MathWorks and NI Interoperability

Joel Van Sickel – Senior Application Engineer

MathWorks

Improved Workflows

Better Support

Combining Modeling with Real-Time Simulation & Measurements

- This collaboration will help customers better address their needs for technical computing and Model-Based Design with automated test and automated measurement systems
  - Improve the user's workflow between MathWorks software and NI hardware and software products
  - Provide better technical and engineering support services to our mutual customers
- The two companies will share tools and expertise to enable these goals

Streamlining Design and Test Workflows

MathWorks

MATLAB - Access real-world data

- Toolboxes and NI hardware drivers
- Importing LabVIEW measurement data
- Importing VeriStand results

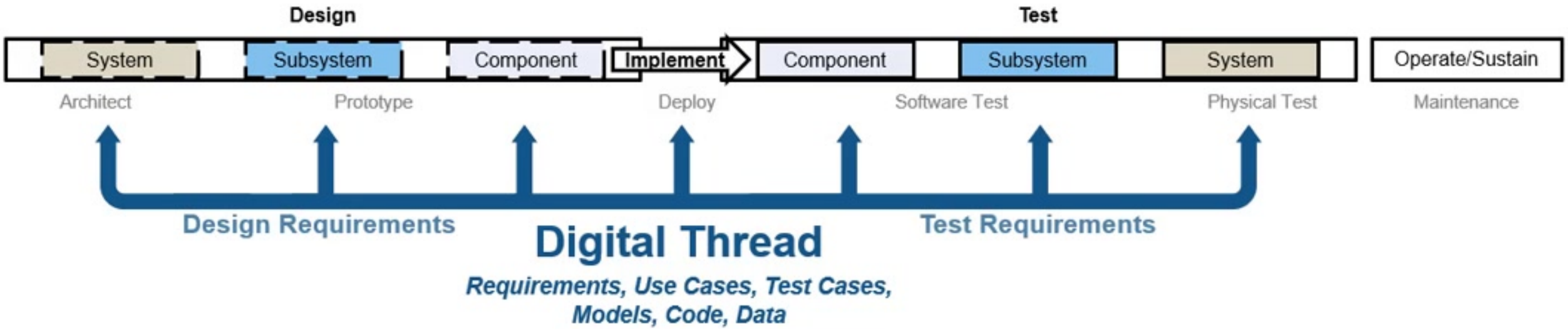
Simulink – Deployment for real-time testing

- MATLAB code and Simulink models running on NI hardware using automatic C code generation

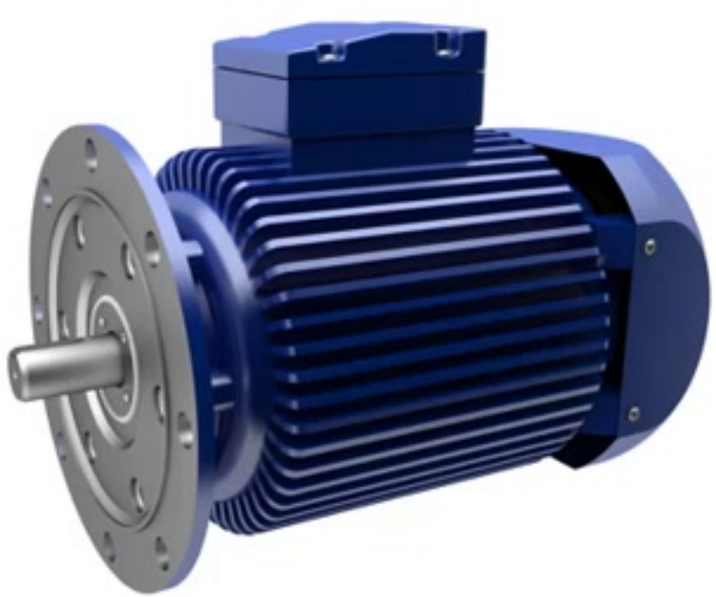
NI Software and Modular Hardware - Perform analysis and deploy models

- Perform data analysis, control system design, signal processing, and simulation
- Run MATLAB code and Simulink models during test
- Access analysis results and modeling data through an integration with MATLAB and Simulink

Typical Design Process



Major Design Components



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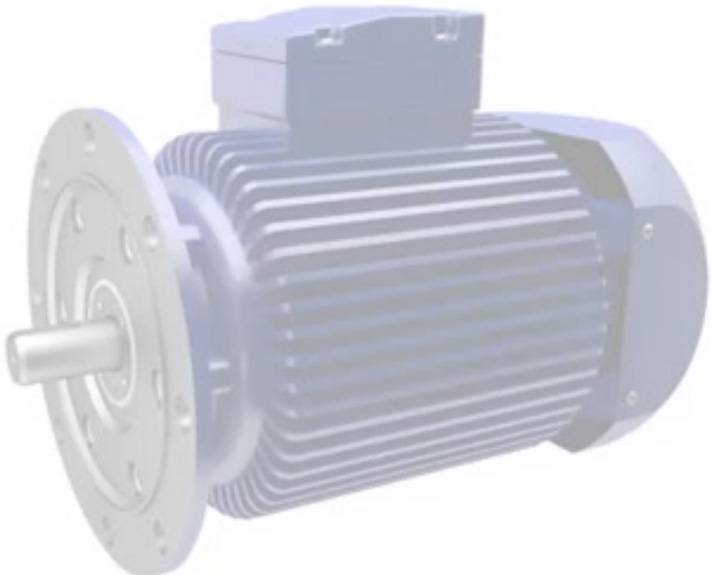
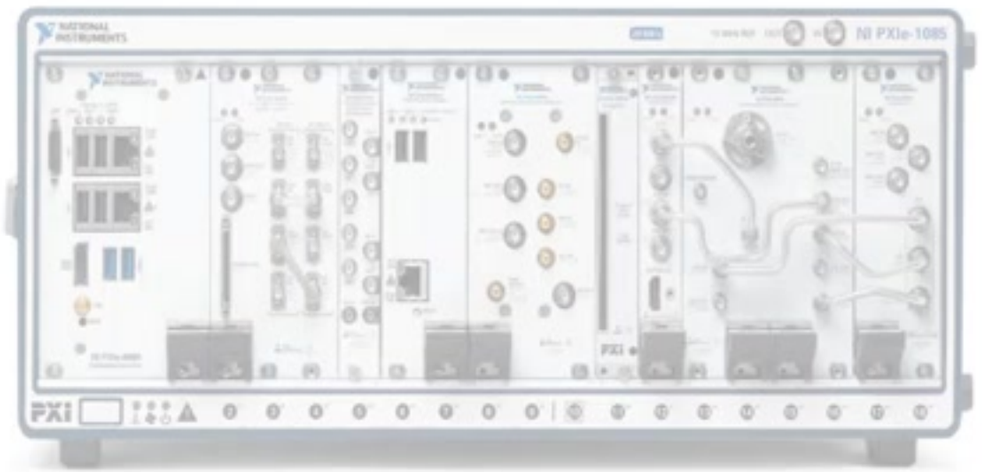


Controller



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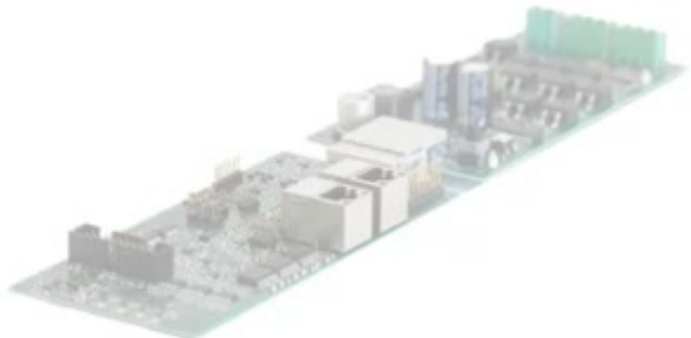
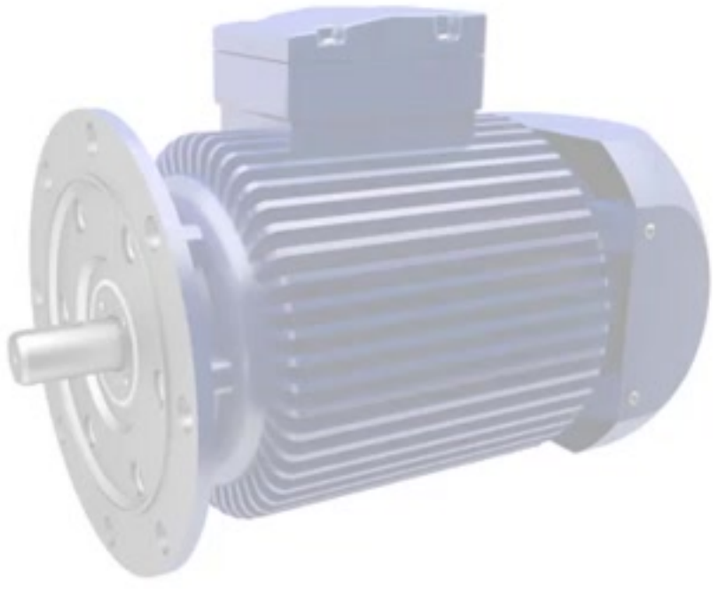
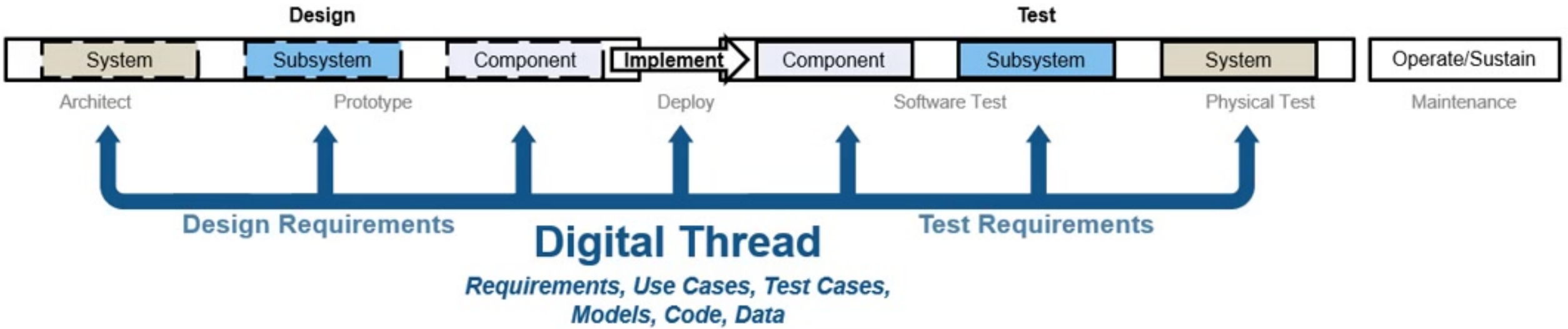


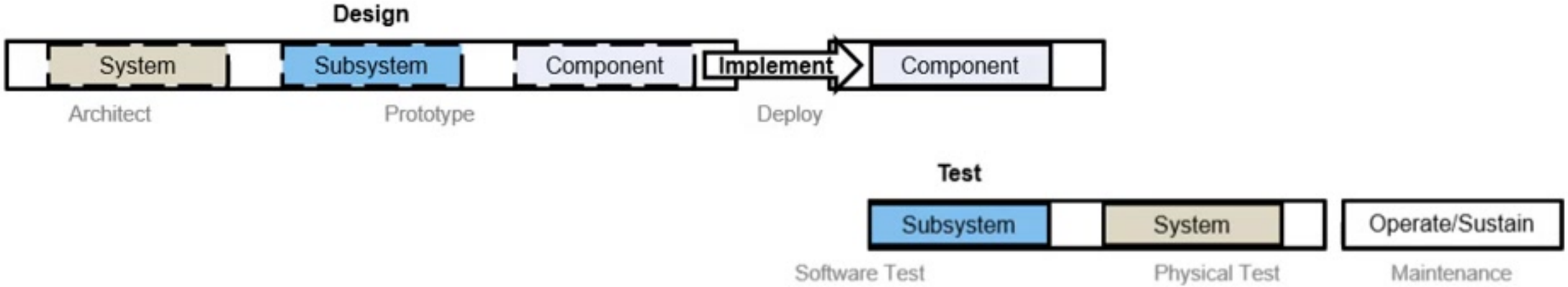


Test System

Typical Design Process



Moving Testing to the Left



Using MathWorks and NI to Simulate/Virtualize Systems

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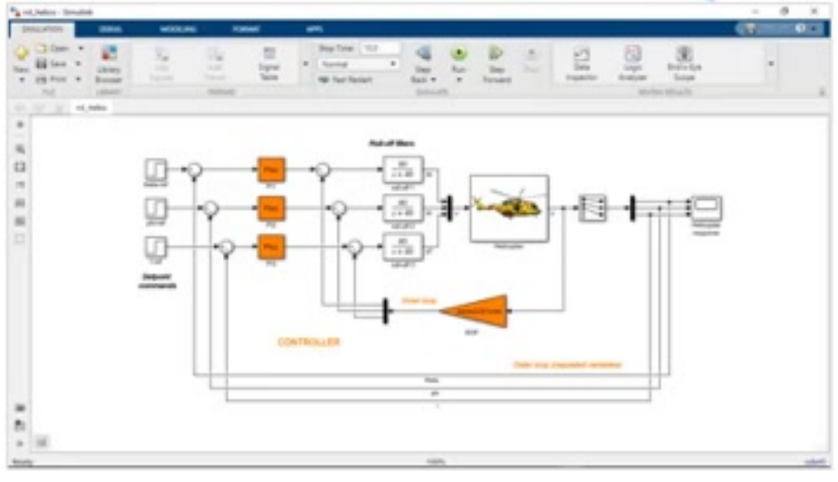
Simulink



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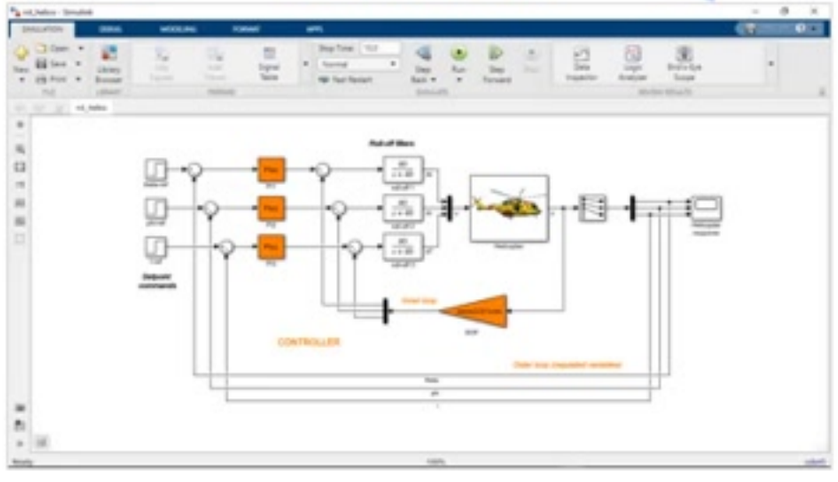
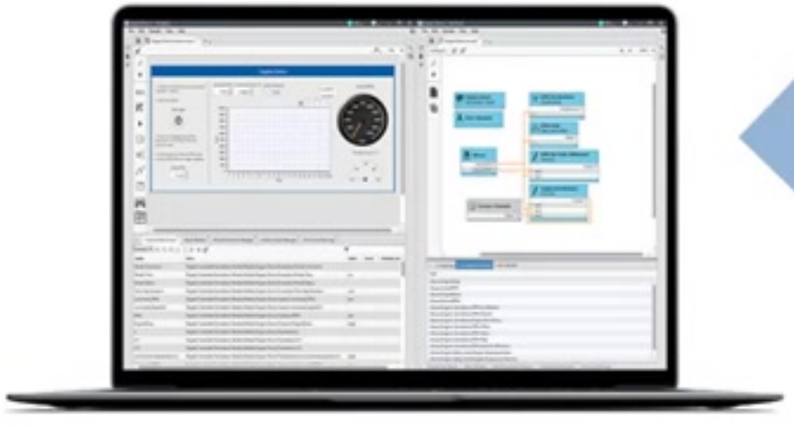
Simulink



VeriStand



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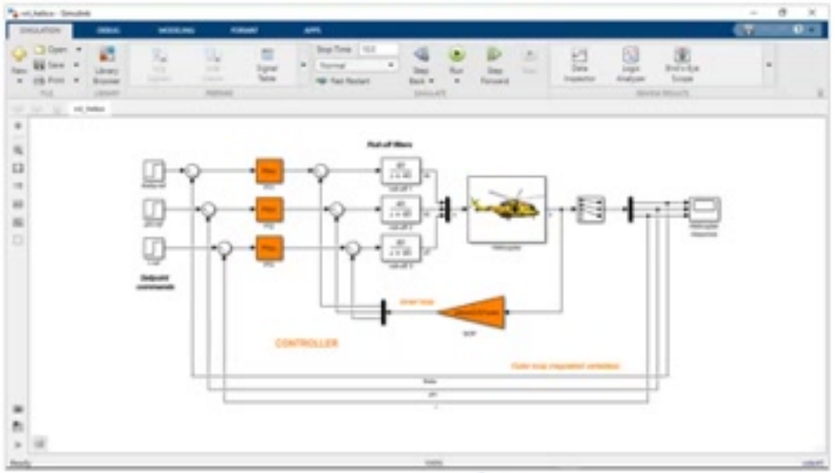
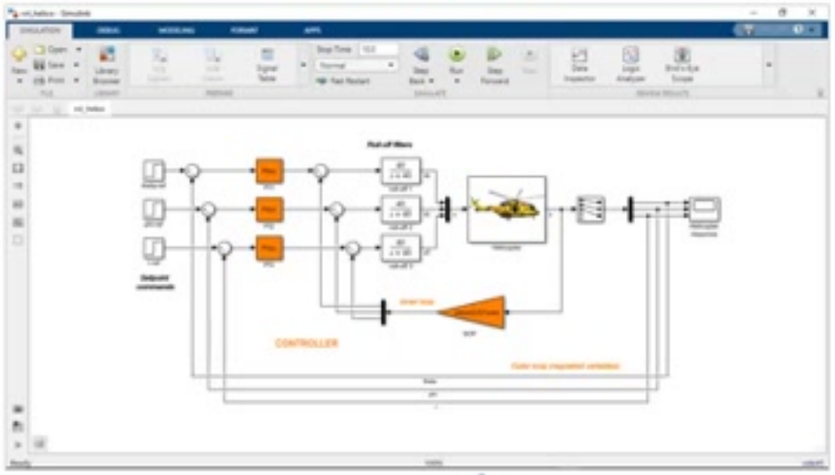


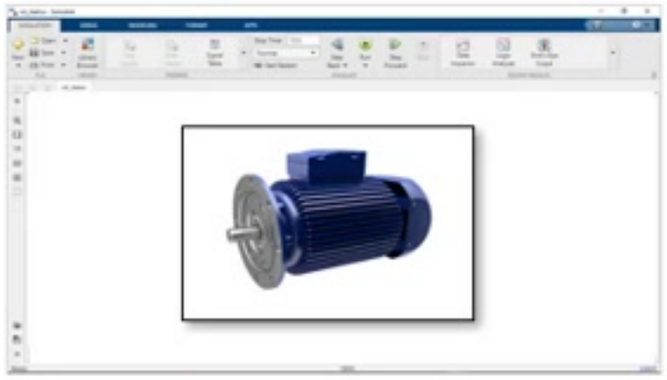
Using MathWorks and NI to Simulate/Virtualize Systems

Simulink

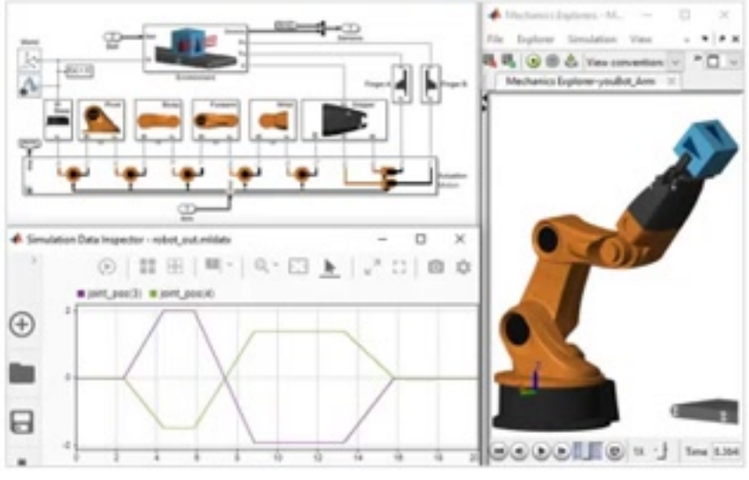


VeriStand

Using MathWorks and NI to Simulate/Virtualize Systems



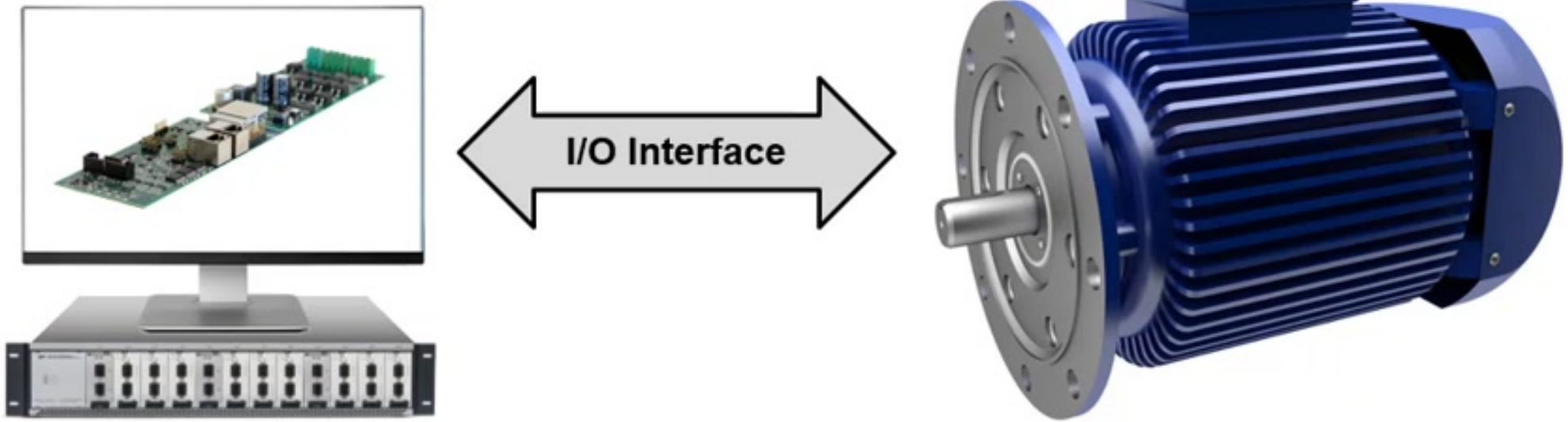
Simscape



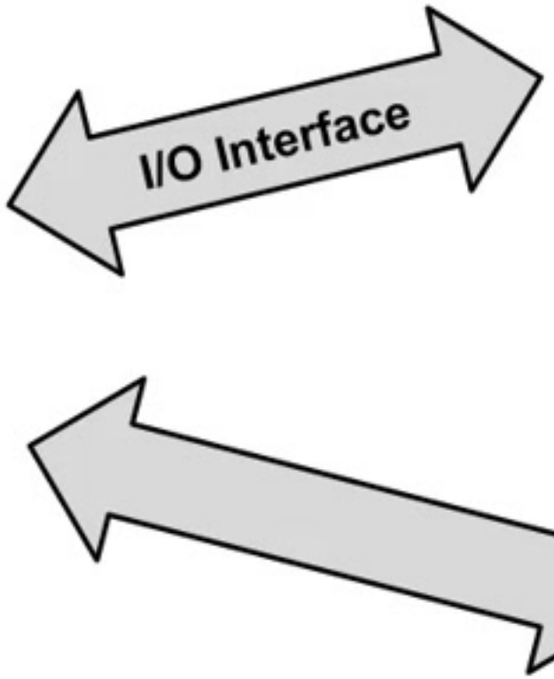
Use Cases

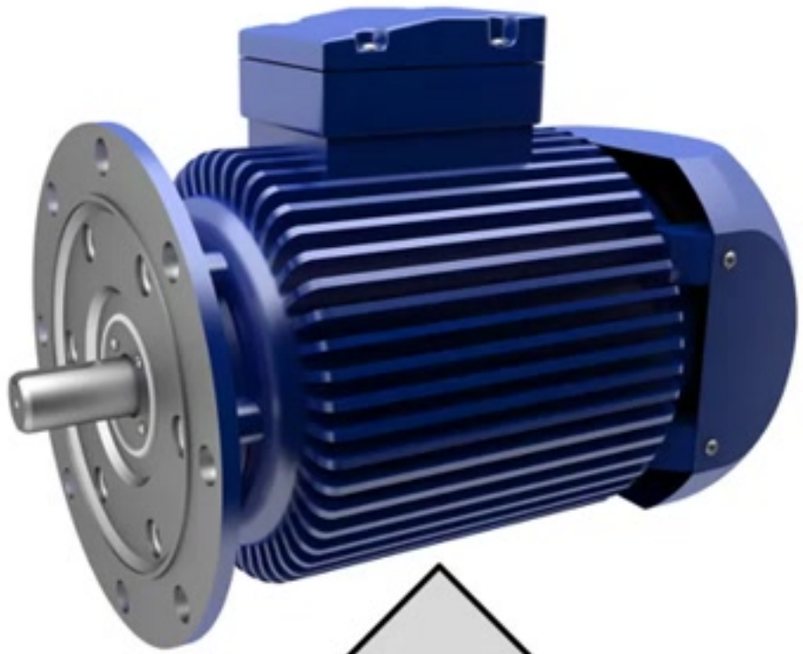
- Rapid Control Prototyping
- Hardware in the Loop Testing
- Test System Design

Rapid Control Prototyping



Rapid Control Prototyping





Hardware in the Loop Testing

I/O Interface

Hardware in the Loop Testing

I/O Interface

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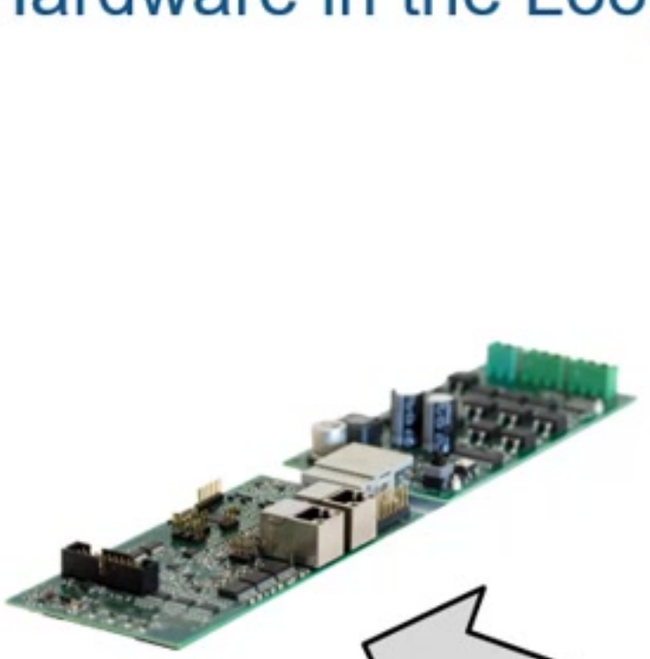
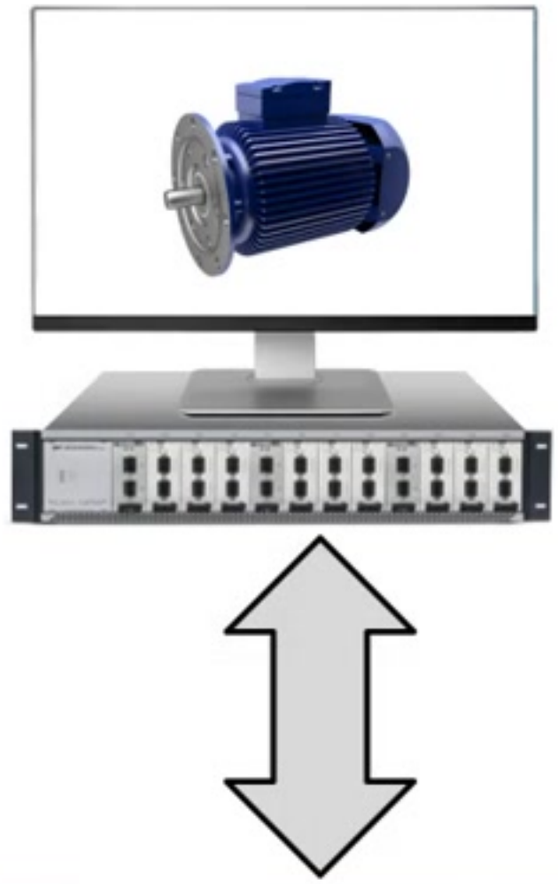
Hardware in the Loop Testing



I/O Interface



Test System Design

I/O Interface

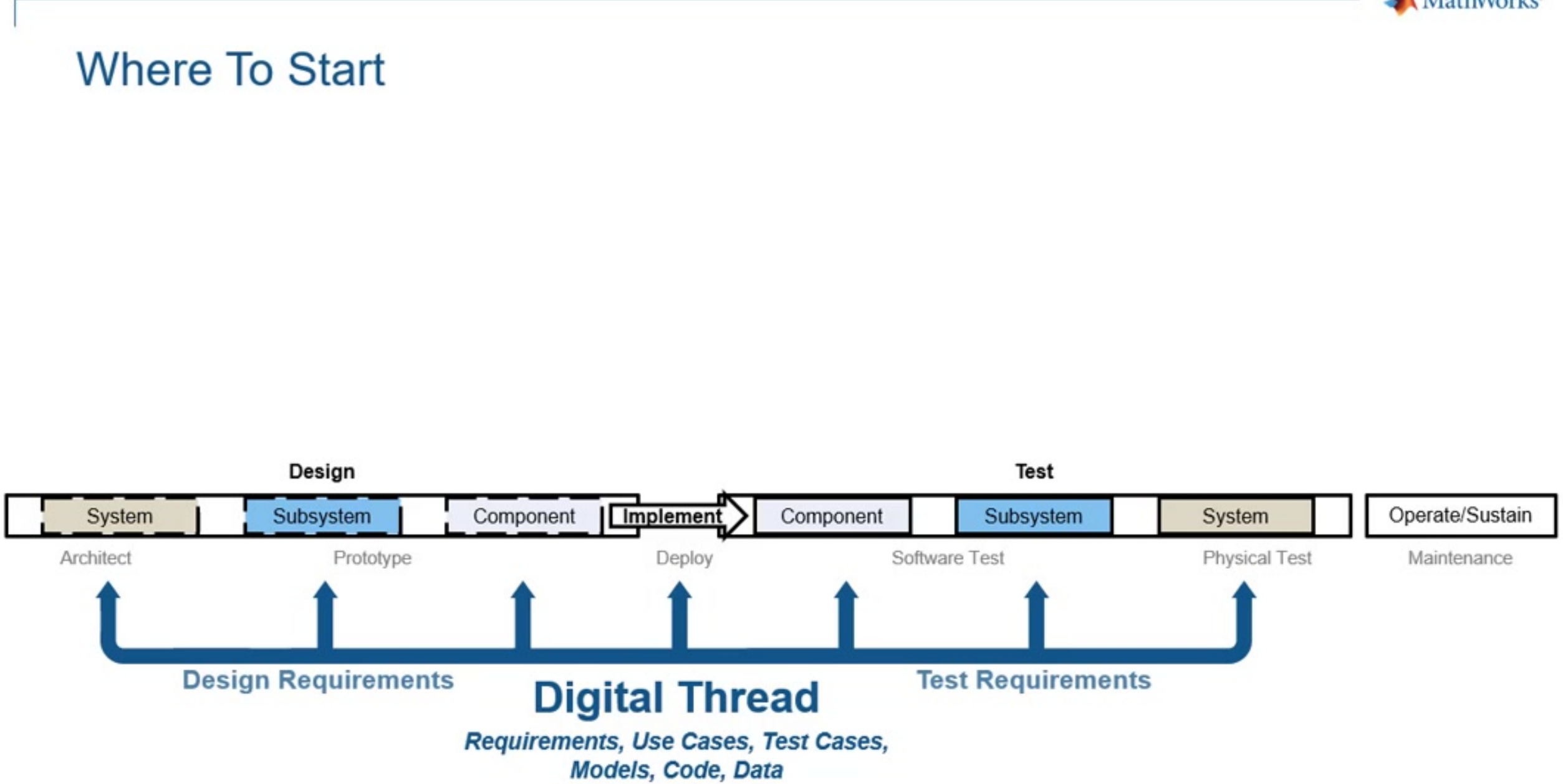
Test System Design

I/O Interface

Test System Design

I/O Interface

Where To Start



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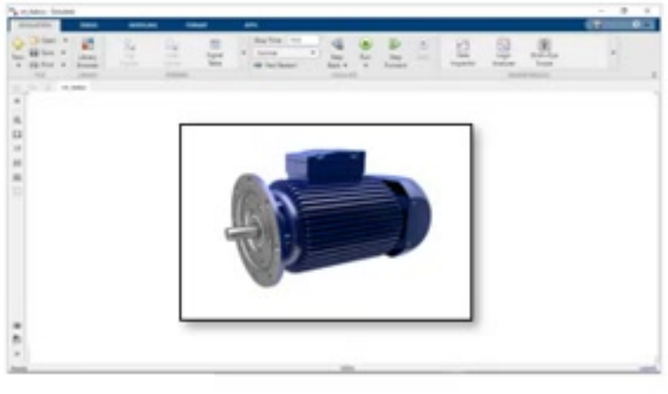

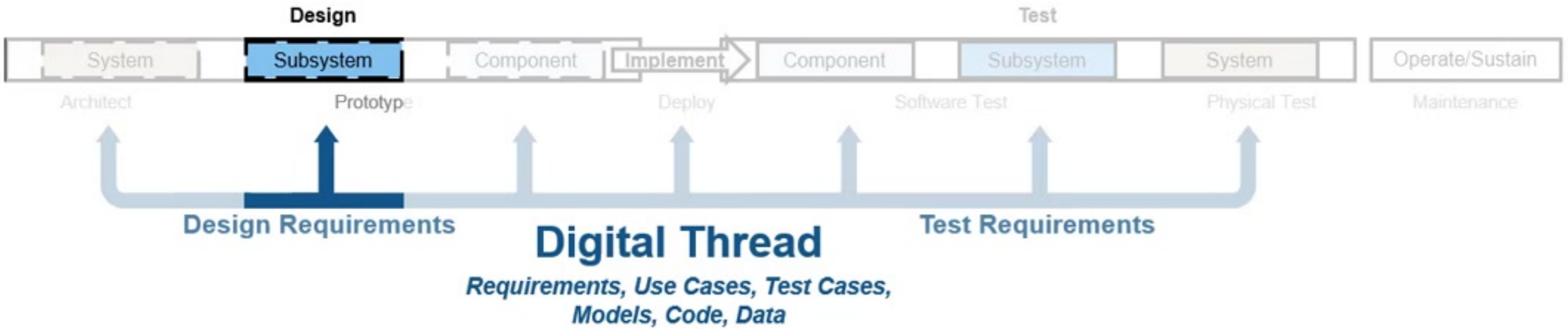

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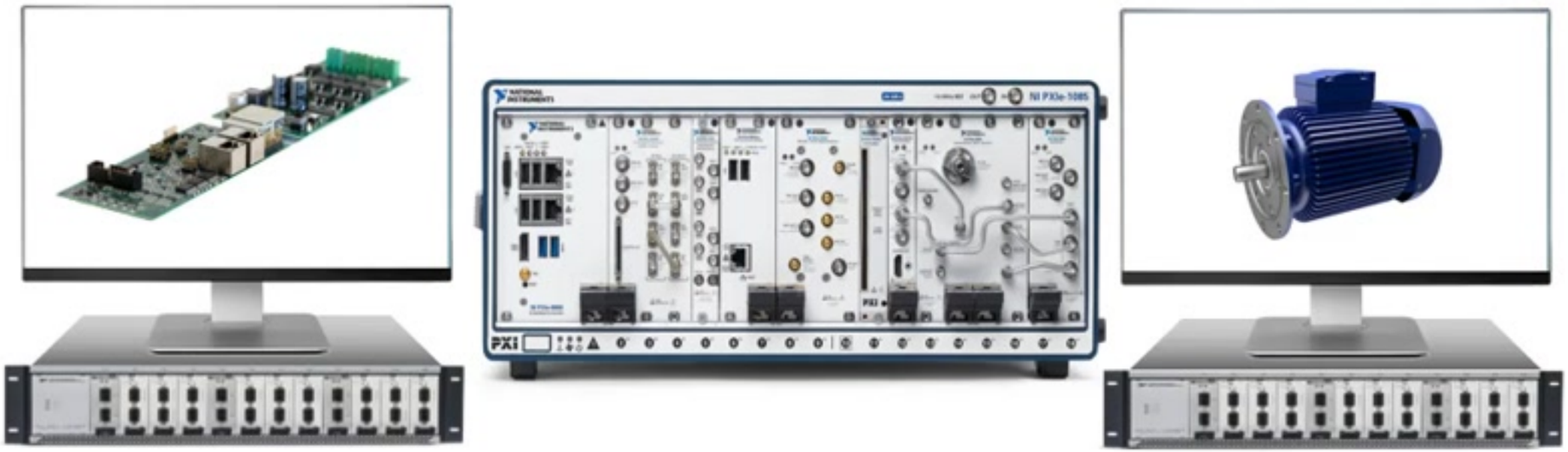

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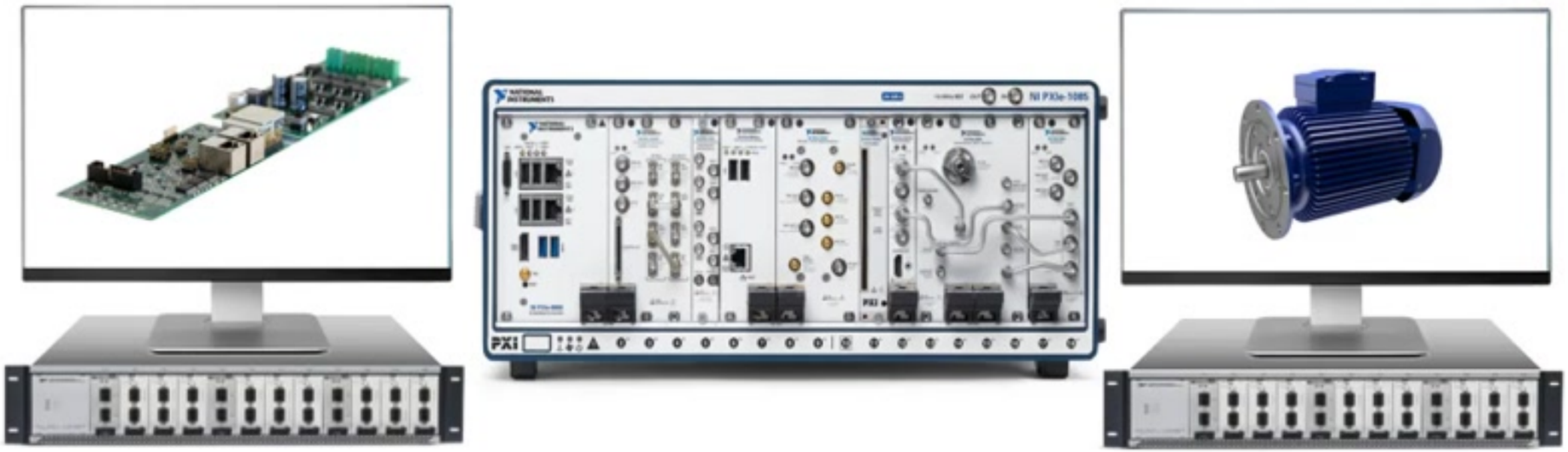

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