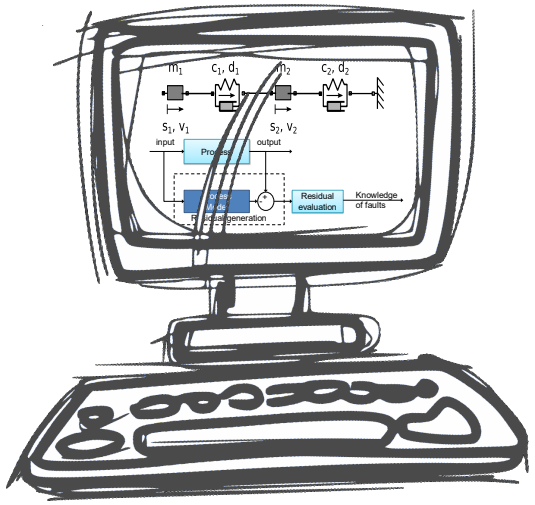
eFMI vs. FMI

From Physical Models to ECU Software

Recorded July 15, 2021

Oliver Lenord (Bosch Research)



EMPHYSIS

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efmi

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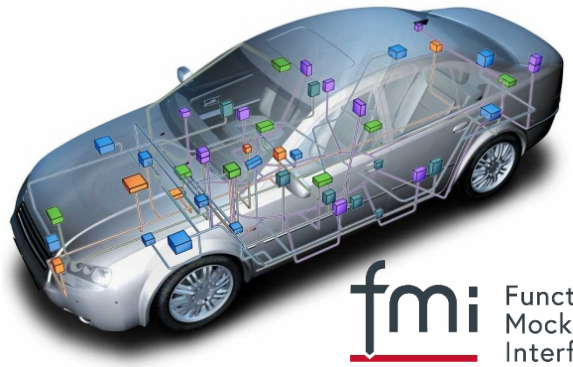
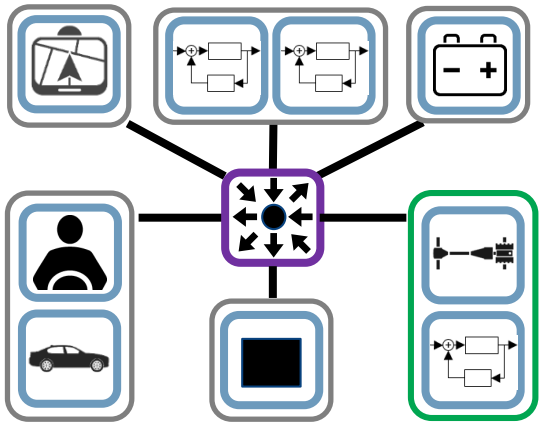
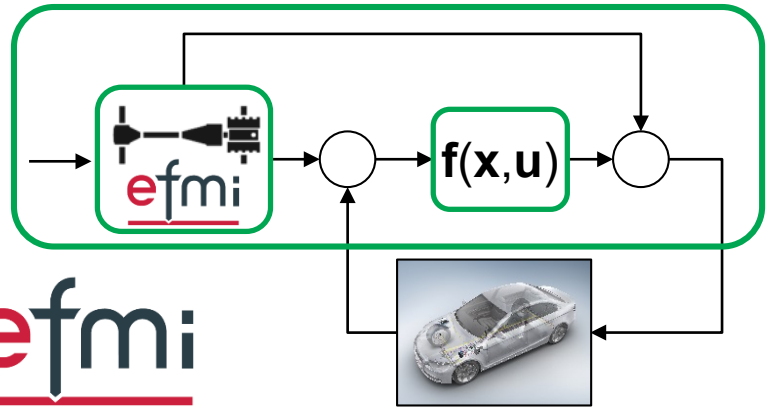
How?
FMI vs. eFMI (FMI for embedded systems)

- Model-based Systems Engineering

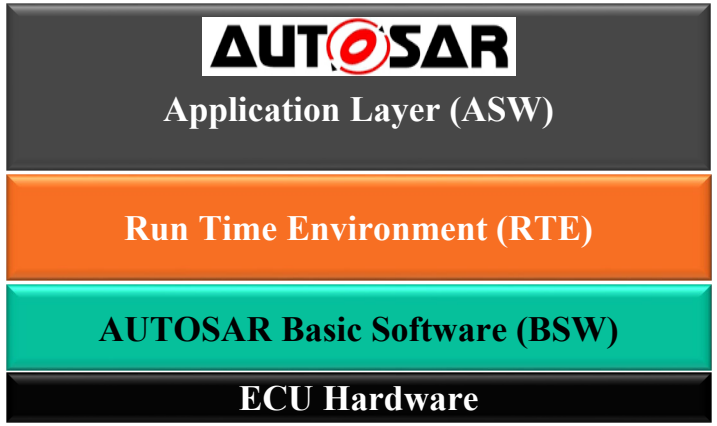




- Model-based Control Design
  - Virtual Sensors
  - Feed-forward Control
  - Model-based Diagnosis
  - Model Predictive Control
  - Advanced operating strategies
  - …

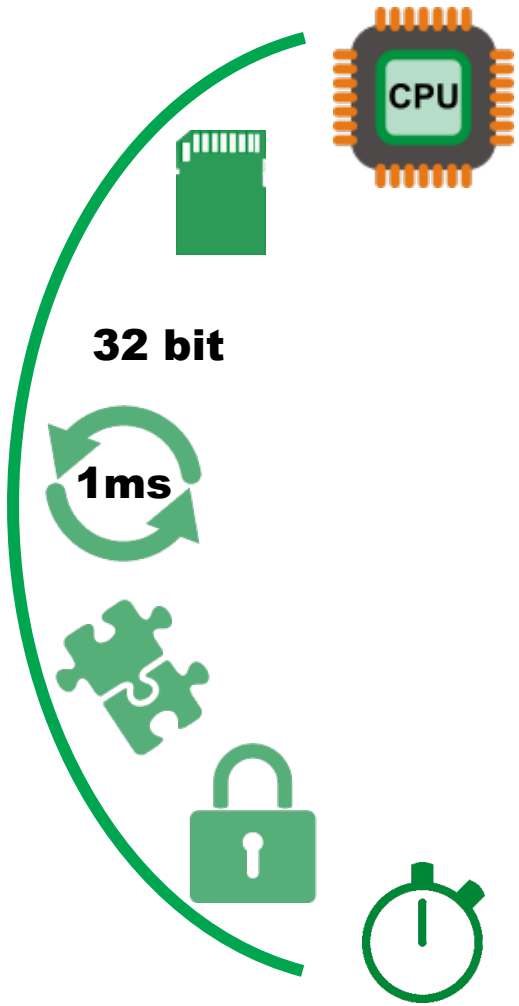


- Software Engineering



eFMI SW-C

How?
Special requirements of automotive embedded systems



- Limited computation power
- Limited memory,
- Single precision
- Limited sampling rate
- No exception handling
- Static memory allocation.
- Inbound guarantees.
- Guaranteed execution time.

- Specialized Hardware

Bosch MDG1 ECU

- SW Architectures

AUTOSAR

- Rules & Regulations

MISRA

Motor Industry Software Reliability Association

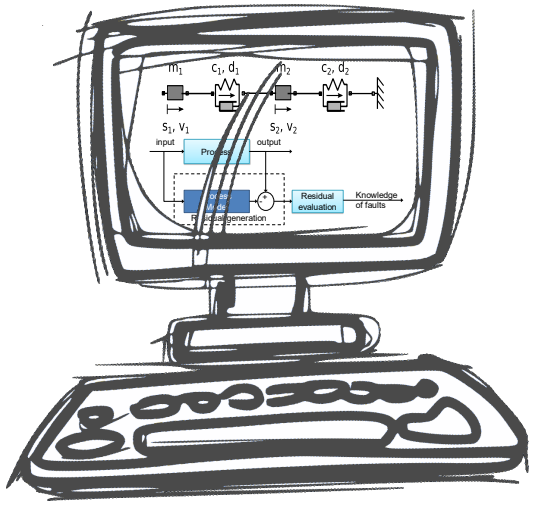
Model-based development with “eFMI”
From Physical Models to ECU Software

ITEA 3

Recorded July 15, 2021

Oliver Lenord (Bosch Research)

➔ Look-up EMPHYSIS results: https://emphysis.github.io/
➔ Visit us on https://efmi-standard.org/
➔ Join the MAP-efmi: https://modelica.org/



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