

LogDynamics Newsletter February 2017

Projects

Optimization of Global Supply Chains

Missing transparency in complex supply chains often causes additional costs. For example, special transports or post-production may be required to provide downstream production processes with error-free parts. To satisfy customer requests and at the same time making processes more efficient, it is necessary to guarantee high quality in supply chains. Both, the product quality as well as the quality of associated processes have to be ensured.



The research project “SaSCh – Digital Services for Designing Agile Supply Chains” aims to solve the described challenges and to increase quality in supply chains. BIBA - Bremer Institut für Produktion und Logistik develops solutions to capture, exchange and analyse quality data in supply chains in collaboration with the partners BLG LOGISTICS, Robert Bosch GmbH, GS1 Germany GmbH and queo GmbH. The project receives funding from the Federal Ministry for Economic Affairs and Energy (BMWi) under the scope of the technology programme “PAiCE - Platforms, Additive Manufacturing, Imaging, Communication, Engineering “.

The project develops and improves stationary and mobile sensor solutions, which will generate necessary quality data. To exchange quality and sensor data between companies, the EPCIS standard will be used and augmented as needed. In order to trigger and perform effective activities based on data, the project partners develop digital services, characterized by intuitive user interfaces. Moreover, business models are developed for prompt transfer of developed solutions into practice. Legal issues as well as aspects of data security are taken into account as well.

The joint goal of all partners is to make SaSCh a flagship project for the German industry. To achieve this goal, the project solutions will be evaluated in practice and their potentials for the realisation of more efficient supply chains will be highlighted

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Details: www.sasch-projekt.de

Photo: Sensor based track & trace solution attached to small load carrier; BLG LOGISTICS / Marcus Meyer

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Endurance Test Passed – Bremen Robotics Team Successfully Simulates Mars Mission in Utah



A major challenge in the exploration of Mars by robots is its uneven surface, which is marked by trenches and craters. Whether the systems can withstand the rough terrain on the Red Planet, they have to prove it on the earth first – for example, in the rocky deserts of the American state of Utah. There, scientists from the Robotics Innovation Center of the German Research Center for Artificial Intelligence (DFKI) tested robotic systems and their cooperation capabilities within the project Field Trials Utah (FT-Utah) from the end of October to the end of November 2016.

Among the systems tested in Utah were the hybrid walking and driving rover SherpaTT and the micro rover Coyote III, both developed and build as part of the TransTerra project at the Robotics Innovation Center. The robot team was completed by immobile robotic units, namely a BaseCamp as well as various payload containers equipped with electromechanical interfaces.

A control station was set up at the Robotics Innovation Center in Bremen to allow the control of the intended mission, which built a communication link to the robots in Utah via satellite. The Virtual Reality Lab, an interactive 3D multi-projection facility, enabled the operator to observe the mission status in a virtual reality. In addition to a pointing device, a two-armed upper body exoskeleton served as an input and control device. This allowed the operator to control the robots in Utah intuitively with natural movement patterns. Through integrated force feedback, he also received direct feedback on the SherpaTT's manipulator, enabling him to safely move and place it in the more than 8,300 kilometers away.

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Details: www.dfki.de/robotik/de/forschung/projekte/ft-utah.html, <https://www.youtube.com/watch?v=pvKlZldni68>
Photo: Florian Cordes, DFKI GmbH

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Gamification for Qualification of Offshore Wind Energy Service Technicians (QUEST)

The competition for offshore wind energy maintenance services is steadily increasing. The quality of the service represents the decisive differentiation feature in the industry. In addition, public requirements lead to the necessity of constant further development and training of the employees. As a result of the decentralized service stations, further trainings are characterized by high logistics costs due to the transfer of employees to central qualification measures. At the same time, the weather conditions at sea, for example, frequently lead to temporal free spaces, which could potentially be used for qualification measures. In order to exploit this potential, the use of new media and the e-learning approach are pressing. In order to meet the demand for further training in the specific field of offshore wind energy, the project consortium of Deutsche Windtechnik Offshore und Consulting and BIBA pursues the goal of developing a gamified qualification application. By using text mining methods, existing service logs will be analysed to identify qualification requirements and add them to the application. The funding institution is Bremen Development Agency (WFB), the project duration: 01/12/2016 – 31/05/2018.



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On the Way to Industry 4.0: IGEL Counts on Digital Product Life Cycles by RFID Transpon- ders



The Bremen IT specialist IGEL not only counts on guiding technologies for its Thin Client solutions, the company sets the course for the future in its own production as well: Since October last year, Radio-Frequency Identification (RFID) is used in the assembly – where IGEL configures its Thin Clients customer-specific and makes them ready for transport. Every Thin Client is also equipped with a transponder, by which it can be retraced throughout the whole product life cycle – from production to usage period up to disposal. The digital life cycle file significantly contributes to quality control and helps IGEL to push production automation forward. On top of that, the RFID project makes an important contribution to sustainability issues: The use of paper is reduced, because the whole device history can be retraced comfortably by the database. Following the Industry 4.0 approach, the system can easily be integrated in present IoT-system environments of suppliers and customers. IGEL already plans the project's next extension level for the future.

In order to realise the RFID project, the cooperation of companies and institutes is necessary: Beside of IGEL, the Bremer Institut für Produktion und Logistik (BIBA) and the Melchers Software Department belong to the project partners. As user IGEL was involved in both, system development as well as software development. The connection to the SAP-system was undertaken by Melchers Software Department.

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Details: www.youtube.com/user/IGELTechnologyVideos

Methods and Tools for the Pro-Active Maintenance of Offshore Wind Turbine Generators



In the project „preInO“ tools and methods for the realisation of a preacting maintenance were developed by means of artificial intelligence and automatic self-organisation. These have been validated by means of a demonstrator. Great optimization potentials concerning the deployment of personnel, spare parts and transport were pointed out. The project has been implemented in cooperation with the turbine manufacturer SENVION from Hamburg and the software developer SWMS from Oldenburg.

Offshore maintenance processes were recorded and data sources for an automated decision support were identified. Based on this, a basic concept was developed and the required methods analysed or researched. This enabled an automated prioritisation of detected errors. The acquired knowledge flowed into the development of a software module. The developed methods and data were validated with real data by using a demonstrator, which was in the course of development.

The project results are comprehensive methods and tools taking several data sources into account that can be used for a preacting maintenance strategy of the service of offshore wind turbines. To enable an accurate prognosis about the condition of a component, a variety of data sources such as sensor values, statistic data, maintenance data from the maintenance history file, externa-

lized staff know-how, weather data as well as stock inventory and personnel planning were analysed and automatically linked to a relevant event. The prioritisation of the detected errors, the dynamical planning of the scope of maintenance and the scheduling into the workflow with corresponding logistics using decentralized controlling systems are based on the points of the project that were researched. By using the tools and methods of the preacting maintenance, it is possible that logistic accompanying processes can be planned better and earlier.

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Awards



Celluveyor Wins the DHL Innovation Award – Shark Tank 2016

The DHL Innovation Day is a yearly event that brings together experts and visionaries from industry, research, and media, where trends and future-oriented technologies for logistics are presented and discussed. To be able to react efficiently to the explosive increase in e-commerce as well as the increasing volume of parcels, automation plays a key role in sustainable and efficient logistics processes.



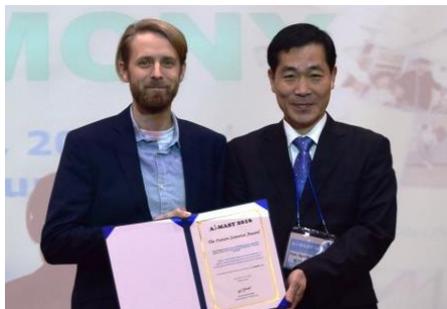
In this year's DHL Innovation Day, alongside with different international competitions, a "Shark Tank" contest was held for the first time. Within this competition DHL was looking for "innovative ideas and leading young entrepreneurs from the sector logistics". Three technologies and start-ups were presented to the specialized audience and a top-class expert jury. At the start-up pitch the candidates competed against each other and had to present the technology, its advantages as well as their business model convincingly within a very short time. The *Celluveyor* developed at BIBA was able to convince the jury and the audience due to the high flexibility of the technology as well as the economic potential.

The vote of the audience as well as the vote of the jury of experts – composed by Dr. Alex of Frankenberg from the High-Tech Gründerfonds (HTGF), Peer Bentzen of DHL as well as investor Frank Thelen (e42), known for german adaptation of Shark Tank TV series "Die Höhle der Löwen" – went to the *Celluveyor* team. The *Celluveyor* was included the "Start-up-Hall-of-Fame" and the technology will be exhibited in the "DHL Innovation Center" in Troisdorf.

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Details: www.celluveyor.com,
www.youtube.com/watch?v=DhPVQwtX3hg,
<https://idw-online.de/de/news664347>,
<http://www.celluveyor.com/celluveyor-gewinnt-dhl-shark-tank-wettbewerb>
Photo: Alexander Flögel

Future Scientist Award for Bremen Scientists in Mokpo, South Korea

Several actors with different information backgrounds are currently involved in the decision process for the execution of maintenance operations in the



offshore wind industry. For deployment decisions, the decisive factors are especially prevailing weather conditions for the operating period. At the moment, suitable weather windows are partially not used or service technicians have to abort their operation process.

Within the scope of the BMWi-funded research and development project “IeK – Informationssystem zur echtzeitnahen Koordination des Offshore-Transports”, BIBA institute develops a system for planning and control of offshore transportation together with the partners Cluetec (Karlsruhe), energy&meteo (Oldenburg) and the JadeHochschule (Elsfleth). In the future, the system offers decision support for participating actors and is supposed to save costs and time. The conservation of the used technology and the required resources is also a central objective of the project/system.

In the course of this project the article “Information System for the Coordination of Offshore Wind Energy Maintenance Operations under Consideration of Dynamic Influences” by Thies Beinke, Moritz Quandt, Abderrahim Ait Alla, Michael Freitag (all BIBA institute) and Thomas Rieger (Cluetec) has been awarded with the Future Scientist Award on the “International Conference on Advanced Intelligent Maritime Safety and Technology – Ai-MAST 2016” in Mokpo (South Korea).

The article deals with logistics of maintenance for offshore wind energy plants and the influence of swell as well as tide predictions on the coordination process between actors for planning of maintenance operations. Effects of the wave height’s forecast quality on deployment decisions, the average repair time in case of a damage as well as the availability of offshore wind energy plants have been analysed in detail. Based on these findings an approach for decision support in operational logistics planning has been presented.

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Internationalisation



The Memorandum of Understanding between University of Peradeniya and University of Bremen



Logistics is a global domain therefore the establishment of international networks and sustainable cooperation are of great importance, both in economy and in science. *LogDynamics* cooperates with many institutions worldwide thus contributing to the internationalization strategy of the University of Bremen. One further cooperation measure was initiated on 16th December 2016 in Sri Lanka by Prof. Hans-Dietrich Haasis. On behalf of the cluster *LogDynamics* and the International Graduate School Prof. Haasis signed a Memorandum of Understanding with Professor Upul B. Dissanayake, the Vice Chancellor of University of Peradeniya at the Senate building in University of Peradeniya. The MoU will open up the opportunity for collaborative research as well as exchange of students and staff between the two institutes in the areas of logistics and industrial engineering. The cooperation results for the Erasmus Mundus gLINK mobility of Dr. Asela Kulatunga.

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Details: www.pdn.ac.lk/news/201220161

LogDynamics Welcomes Guest Lecturer from Pakistan



The cooperation between LogDynamics/ University of Bremen and the Capital University of Science and Technology in Pakistan has been established within the scope of the Erasmus Mundus projects cLINK and FUSION. Over the last years, these projects financed several mobilities in both directions. In January and February 2017, Prof. Dr. Amir Qayyum visited the University of Bremen and the International Graduate School for Dynamics in Logistics (IGS) at Prof. Pannek's invitation. He offered a workshop "Leadership: Care and Growth Model through Intent" for the IGS during his stay and a lecture at the Faculty of Production Engineering.

Prof. Dr. Amir Qayyum is a professor at the Capital University of Science and Technology, Pakistan. He has both management and technical expertise with leadership skills to effectively lead a team; creative and visionary thought leader, numerous publications and co-author of an RFC in IETF (Internet Engineering Task Force) about mobile ad hoc networks. He has been involved in conducting numerous professional trainings and workshops in different leading organizations and institutions at several managerial and technical levels. His leadership sessions cover diverse range of topics like leadership, management, character and professional ethics, etc. He has a research and teaching experience of about two de-cades along with several years of industry experience. His trainings possess valuable insights that he has gained through extensive travel all around the globe and during his stay in Europe.

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Events



LOGISS 2017 – LogDynamics Invites to its 2nd Summer School

Date: 3rd – 7th of July 2017
Venue: Bremen



The research cluster LogDynamics organises the Summer School LOGISS for the second time. The goal of this summer school is to forge a seed of young researchers from different disciplines, who share the interest in mechanisms for coordination of logistics processes as well as in the cooperation and competitiveness in supply chains. The LOGISS 2017 will focus the topic area of **Coopetitive Control of Supply Chains**.

The courses of the summer school include among others the following topics:

- negotiation mechanisms for supply chain coordination
- IT-enabled decision making in collaborative distribution networks
- network flow optimization, big data analytics, control theory, and heuristics
- performance criteria for control interfaces and selection of evaluation criteria

The LogDynamics Summer School is designed for PhD and Master students who work on theses at the interface of Logistics, Computer Science, Industrial Engineering, Economics or related fields. It is encouraged that the applicants have some basic knowledge in modeling, programming, and statistics.

Deadline for application: **4th April 2017**.

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APMS 2017 International Conference on Advances in Production Management Systems

Date: 3rd – 7th September 2017
Venue: Hamburg

The conference is organised by the IFIP working group 5.7, which was established in 1978. It is one of the leading international conferences on Production Management. This year, the Hamburg University of Technology, the TU Chemnitz and the University of Bremen are responsible for the organisation. The APMS 2017 will take place in Hamburg. This year's topic is: **Shaping the future of production management – the path to intelligent, collaborative and sustainable manufacturing.**

The conference includes:

- a doctoral workshop to support young scientists,
- different Special Sessions for particularly relevant topics,
- industrial tours to companies like Airbus, Daimler, Aerobus and others

Relevant dates:

Submission of full paper: March 23rd

Doctoral workshop submission: March 23rd

Topics of APMS 2017 include (but are not limited to):

- Knowledge based production management
- Global Supply Chains
- Collaborative networks
- Sustainability and production management
- Industry 4.0

Each paper can be up to 8 pages in length and must confirm to the Springer format. For additional information about the format please visit www.apms-conference.org/submissions.php

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Day of Logistics: Digital Services in Logistics

Date: 27th of April 2017
Venue: Bremen

On the occasion of the „Day of Logistics“ LogDynamics organizes an event titled „Digital Services in Logistics“ on 27th of April 2017. The co-organizers

are: the BIBA institute, the association AFSMI, BHV, Chamber of Commerce Bremen, and WFB – Bremen Economic Development Agency.



The event focuses on cooperation between science and economy as well as

the transfer of research results in practice. The aim is to show the potential of digitalization and digital services in the logistics with exemplary applications and successful cooperation. A diversified program is offered with lectures, demonstrations of new research results, an exhibition with the involvement of our cooperation partners, and a concluding get-together.

Deadline for application: **15th of March 2017.**

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



Date: 24th – 25th of April 2017,
4th – 5th of September 2017,
20th – 21st of November 2017
Venue: 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 develops an expert factory for 'autonomous control in production and logistics'. Here, demonstrators, dialogues and two day training courses on digital production and logistics are offered (free of charge) 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 next training courses will be held at the following dates: April 24-25, 2017, September 4-5, 2017, and November 20-21, 2017.

'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: www.mitunsdigital.de
Registration: <http://mitunsdigital.de/wordpress/veranstaltungen/selbststeuerung-in-der-produktion-und-logistik-2>
Photo: clabeck.de

transport logistic 2017 – LogDynamics Present at the Bremen / Bremerhaven Booth



Date: 9th – 12th of Mai 2017
Venue: Munich

LogDynamics is carrying out on the edge logistics research both related to basic concepts in logistics as well as in the applied area. A main aspect of the work is to strengthen the collaboration between the research and the logistics

industry in the region of Bremen as well as in an international context. Thus, since years we have had a very fruitful collaboration with bremenports and VIA BREMEN with several common activities strengthening this research-industry relationship. As a part of this collaboration, LogDynamics will again be part of the common booth Bremen / Bremerhaven on transport logistic 2017. transport logistic is one of the largest fairs targeting all different stakeholders within the transport and logistics sector regarding mobility, SCM, IT solutions and related areas. LogDynamics presents the latest developments related to the field of digitalisation in the logistics and cellular conveying technology. You are welcome to visit us in the **hall B4, booth 213/314!**

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Places & Formats of the Future – A Workshop of LogistikLotsen for the Metropolregion Nordwest

Date: 17th - 19th of March 2017
Venue: Berlin



From the 17th to 19th of March, the LogistikLotsen head for the capital and provide students of all subjects an opportunity to experience the innovation method 'Design Thinking' in creative Berlin. Together with Creative Coaches own event ideas and approaches for social innovations in the logistics sector are developed as well as a specific concept for the regional conference Logistik 2018 by Metropolregion Nordwest. The interdisciplinary workshop also offers the opportunity to learn about the logistics sector as one of the biggest employers in the Metropolregion Nordwest and to creatively participate in its development. The application deadline for the limited participation ends on the **17th of February 2017.**

The Metropolregion Nordwest-sponsored project of LogistikLotsen especially develops and initiates innovative and creative event formats for regional cooperation of science and practice in the area of maritime industries and logistics.

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Open Campus of the University of Bremen

Date: 17th of June 2017
Venue: University of Bremen



On 17th of June 2017 from 14h00 to 24h00 the University of Bremen invites all interested persons from Bremen and the surrounding region to an Open Campus. Under the motto „Opening Worlds - Sharing Knowledge“ the university shows, what it is made of. In more than 30 pagodas, right in the middle of Campus-Park, faculties, institutes and central institutions give fascinating insights in their activities and projects. There is always something to discover in Campus-Park: scientific shows, science slam, international dance performances, original lectures and guided tours take turns.

The LogDynamics cluster and the BIBA institute take part in Open Campus with two guided tours (15h and 16h). The application and demonstration center LogDynamics Lab exemplarily presents research findings of innovative solutions in logistics. The motto of the tours is "Industry 4.0 – How become objects intelligent?". We cordially invite you to join the event and to experience the university from another perspective.

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Details: www.uni-bremen.de/open-campus.html

Photo: Universität Bremen

Digitalisation Day for Young Professionals in the Vehicle Distribution at BIBA Institute

Increasing customer needs and a strong competitive pressure require efficient processes and innovative solutions within finished vehicle logistics.

This applies to automobile manufacturers as well as logistics service providers. Here, companies especially depend on the creativity, motivation and knowledge of their employees. The ECG Academy exists to particularly qualify young professionals for future tasks in the field of finished vehicle distribution. The courses are organised by the auditing company KMPG at different companies and with different lecturers on behalf of ECG - The Association of European Vehicle Logistics.



Last year and for the first time, BIBA institute organised a whole day for the ECG Academy. On that day, participants became familiar with innovative concepts for vehicle identification and tracking as well as possibilities for using generated data for planning and controlling processes in an efficient way. The lectures were based on experiences of BIBA from successfully concluded projects. Innovative approaches from basic research as well as practical experiences from projects with companies were presented. Thereby, participants were able to profit from the BIBA staffs' comprehensive methodological knowledge as well as from the knowledge of operational processes in finished vehicle logistics.

Thus, the Digitalisation Day conveys the knowledge from diverse activities of BIBA in the field of finished vehicle logistics. Due to the exchange of ideas between participants and lecturers, the event helps to further improve innovative solutions within finished vehicle logistics in the future. Further dialogue between research and practice will definitely make an important contribution to this

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Details: www.ecgassociation.eu/ECGAcademy/AbouttheECGAcademy.aspx

Speakers from Politics, Science and Economy Show Potentials of Digitalisation

"We digitise us"- was the motto of the joint event from the City of Vechta and the Private Hochschule für Wirtschaft und Technik (PHWT). A subject which raises many questions. The City and



PHWT invited speakers from politics, science and economy in the town hall's foyer to give some answers.

Thomas Jarzombek - speaker of the Bundestag Committee "Digitale Agenda", district chairman of the CDU Düsseldorf and IT entrepreneur himself - explained the importance of digitalisation for German economy using the example of the automobile industry. According to him, in times of autonomously driving cars products are not crucial for success anymore but services.

Prof. Klaus-Dieter Thoben, head of BIBA institute at the University of Bremen, showed what digitalisation specifically means: In this way, employees, who are in the surroundings of a forklift, can be made visible for the driver in time by a "digital shell". This increases safety. But digitalisation is not always the "big thing". A digital illustration of the work organisation already provides benefits for companies. According to Prof. Klaus-Dieter Thoben, not everybody has to digitise, but companies have to recognise in which areas digitalisation can improve processes. Here, the cooperation with science helps as well.

A decisive condition for a successful digitalisation was presented by Daniel Proetel, Advanced Software Manager of Big Dutchman. He got to the heart of a fundamental problem. Because: Data exists, but the competence to evaluate it misses. Three speakers, many perspectives. It was shown that companies need the courage to strike out in a new direction, the competence to profit from generated data and competent partners by their side.

Details: www.vechta.de/Aktuelles

Photo: Kläne