



# Advisory Board: R&M Engineering in the DoD Digital Engineering Environment

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Office of the Under Secretary of Defense for  
Research and Engineering

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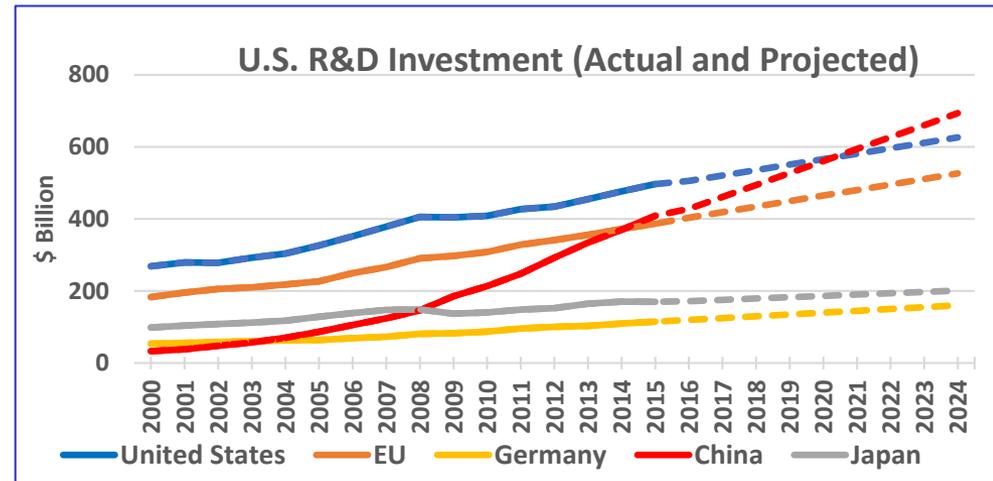


# The World Today

## Technology Is Transforming the Battlespace



- The proliferation of knowledge and technology erodes historic U.S. advantages
- Our near-peers are increasing their rate of investment in military R&D
- A hyper-competitive environment for National Security technologies
- The discriminators are speed and cycle time



- NSF 2015 data predicted R&D investment parity with China in 2020
- Feb 2018, NSB estimates China R&D investment parity with U.S. by end of 2018

- 2017 GLOBAL R&D FUNDING FORECAST WINTER 2017 Industrial Research Institute, R&D Magazine

R&D – Research & Development  
NSB – National Science Board

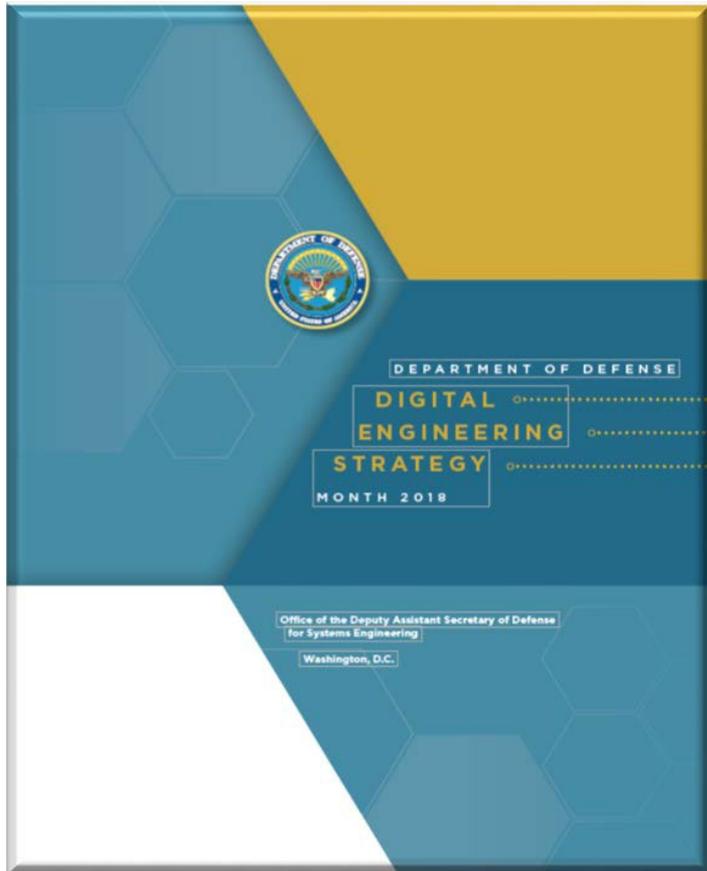


# *Implementing the National Defense Strategy*



- **The Office of the Under Secretary of Defense for Research & Engineering (OUSD(R&E)) mission is to foster technical dominance across all DoD missions areas through scientific discovery and rapid capability prototyping.**
- **OUSD(R&E) seeks to realign government, industry, Federally Funded Research and Development (FFRDCs), and laboratories research and engineering efforts to support the National Defense Strategy (NDS).**
- **The System Architecture and Engineering community needs to step up to the NDS challenge by providing technical leadership and skills.**

# Digital Engineering Strategy



- **Digital Engineering Strategy**
  - Basic capabilities needed by Services and Agencies to begin use of Digital Engineering practices
- **Objective**
  - Guide the planning, development, and implementation of digital engineering across the services and agencies
- **Expected Impact**
  - Increase technical cohesion and awareness of system in lifecycle activities
  - Reform the Department’s business practices for greater performance and agility
- **Coordination**
  - Approved by USD(R&E), DASD(SE), and each Service

<https://www.acq.osd.mil/se/docs/2018-DES.pdf>

# Digital Engineering Overview

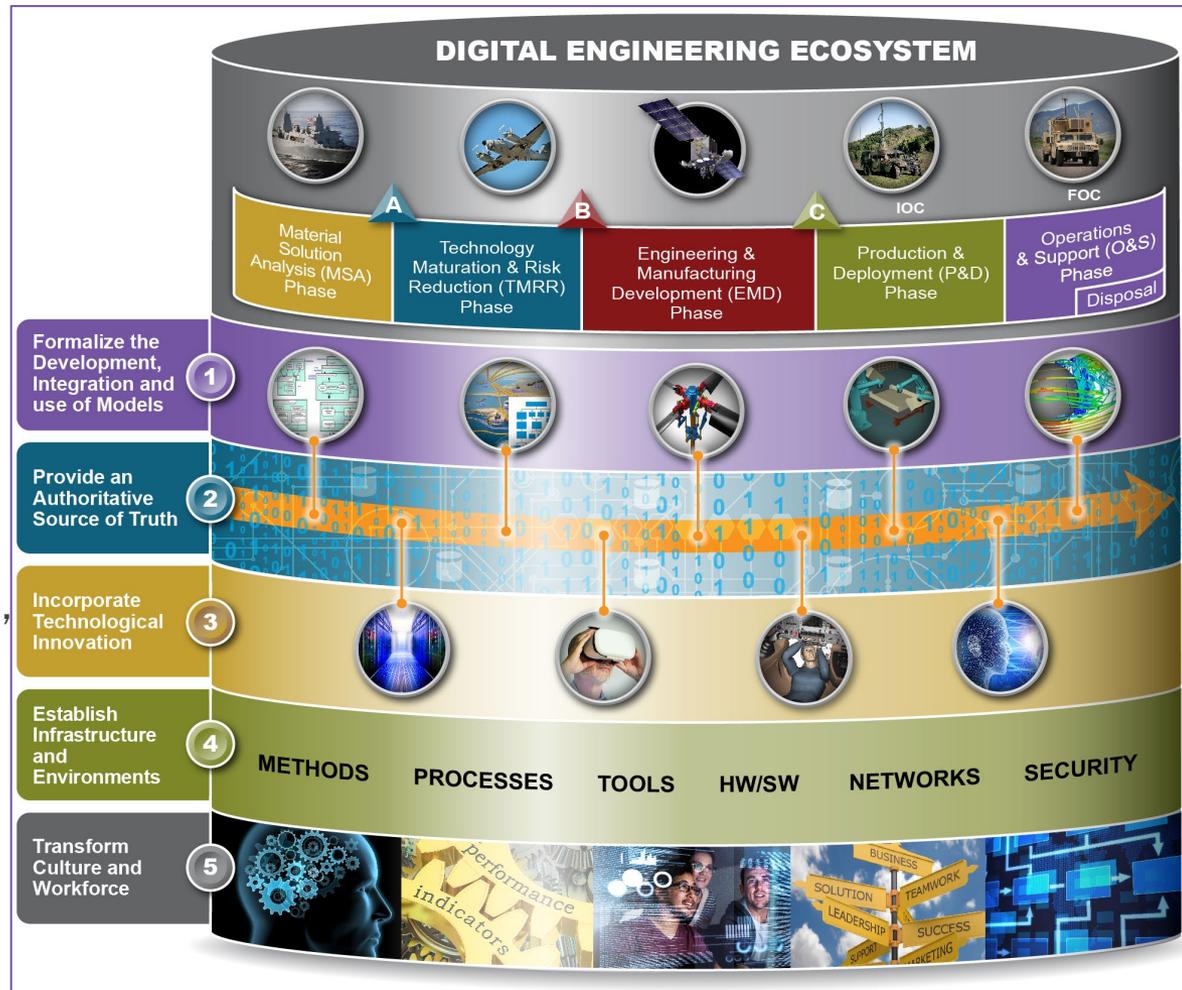


## What is Digital Engineering?

- Combines model-based techniques, digital practices, and computing infrastructure
- Enables delivery of high pay off solutions to the warfighter at the speed of relevance

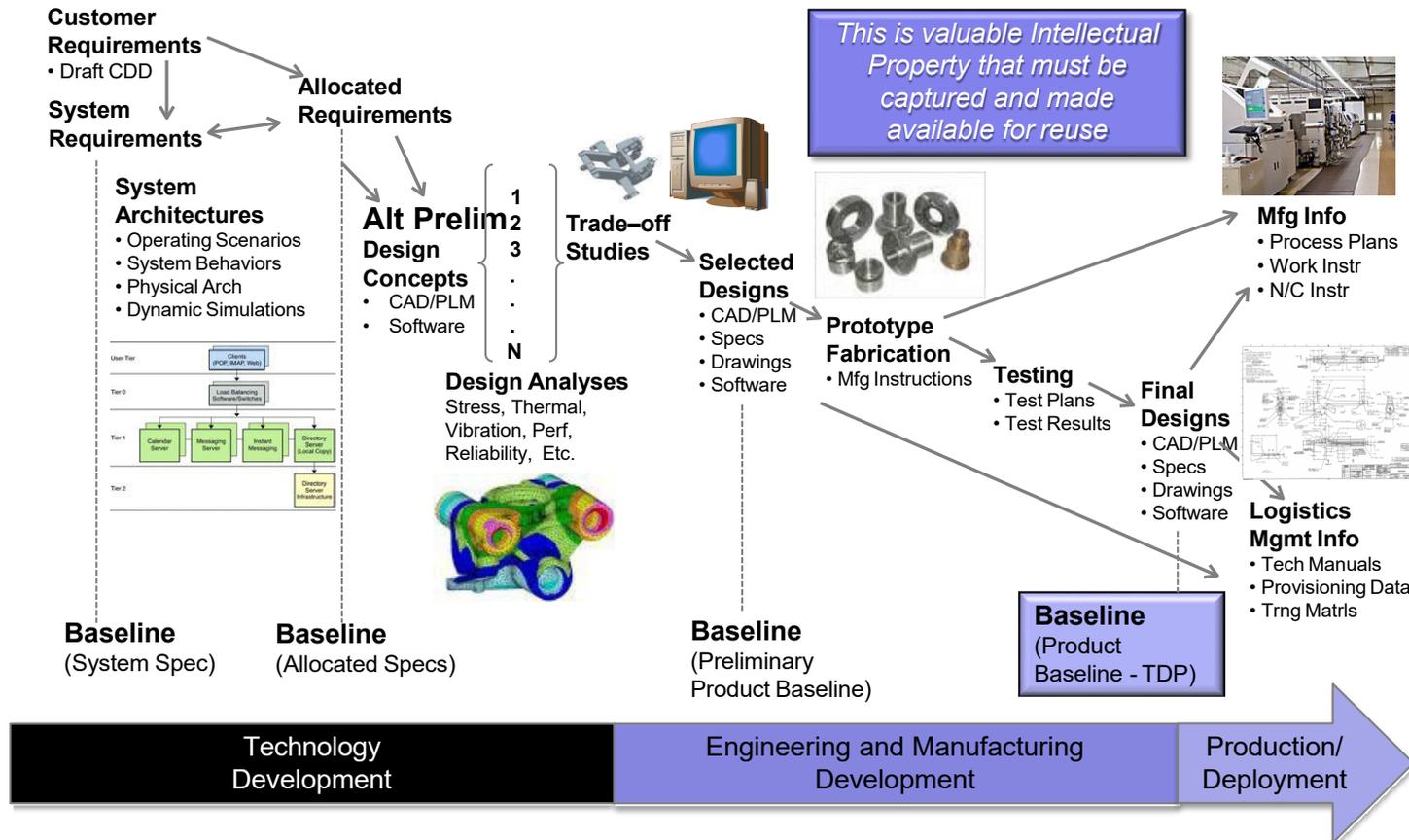
## Reforms Business Practices

- Digital enterprise connects people, processes, data, and capabilities
- Improves technical, contract, and business practices through an authoritative source of truth and digital artifacts



*Modernizes how we design, operate, and sustain capabilities to outpace our adversaries*

# Lifecycle of Data



# Summary



- **R&M discipline needs to:**
  - Adapt to the “go-fast” environment of the DoD
  - Combine model-based techniques, digital practices, and computing infrastructure
- **R&M engineering data sources and models needs to be established across the lifecycle as part of an Authoritative Source of Truth**
- **Digital Engineering moves the R&M engineering discipline towards an integrated model-based approach**
  - Through the use of digital environments, R&M processes, methods, tools, and digital artifacts
  - To support planning, requirements, design, analysis, verification, validation, operation, **and** sustainment of a system

**Digital Engineering environment delivers proven technology more quickly and affordably with improved Readiness.**

# DoD Research and Engineering Enterprise

## Solving Problems Today – Designing Solutions for Tomorrow



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<https://www.acq.osd.mil/chieftechologist/>

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