Digital Transformation Senior Steering Group

SSG Membership
- **Office of Defense Programs**
- **Office of Information Management**
- **Defense Nuclear Non-Proliferation**
- **Field Offices**
- **Management & Operating Partners**

Working Groups
- **Policy** | BJ Quigley NA-PAS, Girard Simmons KCNSC
- **Infrastructure** | Valerie Noble on behalf of NA-IM, JJ Jones SNL
- **Digital Thread** | Jon Arlotti-Parish NA-12, Shawn Dirk SNL
- **Culture Change** |Allyson Koncke-Fernandez NA-1.1, J.J. Rambo SNL

Vision: In collaboration with Laboratory, Plant, and Site (LPS) partners, NNSA Defense Programs will create and execute a comprehensive digital engineering (DE) strategy for weapons activities. The strategy will enhance the agility, responsiveness, and efficiency of the National Security Enterprise (NSE), enabling it to perform its core stockpile science, engineering, and production missions more effectively.

Co-Chairs

Kent Jones, Associate Deputy Administrator for Systems Engineering and Integration, Office of Defense Programs (NA-10)

Laura McGill, Deputy Laboratories Director - Nuclear Deterrence & Chief Technology Officer,

Sandia National Laboratories (SNL)

Commitment Established at July 2023 NNSA Council Meeting

√ Formalize LPS' DE action group to develop, coordinate, and align strategic plans and activities

√ Hold DE Summit (follow on to 2019 event) to align enterprise and determine standard/compatible tools

- Approach per NNSA Council proposal:
  – Identify artifact interfaces
  – Develop Principles for down-selecting standard/compatible tools, emphasizing eventual future state, including accommodations for required bandwidth, access privileges, capability for AI/ML, etc.
  – Identify existing tools suites, associated capabilities, extent of usage and gaps against future state

✓ Designate NNSA DE lead at appropriate DP federal level

✓ Formalize DE implementation actions to enable DA to PA digital thread that enables standard and consistent MBD and MBSE implementation

✓ Develop estimates for required investment and anticipated savings

- Use DE capability to accelerate W87-1 and W93 Programs – in plan

All commitments completed or accounted for in Charter, Strategy and Action Plans

Digital Transformation SSG Integrated Approach
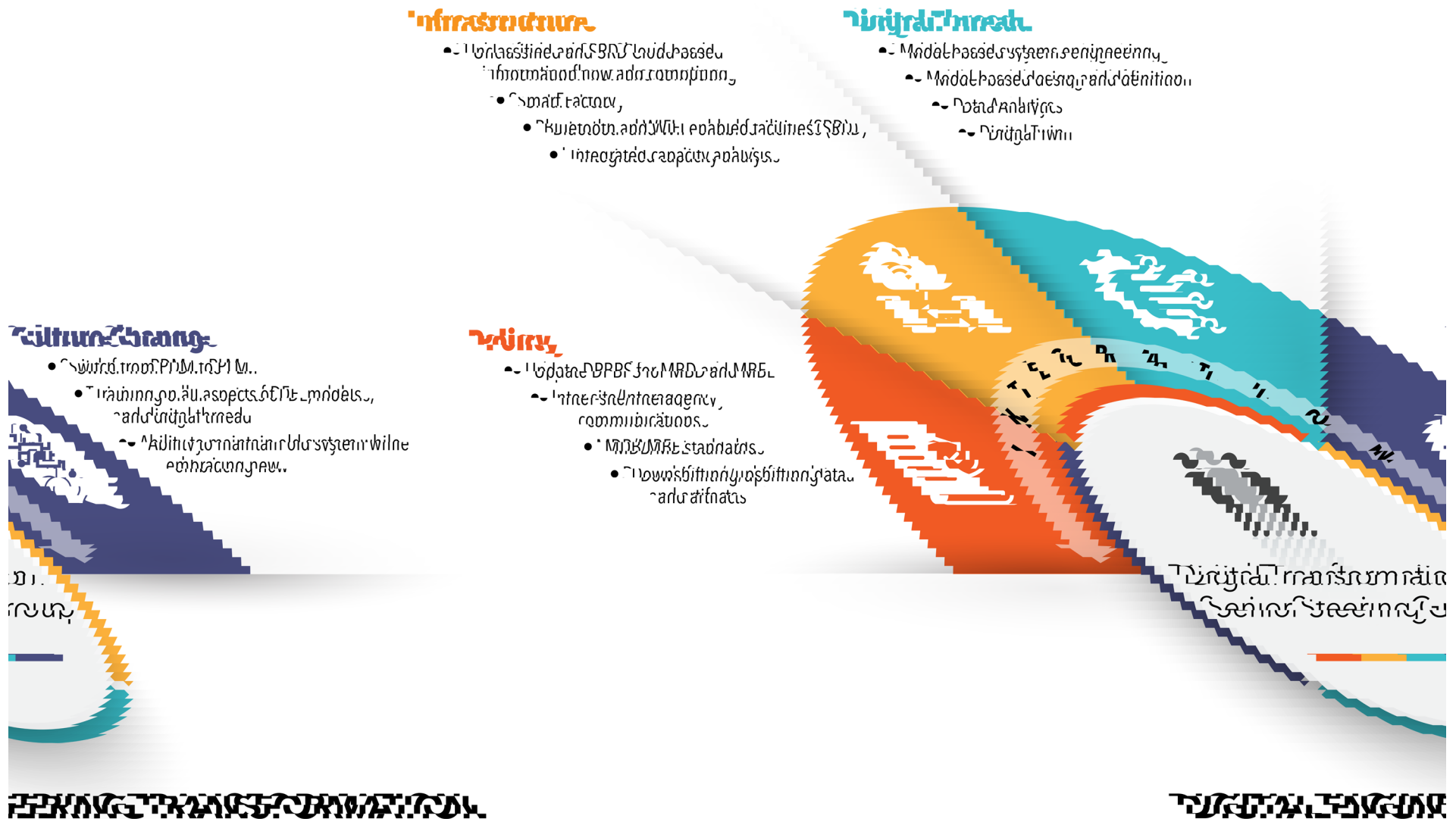
Initial Enterprise Capabilities

- Key enterprise-wide capabilities to be deployed :
  - eRMS (enterprise Requirements Management System) –DOORS (Dynamic Object-Oriented Requirements System) Next Generation (DNG)
  - CAD (Computer Aided Design) Mechanical – Creo
  - CAD Electrical - AOA (Analysis of Alternatives) needed
  - ePDM (enterprise Product Data Management) – Windchill (PTC product)
  - MBSE (Model-Based Systems Engineering) – AoA completed, but results not yet announced
  - Tool Interoperability – AOA in progress
  - Business Process tools
  - Collaboration Tools

Key Objectives and Milestones

- **20 Initial Enterprise Actions** identified by 4 WGs for transformation implementation

- **Target date of Oct 2025 to have the product design portion of the digital thread capability in-place and ready for program use**

  - Decision to adopt the digital thread elements will be up to the program leadership

- **Enterprise instantiation of DNG deployed Dec 2023 to support 2024 W93 Customer Requirements Review**

- '**Data is an enterprise-wide asset'** to be widely shared in the interest of efficiency and partnership – this is a go-forward principle to address well-embedded culture across the NSE that we only share data as a last resort, when forced to do so to make progress on our programs. collaborate with them to embed this in all our activities

Digital Transformation Key Achievements

- List of site-specific digital tools collected and entered into system model to support initial integration into digital thread

- ROM estimates of quantifiable labor savings resulting from implementation of Digital Thread and other collaboration activities have been collected for each of LPS; developing budget profiles

- Infrastructure WG submitted preliminary estimates of savings from enterprise-wide tool licensing and identified key enterprise processes and objectives that are streamlined and enhanced for digital transformation

- Culture Change WG established comprehensive stakeholder analysis
  - Results published March 2024, identified key transformation focus areas:
    - Communication
    - Collaboration
    - Change Management
    - Resource Needs

Digital Transformation Key Achievements

- **DTSSG Strategy** signed and implemented
- **DTSSG Charter** signed and implemented
- ESN Hub, an NA-IM sponsored initiative, has Authority to Operate
- Initiation of a Joint Unclassified Cloud Environment (JUCE) shared between NSE sites to enhance business agility, simplify integration across applications, and allow collaboration between sites on all phases of the production lifecycle to realize the NSE Digital Thread with following attributes:
  - A true development environment for each sites' use of common enterprise tools
  - Management of enterprise software licensing and optimization of application usage
  - Scalable enterprise container workloads
  - Sandbox for simulation of threats/attacks via red teams, with a goal of hardening production
  - Data access and sharing across sites

Plans Forward

- ePDM (enterprise Product Data Management), 2nd enterprise-wide capability will be fully configured by Q4 of FY24

- Develop Digital Transformation Work Breakdown structure to capture full transformation scope and manage transformation activities across enterprise

- Establishing comprehensive/holistic view of digital ecosystem architecture to support the full DT/DE lifecycle to include key touch points:
  - Network bandwidth dependencies
  - Large file transfer
  - Enterprise Workflows

Questions?

NNSA
National Nuclear Security Administration