



Industrie 4.0 in the Capital Region Berlin-Brandenburg

Manufacturing in the Era of the Industrial Internet

Companies

AEMtec
ATeB Automatisierungstechnik
ATOS
Aucoteam
Automation-Berlin Kunz
Automatisierungstechnik Niemeier
Azeti Networks
B.Grauel
bbi-biotech
BEACONinside
BeanAir
Beckhoff
BOGEN Electronic
Bosch Sicherheitssysteme
Bosch Software Innovations
Boschen & Oetting
bupdatec
Bundesdruckerei
Carneios
Cassantec
CCVOSEL
Cisco
CoreNetIX
Coriant
CPC analytics
Cronon
CSE
Dacort
DPI Automatisierungssysteme
Dr. Brunthaler Industrielle
Informationstechnik
Dr. Riedel Automatisierungstechnik
embeddeers
eMessage Wireless Information Services
F&M Maschinenbau
Factor-E Analytics
Fernsteuergeräte Kurt Oelsch
First Sensor
FLEXIM
Francotyp-Postalia Holding AG
Fuss EMV
GE
Gemalto
GESAA
GFal
Graebert
GSP
HARTING IT Software Development
HTS Elektrotechnik
infotecs Internet Security Software
init
Innominate Security Technologies
inpro
InSystems Automation
Interautomation Deutschland
IWIS IT-Consult
Jonas & Redmann
Kieback & Peter
Klero Roboterautomation
Knick Elektronische Messgeräte
KT-Elektronik
LeapMetrics
lesswire



»The Fraunhofer IPK pushes forward the development of Industrie 4.0 solutions. In application-oriented projects, we connect the production process and make it intelligent and flexible. In the future, all parts of production – people, components and machines – will be linked to the latest information technology and can communicate and cooperate with each other directly. The result is dynamic, self-organizing value creation networks, which can be optimized according to various criteria.«

Prof. Dr. h. c. Dr.-Ing. Eckart Uhlmann
Institute Director
Fraunhofer Institute for Production Systems and
Design Technology IPK

Industrie 4.0 – the complete networking of industrial manufacturing through the use of IP-based networks – increases the efficiency and flexibility of companies and is therefore the most sought-after topic in the industry of the future. The capital region Berlin-Brandenburg has an excellent research landscape and a vibrant high-tech startup scene which offers companies located here a great opportunity! The region stands for energy, networking and creative renewal. Innovative business models have been developed and tested through the unique interaction between various players. Science, startups, innovative SMEs and globally operating companies have made Berlin into their testing grounds and are pioneers of the fourth industrial revolution.

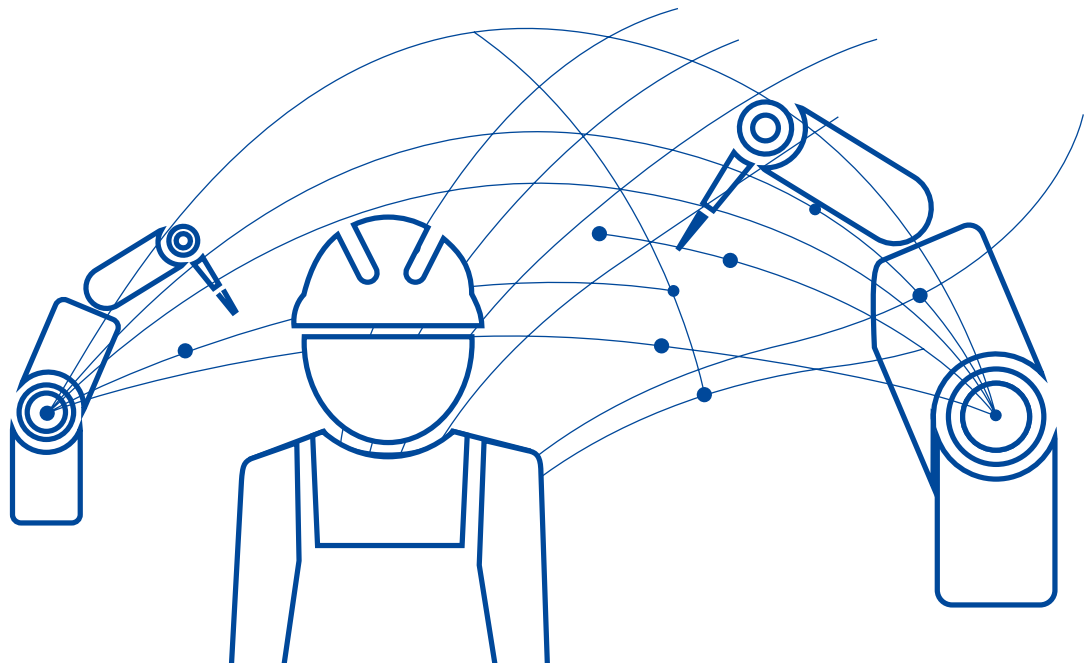
Versatile industries

The capital region boasts a modern and competitive industry across all sectors. There are many manufacturing companies that have improved productivity as users of Industrie 4.0 technologies. The medical technology company Biotronik, the Mercedes-Benz commercial vehicles factory in Ludwigsfelde and the OSRAM plant in Berlin are just some of the many pioneers that have extensively implemented Industrie 4.0 technologies. OSRAM, the world's second-largest manufacturer of lamps and lighting systems is restructuring large parts of its technologically challenging production line in Berlin as a group-wide Industrie 4.0 pilot project.



»Industrie 4.0 is now a household name, but not every company has experience and expertise in this area. During the last few years, we have systematically prepared a transition into the digital age at our pilot location, Berlin. The manufacturing processes have been automated and we are constantly upgrading the information and data exchange between humans and machines.«

Ingolf Schröder
Vice President Global Manufacturing
OSRAM GmbH



Technologies

Numerous companies specializing in ICT, optical communications, sensors and analysis as well as automation supply the technology for implementing Industrie 4.0 concepts. They are available as development partners for new areas of application and system integration.

- **Safety:** Bundesdruckerei (the German Federal Printing Office) sets highest standards for IT security and identity management. The company has thus developed processes and technologies together with partners from science and business that can be used in other industry segments. The current partnerships include the BeID-Lab (Berlin Electronic Identity Laboratory), which was founded in cooperation with the Humboldt University for developing software solutions such as eIDClientCore, among others, and the Fraunhofer Innovation Cluster »Next Generation ID«.
- **Robotics:** pi4_robotics not only offers the perfect human-like robot, »workerbot«, for implementing Industrie 4.0 factories, but uses the application itself. Starting in 2016, the new workerbot generation will be produced as a human-machine-collaboration at the Berlin plant.
- **Sensors:** The sensor solutions from First Sensor are the basis for digitizing Berlin's industry. They collect relevant data, process it and generate the reaction in an intelligent system. This makes it possible, for example, to monitor the conditions of



»BIOTRONIK not only embodies the Industrie 4.0 but also stands for Medical Technology 4.0. We developed a type of intelligent technology back in 2000 which linked our patients using a pacemaker and defibrillator to their doctor. BIOTRONIK Home Monitoring not only contributes tremendous efficiency potential for medical care but also demonstrably improves the health of patients.«

Dr. Hans-Jürgen Wildau
Vice President Health Services
& Electrophysiology
BIOTRONIK SE & Co. KG

the machines in an automated production process.

- **Communication/M2M:** The Berlin-based startup relayr provides a cloud platform and simple open-source tools (software development kit and a sensor kit), enabling fast and cost-effective development of new solutions, devices and services for the Internet of Things. Companies and organizations of all sizes can quickly develop their own IoT solutions: from prototypes to rolling out the solutions within one fiscal quarter (relayr IoT Innovation Accelerator).
- **ERP/MES:** As a consortium partner of the research project WInD, PSI Automotive & Industry has created a horizontally and vertically integrated production process for the "StreetScooter" electric car. The PSI Network Cloud for easy Electronic Data Interchange (EDI) among user companies simplifies a higher level of horizontal integration across companies.
- **Industrial IT:** PI Informatik supports projects for digitizing company structures with its expertise in the area of system integration. A key element is innovative, safe and legally compliant cloud computing. Therefore, the company is also a founding member of the Trusted Cloud competence network, an initiative from the German Federal Ministry of Economics (www.trusted-cloud.de).



»Rohde & Schwarz Cybersecurity develops high-availability and high-performance IT security products, including robust high-speed encryption solutions for protecting industrial control networks as well as Next Generation Firewall and endpoint solutions for prevention against cyber attacks on SCADA, IT/OT & Co. Being located in Berlin is especially beneficial for us due to the proximity to public initiatives, associations and research institutions that promote Industrie 4.0 with a focus on IT security.«

Peter Rost
Head of Marketing
Rohde & Schwarz Cybersecurity GmbH

- **Automation/Logistics:** InSystems Automation in Berlin-Adlershof develops and implements innovative Industrie 4.0 systems from a single source: autonomous transport robots for a flexible material flow, intelligent assembly control systems for creating maximum process reliability and customized automation solutions for production and quality assurance.

The companies are great examples of the diversity of Berlin's expertise in the field of Industrie 4.0. For an overview, check out the Industrie 4.0 Expertise Map – an interactive map of the capital region where all known industry suppliers and integrators are listed and located:

www.businesslocationcenter.de/wab





Application-oriented research

Berlin is a city of science and research where you can find the right partner for every type of R&D project. This is ideal for those who are venturing into complex projects in the context of Industrie 4.0. The four closely cooperating Fraunhofer Institutes, among others, centralize this expertise. Together with the four universities and numerous colleges and research institutions they cover a broad spectrum of topics.

Advanced networking

Private and public initiatives connect established businesses, the startup scene and science in Berlin on all topics revolving around Industrie 4.0. The digital networking performance center from the four Berlin Fraunhofer Institutes creates an ecosystem for rapidly transferring research results into innovative products. Berlin Partner coordinates the expertise network for Industrie 4.0, which informs companies about the opportunities and requirements while also supporting the development and implementation of individual solutions. The SIBB Forum for Industrie 4.0 and the Digital Economy Lab 4.0 from UVB provide forums for exchange spanning various business sectors on the topic of business applications. The Berlin CityLab, initiated by Berlin's Senate Chancellery, de-



»Our team researches practical applications in the robotics laboratory for applying key Industrie 4.0 technologies. Currently, engineering concepts are being conducted within numerous projects to investigate practical application when using service-oriented architectures during the migration of existing inventory systems in order to prepare them for the production of ever smaller and more individual batch sizes. Assistance systems support the user, so that the system operation is even simpler, more intuitive and safer despite their growing complexity.«

Prof. Dr.-Ing. Stephan Schäfer
Hochschule für Technik und Wirtschaft Berlin –
University of Applied Sciences



»In the development and implementation of our solutions, VIRTENIO has benefited from the location in Berlin and also from the large pool of skilled labor coming from the local universities, since it was founded. Above all, Berlin provides

the optimal conditions for startups – from startup support and startup funding to recognition of young entrepreneurs in politics and the media. In short, in our view, Berlin is THE location for startups in Germany – if not Europe.«

Thomas Henn
Head of Business Administration and co-founder
Virtenio GmbH

velops application-oriented solutions on the topics of digitization and Smart City.

Clear policies

A sustainable, modern and clean industry is the engine behind Berlin's economy and the basis for the region's economic competitiveness. Therefore, the regional government pursues the Industrial Master Plan for Berlin, which sets out a clear strategy to improve the framework for the development of industrial manufacturing. The topic of digitization plays a central role. The steering committee on industrial policy is the direct responsibility of the governing Mayor of Berlin and monitors the implementation of the Industrial Master Plan.

LinTech
M2-Automation
mention Software
Mikron Berlin
NC Systems
OpenSynergie
Osram
Pepperl+Fuchs
PI Informatik
pi4 robotics
Pikkerton
Promess
PSI Automotive & Industry
Pumacy Technologies AG
R3 – Reliable Realtime Radio
Communications
Relayr
Rohde & Schwarz Cybersecurity
Run24
Sablono
SAP
Schindler Deutschland
Schleicher Electronics
Sensorberg
shour labs
SKDK
TEAM Automation Berlin
TELCO TECH
Teraki
Tixi
TraceWave
Virtenio
WG Systemhaus für IT
WTG Communication
Witt IndustrieElektronik
Yacoub

Science | Research and Development

BAM Federal Institute for Materials
Research and Testing
Berlin Big Data Center
Beuth University of Applied Sciences
Berlin
Brandenburg University of Technology
Cottbus-Senftenberg
ESMT, Digital Society Institute
Fraunhofer FOKUS
Fraunhofer HHI
Fraunhofer IPK
Fraunhofer IZM
Freie Universität Berlin
Fritz Haber Institute of the Max Planck
Society
German Research Center for Artificial
Intelligence (Project Office)
Hasso Plattner Institute
HTW Berlin
Humboldt-Universität
IFAF – Institut für angewandte
Forschung Berlin
Physikalisch-Technische Bundesanstalt,
the National Metrology Institute of
Germany
Technische Universität Berlin
Telekom Innovation Laboratories (T-Labs)
TH Wildau
Universität der Künste Berlin
University of Potsdam
Zuse Institute Berlin (ZIB)

Deciding for Berlin

As a creative hot spot in Europe, Berlin is an attractive location for tech companies. Pursuing open innovation strategies, companies such as Henkel, Bayer, Bosch, Microsoft, IBM, Deutsche Telekom, Deutsche Bahn, Cisco, E.ON and GE have chosen Berlin as the development location for their innovations, and also create and support labs, incubators and accelerators here.



»We opted for Berlin because we can work together with innovative global market leaders in the industry here that we do not find in Silicon Valley in this quantity and all in one location. In this context, Berlin is the ideal location for growth with all its universities, research institutions and startups.«

Dr. Bernd Heinrichs
Managing Director IoE EMEAR &
openBerlin Innovation Center, Cisco Systems

Berlin also has an enormous pool of highly skilled labor. Harting, Endress + Hauser and Würth Elektronik eiSos, like many others, have deliberately chosen the location because they find talented minds together with a rich and diverse research landscape. In addition, Berlin has a very pronounced ICT scene. Some 6,500 IT companies with nearly 72,000 employees generate a turnover of more than ten billion euros annually.

In order to increase productivity through digitization and to support development and implementation of Industrie 4.0 solutions, the State of Berlin and the Investitionsbank Berlin (IBB), the business development and promotion bank of Berlin, are expanding the funding offers in the digital domain and are also promoting investments for applying IT solutions and digitally networking production and services in other industries.



Our aim: your success!

Initiatives, associations, supporters

AtomLeap
Business Apps Network
CityLAB Berlin
Cluster Industrie 4.0 (CI4)
Digital Labor Wirtschaft 4.0 of UVB
DIN – Deutsches Institut für Normung
Factory Berlin
German chemical industry association (VCI)
German Startups Association
German Trade Union Confederation (DGB)
Handwerkskammer Berlin
hub:raum
Investitionsbank Berlin
Internationales Design Zentrum Berlin
IG Metall
IHK Berlin
Labs Network Industrie 4.0
Leistungszentrum Digitale Vernetzung
Makea
Mittelstand 4.0 – Kompetenzzentrum Berlin/Brandenburg
Network »Modern Industry for Germany«
Plattform Industrie 4.0
Senate Department for Economics, Technology and Research
SIBB Forum Industrie 4.0
Sichere Identität Berlin-Brandenburg
Startupbootcamp
Transfer Allianz
Technologiestiftung Berlin
Vereinigung der Unternehmensverbände in Berlin und Brandenburg (UVB)
VDI/VDE Innovation + Technik
VDMA (German Engineering Federation)
Xinnovation
ZVEI – German Electrical and Electronic Manufacturers' Association

Today, Berlin is a business hub of international standing. The capital city is growing at a much faster rate than the rest of the country. More and more companies are seeing opportunities for themselves to become part of this success story.

We can help you.

Berlin Partner is the central point of contact for economic development in Berlin. We support you with setting up business, corporate development and technology transfer. This one-stop service means shorter distances and faster decisions for you. So you can concentrate on what is essential: your business goals in Berlin.

We consistently focus on our clients' needs. We support companies at every stage of their growth. From business plans, founding, financing and selecting a location to innovation consulting and personnel recruitment all the way to tapping new international markets.

Reach out and contact us!

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