

Speedgoat FS Symposium

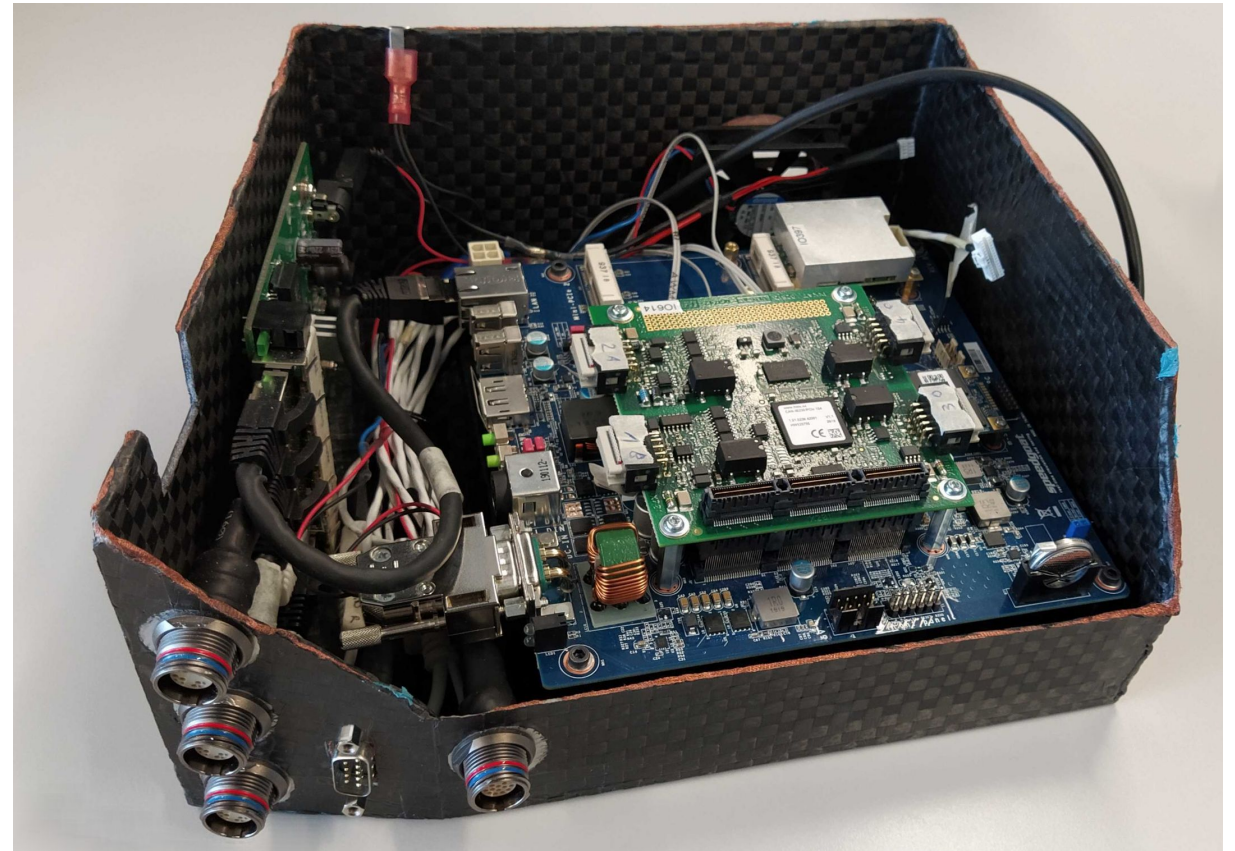
alvier

- Overall weight: 162 kg
- Topspeed: 115 kph
- Self developed:
 - motors
 - inverters
 - aerodynamic package
 - hydraulic suspension



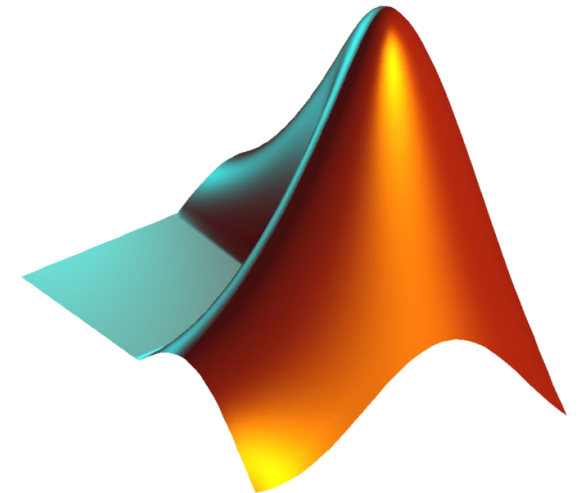
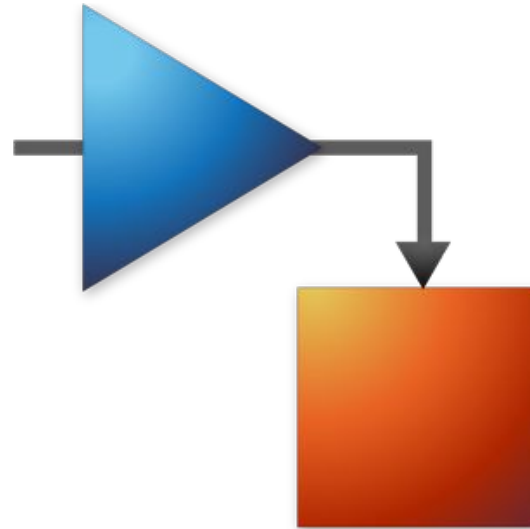
Vehicle Control Unit

- Speedgoat Baseline Openframe
- IO614 CAN Module
- IO397 FPGA Module
- Simulink 2019b kernel
- Custom CF housing



Model Implementation

- Matlab & Simulink
 - programming and graphical modelling environment
 - toolboxes, libraries & blocks
 - automatisisation



Code Execution

- Speedgoat hardware as target machines
 - directly accessible in Mathworks environment
- Running Simulink on the target machine
 - model compilation in Simulink
 - kernel generation with Speedgoat tool
- Real-Time observation of execution
 - real-time monitoring & plotting
 - parameter control

Data Logging & Processing

- Providing data logging capability
 - data stream to host computer
 - permanently stored on target machine
- Managing & organizing data in Matlab
 - automated download and conversion
 - cloud or database integration
- Data analysis in Matlab
 - scripts and applets
 - (re-) simulation

Data Acquisition: Testing

Preparation

1. Develop Algorithm
2. Simulation
3. Test Day Organisation
4. Detailed Testplan
 - a. Necessary Parameters
 - b. Track Layout
 - c. Iteration Description

Data Acquisition: Testing

Preparation



Execution

1. Track & Car Setup
2. Safety checks
3. Test Runs
 - a. Reference Run
 - b. Parameter Iteration
4. Data Acquisition

Data Acquisition: Testing

Preparation



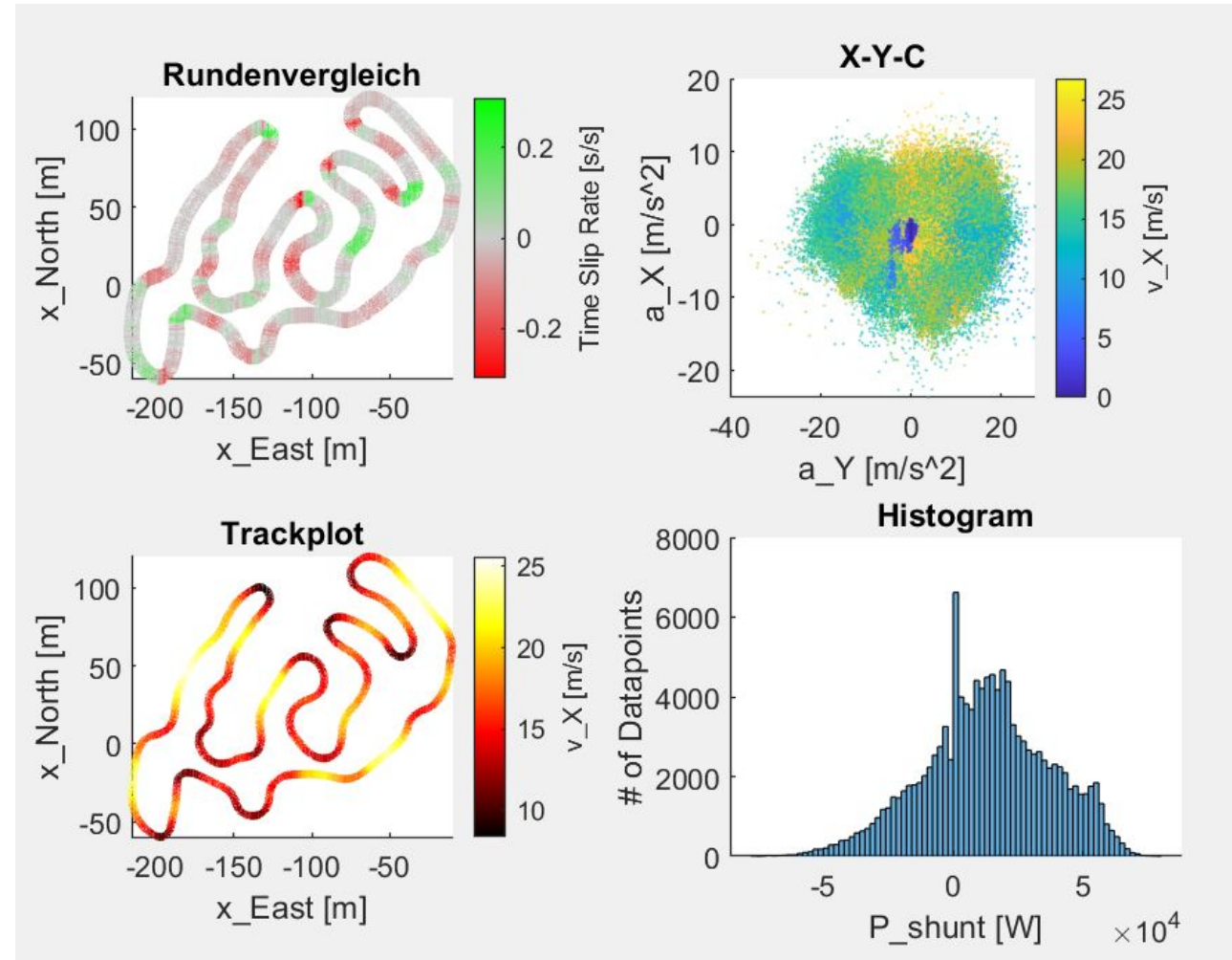
Execution



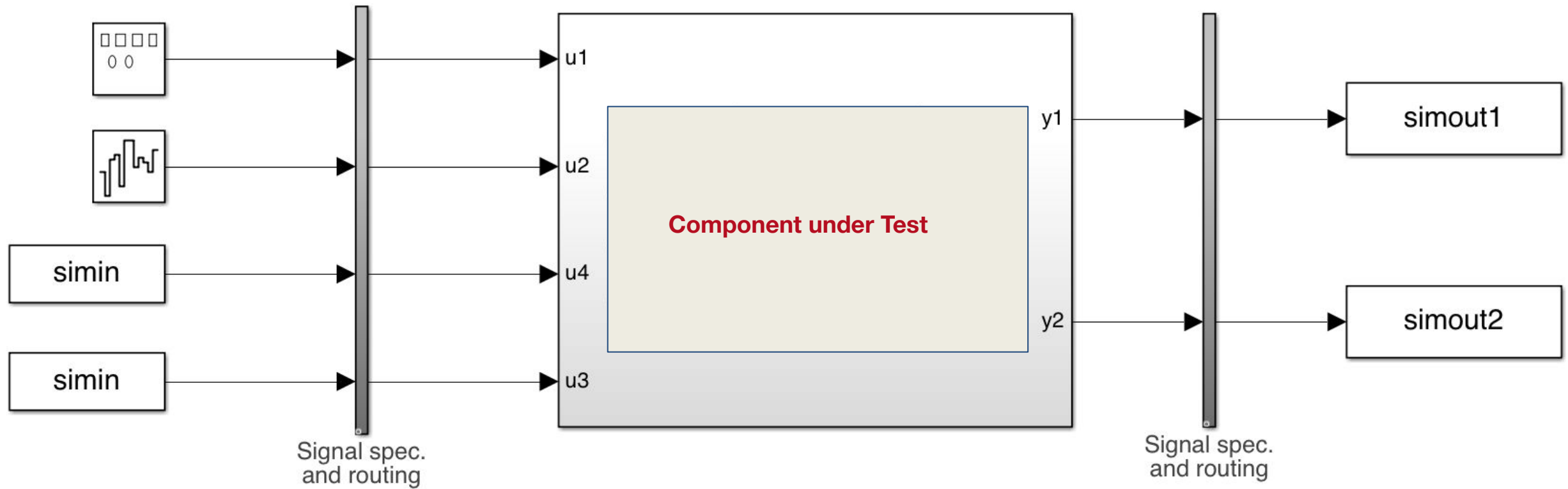
Data Analysis & Resimulation

Data Analysis

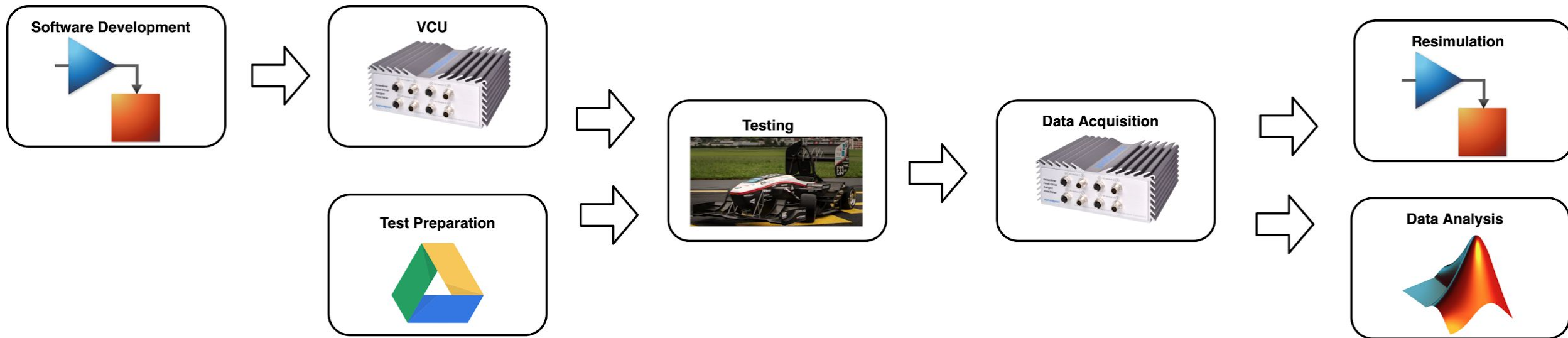
- GUI based tools
 - organizing & processing data
 - analysing test results
 - intuitive & user friendly
 - high modularity
 - usable for anyone
- Script based processing
 - libraries and toolboxes
 - interface to other software



(Re-)Simulation



Recap





Thank you for your attention!