Electric Mobility as Open Source

The thought to share one's know how with competitor is not very common in the automotive Industry. Prof. Shimizu from the Keio University in Japan has developed a vehicle applying the ideas of Open Source. This vehicle is close to mass-production development stage and reaches 330 km with one battery charge. A result which even attracts the European Car Industry to this idea.

Open Source had major impact on the IT world. Specialists meet in the internet and start to commonly develop software-projects which everybody can join and everybody can use. These projects can reach a scale where they become serious competition to established market leaders. Open Office or Linux are only two major examples .

But Open Source in the automobile industry? Prof. Hiroshi Shimizu from Keio University, one of the top Japanese universities, with his company SIM-Drive founded in 2008, is the pioneer of such ideas. For more than 30 years Prof. Shimizu has been working on electric mobility. He has completed more than 10 vehicle projects, which reached a technical level to drive on Japanese streets with an official number plate. In 2005 the ELLICA, a 8 wheel high power sports-vehicle, with the interior space of a luxury car, attracted the interests of international industries when it set a still standing speed record of 370 km/h for electric passenger cars.

But Prof. Shimizu's challenge had not ended even with such a historic record. His wish is to accelerate the fast distribution of his technology for electric vehicles in order to realize his main target, which is to contribute to avoid global warming. Already in 2005 his technology was close to mass-production level, but the interest of the automotive industry to produce a non-in-house technology was limited.

△ *Prof. Shimizu teaches at the Keio University and is president of SIM-Drive. (www.sim-drive.com)*

This has changed with the introduction of SIM-Drives newest project, which Prof. Shimizu presented to public at the end of March 2011. For the SIM-Drive "Project 1" the scientist and president of SIM-Drive could fascinate 34 Japanese companies. In 2010 he promised these companies that in 2011 he would release a new vehicle which will set a new leading standard for electric cars. The participating companies were not disappointed. As Prof. Shimizu promised, the new car reaches 330 km with a one-time battery charge. The battery has the same power as the battery of the Nissan Leave, but the reach is 1,6 times. Following experts' opinions SIM-Drive has the leading vehicle when it comes to driving distance. Insiders are not surprised. More than 30 patents which are core to success in electric mobility are held by Prof. Shimizu and SIM-Drive.

What clearly differentiates Prof. Shimizu from the many pure academic inventors, is his sense for business. He had long time recognized that he, as one scientist, would not be able to accumulate the capital which is required to build a car and set up the sales, service and distribution network

330 km with 25 Kw h, SIM-Drive Project 1

at the same time. In the meantime, he was aware that he held values which are needed and deserve continuous development. Hence, he transferred His know-how, his network and his patents into a new company SIM-Drive, which received a small startup capital from non-automotive companies like Benesse Corporation, Gulliver) The company concept is the following: SIM-Drive develops components, which are core technology for electric vehicles, and also complete electric vehicles. The projects are financed by companies who participate actively or observingly with around 200 000 Euro participation fee. The results of the projects can be used freely by the participating companies by paying a low pre-defined royalty fee if they want to produce components developed and patented by SIM-Drive.

Open source: Anybody can join, anybody can use the results. Why should companies join such a project? That is because participating companies can have access to the accumulated know how and industry net-work of SIM-Drive. Most companies would need 2 to 3 years to develop a comparable level and they would need 2 digit Mio. Euro budgets to get there. SIM Drive is staffed with high grade employees from the automotive industry and academic and academic world and the results need no further elaboration on how successful this concept is.

In October 2010 SIM-Drive decided to promote the participation of international companies to “Project 2” which started in Jan. 2011. The companies only had one month to decide on participation. BOSCH and PSA (Peugeot Citroen) were fast enough to decide and are now actively participating in building the next car with improved components which will be introduced to public in March 2012. Again this different type of vehicle will have the technical pre-conditions to go in mass production.

The Project 1 vehicle and its components are close to mass-production development status and the industrialization process has started. It is also possible to build the complete vehicle under a license of SIM-Drive and investors are showing concrete interest to realize this. A major challenge for non-automotive companies to enter this business always was the creation of a sales and service network. We have a solution at hand today. It is possible to use the existing network of major used car dealers, who are more than happy to sell and service electric vehicles.

Compared to Open Source in IT, the motivation of SIM-Drive is not to attack existing players in the market by building its own brand. Prof. Shimizu rather wants to see his company as a complement to in-house developments of the major automotive players.

Isuzu for example is using Keio technology today for public transportation project and the first bus could already be seen on the streets of Yokohama.

SIM-Drive Project 1. Benchmarktechnologie als Open Source

Technical Data:

Overall Length / Width / Height	**4700mm/1600mm./1550mm**
Passangers:	4
Weight:	1650kg
Drive:	Outer Rotor Inwheel motor (not water cooled!)
	Four wheel drive
Reach per charge	
JC-08 mode:	333km
100kmJh constant:	305km
Energieverbrauch	
By JC-08 mode:	77Wh/km (equivalent to 1,4 l / 100 km)
at lOOkm/h constant	84Wh/km
Accelaration: O- lOOkm/h	4.8 sec
Max. Speed:	150km/h

SIM-Drive für Europäische Partnerfirmen und Pressekontakt:

CBI Partners (Cross Borders Implementation) is specialized in operative management consulting, crossing borders. Markus Schaedlich, Managing Partner; is working with Prof. Shimizu since 2004 and in SIM-Drive he is responsible for the contact to European partner companies and customers. He also is the press interface for Europe. mschaedlich@sim-drive.com.

CBI has a strong foot-print in the automotive industry and alternative energies and is one of the leading consultancies specialized in business between Europe and Japan (www.cbixborders.com)