Mission Domain Working Groups

A PRIDE Effort to establish Digital Standards in the National Security Enterprise

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PRIDE

Product Realization Integrated Digital Enterprise

Overview

- Baseline contextual definitions
  - PRIDE
  - Product Realization Lifecycle
  - DAG & Data Governance
- Challenges
  - Problem Spaces
- Solution
  - STEP 1: Identify Data Domains
  - STEP 2: Create a Viable Structure
  - STEP 3: Stand-up each MDWG
- Lessons Learned
- Successes & Future
  - Just-in-Time Governance Framework

NA-122.1

PRIDE

Product **R**ealization **I**ntegrated **D**igital **E**nterprise

Mission

Enable and enhance the weapons product realization process through integrated digital tools and approaches.

Vision

To enhance the agility of Defense Programs through an integrated digital engineering ecosystem that rapidly delivers capabilities to address current and emerging threats.

Enterprise

A digitally integrated enterprise that can rapidly address current and emerging threats

20K NSE Users

Supports 40+ Engineering Applications

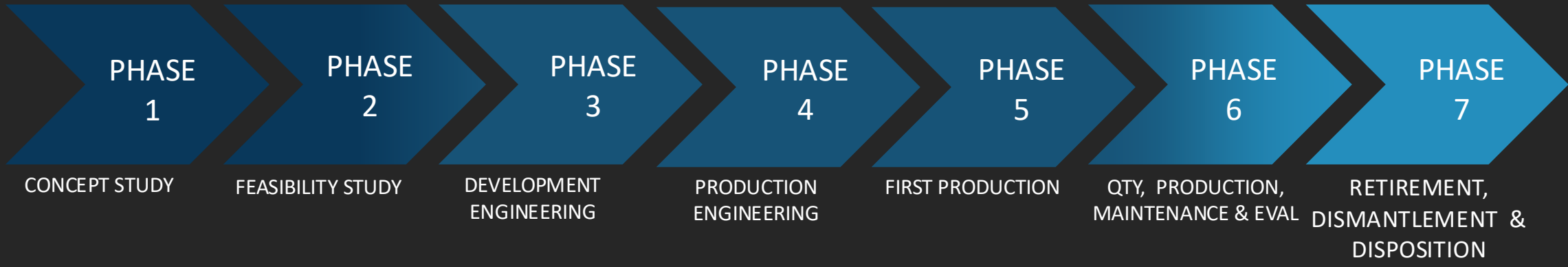
160 FTEs across 8 sites

$ 94M (FY24)

Source: NNSA NA-122.1, U.S. Department of Energy

Product Realization Lifecycle

Leading the Digital Transformation of our Product Realization Process



Source: NNSA Nuclear Weapons Life Cycle Fact Sheet, U.S. Department of Energy

DAG & Governance

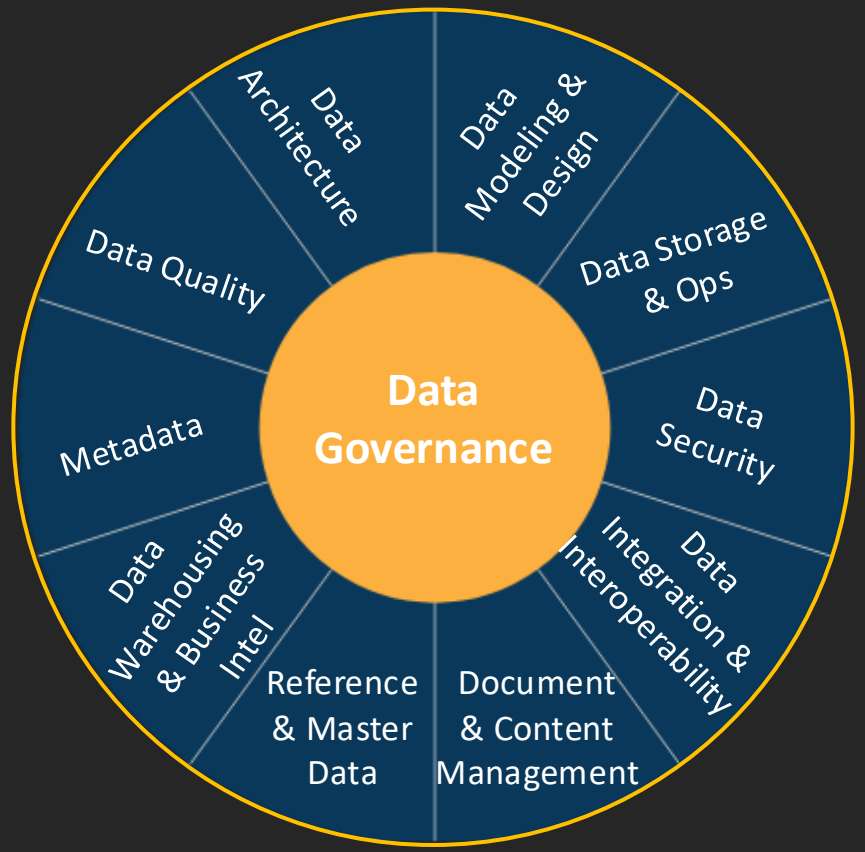


Figure2. DAMA-DMBOK2 Data Management Framework, "The DAMA Wheel"

- DAG = Digital Architecture & Governance
  - Provides the governance framework for assembling the digital thread
- The main components provided are
  - Propose and help create Data governance framework
  - Enterprise (cross-site) Need-to-Know approach
  - Data catalog configuration and use
- Core aspects of data governance and management
  - Establishing data requirements and uses
  - Archiving, curating, and data sharing
  - Defining and managing security requirements
  - Establishing data definitions and standards

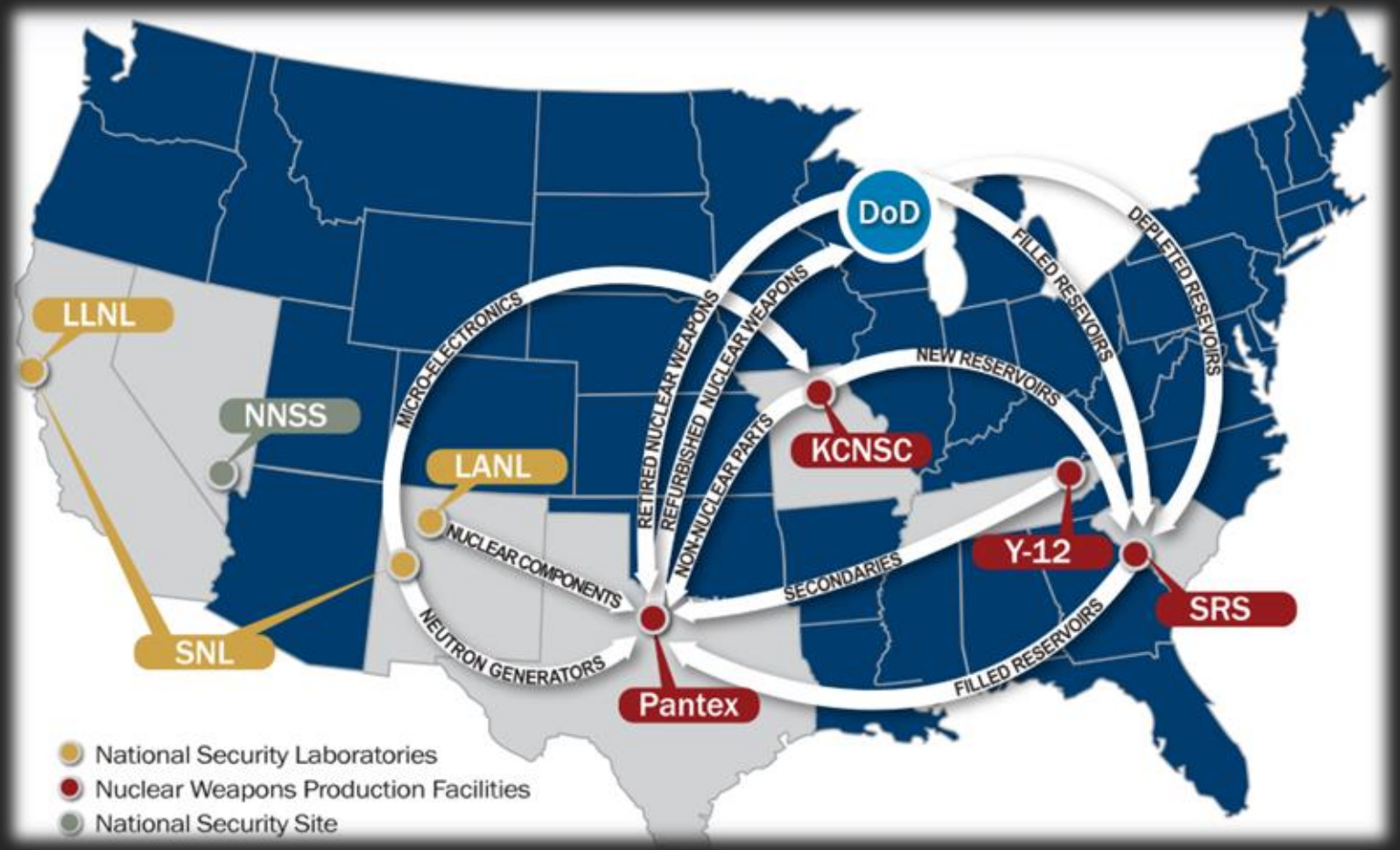
Challenges

- Common conditions prior to enterprise alignment and R029:
  - Fragmented, siloed data environments
  - Lack of enterprise alignment
  - Inconsistent standards and definitions
  - Tool-centric vs mission-centric approaches
  - No unified strategic roadmap
  - Reduced data trust and discoverability
  - Unclear boundaries between enterprise standards and site autonomy
  - Multiple intermittent data governance efforts with overlapping scope

Problem Space: Physically Distributed Agencies

U.S. DEPARTMENT of ENERGY

NNSA
National Nuclear Security Administration



Source: NNSA 2020 SSMP

STEP 1: Identify Data Domains

- Data domain = Defined area of mission activity
  - Mission-based
  - One home
  - Evidence-based
  - Mission-aligned
  - Multi-level context
- Initial set of domains should be chosen by asking:

1. Does this cluster represent a mission-critical activity?
2. Does it have distinct governance needs (compliance, security, stewardship)?
3. Is there an established community of practice (people who can own it)?
4. Will governing this cluster produce clear enterprise value early?

➢ If YES to all 4, it's a strong candidate for an initial domain.

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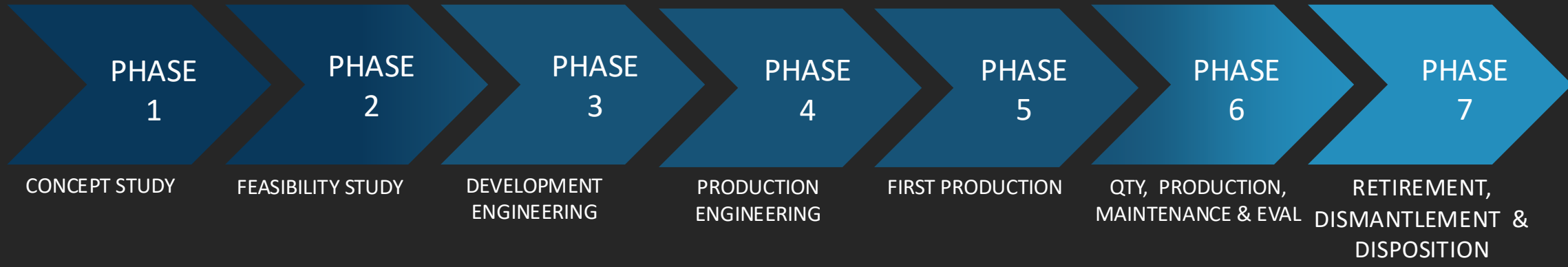
Product Lifecycle & Data Domains



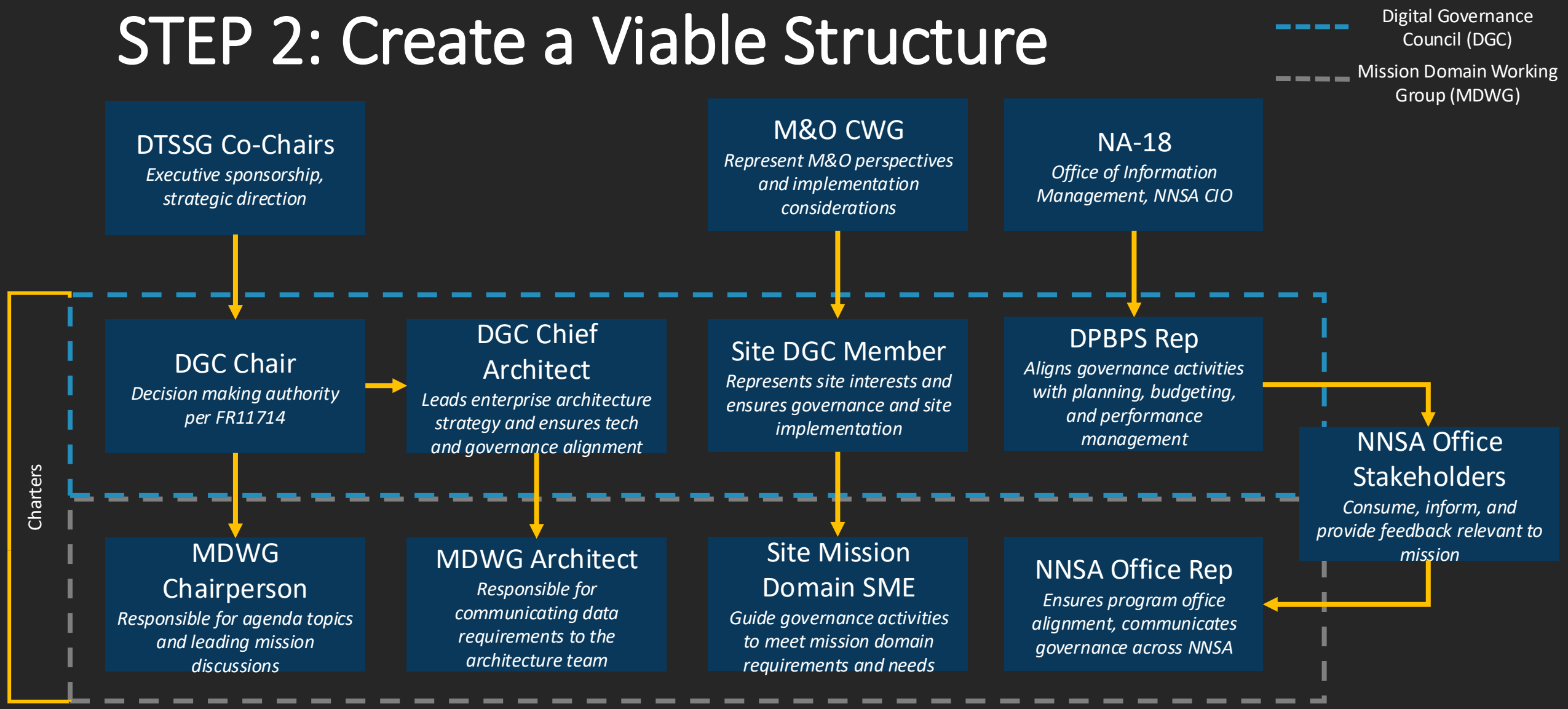
Systems Engineering
Mission-aligned technical integration

Requirements Management
Controlled, traceable requirements

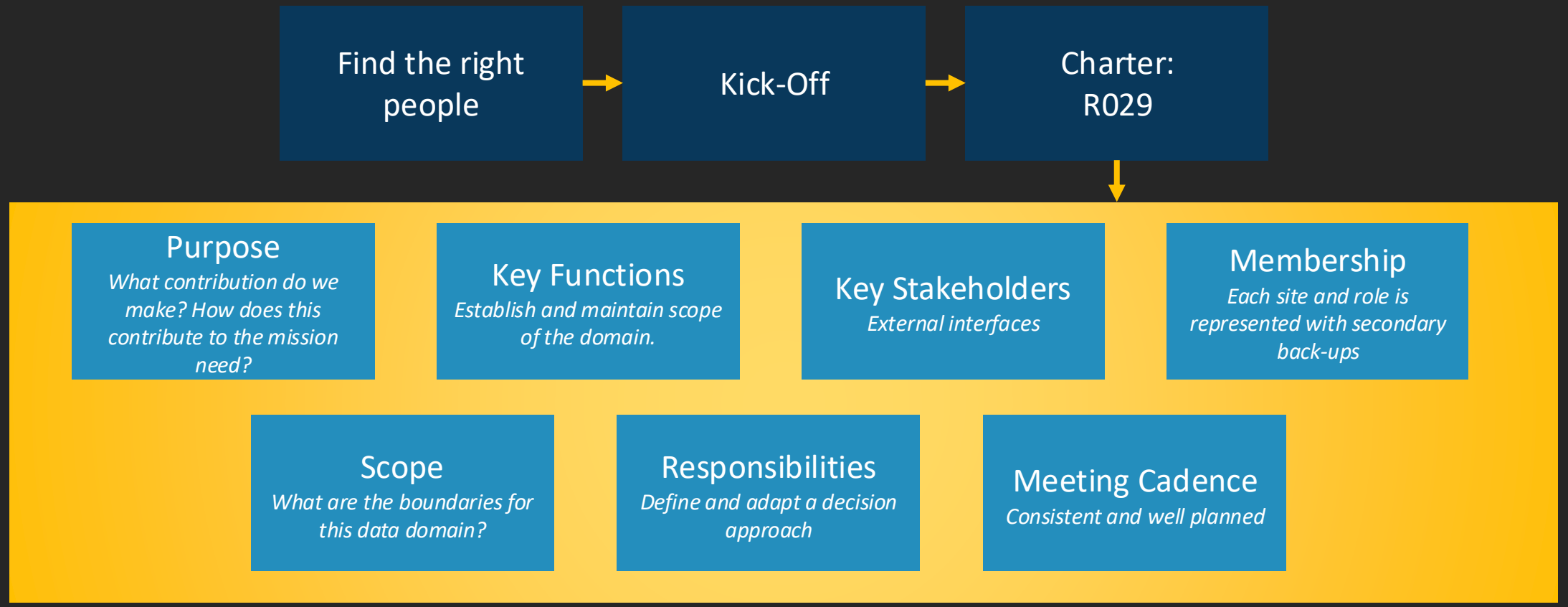
Product Data Management
Authoritative product data

Sources: NNSA Nuclear Weapons Life Cycle Fact Sheet, U.S. Department of Energy | NNSA NA-122.1, U.S. Department of Energy

STEP 2: Create a Viable Structure



Step 3: Stand-up each MDWG



Lessons Learned

- Participation + Accountability
  - Adding a Digital Architecture and Governance Representative to each MDWG enhances deliverables
  - Standardization of terminology and interpretation between sites requires participation
  - Defining attributes through voting and document final decisions
  - Having BOTH a chairperson AND a facilitator makes for better meetings
  - Ticketing system via Service Now for data requests ensures accountability
- Appropriately Sizing Data Governance
  - Data Governance is a huge topic that can overwhelm new practitioners
  - Focusing training on aspects that will be immediately implemented
- Collaboration + Flexibility
  - Data change requests can affect more than one data domain
  - Defining the boundaries of each domain isn't always easy
  - Some cross-domain participation is needed
  - MDWG facilitators met regularly to share issues and best practices
  - Interconnectivity and cross-connections of MDWGs

Successes & Future

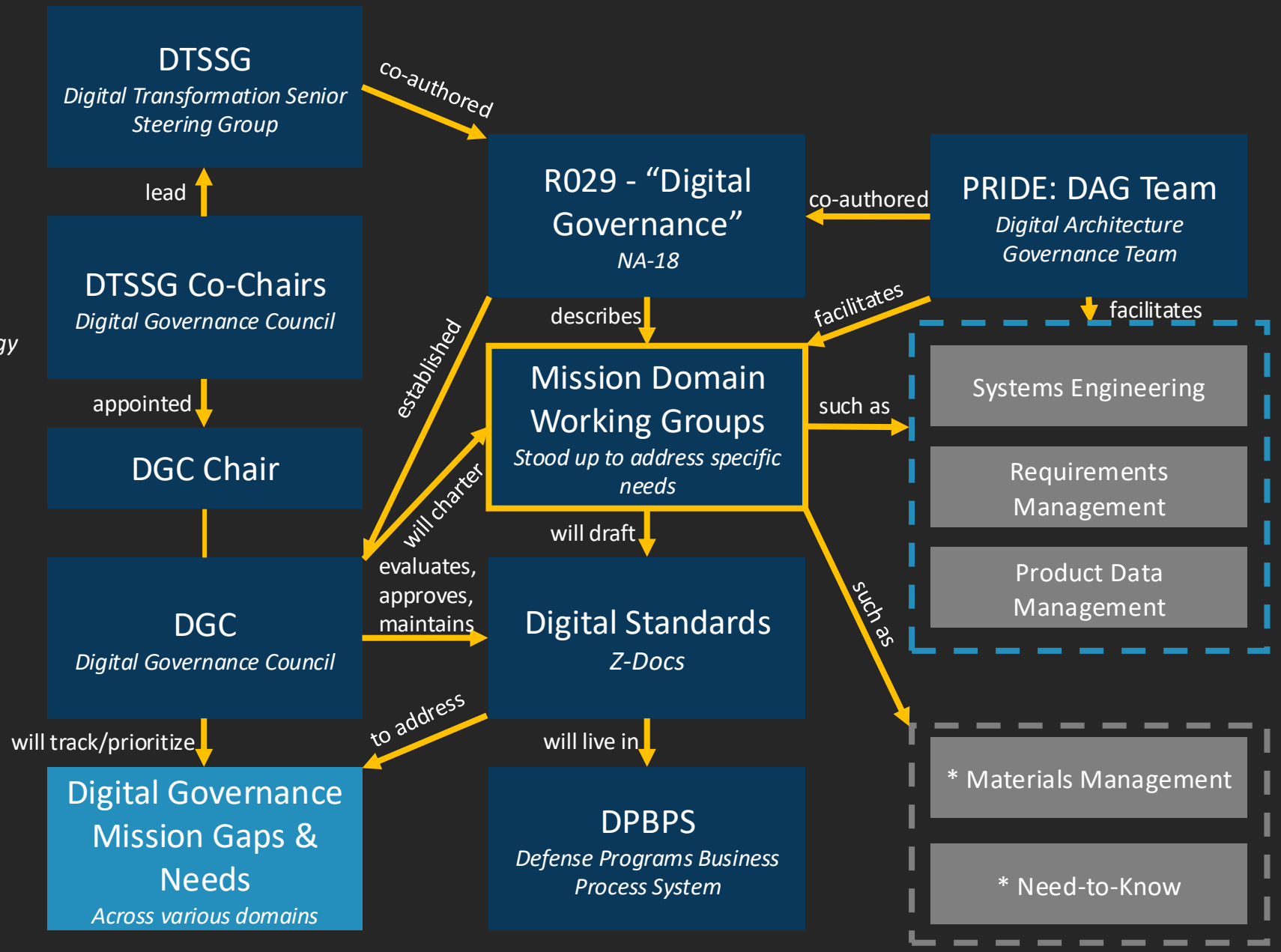
- Refinement of the standard charter document R029
- Consistently perform the Enterprise Data Change Management Process
- Decision making matrix
- Documented and executed enterprise decisions
  - Systems Engineering: created traceability mapping on how mission needs flow through functions, requirements, design elements, and verification aligned to ISO/IEC IEEE standards
  - Requirements Management: defined requirement terminology, types, attributes, and relationships aligned with DPBPS Policy. Executed voting and data change management processes
  - Product Data Management: defined parts, assemblies, and associated attributes enabling downstream engineering, manufacturing, and sustainment decisions
- PRIDE DAG will continue to stand up MDWGs to refine lifecycle needs
  - Potential future MDWGs: Need-To-Know and Materials Management
- Just-In-Time Governance Framework

Just-in-Time Governance Framework

Source: NNSA NA-122.1, U.S. Department of Energy

Key Deliverables

- Cross-site terminology
- Data Usage and Data Provider Agreements
- Tool agnostic data definitions
- Metadata standard for catalog
- Enterprise data change management



Conclusion

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