

FRAUNHOFER INSTITUTE FOR INTELLIGENT ANALYSIS AND INFORMATION SYSTEMS IAIS

FRAUNHOFER IAIS – PARTNERING DATA-DRIVEN COMPANIES



BIG DATA ANALYTICS

FOUR STEPS TO A DATA-DRIVEN COMPANY

Decades of experience across a range of industries combined with an in-depth understanding of the latest cutting-edge research methods makes us the perfect partner when you need to access, analyse and utilise large amounts of data for your business. We will guide you through a four step process that will take you from the initial conception to the full operational use of Big Data in your company.



»Data-driven companies are able to make quick and objectively based decisions thanks to their detailed data knowledge and the depth of experience of their staff. This means they can react more quickly and more efficiently to changing circumstances and perform better in the market.«

Prof. Dr. Stefan Wrobel, Fraunhofer IAIS Institute Director



EXCITE – LEARNING FROM THE BEST

We will work with you on ideas for your »data-driven company« and identify opportunities and risks.

- Excite seminar: Are you wondering how your company can benefit from big data? We will provide you with a concise view of the latest technical, scientific and commercial trends.
- Innovation workshop: We analyse your current situation with you, develop proposals and prepare a schedule of project ideas and measures based on best practice examples.

ACCELERATE – IGNITING IDEAS

We help you to convert ideas quickly and efficiently.

- Data asset scan: Are you making the best use of all the information you have to hand? We identify which internal and external data pools are most relevant and exploit previously unused information including text.
- Starter toolkit: Our big data starter toolkit includes the most important tools and algorithms to get you going

EVALUATE – PURSUING THE RIGHT PATH

We develop Big Data strategies and roadmaps specifically for you.

straight away. It scales seamlessly from conception to full sustainable operation.

- Proof of concept: Benefit from our decades of data analysis experience to evaluate new ideas. We develop concepts, demonstrators and scalable prototypes for your business.
- Legal Big Data: We help your company manoeuvre through any potential areas of conflict between analytics and data protection to produce secure IT solutions based on »privacy by design«.
- Roadmap: When setting up your Big Data strategy we help you find the optimal balance between technical feasibility, operational conditions and commercial appeal.

RUN – GETTING STARTED

Are you taking full advantage of what it means to be a »data-driven company«? We will support you with integrating your vision into the operational side of your business.

- I Training and qualification: Our data scientist trainings are geared to your specific company requirements as you prepare your teams for their big data roles and responsibilities. Your data scientists will benefit from mentoring programmes as part of ongoing projects.
- Big Data architecture and analytics: We help you seamlessly implement results and prototypes into your productive IT systems.
- Sustainability: We develop structures and processes which help your »data-driven company« to not only become successful but also to remain so in the long term. Our guidelines and best practices guarantee the quality and efficiency of analysis projects while still allowing data scientists the flexibility they require. The Fraunhofer technology monitoring ensures you are continually informed of every significant technological trend in your industry. It makes your Big Data strategy sustainable.



SOLUTIONS FOR DIFFERENT INDUSTRY SECTORS

Every industry is characterised by its specific requirements. It takes the right combination of industry experience and innovative analytics to produce powerful solutions and tailored big data strategies.

Industry 4.0 / Industrial Analytics

Industrial production generates huge amounts of data which facilitate innovative services such as preventative maintenance, quality analyses in real time and better control processes. Big Data analytics enables predictive and prescriptive analyses, makes influencing factors and dependencies easier to understand and also makes it possible to analyse massive sensory data in real time. Analysts and engineers working in cooperation succeed in improving products, optimising processes and convincing customers.

Automotive

Like no other, the automotive sector is characterised by contrasting ends of the spectrum: emotion and technology. A vehicle's production cycle – from development through production to quality monitoring – is dominated by highly complex technical data whereas the (after) sales market is heavily characterised by customers' emotions and desires. By analysing each of these contrasting dimensions it is possible to keep your finger on the pulse of both customers and technology.

Logistics

In the logistics sector quite a number of different types of information can be relevant. In addition to diverse internal data within the logistics chain itself it may also need to account for traffic updates, weather forecasts, information about end customers, the world economy and much more. An integrated analysis gives us a clear picture of how the business is managed. With that comes an understanding of current patterns in real time and the ability to forecast future developments.

Finance

The financial sector is facing a major upheaval because of innovative technology – the so called »Fintechs«. However, data-driven solutions also open up new possibilities for more traditional aspects of the industry. Fraudulent behaviour, breach of compliance targets or wrongly assessed risks are very difficult to detect in real time using conventional procedures. So experts have very much had to rely on gut instinct to be able to find the needle in the haystack. The same applies to your own customers – it is only when you expand your view to include market data, news and social media that you begin to understand them properly.

Healthcare

Health insurance companies and healthcare providers/hospitals already deal with a vast array of data relating to diagnoses, treatment processes and billing issues. By adding external data sources, however, from socio-demographic data to discussions on online patient forums, many more influencing factors can now be taken into consideration. They can help to analyse the progression of a disease and infer medically relevant findings. Fraudulent attempts can be recognised more systematically, medicine controlling can be supported and resources can be planned more efficiently.



THE FRAUNHOFER APPROACH

Our analytic methods help your experts to stay on top of their data and quickly recognise new problem areas.

Visual and interactive analytics: transparency instead of black boxes

We always focus on methods of analysis which give industry experts transparent results based on an intelligent combination of human know-how and machine analytics. Visual analytics allows us to explore unknown data and to examine staticial models for plausibility. Our specialised tools support data scientists in their daily work and allow industry experts to apply their knowledge in assessing and interpreting the patterns they find.

Pattern recognition: tapping texts

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Significant information is often hidden in unstructured data and texts making them difficult to analyse with traditional methods. Modern text mining technology, however, means even complex and unclear documents can be tapped automatically to extract specific hard facts, general topics or subjective emotions. In this way we can gain completely new insights, particularly from mass data such as social media. and archives with internal documentation.

Deep learning: tackling complex relationships

Significant patterns will very often not show up at the level of individual signals, transactions or customers but only when many different types of data are connected. It is only through smart processes that a deeper picture emerges: Graph mining can illustrate complex network dependencies, deep learning takes into account complex numerical patterns in large quantities of data and data stream mining operates on high-frequency data streams. We are intensively investigating innovative approaches so that you can rise to the challenge and benefit from big data.

Privacy-preserving data mining: data protection built-in

Personal data is strongly and specifically protected by law and must be treated correctly within the data analysis process. Third parties must not be able to recognise critical business data from analytic results. In both cases privacy-preserving data mining uses mathematics to guarantee the required degree of data protection.

Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS

Schloss Birlinghoven 53757 Sankt Augustin, Germany Tel.: +49 2241 14-2332 bigdata@iais.fraunhofer.de

Contact



Dr. Stefan Rüping Head of business unit Big Data Analytics



Dr. Dirk Hecker Head of department Knowledge Discovery

www.iais.fraunhofer.de/bigdataanalytics