



Big Data in Pharma

In recent years, the term Big Data has been heard more and more frequently and the collection of a multitude of virtual data has become a top trend across all industries. But what does Big Data actually mean and what technologies are behind it? And last but not least, what does it mean for the pharmaceutical industry?

Due to the continuous progress of digitalisation, heterogeneous data can be obtained from a wide variety of internal and external sources. However, Big Data is more than just a large amount of data, but is specifically measured by three specific characteristics: (1) the size of the total amount of data (volume), (2) the diversity due to the different data formats and structures, and (3) the speed at which the data is produced (velocity).

Forecasts predict that by 2025 around 75 per cent of the world's population will be connected to the internet and that, based on this, around 20 per cent of the total amount of data collected will be real-time data. The challenge that companies face in this context lies in the processing, standardisation and analysis of the huge amounts of data, which requires not only large storage spaces but also high computing capacity.

These requirements exceed the possibilities of conventional technologies and methods, which is why special big data technologies and big data analytics methods have to be used. The overarching goal of any Big Data technology is to transform data into useful information in order to generate new knowledge. The more data that is included, the more accurate the results derived from it. The technologies also focus on cost efficiency and speed in data processing in order to be able to generate new insights in real time and thus accelerate decision-making and automation processes.

In the pharmaceutical industry, these technologies and the data they collect are used primarily to support the conduct of clinical trials and for specific drug production based on predictive models. Furthermore, Big Data technologies are used for predictive modelling and control of drug reactions, but in the sales and marketing context, Big Data supports the prediction of customer behaviour and the corresponding design of advertising through the inclusion of demographic data, among other things.

Big Data Pharma-Facts!

- ◊ **The most important value chains:**
big data generation, big data management & big data product development
- ◊ **The most important public Big Data providers:**
Amazon, International Business Machines, Microsoft, Oracle, and SAP SE
- ◊ **The most important private Big Data providers:**
Antidote Technologies, BenevolentAI, Deep Genomics, Deep Lens, Exscientia, Healtx, Insilico Medicine, Lantern Pharma & Medidata Solutions
- ◊ **The most important private Big Data providers:**
 - ... on a technological basis: Cloud Computing, 5G & Cybersecurity
 - ... on a regulatory basis: data privacy & regulatory compliance, cures 2.0
 - ... on a macro-economic basis: cost & rising healthcare demand, drug pricing, and the future of work

Advantages offered to the pharmaceutical industry by Big Data:

- ◊ Faster development of new compounds
- ◊ Reliable and accurate analysis in combination with AI tools
- ◊ Ability to draw conclusions about previously unknown mechanisms of action
- ◊ Financial benefits based on higher returns

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