

The Pursuit of Zero Defect Development

MATLAB EXPO 2023



Who am I ?

Jason
Casey



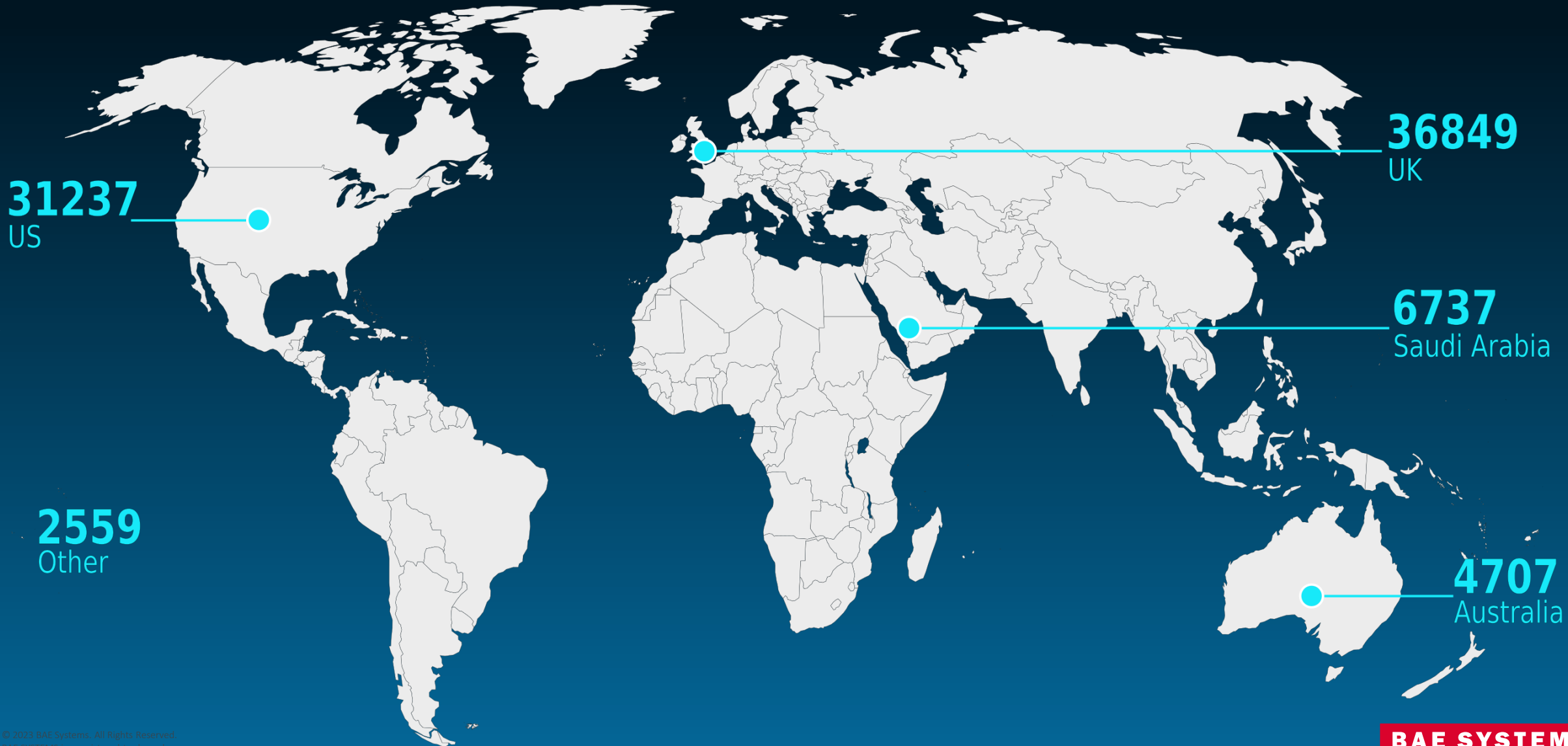
Chief Engineer (Software)

BAE SYSTEMS

ELECTRONIC SYSTEMS



BAE Systems around the world



BAE Systems UK Sites



- Air
- Digital Intelligence
- Electronic Systems
- Land
- Maritime Naval ships
- Maritime Services
- Maritime Submarines

BAE Systems Electronic Systems Products



Bugs, or defects, become increasingly difficult to find/fix later in the lifecycle



A brief history of our Model Based Engineering at Electronic Systems

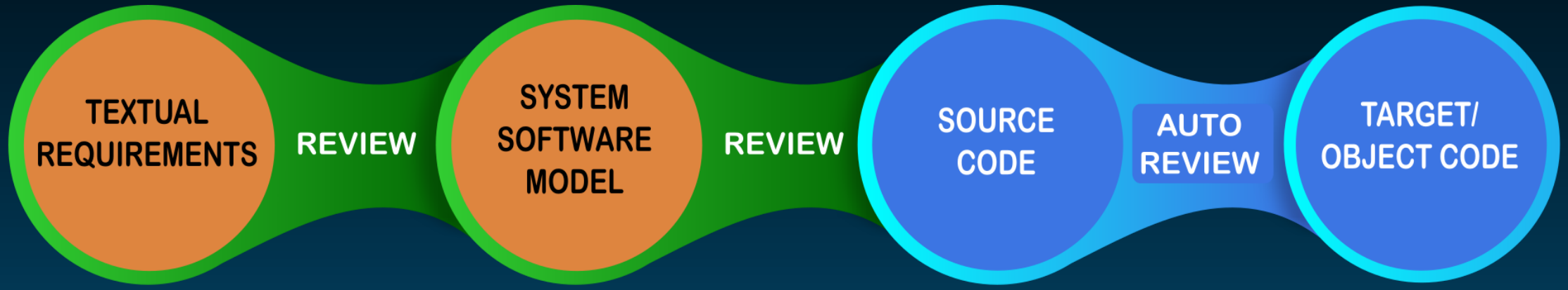


**Fixed Pipeline OpenGL
implementation in
Simulink, Auto-coded
using HDL Coder for
embedding in an FPGA**



Margaret Hamilton
In 1969, standing next to listings of the software she and her MIT team produced for the Apollo project

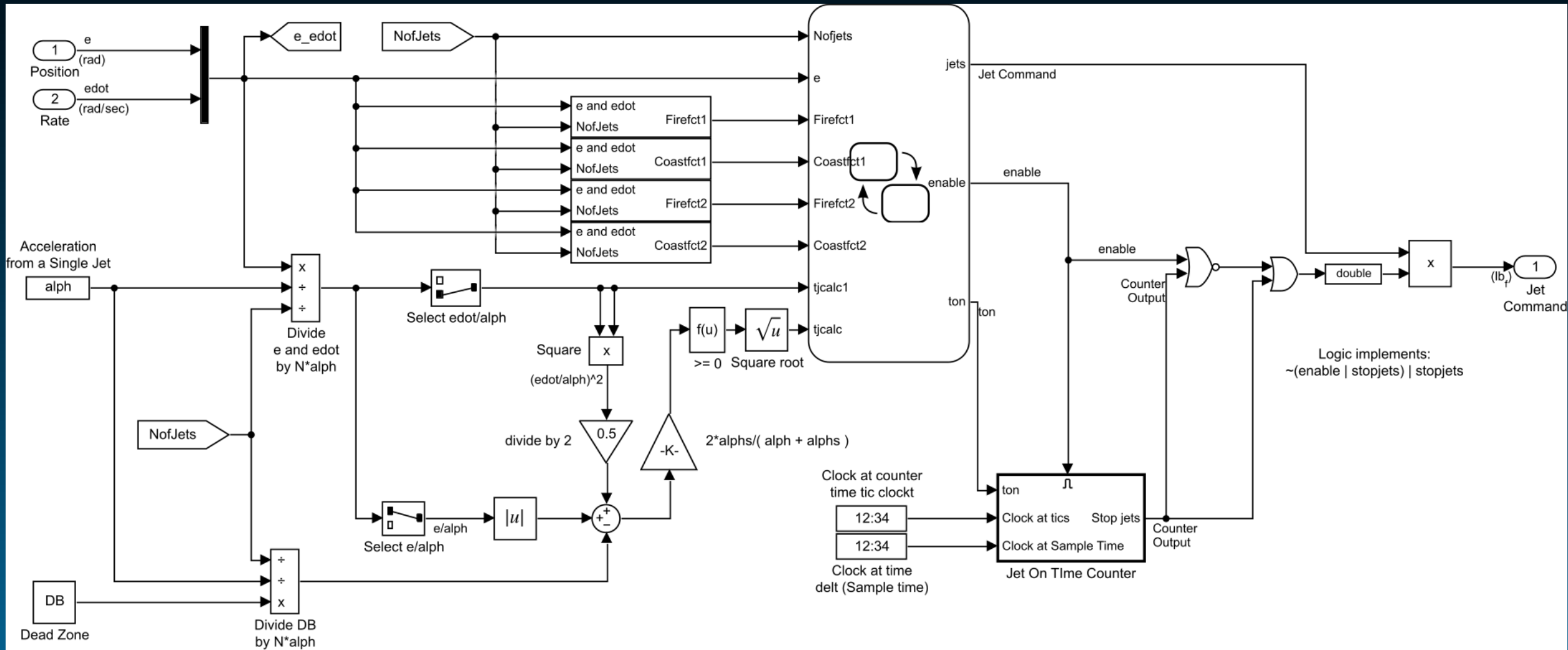
Our development strategy from BAE Systems 2015 MATLAB EXPO Keynote



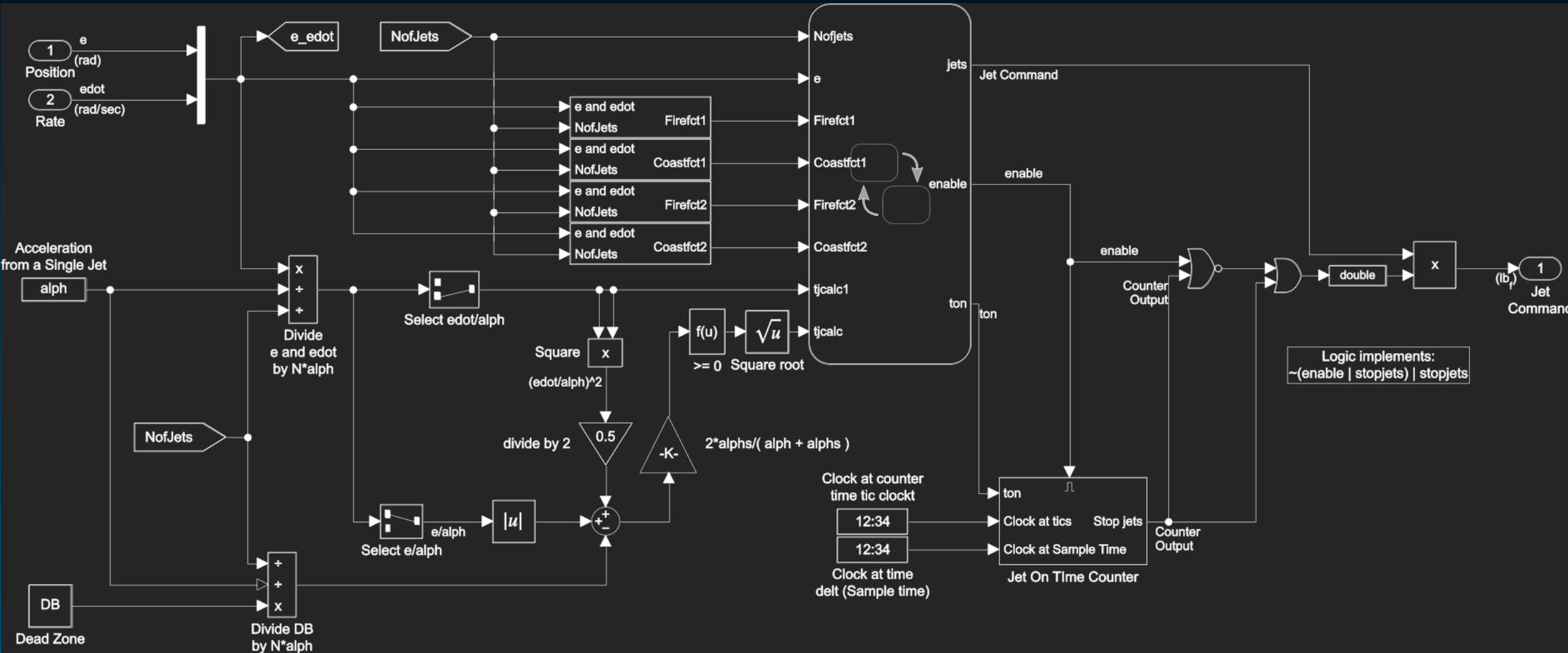
DO-331 Table MB.1-1 – Model Usage Examples

Process that generates the life-cycle data	MB Example 1	MB Example 2	MB Example 3	MB Example 4 (See Note 1)	MB Example 5 (See Note 1)
System Requirement and System Design Processes	Requirements allocated to software	Requirements from which the Model is developed	Requirements from which the Model is developed	Requirements from which the Model is developed	Requirements from which the Model is developed
					Design Model
Software Requirement and Software Design Processes	Requirements from which the Model is developed	Specification Model (See Note 2)	Specification Model	Design Model	
	Design Model	Design Model	Textual description (See Note 3)		
Software Coding Process	Source Code	Source Code	Source Code	Source Code	Source Code

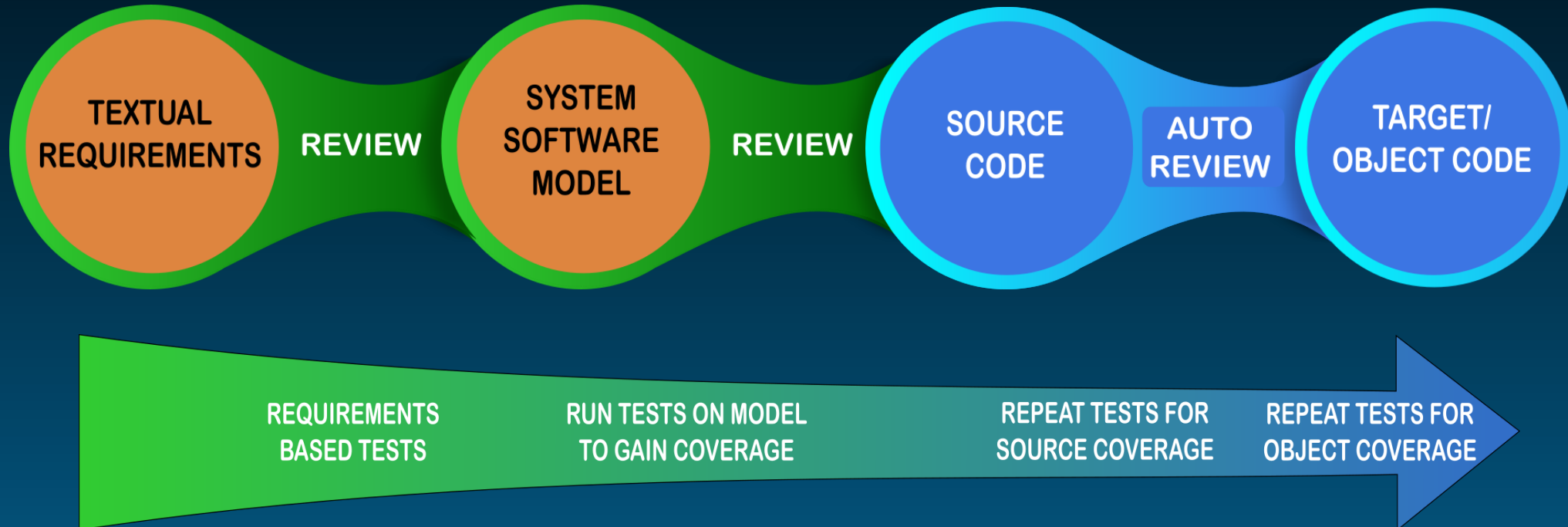
Simulink makes it easy to understand what's happening, but not why



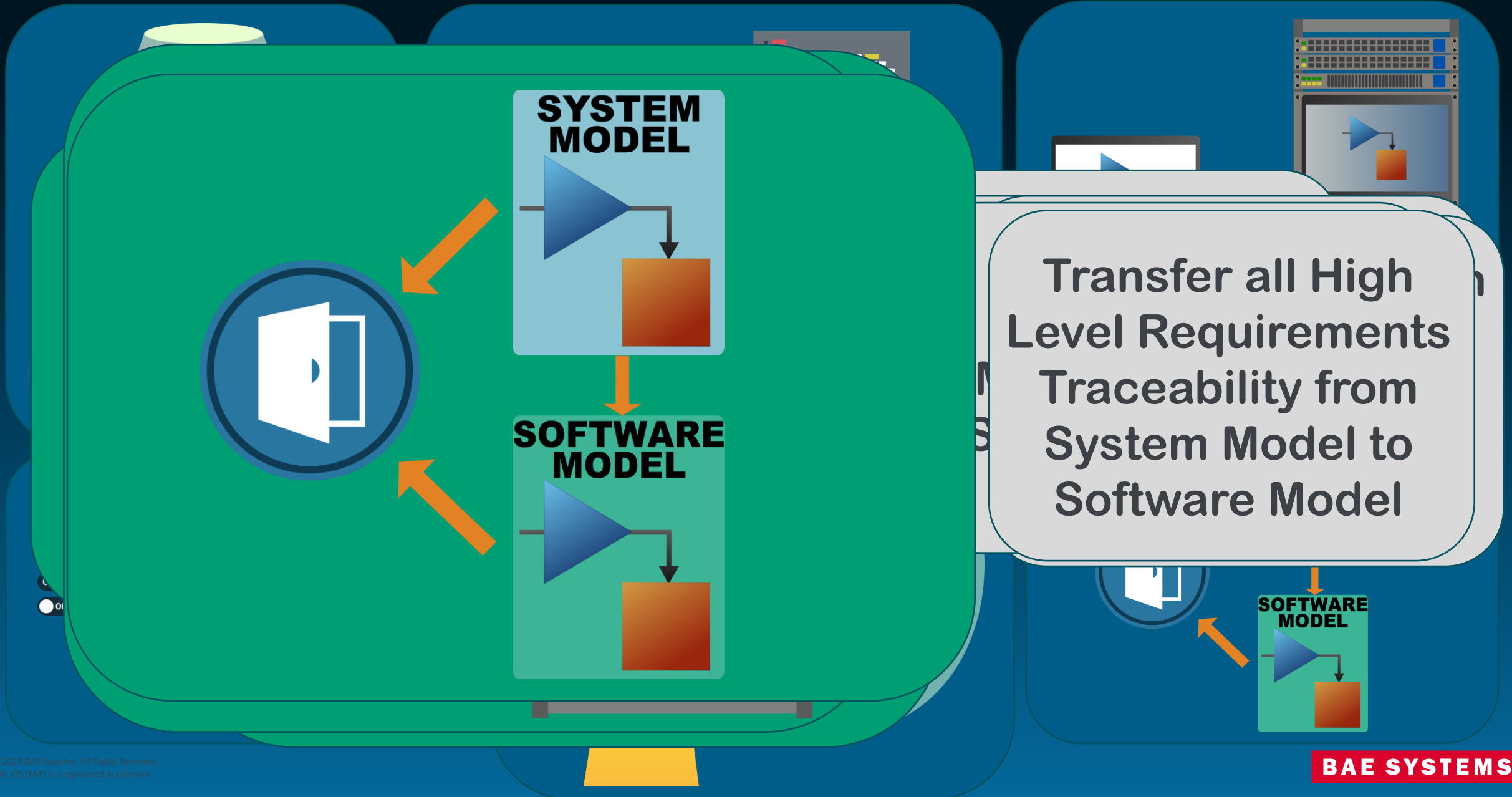
Simulink makes it easy to understand what's happening, but not why



Enhancing our MATLAB EXPO 2015 Strategy for increased automation



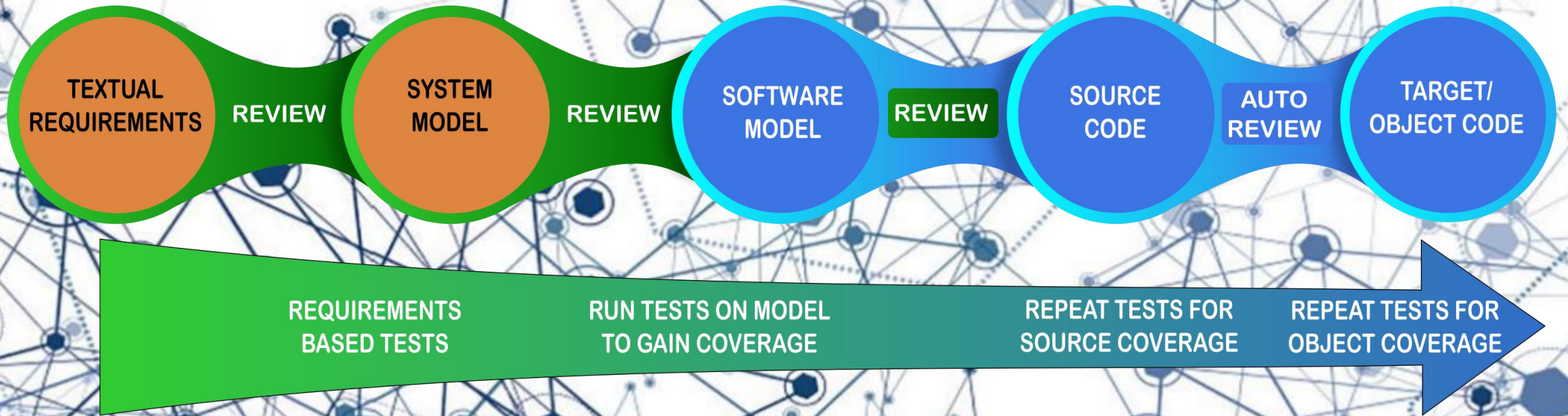
How do BAE Systems automate Software Model Creation ?



We are further enhancing our strategy for BAE Systems' Future Products



Are LLMs the next step in the future of defect free development ?



Thank You