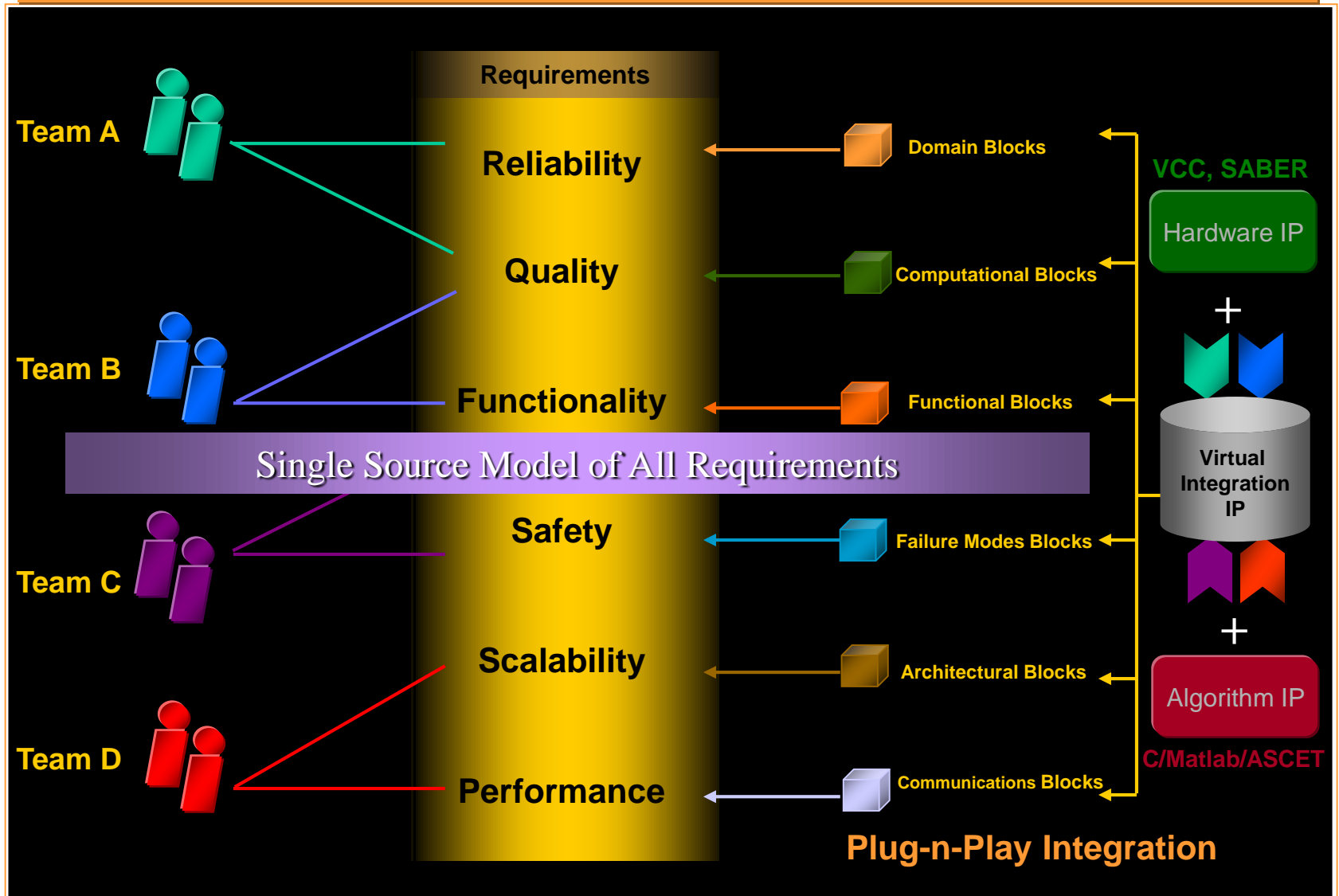


# ARTIST: Verification of Dynamic Systems Software

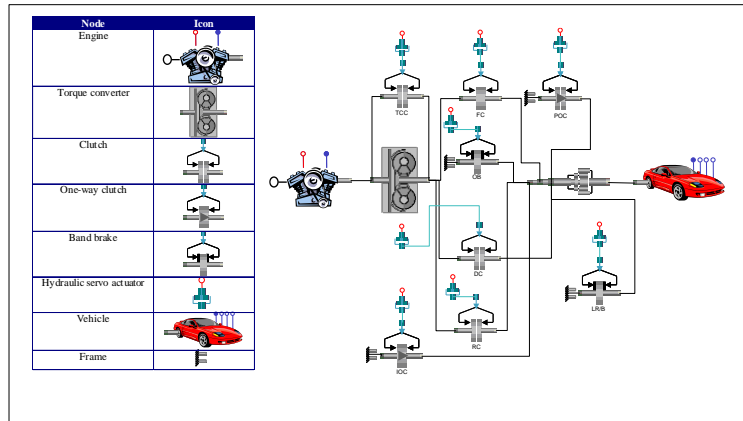
## Benefits of Requirement-Driven Software Models

- Offer model-level verification and testing of complex functional, performance and architectural requirement changes/upgrades, thus reducing cost and time of certification/clearance of highly-integrated dynamic systems (avionics and automotive).
- Simplify collaborative requirement management, monitoring and trade-offs, including support for model-level simulation-based acquisition (OEM and suppliers collaboration).
- Support creation and reuse of model-level product IP, hence improving project-to-project ROI and Time-To-Market.

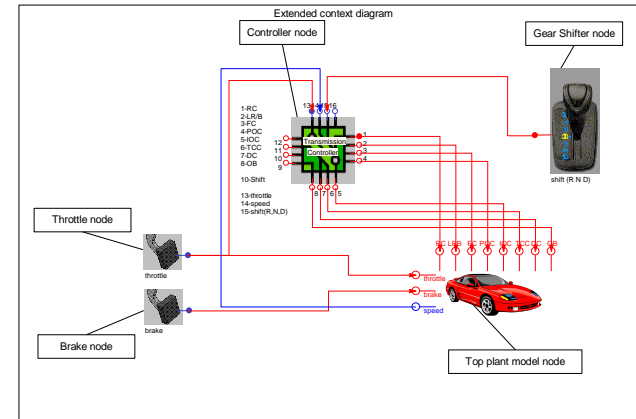
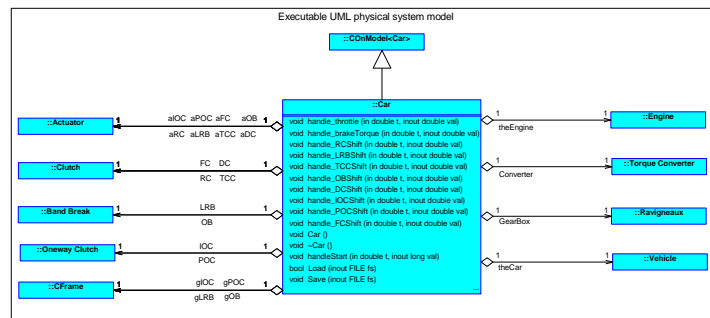
# Requirement-Modeling for Software Verification



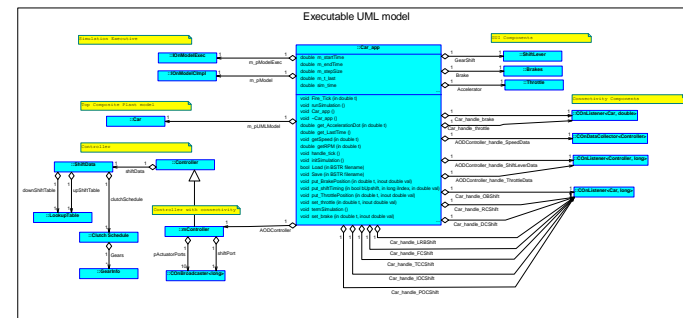
# Equation-Based Systems Modeling



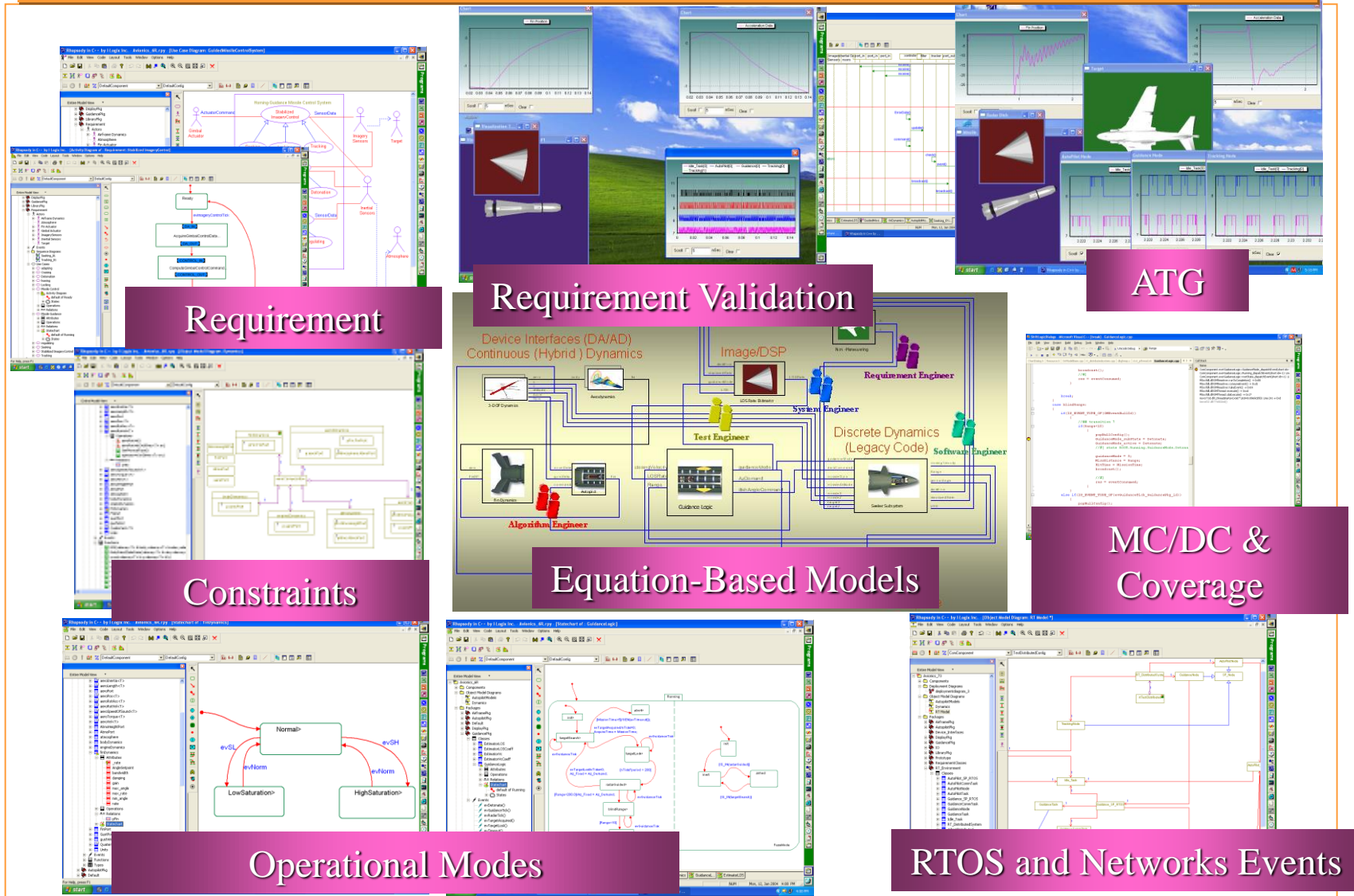
Translate to executable UML physical system model



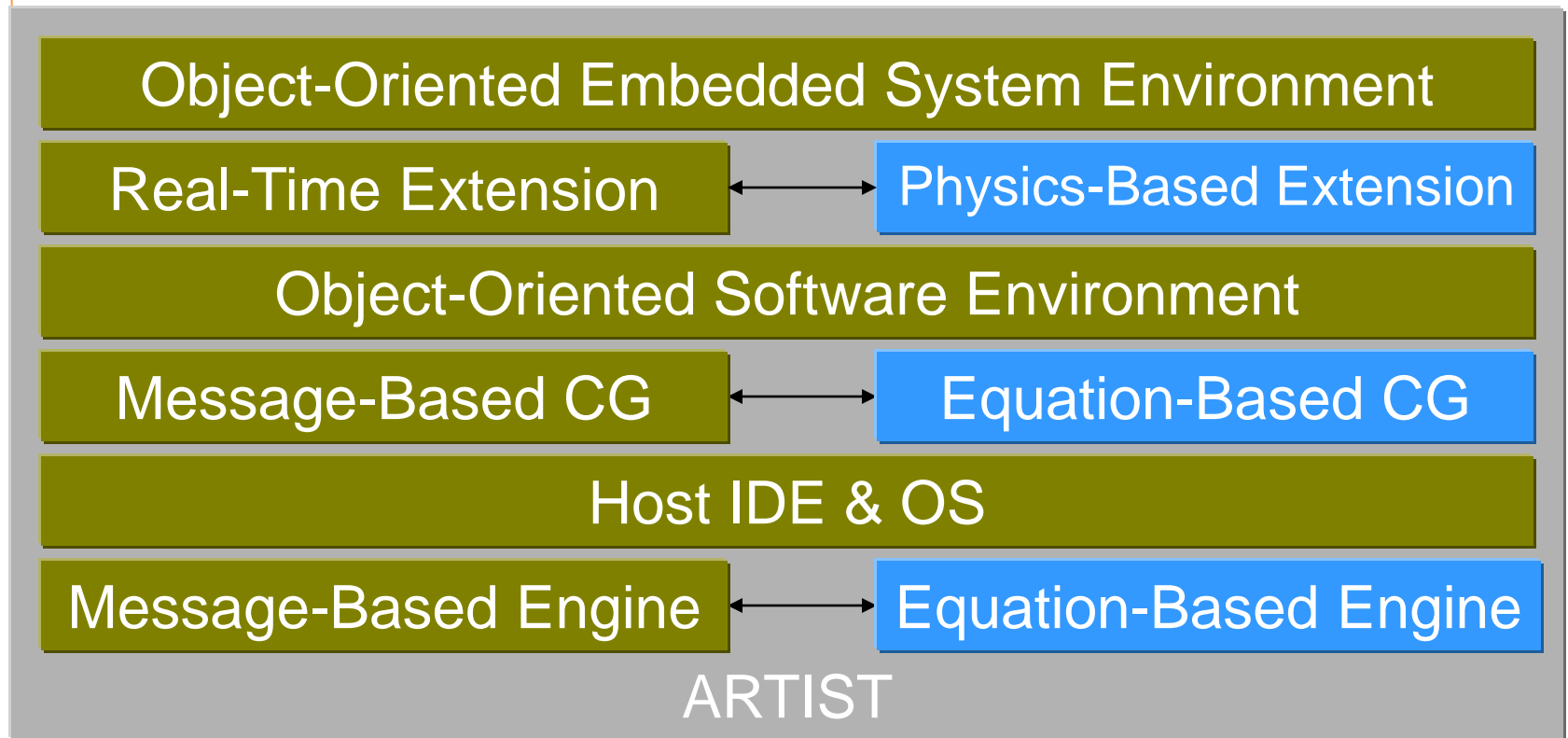
Translate composition to executable UML application model



# V&V Process of Embedded Control Software



# Architecture of Software Verification Environment



# Equation-Based Technology for Software Verification

- Solvers (ODE, High-Index DAE, Explicit, Implicit, NLA)
- Graph algorithms (Assignment, BLT, Index, Initialization)
- Linear Algebra (LAPACK and direct sparse)
- Event Detection (Interval ZC, Chatter-Control, Re-Initialization)
- Auto-Differentiation
- Event management and access interface
- Snapshot control
- Automation Interface
- RTOS scheduling