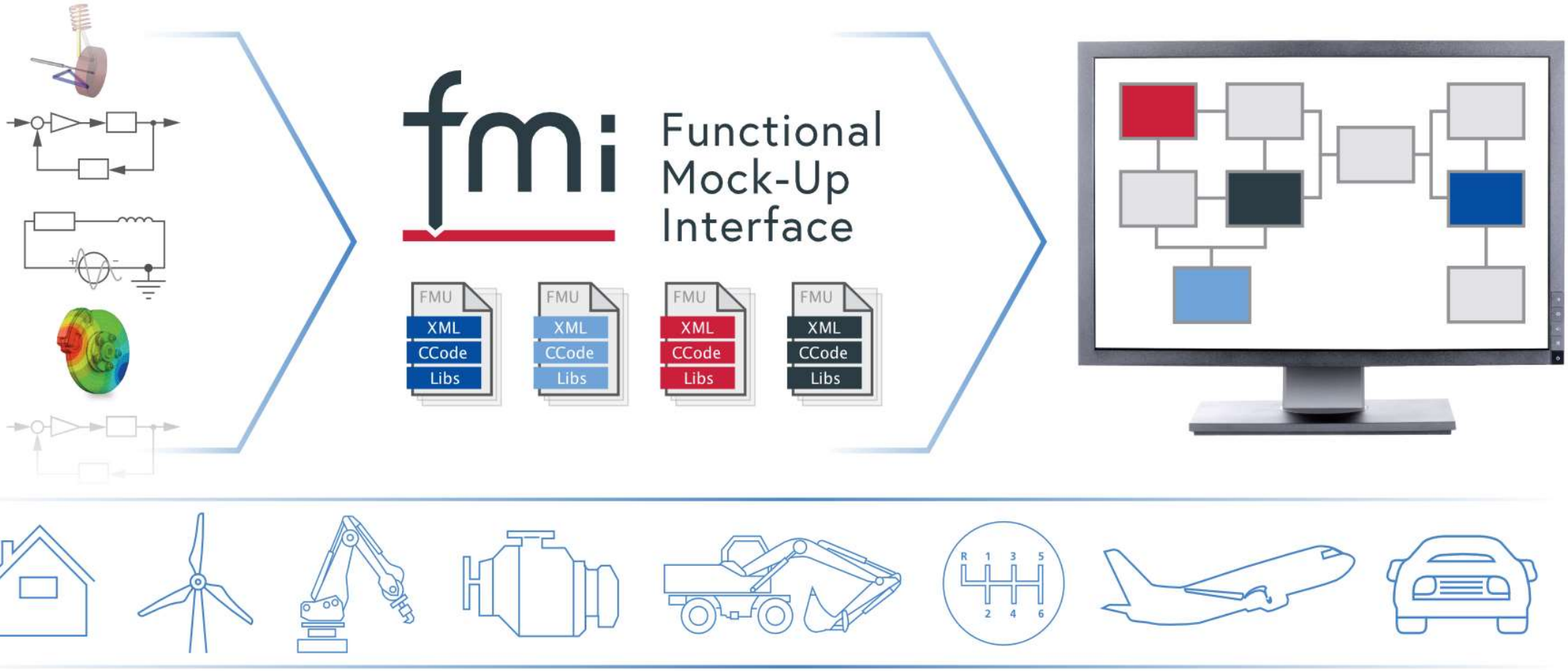
DEMOBASE

COLLABORATIVE PLATFORM FOR INTEGRATING MODELS WITH FMI

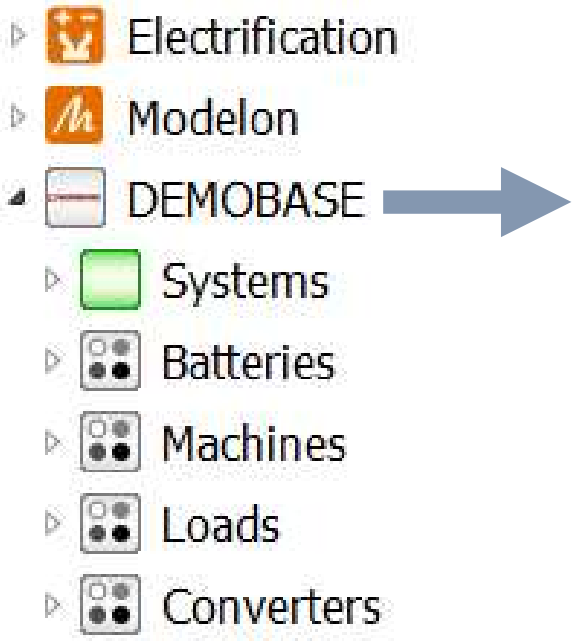
Thomas Fickenscher – MODELON AB 2020-09-16

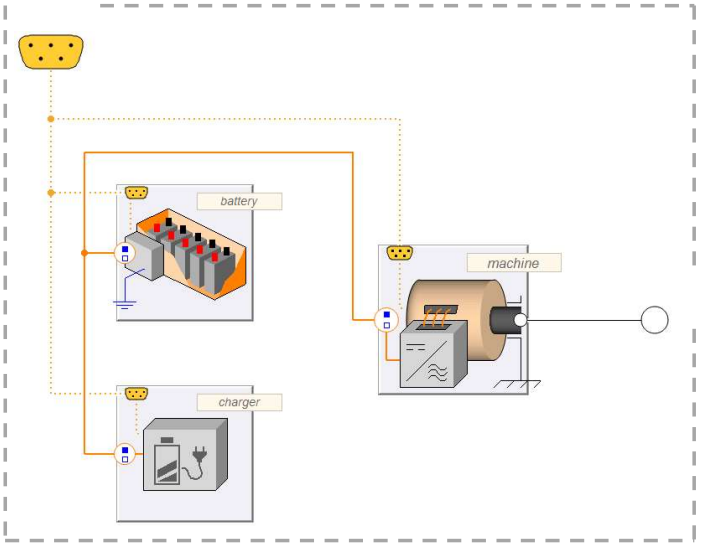
Modelon

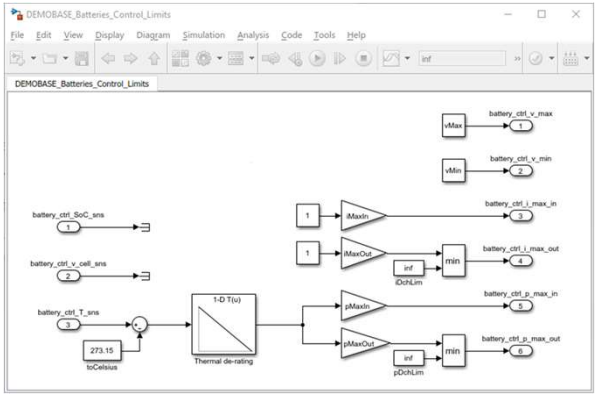


Modelon

CASE STUDY : COMBINE AN ELECTRIC PROPULSION SYSTEM MODEL FMU WITH AN EXTERNAL BMS CONTROLLER FMU INTO A SINGLE SYSTEM FMU

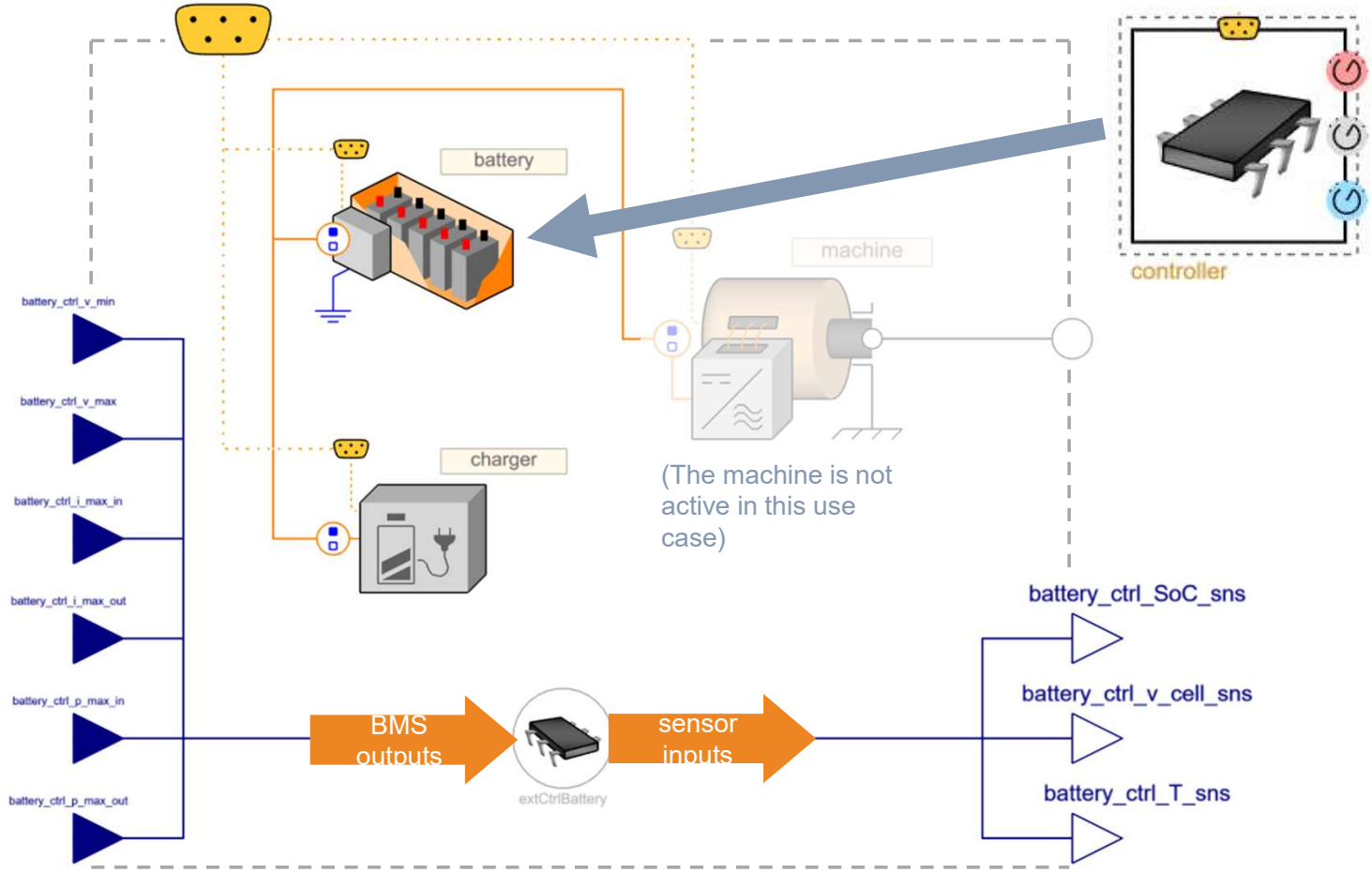






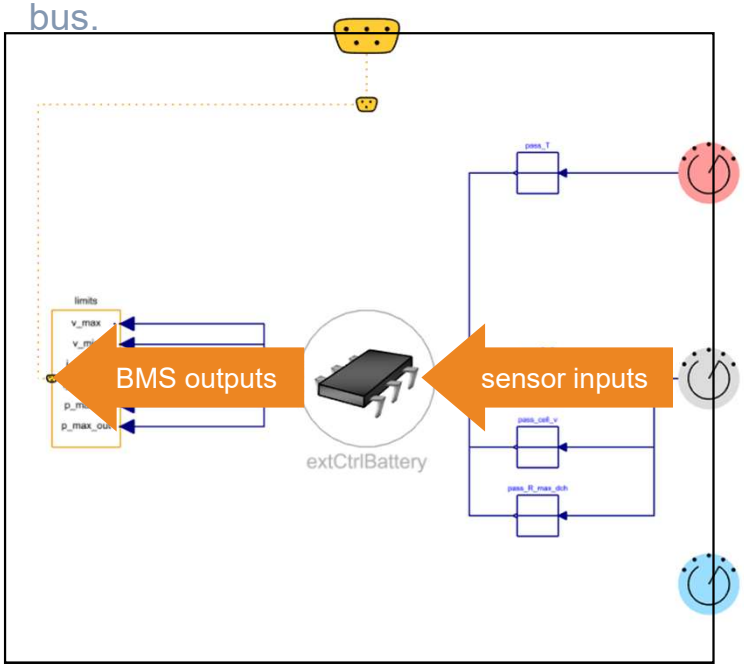
USE CASE –
PLANT SYSTEM FMU + EXTERNAL BMS FMU

Modelon Impact



“empty” battery controller

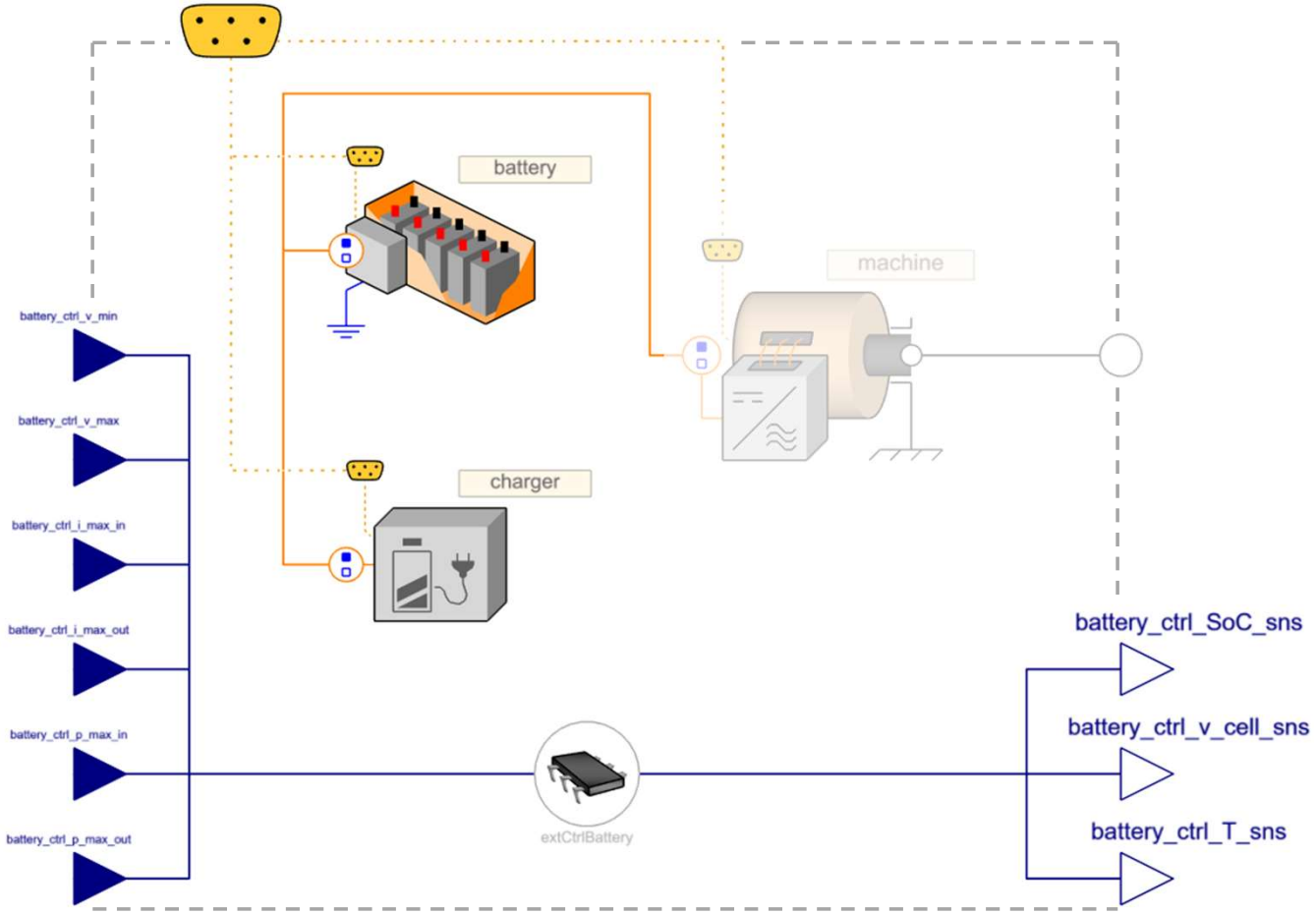
Forwards sensor inputs to external BMS, and returns BMS outputs to the control bus.

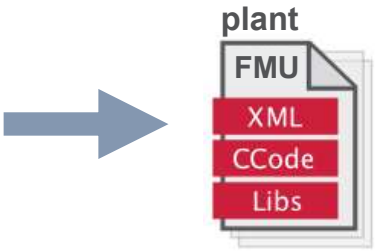


Modelon

USE CASE –
PLANT SYSTEM FMU + EXTERNAL BMS FMU

Modelon Impact

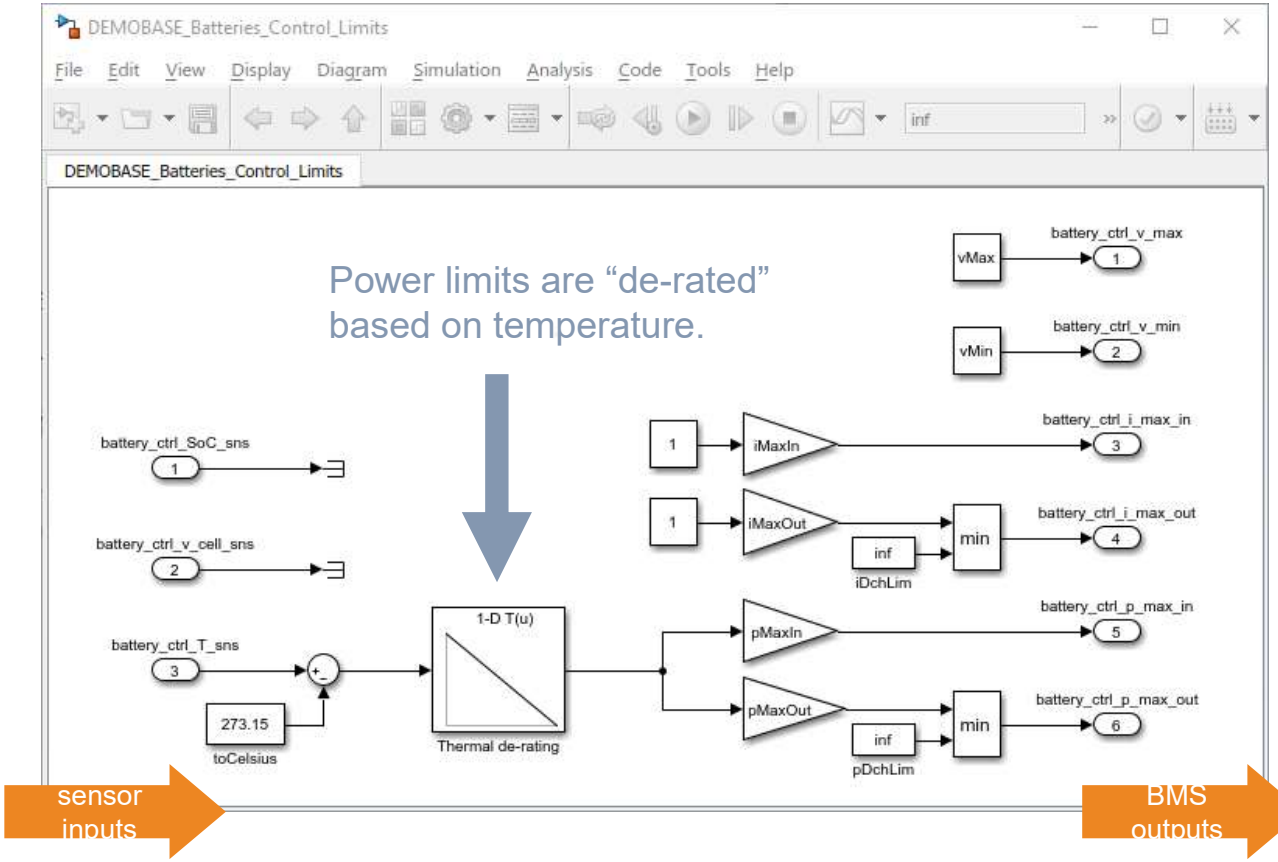




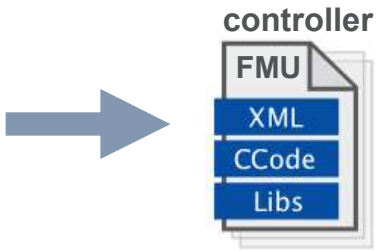
FMU is generated from plant model
in Modelon Impact

Modelon

USE CASE –
PLANT SYSTEM FMU + EXTERNAL BMS FMU



Simulink battery controller
Outputs: battery limits (voltage, current, power)
Inputs: SoC, cell voltages, temperatures

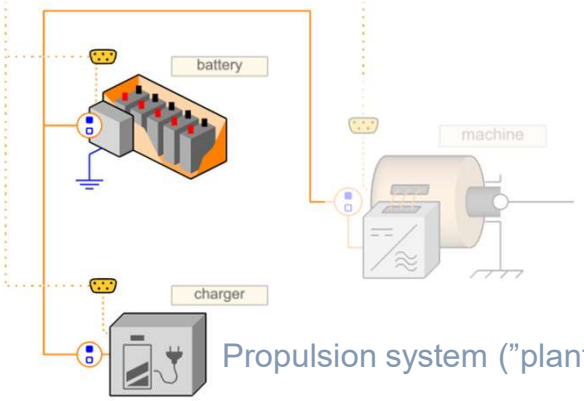


Exported as FMU
(using the Modelon FMI Toolbox for Simulink)

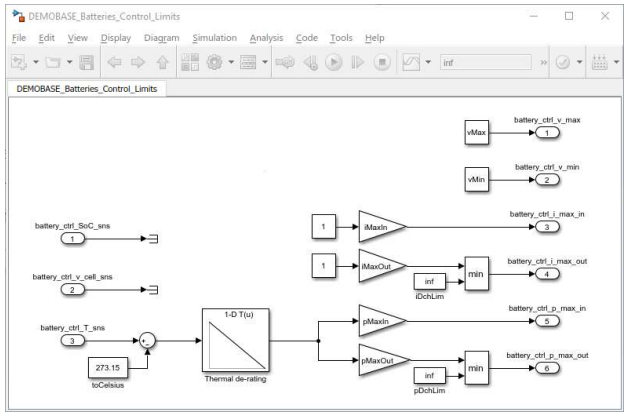
Modelon Impact

fmi Functional Mock-Up Interface

jupyter python



Propulsion system (”plant”)



MATLAB & SIMULINK

BMS (”controller”)

plant

FMU
XML
CCode
Libs

controller

FMU
XML
CCode
Libs

Integrate to system FMU …

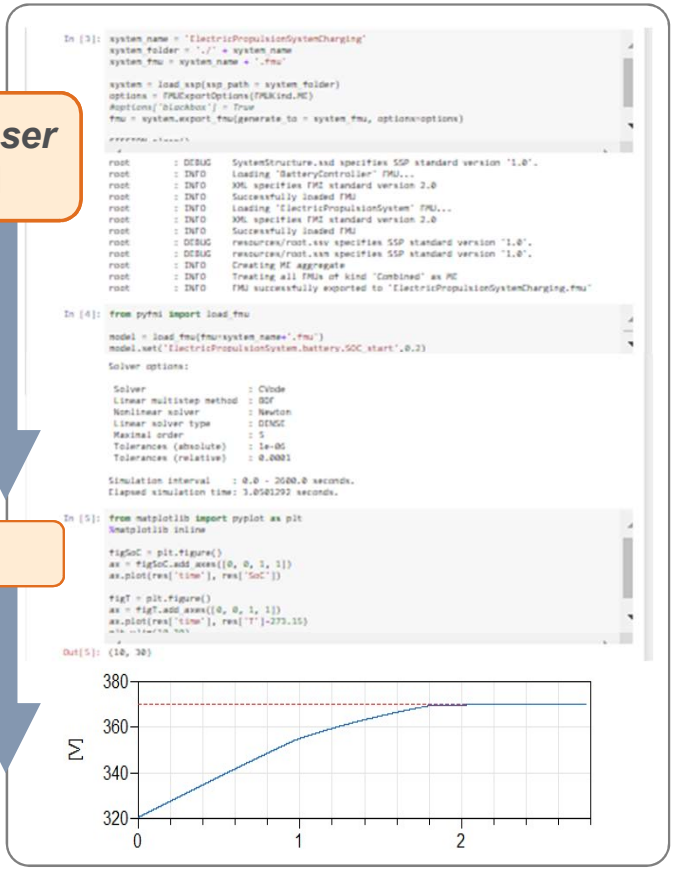
***FMI Composer* backend**

system

FMU
XML
CCode
Libs

PyFMI

Simulate system …



Modelon

Modelon Impact

System Simulation Software for Everyone

Designed for Collaboration

Accelerate Decision Making With Confidence

Modelon

THANK YOU

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