



Model-Based Enterprise Transition Initiative (MBET-I)

Stockpile Services / PRIDE initiative for MBE
Implementation

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- **NNSA Perspective on MBE Challenge**
 - Stockpile Services' Goals, Expected Benefits, Activities
 - Challenges Presented by Current System
- **MBET-I**
 - Scope
 - Partners
 - Essential Teams
 - Milestones, Schedule, and Budget
- **Risk Management / Challenges to MBET-I**
 - Cyber / Nuclear Enterprise Assurance (NEA)
 - Business Practice Changes / Momentum
 - Technical
 - Programmatic
 - Other challenges / questions discussed throughout

The current drawing-based, drawing centric system for product definition and realization:

- **Increases potential for human error** through the translation of product definition between model-based and drawing-based formats
- **Increases work load** as product definition is repeated in model-based and drawing-based formats both at the DA and at the PA.
- **Limits the transfer and potential of useful data** through a prejudice against model-based definition in NNSA's business and quality processes
- **Perpetuates a culture that stymies the development of advanced technologies and processes** which may be necessary for future mission execution



Goals, Benefits, Activities

Goal: Enable business processes and policies to support digital engineering models as product definition for design, manufacturing and product acceptance

Expected Benefits:

- Accelerated product realization
- Increased collaboration across NNSA's National Security Enterprise (NSE)
- Better quality product
- Proactive policy and technology solutions to Nuclear Enterprise Assurance (NEA) issues associated with digitalization of design/production processes
- Leveraging new options for design, production, and qualification enabled by model-based enterprise (MBE)

Activities:

- Modify and codify business practices
- Establish pilot projects among key NNSA Design Agency (DA) / Production Agency (PA) pairs
- Leverage key partnerships to further MBE implementation



MBET-I Scope

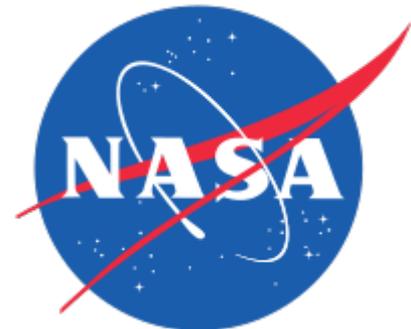
- **Modify and codify business practices**
 - Notional DPBPS targets
 - Modify current Weapon Quality Policy (NAP-24A)

- **Establish studies and pilot projects among key NSE partners**
 - Products to inform MBET-I scope execution
 - key to “proving in” MBE and acquiring cultural and organizational buy-in.
 - take advantage of opportunities outside War Reserve (WR) product definition
 - Tooling design and fabrication
 - Joint Test Assembly (JTA) builds

- **Strategic Investments in technology**
 - Tech funding reserved for projects of exceptional strategic importance
 - MBE-related acquisition funding from M&Os & NNSA orgs will continue

- **Leverage key partnerships to further MBE implementation**

- Stockpile Services' Product Realization Integrated Digital Enterprise (PRIDE)
- NNSA Office of Technology Maturation
- NNSA Nuclear Weapon Surety and Quality Office
- NNSA Office of Systems Engineering and Integration
- Weapon Quality Programs at the Field Offices
- Managing and Operating (M&O) Partners
- Department of Defense (DoD)
- National Aeronautics and Space Administration (NASA)
- Department of Energy (DOE) Office of Chief Information Officer (OCIO)



- **Headquarters MBE Transition Team**
 - HQ lead and product realization subject matter experts (SMEs) from NNSA M&Os.

- **MBE Transition Coordination Committee**
 - Guide the project and coordinate the achievement of objectives at sites
 - Includes NNSA HQ direction / product realization managers from each DA and PA (to include PA representatives from SNL and LANL) / other relevant NNSA programs

- **Model Based Integrated Technologies (MBIT) Community**
 - Provide detailed technical and policy support to MBE Transition Team and Coordination Committee

Notional Levels of Interoperability

MBET-I



NNSA

- PRIDE
- Stockpile Services FPMs
- Other DP programs



MBE Transition Partners

- NNSA Participants
- M&O Management



MBIT

- DA/PA Community
- Committees (Steering, MBE, ECAD, etc.)

MBET-I SMEs



Milestones and Schedule (FY18-19)

Milestones:

■ **FY18 (Funding Year 0)**

- Call for papers - NSE pilots and studies (for FY19)
- Select pilots and studies for FY19
- Develop relationships with key NNSA partners

■ **FY19 (Funding Year 1)**

- Start MBE pilots / studies
- Initiate DA/PA “pairing” studies; Beginning MBE gap analysis at policy and procedure level
- Call for papers - NSE pilots and studies (for FY20)
- Select pilots and studies for FY20
- Begin DPBPS / **NAP24A revision processes**



Milestones and Budget (FY20-23)

■ FY20 (Funding Year 2)

- Produce MBE gap analysis at policy and procedure level
- Produce detailed MBE implementation plan
- Call for Paper- NSE Pilots and Studies (for FY21)
- Select pilots and studies for FY21
- Second round of MBE pilots / studies
- Begin additional DPBPS revisions (if needed)

■ FY21 (Funding Year 3)

- Negotiating DPBPS / **NAP24A** Site Impact Analysis (SIA)
- Third round of pilots / studies

■ FY22 (Funding Year 4)

- Achieve DPBPS revisions
- **Achieve NAP24A revisions**

■ FY23 (Funding Year 5)

- NNSA accepts product using model as product definition

- Main Selection Criteria
 - Alignment with MBET-I Goals
 - Return on Investment (Valuation)
 - NSE Pairings
 - Success Criteria
 - Viability
 - Visibility and Reporting
 - Project Plan
 - TRL/MRL (optional)
 - Operational Capabilities (optional)

| Pilot / Proposal Name | | | | |
|------------------------------|-------|--------|----------------|-----------------------------|
| Proposing Site(s) | | | | |
| Cost (\$k) | | | | |
| Category | Score | Weight | Category Total | Notes |
| Alignment | | 1 | 0 | [Explanatory notes go here] |
| ROI/Valuation | | 1 | 0 | |
| NSE Pairings | | 1 | 0 | |
| Success Criteria | | 1 | 0 | |
| Viability | | 1 | 0 | |
| Visibility and Reporting | | 1 | 0 | |
| Project Plan | | 1 | 0 | |
| O: TRL / MRL | | 1 | 0 | |
| O: Operational Capabilities | | 1 | 0 | |
| Pilot / Proposal Total Score | | | 0 | |



- **Cyber**

- built into the technical and organizational aspects of MBE implementation
- features as a key subject of MBET-I's collaboration with NSE stakeholders
- NSE model certification can serve as a solution to issues associated with digitalization of design/production processes

- **Business practice change and momentum**

- Obstacles: complexity of policy, NSE politics, and a resistant culture
- Need management commitment at the M&Os to make personnel available and to support change initiatives

- **Technical**

- need to be addressed to ensure that models can equal and exceed drawing based formats in the NSE system
- Availability of resources and connections to secure enterprise operation will be the main factors in how prevalent this risk is to MBET-I goals

- **Programmatic**

- Linking MBE transition initiative work to W80-4 or W78 Replacement Program can tie success of MBE to specific programs
- At the same time, MBE efforts need to show their value to programs in order to be taken seriously as future of NSE's design, production, and qualification activities
- JTA / tooling applications should constitute a portion of MBE related focus in order to mitigate programmatic risks to MBE successes



Questions / Comments / Suggestions?

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