AFRL
THE AIR FORCE RESEARCH LABORATORY
LEAD | DISCOVER | DEVELOP | DELIVER

Air Force Research Laboratory To Improve Warfighter Support with Innovative No-Code Modernization

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AFRL/RCB, 4 June 19

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AFRL at a Glance

	Employees	Civilian	Military	Contractor
Total	10,417	5,018	1,146	4,253
S&Es	6,371	3,031	564	2,776

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Overview of EBS

WHAT EBS IS ALL ABOUT

The EBS Mission:

"Provide and sustain information technology solutions to support AFRL enterprise business processes."

IT Tools & Applications

- Implement entire spectrum of AFRL's core business processes

Business Processes

- Repeatable
- Consistent, Common, & Standardized
- Enabling

Data

- Consolidation of TD disparate data
- Horizontal integration across TDs and tools
- AFRL 'single source of truth'

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AFRL Enterprise Business System

EBS
People Processes Information

- Certified as a Defense Business System (DBS) in 2006
  - Sustainment and Configuration

- 4 Major EBS Capability Areas
  - Financial Management (G2)
  - Integrated Project Portfolio Management (IPPM)
  - Business Intelligence (BI)
  - Collaboration

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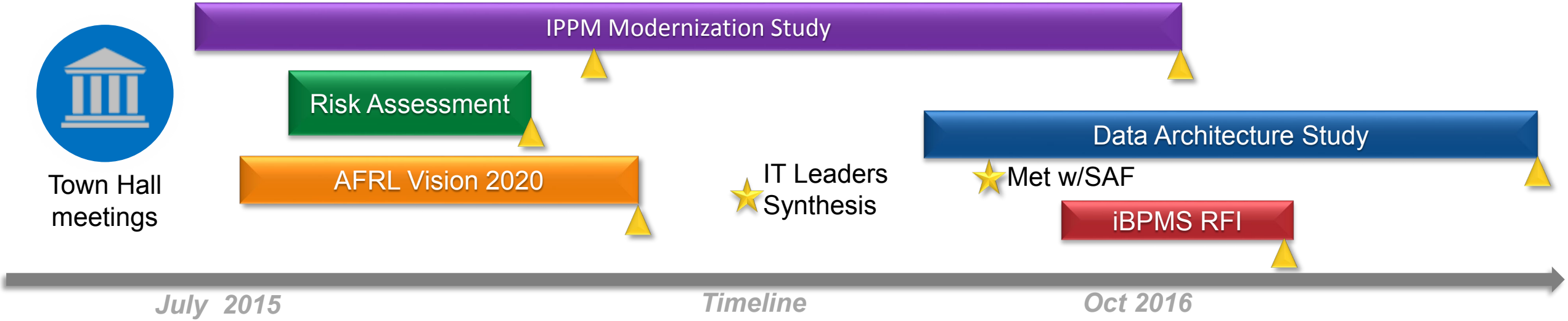
Foundational Research



- Town Hall meetings uncovered dissatisfaction with Business IT in AFRL
- Internal and External studies commissioned to address issues:
  - Carnegie-Mellon University, Software Engineering Institute (SEI) – Integrated Project Portfolio Management (IPPM) Modernization Study
  - AFRL Vision 2020 Team – Report on “A Vision for Business IT Capabilities”
  - Pro-Concepts – Independent Organizational Risk Assessment
  - Carnegie-Mellon SEI - Data Architecture Study
  - iBPMS Request for Information under NETCENTS 2 Small Business

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Why Change IPPM?

- System design decisions made over a decade ago
  - Significant technology evolution since 2004
  - We do not use ~80% of CA-PPM's inherent capability
  - Difficult to implement new software changes
  - Current version upgrades are very costly and time-consuming

- We pushed a "one-size" acquisition model onto a commercial business tool to manage an AF R&D lifecycle
  - Cultural and organizational issues stymied adoption
  - Requirements were not always managed in totality
  - Collection of information isn't integral to daily work
  - Captures technology info with snapshots in time
    - Lost traceability through maturation process

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AFRL Approach to IT Challenges

Today's Situation

Enterprise Business

- Rigid, "One-size" COTS/GOTS tools
- Data definitions & business rules interpreted inconsistently
- Data often unreliable and/or stale
- Unclass to Classified is manual

Microsoft Office

Default Means

Mission Organizations

- Isolated and disparate IT systems
- Unable to share custom applications
- Data center consolidation push
- Cyber-security & reporting burden

Future State

Common Toolbox of Managed IT Capabilities

- Scalable/ Interoperable
  Intelligent Insights
  Process Agnostic
- Rapid Configuration
  Collaborative BPR
  Simulate Processes
- Reuse & Tailoring of Apps
  Published Definitions
- Single Source Truth
  Self-Service Analytics
- Rules & Standards
  Governance & Oversight
  Unclass & Secret Synched

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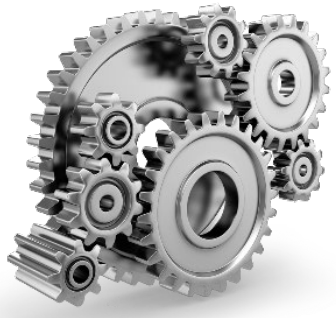
Initial Shared Platform Capabilities

Intelligent Business Process Management Suite (iBPMS)

Observe/Orient
Business activity monitoring
Reporting

Decide
Analytics, Business Rules, & Optimization

Act
Process Modeling Workflow
Content & Case Mgt



- Agile BPR/Optimization
- Low Code Development
- Scalable/Re-usable
- Cloud Ready

Data Visualization

Visually Represent

Analyze & Evaluate

Interaction/ Manipulation

Manage

Monitor

- Improved insights
- Drive higher data quality
- Analysis of trends
- Faster decisions

Easy and continuous optimization of business processes

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Business IT Modernization Principles

- AFRL Data
  - We are One AFRL. AFRL's data needs to support the Air Force Data Strategy: Visible, Accessible, Understandable, Linked, and Trustworthy (VAULT)

- Airmen's Time
  - Airman's Time is the driving metric behind Business IT Modernization. Modernization paired with business process reengineering enable AFRL to make better use of our valuable Airmen's Time.

- Federated / Flexible
  - AFRL is a federated organization. Local variation in business processes and data is a key part of AFRL's culture.
  - The S&T business needs to be agile to respond to the ever-changing environment.

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Federated Development Tenets

- Operate shared platform-based IT capabilities
- Establish core team to:
  - Manage the platforms
  - Become a center of excellence
  - Implement “just enough” governance
- Provide enterprise level capabilities, data & business rules
- Provide flexibility to meet local conditions
- Empower all AFRL organizations to create capabilities and processes to meet their needs by configuring the platform
- Enable sharing of capabilities, processes, and IT talent across AFRL

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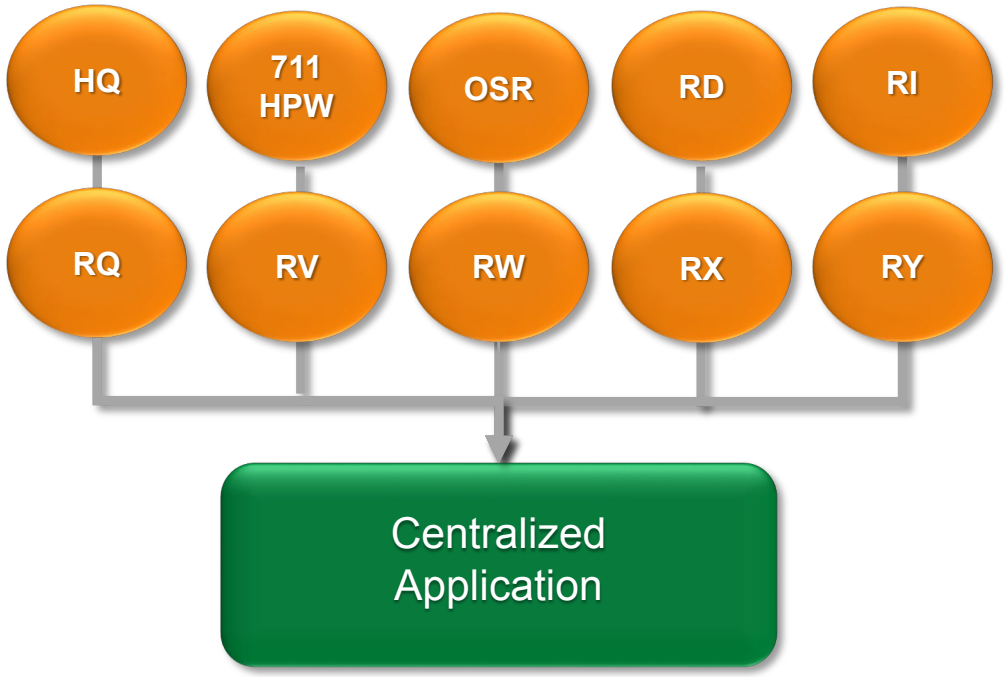
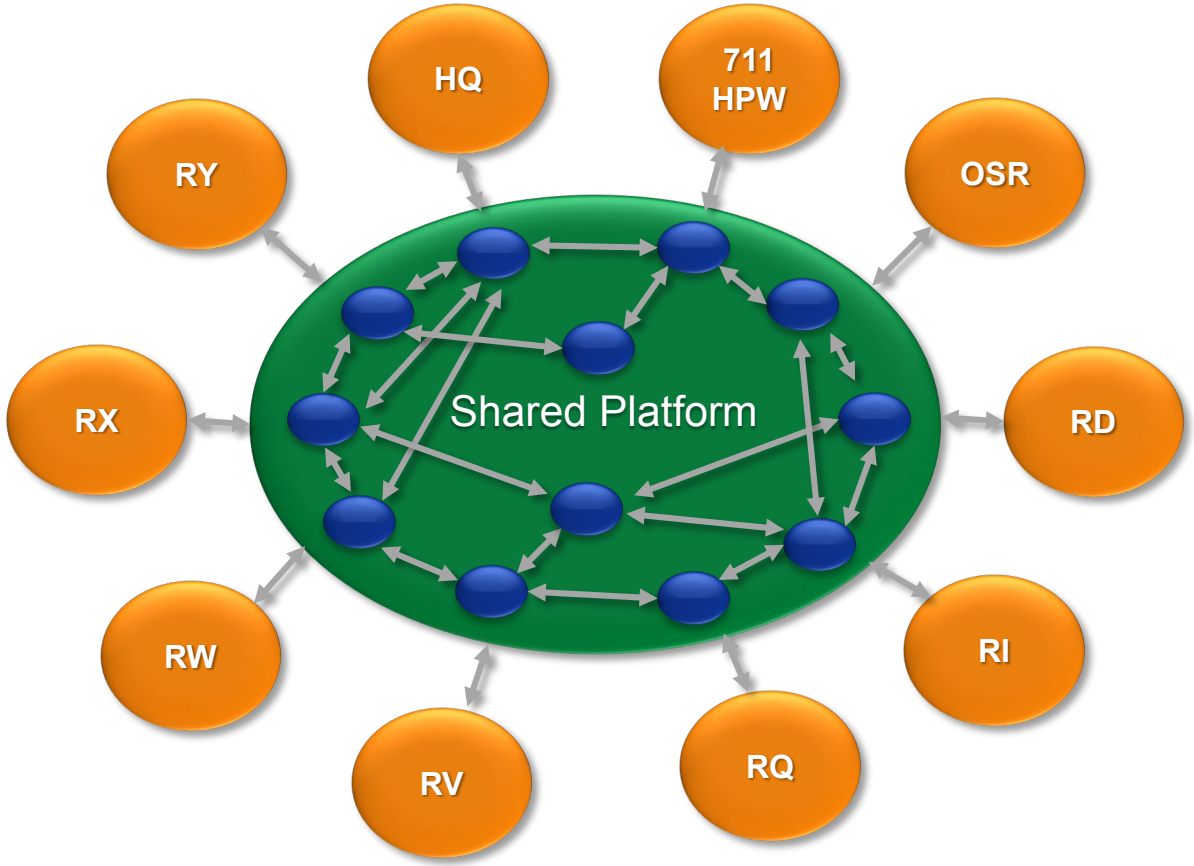
Centralized Model vs. Federated Model



AFRL Organizations using a **Centralized** Application
"On size fits all"



AFRL Organizations using apps on a **Federated** Platform
"Enable Local Variation"

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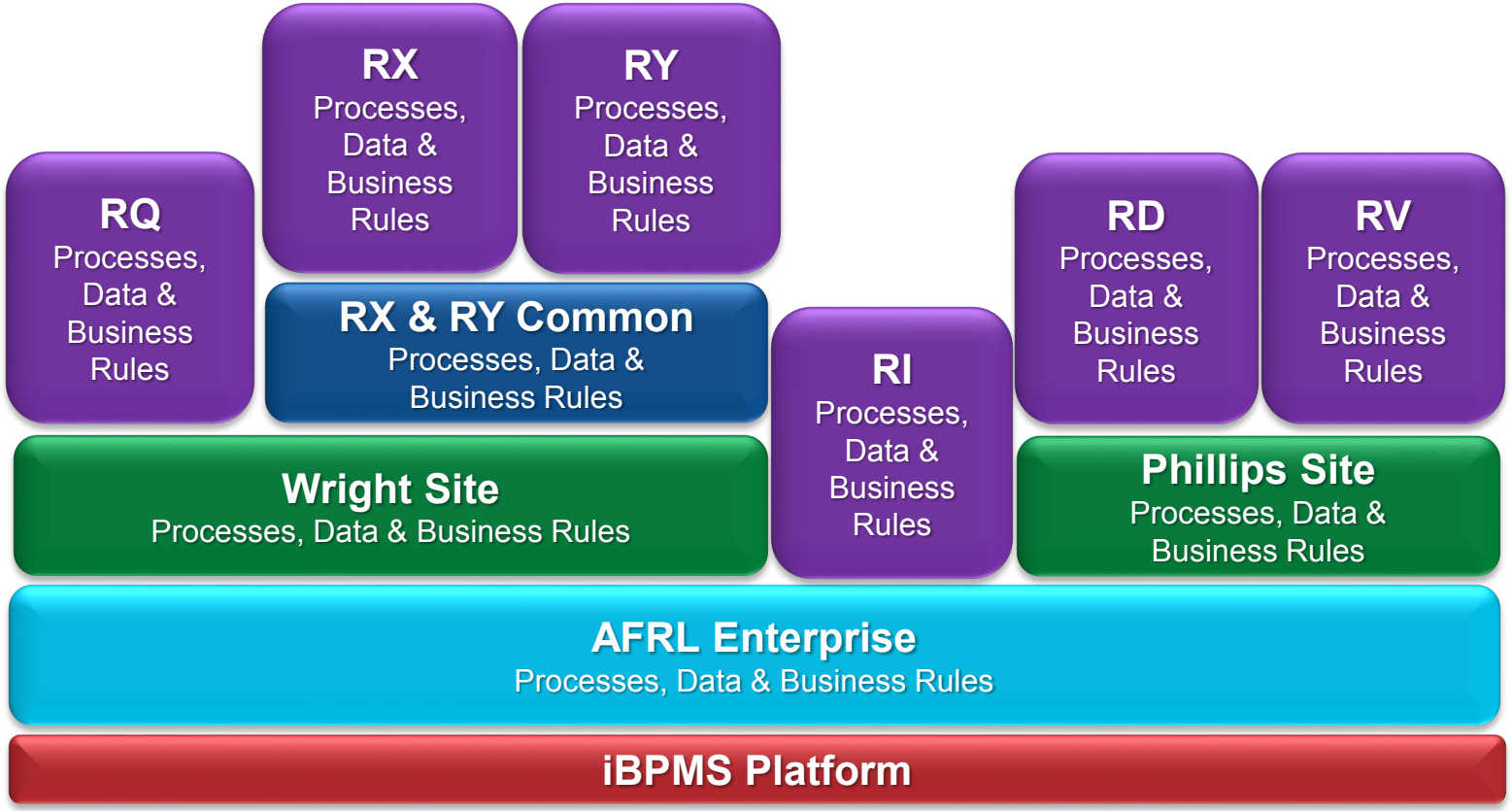
Flexibility to Meet Local Conditions



- Establish AFRL Enterprise processes, data & business rules
- Enable organization to meet local conditions by inheriting from the enterprise and making changes within the bounds of the enterprise rules

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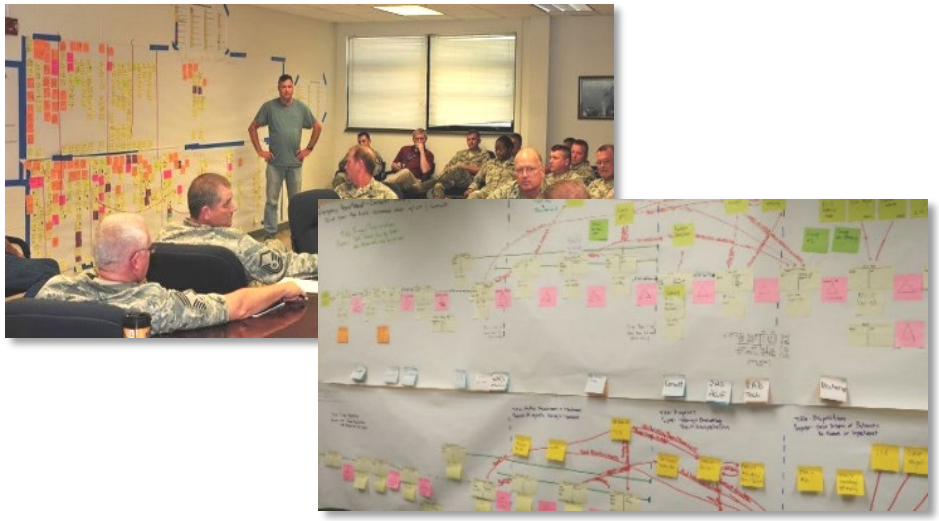
Enhanced BPR: Leveraging Modern Methods

Traditional BPR Approach



- Waterfall Implementation Model
- Lacks Insight into Impacts & Metrics
- Unable to Easily Test

Increased Speed to Deploy

iBPMS Enabled BPR Approach

- Agile Real Time Configuration
- Identifies Issues & Metrics Upfront
- Test in Real Time via Simulation

Increased engagement and immediate user feedback

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iBPMS Platform Prototype Evaluation

- Using Other Transaction Authority (OTA) in 10 U.S.C. Section 2371-b
- Exploring Intelligent Business Process Management Suite (iBPMS) Platform
  - Ensure AFRL required functionality is met
  - Utilize Agile methodologies to demonstrate business process optimization
  - Develop governance to support Federated Development on a shared platform
- Informs Business Capability Acquisition Cycle (BCAC) process

- Down-select to two viable candidates
- Aug-Oct 2017

- Prove capability using test data and relevant use cases
- Nov 2017 – Mar 2018

- Prove iBPMS platform is viable on AFNET
- Apr-May 2018

- Develop procedures and prototype initial capabilities through 31 Dec 18

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Lessons Learned

USING OTHER TRANSACTION AUTHORITY (OTA)

- Great methodology for developing prototypes and maturing technology quickly
- Utilize successive competitions for down-selecting against well-written technical requirements
  - e.g., whitepapers, proposals, pilot implementations
- Notify offerors from the beginning that the results of the OTA may lead to a production contract
- Ensure prototypes are completed prior to award of a production contract

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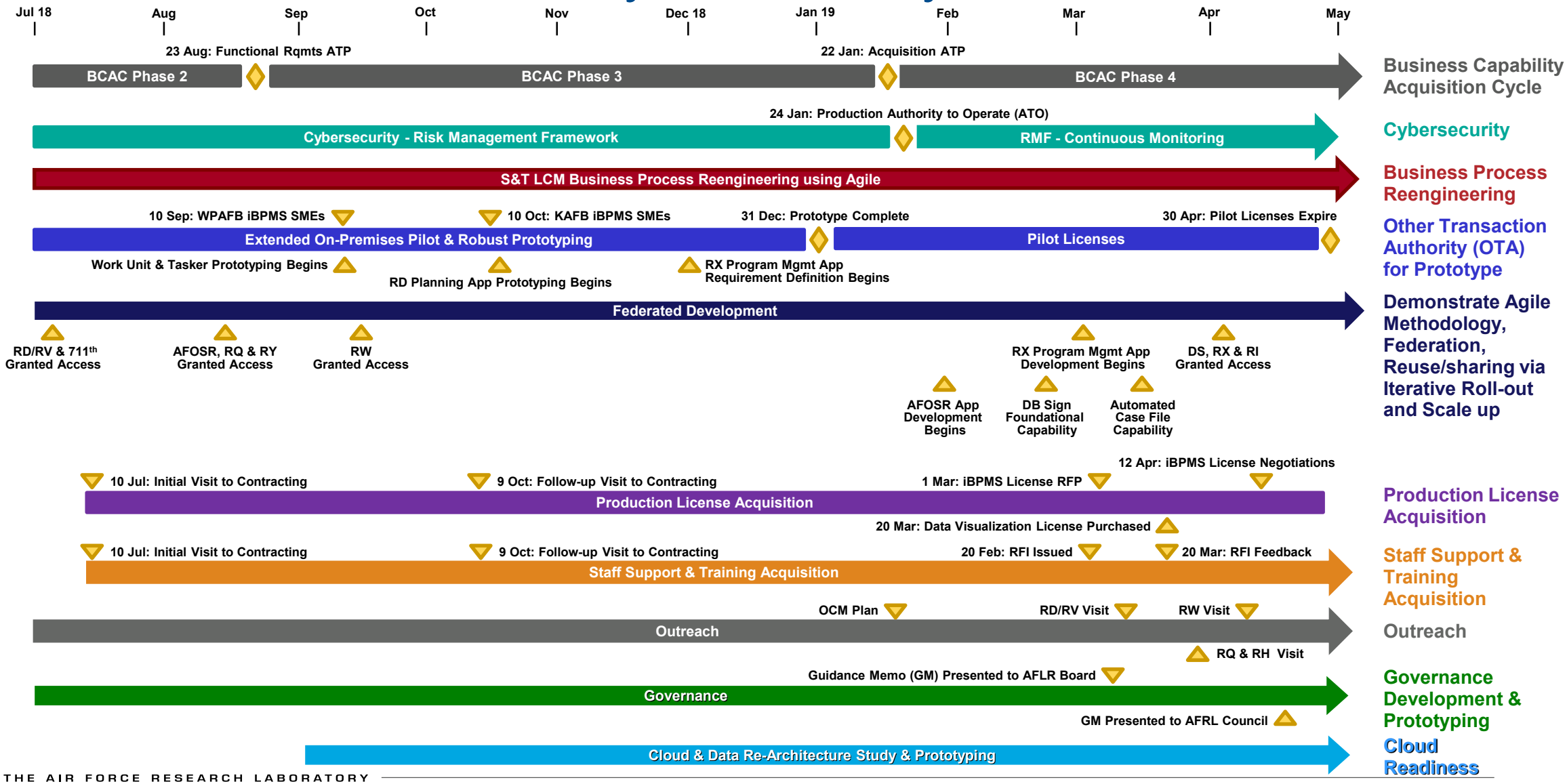
Modernization Efforts: July 2018 – May 2019



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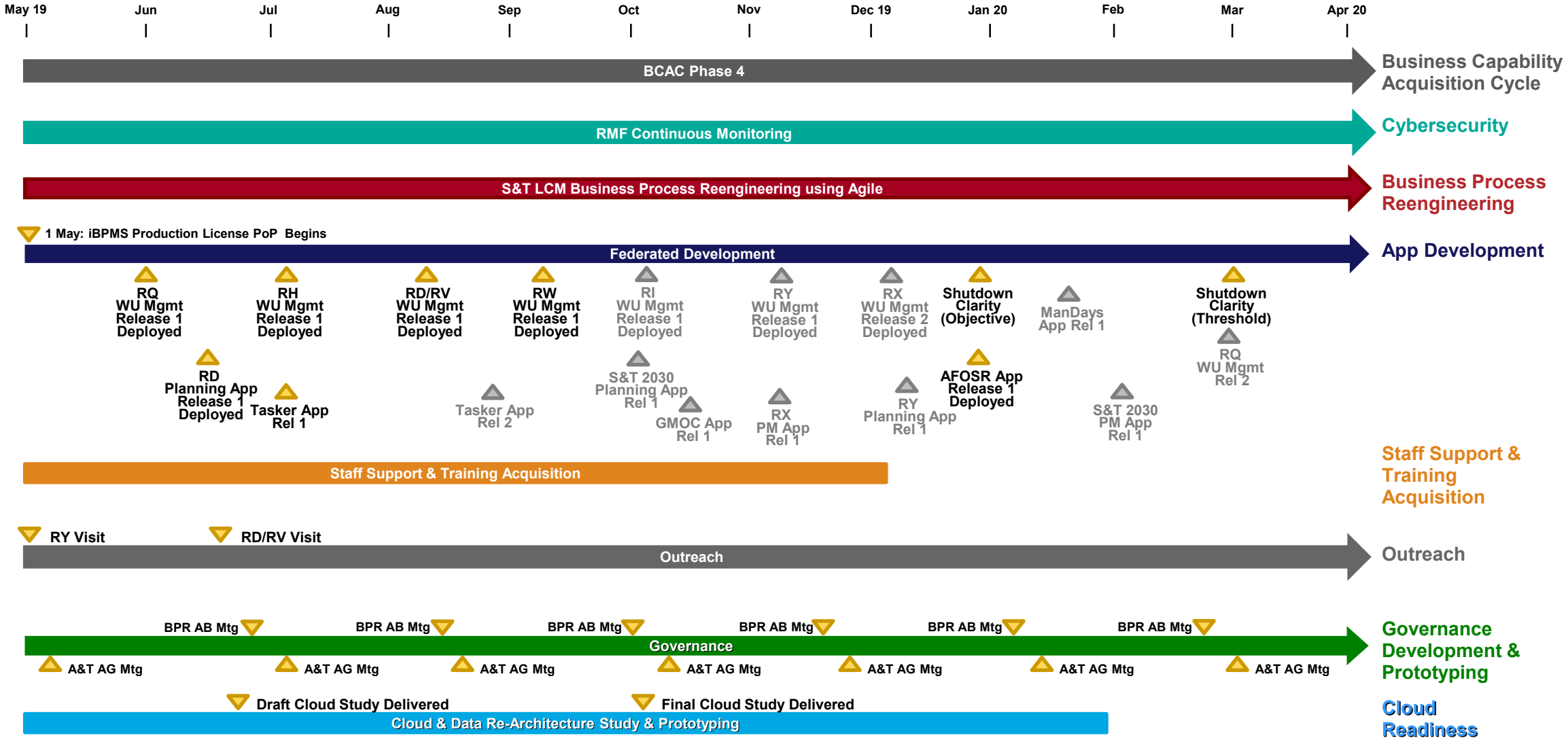
Modernization Efforts: May 2019 – Apr 2020



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“To Be” Process Artifacts

Integrated S&T Business Processes

- Work Unit Initiation & Reporting
- AFRL Program/Project Mgt
- AFRL Future Capability Planning
- AFRL Contract Management
- MIPR Processing
- Internal AFRL Info Requests
- Work Order Management
- Research Equipment Tracking
- Safety/Flight Test
- Public Release
- Intellectual Property Mgt
- Enterprise Reqmts Process
- Idea Management

Information Assets

- Research Plans
- Contract Information
- AFRL Funding Data
- AFRL Budget Data
- R&D Case Files
- Work Unit Plans
- Schedule / WBS
- Technology Plans
- Requirements
- AFRL Final Reports
- R&D Deliverables

Governance

- Revised AFRL Operating Instructions
- Data Management Strategy
- Revised AFRL Business Rules
- Multi-Level Security Environment
- Training Manuals/Guidance
- Updated Test Strategy
- Risk Strategy
- Cybersecurity Strategy

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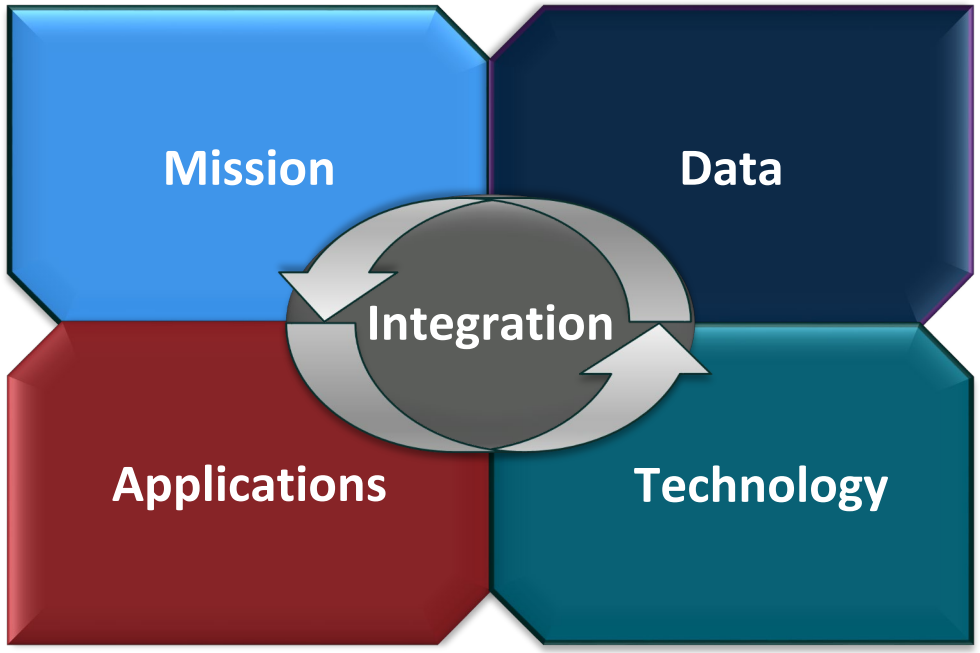
AFRL Agile Framework Governance Model

➢ Applies to both the AFRL Enterprise Architecture and the Modernized EBS



A formalized way to align AFRL business strategy to Data & IT initiatives

- Mission
  - Running the business of AFRL
  - Describes business strategy, governance, organization, and key business processes
- Data
  - Defines data management and maintains the AFRL data architecture using data modeling, master and reference data, metadata, and content management.
- Applications
  - Defines methods and standards for development, interoperability, and configuration management of applications
- Technology
  - Defines technical standards for IT infrastructure; hardware, software, services, networks, and connectivity
- Integration
  - Ensures the governance layers are not silos
  - Enables interoperability

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AFRL Agile Framework: Governing the AFRL EA and EBS

AFRL Enterprise

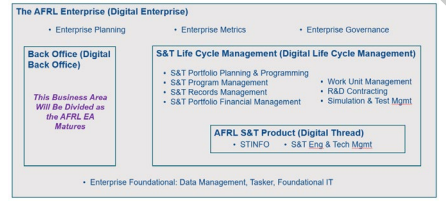
Advise, Counsel, & Arbitrate

BPR Advisory Board

- *Chair assigned by the AFRL Board*
- *Manages the AFRL EA*
- *Members: Business Area Owners, Msn Org Rep, FD Rep*

Application Advisory Group

- *Chaired by EBS Tech Advisor*
- *Manages Application Standards, DevOps, & Config Management*
- *Members: AFRL Developers, CITOs*



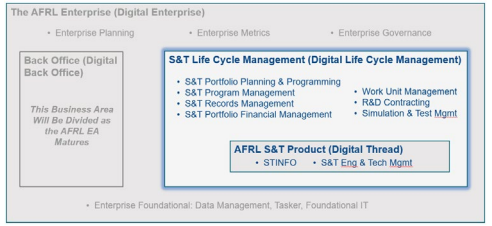
BPR Team

Business Area

Coordinate, Prioritize, and Align

Business Area Owner

- *Empowered owner of the Business Area*
- *Assigned by the AFRL Board*
- *Prioritize & Deconflict Area Needs*



Value streams delivering functionality

Capability

1 2 3

Define, Coordinate, & Align

Capability Owner

- *Empowered SME*
- *Assigned by an AFRL Group*
- *Identify & Approve Functional Business Rules & Data Definitions*
- *Maintain Situational Awareness across Application teams, Processes, & Systems*

Agile Team

- *Product Owner*
- *Developers*
- *Agile Coach*
- *Stakeholders & Capability Owner(s)*

Product Owner

- *Empowered SME*
- *Assigned by Requesting Organization*
- *Define Need & Approve Solution*
- *Align with Functional Business Standards*

Application

Plan, Develop, Test, & Deliver

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Lessons Learned

GOVERANCE

- Empower governance focal points to ensure fit for purpose and initiate change to data architecture
  - Mission governance sets priority for changes
  - Focal points act as facilitators
- Provide clear and concise documentation
  - Translate key business roles, processes, data, and their relationships into the enterprise architecture
- Apply an Agile mindset
  - The enterprise architecture and data definitions continuously evolve to meet mission needs

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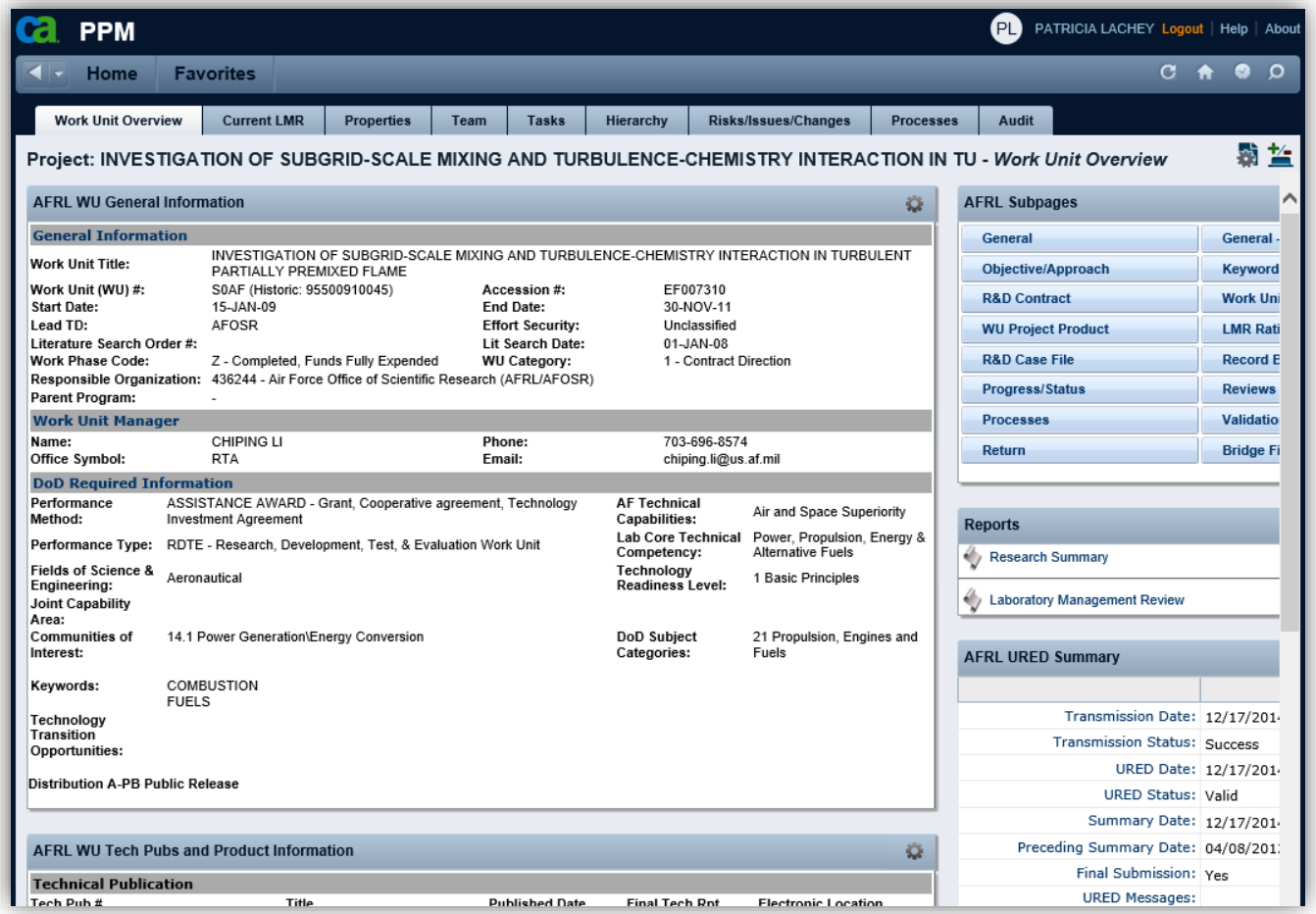
Transformational Change: Work Unit Management

As-Is Process & Data

- Work Unit initiation via forms and email, followed by admin data entry in Clarity
- Case file initiation via forms and email, followed by admin data entry in LiveLink for Records Management
- Management and reporting via MS Office and manual recording in Clarity
- Work Unit and Case File closeout via forms and email, followed by admin data entry in Clarity and LiveLink



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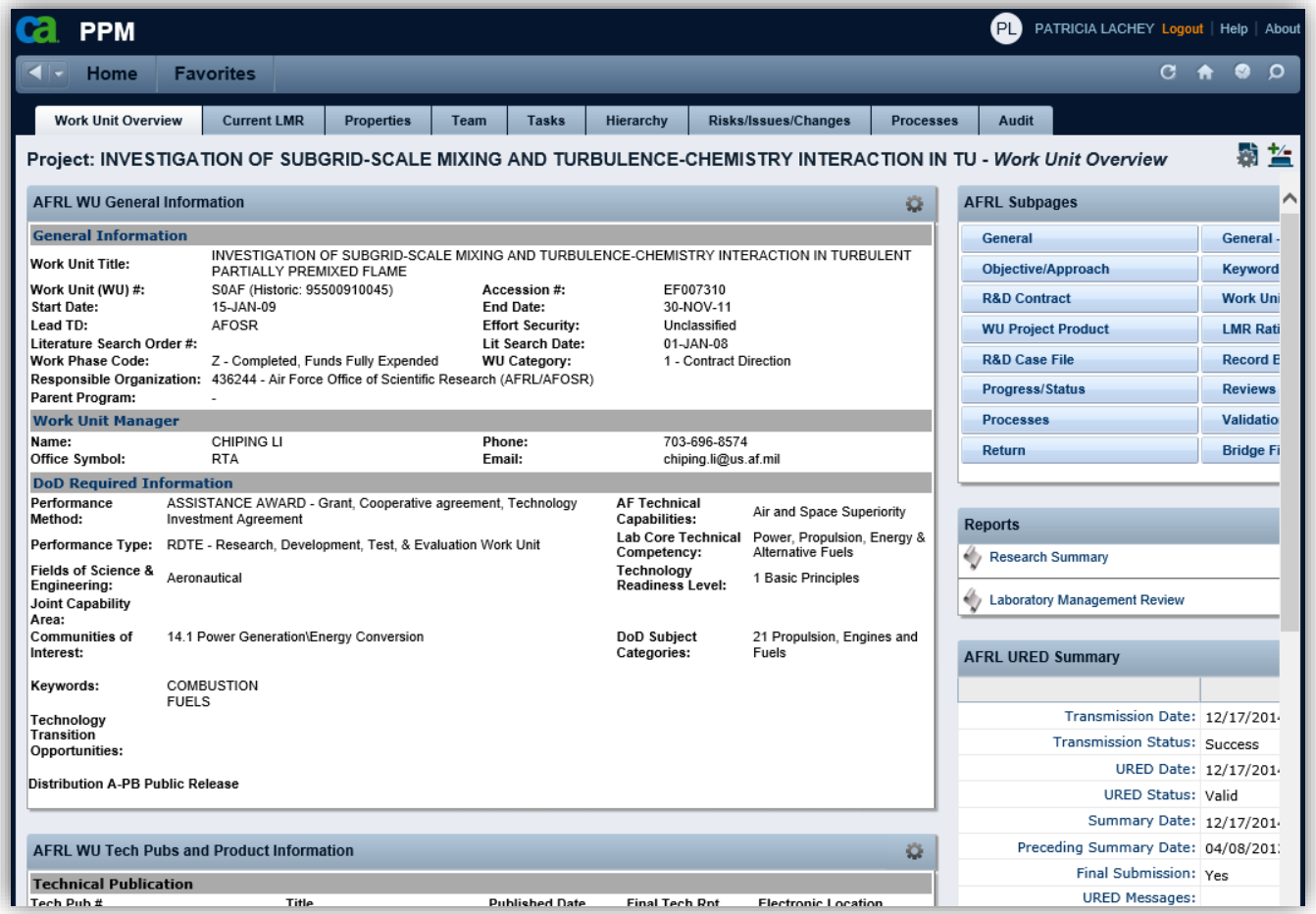

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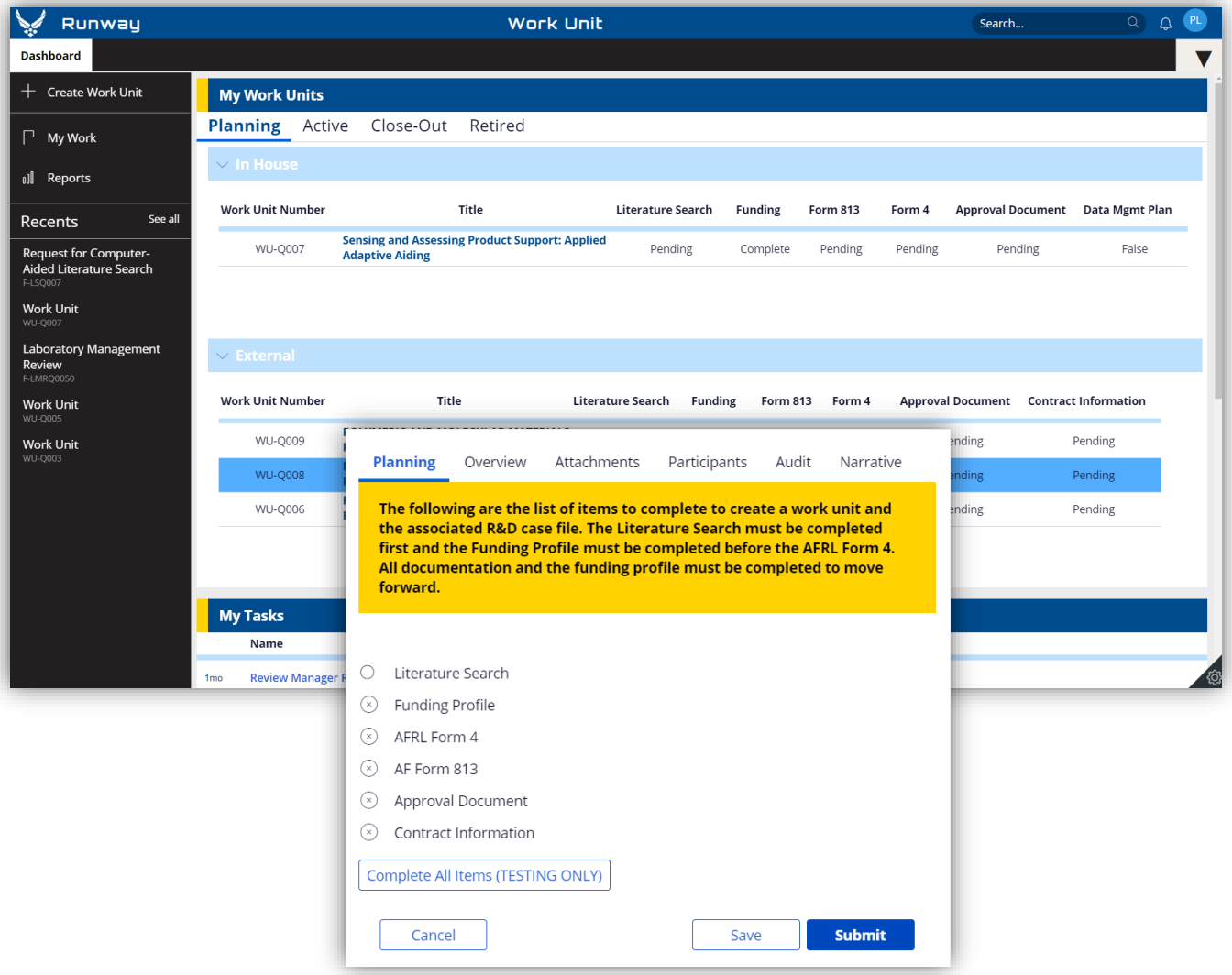

To-Be Process & Data

- Work Unit initiation via iBPMS application
- Case file initiation via iBPMS application, automated connection to LiveLink
- Management mixed between MS Office and iBPMS application
- Reporting and recording via iBPMS app
- Work Unit and Case File closeout via iBPMS application, automated connection to LiveLink

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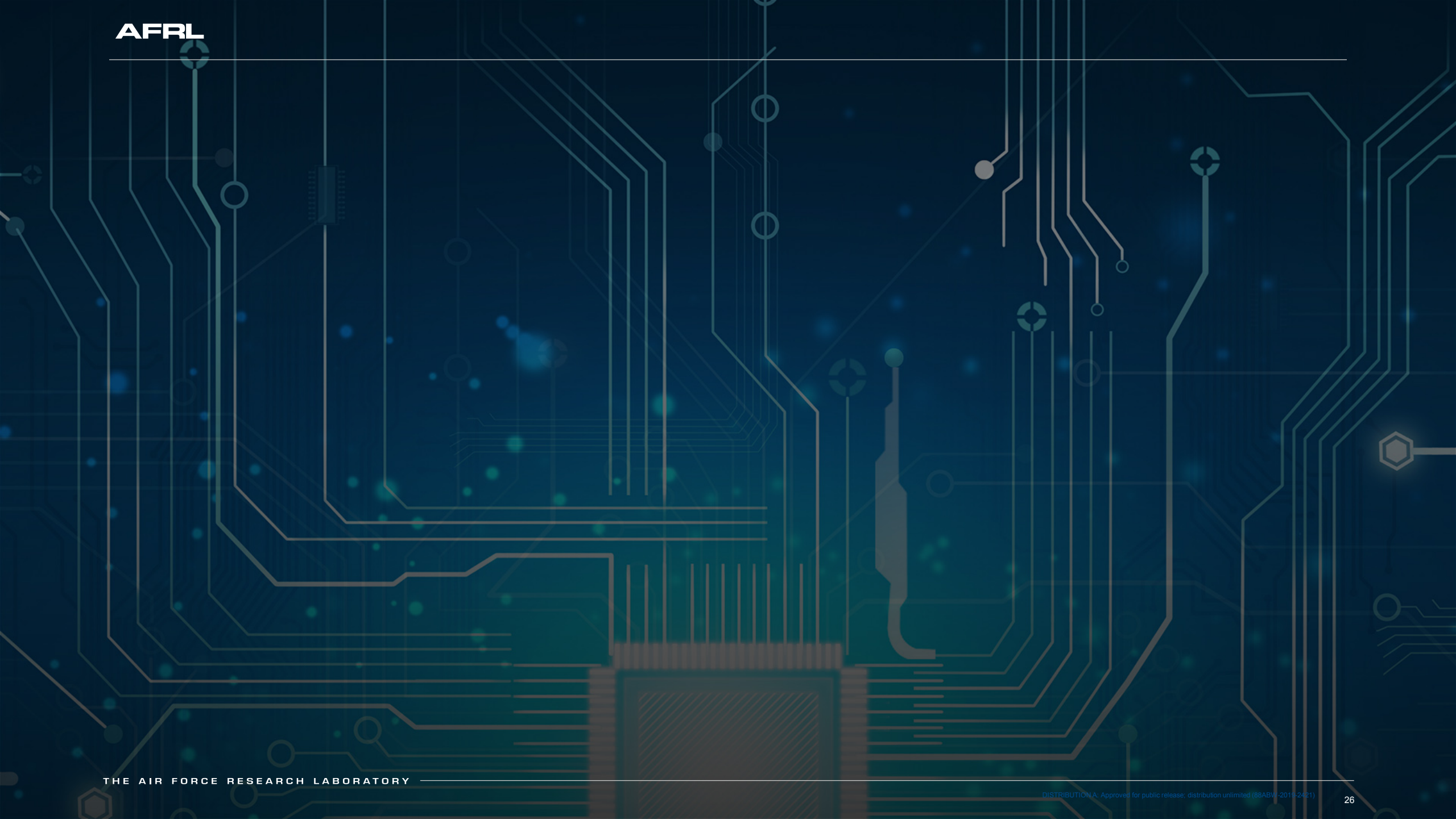

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