

## LogDynamics Newsletter August 2017

### Projects

#### DFG Approves New Collaborative Research Center “Everyday Activity Science and Engineering”

„Please set the table!“ – many instructions, which are easy for humans to implement, present robots with enormous challenges. In order to carry out activities, they need extremely detailed information: what should be placed on the table? How to best grab a glass? And how do you recognize a table at all? In order for robots to be able to execute statements with a high degree of abstraction independently, they must be able to obtain missing information themselves. The German Research Foundation (DFG) has now approved a further Collaborative Research Center (CRC) at the University of Bremen, where scientists are working with completely new approaches to the fact that robots implement abstract instructions independently. They enable them to learn. The CRC EASE (Everyday Activity Science and Engineering) was launched on July 1, 2017 and is financed by the DFG for 10 years at its first funding phase. Several LogDynamics members are involved in the CRC.



Within the framework of basic research, EASE will examine how people manage their day-to-day activities in an extremely flexible, reliable and efficient manner. This understanding is then intended to inspire a new generation of robot control models to achieve a comparable level. „When robots learn how to properly interpret colloquial instructions, there are numerous possibilities for increasing the quality of life - for example for people with disabilities or for seniors who want to live independently in their own four walls,“ explains the CRC speaker, Professor Michael Beetz. A wide range of possible applications are also conceivable in research, including carrying out experiments with hazardous substances.

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Photo: Alexis Maldonado / Universität Bremen

#### Augmented Reality-Based Assistent System for Commercial Vehicles (safeguARd)

The goal of the safeguARd project, which is concluded by the BIBA in cooperation



#### Bremen Research Cluster for Dynamics in Logistics

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with CraniMAX GmbH, Trivisio GmbH and the TU Kaiserslautern, is the development of an assistance system for commercial vehicles, which recognizes the occurrence of hazardous situations at an early stage, draws the operator's attention to the dangerous situations and, in the last resort, actively transmits control commands to the machine operator, for example, to initiate an emergency stop. In the context of the project, the safeguARd system is initially developed and evaluated on the example of mobile cranes. This is due to a modular and flexible design so that the transmission of the system to other construction machines as well as other commercial vehicle groups is possible without major adjustments. The project partners apply the „Design for all“

concept as part of the development efforts. Thus, the system enables all users to an efficient and safe use of commercial vehicles. Particularly older employees can compensate sensomotoric restrictions and thus the safeguARd system represents an approach to adapt machine operator workplaces to the requirements of the demographic change. The safeguARd project is promoted by the Federal Ministry of Education and Research (BMBF) via the development plan “SME innovative”.

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Photo: Steil Kranarbeiten GmbH & Co. KG

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## Development of a Mobile and Stationary Wire Rope Monitoring System (MOBISTAR)



When it comes to the operation of wire ropes there is often a risk put to human lives. Therefore the wire rope always needs to be in a faultless condition and under appropriate testing. Within the project MOBISTAR the existing monitoring procedures will be optimized, thus, the reliability of the testing shall be raised and safety risk minimized. By better assessing the condition of the wire ropes the cable pulls can be used more economically. Furthermore, this way of modernizing is joined with reducing the environmental pollution, for example, by implementing a continuous monitoring of the wire rope condition the annually maintenance would be obsolete and the emissions caused by the journey are omitted.

A system that consists of a combination of magnetic induction and optic sensors shall be developed to operate a better detection of defective areas within and around the wire ropes. An intelligent evaluation unit will analyze the gained data. For this unit different algorithms for the defect detection will be developed. Thereby the classification of the defects shall be done by an artificial neural network. Thus, it should be automatically decided which rope needs to be sorted out and in which areas an additional manual testing is required.

The common objective of the partners MEB-Services GmbH & Co. KG and BIBA is to develop a wire rope monitoring system that can be mobile as well as stationary and displays the defect existing on the rope. For now, the system will be designed for wire ropes with a maximum diameter of 40 mm. With the introduction of such a system accident shall be minimized in the future and the monitoring of wire ropes will be lead to a new level.

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## The Future of Intelligent Transport Systems for Road Freight Transport – Call for Participation



The Chair of Logistics Management at the University of Bremen invites to active participation in the research project

„The Future of Intelligent Transport Systems for Road Freight Transport”. The project’s aim is to develop possible future scenarios for intelligent transport systems in Germany. For this reason the perspectives of different stakeholders in transport and logistic chains (i.e. shipping companies, logistics service providers etc.) are of interest. The participation in the study may take up to three afternoon hours. The theme-based workshop will most likely take place in November/December. A nominal-group-technique will be conducted. Catering will be provided. Further information is available upon request.

First project outcomes will be presented during the Interdisciplinary Conference on Production, Logistics and Traffic (ICPLT), which will take place September 2017 in Darmstadt, as well as the Transport Research Arena (TRA) 2018 in Vienna

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## Interactive Logistics Planning and Control for Sea and Inland Ports



Logistic processes on sea and inland ports play an important role for finished vehicle logistics. High flexibility and reactivity are required to cope with short-term change demands. In this context, the project “Isabella - automobile logistics in sea- and inland ports: interactive and simulation-based operation planning, dynamic and context-based control of device- and load movements” aims at the development of an interactive planning and control system for adaptive logistics processes on sea and inland ports.

A simulation-based planning tool will be developed to enable shortterm planning adjustments due to occurring change demands and to validate possible planning alternatives. A multi-touch table will be used for the visualization of the current planning situation and the definition of planning alternatives. The evaluation of these alternatives is supposed to happen simulation-based. A control algorithm will be developed for the management of vehicle movements on the vehicle port. The control system should assign tasks based on the current order situation and the location of the vehicles. By doing so, not only a given order sequence and thus due date reliability can be pursued, but also route optimization and elimination or minimization of empty runs. For the realization of adaptive logistics processes, a tracking and tracing system needs to be designed that generates real time data of the location of the vehicles.

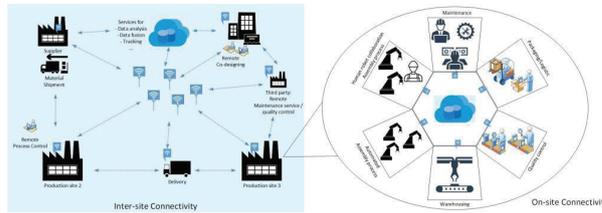
Therefore, it will be investigated, if different tracking and tracing methods such as differential-GPS (DGPS) and WLAN-Fingerprinting are adequate for usage in vehicle compound applications. The envisioned planning and control system will be developed in cooperation with the project partners BLG AutoTerminal Bremerhaven GmbH & Co.KG and 28Apps Software GmbH. The project is funded by the German Federal Ministry of Transport and Digital Infrastructure (BMVI) as part of the program for innovative port technologies (IHATEC).

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Photo: BLG LOGISTICS

## Provision of a Standardized Industry 4.0 Infrastructure for 5G-enabled Applications and Network Services (MATILDA)



From the Industry 4.0 perspective, future production environments are characterized by the improved processing of data in production processes and the improved integration into the entire production chain. This means that data, which consist of devices, control systems, products etc., must be seamlessly shared, analyzed and processed under real-time constraints. Against the background, MATILDA is focusing on a new holistic service concept for Industry 4.0, which supports the life cycle of 5G-enabled applications and network services through a unified programmable infrastructure. For this purpose, intelligent and standardized mechanisms are provided which allow a so-called service orchestration, i.e. an automated compilation and linking of 5G-enabled applications as well as the provision of central functions and maintenance of the required network slices.

The BIBA enables the implementation, analysis and evaluation of this approach through two application scenarios based on the existing infrastructure in the institute. The Industry 4.0 scenarios consider the communication between and within production facilities:

- The “Inter-Enterprise Integration” scenario considers the interplay between different production facilities. The biggest challenges are caused by the stakeholders (OEMs, suppliers, logistics service providers), which in each case operate different technologies and management solutions that must be smoothly connected.
- The „Intra-Enterprise Integration“ scenario considers the interaction within a production plant. For this purpose, various machines and components are connected in a production chain so they can communicate seamlessly with each other.

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## The Digital Twin of Your Factory (MuPlant)

National and international business development in times of industry 4.0 requires new approaches. Agile supply chains and AdHoc production networks require rapid decision-making processes within company cooperations. Classic processes are increasingly being supplemented by virtual reality applications in order to create consistent planning bases and to reduce travel times.



MuPlant addresses the challenges of national and international business development in times of industry 4.0. By means of its own Internet platform, digital twins of the production environment are created and converted into virtual factory tours for interested companies. Companies choose between public and private content. While public content can be viewed freely, separate inquiries and releases by the company are required for private content. Starting from the Internet platform, MuPlant offers a range of services in the area of digital twinning and business development. With focus on Germany

and India, virtual factory tours are being developed and companies are supported in initiating business. This includes the search for suppliers (according to Ray Carter's 10C's) and country representations.

Mr. Padmaraj Pattanashetti had developed the idea for MuPlant as part of his master thesis at the BIBA – Bremer Institut für Produktion und Logistik GmbH. As an application-oriented research institute, the BIBA is intensively involved in the concept of digital twins. Therefore Mr Pattanashetti was also supported by the BIBA during the start-up phase after his master thesis. For this purpose, an EXIST start-up scholarship was raised by guidance under Prof. Dr. Till Becker and Dr. Michael Lütjen. After scholarship the MuPlant business was joined to the company Abakus GmbH. With currently more than 40 enthusiastic companies (production environments) and institutes (laboratories), the growth has been accelerated by the Abakus GmbH and the service offer has once again significantly expanded.

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## Federal Minister of Transport Promotes Project on AI-based Transport-Optimization to Reduce Emissions



XTL Kommunikationssysteme GmbH from BITZ is working together with BREWELO GmbH & Co. KG in the „TransData“ project to develop a learning planning and control system for transport logistics. The technological foundations of the XTL optimization software were developed within the LogDynamics cluster and by the Artificial Intelligence group at the Center for Computing and Communication Technologies (TZI) at the University of Bremen. The project started on 1 July 2017 and is funded for 2 years by the Federal Ministry of Transport and Digital Infrastructure (BMVI).

The goal of the project is to increase ecological standards, competitiveness, and service quality of transport logistics by means of efficient transport planning and control. This will be achieved through increased utilization of resources and optimized shorter routes that avoid empty runs and reduce CO2 emissions. Therefore, transports must be carried out efficiently, flexibly, and reliably. To consider all relevant information during planning and control of the transports, real-time and historical data must be included within the planning process. For this purpose, internal process and operating data is linked with external mobility-data, geo-data, and weather databases in order to generate precise forecasts, for example on order properties and filling levels of load carriers.

The innovative XTL software processes these predictions and real-time data directly during transport planning. It adapts tours continuously to react to unpredictable events and circumstances. Two scenarios of BREWELO are investigated in detail: the emptying of textile containers with highly variable filling levels and the delivery of propane bottles with seasonally fluctuating order volumes and delivery locations.

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Photo: BREWELO GmbH & Co. KG

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## Data Glasses System Supports Technicians during Wind Power Plant Servicing



After two years of research and development, the BIBA, the specialist for virtual 3D-services AnyMotion (Bremen) and the IT-security specialist COMback (Oberreichenbach/Baden-Wuerttemberg) presented the outcomes of the “AR Maintenance System”, an assistant system based on data glasses that aims to support technical service personnel of wind energy turbines. The technicians praised the system as “helpful” and “fairly easy to handle” during tests, what drew interest of the industry. The project members are now looking for partners for further development.

“AR” stands for “Augmented Reality”, the computer-based extension of the perception of reality. This is made possible by using new half-transparent 3D data glasses, which are connected to an assistant system. The carrier of the data glasses also sees virtual information, e.g. directions and technical information, embedded in the real environment in front of them. AR is already used diversely in logistics settings. As of now, AR can also be used to ease the work of technicians during maintenance. It is, for example, possible to use the system to navigate through complex wind power plants. At the job site the system then provides the technician with information regarding maintenance assignments like technical data sheets. Furthermore the system assists with time-intensive documentation, since the glasses identify what has been done and pass the information on into the system. This avoids browsing through a large amount of pages or filling out endless forms.

The joint project was founded by the Federal Ministry of Industry and Energy as part of their “Central Innovation Programme for SMEs”. The wpd, which is a company from Bremen in maintenance and service of wind parks accompanied the project.

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Photo: AnyMotion

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## Construction Automation 4.0 – Omniketten Big Demonstrator



Omnidirectional drives are very common in the robotics area. They enable a robot to move on a plane completely free and thus an excellent manoeuvrability. But they also impose high demands on the evenness and cleanliness of the roadway. The construction machinery market constantly calls for improvements in manoeuvrability of the machinery. Omnidirectional drive technology can meet such requirements. However a direct transfer from the omnidirectional technology commonly used for robot applications is not possible due to the work environment found at construction sites. The Bremen Institute for Production and Logistics (BIBA) developed in collaboration with the Company IVA Johann Construction GmbH an innovative omnidirectional track system for applications involving construction equipment in the harshest environments. The system will be designed, simulated and the finally constructed. The interaction of the system elements with the surface are of great interest due to the challenges imposed by the new kind of tracking system.

This project was financed by The German Federal Ministry for Economic Af-

fairs and Energy, BMWi – under the Central Innovation Programme for SMEs (Zentrales Innovationsprogramm Mittelstand - ZIM).

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Video: [www.youtube.com/watch?v=mAMSd8paMsU](http://www.youtube.com/watch?v=mAMSd8paMsU)

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## Inverse Factory Planning- Intralogistics 4.0

The progressive development of industry in the context of the fourth industrial revolution leads to the re-thinking of factory planning. Many influences resulting from the industry 4.0 area have a direct impact on the new and new planning of industrial plants and logistics objects. This requires novel concepts in factory planning, which provides an important foundation for future planning projects. For this purpose, the generally valid VDI 5200 should be extended and supplemented by the topic of factory planning.



The iron and steel industry faces particular challenges in the context of industry 4.0, as the processes in this heavy industry have a low degree of digitization. This offered the best possible application. With ArcelorMittal Bremen, a suitable and prominent application partner for the joint project presented was won. Within the project, logistical processes of the application partner were recorded and analyzed. These formed the basis for the subsequent development and review of the inverse planning strategy, with the help of which the solution area within the factory planning can be expanded. In order to meet the challenges of Industry 4.0 in the area of factory planning, an industry 4.0 readiness check was developed, which can be used to assess the suitability of a company or business area for industry 4.0 and be linked with the industry. The two approaches of inverse factory planning and the determination of the industry 4.0 readiness check were combined in a process model of factory planning.

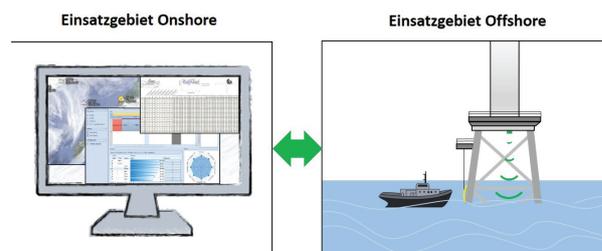
The aim of the project was thus to develop a general concept for intralogistics planning in the context of industry 4.0, which is applicable to the majority of the manufacturing industry. This concept covers both the implementation of the requirements of the industry 4.0 and the design of the intralogistics, as well as the development of an innovative approach of an inverse planning strategy.

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Photo: ArcelorMittal Bremen GmbH, Fotograf: Thomas Joswig

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## Information System for Near-Real-Time Coordination of Offshore Transport (IeK)



The constant expansion of offshore wind energy and the growing demand for the maintenance of these systems significantly increases the number of maintenance services. The large number of facilities, the high costs for the transportation of materials and personnel as well as the increasing complexity of the planning process lead to the desideratum of a comprehensive informa-

tion system, which contributes to improve planning and control as well as to support operational logistics processes.

The developed information system comprises five subsystems. A central component of this system is a planning and control instrument for the control centre. Both, the weather and sea data as well as the order data are collected. In order to be able to capture a large number of sea-wave data at low cost, a low-cost wave-length sensor has been developed. The quality of the integrated weather data has been enhanced by the development of new analysis algorithms. For the individual observation of different ships, the behaviour of each vessel has been considered in the system under certain weather and sea conditions. Thus, the exact behaviour of the vessel has been included in the planning process. An information system for the captain has been developed to display orders, weather and sea conditions.

The result of the project is an information system that provides the actors of offshore wind energy service logistics a well-founded information base in the operative decision-making process. This includes information about the current and future weather and sea conditions and the individual behaviour of the deployed transport vessels. In addition, the system provides the basis for an efficient and high-quality preliminary planning of the resources assignment at sea. In addition, a low-cost system for wave measurement has been developed.

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## Personnel Changes



### Prof. Bendul Appointed at the RWTH Aachen

Julia Bendul was appointed professor at RWTH Aachen University on 1st of August 2017. She is a chair holder for the Management of Industry 4.0 at the Faculty of Economics and Business Administration. As a professor of Network Optimization in Production and Logistics at Jacobs University Bremen, she was a member of *LogDynamics* for more than four years. In Aachen, she will continue her teaching and research activities at the interface of management, digitalization, production and logistics and is looking forward to developing and expanding the cooperation with the colleagues of *LogDynamics* around the topic of management of industry 4.0.



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### Prof. Pöppelbuß Appointed at the Ruhr-Universität Bochum

Prof. Dr. Jens Pöppelbuß joined the Ruhr-Universität Bochum on 1st of August 2017. There he holds the chair for Industrial Sales and Service Engineering at the Faculty of Mechanical Engineering. Previously, he was Junior Professor of Industrial Service and a member of *LogDynamics* at the University of Bremen. In the new position at the Ruhr-Universität Bochum, he will continue the interdisciplinary cooperation in logistics research with the Bremen colleagues.



## Internationalisation

### Cooperation over Three Continents - Research Visit from Ethiopia and Texas / USA at the IGS



The Ethiopian Ministry of Education, with support from Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), established homegrown postgraduate programs in different clusters of Universities of Technology to spread the establishment of Centers of Excellence in different technological and engineering fields. The Texas Tech University (TTU, Lubbock / Texas / USA) runs such a program in collaboration with the Jimma Institute of Technology (JiT, Jimma / Ethiopia). From the 1th of July until the 27th of September 2017 15 doctoral candidates out of this project are guest researchers at the University of Bremen, hosted by BIBA - Bremer Institut für Produktion und Logistik GmbH. During their stay the Ethiopian engineers passed their proposal defense under the supervision of 10 American professors and a representative of the Ethiopian Jimma University.

In the context of the professional support for their research, the guests will be offered an exciting excursion program. The doctoral candidates visited already the BLG seaport terminal. They will visit further labs and German universities e.g. TUHH. Additionally, they will take part in guided tours according to their research topics. In Bremen the scientists will join a tour to the waste water facilities and a tour to the solid waste management facilities as well as demonstrations of the *LogDynamics* facilities, AI lab and the *LogDynamics* lab. After their return to Ethiopia, the doctoral candidates can use the acquired expertise for their research work as well as for teaching or to implement it in practice.

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Photo: Getachew Kebede Warati

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### Successful 4-Weeks-Logistics Seminar at the ISL for Students from Djiddah



With the ceremony of handing-over the certificates for successful participation on Friday, July 28th 2017 the logistics training seminar at the Institute of Shipping

Economics and Logistics (ISL) ended for the students of the Faculty of Maritime Studies of the Department of Ports and Maritime Transport at the King Abdulaziz University in Djiddah, Saudi Arabia. They said goodbye after - with their words - „4 perfect weeks“.

It was the crowning finisher for the students from the Western Saudi-Arabic coast city after a month full of interesting and demanding lectures, courses, workshops and exciting excursions to explore - among other trips – the ports of Bremerhaven, Hamburg, Cuxhaven and even Rotterdam. Of course, it was already an exciting time as for most of the students it was their first time in Europe and thus the first time to experience a foreign culture.

The aim of the individual 4 weeks training seminar from 2nd to 28th July 2017 at ISL was to provide the participants insights into the interactions of the port-related supply chain and outline maritime logistics. "Port Security Issues", "Supply Chain Security", "Green Ports", "Understanding supply and demand fundamentals of the crude shipping industry", "Optimizing strategies in terminal operation", "Port planning in Germany", "Seaborne trade development and its long term impact on port logistics" und "Freight Villages in Germany" among others were topics of workshops and seminars here at the ISL.

This year's training seminar is a successful repeat of our co-operation with the Faculty of Maritime Studies of the Department of Ports and Maritime Transport at the King Abdul Aziz University in Djiddah, Saudi Arabia as already in recent years students from Jeddah visited the Hanseatic City two times for a month and successfully took part in the ISL Logistics Training.

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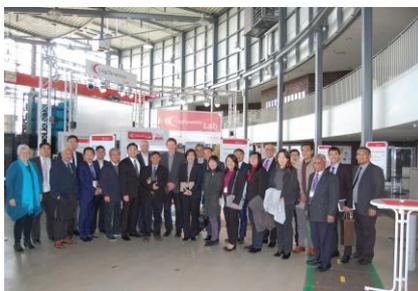
Details: [www.isl.org](http://www.isl.org)

Photo: ISL

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## LogDynamics Welcomes a Delegation from Singapore

The logistics research at the University of Bremen comes across international interest. In particular, current developments on the subject of digitization and „Industry 4.0“ are of great relevance for companies around the world. To inform themselves about these developments, to exchange thoughts and discuss possible cooperation, a 23-member company delegation from Singapore visited the BIBA and the LogDynamics Lab on April 26th. An exciting program consisting of lectures, demonstrations of the latest research results and cooperation talks was offered. The guests from the transport and logistics industry have taken inspiring insights and are planning the implementation of digitalization approaches in their economic practice.



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## BremenIDEA: Collaboration with the Federal University of São Carlos

Tobias, Sprodowski, research associate in the Dynamics in Logistics Group (DiL) of Prof. Dr. Jürgen Pannek, participates in the program BremenIDEA from July to November 2017. He is with the Federal University of São Carlos in the department of production engineering (DEP) to collaborate with Prof. Dra. Juliana Keiko Sagawa. Mrs. Sagawa was at BIBA for a post-doc research in 2016 where the collaboration started. Mr. Sprodowski plans to realize a part of his doctoral thesis in this program. The subject is the interconnection of communication and sub optimality of a control algorithm for controlling distributed systems. Here, two scenarios are considered: First, a simulation of distributed autonomous connected cars was carried out. In this setting, methods were examined to reduce the necessary communication effort.



As a second application a manufacturing process with distributed workstations for manufacturing polypropylene bags (plastic bags) is considered. Mrs. Saga-

wa modelled this scenario utilizing bond graphs to describe the material flows and dependencies among the workstations. The methodology of bond graphs allows the description of any dynamic physical system and the energy flows among the subsystems. Mr. Sprodowski will adopt a control algorithm for this model and examine properties of centralized and distributed control. Furthermore, two presentations about both topics in the groups of the department are planned and a mini-course about discrete simulations for graduate and PhD students.

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## Events



### Industry Meets Science: Digitalization in Production and Logistics

Date & Time: **29th of August 2017, 4 – 7 pm**

Venue: BIBA, Bremen



The Research Cluster *LogDynamics* and the BIBA - Bremer Institut für Produktion und Logistik would like to invite you to our event “Industry meets Science: Digitalization in Production and Logistics” on the August 29th 2017 at 4 pm.

The event is hosted in cooperation with the Chamber of Commerce of Bremen and Bremerhaven as well as the Oldenburg Chamber of Commerce and advocates itself to connect industry representatives and scientists and encourage cooperations. It will feature an interesting program with presentations and demonstrations of the newest research outcomes about the topic of digitalization in production and logistics.

The event starts with keynote addresses from Industry and Science, which provide exemplary solutions for practical issues of digitalization. Afterwards you are able to inspect the newest developments in BIBA and *LogDynamics*. You are welcome to look forward to fascinating demonstrations about industry 4.0, robotics in production and logistics, new business models as well as augmented reality and virtual reality technologies. Finally a get-together offers a platform for further discussion and networking.

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Details and Registration: [www.handelskammer-bremen.de/System/vst/1309302?id=248204&terminId=408012](http://www.handelskammer-bremen.de/System/vst/1309302?id=248204&terminId=408012)

Photo: Jan Meier, BVL

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### BIBA Offers Training Courses in its Industry 4.0 Expert Factory 'Autonomous Control in Production and Logistics'

Date: **4th of September 2017, 20th of November 2017**

Venue: BIBA, Bremen



In the scope of the “Mittelstand 4.0-Kompetenzzentrum ‘Mit uns digital! Das Zentrum für Niedersachsen und Bremen’” (Industry 4.0 competence centre

for small and medium-sized enterprises), BIBA - Bremer Institut für Produktion und Logistik has developed an expert factory for 'Autonomous control in production and logistics'. Here, demonstrators, dialogues and training courses on digital production and logistics are offered free of costs to small and medium-sized companies. The training courses shall qualify specialists and executives regarding the future concept Industry 4.0 and support cyber-physical systems in the respective company. Three core topics in the context of Industry 4.0 are covered: mobile technologies and smart products, efficient planning and control of logistic processes and technical systems as well as adaptive systems for a changing environment.

The first training courses have already been held successfully. The course concept, which integrates technical background knowledge, practical demonstrations and group workshops, was highly acclaimed by participants.

The next training courses are scheduled for the following dates: 4th of September 2017, and 20th of November 2017. Additional training courses will be offered in 2018.

'Mit uns digital! Das Zentrum für Niedersachsen und Bremen' is coordinated by the Hannover Centre for Production Technology and has started at the beginning of 2016 as the first „Mittelstand 4.0-Kompetenzzentrum" in Germany.

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Details and Registration: [www.biba.uni-bremen.de/industrie/expertenfabrik/qualifizierung.html](http://www.biba.uni-bremen.de/industrie/expertenfabrik/qualifizierung.html)

Photo: clabeck.de

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## 6th International Conference on Dynamics in Logistics (LDIC 2018) – Call for Papers

Date: **20th - 22nd of February**

Venue: Bremen

Dynamics of logistic processes and networks are at the heart of the conference. The spectrum of topics reaches from the modeling, planning and control of processes over supply chain management and maritime logistics to innovative technologies and robotic applications for cyber-physical production and logistics systems. The growing dynamics confronts the area of logistics with completely new challenges: it must become possible to identify, describe and analyze the process changes. Moreover, logistic processes and networks must be revised to be rapidly and flexibly adaptable to continuously changing conditions.



Deadline for the submission of papers: **24th of September 2017**. Topics:

### Supply Chain Management and Coordination

- New business models,
- Collaborative planning and control,
- Supply chain resilience and risk management

### Maritime Logistics

- Port operations, seaport hinterland transport,
- Multi-modal transport,
- Logistics for offshore wind farms,
- Maritime clusters

### Cyber-physical Production and Logistic Systems

- Internet of things and services,
- Intelligent transport systems,
- Distributed planning and control,
- Sensors and sensor networks

#### Robotics in Logistics

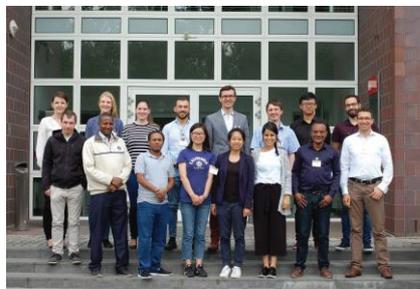
- Future visions and applications,
- Human-robot collaboration,
- Mobile robots and robot-robot collaboration,
- On-line planning

#### Advanced Modelling Techniques

- Simulation and system dynamics,
- Automatic model generation and model transformation,
- Big Data in transport and logistics, data analytics and predictive analytics

Contact: Prof. Dr.-Ing. Michael Freitag, Prof. Dr. Herbert Kotzab,  
 Prof. Dr. Jürgen Pannek [info@ldic-conference.org](mailto:info@ldic-conference.org)  
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 Photo: ake1150/Fotolia

## LogDynamics Summer School Internationally Attractive



The main theme of the second LogDynamics Summer School (LOGISS), held at the University of Bremen from 3rd to 7th of July 2017, was „Coopetitive Control of Supply Chains“. The aim of the LOGISS series is to establish an international network of young scientists in the field of logistics, which promotes innovative ideas from different disciplines, as well as providing new opportunities and joint research. Target groups are master students and doctoral students with research subjects at the interface of logistics, computer science, business engineering or related fields. The participants of the LOGISS 2017 were offered numerous lectures by well-known international scientists as well as lab sessions, an excursion to the automobile and container terminal of BLG in Bremerhaven as well as social events. The following topics were discussed: concepts and tools of industry 4.0, negotiation mechanisms for supply chain coordination, IT-supported decision-making in collaborative distribution networks. A total of 17 scientists from 8 countries took part.

Contact: Prof. Dr. Jürgen Pannek, Prof. Dr. Till Becker, Prof. Dr. Tobias Buer [summerschool@logdynamics.de](mailto:summerschool@logdynamics.de)  
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## Industry 4.0 – How do Logistic Objects Become Intelligent? – LogDynamics at the Open Campus of the University of Bremen



LogDynamics It was a festival of science which the University of Bremen celebrated with ca. 19.000 visitors. On Saturday, June 17th 2017, about 500 assistants were busy to create an unforgettable third OPEN CAMPUS which was

commemorated under the slogan “Open Worlds – Share Knowledge”. The Research Cluster *LogDynamics* was active during the event: The topic of industry 4.0 awakens lots of people’s interest, from young students to pensioners. Accordingly the groups visiting BIBA were big and diverse. In cooperation with the research cluster *LogDynamics*, the BIBA invited the public to pursue the question: „How do logistic objects become intelligent?“. *LogDynamics* Lab CEO Dr.-Ing. Marco Lewandowski reported from the newest researches and showed at different stations, what is already possible, and what will be possible in the near future. He answered many questions about the new technologies, but also about BIBA and *LogDynamics*. Apart from that, many guests used the opportunity to inform themselves about study in the faculty of Production engineering - Mechanical engineering and process engineering at the University of Bremen. Some students and parents came especially for that reason.

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Photo: Sabine Nollmann

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