Air National Guard
Geo Integration Office (GIO)

Governance and Compliance

Ensuring Data Quality

Air National Guard QAP Workflows:
PLTS Foundation

Justin Wolff(GIO Regional Administrator)
Mark Alexander(GIO Data Architecture Manager)

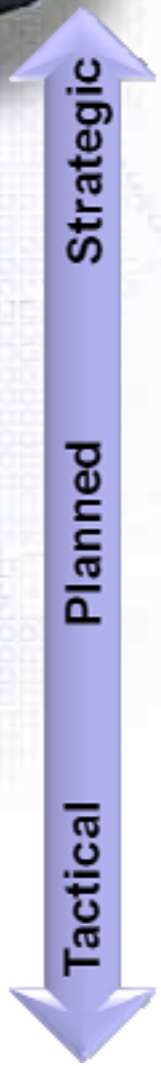
ESRI FedUC
18 February 2010

ANG GIO Data Management

This presentation presents:

- the concept of using recognized architecture and data management frameworks that describe what constitutes the ANG GIO data governance program.
- The influence of the these frameworks for planning and assessing data quality and data quality maturity.
- Tactically, how these frameworks assisted the ANG in defining the integration of automated QC technology to support data quality efforts.

Implementing Best Practice Frameworks



- Data Governance
- Ensuring Data Quality
- Evolution ANG QAP Workflows: PLTS Foundation “A Case Study”

Implementing Authorities

DoD Compliance Drivers

EA and IT "Best Practice" Frameworks

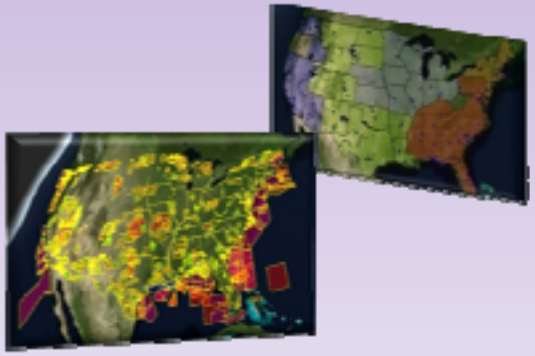
- Frameworks assist in describing major concepts and their interrelationships.
- Frameworks assist in organizing the complexity of a subject.
- Frameworks facilitate communications and discussion.
- Additionally, data governance frameworks assist in demonstrating how data governance relates to other aspects of data management, data architecture, and enterprise architecture.

ANG GIO Data Management
GI&S Domain Areas

Installations

All DoD

Domestic Operations



National Guard

Expeditionary

Active Duty AF

Implementing Authorities

- IGI&S
- DISDI
- NGB GIO
- IGI&S

ANG GIO Data Management
GI&S Domain Areas

2002 – Ongoing

- **Training**

(Producing data outside our enterprise)

ANG GIO Data Management
GI&S Domain Areas

Installations

All ANG I & E

Expeditionary

Active Duty AF

2005 – Ongoing
- Training Development
- Producing
- Consuming

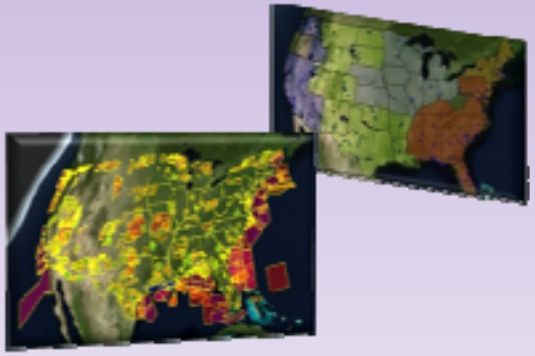
2002 – Ongoing
- Training

ANG GIO Data Management
GI&S Domain Areas

Installations

All ANG

Domestic Operations



National Guard

Expeditionary

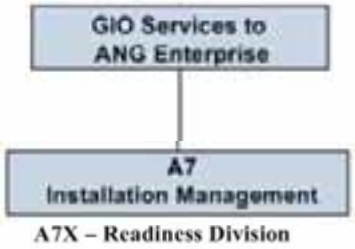
Active Duty AF

2005 – Ongoing
Training
Producing
Consuming

2008 – Ongoing
Consuming
Producing

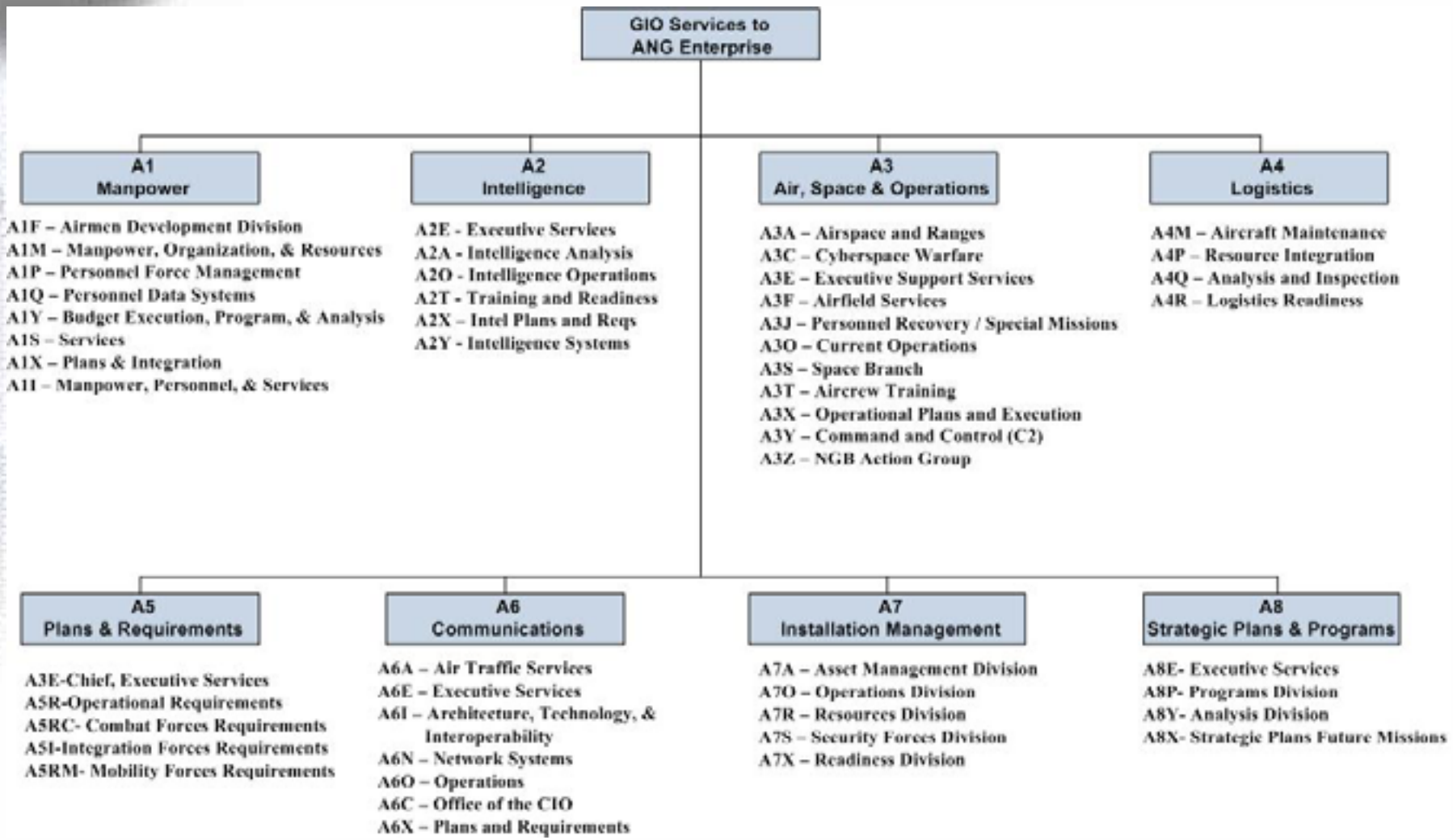
2002 – Ongoing

ANG GIO Data Lines of Business (BRM) 2002



Training

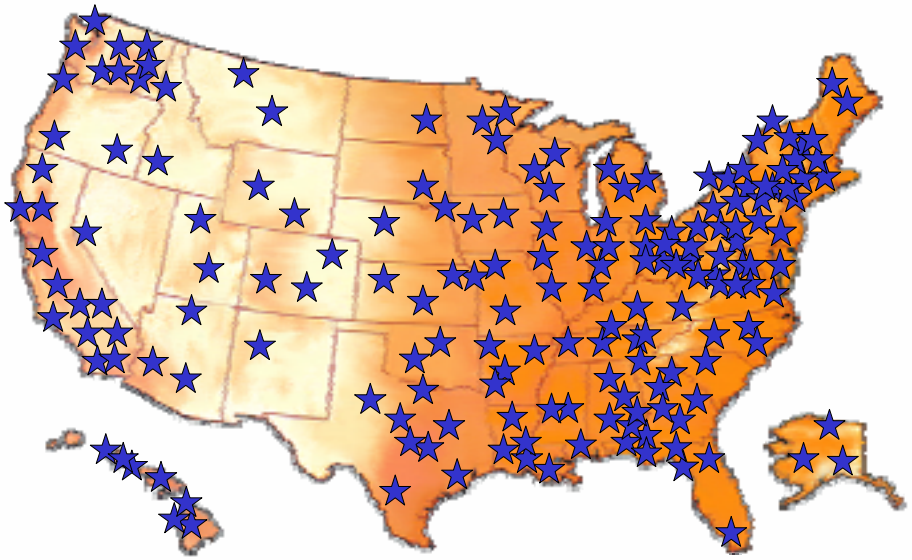
ANG GIO Data Lines of Business (BRM) 2010



Training Producing Consuming

Reality Check…

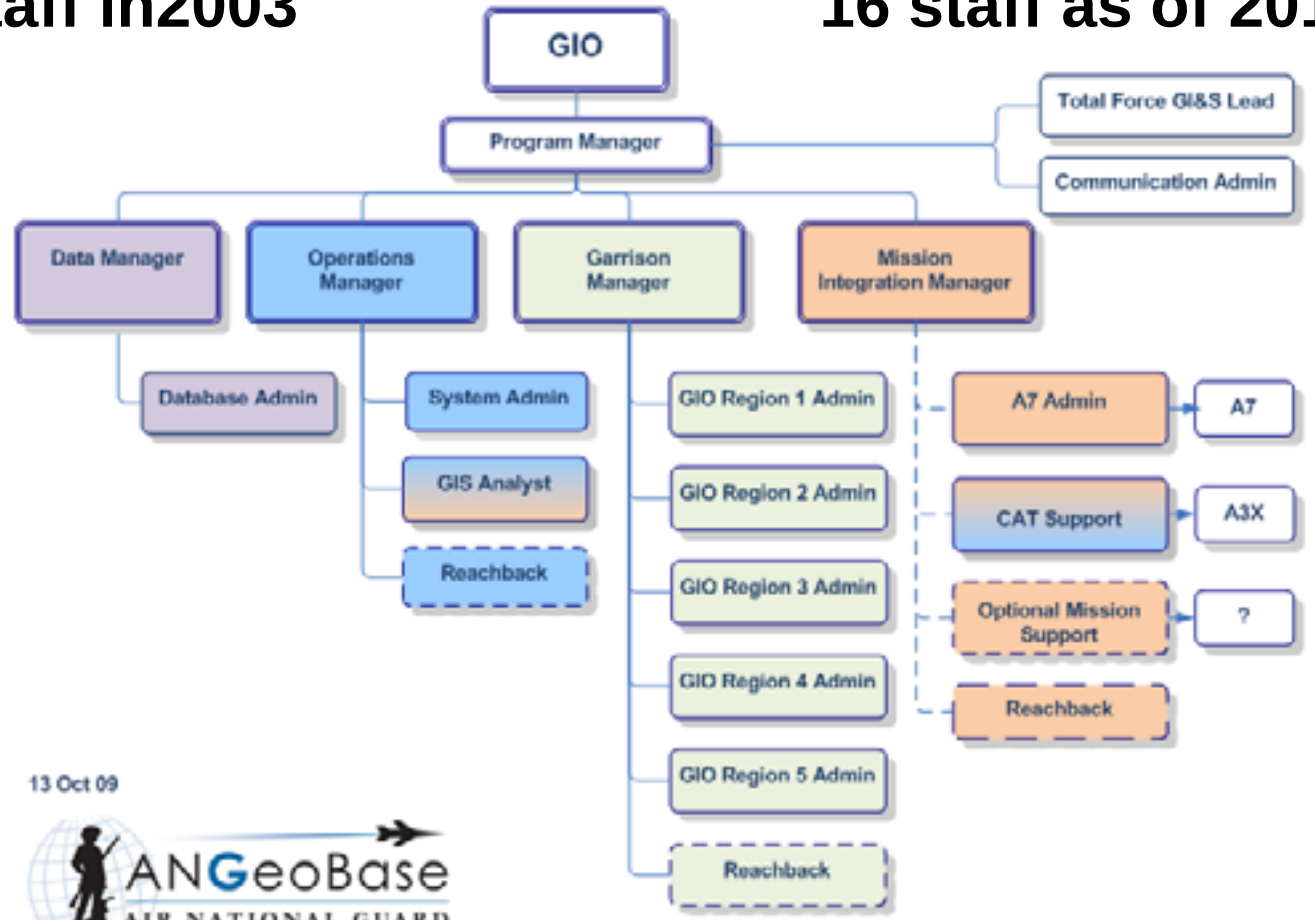
Over 100 ANG installations/sites



Reality Check…

9 staff in2003

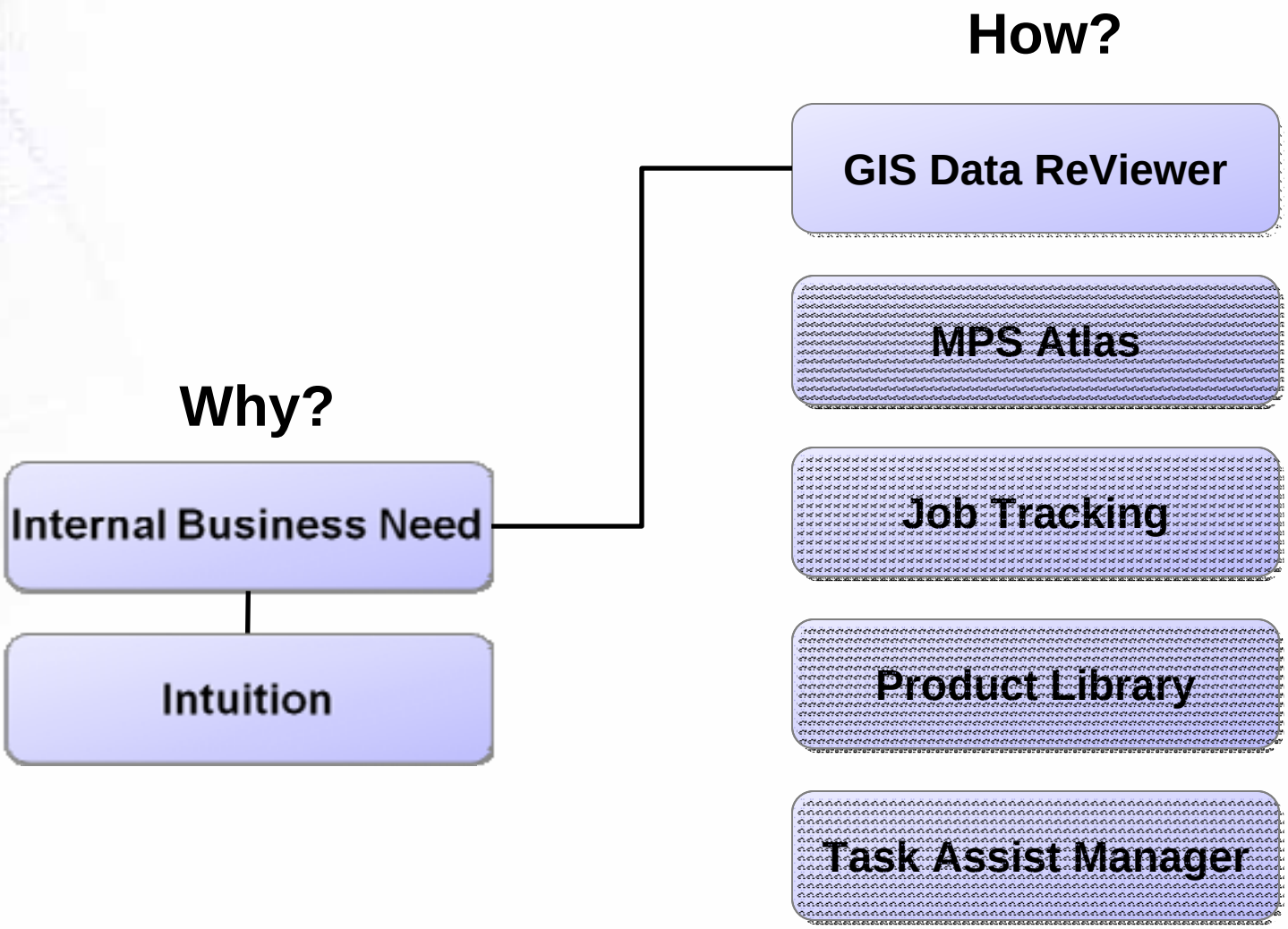
16 staff as of 2010



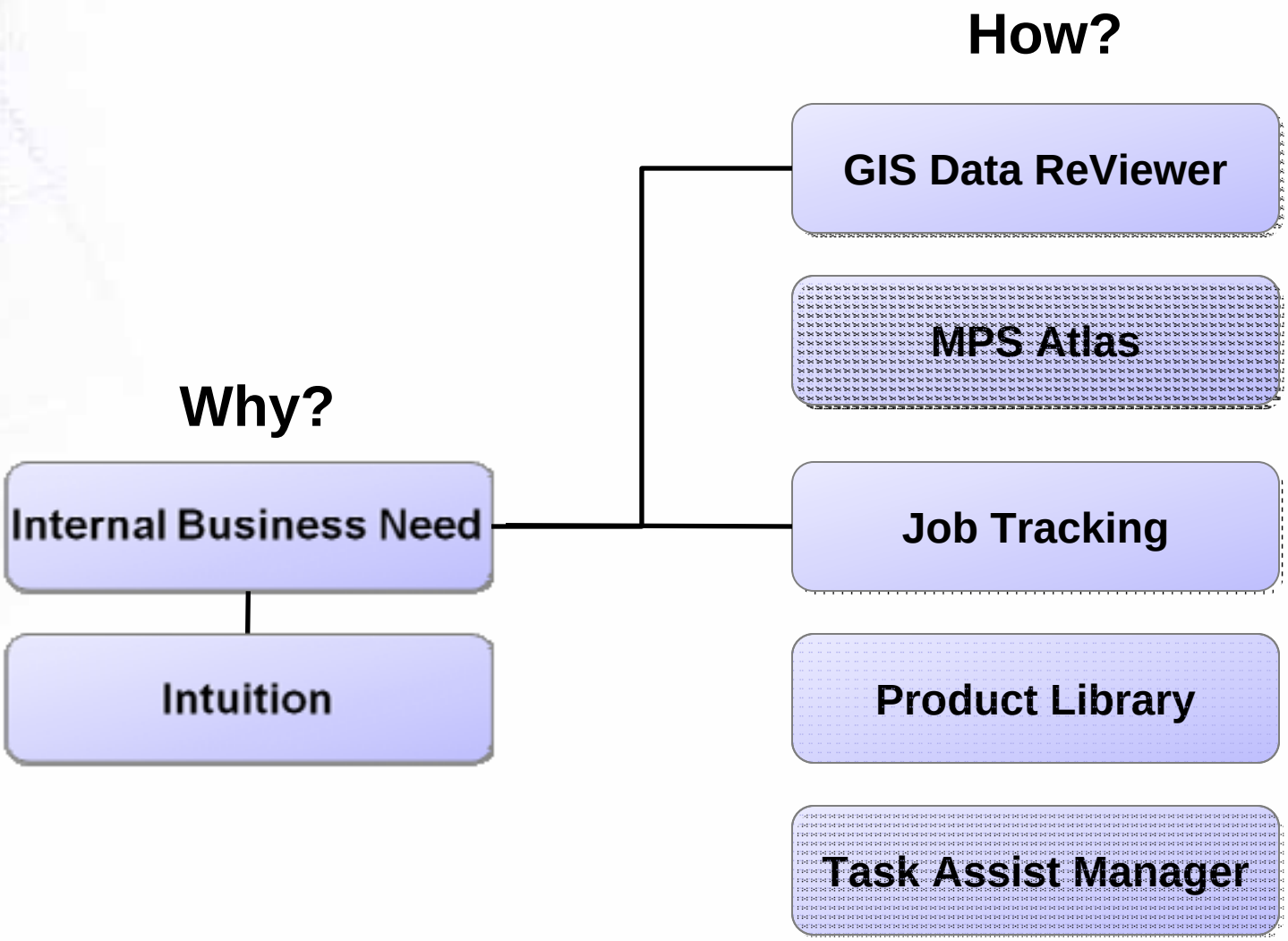
13 Oct 09

ANGeoBase
AIR NATIONAL GUARD

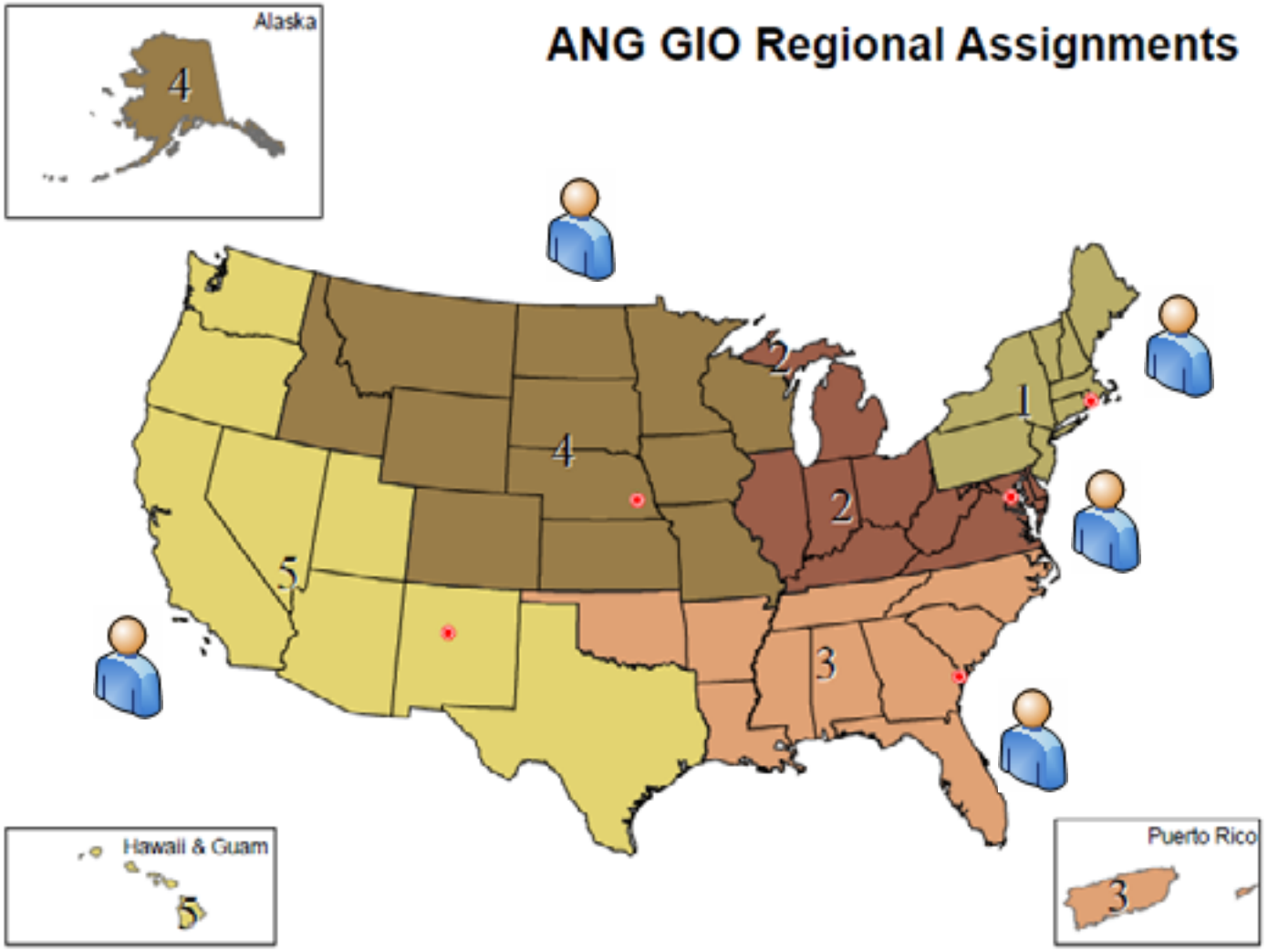
PLTS Foundation – Purchase 2006



PLTS Foundation – 2008



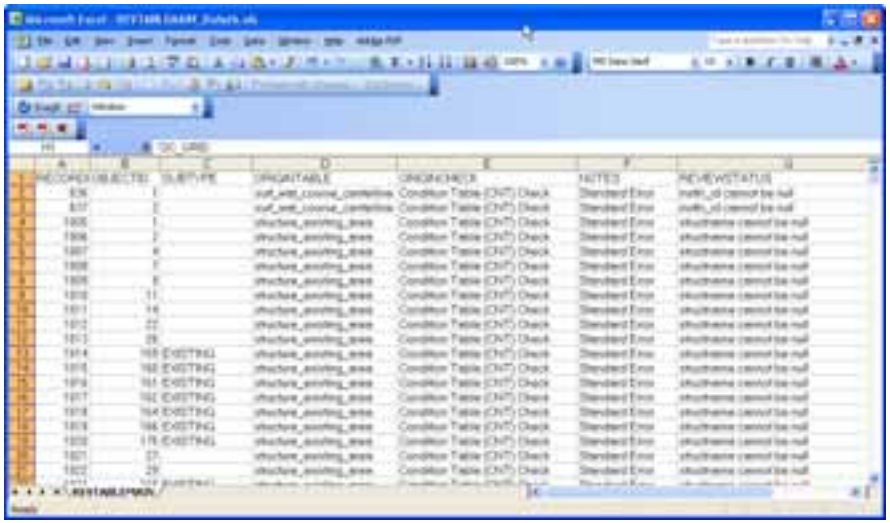
Over 100 ANG installations



GIS Data ReViewer 2006-2010

Excel Spreadsheet

Error Report



Regional Staff

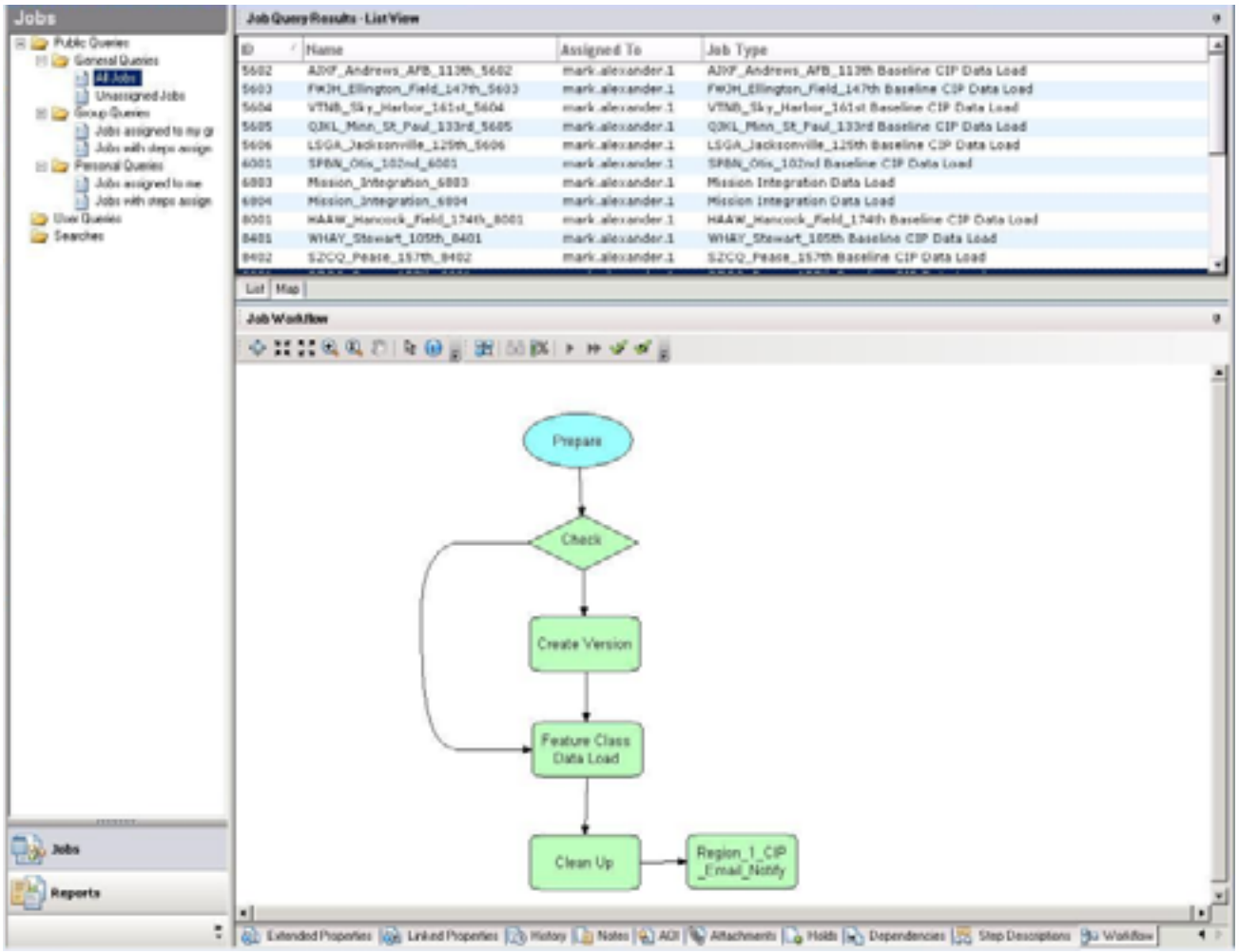
Exports Errors from GIS Data Reviewer

Installation Staff

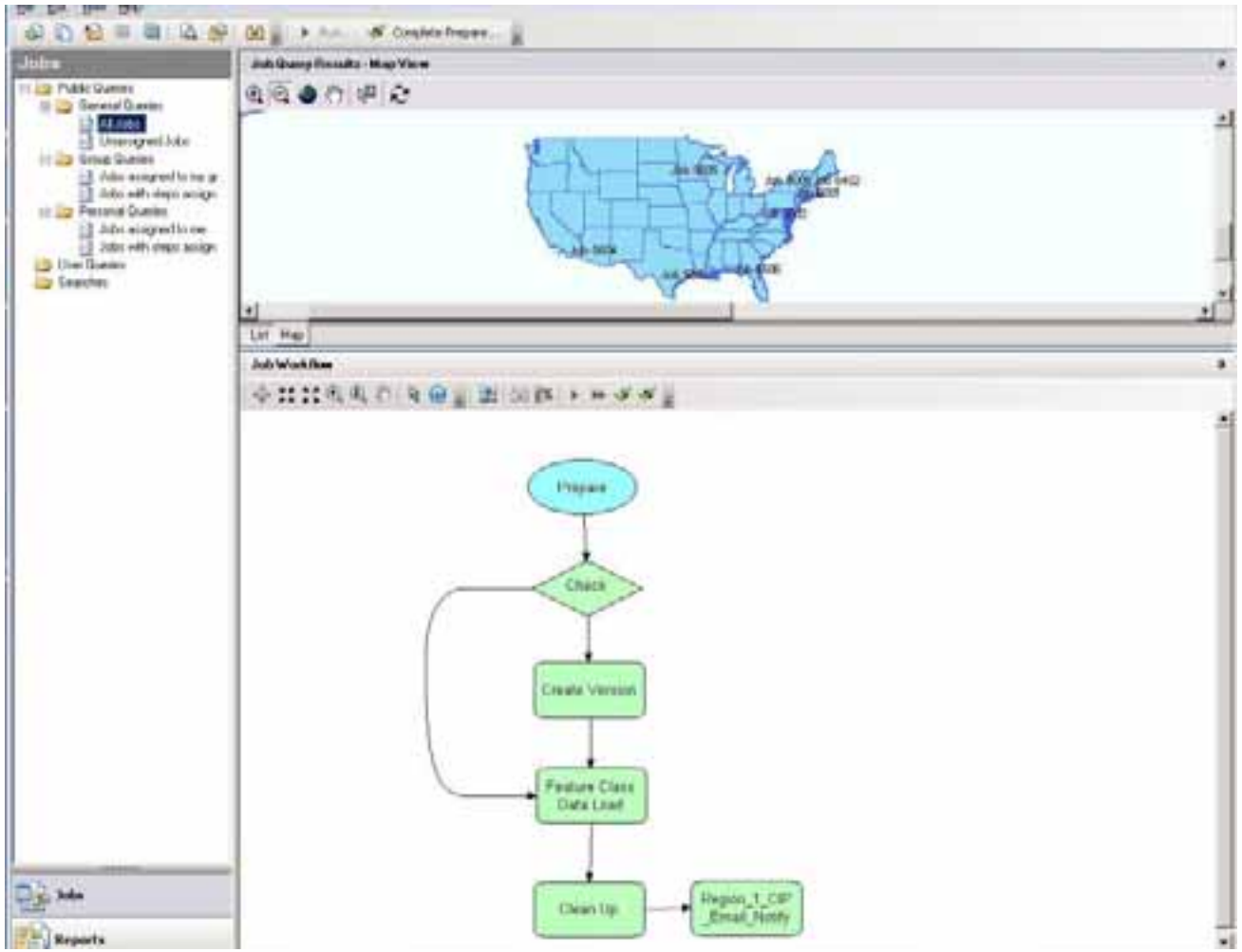
Interprets GIS Data Reviewer Error Results

No Visual

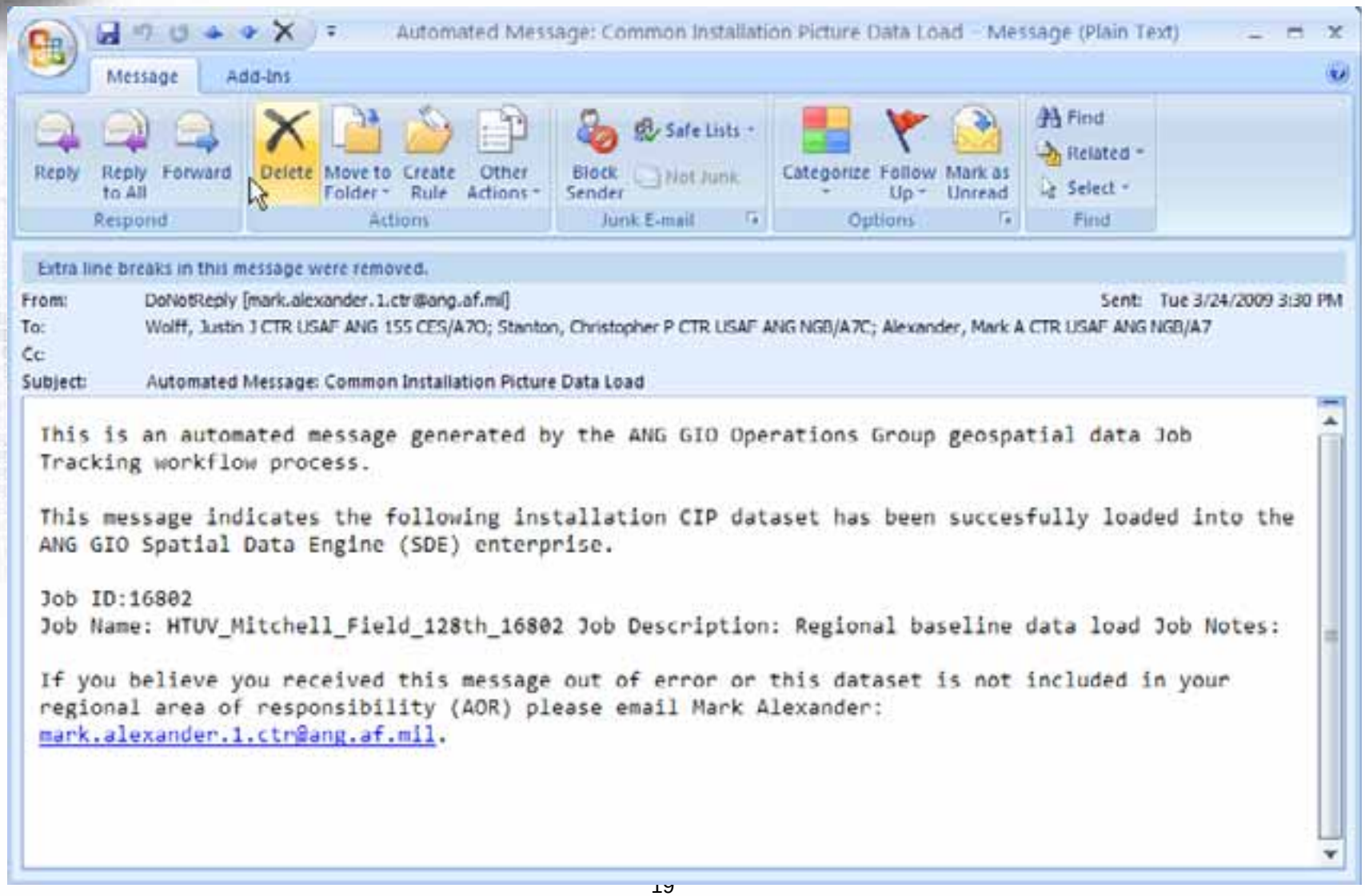
PLTS: Job Tracking Client Side



PLTS: Job Tracking Client Side

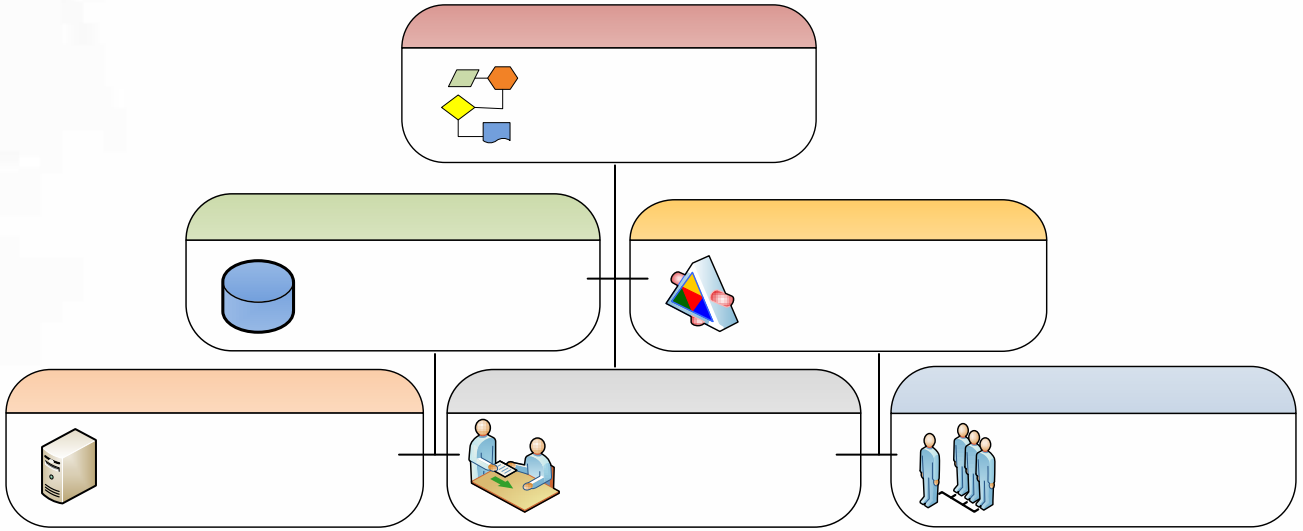


Job Tracking (JTX) 2008-2010



Geospatial Requirements Definition Process (GRDP) – 2007-Ongoing

The ANG GIO Geospatial Requirements Definition Process (**GRDP**) is a methodology …used by the GIO for defining, analyzing and managing requirements…for enterprise geospatial capabilities, services and resources.



GRDP **framework** is modeled after the **Federal Enterprise Architecture**

Business Reference M

Requirem

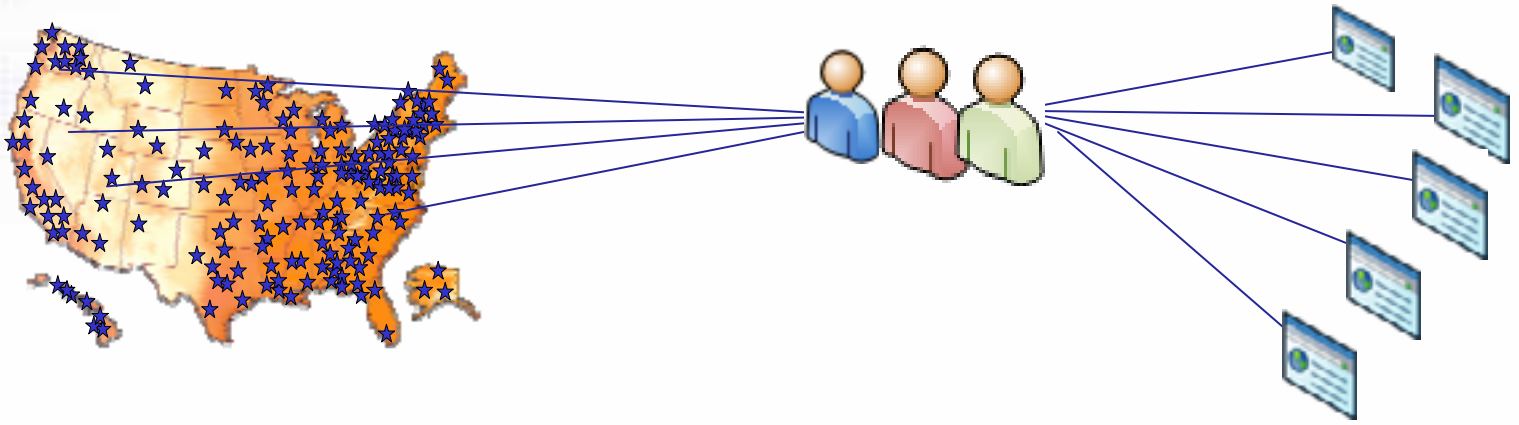
Requirements Definition

GRDP…is used for capturing & defining Installation level requirements enabling the GIO with: analysis, governance, management, and oversight of garrison requirements

Over 100 ANG installations/sites

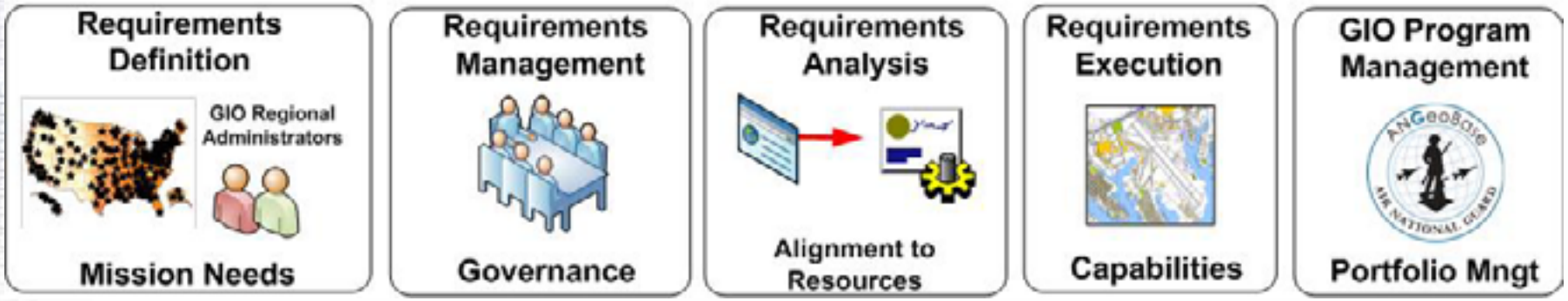
Regional GIO Administrators

GRDP's



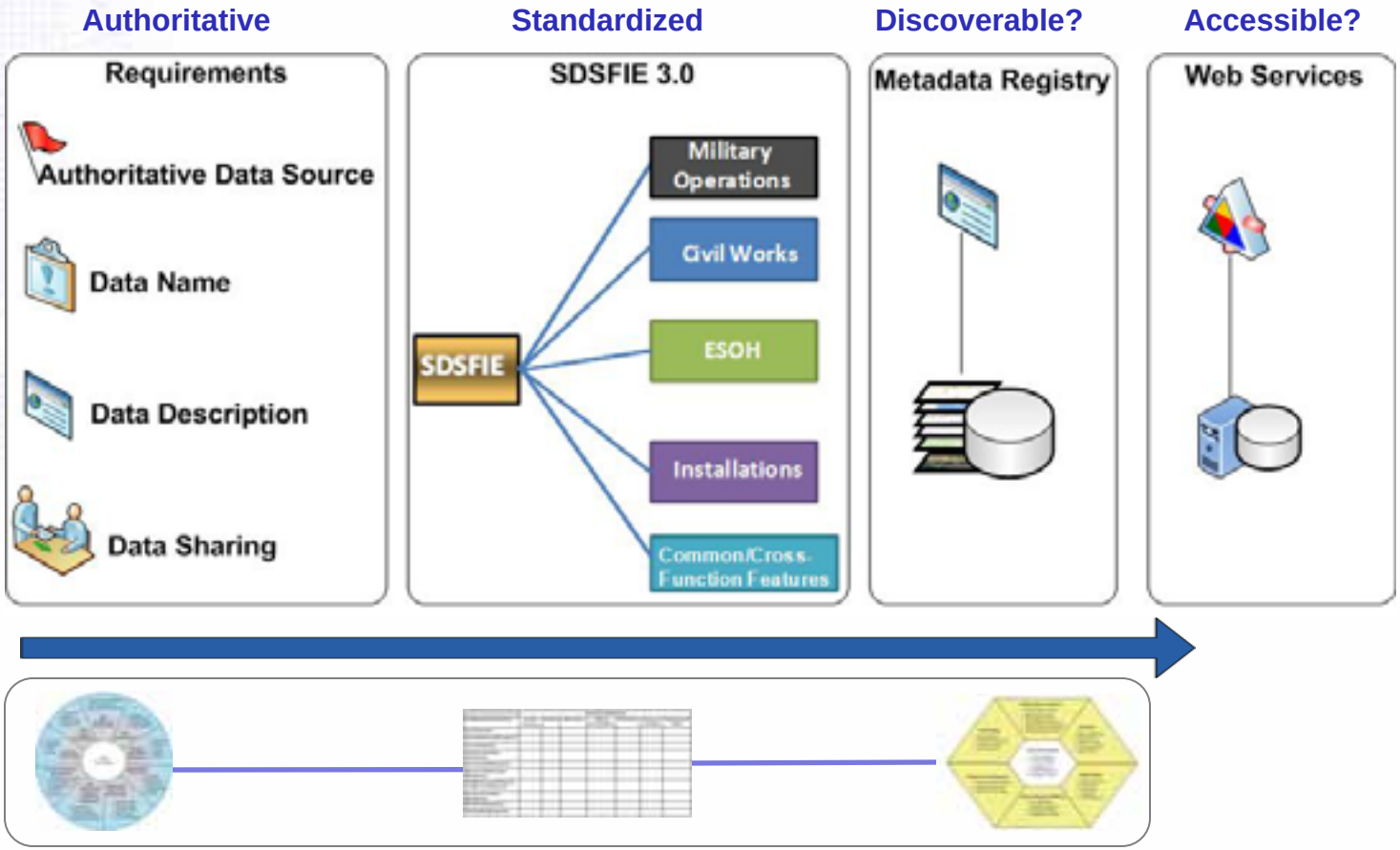
GRDP Purpose

The ANG GIO Geospatial Requirements Definition Process (**GRDP**) is a methodology …used by the GIO for capturing, analyzing, and managing requirements for enterprise geospatial capabilities, services and resources.



Data (DRM) supported by a Data Management Framework

Data is managed & available as an asset to the enterprise, not just for the project that produced it…



Data Management Framework

Data Management Framework 2008-09

Blended Data Management approach
i.e. DAMA, BEA, DoDAF etc

10 Functions

100+ Activities

7 Environmental Elements

DAMA Data Governance Framework-2009

- Strategic business intent – Business Goals and Objectives
- Strategic intent of data management
- Organization
- Policies
- Performance metrics

	Environmental Elements						
Data Management Functions	Goals & Principles	Activities	Deliverables	Roles & Responsibilities	Technology	Practices & Techniques	Organization & Culture
Data Governance							
Data Architecture Management							
Data Development							
Database Operations Management							
Data Security Management							
Reference & Master Data Management							
Data Warehousing & Business Intelligence Management							
Document & Content Management							
Meta Data Management							
Data Quality Management							

Data Management Maturity

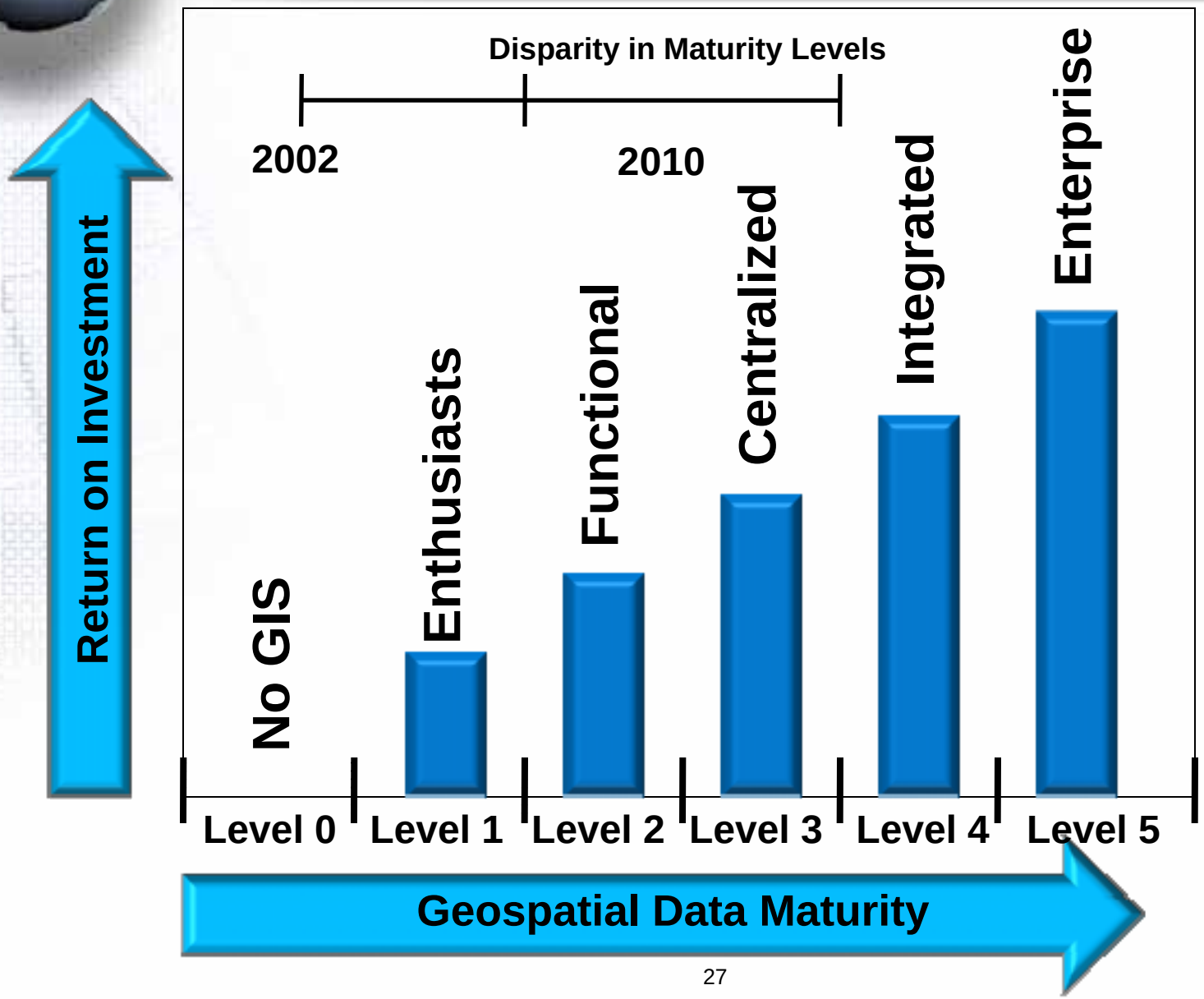
ANG GIO Geospatial Program Characterstics Maturity Model-High Level

		1-ENTHUSIAST	2-FUNCTIONAL	3-CENTRAL	4-INTEGRATION	5-ENTERPRISE
Data Maangement Modeling, Editing, QA	**Data Quality**	Data copy/extractions are quickly out of date.	Multiple, inconsistent copies of data Initiation of standardized QC. QC Consistency not tracked	Data accuracy built into editing Defined Data Ownership Quality Control Procedures	Data in its source database, rather than use of data extracts.	Operational users have full control over data.
	Data Modeling	None	Intitiation of AF standardss	Advanced Data Model and Standardization | Central database becomes source of Validation | Intentional modeling of base datasets	Advanced Data Modeling Central source for enterprise systems. GIS Element integration into traditional databases	Rationalization of enterprise and GIS databases. Redundancy is reduced in direct integration of GIS into enterprise databases and vice versa.
	Data Management	None	Redundant efforts across departments. No standards or version management.	Central Data Repository | Editor Procedures & Tools improve efficiency	Data maintenance starts to be imbedded in the business workflow and pushed out to operational data	GIS data maintenance on live production data. Data maintenance integrated with source systems edited by end-user owners of the data.

Disparity in Maturity Levels

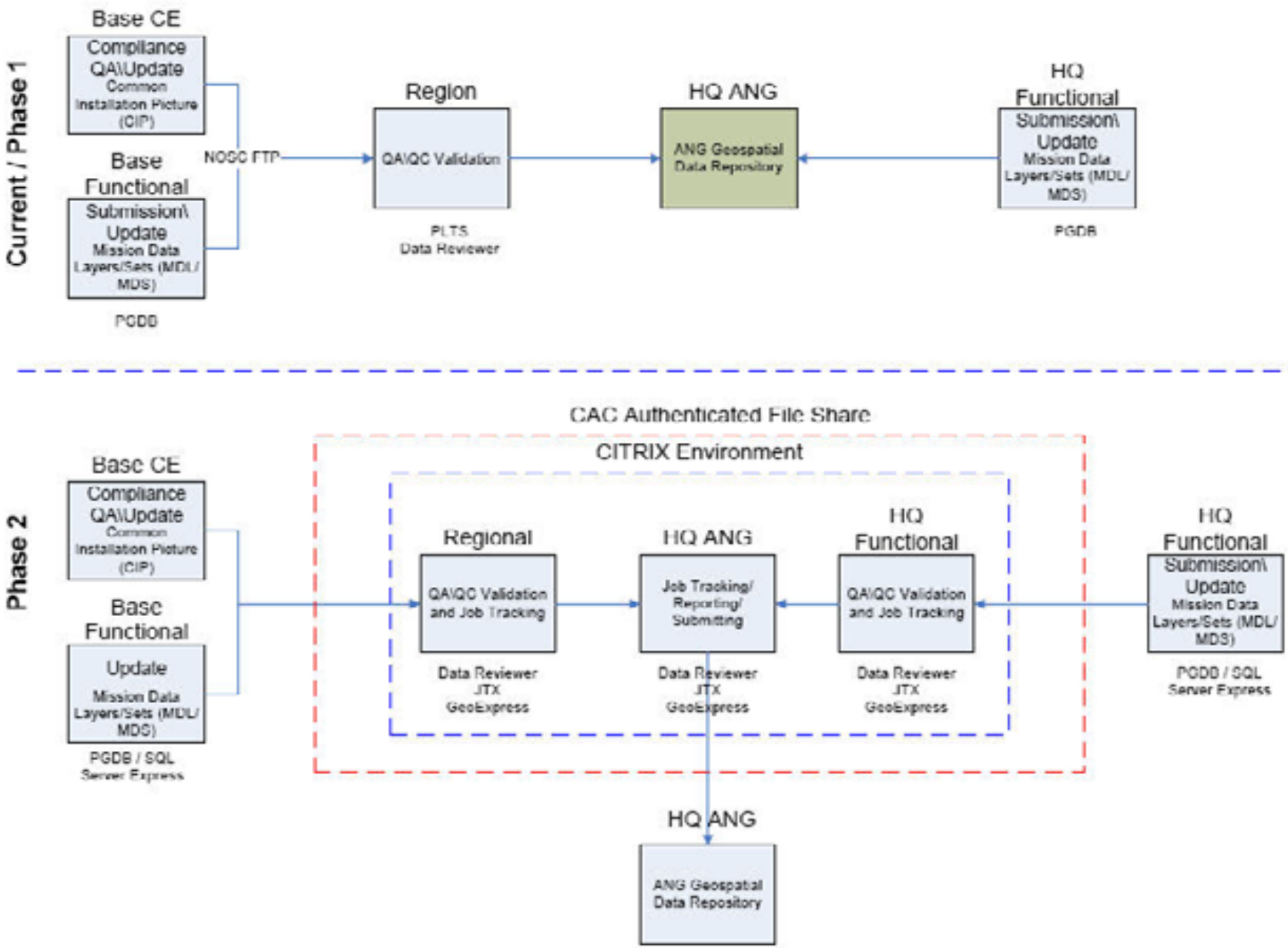
2002 **2010**

ANG GIO Data Architecture Maturity

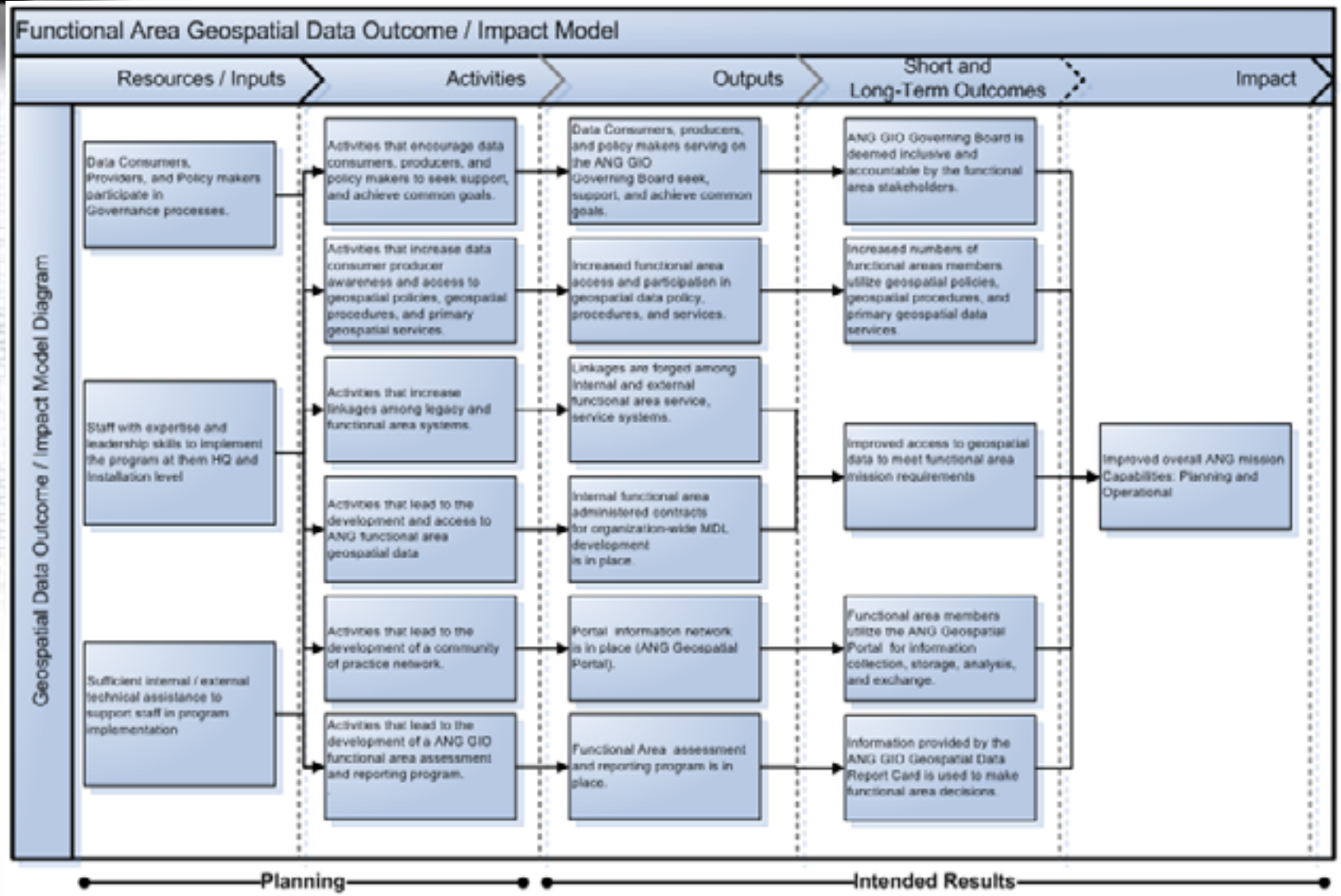


Operational Views

Phases of Maturity



Data Outcome / Impact Models



Data Quality Considerations

ANG GIO Quality Assurance	
Management	**Design**
• Establish process and scope of internal and external assessment • Document Objectives • Identify Roles and Responsibilities • Define Workflow and Develop Procedures	• Apply Data Management Procedures • Comply with the ANG/Air Force Data Model • Utilize ANG GIO SOWs for internal and • external deliverables • Determine quality sampling controls
Data Assessment	**Topology**
• Illustrate Quality Control Tasks and Workflow • Automate QC Checks • Assess Topology • Document QC Checks • Identify Relevant Documents	• Defines QC reporting mechanism • Outlines a systematic approach for resolving data problems • Allows for review and assessment of plan and procedures

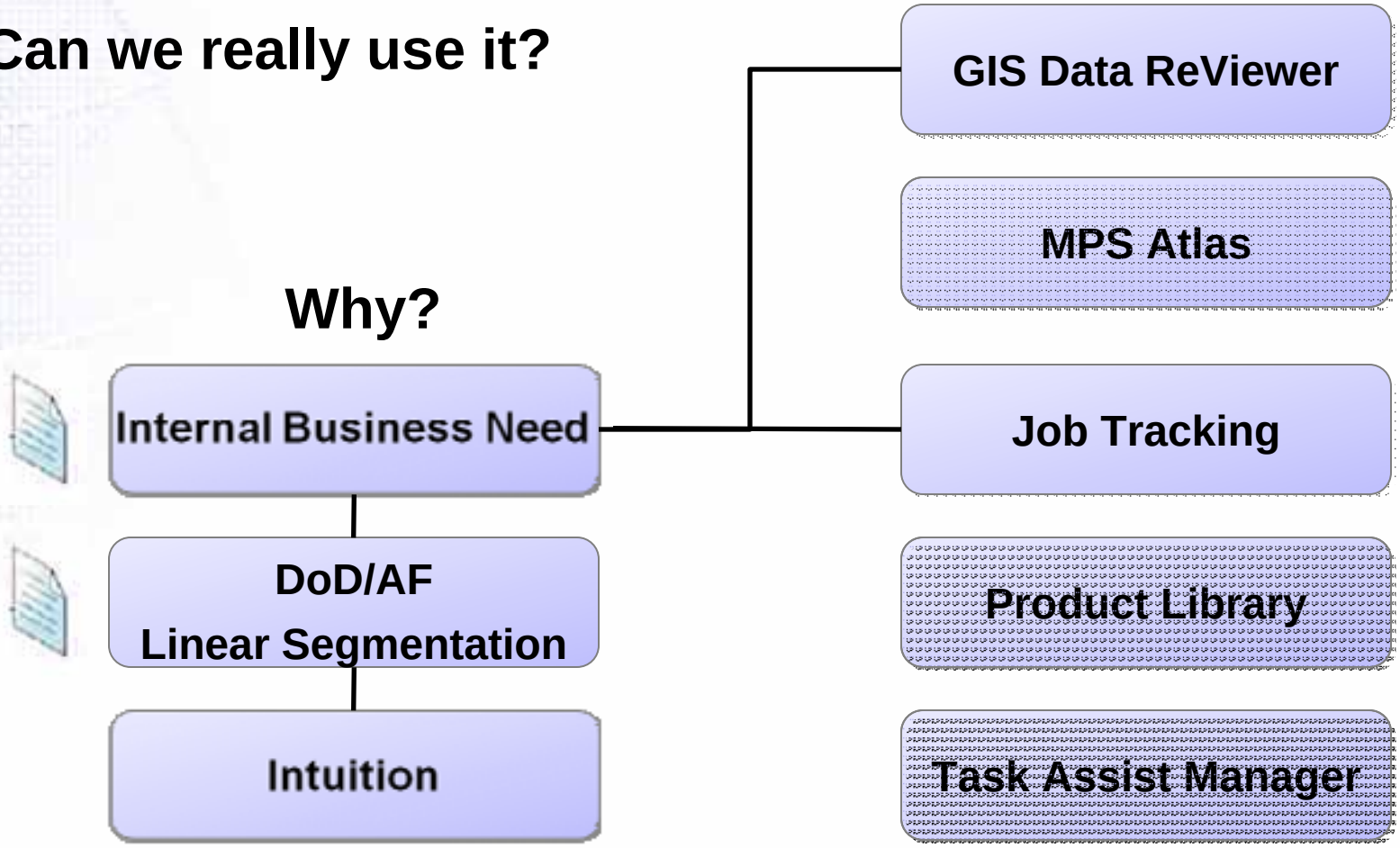
Data Quality Considerations

ANG GIO Quality Control Test Areas				
ANG GIO Data Models	Geometry	Topology	Visual QC	Feature Counts & Content
• Database Compliance • Database Properties • Spatial References • Field and Attribute Properties	• Undershoots • Overshoots • Null Geometry • Self Intersection • Overlapping Features • Sliver Polygons • Validation Rules	• Cluster Tolerance • Cracking/Clustering • Adhere to Rules (Point, Line, Polygon)	• Digital Review • Hardcopy Review • Source Comparison • Labeling • Symbology	• Feature Classes • Tables Source Vs. Delivered Attribute • Content

PLTS Foundation – 2009

Do we really need it?

Can we really use it?



Need for a Business Outcome

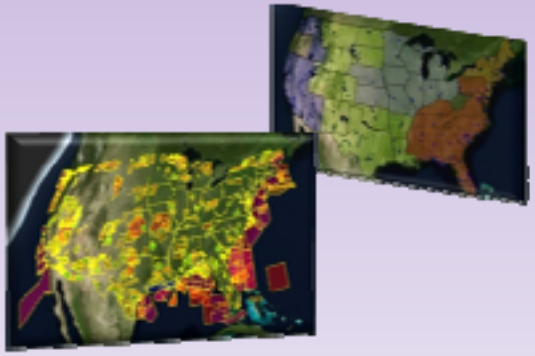
- Approach: choose a business outcome that is relevant, achievable and if possible, have significant impact.
- Benefit: In the process of understanding the business need, parallel ongoing activities can be undertaken to further support the enterprise-wide data governance capability.

ANG GIO GI&S Domain Areas

Installations

All DoD

Domestic Operations



National Guard

Expeditionary

Active Duty AF

Implementing Authorities

- IGI&S
- DISDI
- NGB GIO
- IGI&S

Installation (Garrison)

Installations

All DoD

- Large producer of data “The CIP”

- Evaluate centralized installation/regional workflows (Citrix)
- Evaluate centralized licensing
- Evaluate additional applications and components of PLTS Foundation
- Work closely with ESRI

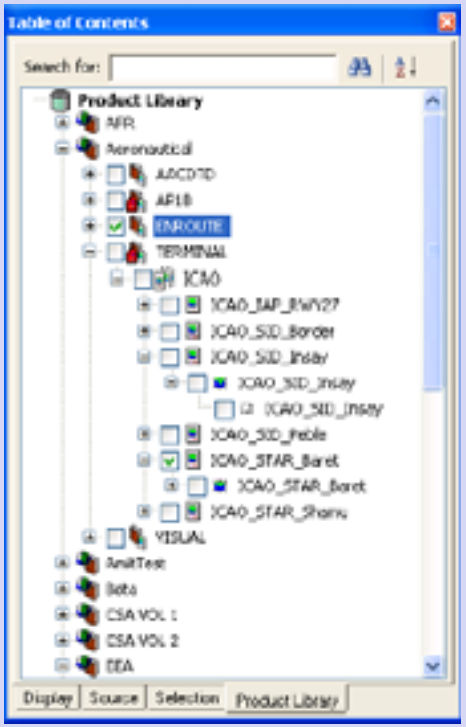
Centralizing QA/QC

Centralizing QA/QC

Centralized management
of production rules, maps and documents

GIS Data ReViewer
Error Reporting

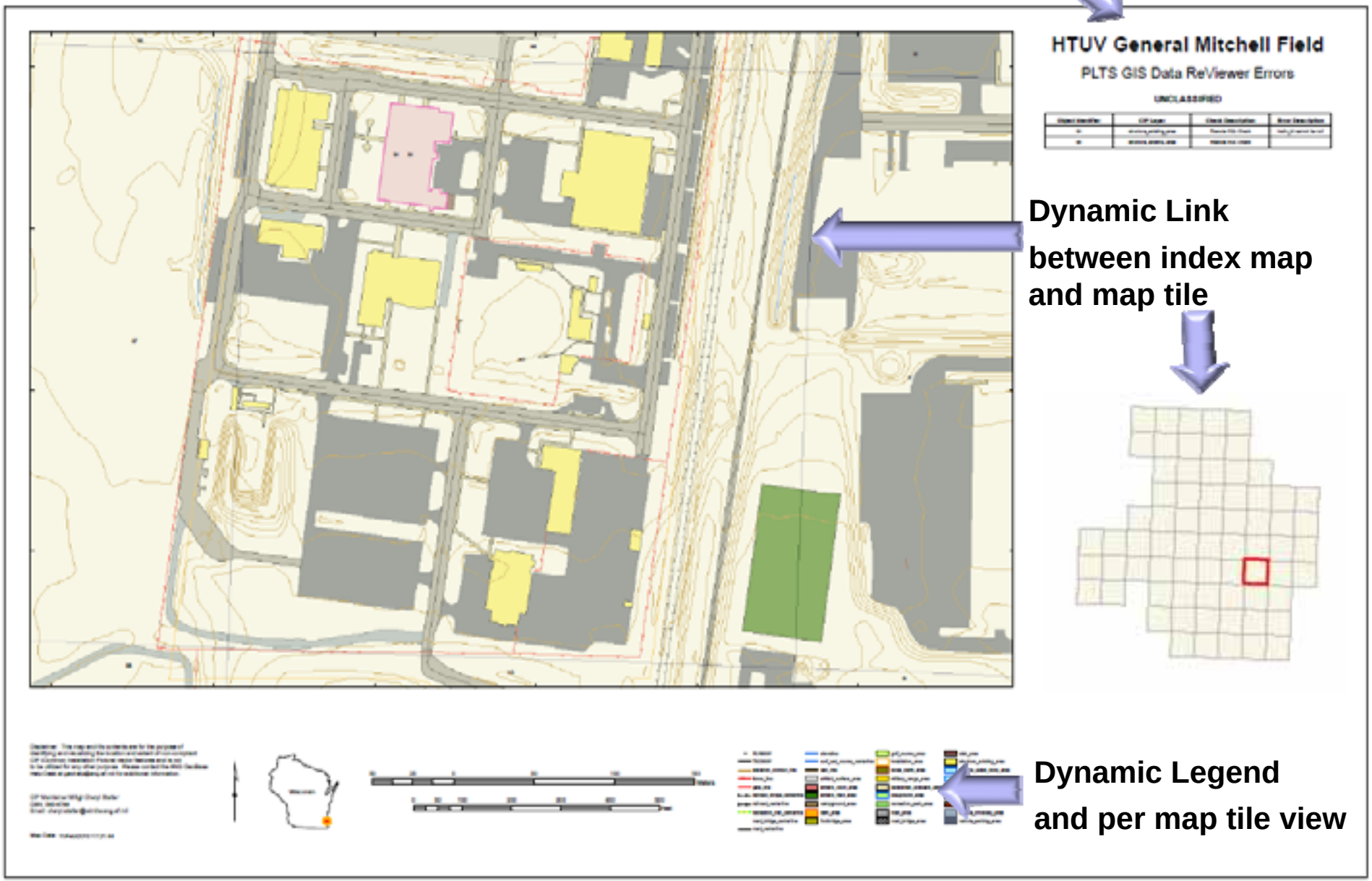
Product Library



MPS-Atlas

MapAtlas

Dynamic Table
GIS Data ReViewer Results



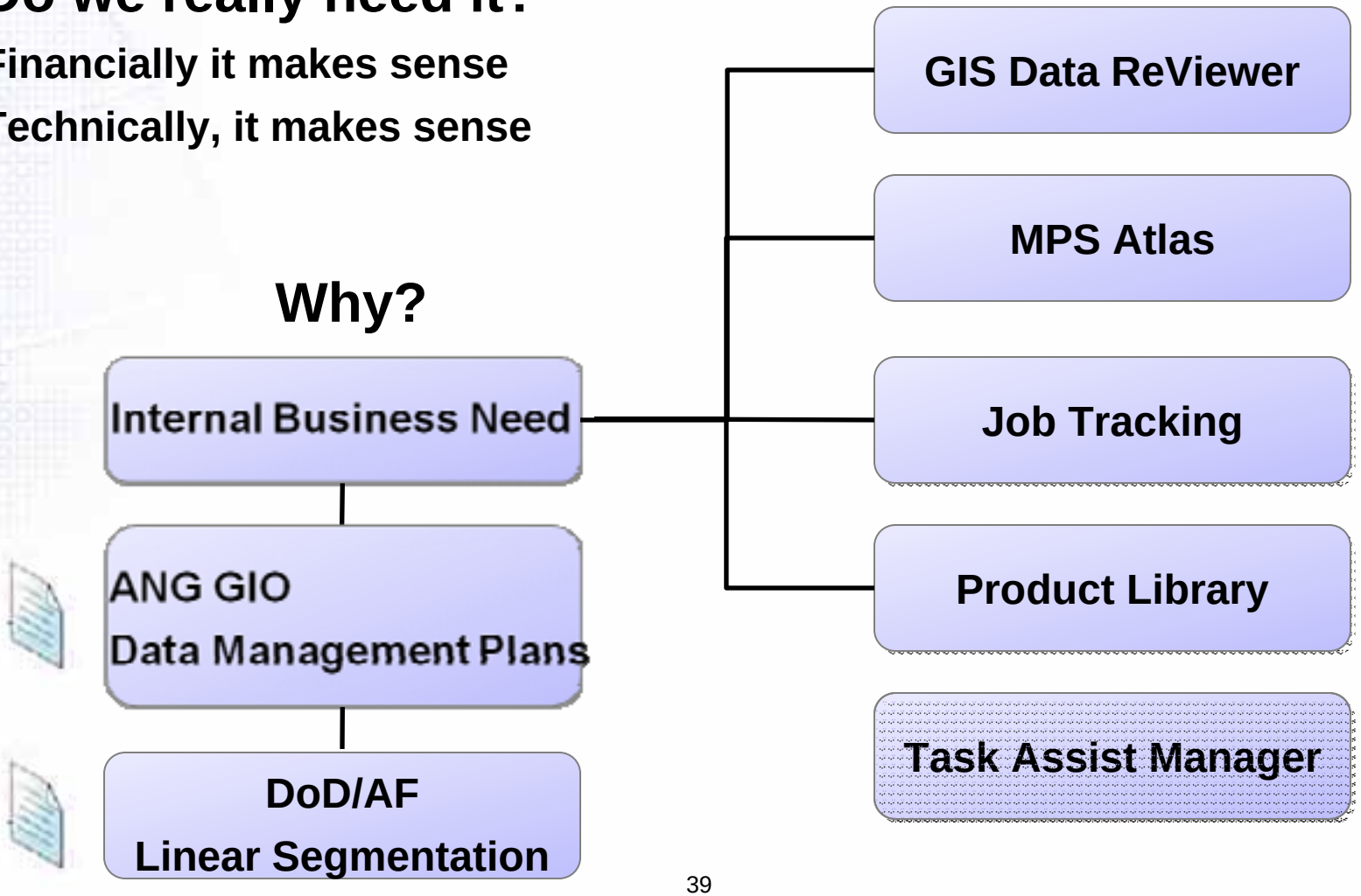
PLTS Foundation – 2010

Do we really need it?

Financially it makes sense

Technically, it makes sense

Why?



PLTS Foundation – Future