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National Aeronautics and Space Administration

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SPACE LAUNCH SYSTEM

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A Vehicle Management End-to-End Testing and Analysis Platform for Validation of Mission and Fault Management Algorithms to Reduce Risk

Luis Trevino, Ph.D.
Mission & Fault Management (M&FM)
Jacobs ESSSA Group

Vehicle Management End-to-End Testing (VMET)

Co-Authors

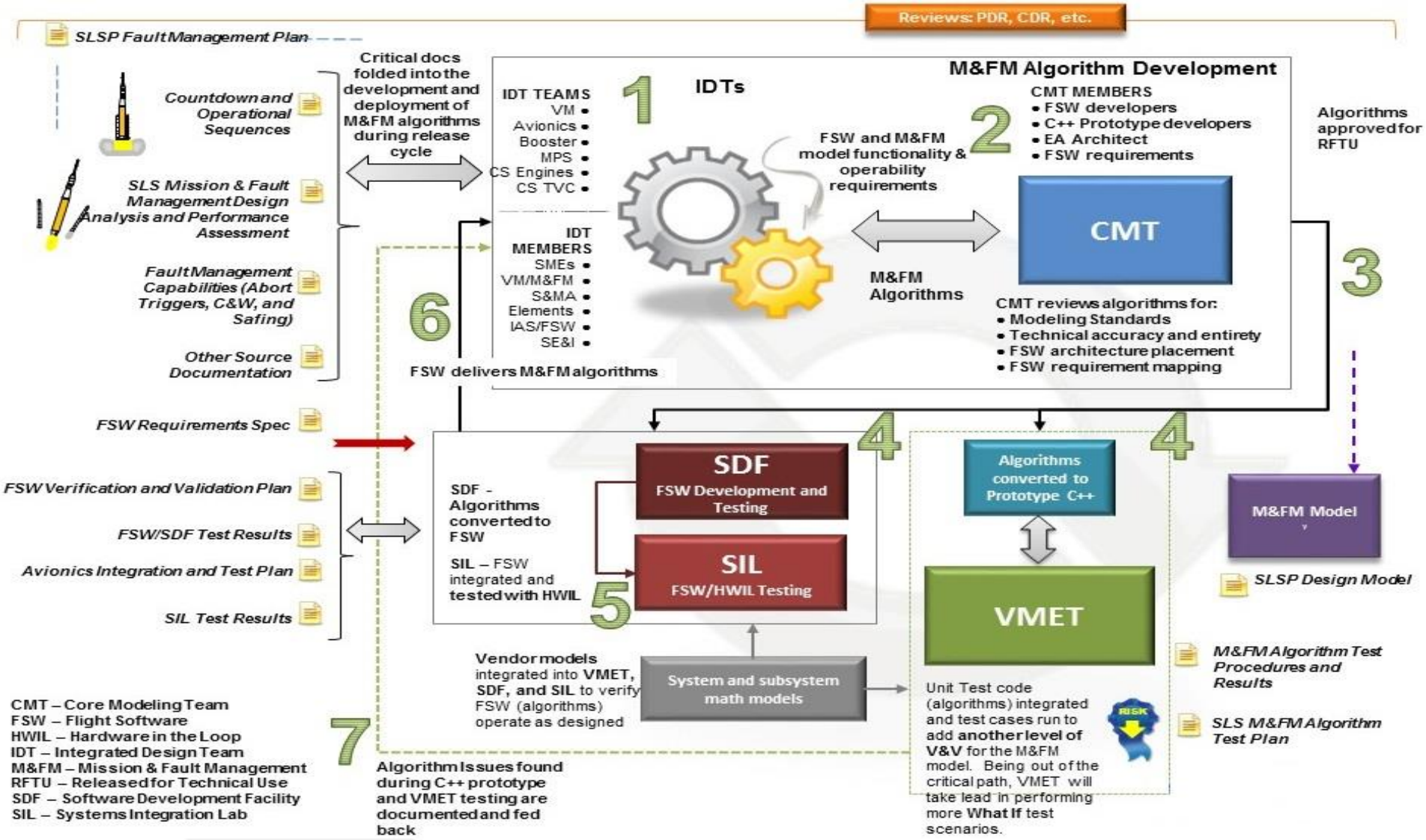
- Dr. Stephen Johnson – EV43, M&FM Analysis Lead

  Dependable System Technologies, Jacobs ESSSA Group
- Jonathan Patterson, EV43, M&FM Lead, NASA MSFC
- David Teare, EV43, VMET Lead, NASA MSFC

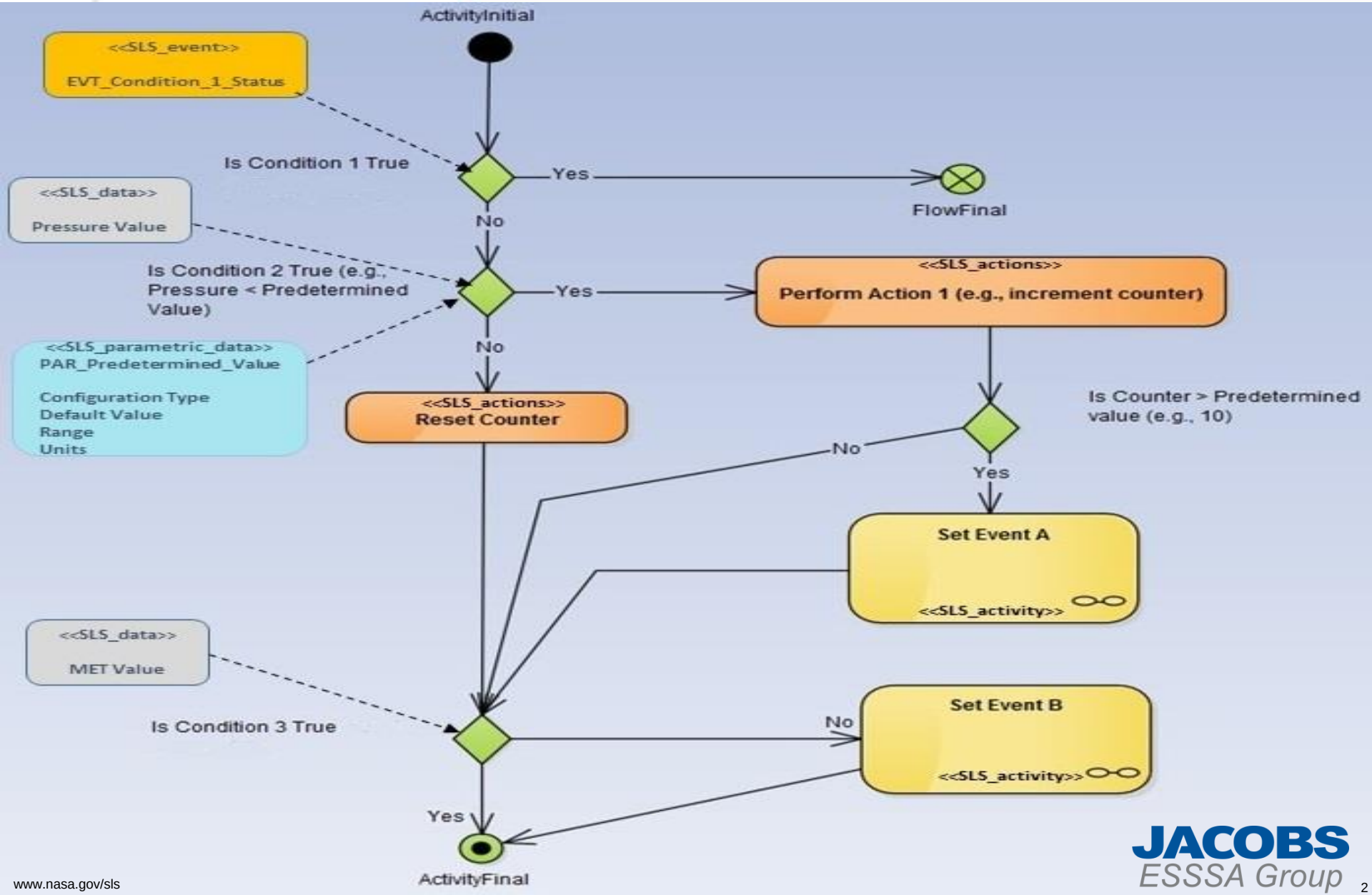
Objective of VMET

- Risk Buy Down
- Integrated Environment of M&FM and Physics Based Vehicle Models
- Validate M&FM Models
- Perform Extensive Off Nominal Testing

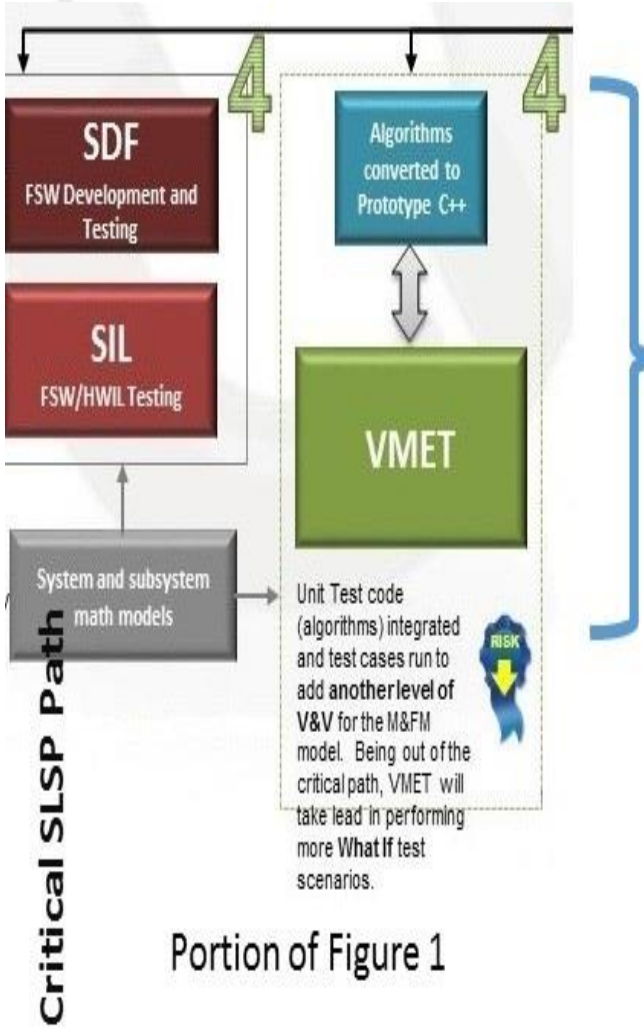
M&FM Algorithm Design, Development, & Testing Process



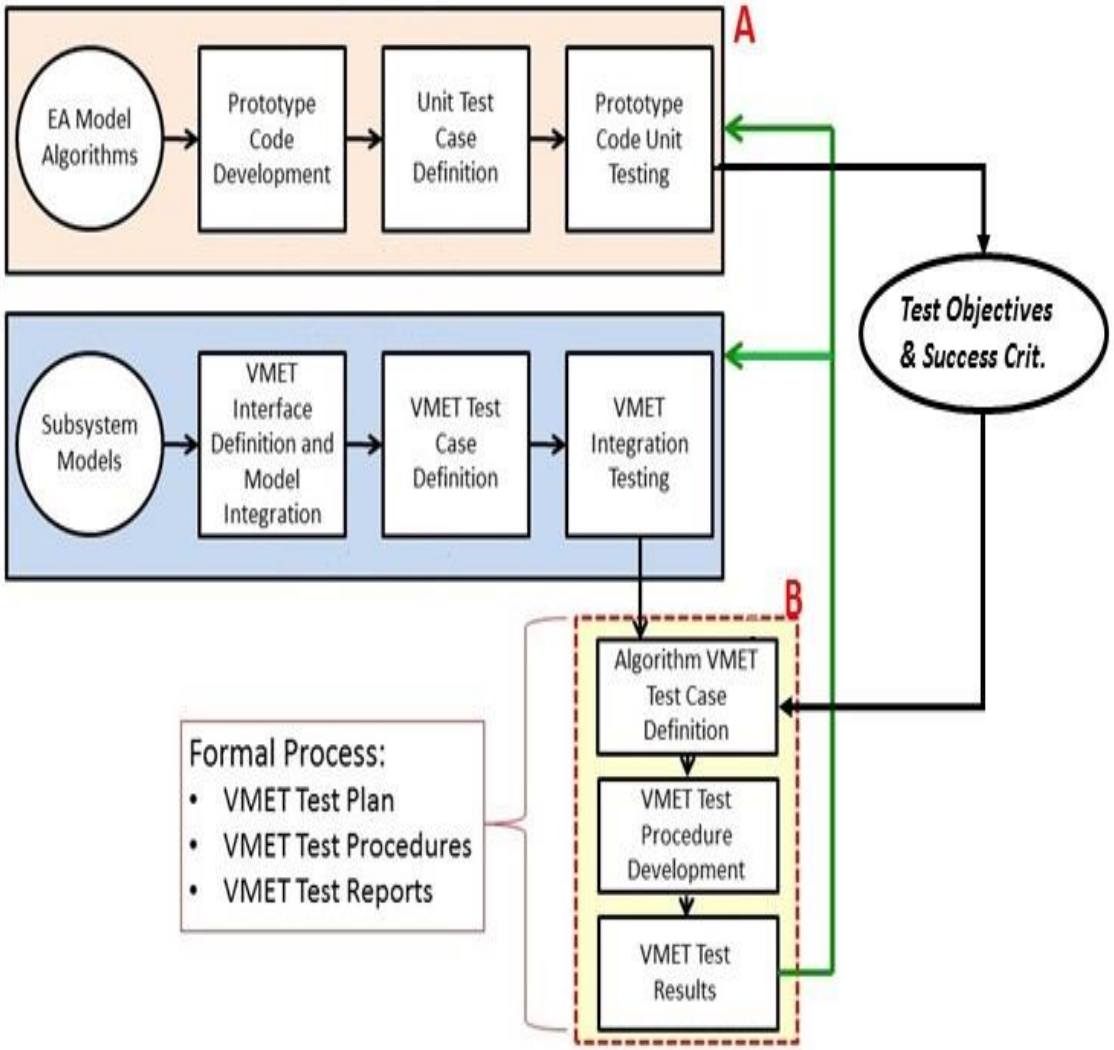
Algorithm – Modeling - SysML



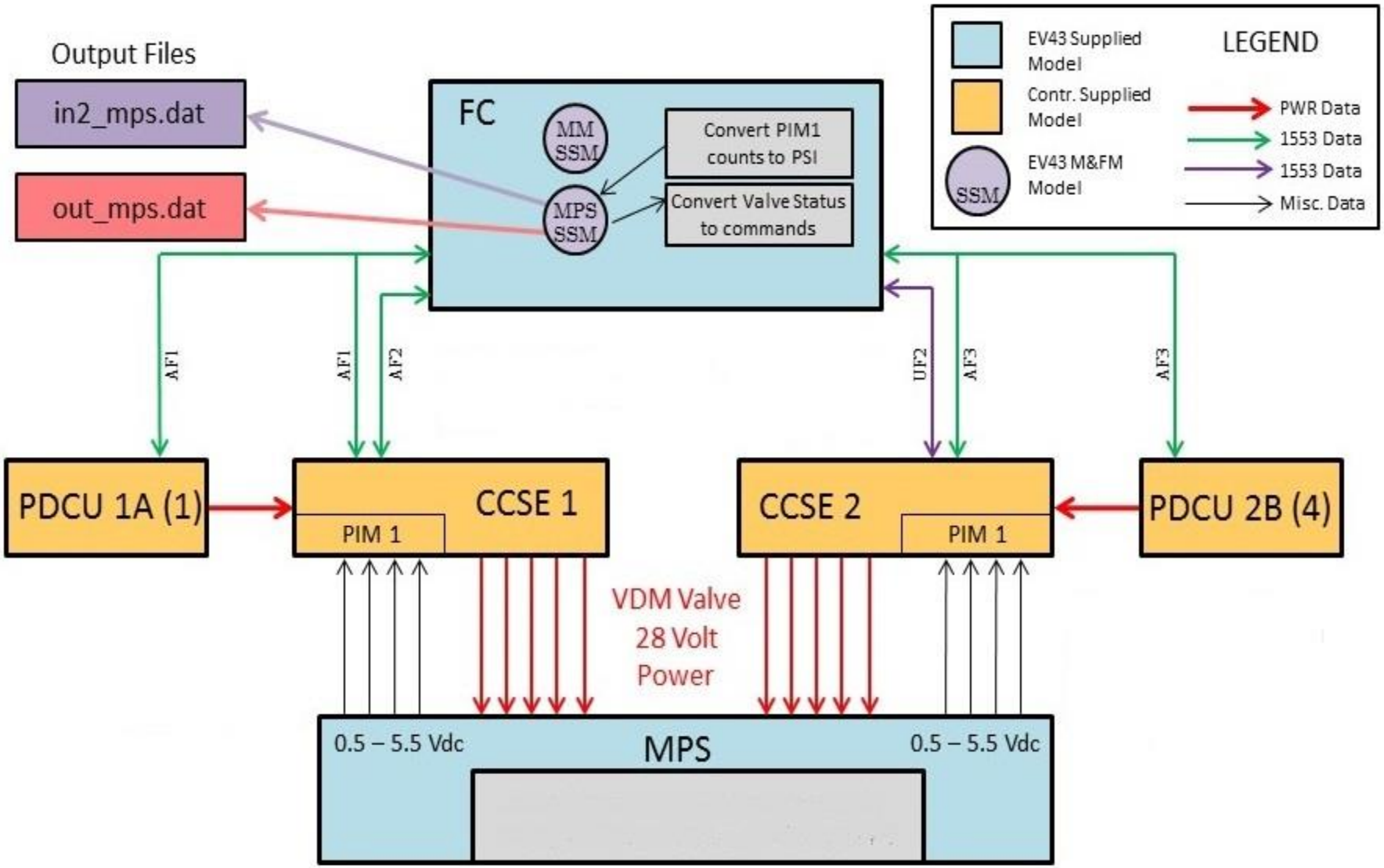
VMET Testing Process



Portion of Figure 1



Model Integration



Conclusion – Forward Work

State Flow Analysis (Mathworks)

- Early Insight into interactions between M&FM models with the SLS Vehicle Subsystem
- Validate planned test plans for VMET
- Model based verification method

Forward Work

- Incorporate FSW Test Procedures
- Implement FSW and validate against VMET
- Advanced concepts
- Other Launch Vehicle Models