Novartis has a rich history of investing in the most promising frontiers of science, the most exciting innovations in the business of medicine, and the most significant healthcare needs. As the industry faces acute disruption, the company's prescription for ongoing success hinges on APIs and microservices. Pascal Bouquet, Global Head of Architecture for Drug Development, answers a few questions about digital transformation is moving Novartis forward.

Why did Novartis need a digital transformation?

There is a huge disruption happening in healthcare. The healthcare system will be drastically different 10 years from now. We need to be able to keep innovating and finding new ways to reduce the time between discovery of a molecule and its sale as a medicine. That means we need more agile and modular IT solutions.

What was the thought process for aligning technology with business goals?

The initial driver was to gain more agility in the IT system so we could better leverage the data we have. Digital technologies have shaken up the relationships between pharmaceutical groups, healthcare professionals, patients, and insurers. We are living in a world where technology is transforming medical ecosystems, where we need the right technology at the right moment. APIs make it possible to experiment more quickly and create value. They are an essential tool for innovation.

How did you get started?

APIs and microservices along with containerization are the foundation for our digital transformation program. The very first challenge was to create the right API strategy and define how we were going to govern APIs. We created an API program and implemented the API platform. But that wasn’t the main challenge; technology wasn’t the main challenge.
So, what was the main challenge if it wasn’t technology?

The main challenge was changing the culture in IT and in the business. Because, very soon, we are going to go to data services, to an API economy. You can imagine algorithms being exposed as APIs. So, the API challenge is really a change of culture, especially for architects, because you have to open your world, no more working in silos. You need to open your APIs and make sure you have consumers for them.

Is the culture change happening?

We have already onboarded 300 APIs, which can be data services or business services. At the end of 2018, we had 450 operational APIs, compared to 170 in mid-2018. We have adopted APIs at an exponential rate, because they truly meet business line and data openness needs to design the best possible data services. That’s where we are in a year, which is quite amazing to me.

What’s next for the architecture of the platform?

We started with a basic API implementation architecture with the gateway we have in Europe and the U.S. More and more, we see the need to extend this architecture with more gateways in China, in Japan, to respect data residency requirements we have in those countries. And we have a plan to onboard many more APIs from various programs, so we mandate each and every program to use APIs today.

I think the next step is determining how we use the platform to onboard microservices, as microservices are going to be a key architecture principle for future platforms, future developments. By using microservices to uncouple various existing solutions and creating new services, we can strengthen ties with the ecosystem and encourage collaborative working styles.

How does the API platform speed innovation at Novartis?

Given our enormous investment in research and development, there’s so much we can do to improve efficiency and operational excellence. APIs make it easier to open up data for the benefit of the entire ecosystem that surrounds the company. This need for openness is more and more apparent, with the need to regularly bring in partners — for R&D programs, for example — or as part of value-creating open innovation initiatives.

We’re also using artificial intelligence and data lakes to support inference and insights, which accelerates the pace of clinical trials and shortens the time to market for medicines.
How do you see this transformation helping to shape the future of healthcare?

The healthcare system will be drastically different a decade from now due to the combination of data, digital, and the innovation we have in bio. It will be powered by a better knowledge of genetics and diseases, and by data and digital, where we have more and more computing power to understand the diseases.

This means we are going to move from a system which is more physician-centric today, with physicians making decisions, to a more patient-centric system. We can imagine patients managing their own data on a patient data platform, making decisions on their health. And we’ll see more algorithms, step by step, making or proposing decisions versus physicians making those decisions today.

So, when you think about all that, it’s a lot of digital transformation, a lot of data analytics platforms, blockchains will come into the picture, and the foundation of all that is APIs, microservices, and containerization. We really believe that APIs are the foundation for a digital transformation, and the transformation of healthcare itself.

About Novartis

As a leading global medicines company, Novartis uses innovative science and digital technologies to create transformative treatments that reach more than 750 million people in 155 countries.

With more than 200 projects in its clinical pipeline, the company consistently ranks among the world’s top innovators investing in research and development.

Pascal Bouquet
Global Head of Architecture for Drug Development at Novartis

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