



## Interview with Grégory Gackel PSA / October 28, 2015

### Mr. Gackel, mobility has been changing dramatically in recent years: Where is this journey heading in your view?

For me, it is completely clear: There are two topics, connected services, in other words the connected vehicle in all of its manifestations (Car2X), and autonomous driving, which are going to dominate the discussions centered on the automobile and its development. The evolution of advanced driver assistance systems (ADAS) will be making rapid progress. At the moment, for example, adaptive cruise control (ACC) is being installed. In the next few years, traffic jam assists, followed by automated driving on freeways, will be playing an increasingly important role in new vehicles.

### At PSA, your department is responsible for testing and integrating vehicle electronics. What exactly does your job look like?

Our job is to test the entire electronics – by now amounting to more than 50 electronic control units per vehicle. You can

imagine that this is a pretty complex task. My colleagues and I are responsible for ensuring that the tested systems will ultimately work out on the road.

### What challenges does your work entail?

Like all manufacturers, we are challenged by the growing complexity of the electronic systems. As there are more and more advanced driver assistance systems, the number of functions and variants to be tested increases enormously. Clearly, the quality of our tests is important. As PSA develops modular components, reliable testing of the individual components is particularly important because they are installed in many vehicles types and variants – so they have to satisfy maximum quality and safety requirements.

### What is your approach to testing?

We use HIL systems from National Instruments. We have been relying on this hardware for many years and have progressively

been enlarging our inventory according to the scope of our testing activities. However, we were in need of more testing opportunities in an earlier development stage than these systems were able to offer us. As we definitely wanted to combine a new solution with our existing systems, we started looking for an appropriate solution provider and selected IPG Automotive.

### What were the reasons for your choice?

The company has extensive expertise in chassis simulation and (camera-) based sensor models – fields that have to be considered increasingly in ADAS testing. Furthermore, both software and hardware products have been used in other departments at PSA, for instance for ESC, brake system or camera tests. Past and present experiences gained with them have been very good so that we had reason to expect a positive progression of the project with intensive support.

### What systems do you specifically test with the solution of CarMaker in combination with NI platforms?

Everything, actually – from the engine and the transmission ECUs as well as powertrain control units to chassis ECUs, such as ESC and EPS. In the field of ADAS, the range is very wide as well. For instance, we are testing ACC, emergency braking and park assist functions, traffic sign recognition and lane keeping assist systems. The interaction between all these systems is very complex and one of the main reasons why our test effort has increased. And that exactly was the crucial factor which motivated us to start looking for a new testing solution. Our objective was to find a dynamic test environment with a broad scope of tests delivered by a single provider with a very comprehensive view of vehicle development and testing. In the final analysis, CarMaker best meets these requirements.

### Is it correct that the connection of CarMaker to National Instruments hardware only came about as a result of your project?

Yes, that's true, we agreed on a joint development project with benefits for both companies. Due to our direct exchange, IPG Automotive managed to present a precisely fitting solution to us that we are now working with at PSA and are

very satisfied with. And IPG Automotive in turn profits from its implementation in that they are able to offer this variant as a solution to other customers as well.

### All this sounds very simple – but, honestly, didn't this project entail some issues to be dealt with as well?

Initially, we were faced with the challenge that many of our colleagues had no prior experience of working with CarMaker, so we had to organize workshops to train them in handling the new software. Naturally, this required a certain adjustment period but, thanks to the user interface's ease of use, our employees very quickly familiarized themselves with it. Other than that, there were no issues – we managed to resolve any emerging challenges due to our close cooperation and now we are very successfully using CarMaker on our existing hardware.

### Can you specifically name the benefits that the utilization of virtual test driving provides you with?

For one, we are obviously saving time or gaining time for more extensive tests. For the other, the answer, clearly, is that we are saving a lot of money with it. In eight projects, we cut the number of prototypes by a total of about 30%, which in this specific case corresponds to several hundred thousand euros.

### This project was no doubt a milestone for you, but the next challenges are already on the horizon. Continually increasing connectivity, plus time and cost pressures ... how are you dealing with them?

At the moment, we are preparing the so-called 'second wave of advanced driver assistance systems.' This means we need to be able to test subsystems as early as possible. In addition, we are heavily involved in further automation of testing. On the software side, this has already been achieved for maneuver catalogs by CarMaker – the future challenge will lie in no longer performing manual modifications of the HIL system but to run parallel tests of several functions to the extent possible, instead of testing one after the other. Highly automated driving is going to create a lot of work for the relevant development departments – but I am sure that we are going to find suitable solutions in this field as well.

## PROFILE

### Mr. Grégory Gackel

Grégory Gackel is Electronic Integration & Verification Manager at PSA Peugeot Citroën.

In 2012, the department for testing electronic vehicle components launched a three-year project involving 50 people to equip existing testing systems with a powerful test environment. At the beginning of the project, the electronics testing department had more than 44 National Instruments test systems, ten of which are now compatible with CarMaker/HIL.

The project aim was to achieve the first-ever porting of the CarMaker software to existing NI platforms. Due to the continually increasing test effort, the need for test systems will continue to grow as well.