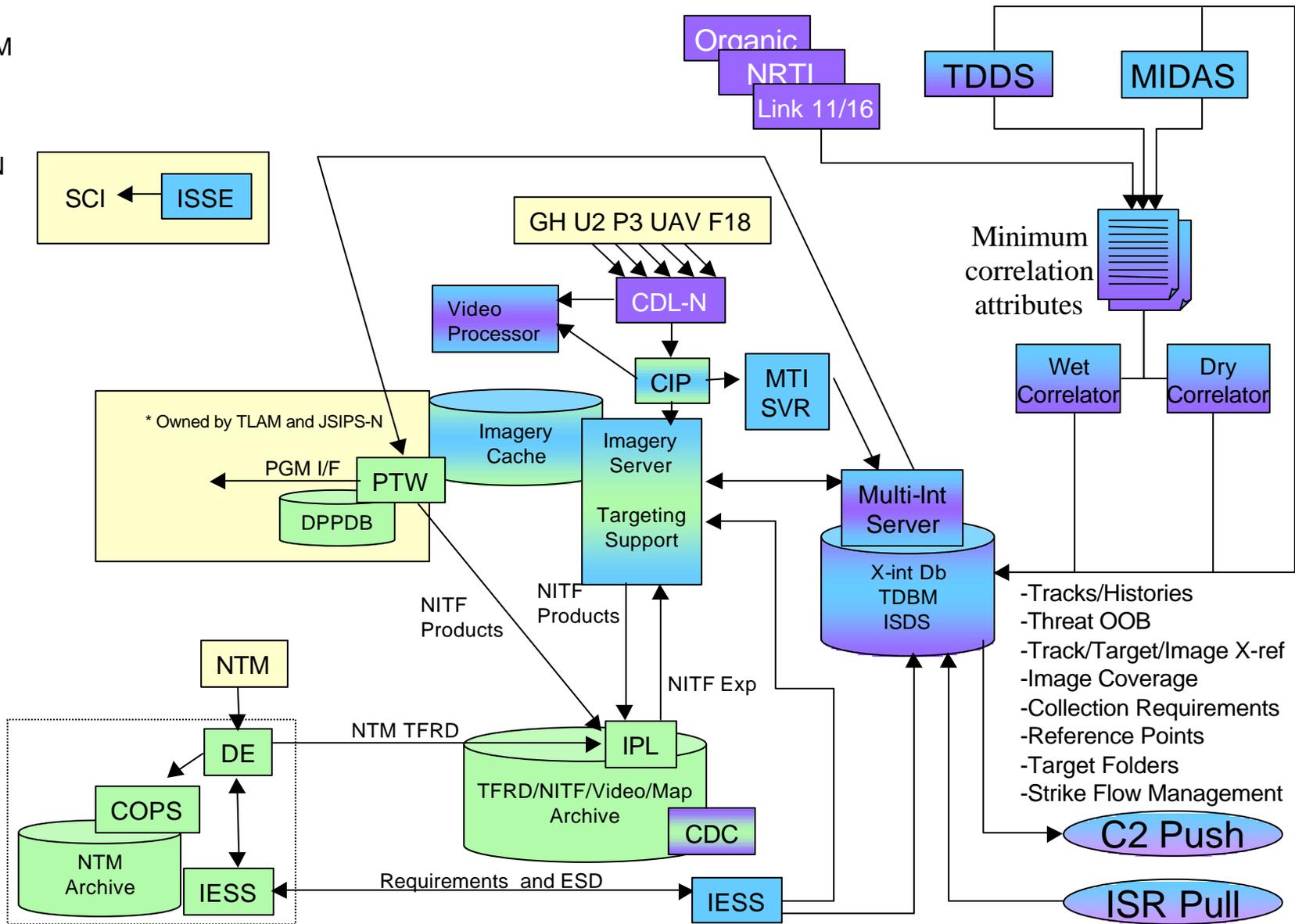
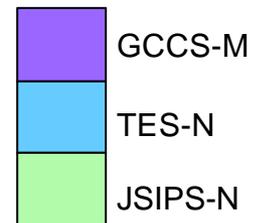
Other Overlap Areas

- **MTI Processing**
 - GCCS-M and JSIPS-N both utilize Joint Stars Workstation (JSWS)
 - Part of the Army CGS system
 - TES-N utilizes MTES
 - Auto-tracking capability part of TES
- **IESS**
 - JSIPS-N has moved IESS ashore for national imagery processing in JCA
 - TES-N uses IESS for ISR workflow management for BOTH national and tactical imagery
- **CIP**
 - One each (JSIPS-N and TES-N)
- **Mensuration Toolset/Aimpoint Generation**
 - TEG and Raindrop (not certified for PGMs)
 - Currently just used to provide coordinates that are relayed to F/A-18 pilot for manual entry
 - TES-N and PTM/EPPIC (not certified for PGMs)
 - JSIPS-N and PTW/ViTEC (**certified** for PGMs)





Objective NFN Converged Architecture (Preliminary Assessment)





Operational Capabilities of Spirals

- **Spiral 1A**
 - U2 EO/IR sensor control
 - Integrated ELINT displays for imagery/screening positions
 - National and tactical
 - Additive ELINT information
 - MTI auto-tracking
 - Auto-chipping for tactical imagery collection
- **Spiral 1B**
 - Fleet-wide access to tactical sensor data through combined TES/JCA integration
 - Ability to access theater imagery collection events from non-TES nodes
 - Access to Precision Targeting Workstation (Web) from multiple workstations
 - Integrate support for PGM certified ELT
 - Enable ISR workstations to access certified TLAM interfaces
 - Interface the C2 and ISR grids through track update/replication
 - Automatic import and update functions to enable C2 nodes to act on tactical sensor information
 - Give image analyst/screener greater access to C2 information (Link 11/16, EPLRS, etc.).





Operational Capabilities of Spirals

- **Spiral 2**
 - **Expanded support for tactical video sensors in NFN**
 - **Predator video screener product from GCCS-M provided to tactical imagery cache in TES-N**
 - **Consolidated screener capabilities**
 - **Merged platform to support U2/Global Hawk/SHARP**
 - **Fully integrated ISR collection management process and target management process (i.e., Strikeflow)**
 - **Ability to seamlessly work between JPITL, ATO, ISR planner, and mensuration worklist**
 - **Local access to video screener workstation from ISR and targeting platforms**
 - **Integrate GCCS-M video screener workstations onto TES-N and JSIPS-N**





Operational Capabilities of Spirals

- **Spiral 3**
 - **Expand SIGINT cueing capabilities to exploitation workstations**
 - **Provide access from PTW to GCCS-M and TES-N SIGINT, COMINT, Link, and Overlay data**
 - **More refined ELINT correlation capabilities in C2 and ISR systems**
 - **Enable co-habitation of ELINT correlation functions exhibited in TES-N and GCCS-M**
 - **Addition of framing sensor processing into integrated screener capabilities (SHARP)**
 - **Integrated display mechanics used by all systems**
 - **Flexible display arenas that support NITES, GCCS-M, TES-N, and JSIPS-N**





Preliminary NFN CED

For Illustration Purposes Only

