Plug-in Hybrid Electric Vehicle Model Validation

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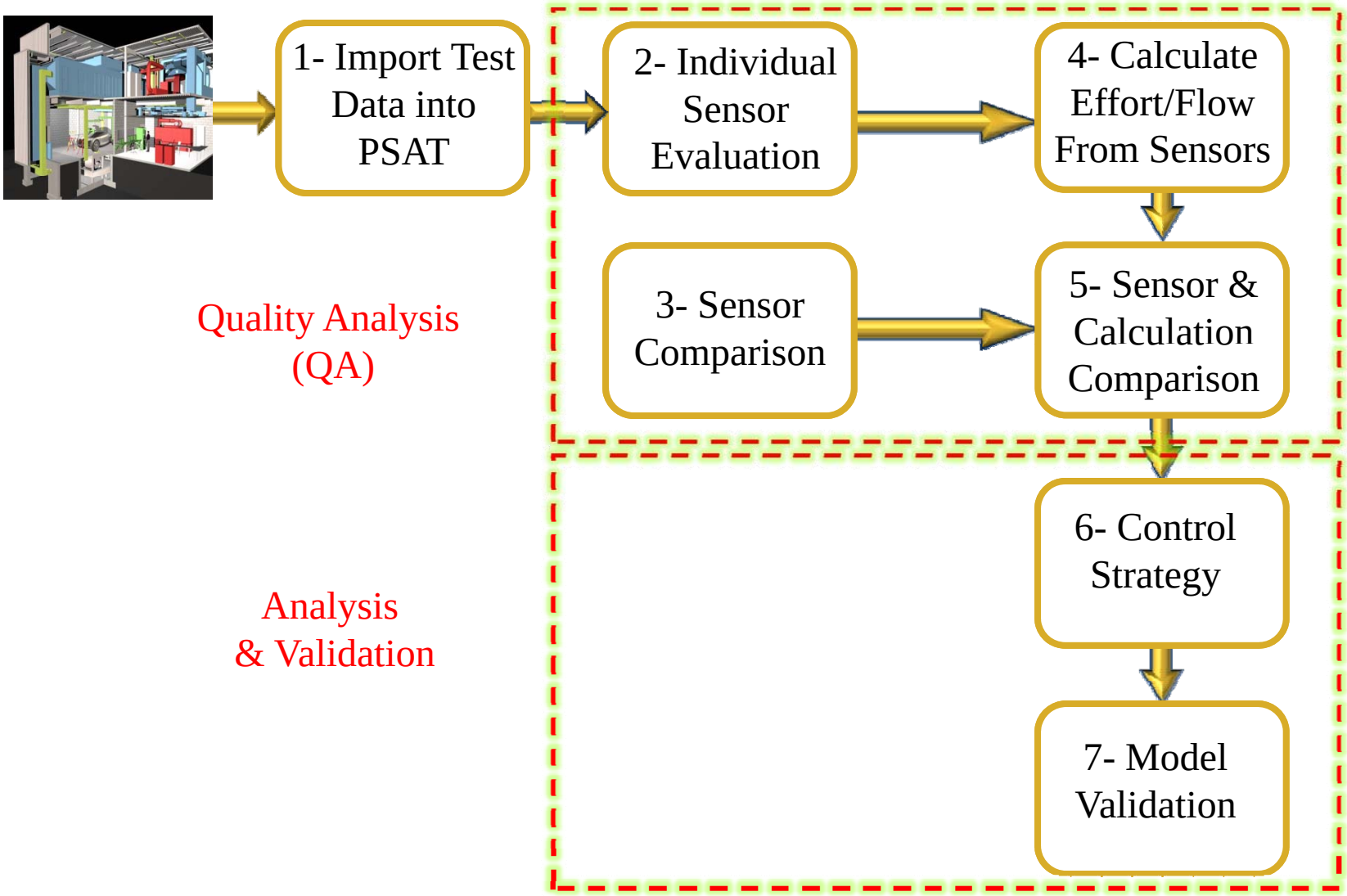
Project Description

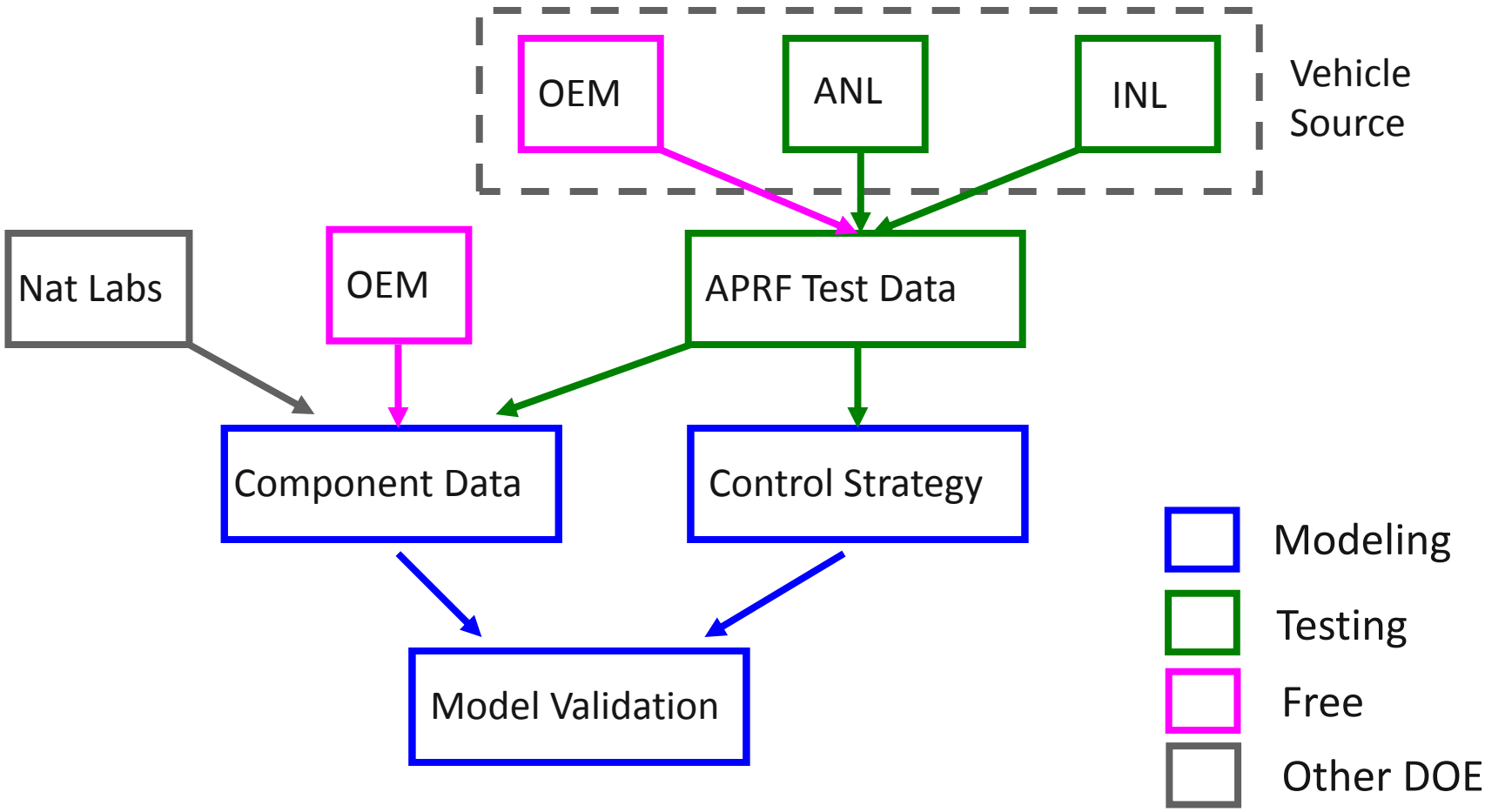


Funding

- Funding
  - Present (FY08) DOE funding ($100K)
  - Expected future DOE funding ($100K/yr) for foreseeable future
  - Total funding prior to FY08 ($200K)

Objectives

Validate PSAT with the latest vehicle powertrain technologies



Relevance

- Understand the latest vehicle powertrain control logics
- Provide basis for DOE studies (e.g., implement a new electric machine developed under DOE contract vs latest one tested on dynamometer)
- Models need to be validated for the results to be trusted

Barriers

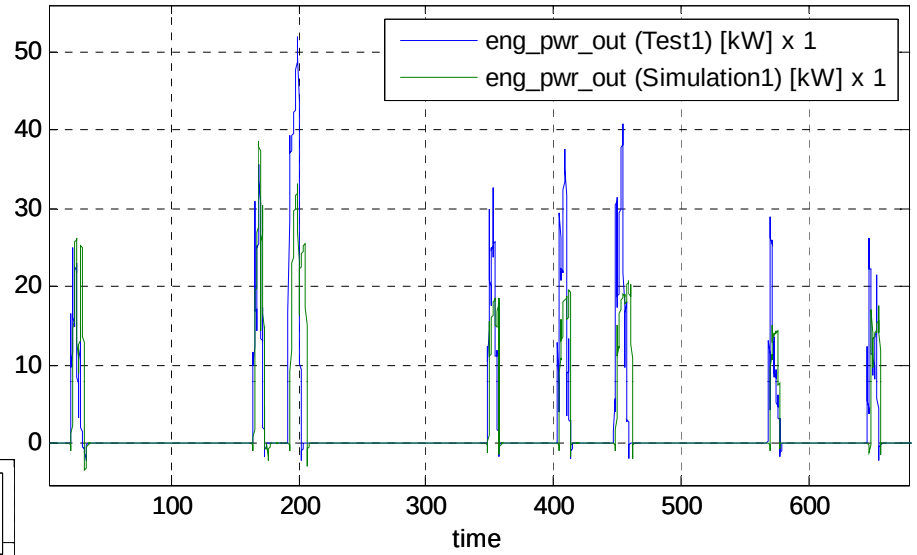
- Acquisition of component data for the different powertrain is a major issue.
- Insufficient number of sensors to properly understand the control strategy.
- List of tests for fuel efficiency sometimes incompatible with ones required for validation (time limitation makes that not all tests can be done)
- In some cases, inability to do another round of testing to verify assumptions due to vehicle availability.

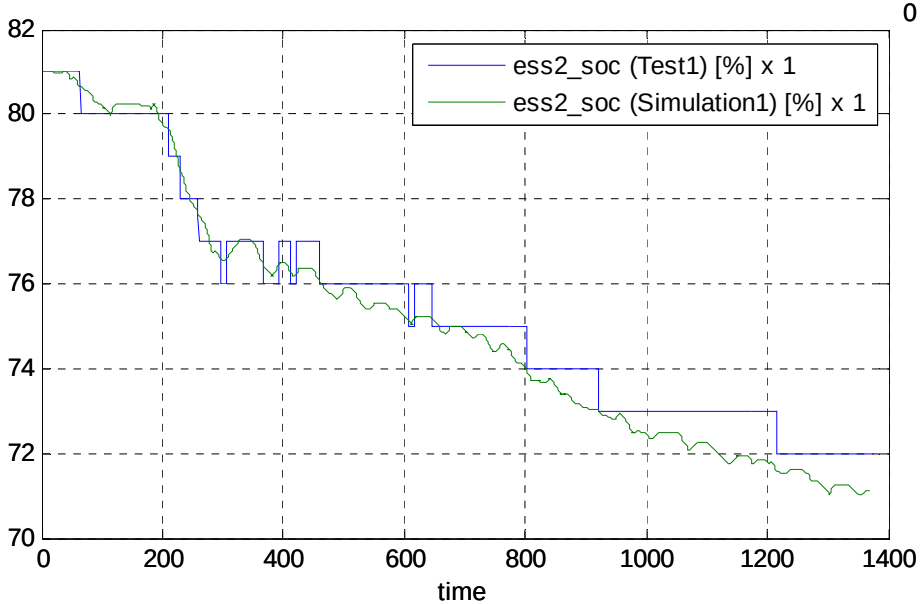
Approach

- Missing components:
  - Get limits from literature (e.g. max torque).
  - Use information (e.g., efficiency) from similar technology.
- Component parameters are estimated when sensors not available (e.g., output transmission torque calculated from measured wheel torque)
- Get test data from different sources.

Accomplishments and Progress

- Validated TTR





Test #60806002 (UDDS)

Future Plans

- Continue to validate vehicle models of vehicles tested on dynamometer when sufficient sensors are available.
- Validate Sprinter PHEV as well as OEM vehicles from PHEV Demo.