GEOINT Workflow Enhancement (GWE)

CAN DO
WILL DO

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GWE Project Background

- **General Otto (then AFISRA CC) directed GEOINT exploitation process improvements**

- **GEOINT Workflow Enhancement (GWE) effort launched to:**
  - **Improve productivity**
  - **Reduce product dissemination timelines**
  - **Improve enterprise capacity**

- **Kick-off meeting (Oct 2011) held at DGS-1 to discuss workflow issues with GEOINT SME's**
  - **Output product was AF DCGS GEOINT Workflow Technical Requirements Document (TRD)**
  - **Contains seven major categories of improvements, three of which were covered by available funding ($7.6M) and became "GWE Phase-1"**

GWE Team

- **AF DCGS GEOINT Analysts**

- **AF DCGS Stakeholders (HAF/A2, AFISRA, and the 480th ISR Wing)**

- **AF DCGS Program Management Office (PMO)**

- **402nd SMXG / 577th SMXS**

- **BAE**

- **LEIDOS**

Project Scope

- **GWE Phase-1 satisfies the following requirements:**
  - **Rich reference data**
  - **Streamlined enterprise-class high altitude workflow**
  - **Highly optimized secondary image creation process**

- **The following remains unfunded:**
  - **Phase-1 Fielding**
  - **Future Phase Requirements**
    - **FMV automation and data quality improvements**
    - **Streamlined high-to-low downgrade process**
    - **Still frame imagery (MSI & HSI) workflow optimizations**
    - **Remote Quality Control**
    - **Automated Configuration of User Desktop**
    - **Dataflow Improvements**
    - **Geotagging of Chat Information**

GWE Development Approach
Applying BR10B Lessons Learned

Approach	BR10B	GWE
Delivery Model	Waterfall	Agile
Requirements	Fixed	Fixed (High Level)
Design	Locked	Iterative
Design Events	2 PDR, CDR	8 Pre-PDR TEM, PDR, Post-PDR TEM, CDR, Sprint Planning Meetings (4)
Integration Events*	1 IFAT	5 Sprint I&T's (4), Demo I&T
Test Events*	2 OEM FATs, IFAT	8 OEM FATs, Sprint I&T's (4), Demo I&T, AT, IAT
Integrated Test Environment	OEM facility, closed network, minimal test data	Government facility, CAN/WAN connectivity, direct access to actual mission data (target decks, primary and reference imagery, etc.)
A6 IATT Approvals*	0	5 Sprint I&T's & Demo I&T
Operator Involvement*	Limited	Continuous Actual operators present for Pre-PDR TEM, PDR, Post-PDR TEM, CDR, Sprint Planning Meetings (4), Sprint Test Events (4), Sprint Retrospective Meetings (4)

* Prior to DGS-X

Pathfinder for agile development process!
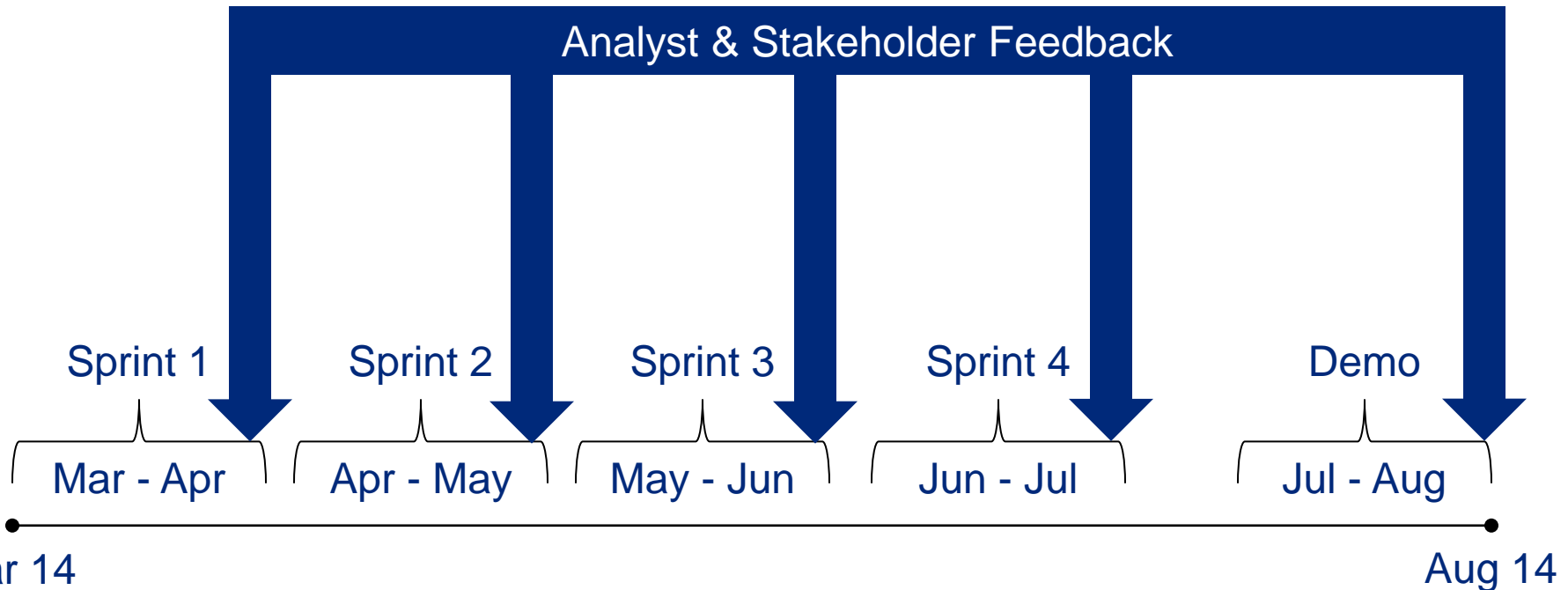Monthly analyst and stakeholder involvement

Phase 1 Development Plan

Analyst & Stakeholder Feedback

Sprint 1	Sprint 2	Sprint 3	Sprint 4	Demo
Mar - Apr	Apr - May	May - Jun	Jun - Jul	Jul - Aug

Mar 14

Aug 14

Service Oriented Architecture

GXP Xplorer

UNICORN

Reference Data Query

Reference Data

Publish Products

Publish Workspace

Image Notification

Target Metadata

GEOINT Data Exchange Services (GDES)

Target Metadata

Publish Products

Publish Workspace

Rich Reference Data

SOCET GXP

Image Launch
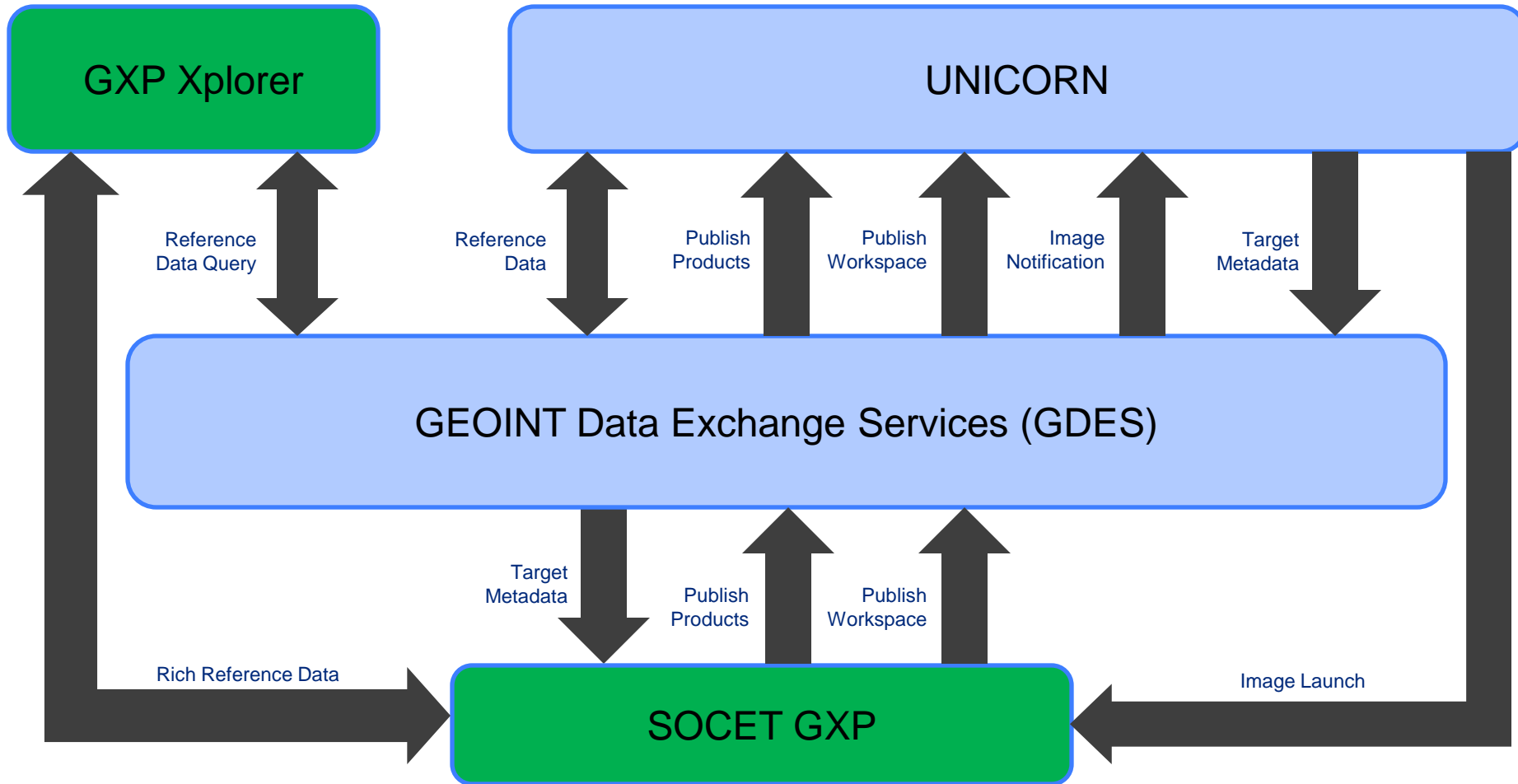
<u>**Government owned core with GOTS / COTS components!**</u>
Government control of interfaces, standards, and architecture

Integrity - Service - Excellence

GWE Design Approach

- **Install infrastructure to enable remote maintenance and upgrades**

- **Develop building blocks for cloud-based GEOINT exploitation**

- **Modern sustainment model**
  - **Leverage on site blue-suit maintenance (Tier-1/2 support)**
  - **ISEC Enterprise Service Desk (Tier-3/4 support)**
  - **Removes need to sustain Image Product Library, Softcopy Reference Folder, Web-based Workflow, and image template population from Web Launchpad**

Phase 1 Draft Fielding Plan

GWE Fielding Draft Schedule = ~16 Months					
DGS-X	**5 wks**	**First 4 Sites**	**4 wks**	**Remaining sites**	**3 weeks**
Install	1.5 wks	Install	1 week	Install	1 week
Test	2 wks	Test	2 wks	Test	1 week
Training	1.5 wks	Training	1 week	Training	1 week
*Prep for next fielding site	1 week	*Prep for next fielding site	1 week	*Prep for next fielding site	1 week
*This week is performed back at the ISEC lab and is not reflected in on-site time.					

Options to reduce fielding time:

1. Stage and preload GWE at ISEC
2. Solicit Bluesuit assistance on-site
3. Provide a pre-installation training session at ISEC for Bluesuiters
4. Perform some level of remote installation
5. Perform Security checks at ISEC and Security Hash checks on-site
6. Perform parallel fielding to the Enterprise

Summary

- Cross organizational involvement (HAF/A2, AFISRA, HBG, 402nd SMXG, 480th ISRW, 46th TES)
- "Sprint" approach
  - Pathfinder for improved development model
- ISEC Involvement
  - Example of government owned integration
- GWE enables
  - Shortened product dissemination timelines
  - Increased analytical rigor
  - Advancement toward government control of the weapon system and CFSR draw down

Recommendation:
Fund Phase 1 Fielding to begin 1 Oct '14

Questions?

BACKUP

Phase 1 Fielding Cost

Enterprise Virtualization	$1.2M
Enterprise Hardware	$1.6M
Enterprise Labor	$3.0M
Enterprise Travel Cost	$0.5M
Enterprise Software Cost	$1.2M
Total	$7.5M

General GEOINT Workflow
(Site-Level, Baseline Independent)

Analyst 1
Research → Exploit → Create Product → Submit for QA

Analyst 2
Research → Exploit → Create Product → Submit for QA

Analyst 3
Research → Exploit → Create Product → Submit for QA

Analyst n
Research → Exploit → Create Product → Submit for QA

Imagery

Match Scenes to Targets
Individual Screener

Assign Targets to Analysts
Individual GRE

QA Product
Individual GRE

Publish Product
Individual GRE
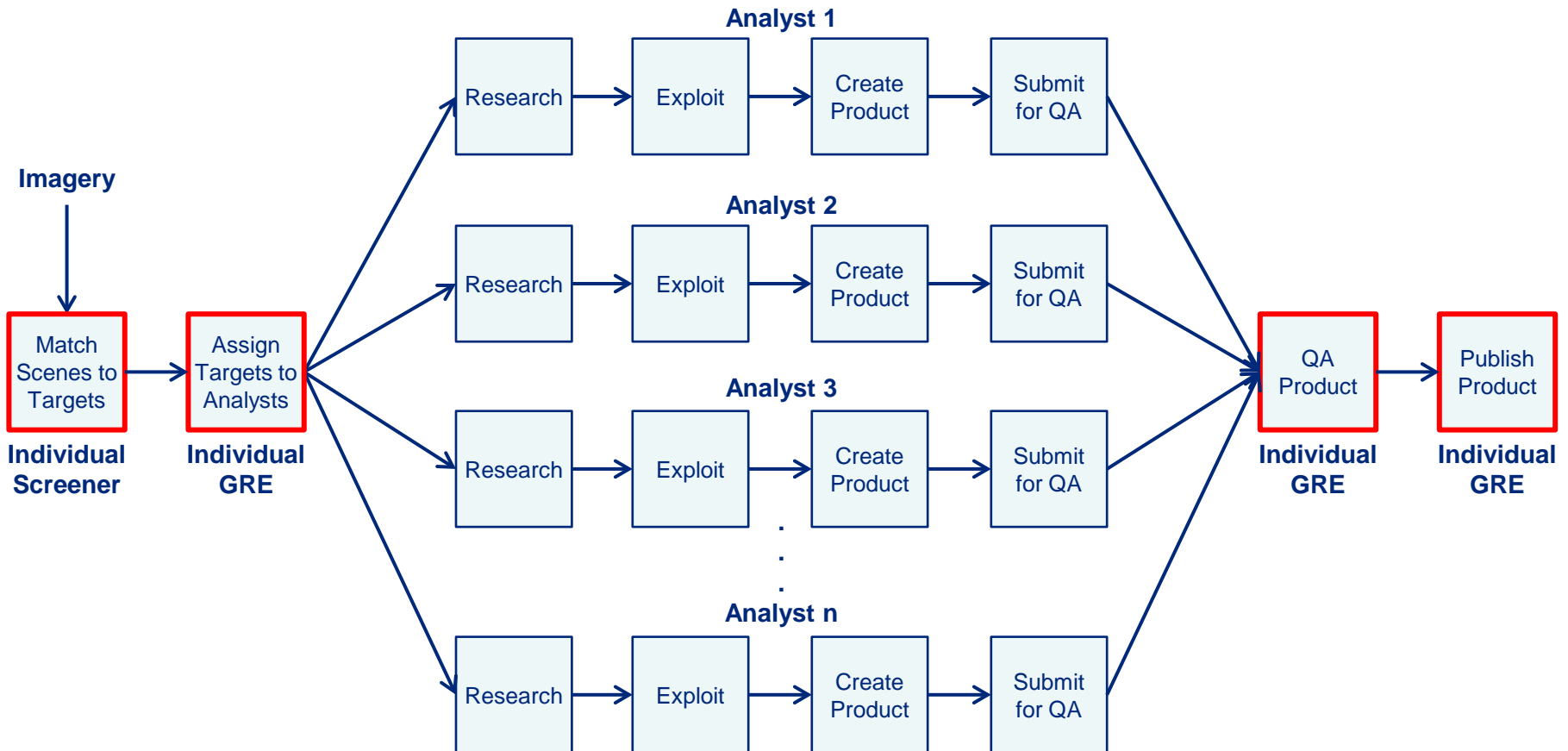
Increased timelines result from inefficiencies in the analytical process as well as "choke points" in the production workflow (highlighted in red). GWE introduces improvements to address both issues.

Integrity - Service - Excellence

GWE Phase-1 Components

- **GXP Xplorer – catalogs reference data from internal and external sources and exposes data to analysts**
  - **Replaces BR-10B Softcopy Reference Folder (Raytheon Garland) and legacy NGA Image Product Library (IPL)**

- **UNICORN – Transitions enterprise to a single GEOINT workflow system with numerous improvements over existing capabilities**
  - **Replaces BR-10B Web-Based Workflow (Raytheon Garland)**

- **GDES – GOTS tool that notifies UNICORN of newly arrived images and routes messages among GWE components. Enables Air Force control of key interfaces, standards, and system architecture!**
  - **Replaces BR-10B workflow related ETS interfaces and "Scan Daemon" (both Raytheon Garland) as well as BR-10B Enterprise Service Bus (ESB) functionality (Lockheed)**

- **SOCET GXP - Workflow Improvement Module (WIM) allows analysts to query, filter, sort, and display reference data within their exploitation environment. Receives scene metadata from Unicorn to support template auto-population.**
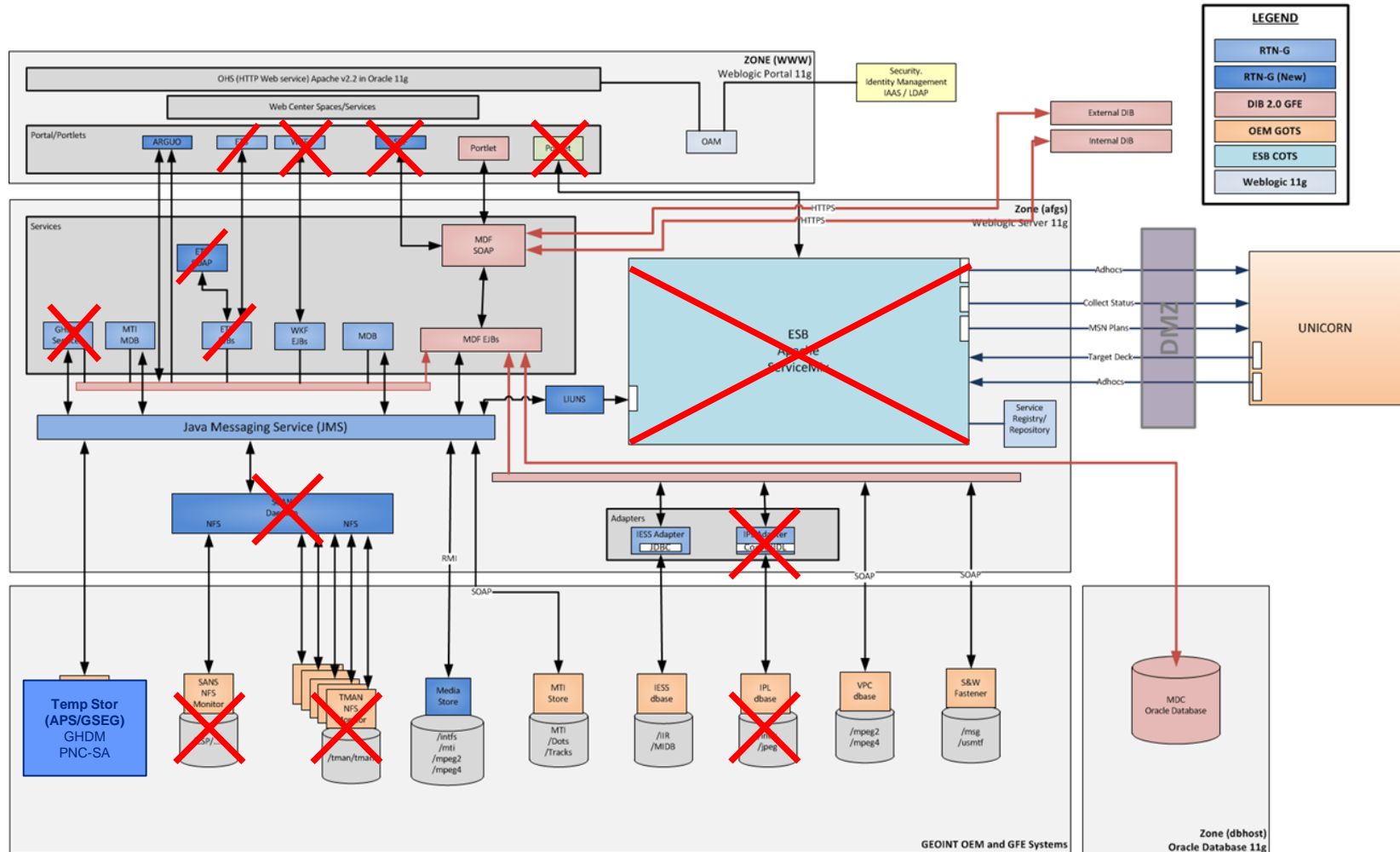 - **Replaces BR-10B image templating features within Web Launchpad (Lockheed Martin)**

Workflow Comparison by Baseline

Activity	10.1	10.2	BR 10B	GWE
Scene-target correlation (Screening function)	Manual using CSP mission plan (U2), JTAAC (GH), VCT, Tracker .xls	ETS in concert with CSP and MCE; supplemented by JTAAC (GH), VCT, Tracker .xls	ETS in concert with CSP, MCE, and UNICORN; supplemented by JTAAC (GH), VCT, Tracker .xls	UNICORN (no dependencies)
Target assignment	Tracker .xls, mIRC, UNICORN	Workflow	Workflow	UNICORN
Scene Launch into SOCET GXP	File browser	Workflow	Workflow	UNICORN
Research	IPL, UNICORN, miscellaneous individual repositories	SRF, IPL, miscellaneous individual repositories	SRF, MediaStore, miscellaneous individual repositories	GXP Xplorer
Product Generation	SOCET GXP / LaunchPad	SOCET GXP / LaunchPad	SOCET GXP / WebLP using UNICORN feed	SOCET GXP using UNICORN feed
Product QA	SOCET GXP, LaunchPad, mIRC, UNICORN	SOCET GXP, LaunchPad, Workflow	SOCET GXP, WebLP, Workflow, UNICORN	SOCET GXP, UNICORN
Dissemination (Publish Product)	UNICORN, IPL	DIB/IPL from Workflow	DIB/IPL from Workflow, UNICORN	SOCET GXP to various (including UNICORN)
Summary	Manual labor intensive	Tight integration and coupling, significant mission limitations	Tight integration and coupling, more tools, new limitations	Fewer tools, faster production, loosely coupled integration via government-managed middleware