3Ccar Newsletter No.1/2015

October/November 2015

Introduction

Welcome! The newsletter of the 3Ccar project will be used as a tool for informing the whole consortium members about the status of the Work Packages and the Supply chains. There will be also a paragraph dedicated to the Core Team work and Dissemination highlights. The Newsletter will be released every quarter in order to keep all the partners updated.

Supply Chains updates

SC1: the SC1 Kick-off meeting took place in Neubiberg, Germany, which was followed by discussion of the responsibilities and tasks for each partner. Specifications of the battery system and its components were discussed and related Deliverable D1.1 is currently being finalized.

SC2: Functionally Integrated Powertrain is still in the concept definition phase. In the project proposal of ECSEL a wheel hub drive (in wheel motor) is announced, however, they are not favored by the OEM (Daimler) at least for sports cars due to the high unsprung mass. Currently SC2 is evaluating other drive concepts like near wheel motors. In any case the integration of a (multiphase) inverter, sensors and multifunctional control board is planned.

SC3: the patners of the SC3 have prepared a template for Deliverable 1.4 in Task 1.3. Task 1.3 (Definition on requirements on the fuel cell system) has a progress of ca. 25%, i.e. a somewhat slow start because of the holiday season. Tasks 2.5 (simulation), 3.2 (Development of components), and 4.3 (Development of communication) are in preparation phase.

SC4: The work in SC4 is currently focusing on the tasks and deliverables corresponding to WP1. The state of the art of automotive suitable embedded platforms is in progress. A set of representative benchmarks, covering from conventional functions to advanced algorithms, is being established together with the best possible methods to execute them. Considerations about possible system architectures and topologies will be made concerning both the Domain Controller's internal architecture as well as the powertrain and vehicle level architectures.

SC6: First activities have started for design and modelling power modules with wide band gap material inside. Different module concepts are under consideration. For example molded modules with double-sided cooling option or power modules for low power application with press fit technology. Solutions with pure SiC devices (SIC –Mosfet) are possible. But also a combination of SIC- JFET / Diodes with silicon devices could be an interesting solution for higher efficiency.

SC7: Main focus in SC7 has been in Task 1.6 System and component level requirements for MEMS and sensors for automated driving. Target for the MEMS mirror optical dimension has been initially set as 4 mm in diameter and different LIDAR system architecture options have been analysed based on that. Two basic options are single optical path device or a system with separate send and receive channels. Analysis includes initial design of the lenses, detection principle, and laser power budget and eye-safety assessments.

SC8: the supply chain deals with developing a validation program for the E-machine with focus on the Durability/Robustness and Lifetime test. The system under test will be an E-machine provided by Siemens. Main work did not start yet, planned is to have a SC8 KOM during the meeting in December.

SC9: VGTU has developed the Matlab simulink physical model of the hydraulic shock absorber and vehicle model, however, there are still some missing parts. TNO is currently building the models of the smart damper and integrating the drivetrain model. TU/e is currently modelling the hydraulic model for double tube and monotube damper and is investigating principles and background of electromagnetic and piezo valves.

SC10: At this moment, FICOSA-TRIAD activities in 3CCAR project (as leader of SC10 section "Battery charger platform") are currently focused on WP1,

which is the first stage of the project work plan, organized according to the V-cycle described by the Systems Engineering Process methodology. At this stage the on board battery charger main requirements (electrical, mechanical, environmental, etc.) are being defined. These global system requirements definition will lead to a more detailed system and subsystems architecture definition down to the semiconductor level.

Work Packages updates

WP1: the templates for the deliverables have been defined and are in the process of consolidation. WP leader is still working on the clarification of the responsible persons list. Next step will be to make a Doodle call for a common Telco. The feedback I received so far indicates a work progress of ca 25%.

WP2: We set up the entire work package and organized a regular webex phone conference in order to align our activities.

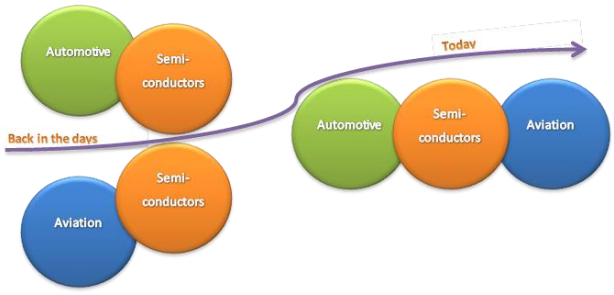
WP3: So far, no activities. The work package WP3 will be kicked off with input from WP1.

WP4: WP4 have just started its activities, mainly adapting algorithms needs and constraints to the requirement specification (WP1) for the selected existing or novel HW (WP3) and for the system-level designs (WP2).

Core Team highlights

In August 2015 Core Team had a meeting in Unterwossen, Germany, where they have discussed the project issues. During the meeting, 3 domains for automotive, nanoelectronics and aviation were set. The partners have also discussed the overall picture of semiconductors' links to automotive and aviation, which is illustrated below.

Currently, Core Team is having teleconferences on a regular basis (every 3 weeks) in order to discuss the arising issues. At the moment the partners are working on the 3Ccar Vision 2016 meeting in Malaga, Spain.



Dissemination & Meetings highlights

3Ccar project will be presented in the **Nanoelectronics forum, 1-2nd of December 2015**, which takes place in Berlin, Germany. Tenneco will represent the 3Ccar consortium as well as SC9. There will be a presentation made a short video prepared.

Save the date! The upcoming 3Ccar partners meeting will take place in Malaga on the **9-10th of December**. The meeting is organized by Technalia and the Core Team.

The intention of the event is to discuss our ideas towards electrification, electrical storage and the overall setup; where we have to move when we integrate functionalities and furthermore applications. This creates more **complexity** that must be addressed by more holistic solutions, architectures and higher performance realized by the technologies.

See You all soon in Malaga!

¡Nos vemos pronto en Malaga!