# Big Pharma and Big Tech – Challenges and Opportunities

25 October 2019 | **Healthcare** | **Boris Langer**, **Patrick Steiner**
**Reading time:** 5 minutes

**According to Deloitte, the health market will be a $10 trillion business by 2022. Obviously, there are many different players that want to have a slice of that pie. This creates an increasingly competitive situation, especially between Big Pharma and Big Tech. Why both sides could benefit from a collaborative approach – and what that collaboration might look like.**

In the last few years we were able to observe a large – and entirely new – field of tension in the health industry. Big Pharma companies, specialized in developing new drugs and producing them at large scale, were suddenly challenged by Big Tech companies like Apple and Google that were entering the scene with large investments and access to a previously unseen amount of data. Luckily for Big Pharma, those entrances were often accompanied by a lack of experience in regulated environments and sometimes also an exaggerated optimism (see Verily's Smart Lens fail).

The latest activities of Big Tech companies now allow the conclusion that their way of pushing into the health business is mainly based on an expansion strategy. Acquisitions of startups and smaller companies allow them to feed on the domain-knowledge they themselves are lacking. For instance, Google/Alphabet allocates a third of its venture-funding to HealthCare and LifeScience Start-ups while Amazon just bought PillPack for $750 Mio. (link) and the accompanying direct access to about 40'000 patients and the license to sell prescription drugs.

It may not stop there. By leveraging consumer devices at a medical level, Big Tech can collect even more health-data from real world end points (e.g. Apple Watch 4 is now an FDA Class 2 Medical Device) and thus creating an invaluable feedback loop. Big Pharma on the other hand seems to prefer a more collaborative approach: A current survey shows that 82% of medical R&D leaders plan to collaborate with organizations outside of MedTech & Pharma (link). One of the ideas is to use the services and platforms of Big Tech to build their own health solutions on top of them. Current examples are Novartis joining forces with Microsoft to transform medicine with artificial intelligence and other Big-Pharma companies using Verily's Project Baseline to speed up clinical trials.

## Strengths and weaknesses of the players

While competing for the same market, both players bring along their distinctive strengths and weaknesses. Let us first consider the access and processing of data:

By 2025, 463 exabytes (EB) of data will be created every day ([link](link)) and most of it can somehow help us to understand how the human body works and how human behavior influences health. Currently only Big-Tech has the technical capabilities to handle this huge amount of data. More than anything else, the access to and handling of extensive health data from the consumer market is a big advantage of Big-Tech. However, looking closer at the data collected, it often cannot meet the quality requirements for medical use. Big Pharma is conducting thousands of clinical trials were the data has a very good quality. Thus, with quality over quantity, Big-Pharma is again ahead of Big Tech.

Another point to consider are the general conditions of the health market. The strong regulations of the health industry certainly represent a big hurdle for Big Tech when entering this field. Since human lives are endangered, legislation has introduced strong gates for new products. The safety and effectiveness of new products must be proven by the manufacturer before they can enter the market. Big Tech is not used to formal safety arguments and to handling complex regulatory requirements.

Big Pharma on the other hand has learned how to guarantee the safety and effectiveness of their products and has developed strategies to handle that topic. They have also built a strong relationship with notified bodies and regulatory agencies that is hard to infiltrate. Finally, Big Pharma has the pharmaceutical and biological knowledge crucial for the development of new cures as well as the capability to build the corresponding manufacturing infrastructure.

## Collaboration is key

It becomes obvious that each side has advantages that could compensate for the weaknesses of the other side. But there is something even more important that will force Big-Pharma and Big-Tech to collaborate: People.

Developing a state-of-the-art digital health solution is a demanding task that requires a vast amount of special skills which are usually attributed only to either side. The following building pattern has been derived from numerous digital-health projects Zühlke currently observes.
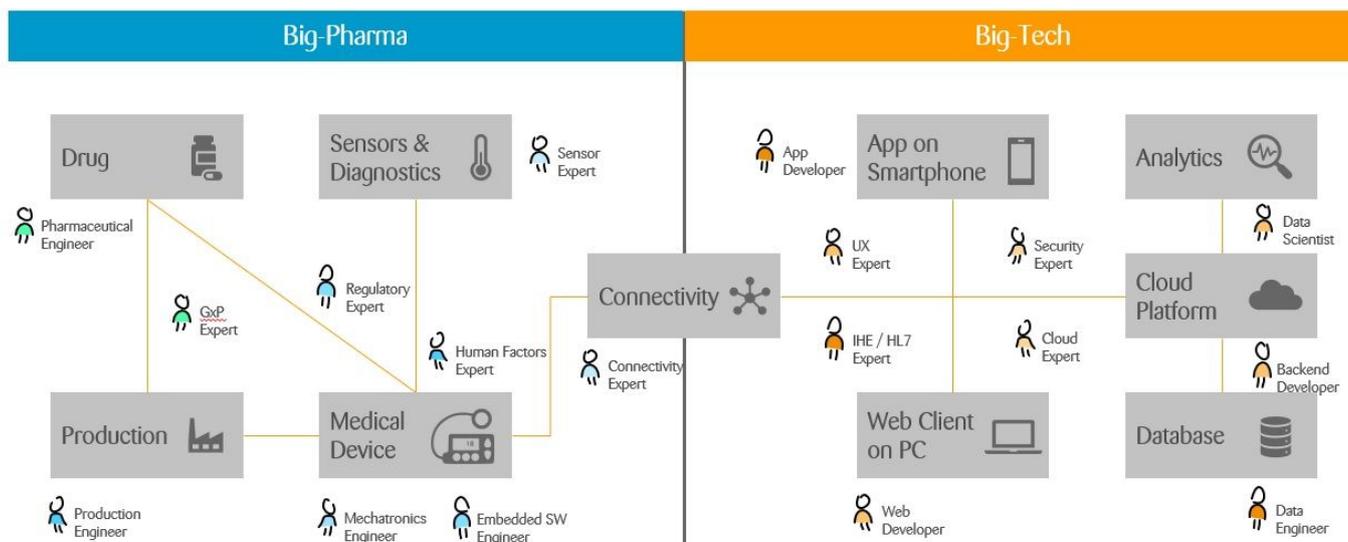
Digital Health Systems: Big-Pharma versus Big-Tech

Let's start with a classic medical device where mechatronics, embedded software and regulatory know-how are mandatory for development. If the device aims to employ a closed loop system, the needed skill set is already expanded by additional expertise for sensor-design and sensor-integration.

If the device is a combination product, pharmaceutical experts get involved and production engineers and GxP-experts are needed. Modern device design does not stop there, though: Connectivity expertise must be integrated into the development team to master the vast amount of technologies like GSM, BT, NFC etc.

At this point, it is vital to start looking to the Big-Tech world. Without a solid security concept, data is at risk and since we want to engage with patients and practitioners, we need a frontend. This requires security and user experience (UX) experts as well as web- and app-developers in the team. Last but not least, since everything is managed in the cloud, we need a cloud expert who selects the appropriate platform and designs the architecture while data engineers make sure that the collected data is stored so that data scientists can generate valuable information from the data. Neither Big-Tech nor Big-Pharma will be able to attract all these experts alone. Therefore, the only sustainable solution is a collaboration.

Please read in the second part of this blogpost, how this collaboration could look like.