Enabling the Digital Worker Through Augmented Reality:

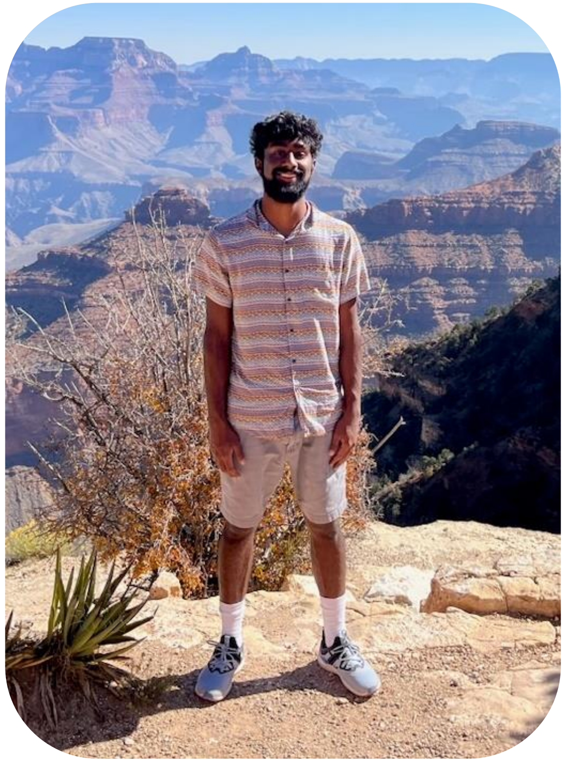
A Pathway to Digital Manufacturing

GLOBAL PRODUCT DATA INTEROPERABILITY SUMMIT 2024

Rebecca Peterson
Roshan George
Austin Wilson

Presenters

Austin Wilson
Mfg. Engineering Manager
Deployment Site Lead



Roshan George
NG Future Technical Leader
Integration Lead

Rebecca Peterson
Systems Engineer
Project Lead

Agenda

- The Role of AR in Manufacturing
- Data Interoperability and Digital Threads
- Integration of AR with Manufacturing Source Systems
- Example Use Case from Northrop Grumman
- Lessons Learned
- Conclusion and Q&A

The Role of AR in Manufacturing

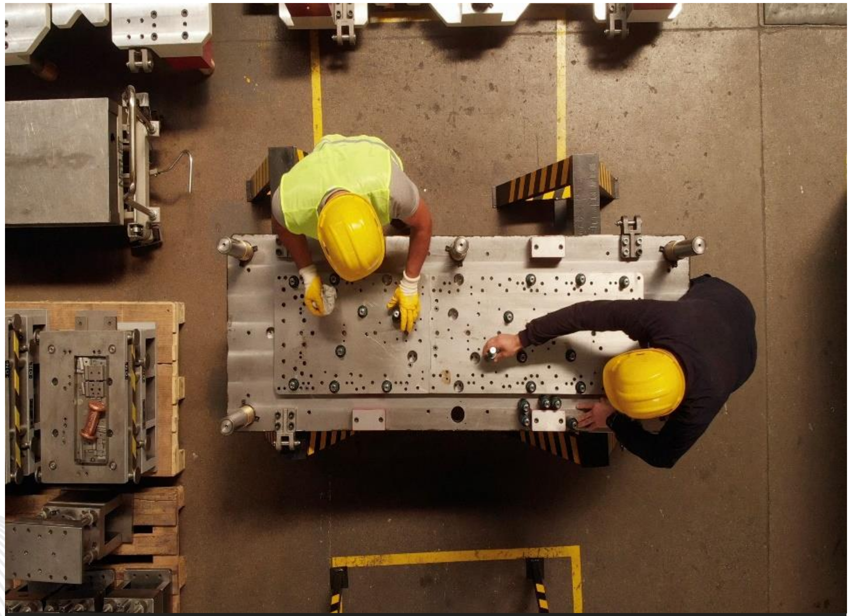
WHAT IS AUGMENTED REALITY?

A technology that overlays interactive digital, computer-generated content onto the user's view of the real-world.

How does it apply to manufacturing?

AR enables the "digital worker" through bringing the digital world to the physical environment through AR capabilities such as work instructions, training, or remote assistance.

AR, Manufacturing, & Data



Operational Efficiency

Data Integrity

Data Interoperability and Digital Threads

Defining Digital Thread/Integration

FORMAL DEFINITION

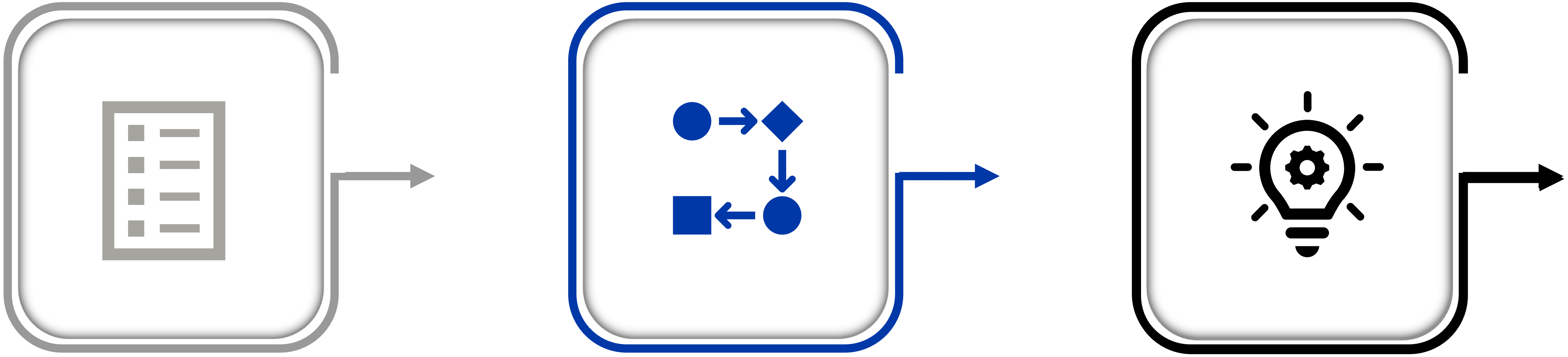
DoD 5000.97: An extensible and configurable analytical framework that seamlessly expedites the controlled interplay of technical data, software, information, and knowledge in the digital engineering ecosystem, based on the established requirements, architectures, formats, and rules for building digital models.

Role: It is used to inform decision makers throughout a system's life cycle by providing the capability to access, integrate, and transform data into actionable information.

SIMPLE DEFINITION

A digital thread is a connection between authoritative data and context across a system's lifecycle.

Process



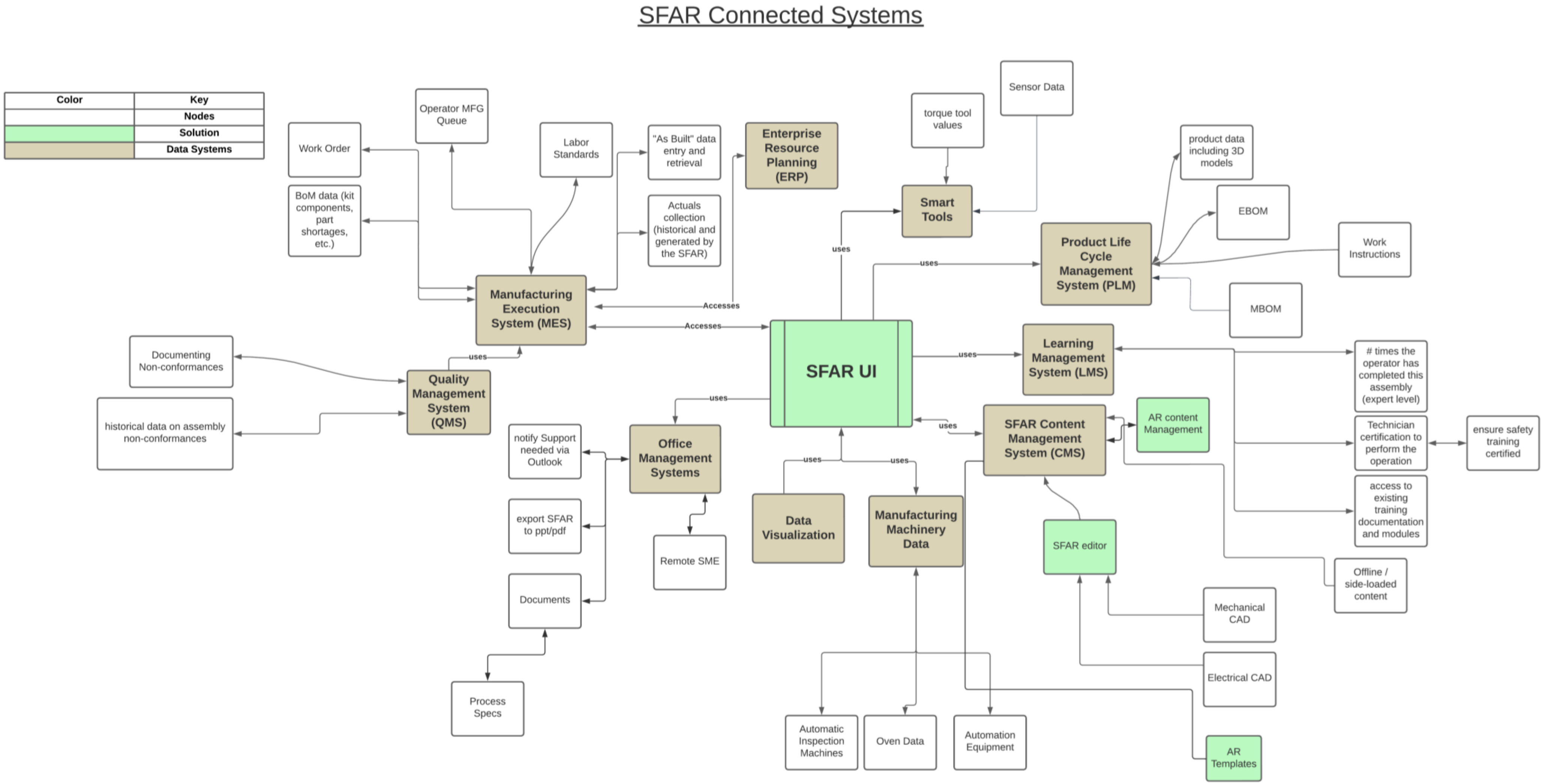
Systems Engineering
- Requirements
- Use Cases

Integration Design
- Architecture Diagrams
- Data Elements

Implementation and Testing

Architecture for SFAR Integration

Global Product Data Interoperability Summit | **2024**



Integration Takeaways

Understand your PROCESSES and DATA

- Site vs Enterprise
- What data lives in which system?
- How does AR fit into the process?

Design for flexibility and scalability

- Hub and Spoke
- Consider System Migrations

Prioritize Threads that add the most value

Real-World Use Cases

Identifying Your Use Case

HIGH RATE

High-rate production programs

- Allows for a faster impact to ROI
- Establishes a baseline of what AR looks like in your business

OPEN TOLERANCE

Focus on smaller processes with open tolerance

- Tie base locations
- Component orientation

MODELING

Benefit greatly from accurate up to date models

- Expands useability and scalability of AR
- Maintain engineering accuracy

Execution

Launch Party

Get excited live demo for employees

- Use real business applications vs standard vendor demos
- Engage with all levels of production at once
- Celebrate the accomplishments

Trial/Test

Execution is key

- Allow for trial/test builds to understand how AR truly fits in the process
- Dedicate time to learn and adjust on the go
- Building is where the value is found

Lessons Learned

BUSINESS CASE

Not Enough Business Justification for Specific Use Cases:

- Use cases in current state
- Utilize existing AR capabilities
- Ensure modeling is sufficient
- Find a process/program and GO.

SCHEDULE

Not Scheduling Sufficient Time for Development and Test:

- Learn and Develop process
- Bake in ample time in schedule for development and test
- Rushing a deployment leads to more problems than solutions

RESOURCES

Not Obtaining Additional Resources:

- Large effort that needs ample resources and time
- Ensure support for various phases
  - Deployment
  - Scaling

AR enables the “Digital Worker”

An Integrated AR Solution is only as good as your data and processes

Take the leap!

Questions?