

General Information

<i>i-Space Name</i>	Know Center
<i>Label Category</i>	Silver



Know-Center is Austria's leading research center for data-driven business and big data analytics. It conducts applied and interdisciplinary research in the field of computer science in the areas of data-driven business, big data and cognitive computing. To that end, Know-Center works closely with the Institute for Interactive Systems and Data Science of Graz University of Technology. Specific research topics include search technologies, machine learning methods and knowledge extraction from large data sets, presentation and visualization of massive amounts of information, efficient use of information in social media channels, as well as contextualization and personalization of information.

Our research areas are:

- Knowledge Discovery
- Knowledge Visualization
- Social Computing
- Ubiquitous Personal Computing & Business Models
- Data Management
- Data Security

Our data-driven methods and technologies contribute to value creation and benefits for partners and customers in a sustainable way among various industries and use cases. Through our Cognitive Computing-based approach, which combines the strength of man and machine (=software), we are setting standards within both the local and the international research community. The best example for this is the area "Industry 4.0" (also known as "Smart Production") where our approach makes companies more successful. Here, for instance, our Cognitive Computing Systems consist of integrated sensors in the production facilities, intelligent algorithms for data analysis and interactive systems that allow users to derive action-relevant knowledge and work more efficiently. Our customers benefit from this specific know-how in the form of competitive advantages and innovations directly at the value-creation chain.

Our Business domains are:

- Industrial Data Analytics
- Data-Driven Markets
- Strategic Intelligence
- Data-driven Process and Decision Support
- Learning 4.0
- Digital Life Science

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<i>Web site</i>	https://www.know-center.at and https://twitter.com/Know_Center

Platform and Services Information

Platform(s) & Service(s)

HDFS, MapReduce2, YARN, Tez, Hive, Pig, ZooKeeper, Kafka, Kerberos, Slider, Zeppelin Notebook, Jupyter Notebook, Spark, Spark2, Apache Solr.

Resource	Value
CPU cores	360 in 15 servers
RAM	187 TB
Disk	19326 TB
Network:	10 Gbit/s

Provided Services

The **Big Data Lab** is Austria's first point of contact for all questions around Big Data Analytics and Big Data Management. The Big Data Lab enables partners and companies to quickly and efficiently test data-driven methods as well as to assess the potential and possibilities for a data-driven business.

Our offer includes **consultations, data analysis and trainings**. The Big Data Lab offers a simple and direct access to our expertise and infrastructure. In addition to Apache Hadoop, the Big Data Lab is equipped with other big data technologies such as Apache Spark and Apache Storm on its computer clusters. Integrated within an international network around the topic of Big Data and Data Science, the Know-Center provides its partners with access to the latest trends and findings in this area.

Selected Projects and/or Success Stories

Detego (formerly Enso Detego) develops and distributes highly innovative software products for the fashion retail industry. The company was founded in 2011 and is headquartered in Graz/Austria, with offices in London/UK. Detego's software suite provides real-time analytics and merchandise visibility on item-level, enabling fashion retailers a digital transformation without the need to replace their existing technology stack. Detego supports fashion retailers in optimizing store processes and daily operations. In cooperation with the Know-Center, a new component has been developed to create actionable insights based on inventory movement and item sales. Target group of these recommendations are both, sales staff and store managers, but also managers in supply-chain and procurement, e.g. Head of Retail or Merchandise Managers.

Porsche Holding Salzburg is the largest and most successful automotive distributor in Europe. The Salzburg-based company was founded in 1947 and operates today in 22 countries in Western and South-eastern Europe, as well as in China, Colombia and Chile. Its subsidiary Porsche Austria GmbH is importing and distributing cars to dealers and Customers across Austria. Together with the Know-Center, Porsche Austria is interested in analyzing the quality of data from the market introduction and the market performance of new car models in the past in order to create a forecast. These models are then used to forecast upcoming market performance in terms of new car registrations or sales. This is of interest for current car models, but even more for upcoming new models. The project aimed at forecasting the demand on the number of cars of a specific brand overall or within a dedicated segment. A predictive model forecasts the demand for a period of a month up to one year. The decision on the model is based on an evaluation of a non-linear approach from the research field of Deep Learning and a linear approach (Seasonal Autoregressive Integrated Moving Average, SARIMA). The linear model yielded the most promising results that hold true for both short-term and long-term demand forecasts.

The overall goal of the **Data Market Austria (DMA)** project is to develop the technological, infrastructural, regulatory, and economic foundations for a comprehensive, innovation-supporting, sustainable Austrian Data-Services Ecosystem, building on existing initiatives. One central part of DMA will be its brokering functionality which shall foster interactions between dataset owners, service providers (e.g., analytic services) and data market customers. Know-Center is leading the corresponding work package "Brokering Technology Foundation" which aims to generate recommendations for possible collaborations between these three groups. This is done by the development of a matchmaking framework (*) that extracts information from dataset and service descriptions as well as interactions with the DMA. The extracted information is the basis for recommendations and matchmaking algorithms. With regard to datasets, services for the analysis of this data are suggested or other data for enrichment and combination might be recommended. Similarly, with regard to services, potential input data as well as pre- and post-processing services or use case scenarios, i.e., potential usage of a dataset in combination with services, might be proposed.

(*) Basis for this framework is ScaR, a scalable recommender framework developed by Know-Center (<http://scar.know-center.tugraz.at/>).