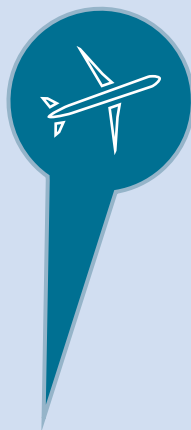# Fraunhofer

BIG DATA

FRAUNHOFER BIG DATA ALLIANCE

STRATEGIES, SOLUTIONS AND TRAINING FOR »DATA-DRIVEN ENTERPRISES«

BIG DATA – A HEAD START WITH FRAUNHOFER

The Fraunhofer Big Data Alliance is made up of 31 separate institutes harnessing their expertise across all sectors. Fraunhofer experts not only help companies develop Big Data strategies, software packages and data protected Big Data systems, but they also train specialists and managerial staff to become »data scientists«.

Big Data is essentially defined as very large amounts of diverse data being generated at exceptionally high speed as is increasingly happening anywhere and everywhere throughout the world – in companies, in urban infrastructures, and in private households. Big Data is a key technology and as such is of great importance to the economy, science and society as a whole.

Access to Big Data is particularly important in business as it can give companies a significant knowledge-based and value creation head start. This is one of the key findings of a Fraunhofer study analyzing Big Data and its potential to innovate in the corporate environment. Companies are increasingly looking to reap benefits from Big Data in terms of competitive advantages, increased turnover and higher levels of productivity. This goes hand in hand with a growing demand for Big Data expertise and tailored technical support solutions.

The Fraunhofer Big Data Alliance sees itself as an independent Big Data process chain adviser providing technological support to partner businesses from the initial roadmap to the effective roll-out of specific solutions – in business processes, in production and logistics and in research and development.

Our experts can provide support in every significant sector. We use powerful IT infrastructures and are able to control core technologies including data management and real-time processing of data, machine learning, visual analytics and data protection and safety.

We support young talented »Big Data experts« and managerial staff by offering extensive training programmes to help expand their Big Data skills. Our programmes not only cover Big Data basics but also sector-specific Big Data strategies, technology and applications.

The institutes within the Fraunhofer Big Data Alliance

Map of Germany showing institute locations:
- Fraunhofer MEVIS
- Fraunhofer FOKUS, Fraunhofer HHI, Fraunhofer IPK
- Fraunhofer IFF
- Fraunhofer IML, Fraunhofer ISST
- Fraunhofer IMW
- Fraunhofer IVI
- Fraunhofer IME, Fraunhofer IPT
- Fraunhofer FIT, Fraunhofer IAIS, Fraunhofer SCAI
- Fraunhofer FKIE
- Fraunhofer IDMT
- Fraunhofer IGD, Fraunhofer SIT, Fraunhofer LBF
- Fraunhofer IBMT, Fraunhofer IZFP
- Fraunhofer IESE, Fraunhofer ITWM
- Fraunhofer IIS
- Fraunhofer IOSB, Fraunhofer ISI
- Fraunhofer IAO, Fraunhofer IGB, Fraunhofer IPA
- Fraunhofer IVV
- Fraunhofer AISEC

BUSINESS AREAS

PRODUCTION & INDUSTRY 4.0

Sensor-controlled machines, networked systems and electronically identifiable products and tools are now continuously generating vast quantities of data as a normal part of their everyday activities. Our software is tailored to a company's specific requirements allowing it to be integrated into operational processes to make full use of all available data. It is sufficiently flexible to adapt to fast changing operational and market conditions and guarantees optimum utilization of all available resources.

LOGISTICS & MOBILITY

As part of the »Logistics & Mobility« sector we develop technologies which utilize a range of data sources to analyze the flow of traffic and goods. Our developments make it possible for us to forecast operational defects and failures and to even avoid them by optimizing aspects of the system. Delivery routes can be adjusted in real-time to react to traffic conditions, compliance with transport routes is monitored and transport systems are managed in the most efficient way possible.

LIFE SCIENCES & HEALTHCARE

The solutions we develop for our customers automatically analyze and evaluate complex medical data sets and allow them to be visualized in a way that is easy to understand. We support healthcare professionals in many areas including diagnosis and therapy, organized patient care and the use of medical data for research. The analysis of highly sensitive patient information including individual medical observations and treatments is central to our work and because of this we have developed systems which specifically and fully comply with all relevant data protection laws.

ENERGY & ENVIRONMENT

The vast data streams now being generated within the energy supply sector are the result of a combination of increasingly complicated links throughout the industry and the progressively widespread application of intelligent sensors to measure consumption and environmental data.
Our applications help control all aspects of the industry including environmental impact, the forecasting of supply and demand and implementing measures to optimize processes in real-time. They operate on every level from households and industry through to the energy supply infrastructure itself.

DATA SECURITY

Specialists in our »data security« department develop systems which can detect and evaluate safety risks at an early stage. In addition to relying on traditional information sources such as weather and traffic data to assess situations and develop methods of defense against potential dangers, we now also make use of data from sources such as social media, modern sensor systems and cellphone capacity data. All of our Big Data solutions, even in their first draft, comply with the highest demands of data protection and safety.

BUSINESS & FINANCE

»Business and Finance« specializes in developing integrated software products which provide our customers with a comprehensive market overview and automatically generated recommendations. Our solutions use vast quantities of business and transaction data to help identify patterns of fraudulent activity, discover optimized cost-benefit ratios or facilitate activities such as customer-facing contact, market observation and dynamic pricing.