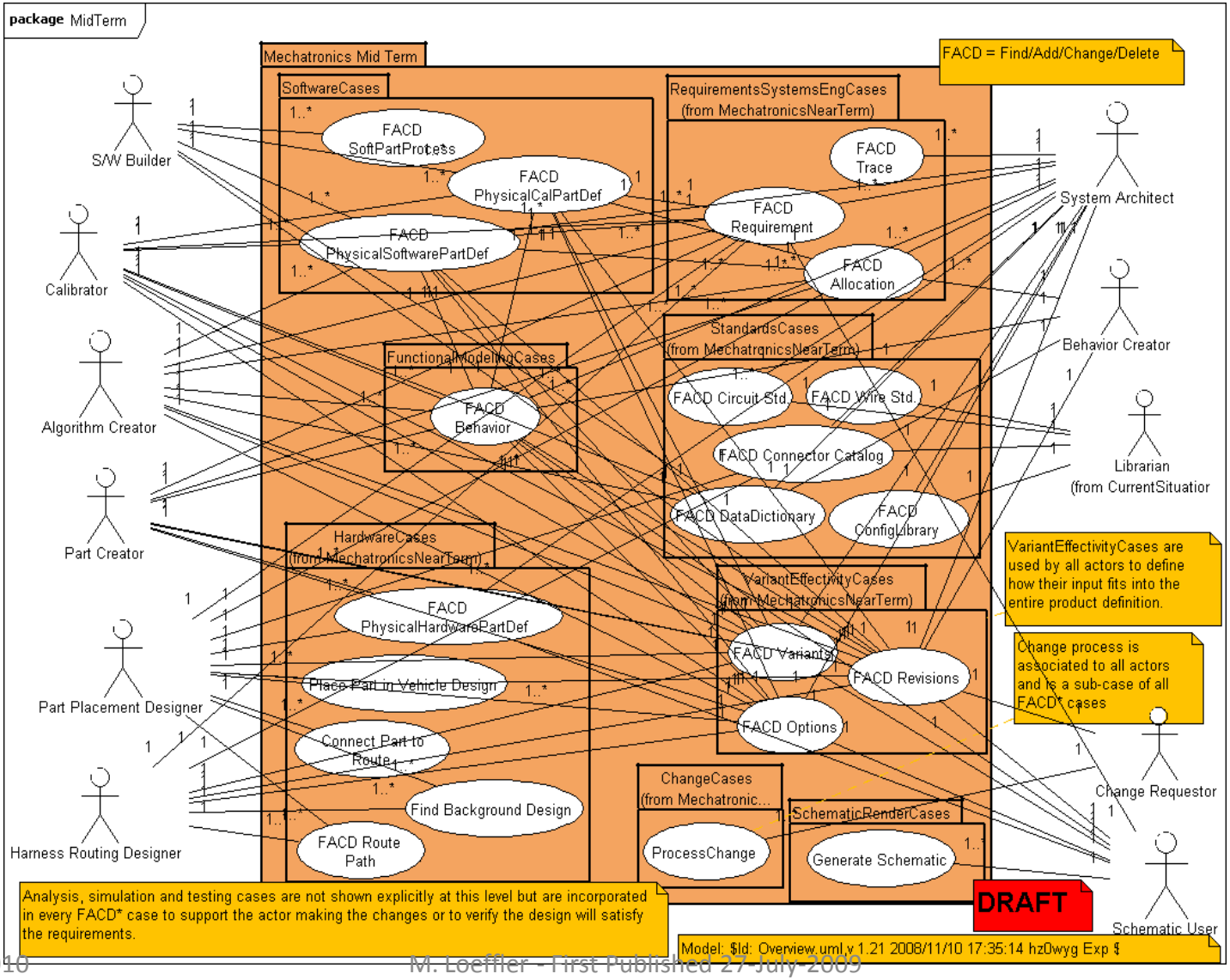
Mechatronics Scenarios

NOTE: In all these scenarios the design artifacts must have proper effectivity and variant conditions applied, those details are left out in most cases for clarity

Reference Use Case Diagram



Systems Engineer Reacts to Changed Requirements

- SE receives input of change to existing product needed by marketing (via Change Request)
- SE locates existing requirement(s) affected by desired change, either directly in requirements manager or SysML requirements diagram view
- SE traces affected requirements to determine impacted behavior and physical design artifacts, adding them to CR as part of solution
- SE adds or removes requirements as necessary
- SE searches for behaviors and physical designs to meet new and revised requirements based on previous uses and related requirements
- SE proposes changes of requirements, behaviors and physical designs as solution to CR, while collaboratively, all affected suppliers and downstream engineers analyze, review and approve changes

Behavior Creator Adds New Behavior Design

- New behavior for feature is proposed or observed in competitive product, CR is created to design the behavior for future use
- BC creates SysML state machine/activity/sequence diagram to capture new behavior
- BC optionally ties behavior to generic requirements and use cases that the behavior satisfies
- BC optionally ties example implementations of behavior (physical software, calibrations and/or hardware) to behavior for reference
- New behavior CR is analyzed, reviewed and approved for use in product designs

Hardware Change Forces Software/Calibration Change

- Part Creator must change pin assignments based on internal device construction or manufacturing issue, CR is generated to address the issue
- PC proposes pinout changes and traces pinout to affected signals, data flows in software and calibrations related to those signals, adds all changes to the CR solution, while collaboratively, algorithm creator and calibrator analyze, review and approve changes
- Software builder generates new software and calibration build based on results of CR

Interested Party Views Schematic for Certain Subset of Vehicle System

- Based on need the party selects data to render into schematic based on requirements, behaviors, parts (devices or harnesses), effectivity, variants, manual selection or combination of factors
- Schematic is auto-generated from data returned by query and shown in viewer
- Objects on schematic can be selected and same objects or those allocated into/from these objects in other views will be highlighted (cross-probing)
- Query criteria and rendering settings can be saved for future reuse