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Conversations for tomorrow

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Intelligent Industry: The Next Era of Transformation

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ENABLING THE AUTOMOTIVE SOFTWARE TRANSFORMATION

Renault Group

Frédéric Vincent joined Renault Group in 2016 as Chief Information Officer, drawing on his experience in the media industry, a leader in the digital transformation. He is also Chairman of the Renault Digital subsidiary and leads Renault Group's digital transformation. On April 1, 2019, Frédéric Vincent was appointed EVP, Group IS IT/Digital and EVP, Renault Brand, IS/IT.

The Capgemini Research Institute spoke to Frédéric about the digital transformation of the automotive industry and what the future of mobility will look like.

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ALIGNED BUSINESS AND IT STRATEGIES

Frédéric Vincent
Member, Renault Group Board of Management, CIO Renault Group

How has Renault's combined digital and IT structure helped accelerate digital transformation?

— When we started our digital transformation, we realized that the IT department had to be modernized to capture the full value of digital. Our teams were mainly focused on managing contracts with suppliers, or delivering products based on cost, quality, and planning. We were not focused on delivering benefits from technology, working in short cycles, or understanding the needs of the different businesses within the group.

Such a change would usually be a very long journey. To move fast, in 2017, we decided to create a subsidiary dedicated to our digital transformation, called Renault Digital. We were able to hire several hundred people with the right skills. They could immediately deliver digital products for the company. Bringing in the correct skillset also afforded more time for the existing teams to transform themselves.

Meanwhile, Renault Digital could play the role of incubator for IT teams and projects. To enable this, Renault Digital had to be close to the IS/IT teams, and we therefore allocated the same management to both teams. This ensured Renault Digital had sufficient autonomy to make key decisions while being closely connected to the rest of IS/IT, which meant they could embark on this transformation as a unified team.

How well prepared is the automotive industry for the data-driven digital era?

— The automotive industry is not particularly advanced in the efficient and innovative use of data. We are working hard, firstly to create usable data; secondly, to collect it; and lastly, to make it consistent and transversal within the company.

We have a lot of data today but were not able to share it across the industry or even across different business units in the organization as there was no standard or common referential. In the plants, for instance, we have many different robots coming from different providers that don't speak the same language. We needed to define standards for our industrial data to make it interoperable. Then, we had to put all curated data in a common space to create meaningful links. To achieve this, we created a data lake hosted in the cloud. Cloud technologies and capacities are essential to manage a large volume of data and scale very quickly to follow the evolution of our needs. Additionally, we need to share all this data and since the cost of uploading to the cloud is high, we use edge computing to analyze the data closer to the point of collection, reducing latency [delay] in transferring data across a network. After initial computation near the data source, we only upload relevant data to the cloud that we need for large scale or cross-domain calculations. This optimizes costs and makes data available to other parts of the organization for cross-functional usage. Thanks to the cloud, we created transversal integration of data between functions. This allowed us to start using the data from Industry 4.0 in sales, data from after-sales in engineering, etc., to generate value.

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On the consumer front, we also need to be cognizant of complying with the General Data Protection Regulation (GDPR) and similar standards. We need to gather all the data from inside a vehicle, since it is vital for maintenance, security, and understanding usage patterns. We have 80 ECUs in a car, which can generate up to 25 GB of data each hour.[1] But, as most of it is considered personal data, we need to maintain transparency about how we access it, for customer assurance.

25 GB

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1 Venture Beat, "Vehicle telematics data could unlock $1.5 trillion in future revenue for automakers," December 2018.

SOFTWARE AND SERVICES AT THE CORE

How do you see software driving change within the automotive industry?

— Software-driven transformation is redefining the automotive industry in terms of how vehicles are conceived, designed, and manufactured. On the product front, the heart of a vehicle is now the software, rather than a collection of specialized hardware.

Over time, cars will become more intelligent and have the ability to learn. When a customer buys a car, it won't stagnate as a product during its lifetime. It will improve, learn, and will bring more value to the owner of the car with the help of emerging technologies such as AI, edge, and Cloud computing. This revolution will be comparable to that of the smartphone. The use cases associated with a smartphone skyrocketed when it was connected to the cloud. In the same way, the connected car will lead to the invention of new services. It will create new business models and new revenue opportunities for auto manufacturers.

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How is Renault integrating software into manufacturing operations – specifically, digital twins?

— We use digital twins extensively to save time and money and achieve optimization and greater efficiency. For instance, in car design, we used to test car-crash safety by throwing the car into a wall. To achieve the desired results, we had to repeat this process multiple times. Today, we can do this using digital simulation, where we create a digital twin of the car in the cloud and simulate the crash to update, upgrade, and change required parameters. We still do a physical test with a real car to verify the final results, but digital simulation of crash tests brings significant savings.

Digital twins help us make rapid changes in our manufacturing line. When we have a new car to produce, we can use digital twins to check and configure the manufacturing line in a matter of seconds. We can simulate all possible manufacturing chains to optimize the final configuration before building a single piece. Once the plant is in operation, a digital twin helps us anticipate breakdowns, optimize energy consumption, and achieve higher efficiency.

"With digital simulation, we create a digital twin of the car in the cloud and simulate the crash to update, upgrade, and change required parameters. We still do a physical test with a real car to verify the final results, but digital simulation of crash tests brings significant savings."

What role will IT play in Renault's fulfilling its commitment to become more software-driven?

— The IS/IT and Digital teams have a crucial role to play in enabling Renault's software-driven transformation, in terms of defining the car-software strategy and designing the organizational structure required to deal with this software evolution. We work closely with the engineering teams to realize various applications of software inside the car.

When you put software in the car, the first thing that must be done is connecting the car to the cloud, to get information used in maintenance, security, understanding customer usage, and for software updates. The IS/IT team provides the tools to enable this crucial connectivity to the cloud. We have created a car-data platform that is dedicated to handling this connectivity.

> **"Software [in automotive] is enabling new services opportunities, ranging from maintenance to insurance."**

Many operations can also be undertaken outside the car. For instance, we have a camera in front of the car that is able to take pictures of tires when a turn is taken. By uploading these pictures to the cloud, wear and tear on the tire is detected. We can go back to our customer saying, "You have an issue with your tire." This is enabling new services opportunities, ranging from maintenance to insurance. IT has the responsibility to put the framework in place to enable these services – in terms of cloud, connectivity, and artificial intelligence (AI).

LOOKING AHEAD: FROM OWNERSHIP TO "USERSHIP"

How do you see mobility evolving in the next 5–10 years?

— There are three main axes. The first major evolution is due to CO2 regulations and the move to electrification. Although we are still at the beginning of this, the market share of electric cars is increasing day by day.

The second axis is the increasing use of software inside a car. By 2030, we anticipate 20% of our turnover to come from services, data, and energy trading. These services could include updates on quality and maintenance, insurance, or suggested features a customer can install in their car to improve user experience.

The third axis focuses on changing customer behavior: moving from "ownership" to "usership" in order to optimize the cost of cars. We view this as an emerging trend, since, especially in big cities, owning a car can be a hassle, but people still want to be able to use one. This is creating new businesses, including car-sharing and -hailing, which we call "mobility."

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"Changing customer behavior: moving from "ownership" to "usership" in order to optimize the cost of cars is one of the key axis of mobility's evolution."

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