

# **PRAXISforum**



# Big Data Analytics in Process Industry

From Big Data to Smart Data

#### From experts for experts

Big Data Analytics has become important to the process industry. It reveals new market opportunities and could lead to process advantages and reductions in production costs.

Whether in the chemical, pharmaceutical, biotech, energy or other related industries: enormous amounts of data are created every second. These huge amounts of data need to be analyzed to further improve processes, enhance production, develop innovative products, plan maintenance and, in general, understand what will happen next. The application areas in which data analytics can be used profitably are diverse and nowhere near exhausted in process industry.

The 3rd DECHEMA PRAXISforum "Big Data Analytics in Process Industry" will bring together large-scale industry and SME delegates from international market leaders, high profile end-users and solution providers in the field of data analytics, as well as experts on artificial intelligence and machine learning from all over the world to discuss how data analytics can benefit the process industry.

#### What the PRAXISforum is about

- By industry, for industry PRAXISforum reveals market opportunities and promotes development in the fields of data analytics, artificial intelligence and machine learning in the process industry
- **Networking platform** the PRAXISforum brings together international market leaders, high profile end-users and experts from all relevant industries
- High-level speakers Best Practices presentations and lessons learned from speakers at decision maker level. Technological background is presented along with information relevant to end-users
- Relevance to applications PRAXISforum provides visitors with an overview of innovations for their highly specific requirements in everyday practice

Alexander Frey Project Manager PRAXISforum DECHEMA e.V.



# PRAXISforum key questions about industrial application of Big Data

- · Is there Big Data without Big Data Analytics?
- How can the abundance of collected data be used effectively?
- · What are the benefits of Big Data Analytics?
- Is AI ready to be used effectively in the process industry?
- · Why is the right choice of Big Data Analytics methods so important?

## Tuesday, 9 April 2019

| Time  | Topic   | Speaker   |
|-------|---|---|
| 10:00 | Check-in and opening of the exhibition, welcome coffee  |   |
| 11:00 | PRAXISforum opening and welcome address   | Thomas Hansmann<br>Mananging Director<br>CDV Advisory, Germany  |
| 11:15 | Current trends within the Industrial Internet of Things: End to end data processing  Connectivity: 5G/TSN  Communication: OPC UA  Data: Distributed Digital Shadows  Processing: Edge Computing   | Alexander Willner Director Industrial Internet of Things Center Fraunhofer FOKUS, Germany   |
| 11:45 | <ul> <li>Reshaping process industry by using Big Data</li> <li>Big Data - new raw material for process industries</li> <li>Examples of use of big data to increase process efficiency and product quality</li> <li>Examples of using big data for innovative products and business models</li> </ul>  | Renata Jovanovic Managing Director Accenture GmbH, Germany  |
| 12:15 | Lunch break, networking and interactive discussions @ "Topic Tables" in exhibition area   |   |
| 13:30 | <ul> <li>Failure analysis and early detection for large machines using data analytics</li> <li>A failure analysis example from Borealis-Polyolefine</li> <li>An understandable introduction to the involved Machine Learning Algorithms</li> <li>Inspiration to use data analysis in industry</li> </ul>  | Stefan Pauli Senior Data Scientist VTU Engineering Schweiz AG, Switzerland Hubert Andert Group-Leader EIC & Automation, VTU Engineering GmbH, Austria |
| 14:15 | <ul> <li>Al in action: A complete and Al-based process automation of text classifications</li> <li>Complete process automation including a daily text mining</li> <li>Business user can easily work/adjust process flow</li> <li>User interface to work with the text mining results</li> </ul>   | Alexander Timo Buchwald<br>Consultant<br>mayato GmbH, Germany   |
| 14:45 | <ul> <li>Data science use cases for the process industry: Data-driven production &amp; supply chain optimizations and forecasting approaches</li> <li>Introduction of data science into the company culture by means of a phase model</li> <li>Data science and Al use case requirements for defining the future IT architecture</li> <li>Real life use case examples relevant to the process industry</li> </ul> | Rene Fassbender<br>CEO & Founder<br>OmegaLambdaTec GmbH, Germany  |

## Tuesday, 9 April 2019

| Time  | Торіс  | Speaker   |
|-------|--|---|
| 15:15 | Coffee break, networking and interactive discussions @ "Topic Tables" in exhibition area   |   |
| 16:30 | <ul> <li>From data to knowledge – On the transformation and translation</li> <li>Promotion of technology transfer from science to industry in the field of cognitive computing</li> <li>Automated workflows on supercomputers for AI and data analytics. Examples: neuroscience and Earth systems sciences</li> <li>How the new paradigm of modular supercomputing boosts data analytics and AI</li> </ul> | Thomas Lippert Director of the Institute for Advanced Simulation, Head of Juelich Supercomputing Centre Forschungszentrum Juelich GmbH, Germany |
| 17:00 | <ul> <li>How Big Data will shape the future of intellectual property analytics</li> <li>Emergent technology trends change market competition</li> <li>Why decision making requires a constant monitoring &amp; analysis of millions of data points</li> <li>How artificial intelligence helps to overcome the big data problem</li> </ul>  | Tim Pohlmann<br>CEO & Founder<br>IPlytics GmbH, Germany   |
| 17:30 | <ul> <li>Managing the digital transformation</li> <li>What the vision of Industrie 4.0 tells?</li> <li>What are other leading companies doing?</li> <li>How can I build my individual company roadmap?</li> </ul>  | Sebastian Schmitz Senior Manager Industrial Practice i4.oMC Industrie 4.o Maturity Center GmbH, Germany   |
| 18:00 | <ul> <li>Data Mining mining data – Let's put your data to work</li> <li>20.8B connected things by 2020</li> <li>1% of industrial data is used</li> <li>Making sense of DATA is hard. Making use of DATA even harder</li> </ul>   | Sebastian-Friedrich Kowitz<br>CEO<br>talpasolutions GmbH, Germany   |
| 18:30 | Networking Dinner and interactive discussions<br>@ "Topic Tables" in exhibition area   |   |

(22:00 End of first PRAXISforum day)



## Wednesday, 10 April 2019

| Time  | Торіс  | Speaker  |
|-------|--|--|
| 08:30 | Re-opening exhibition and welcome coffee   |  |
| 09:00 | <ul> <li>Graph technology – the enabler for advanced analytics in process industry</li> <li>Graph technology allows complete transparency of the design process</li> <li>Cross-functional comparison between plant design and plant operation is effortlessly possible</li> <li>Technology significantly improves topics such as predictive maintenance</li> </ul>   | Sebastian Dörr<br>Vice President Sales<br>CONWEAVER GmbH, Germany            |
| 09:30 | <ul> <li>Gaining a 360°-view on the business along the whole value chain to make smarter business decision and to thrive innovation</li> <li>The new requirements on the data supply chain</li> <li>How to build a smart data supply chain involving big data and business data with the Logical Data Warehouse (LDW)</li> <li>Breaking down the data silos within the entire organisation</li> <li>Feeding the hunger of IoT and AI applications</li> </ul> | Mirko Hardtke Business Development Manager Data Virtuality GmbH, Germany     |
| 10:00 | Remote monitoring & optimization for Air Liquide plants  Data cleaning  Centralized monitoring and optimization  Remote control  | Moussa Diakhité<br>Real Time Engineer<br>Air Liquide France Indstrie, France |
| 10:30 | <ul> <li>Big Data monitoring of chemical batches</li> <li>Turn your batch data to actionable insight</li> <li>Using big data analytics methods to detect and correct product anomalies early</li> <li>Increase the productivity of each asset</li> </ul>   | Martin Hollender<br>Researcher<br>ABB Corporate Research Center, Germany     |
| 11:00 | Coffee break, networking and interactive discussions @ "Topic Tables" in exhibition area   |  |

## Wednesday, 10 April 2019

| Time  | Topic  | Speaker  |
|-------|--|--|
| 12:15 | <ul> <li>Model-based solutions for digitalization and automation in the process industry</li> <li>Integration of process data and process knowledge into smart self-learning solutions</li> <li>Smart software, smart sensors and smart platforms</li> <li>Tailored applications for process screening, optimization, scale-up and predictive maintenance</li> <li>Industrial cases and implementations in chemical and pharma sector</li> </ul> | Alessandro Butté<br>CEO<br>Data How, Switzerland                                 |
| 12:45 | <ul> <li>What (not?) to expect from Big Data analysis in process technology</li> <li>Data mining use case: Power plant efficiency</li> <li>Big Data analysis is NOT getting all answers from an automated set of algorithms</li> <li>Perspective from offline to online data analysis</li> </ul>   | Martin Weng<br>Managing Director<br>aixprocess GmbH, Germany                     |
| 13:15 | <ul> <li>Make it fun to use modelling and machine learning</li> <li>Are you aware that you most likely are already using some machine learning techniques?</li> <li>Pitfalls you can fall in using traditional methods like ANOVA or least-squares regression</li> <li>How to deal with functional data and other useful machine learning techniques out of the box</li> </ul>   | Martin Demel Sr. Systems Engineer JMP SAS Institute GmbH (JMP Devision), Germany |
| 13:45 | Networking lunch and interactive discussions<br>@ "Topic Tables" in exhibition area  |  |
| 14:30 | End of PRAXISforum   |  |

#### **Topic tables**

At the topic tables you can discuss specific questions, developments, challenges and their solutions with our speakers. In every break, you can find the experts from the prior session at an indicated topic table within the exhibition area. Are you just getting started with electrolysis? Do you want to discuss your question in a smaller group? You don't agree with the statement given by the speaker? Make your way to our topic tables!

#### **Topic table hours:**

9 April 2019: 12:15 - 13:30, 15:15 - 16:30 and 18:30 - 19:45

10 April 2019: 11:00 – 12:15 and 13:45 – 14:30

#### **Exhibition**

The exhibition is a platform for the latest product and technology innovations and services. Please find more information about our exhibitor in the company profile on the next page.

The following company is looking forward to your visit and will inform you about the latest trends and decisive advantages of their products and services.

#### **PRAXISforum exhibitor:**





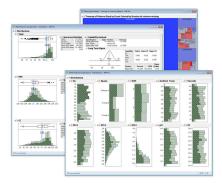
#### JMP Software / SAS Institute GmbH

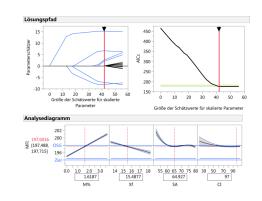


JMP is a business unit of SAS that produces interactive software for desktop statistical discovery. Pronounced "jump," its name suggests a leap in interactivity, a move in a new direction. John Sall, SAS co-founder and Executive Vice President, created this dynamic software and remains its chief architect and leader of the JMP division. Introduced in 1989 with scientists and engineers in mind, JMP has grown into a family of statistical discovery products used worldwide in almost every industry. From its beginnings, JMP software has empowered its users by enabling interactive analytics on the desktop.

JMP products continue to complement – and are often deployed with – SAS solutions that provide server-based business intelligence. The SAS commitment to accuracy, value and quality is evident in every JMP software release. Training, technical support, licensing and distribution are provided to JMP users the world over through SAS. Teams specializing in JMP products are located in the United States, Europe, China and Japan.









JMP Software
SAS Institute GmbH

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# **PRAXISforum**



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Herbert Andert Group-Leader EIC & Automation VTU Engineering GmbH, Austria

"Borealis had serious failures on a large compressor, the cause of which could not be found. The talk shows how potential root causes were determined with historical process data in a collaboration with technicians and data specialists. In addition, the talk gives a comprehensible explanation of data analysis algorithms to strengthen the confidence and willingness to use them in industry."

Originally, I studied "Technical Project- and Processmanagement" with focus on automation and later became a certified IH manager. I gained experience in terms of maintenance as site manager at Bilfinger for Borealis and OMV in Schwechat. Before my actual position as EIC-Manager for VTU-Engineering I worked as COO for Service&Support and IT at acs AG in Wil (CH).



Alexander Buchwald Consultant mayato GmbH, Germany

"In this project we implemented a text mining solution to evaluate technical notifications completely automatically on a daily basis. It was challenging to fulfil the regulatory requirements and still have a process flow that business user can change or interact with the results."

Alexander Buchwald has been working for mayato for more than 6 years. He graduated from the Technical University of Berlin in industrial engineering and management. His speciality has been chemical engineering, statistics and machine learning.

At mayato his tasks include machine learning and data engineering, especially with SAS. He is passionate about understanding business processes and their enhancements with machine learning.



**Dr. Alessandro Butté** Chief Executive Officer DataHow, Switzerland

"Big data is the raw material for process industry. The future competitive advantage of the companies depends largely on the capabilities to exploit the big data. In the talk, we'll explore some of the options that are already in the use and some future trends."

Alessandro Butté received his Ph.D. in Chemical Engineering in 2000 from ETH Zurich. After a two-year post-doc at the Georgia Institute of Technology, he joined the group of Prof. Morbidelli at ETH Zurich and completed his habilitation in 2008. During this period, his research activities focused on polymer engineering, production of nano-materials for protein purification (monoliths by reactive-gelation) and chromatography purifications of peptides, proteins and Mabs. In 2008, he joined Lonza as responsible for downstream activities in the sectors small molecules and peptides and as project manager. He was also involved in the pilot program to introduce Quality by Design into R&D. In 2013, he joined back ETH as senior researcher and, in 2017, he co-founded DataHow, a spin-off company dealing with digitalization of production processes in pharma and chemical industry. He is author of more than 60 papers on international peer reviewed journals, several book chapters and patents.



#### **Martin Demel**

Sr. Systems Engineer JMP JMP Devision, SAS Institute GmbH, Germany

"Industrial companies today collect more and more data, continuously and from more sources than ever. To make use of this data, statistics can help. But it is often met with reluctance and prejudice. However, applying statistics today is an easy, almost playful task. Find out how modelling and machine learning can be used to understand complex patterns and relationships in your data."

Since 2012, Martin Demel is a Sr. Systems Engineer for JMP, a business unit of SAS Institute. Using JMP products he is responsible to guide, support, train and lecture customers from chemical and many other industries (Semi, Pharma, Hi-Tech, ...) in the use of JMP to become more productive, efficient and effective in resolving their day to day tasks. He is covering application areas from explorative data analysis, statistical modeling through to DoE, quality management, reliability analysis and also consumer research.

Before he worked for six years at Mathworks using MATLAB and Simulink products in several industries. There he covers mathematical toolboxes like optimization, neural nets, or parallel computing, but also signal processing, code generation and deployment.

Martin graduated in Technomathematics at the TU Munich with main classes in Numerical Analysis and Optimization and sub classes in mechanical and electrical engineering (leightweight structures, control theorie).







Moussa Diakhité Real time Engineer Air Liquide France Industrie, France

"With the centralization and digitalization of its operation Air Liquide has changed its usage of the data. The implementation of SIO streams and a contextual database for time series data are part of thoses changes."

I graduated from INSA Rouen in 2015 with a Master in Chemical Engineering and completed my studies in IFP School in 2016 with a alternating school/company program Masters in Energy & Processes with ExxonMobil as sponsor.

In 2016 I joined Air Liquide France as a Production Optimization Engineer for Air Liquide's newly created ROCC (Remote Operation Control Center) in Lyon (France). In my current role I work on the definition and creation of new tools for the ROCC. I am an active member of the community of practice around the PI system within Air Liquide and an early adopter of Osisoft PI AF within the Group. I am part of the working group in charge of the definition of Data Structure & Calculation standards in preparation for a global deployment.



**Sebastian Dörr**Vice President Sales
CONWEAVER GmbH, Germany

"Increasing process complexity and rapid data growth require new technologies for data usage, mostly where dependencies about data silos are needed. The Graph technology overcomes these silos and provides this contextual knowledge to owner and operator. In addition, the information context

Al procedure serves as a basis for Big Data Analytics.

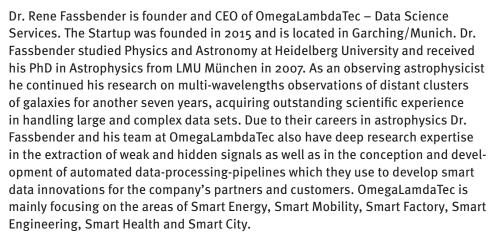
Make Your Big Data smart."

As Vice President Sales, Sebastian Doerr is responsible for sales at CONWEAVER GmbH. He began his professional career during his college days at the Technical University in Darmstadt with the foundation of his own software consulting company. Here, and most recently at ITandFactory GmbH, he was in charge of the implementation of business critical software projects at Alfa Laval, Bayer, Borsig, Bosch, EON, GEA, JCI, WCH, Wingas etc. Many other international projects bear Sebastian's signature. His passion ever since has been the "value of customer data". With a degree in IT, he now oversees the Go-To-Market strategies at CONWEAVER, in a manner of speaking having been the frontend to the market since 2013.



**Dr. Rene Fassbender**CEO & Founder
OmegaLambdaTec GmbH, Germany

"Every company that possesses or collects significant amounts of data needs to face the topics of Smart Data and AI today to be able to survive in the market in 10 years."





#### Mirko Hardtke Business Development Manager Data Virtuality GmbH, Germany

"According to a study by the Fraunhofer IAO and the IT industry association BIT-COM, the networking of product development, production, logistics and chemical customers could result in an increase of 30 percent in their added value till 2025. In other words, whoever succeeds in making data usable along and across the entire value chain will gain a drastic competitive advantage."

Mirko Hardtke studied Chemistry and Business Administration and finished his studies in 2015. During and after his studies he learned how much enterprise company in the process industry struggle with siloed data - historically grown over decades. In 2016 Mirko Hardtke joint the sales team of the today's fastest growing German Big Data Startup - Data Virtuality GmbH. Today he is responsible for the sales development team and for the strategic business development within the process industry and life-science vertical.





### **The Speakers**



**Dr.-Ing. Martin Hollender**Researcher
ABB Corporate Research Center, Germany

"Historical production runs can be distilled into knowledge to optimize current production runs."

Martin Hollender currently works at ABB Corporate Research in Ladenburg. He received his PhD from the University of Kassel, Laboratory for Man-Machine-Systems. Before he studied at TU Darmstadt, Institute for Automatic Control (Dipl.-Ing.). Martin Hollender is a member of IEC TC65A WG15 IEC 62682 "Management of alarms systems for the process industries".

He is also the editor of the Book "Collaborative Process Automation Systems".



**Dr. Renata Jovanovic**Managing Director
Accenture GmbH, Germany

"Big data is the raw material for process industry. The future competitive advantage of the companies depends largely on the capabilities to exploit the big data. In the talk, we'll explore some of the options that are already in the use and some future trends."

Renata is a Managing Director at Accenture Chemicals and Natural Resources Practice. She has over 18 years of experience in industry and consulting.

Prior to joining Accenture, she has worked at BASF (2004-2014) in various man-

Prior to joining Accenture, she has worked at BASF (2004-2014) in various management and leadership functions. Among others, served as a Senior Advisor for BASF C-level executives and Top Managers worldwide. Also led a global group on modeling and simulations of advanced materials and systems where the use of big data in simulations ensured competitive advantage.

As an external consultant at Accenture and Ernst&Young, Renata advised leading chemical companies such as BASF, BAYER, Saudi Aramco, Kemira, Covestro, Akzo Nobel, DuPont, DSM and others.

Renata holds a Ph.D. in Chemical Engineering (Univ. of Ottawa, Canada) and an Executive MBA (Dual Degree Germany/France). Published a number of peer reviewed articles and participated as a speaker in a number of conferences. Holds several patents in the area of chemical operations.



# **Sebastian-Friedrich Kowitz**Managing Director talpasolutions GmbH, Germany

#### "AI is like teenage sex:

Everyone talks about it, nobody really knows how to do it, everyone thinks everyone else is doing it, so everyone claims they are doing it.."

Sebastian successfully completed his studies at the Afnorth International School (Netherlands) and at RWTH Aachen University to become a raw material engineer in 2015. Parallel to his studies, he pursued a part-time position as a project engineer for DMT from July 2010 which was seamlessly transferred to full-time employment as a project engineer in the mining division at the end of 2014. During his work as a technical consultant, he has optimised extraction processes and machines on the basis of machine data analysis in international projects. In 2016 he founded talpasolutions.



#### **Prof. Dr. Dr. Thomas Lippert**

Director of the Institute for Advanced Simulation, Head of Jülich Supercomputing Centre, Forschungszentrum Jülich, Germany

Thomas Lippert got his diploma in High Energy Physics at the University of Würzburg in 1987. In 1993 he received a PhD in Theoretical Physics at the University of Wuppertal and 1998 a PhD in Computer Science at the University of Groningen. Since 2004, Thomas Lippert is director of the Jülich Supercomputing Centre and Executive Director of the John von Neumann Institute for Computing. He holds the chair for Theoretical Computational Physic at Wuppertal University. Since 2013 he is member of the Human Brain Project (EU-Flagship) as Director of the High Performance Analytics and Computing (HPAC) Platform. In 2015 he became Member of the Board of Directors of the Gauss Centre for Supercomputing (GCS). Since 2018 Thomas Lippert ist the Chair of the Council of the Partnership for Advanced Computing in Europe (PRACE).



#### Dr. Stefan Pauli

Senior Data Scientist VTU Engineering Schweiz AG, Switzerland

"Borealis had serious failures on a large compressor, the cause of which could not be found. The talk shows how potential root causes were determined with historical process data in a collaboration with technicians and data specialists. In addition, the talk gives a comprehensible explanation of data analysis algorithms to strengthen the confidence and willingness to use them in industry."

Stefan Pauli completed his PhD at the ETH Zürich related to computer science and mathematics. He gained experience in algorithm development in several industrial companies and start-ups. His background and experience, including an industrial apprenticeship, help him to link the world of algorithm with the industrial practice.







**Dr. Tim Pohlmann**CEO & Founder
IPlytics GmbH, Germany

"Decision making requires a constant monitoring and analysis of millions of data points. This big data problem can only be solved with intelligent algorithms."

Dr. Tim Pohlmann is founder and CEO of IPlytics. IPlytics Platform is a market intelligence tool which empowers its users to analyze technology trends, market developments and a company's competitive position for any industry. Dr. Tim Pohlmann is an external research associate at the "Law and Economics of Patents Group" CERNA, MINES ParisTech and an associate at Berlin Institute of Technology. Dr. Pohlmann's expertise covers the empirical analysis technology trends and market competition such as e.g. patent strategies, the interplay of patents and standards, the pooling of patents, technology licensing, patent trolls and standard setting for ICT. Dr. Tim Pohlmann earned his doctoral degree with the highest distinctions from the Berlin Institute of Technology with a dissertation on patenting and coordination in ICT standardization. During the last 5 years Dr. Tim Pohlmann has been actively involved in preparing studies for the European Commission, the World Intellectual Property Organization, the German "Expertenkommission Forschung und Innovation" and the German Federal Government on the effect of patents, patent licensing, business models in Open Source Software, technology trends in ICT and the interplay of IPR and standards.



**Dr. Sebastian Schmitz**Senior Manager
Industrie 4.0 Maturity Center GmbH, Germany

"Digitalization promises high potential for producing companies, but many struggle with the transformation. I will hand out a digitalization plan and show, this is more than a IT topic."

Sebastian Schmitz is responsible for the practical application of the Industrie 4.0 Maturity Index and accompanying services for customers in the manufacturing sector. Over the last three years, he has significantly contributed to the development of the Maturity Index; moreover, he has led a number of Industrie 4.0 projects with manufacturing companies from different sectors. Sebastian, who has a degree in Business Administration & Engineering: Mechanical Engineering from RWTH Aachen University, made also his PhD at FIR at RWTH Aachen University, with a focus on digital networking. He has gained project experience with companies such as Kuraray, ZF, Vetter Pharma or BASF.



**Dr. Martin Weng**Founder & Managing Director aixprocess GmbH, Germany

Martin Weng graduated in Mechanical and Biological Process Technology at Aachen University of Technology in 1995. During his PhD work at the Chair of Process Technology, he started working on high resolution experimental and numerical analysis methods for multiphase flows.

Due to increasing demand for CFD and accompanying modelling techniques, Martin Weng founded aixprocess company in 2001 as a consulting & engineering company. He is since then Managing Director and mainly responsible for strategic business development, sales and HR.



# **Dr. Alexander Willner**Director Industrial Internet of Things Center Business Unit NGNI, Fraunhofer FOKUS, Germany

Dr. Alexander Willner is head of Industrial Internet of Things (IIoT) Center at Fraunhofer Institute for Open Communication Systems (FOKUS) and head of IIoT research group at the Technical University Berlin (TUB). In joint collaboration with the Berlin Center of Digital Transformation (LZDV) he is working with his groups in applying standard-based Internet of Things (IoT) technologies to industrial domains. With a focus on moving towards the realization of interoperable communication within the Industry 4.o, the most important research areas include real-time networks (TSN), middleware systems (OPC UA), distributed AI (digital twins) and the Edge Computing paradigm.

Prior research positions include the University Bonn, he holds an M.Sc. and a Ph.D. (Dr.-Ing.) in computer science from the University Göttingen and the Technical University Berlin respectively. His research interests are on semantics-enabled distributed information systems, linked data, the Graph of Everything, communication middleware and service-oriented architectures. He is active in relevant standardization activities and gives a corresponding lecture at the Technical University Berlin.





Thomas Hansmann Managing Director CDV Advisory, Germany

"The perfect Big Data initiatives portfolio is balanced between explorative, highly innovative topics and return-oriented topics."









Any questions?

Please contact

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Jana Geiss

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#### Our next PRAXISforum events:

- 3 4 Jun 2019 Krisenmanagement (Crises Management)
- 3 4 Sep 2019 Lab of the Future
- 8 9 Oct 2019 Power-to-X A vision moves towards application
- 5 6 Feb 2020 Enzymes for Industrial Applications
- 28 29 Apr 2020 Big Data Analytics in Process Industry

Please check our website for more information: www.dechema.de/BigData

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