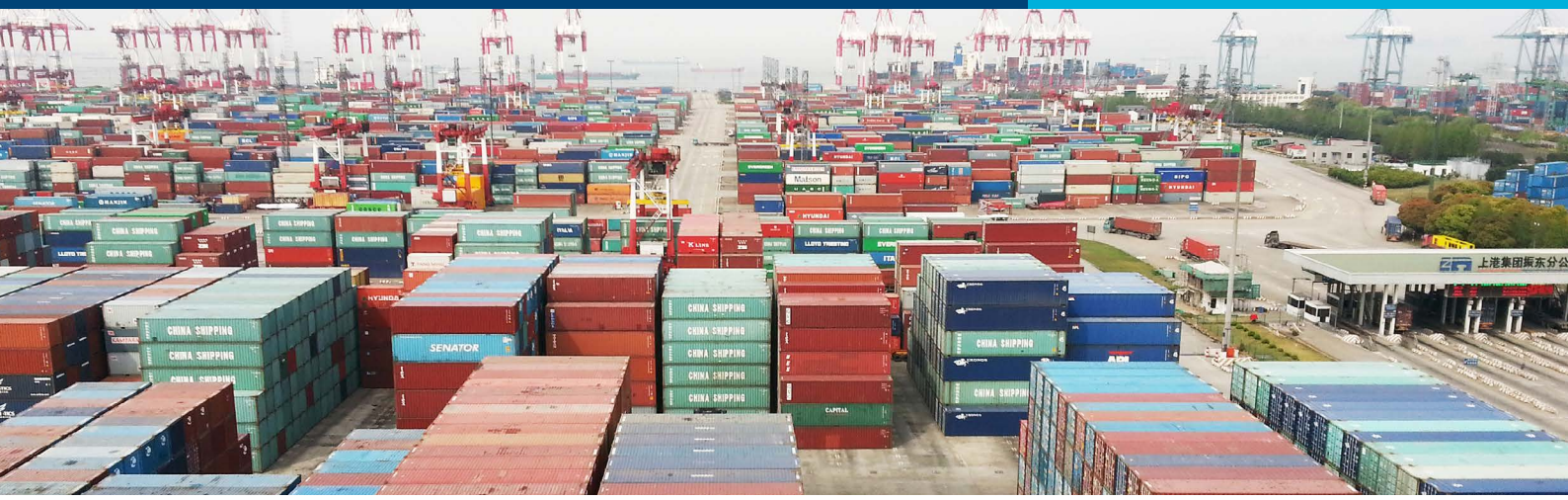
Federal Ministry
for Economic Affairs
and Energy

ZIM
Zentrales
Innovationsprogramm
Mittelstand

ZIM Success Story

Central Innovation Programme for SMEs

Cooperation Projects 165



Free-Flowing Freight Traffic Thanks to More Precise Planning

Due to the increasing demands being placed on loading and unloading procedures, the processes freight terminals follow for large container ships are growing more and more complex. Luckily, a new simulation-based forecasting tool is giving planners at these terminals a fast, reliable means of checking their current planning and projecting how events will affect upcoming shifts.

Ongoing automation and rising requirements – particularly those pertaining to the loading and unloading of very large ships – are leading to a higher level of process complexity at major container terminals. In some cases, containers are loaded into a ship's cargo hold and onto its deck in a way that minimizes the number that need to be moved for clearance. This needs to be taken into account early on when positioning the containers at the respective container yard. Until now, shift planning in this area has been carried out based on simple rules of thumb. Computer-aided forecasting of the processes involved has failed due to the uncertain nature of any data beyond the very next shift and the runtime behaviour of the simulation methods available.

As part of the first-ever German-Korean call for proposals for R&D projects involving small and midsize enterprises, the partners in one project set their sights on coming up with an efficient software tool for this area of application.

The product and its innovation

This transnational cooperation has resulted in an IT system that simulates operations within a given container terminal.

During its development, extensive interfaces were used to integrate CATOS – software from South Korea's Total Soft Bank – with the simulation software CHESSCON, which is sold by the German industrial partner ISL Applications GmbH. Pusan National University, the South Korean research partner in this endeavour, also devised predictive techniques that make it possible to render basic forecasts of a terminal's future workload. Meanwhile, strategies for container storage were developed by the Computational Logistics workgroup at Pusan's German counterpart, the University of Bremen. These were also incorporated into CHESSCON by means of an interface. Here, the results of the heuristic and dynamic warehousing methods applied to factor in transshipment containers and queues at container blocks have been particularly impressive. These methods make it possible to simulate up to nine shifts and 25,000 containers, which far surpasses the capabilities of previous systems in this area.

Market and customers

The integration of these systems and the resulting expansion of their functional scope is opening the door to new markets and distribution channels for both the Korean and the German industrial partners in this project. In fact, ISL Applications has already sold its new simulation

Maritime Technologies

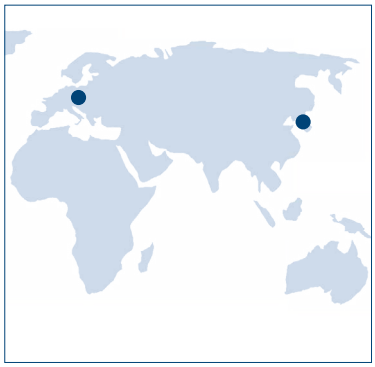
Contact

Prof. Dr.-Ing Holger Schütt
ISL Applications GmbH
Barkhausenstraße 2
27568 Bremerhaven
Telefon 0471 30983838
www.isl-applications.com

Prof. Dr. Tobias Buer
Universität Bremen
Fachbereich Wirtschaftswissenschaft
Celsiusstraße 2
28359 Bremen
Telefon 0421 218 66850
www.uni-bremen.de
www.cl.uni-bremen.de

Prof. Soon Do Hong
Pusan National University (PNU)
Institute of Logistics Innovation and Networking
609-717 Busan, Korea
Telefon +82 103305-9791
www.pusan.ac.kr

Hoon Lee
Total Soft Bank Ltd.
66-39, 513 BanSong-Ro, HaeUnDae-Gu,
Busan, Korea
Telefon +82 70-4733-1100
www.tsb.co.kr



This project was carried out as a result of the first German-Korean call for proposals for R&D projects.
www.zim-bmwi.de

system, CHESSCON Shift Preview, to its first terminal operator. With a corresponding marketing campaign planned for 2018-19, further sales of the module are sure to follow all around the world. Total Soft Bank, for its part, has also succeeded in selling the software to a number of shipping terminals.

The partners

Founded in 2010 in Bremerhaven, Germany, ISL Application GmbH is a five-person operation that develops and sells software products for logistics and port management. It is a spin-off of the Institute of Shipping Economics and Logistics (ISL), which is specialised in issues related to maritime business operations. In addition to offering consulting and support in the same field, ISL Applications provides other services related to information technology. The systems it develops are used to optimise container terminals, plan port operations, and analyse transport networks all around the world.

The Business Studies & Economics faculty at the University of Bremen teaches students and performs research in fields such as finance, business management and entrepreneurship, innovation, marketing and digital media, statistics, and logistics.

Since its foundation in 1988, Total Soft Bank Ltd. of Busan, South Korea, has begun developing and selling components and solutions for ship automation and port logistics in various maritime industries.

Among other areas, Pusan National University (also of Busan) offers courses and conducts research in ship construction and navigation, port operations, and logistics.

Project duration: January 2015 to March 2017

This project was supported by the Federal Ministry of Economic Affairs and Energy on the basis of a desision by the German Bundestag.

The Central Innovation Programme for SMEs provides funding to all technologies and sectors.

→ Individual ZIM projects
→ ZIM cooperation projects
→ ZIM collaboration networks

Information and advice on cooperation projects
AiF Projekt GmbH
Tschaikowskistraße 49, 13156 Berlin
Telefon 030 48163-451
www.zim-bmwi.de

Impressum

Publisher
Federal Ministry of Economic Affairs and Energy (BMWi), Public Relations Department
11019 Berlin, Germany
www.bmwi.de

Last update
March 2018

Design and content
AiF Projekt GmbH

Image credits
ISL Applications GmbH