

National Defense Industrial Association Systems and Mission Engineering Conference

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Data Centricity: Multi-Directional Flow of Specialty Engineering Data Throughout the Life Cycle

Mr. R. Chris DeLuca

Director Specialty Engineering

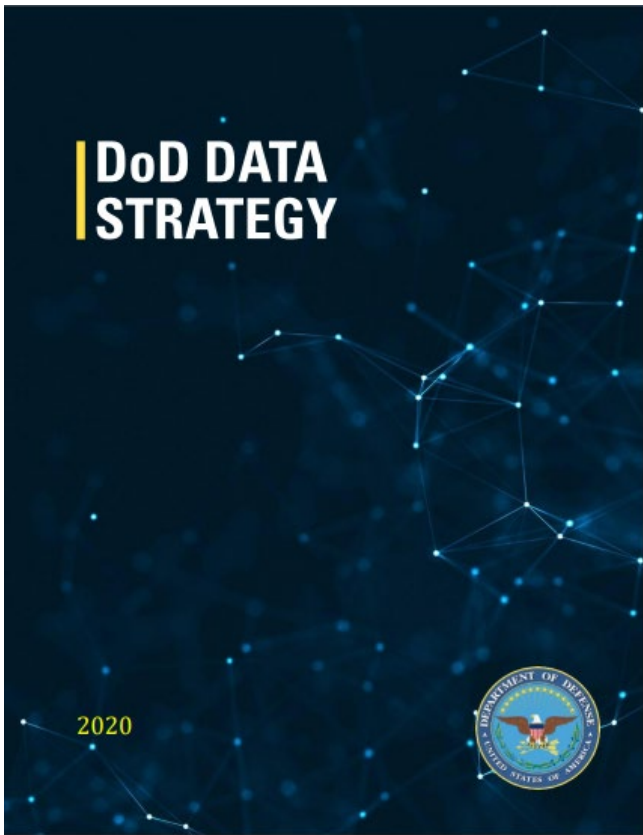
Office of the Executive Director, Systems Engineering and Architecture

Office of the Under Secretary of Defense for Research and Engineering





DoD Is a Data-Centric Organization



David L. Norquist, Deputy Secretary of Defense
2020

- "Unleashing data to advance the National Defense Strategy"
- **Guiding Principle #5: Enterprise-Wide Data Access and Availability**
"DoD data must be made available for use by all authorized individuals and non-person entities through appropriate mechanism."
- "Data underpins digital modernization and is increasingly the fuel of every DoD process, algorithm, and weapon system."

"We have a very large AI challenge ahead of us but in order to do this, we have to get the data right"

Craig Martell, Pentagon CDAO, 2022 Intelligence & National Security Summit (C4ISRNET September 15)



Increasing Complexity and Challenges

A collage of images representing supply chain complexity and military operations. The top left shows silhouettes of two people in a control room looking at a globe. The top right shows a network of red gears with various icons like a calendar, a factory, and a briefcase. The bottom left shows a large container ship with "EVERGREEN" on its side. The bottom center shows a world map with network lines. The bottom right shows a forklift loading a truck.

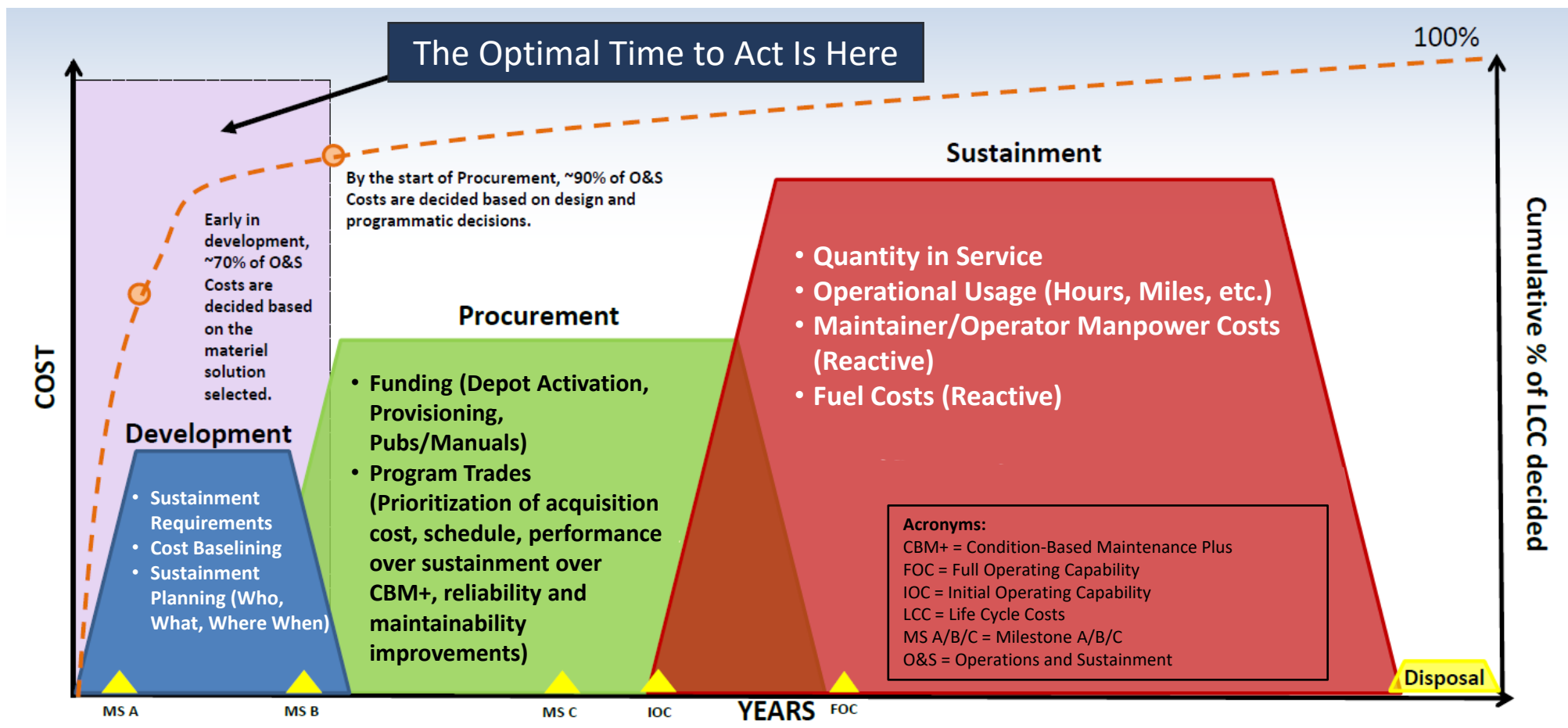
SEE – UNDERSTAND – DECIDE – ACT

BUILD RESILIENCY INCREASE LETHALITY REDUCE DEMAND

Source: 2022 PSM Workshop, RDML Dion English, SC, USN



“Bake In” Data During System Design



Achieve Resiliency and Lethality with Optimal Demand During Design and Development

Source: 2022 PSM Workshop, Principal Deputy Assistant Secretary of Defense (Sustainment)

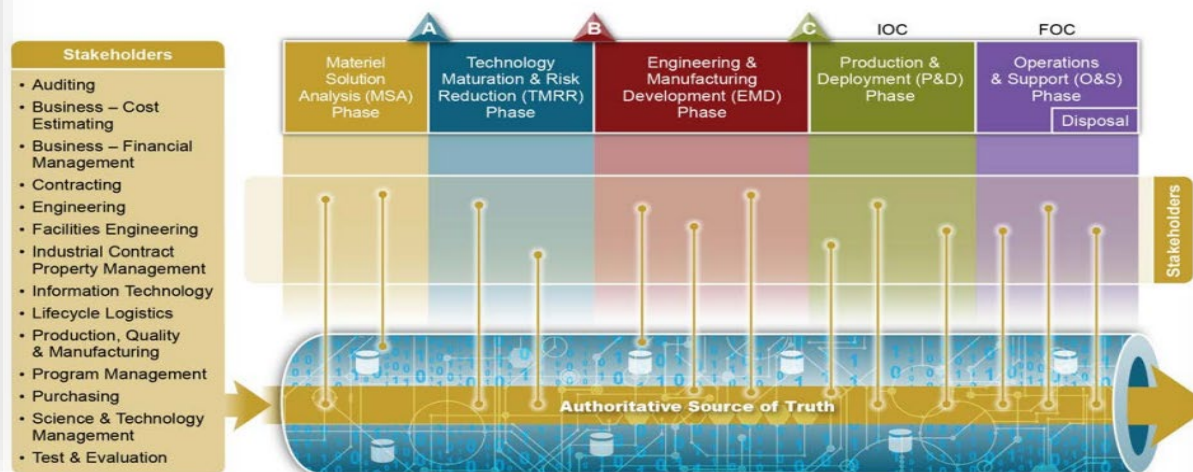
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Lesson Learned: Ecosystem Needed



U.S. Air Force photo by Jill Pickett
HIGH MACH, Vol 67, No 12



Authoritative Source of Truth, Digital Engineering Strategy

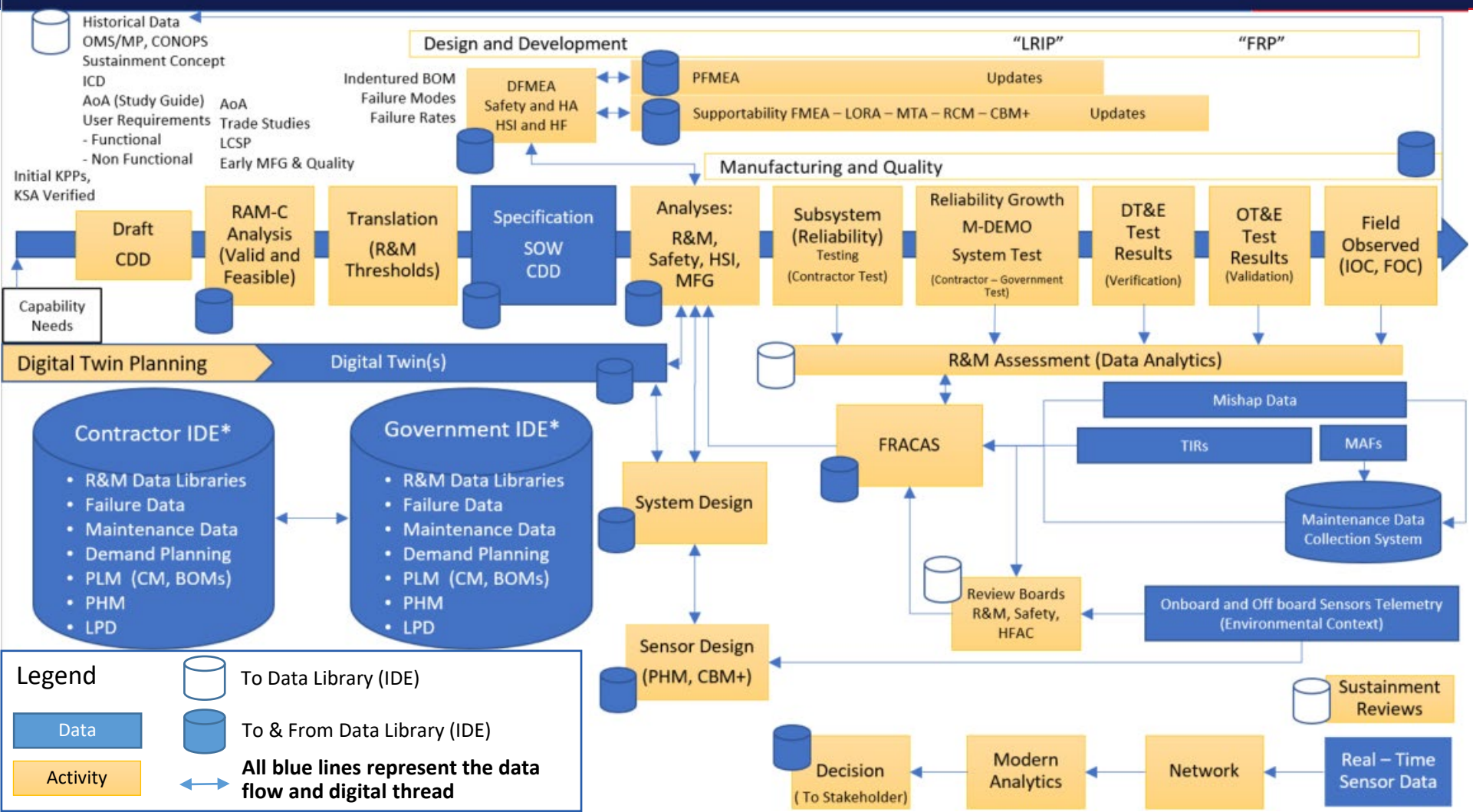
Photo By: Army Spc. Kayla Anstey, “Digital Transformation, AI Important in Keeping Battlefield Edge” June 9, 2022
[960cyber.afrc.af.mil/News](https://www.960cyber.afrc.af.mil/News)



“Warfighters at all echelons require tested, secure, seamless access to data across networks, supporting infrastructure, and weapon systems out to the tactical edge”
DoD Data Strategy, 2020



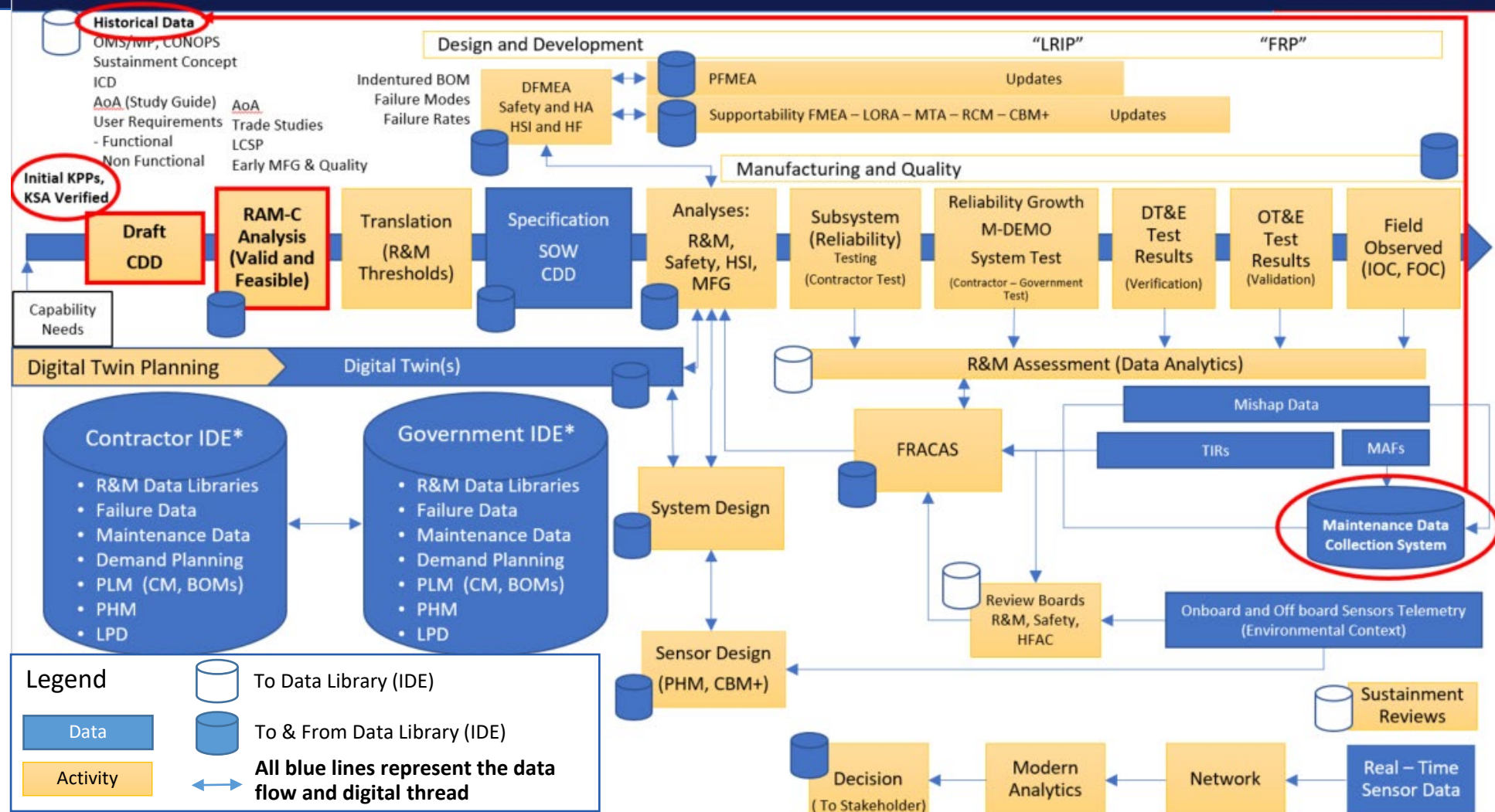
Engineering Data in a DE Ecosystem



*Contractually agreed to content, views, access, and delivery of data.



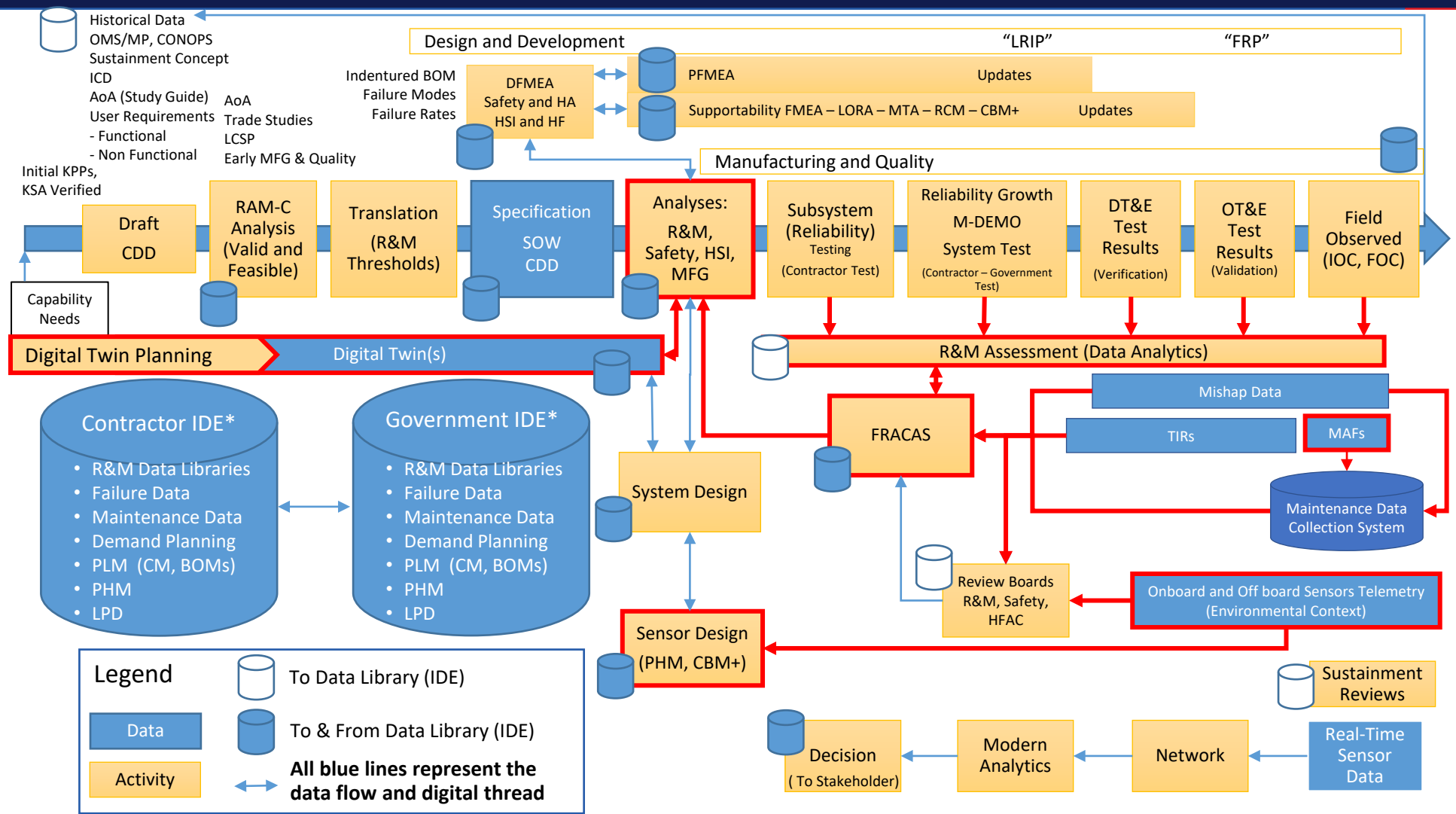
Early Application in Engineering Data



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Failure Reporting Analysis and Corrective Action System (FRACAS) Feedback to the Digital Twin



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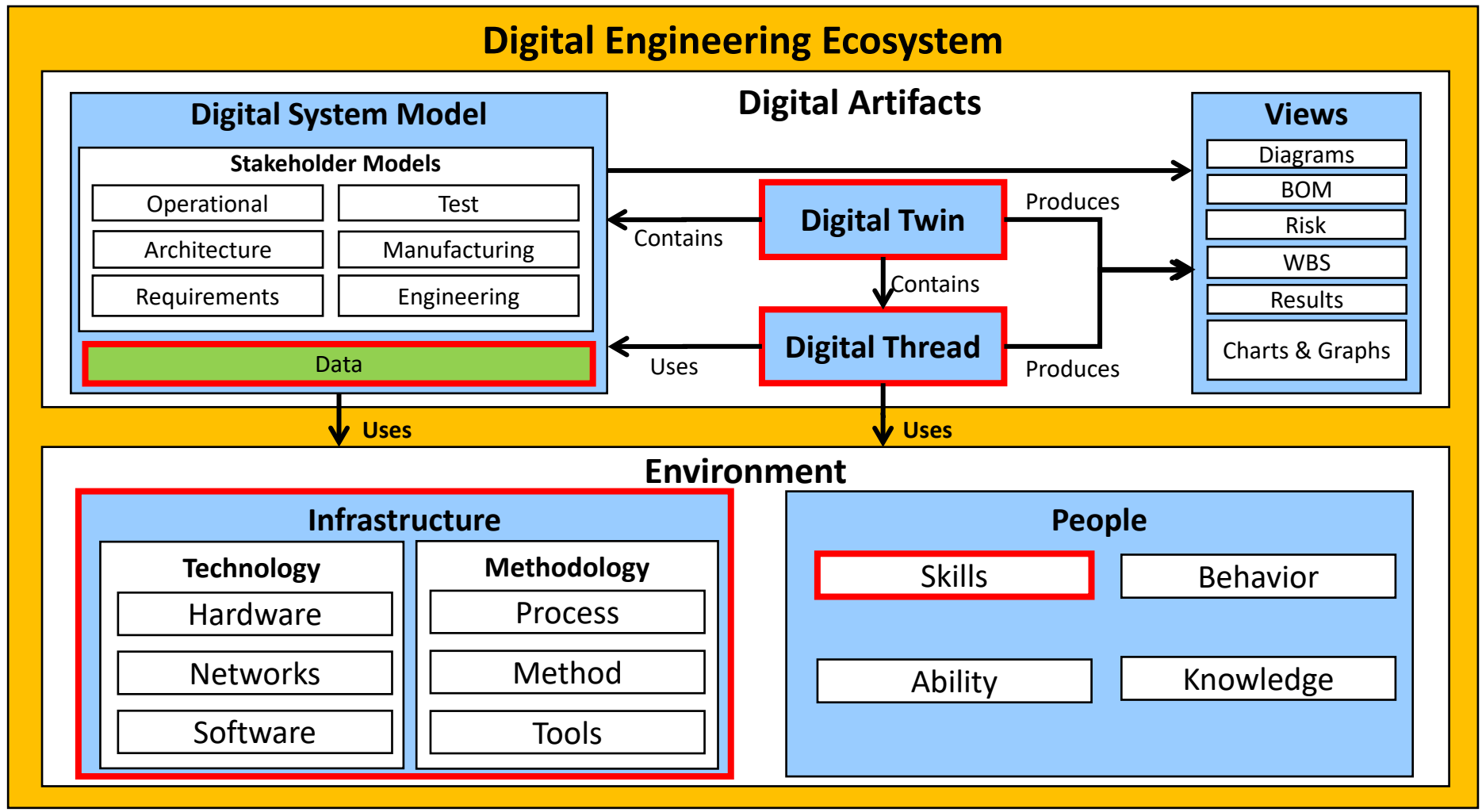
Digital Engineering Ecosystem

Infrastructure includes:

- Compute & Storage
- HVAC
- DevSecOps Tools
- AI/ML/DT Tools
- Simulation Tools
- MLS/CDS Security
- Authority to Operate
- Budget

Skill sets include:

- IT, OT, PIT
- Information Assurance
- Data Engineers & Scientists
- System Admins
- High Performance Compute
- SW Developers
- Scrum Masters
- Security ISSO
- System Engineers
- HW Designers
- Specialty Engineers
- Budget





Its All About the Data – Enhanced by AI



Photo By: Army Spc. Kayla Anstey, “Digital Transformation, AI Important in Keeping Battlefield Edge” June 9, 2022
960cyber.afrc.af.mil/News

... AI, Machine Learning, NLP ... to be continued



Contact

Office of the Under Secretary of Defense for
Research and Engineering

osd.r-e.comm@mail.mil | Attn: Specialty Engineering

<https://www.cto.mil>