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## Big data: definition, benefits, challenges (infographics)

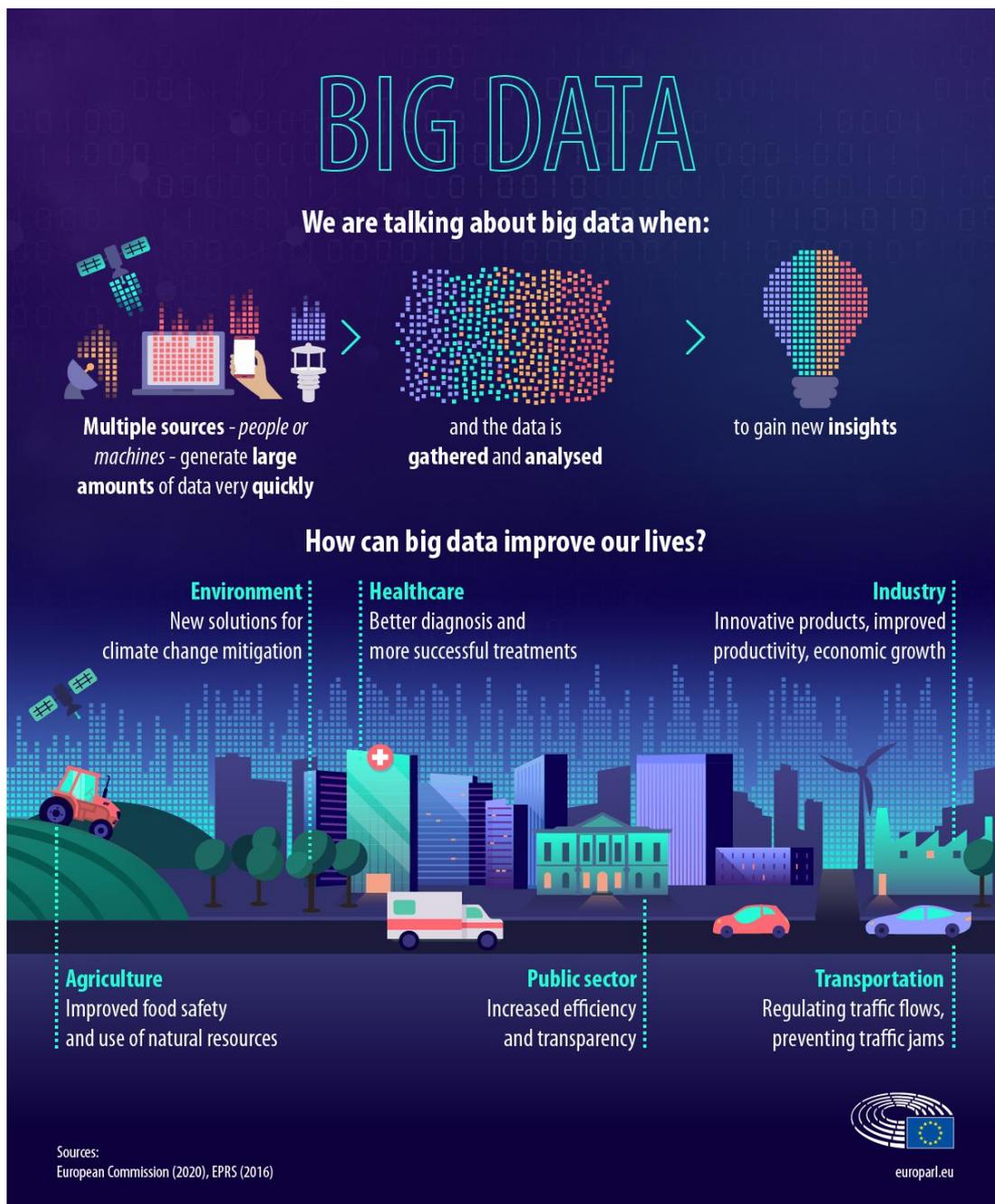
**Learn more about what big data is and what the benefits and challenges are for people, businesses and the environment.**

Our use of electronic devices is increasing and production processes are becoming ever more digitalised. This means that vast quantities of digital data are generated daily in the economy and by people's personal and social activities. The European Commission forecasts the total global amount of data will grow 530% by 2025 compared to 2018.

Data is an important part of the [EU's digital transformation](#). Artificial intelligence, an EU priority, relies on data and its development depends on how data will be managed in Europe.

Data is also an integral part of the [digital services](#) that shape our everyday lives and the economy. [Parliament adopted its proposals for data legislation](#) to ensure people, businesses, recovery and the green transition benefit from an efficient data strategy.

*Read more about [AI opportunities and what the Parliament wants](#).*



Infographic explaining big data

## What is big data?

**Big data** refers to collected data sets that are so **large and complex** that they require new technologies, such as [artificial intelligence](#), to process. The data comes from **many different**

**sources.** Often they are of the same type, for example, GPS data from millions of mobile phones is used to mitigate traffic jams; but it can also be a combination, such as health records and patients' app use. Technology enables this data to be collected **very fast**, in near real time, and get analysed to get new insights.

#### Where does big data come from?

- Big data can be produced by people: in mobile apps, on the web, including social media and commercial transactions, e-government records...
- It can also be generated by machines and collected through sensors in objects linked to the Internet of Things, including smart cars, factories, GPS satellites and satellites collecting weather data etc.

## Opportunities created by the use big data

Big data presents great opportunities in a number of areas.

### Industry

Big data enables companies to innovate, either through better analysing people's needs and wants or by offering entirely new products. While personal data is central for the operation of apps and platforms that have become an important part of our lives and economy, better exploitation of industrial data could bring a new wave of innovation in the EU. Data can also boost productivity and help cut costs, for example by predicting sales or maintenance in smart factories.

### Environment

Satellite data can improve research and help the EU [reduce greenhouse emissions](#) and help in preventing and responding to natural disasters such as wildfires. Improving production efficiency in the industry should lower emissions and waste.

### Healthcare

The analysis of large clinical data sets - for example: anonymised health records or data entered by patients in apps - can enable better diagnostics, treatment and development of medicine, while reducing costs.

### Agriculture

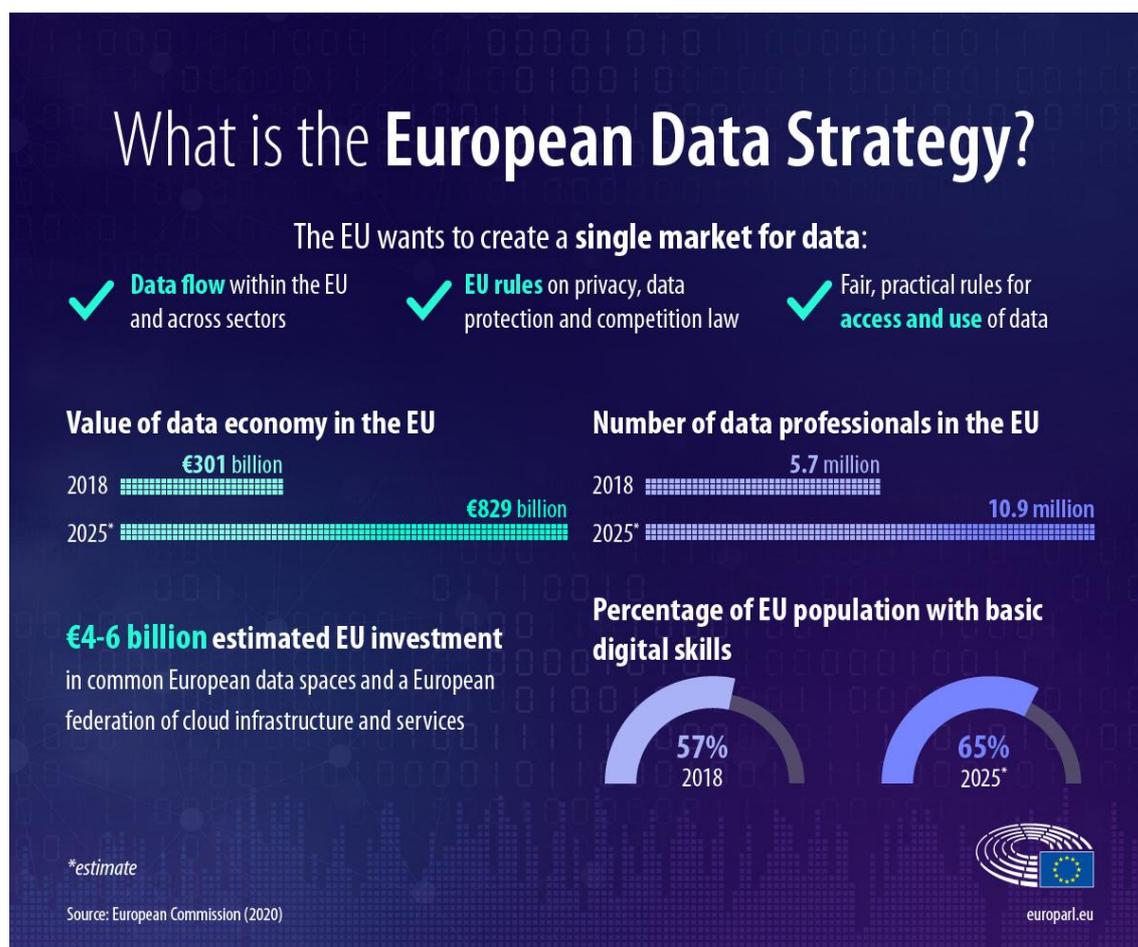
Farmers can use data from satellites and sensors to better use resources such as water or sunlight and adapt crops to changing circumstances.

### Public sector

Data and advanced analytics can increase the efficiency and effectiveness of public services, to improve transparency and offer better-tailored services.

## Transportation

Big data collected from GPS and social media can help mitigate traffic jams. Better regulation of traffic flows also contributes to savings in time and fuel and lowers CO2 emissions.



Infographic about the European Data Strategy

## Challenges posed by big data

### Missed opportunities

If the EU misses the opportunity to exploit the potential of big data, it could hamper the implementation of major EU programmes, such as the Green Deal, and affect consumers, businesses and the economy.

## Protection of rights

As digital service providers obtain more information about users, an unregulated power imbalance might cause preferences and even weaknesses to be exploited for commercial or political gain.

Highly targeted advertisements raise concerns about possible manipulation, where the preferences and even weaknesses of consumers are exploited.

Automated data based assessments could mean individuals or groups are categorised, which could lead to them being excluded from, for example, professional opportunities or medical coverage.

### Find out more

[Check legislative progress](#)

[What can big data do for you?](#)

[Study: new aspects and challenges in consumer protection \(2020\)](#)