HHL LEIPZIG GRADUATE SCHOOL OF MANAGEMENT

Chair Report

Heinz Nixdorf Chair of IT-based Logistics

2021 /22

PREFACE

"The chameleon-like nature of logistics in our global and digital world makes change a driving force. As Heraclitus is often quoted, 'You can't get into the same river twice'; figuratively, this applies equally to the flow of value creation."

Prof. Dr. Iris Hausladen, 2022

CONTENT

1. PHILOSOPHY

“Keep things flowing” is our daily passion

The Heinz Nixdorf Chair of IT-based Logistics at HHL Leipzig Graduate School of Management was established by the Heinz Nixdorf Foundation in 2007 in order to foster applied research and teaching in the field of efficient logistics systems based on modern information technologies.

Contemporary logistics and supply chain management focus on the design of optimal material and information flows within national and international value creation chains satisfying the demands of internal and external customers. Sustainability acts as a central guiding principle for everybody involved.

In close cooperation with companies and as part of an interdisciplinary network of research partners, we investigate and develop strategies, concepts and methods of IT-based Logistics that substantially contribute to the successful development of the regional and supra-regional logistics location.

AND: The management of logistics and supply chains is actually embedded in a multifaceted and interdisciplinary context. It is not only orchestrating material and information flows but beyond that it is about building bridges between technology, business administration, IT and society, to name only a few.

A note on our own behalf:

Logistics chair’s anniversary in September 2022 – 15 years on the pulse of time

When the Heinz Nixdorf Chair of IT-based Logistics was established in September 2007, the logistics subject area was at that time quite new at HHL but developed as an integrative part of modern management and leadership approaches in turbulent times.

Over the years IT-based Logistics also transformed from using quite standard technologies to a research and practice specialty asking for brand new and smart solutions to tackle global challenges successfully, to act responsible and sustainable thus securing the competitiveness of many industry sectors.

The vibrant logistics discipline connected to most diverse branches enables manifold projects to be covered by interdisciplinary and cross-company endeavors. Ongoing digitalization, comprehensive organizational restructuring as well as the reflection of business models pushed the research, teaching, and transfer activities of the chair in this direction to meet the manifold stakeholder demands. Digital transformation is necessary to stay on the pulse of time of smart value creation, logistics and supply chain management.

The textbook by Prof. Dr. Hausladen “IT-gestützte Logistik. Systeme – Prozesse – Anwendungen“ has meanwhile been published in its fourth edition by Spinger Gabler Verlag.

2. TEAM

2.1. Chairholder

Prof. Dr. Iris Hausladen

Prof. Dr. Iris Hausladen is holding the Heinz Nixdorf Chair of IT-based Logistics at HHL Leipzig Graduate School of Management since September 2007. During summer semester 2007 she was a substitute professor at the University of Kassel. She has been a private lecturer at the TU Munich since 2006. She received her doctorate there in 2000 (“Instruments for the implementation of the cultural change of companies”; English translation) and her habilitation in 2006 (“Business process design of enterprise e-maintenance solutions”; Habilitation Award, Association of Friends of the TU Munich; English translation). From 2001 to 2002, Prof. Hausladen worked as a consultant and division manager in production, logistics and technology management at TCW. She studied business education with majors in business pedagogy as well as production & controlling and completed an apprenticeship as an industrial clerk, specializing in energy industry. Preferred research areas: IT-based Logistics, business model development, value orientation/sustainability in digital logistics, interdisciplinary business process management.

2.2. Research Associates

Andreas Matthes, M.Sc.

Andreas Matthes joined the Heinz Nixdorf Chair of IT-based Logistics in September 2019 and was enrolled in the HHL doctoral program in 2020. Prior HHL he worked as logistics planner at DB Schenker (contract logistics), involved in business process management and logistics projects for a Danish, German and Spanish wind power turbine manufacturer. Furthermore, he also gained experience as a junior pricing manager at an electrical wholesaler. Before his work as professional, Mr. Matthes studied business administration with a major in supply chain management (master level) and business and economics (bachelor level) at the Friedrich Schiller University in Jena. He wrote his master thesis at Volkswagen AG (Department Industrial Engineering/Production System) conducting a simulation study on the topic of “Production scheduling along the pearl chain concept – Simulation of algorithms to increase the resorting performance of mix-bank buffers in the automotive industry” (English translation). Mr. Matthes furthermore completed an apprenticeship as management assistant in wholesale and foreign trade.

Lyuzi Kirchgeorg-Muradyan, M.Sc.

Lyuzi Kirchgeorg-Muradyan has studied business education and management training at the University of Leipzig with a focus on sustainability. During her studies, she worked several years in the automotive sector (BMW and Thyssenkrupp Automotive Systems) as a working student. She graduated her master's degree at the Fraunhofer Center for International Management and Knowledge Economy (IMW) in Leipzig. The master thesis called “Collaboration between small and medium sized companies and startups” (English translation) focused on how to analyze the impact of innovation culture of small and medium sized companies on collaboration with startups. In October 2021, Lyuzi Kirchgeorg-Muradyan joined the Heinz Nixdorf Chair of IT-based Logistics as a research associate, mainly responsible for the external funded project (myLOG MOL), and is a doctoral candidate (status pending).

2.3. Team Assistant

Claudia Drews

The chair’s activities were supported by our team assistant Claudia Drews.

3. RESEARCH

3.1. Overview Topical Research Foci

The strategic research orientation of the chair comprises two focal areas. In order to emphasize the strong IT-related environment of logistics, **IT-based Logistics** is in this respect regarded separately from common **logistics**. All efforts and activities to design and evaluate logistics solutions, which are not only IT-based, are subsumed under the **assessment** topic. **BPM** (Business process management) establishes furthermore an important concept framework, since business processes are regarded as integral parts especially in IT-based Logistics to realize a complementary IT support. All research endeavors are viewed from a business perspective; hence a holistic **management** approach is followed.

Supply chain management expands the scope of consideration when it comes to company external material and information flows in a regional, national and international context.

Research projects, working groups, research networks, studies and surveys are representative for different realization forms of our chair-specific research activities.

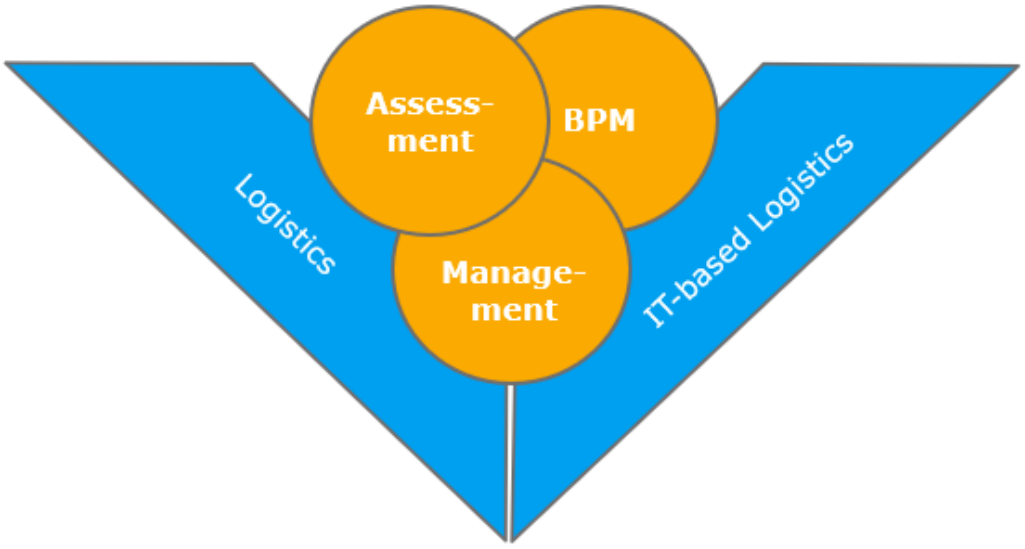

Figure 1: Integrated Research Framework
(Source: Heinz Nixdorf Chair of IT-based Logistics)

The following topics are exemplary outlined to illustrate our broad research portfolio:

Business model development & evaluation in the field of digital logistics

Advanced technologies and innovative solutions manifest some anchor points of logistics in the digital age. Data driven business models and/or digital business models enable the foundation of startups in this sector but also grown companies e.g., in the manufacturing industry and retail have to reflect their traditional business models to stay competitive in the markets. Standard procedures and tools in the area of business model development need to be modified and transferred to digital logistics. Next, an evaluation framework is required (i.e. a paradigm specific evaluation pattern) to assess different business model options based on multiple indicators.

Intelligent IT solutions for logistics/Logistics 4.0/SCM 4.0

Logistics and supply chain management are significantly driven by the application of advanced, smart information and communication technologies both to optimize material and data/information flows. Technologies with a functional orientation support the localization and identification of objects, the mobile communication plus an electronic data transfer. In the cross-functional area architectural concepts, technology resources and analytical methods help to realize concepts like Logistics 4.0/SCM 4.0. Corresponding solutions support the procurement, production, maintenance, warehousing, distribution and redistribution logistics by connecting smart hard- and software applications with logistics intelligence.

Evaluation of IT-Logistics solutions & project management

The establishment of smart IT-Logistics solutions mostly requires upfront investments as well as running costs. Expenses are rather easy to quantify in contrast to the impact of such applications e.g. on logistics processes, efficiency, service quality, processing/lead times as well as sustainability. An adequate evaluation framework based on a broad range of different indicators is needed to provide respective decision support. Additionally, the introduction/realization of new information and communication technologies/solutions is connected with the usage of project management methods as well as tools in order to succeed in practice.

Value chain management/Industry 4.0

Value chain management asks about the way how a company generates value, now in the digital age by covering the inside value chain (logistics and operations management), focusing on the outside value chain (SCM) and by establishing sustainable value chains, following the triple bottom line (TBL) approach, i.e. creating value from an economic, environmental and social point of view. From a manufacturing perspective the Industry 4.0 concept acts as a technological as well as business framework to design, implement and monitor smart value creation processes. Innovative procedure models are necessary to manage such complex endeavors.

Business process management

A business process represents a sequence of activities linked to each other via the respective business logic. Logistics and supply chain processes manifest as interdisciplinary, cross-context and cross-company spanning task steps. Due to the often digital nature of corresponding processes a synchronous business process management is needed that connects ICT (i.e. information and communication technologies) application and business process design/optimization right from the beginning. A paradigm specific controlling concept has to be established as well.

Digital transformation

Digital transformation goes along with a profound business model reflection. Depending on corporate history, core competences and future trends the direction of evolution or disruption of the current business model is catalyzed and companies have to Identify the value proposition they are striving for most in the future. Therefore, digital transformation represents a complex, context-networking and long-term project. Hard and soft factors have to be considered whilst implementing a comprehensive change program.

Sustainable logistics systems and networks (e.g., city/urban logistics & last mile logistics)

Sustainable logistics when related to the economic, ecological and social dimension of the triple bottom line (TBL) nowadays places high demands on logistics due to the fact that it is for instance directly linked with e.g. manifold transportation activities. Especially in cities and urban regions the last mile calls for innovative sustainable ideas. Stationary and mobile city logistics concepts connect smart material with smart data/information flows and micro hubs allow for a smooth consolidation and delivery of e.g. online ordered products. Multifaceted concepts are needed to fulfill the sustainability requirements formulated by diverse stakeholders.

Organizational development and competence management in companies, predominantly in the logistics sector

The introduction of intelligent IT-based Logistics solutions is connected with the sustainable adjustment of the structural and process organization. Thus, adequate organizational development methods and tools have to be provided to master the change process effectively. Moreover, new processes e.g., require corresponding training initiatives to build and further develop skills. Evolutionary corporate culture change complements the activity portfolio.

3.2. Supervised Dissertation Projects at the Chair

Doctoral projects cover a broad range of topics in the field of logistics, supply chain and value chain management in the digital age. The following dissertation projects are respectively were supervised at the chair (listed in alphabetical order).

Managing collaborative problems of supply chains within a digital context – Development of a management concept

"An increasing digital interconnection of partners in the supply chain gives rise to new, digital challenges where changing expectations lead to collaborative problems in a digital context. The resulting continuous change of the internal and external business environment requires the development of new concepts to cope with these challenges. This dissertation explores collaborative digital supply chains in terms of the nature of emerging collaborative problems from the perspective of a digital context and aims to develop a concept for managing these problems."

(Philipp Hentze, HHL PhD Student)

Development of a reference model for managing the digital transformation in the recycling industry - Management approaches for SMEs (English translation)

"The recycling industry in Germany is facing far-reaching changes. The change in placement from the last place in the supply chain to a fully integrated material flow and resource manager poses challenges for the industry. It is driven in particular by the megatrend of sustainability and the scarcity of natural resources. This transformation can only be successfully mastered with the help of digital transformation, especially for the recycling industry in Germany, which is very strongly characterized by small and medium-sized company structures. The subject of the study is therefore strategies for the successful digital transformation of small and medium-sized recycling companies in Germany."

(Philipp Jakoby, HHL PhD Student)

Adaptable information system landscapes within logistics: A management approach (English translation)

"The digital change is probably one of the dominant factors that is currently shaping the business world. New trends, new business ideas, new technologies are following each other with an accelerating momentum and often lead to a – sometimes disruptive – change in respect to traditional concepts and approaches. As far as the field of logistics is concerned, increasing customer requirements related to e.g. delivery reliability, delivery times, delivery quality, but also in terms of logistics costs, are increasing the pressure to introduce automated and smart processes which moreover have to be harmonized with existing or new business information systems covering new (information and communication) technologies. Additionally, various information systems are usually used within companies to fulfill the manifold logistics tasks, thus, complete information system landscapes need to be adapted if necessary. Therefore, the doctoral thesis aims to develop a management approach addressing the adaptability of information system landscapes within logistics."

(Andreas Matthes, HHL PhD Student)

Electronic Procurement of Transportation Services – An Evaluation Concept for Electronic Transportation Marketplaces

"Electronic Transportation Marketplaces allow shippers (manufacturing, retail and wholesale companies) to buy services for road transportation from transportation service providers. Previous research, however, provides only little knowledge about the status quo of the use of such marketplaces, the determinants of their use and the link between marketplace use and improvements in business value. In order to close the aforementioned research gaps, an empirical analysis is conducted based on a web survey of shippers in Germany. The results build the foundation for the development of an evaluation concept which helps shippers in the assessment of marketplace use and the evaluation of business vale impacts."

(Philipp Sylla, Dissertation will be accomplished by disputation end of September 2022)

Technology Based Supply Chain Transformation in Automotive Industry – Role of Organizational Development

"Innovation, digitalization, technology disruption, fast to market are commonly used terms in the technology industry. However, in today's world, these terms are used to define the state of art of the automotive industry. The onset of innovative vehicle models and the technology-driven vehicle manufacturing in the automotive industry offers many opportunities and an equivalent number of challenges. Therefore, how an organization reacts to the ongoing technology discontinuities and how an organization transforms its business model to adapt to the changes to sustain in the industry are becoming significant factors in evaluating its strategic value and determining its success. This doctoral research titled 'Technology-Based Transformation in Automotive Supply Chain – Role of Organizational Development' aims to investigate the critical factors of technology-based transformation in the automotive industry using the automotive supply chain as the research set-up to demonstrate the ongoing transformation. This doctoral research further strives to conceptualize an organizational development framework that seamlessly enables organizations to manage technology-based transformation."

(Dr. Rahima Yakoob, Dissertation accomplished in 2021)

Data as a Production Factor – A Model to Measure the Value of Big Data Through Business Process Management

"Big Data has been among the most innovative topics in literature sources and among organizations for years. Even though only few organizations realized the significant value potentials described by contemporary literature sources, it is widely acknowledged that data assets can provide significant competitive benefits. Given the promises regarding value increases and competitiveness, practitioners as well as academia desire systematic approaches to transform the data sets into measurable assets. This dissertation investigates the current state of literature, conducts an empirical investigation through a structural equation modeling and applies existing theory to develop a model that allows organizations to apply a systematic approach to measure the value of Big Data specifically to their organization."

(Dr. Torsten Zipf, Dissertation accomplished in 2022)

4. TEACHING

4.1. Courses

All courses of the Heinz Nixdorf Chair of IT-based Logistics reflect the contents and guidelines of modern logistics and supply chain management, value chain management, IT-based Logistics/E-SCM and business process management. In a reflexive manner, different theoretical approaches of managing logistical processes are discussed. Up-to-date theories and concepts, methods as well as tools to design, implement and control logistics and value chains are presented. Both a continuous theory-practice transfer and the activity-based learning approach represent didactical principles of the courses. Latest theoretical and practical discoveries enrich the lectures. The following teaching methods are applied within the courses: Interactivities, case study work, business games, group work, discussions, workshops, guest speeches and company visits. During the Corona pandemic, depending on the current situation, courses are and have been offered hybrid or online using MS Teams.

The courses **Logistics** (Module Integrated Case Study: ICS), **Supply Chain Management and Logistics**, **Value Chain Management** as well as **Project and Business Process Management** are provided. Both the full-time and part-time of the M.Sc. as well as MBA degree programs are covered by our course offerings.

Logistics

The aim of the course is to present the basics in the field of logistics. Therefore, the tasks of logistics, the approach to logistics as a management function and the design of logistics processes and systems are presented in a practical-oriented manner. So, selected logistical processes such as procurement, production, distribution and redistribution logistics and respective exemplary decision problems form the basic structure of the course.

The following classes were/will be held in 2021/22

- **Full-time M.Sc. | Class MSc23** (Fall 2022) will take place on-campus/hybrid. Logistics in this context is element of the module “Integrated Case Study” in cooperation with Strategy, Marketing, Accounting and Finance. Part of the module is furthermore a case study that covers the aspects of all involved chairs (“integrated”). Finally, students have to present the results of the related group work in front of all professors.
- **Part-time M.Sc. | Classes PMSc13, PMSc13M, PMSc13C** (Fall 2022) will take place on-campus/hybrid. Logistics in this context is element of the module “Integrated Case Study” in cooperation with Strategy, Marketing, Accounting and Finance. Part of the module is furthermore a case study that covers the aspects of all involved chairs (“integrated”).
- **Full-time MBA | Class M21** (Spring 2022) took place in an online/hybrid setting and with a guest speech by Mr. Beckmann und Mr. Eveleens from Ernst & Young (EY). Part of the course was furthermore a case study together with EY on the topic of „Origin and preferential origin". The course was held twice due to the high number of participants.
- **Full-time M.Sc. | Class MSc22** (Fall 2021) took place in a hybrid setting. Logistics in this context was an element of the module “Integrated Case Study” in cooperation with Strategy, Marketing, Accounting and Finance. Part of the module was furthermore a case study that covered the aspects of all involved chairs (“integrated”). Finally, students had to present the results of the related group work in front of all professors.
- **Part-time M.Sc. | Classes PMSc12, PMSc12M, PMSc12C** (Fall 2021) took place in a hybrid setting. Logistics in this context was an element of the module “Integrated Case Study” in cooperation with Strategy, Marketing, Accounting and Finance. Part of the module was furthermore a case study that covered the aspects of all involved chairs (“integrated”).
- **Full-time MBA | Class M21** (Summer 2021) took place online and with a guest speech by Ms. Anja Sylvester from LaLoG Landlogistik GmbH on the topic of „Multimodal logistics for small goods in rural areas “.

Supply Chain Management and Logistics

Global supply and logistics chains require strategies, concepts, methods and tools to efficiently coordinate material and information flows along the value chain. One if the biggest challenges nowadays is to integrate and to harmonize suppliers, OEMs (original equipment manufacturers), retailers, logistics and IT service providers with often conflicting objectives and requirements. The course introduces into supply chain management (SCM) as well as logistics and related complex as well as dynamic structures and is furthermore based on a holistic process orientation.

The following classes were held in 2021/22

- **Part-time MBA | Class P17** (Winter 2022) took place online and with a guest speech by Mr. Beckmann und Mr. Eveleens from Ernst & Young (EY). Part of the course was furthermore a case study together with EY on the topic of „Origin and preferential origin".
- **Part-time MBA | Class P16** (Winter 2021) took place online and with a guest speech by Ms. Gebert from Celonis. Part of the course was furthermore a case study together with Celonis on the topic of „Process Mining along the Purchase to Pay Process" using the Celonis process mining tool.

Value Chain Management

Global value chains nowadays require strategies, concepts, methods and tools to effectively and efficiently coordinate material, data and information flows both within a company (i.e. internal value chain: logistics management) and within the entire supply chain network (i.e. external value chain: SCM). The course aims to enable students to understand the importance and the role of value chain management in the digital age, to form business process thinking skills and to develop both cross-functional as well as interdisciplinary awareness of value chain analysis, design, governance, transformation and control in a complex, dynamic and information and communications technology-driven environment.

The following classes were held in 2021/22

- **Full-time M.Sc. | Class MSc22** (Spring 2022) took place in a hybrid setting and with a guest speech by Dr. Schosser and Mr. Radomski – both HHL alumni – and Ms. Nina Göntgen-Voss from Forto GmbH. Part of the course was furthermore a case study together with Forto GmbH on the topic of „Supply Chain Act ".
- **Part-time M.Sc. | Class PMSc11** (Winter 2022) took place in a hybrid setting.
- **Full-time MBA | Class M21** (Fall 2021) took place in a hybrid setting and a guest speech by Mr. Peter Tinning, Ms. Adriana Urdoi, Mr. Vinicius Pedroso de Almeida and Mr. Nemanja Dordic from DHL Express. Part of the course was furthermore a case study together with DHL Express on the topic of „DHL EasyGreen Packaging ".
- **Part-time M.Sc. | Class PMSc11M** (Fall 2021) took place in a hybrid setting.
- **Full-time M.Sc. | Class MSc21** (Spring 2021) took place online and with a guest speech by the HHL alumi Dr. Schosser and Mr. Müller from Forto GmbH. Part of the course was furthermore a case study together with Forto GmbH on the topic of „Value Added Services ".

Project and Business Process Management

In preparation for the student consulting projects, the subject of the course is to teach the essentials of project management like planning, implementing, managing and controlling projects. Furthermore, business process management (BPM) flanks the project management part as a supporting framework concept. In the context of the course, workshops on "Managing the field projects" and "Kick-off your field project" as well as an exercise on "Project scheduling" (M22) were offered.

The following classes were held in 2021/22

- **Full-time M.Sc.** | **Class MSc22** (Spring 2022) took place online and with a guest speech by Mr. Paul Brzesina from ThyssenKrupp Marine Systems.
- **Full-time MBA** | **Class M22** (Winter 2022) took place online.
- **Full-time M.Sc.** | **Class MSc21** (Spring 2021) took place online and with a guest speech by Mr. Paul Brzesina from ThyssenKrupp Marine Systems.
- **Full-time MBA** | **Class M21** (Spring 2021) took place online and with a guest speech by Mr. Paul Brzesina from ThyssenKrupp Marine Systems.

Coordination of the Integrated Case Study (ICS)

From May 2020 on the Heinz Nixdorf Chair of IT-based Logistics was in charge of the Integrated Case Study (ICS) lead. In this regard, the chair was the central contact point between students and the four other chairs involved in the module and served furthermore as HHL-internal coordinator. As part of the corresponding project management, updating of the case study as well as its rollout had to be managed. The chair also moderated two kick-off events (part-time and full-time M.Sc. students), eight Q&A sessions and two presentation days. A great challenge was the outbreak of the Corona pandemic, which required an ad hoc change and adaptation of the course towards an online format. After finishing the grading and the related student feedbacks, the Heinz Nixdorf Chair of IT-based Logistics passed on the baton to the Chair of Marketing Management and Sustainability in May 2021.

# Appointments	*Key Points*	*Grading Components*
4 Kick-off events *1 Online quiz* *8 Q&A sessions* *2 Presentation days (FT)* *PT: Lectures for 3 classes* *FT: Lectures for 3 small groups*	*5(6) + 2 Chairs involved* *3 + 1 Classes* *145 Students* *4 Weeks case processing time (FT)* *8 Weeks case processing time (PT)*	*145 Quizzes* *24 ICS student teams (FT, PT), 100 slides on average* *12 Student presentations (FT) on 2 days* *Plenty peer evaluations*

Figure 2: Recap ICS Fall 2020
(Source: Heinz Nixdorf Chair of IT-based Logistics)

4.2. Supervised Master Theses at the Chair

The Heinz Nixdorf Chair of IT-based Logistics offers a variety of up-to-date topics for master theses according to the research foci and considering the student interests as well.

Every master thesis project covers the preparation of a short exposé in advance, outlining the basic problem statement, the targets of the topic, the theoretical approach, as well as a rough depiction of the table of contents respectively the procedure. By doing so, the students can then navigate easily throught their writing process and can concentrate on providing innovative results that contribute to the scientific and/or practical community. The master theses supervised by the chair in 2021 and 2022 are listed below.

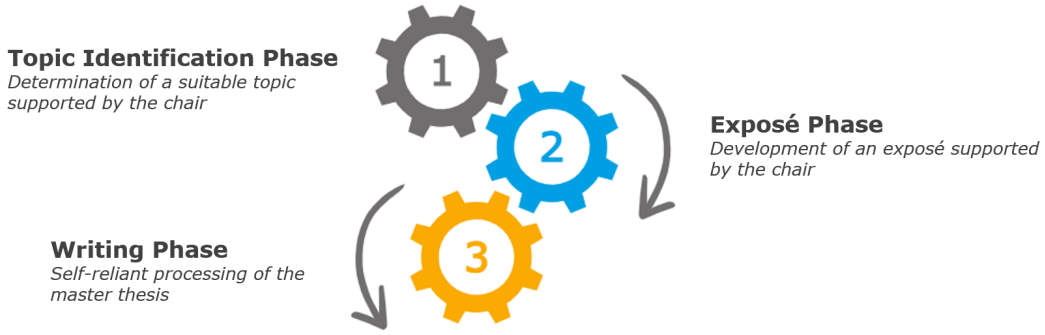

Figure 3: Master theses process at the chair
(Source: Heinz Nixdorf Chair of IT-based Logistics)

Does Automation weaken Competitiveness through reduced Flexibility? Development of Principles for Strategic Design Decisions in the Context of Automotive Inhouse Logistics

"Flexibility is in automotive inhouse logistics a key component for long-term competitiveness. When rising the automation level in the processes it must be ensured that a suitable solution also from flexibility view is selected. Otherwise, a loss in competitiveness may be the result. Currently the strategic decision-making processes do not fully reflect these aspects. By applying the five derived principles in the strategic decision making on automation long-term competitiveness may be reached better."

(Source: Master thesis research brief)

Supplier selection and evaluation in multinational companies in Germany: How the Corona pandemic affects underlying information collection

"Within this Master's thesis, the effect of the Corona pandemic on the information collection within the supplier selection and evaluation was investigated by conducting a survey among procurement employees of multinational companies in Germany. The evaluation of the survey results has shown that the frequency of use of digital information sources has significantly increased and that this trend is going to continue in the future. Though the frequency of use of face-to-face information sources was significantly negatively impacted during the pandemic, the projected frequency of use will not differ significantly from pre-pandemic level."

(Source: Master thesis research brief)

Development of a Framework for Robotic Process Automation. Potentials Identification in Supply Chain Management

"Digitization is one of the most important driving forces in supply chain management (SCM). Robotic process automation (RPA) is a key technology that enables digital transformation with low risk in terms of implementation time and cost. Due to specific characteristics, such as the cross-company perspective, conventional frameworks are not suitable for identifying RPA potential. The Supply Chain Operations Reference Model (SCOR), as a proven standardization and benchmarking framework, is more effective, with minor limitations, for identifying RPA potential."

(Source: Master thesis research brief)

Impacts of the expansion of home office due to COVID-19 on unsuccessful first-attempt home deliveries and alternative delivery concepts in urban areas

"This master thesis aims to make both a theoretical and a practical contribution to the unattended home delivery problem. The expansion and continuous growth of the E-commerce market have led to a significant upturn in business-to-customer deliveries over the past few years, making the problem for all stakeholders even more critical. As a result of the pandemic, the average number of days working from home has tripled. The expectation is that the home office will remain after the pandemic, but not to a slightly lower extent as during it. The expansion of the home office has had a positive impact on the number of unsuccessful first-attempt deliveries. However, a correlation between the increasing number of days working from home and the usage of the different delivery methods could only be observed in the case of 'home delivery: personal takeover'."

(Source: Master thesis research brief)

Transformation of Procurement in Industry 4.0 within German Manufacturing Industry: Challenges and Recommendations

"With the ongoing digitalization trend our lives and how we do business are constantly changing. We are in a time of upheaval in which new, digital technologies are significantly changing the way people communicate and work together. Especially in the business world, it is still not completely clear, how efforts towards an "Industry 4.0" will shape the logistics and procurement related activities. The thesis aims to focus on the effects of this massive transformation on logistics functions, such as procurement. Explicitly upcoming challenges for procurement in Industry 4.0 within German Manufacturing Industry are scope of the considerations leading to technological recommendations to overcome the challenges in procurement."

(Source: Heinz Nixdorf Chair of IT-based Logistics)

E-mobility within logistics in Lima, Peru: A framework for realization

"The field of city logistics bundles a huge variety of concepts and methods aiming to cope with the challenges that are accompanying with urban freight transport and an appropriate demand-driven supply of people living and businesses based in urban areas. Especially sustainability has gained in importance over the last decade, as the challenge is not anymore only to provide cheap and cost-efficient freight transports and other logistics services, but also social and ecological impacts need to be considered. The master thesis aims to address these challenges in the context of developing countries – by the example of Lima, Peru – focusing on e-mobility. The underlying overall aim is to develop a framework for the realization of e-mobility within Lima's logistics."

(Source: Heinz Nixdorf Chair of IT-based Logistics)

How compatible are last-mile delivery models with city logistics requirements?

„Academic literature identifies the relationship between last-mile logistics and city logistics as a research gap that requires further clarification. As the global number of last-mile deliveries continues to increase (e.g. due to e-commerce) and is expected to grow further (e.g. through the rapidly growing online grocery market), this study analyses on the relationship of last-mile logistics and city logistics against the background of the expansive e-food market. Through a systematic literature review, potential measures and innovations that have the overarching goal to reduce externalities caused by last-mile delivery models were derived and assessed with regard to their comparability to e-food delivery models."

(Source: Master thesis research brief)

Sustainable City Logistics: A Freight Vehicle and Light Rail Logistics Comparison in Leipzig

"The field of city logistics bundles a huge variety of concepts and methods aiming to cope with the challenges that are accompanying with urban freight transport and an appropriate demand-driven supply of people living and businesses based in urban areas. The trend clearly shows that the population in urban areas is growing. Against this background, especially sustainability has gained in importance over the last decade, as the challenge is not anymore only to provide cheap and cost-efficient freight transports and other logistics services, but also social and ecological impacts need to be considered. This master thesis aims to address these challenges by investigating on an ideal intermodal city logistics model combining freight vehicle logistics and light rail logistics."

(Source: Heinz Nixdorf Chair of IT-based Logistics)

Increasing sustainability in supply chains through emerging technologies - An impact analysis framework in the context of the automotive industry

"Driven by the needs of our modern society, megatrends like sustainability are constantly reshaping how we do business today. Moreover, we are in a time of upheaval in which new and emerging technologies are significantly changing the way people live, communicate and work together. In respect to the automotive industry, for sure, new technologies might pay in in terms of raising sustainability within automotive supply chains. The master thesis aims to address these challenges by deriving managerial implications and guidelines based on a sustainability framework."

(Source: Heinz Nixdorf Chair of IT-based Logistics)

5. TRANSFER

5.1. Theory-Praxis Transfer in General

The chair is enhancing an intensive theory-practice transfer, i.e. realization of interdisciplinary research projects, workshops, field projects, as well as the organization of guest speeches, talks, and events with representatives from business companies. We are engaged in regional and supra-regional associations in order to promote the exchange of ideas and to strive for innovative concepts and solutions. Moreover, the chair cooperates with enterprises to work scientifically on practical problems inter alia in the framework of master theses or studies. Consulting services for companies to discuss organizational questions complete the knowledge transfer.

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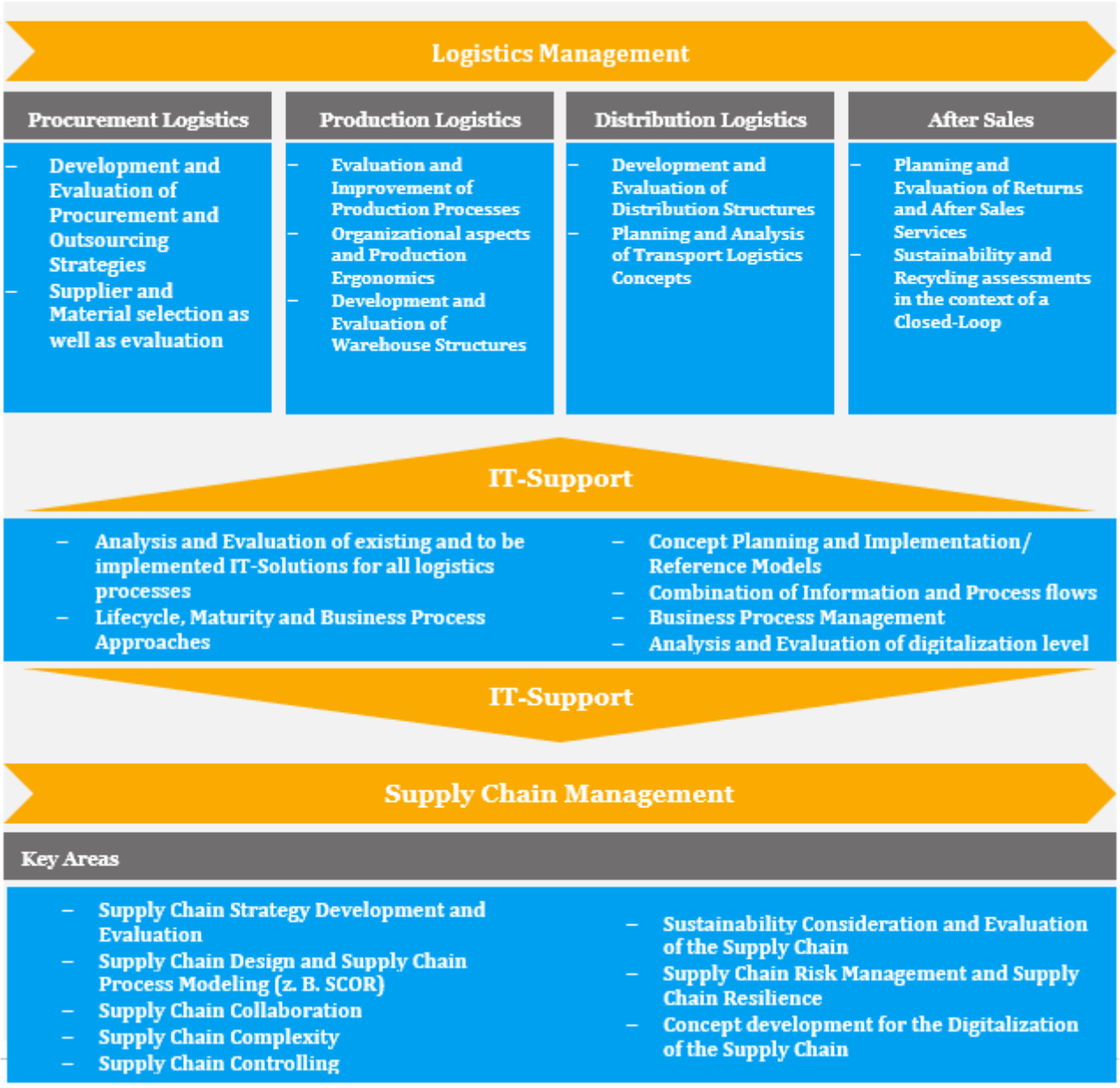

Figure 4: Consulting foci
(Source: Heinz Nixdorf Chair of IT-based Logistics)

5.2. AuLoRa Network

"Something is going on in the countryside" could be a statement awaking interest both from a researcher's and from a practitioner's point of view. The AuLoRa network represents a funded ZIM-network arrangement of SMEs, universities, research organizations approved by the VDI/VDE and managed by the evermind GmbH (https://www.autonome-logistik.land). The target is to innovate concepts, methods and procedures to implement an autonomous logistics in the rural area by using digital and emerging technologies as an enabler. Since April 2020, the Hein Nixdorf Chair of IT-based Logistics is a founding member of this network and brings in its expertise regarding logistics and supply chain process management in the digital context combined with business model consideration, economic assessment of related concepts, and digital transformation. "The central solution approach is the use of autonomous vehicles and transport facilities in combination with information-driven logistics in rural areas. On this basis, completely new logistics infrastructures and business models based on them can emerge to revitalize the regions economically." (source: network proposal, p. 7, English translation). Furthermore, together with the network partners possible project areas are identified and applications are prepared respectively submitte

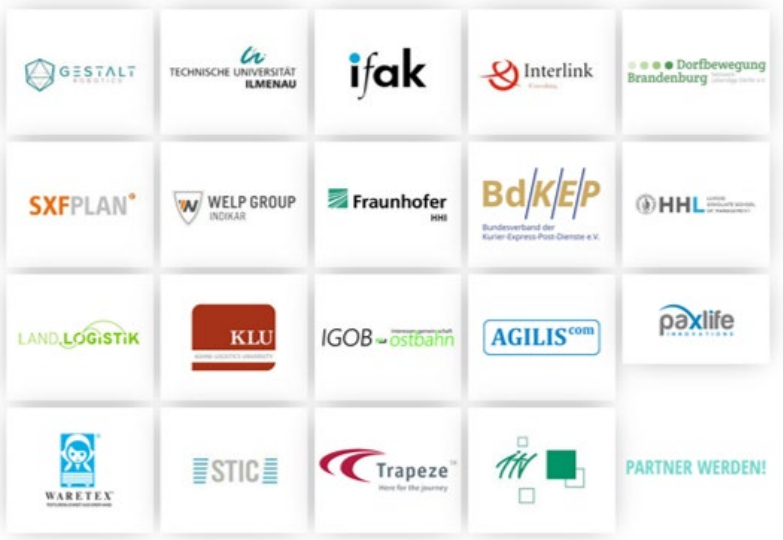

Figure 5: Network partners AuLoRa
(Source: https://www.autonome-logistik.land/)

Manifold application fields of autonomous logistics systems in rural areas are available. Besides the traditional transportation of merchandises in retail also further domains are imaginable, as for instance:

- "**Garbage collection:** a swarm of autonomous vehicles exchanges garbage cans; large garbage trucks do not need to travel long distances
- **Agriculture:** a swarm of autonomous vehicles transports the fresh milk directly to the dairy
- **Gas network:** gas cylinders or wood chips can be supplied on a regular basis and thus replace a network connection
- **Electricity grid:** solar systems could charge batteries that are driven as energy containers to the customer or to the grid connection, thus reducing the load on the electricity grid" (English translation)

Source: https://www.autonome-logistik.land/ (accessed: July 21, 2022).

Meanwhile the 10th network meeting took place at Leipzig (May 05-06, 2022) after a long period of online appointments.

Interested in the activities of AuLoRa? Then go to: https://www.autonome-logistik.land/ (in German language only).

5.3. MBA Internships at the Chair

The Heinz Nixdorf Chair of IT-based Logistics supervises internships within HHL's MBA program. The supervision is related to internships with a thematic link to the topics of the chair. In this context, besides the mentoring of the students on all academic issues, the internship report of the students is evaluated as well.

The following internships were supervised in 2021/22

- **Mr. Basit Eqbal. | Class M21:** The internship was in cooperation with Dr. Ing. h.c. F. Porsche AG at the department After Sales Supply Chain Management.
- **Ms. Jie Wang | Class M21:** The internship was in cooperation with Forto Logistics GmbH & Co KG at the team Product Development – Supply Chain Finance.
- **Mr. Gaurav Pathak | Class M20:** The internship was in cooperation with Metals Hub GmbH at the department Operations.
- **Mr. Jai Dev Singh Nirwan | Class M19**: The internship was in cooperation with Silexica GmbH at the department Engineering – Project Management.


Human
Resources

6. EXTERNALLY FUNDED PROJECTS

6.1. myLOG MOL - Autonomous Driving Systems

A Sustainable Approach for Rural Areas

myLOG
AUTONOMOUS VEHICLE SERVICE

Gefördert durch:

Bundesministerium für Digitales und Verkehr

aufgrund eines Beschlusses des Deutschen Bundestages

Retail in rural areas and small towns is suffering strongly from decreasing retail market as consumers more and more frequently purchase via online platforms. This process has been significantly enhanced by the Corona crisis in recent years and is progressively resulting in the isolation of town centers. The lack of infrastructural development around rural areas is also leading cities to drift away from the countryside. In times of urbanization and space shortage, rural areas as well as small towns should play an important role. Based on this problem, the research project myLOG MOL (Brandenburg) has been started in January 2022. Autonomous transport rovers are used to strengthen the competitiveness of the local retail trade compared to online commerce. They enable retailers to deliver products to customers with a 5G-based logistics system that includes among other things also real-time tracking. As a pilot project with high visibility, myLOG MOL with its technical solutions and new business model approaches also understands itself as a pioneer for the use of 5G technology for future-oriented innovations of the logistics infrastructure in rural areas. (source: easy proposal HHL, June 07, 2021, p.7, English translation). The BMVI project under the framework of the 5G innovation program is limited to 3 years.

Duration time:
Start 01.01.2022
End 31.12.2024

Funding reference number:
45FGU122_G

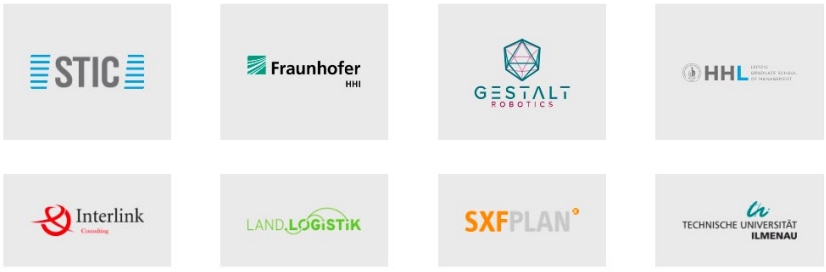

Figure 6: Our project partners in myLOG MOL
(Source: www.mylog-mol.de)

Contribution of the chair: The Heinz Nixdorf Chair of IT-based Logistics supports the logistical-infrastructural and business process-related realization of the project goals, on the one hand the development and testing of a 5G-based autonomous logistics system, and on the other hand the strengthening of the local retail trade. The goal is to develop a sustainable business model that fulfills three aspects, the economic, ecological and social requirements. Through the additional conception of a scalable business model, both extended services which are provided by the 5G-based autonomous system should be integrable and the solution should be adaptable to other rural areas.
Since the project was launched, a comprehensive requirements profile for the autonomous driving system has been developed. To determine the specifications of the autonomous logistics system, an interdisciplinary as well as cross-logistics process and generic approach has been aimed for. In this context, we have identified the basic, performance, and delight requirements of an autonomous driving system in rural areas. The aim is, to evaluate and classify the identified demands in terms of their relevance and their influence on customer satisfaction over the lifetime of the myLOG MOL project. Therefore, first use cases were described to determine possible purchase scenarios in the model area. In a futher step, generic logistics processes for the autonomous system were developed to show interdisciplinary interfaces between humans, maschines and applications (source: subproject description HHL, June 7, 2021, English translation).

7. CHAIR ACTIVITIES

Participation in meetings/events

- Prof. Dr. Iris Hausladen, Andreas Matthes: Munich Management Colloquium (English translation), March 08-09, 2022, Live Stream
- Network meetings & workshops of the network for autonomous logistics in rural regions (English translation) (AuLoRa), Zoom Meetings (2021/22), 10th network meeting at Leipzig, May 05-06, 2022
- Prof. Dr. Iris Hausladen, Andreas Matthes: Innovation Forum: Turnaround in rural areas thanks to autonomous logistics? - Vision, technologies and project approaches (English translation), AuLoRa-network, March 03, 2021, Zoom Conference
- Prof. Dr. Iris Hausladen, Andreas Matthes: Munich Management Colloquium (English translation), March 09-10, 2021, Live Stream

Organization of mentoring appointments and team rallyes

- Prof. Dr. Iris Hausladen is acting as a mentor in the context of full-time and part-time programs at HHL (students with which admission interviews were done during the application phase) to support a successful learning journey.
- The chair's team supports student rallyes during welcome weeks for new students.

Expert activities

- Assumption of expert activities by Prof. Dr. Iris Hausladen among others for journals, PhD programs.
- Since 2020, Prof. Dr. Iris Hausladen is a member of the Editorial Advisory Board of the journal "Logistics Research" of the BVL for the subject area IT-based Logistics (category: Informatics).
- Supervision and review of internal as well as external doctoral theses on a regular basis by Prof. Dr. Iris Hausladen, assumption of secondary assessments of PhDs as well as acting as chairwoman for disputations at times.
- Prof. Dr. Iris Hausladen is a member of the business management expert pool of VHB.
- On request: Preparation of expert opinions for students (e.g. study abroad, scholarship).

Other activities

- Prof. Dr. Iris Hausladen leads conversations with practitioners from different industry sectors e.g. to acquire guest speekers and case study partners.
- Discussions with representatives form different companies/institutions to design new student consulting projects as well as topic-specific projects.
- Launching activities to strengthen and expand partnerships with universities.
- Preparation of ideas and concepts for potential offerings in the area of research, teaching, and transfer.

8. SPEECHES AND PUBLICATIONS

Speeches

- Prof. Dr. Iris Hausladen: From Smart City Logistics to Smart, Autonomous Rural Logistics - Transfer potentials and solution approaches at the Innovation Forum: Trend reversal in rural areas through autonomous logistics? - Vision, Technologies and Project Approaches (English translation), AuLoRa Network, March 03, 2021, Zoom Conference
- Prof. Dr. Iris Hausladen: Logistics by rail - Is the railroad bringing it? (English translation), Transport Logistics Digital, May 06, 2021, Zoom Conference

Publications

- Hausladen, I. (2023). Einsatzpotenziale von Big Data für Logistiknetzwerke. „Aus dem Logbuch eines Logistikdatums“. In. WiSt Wirtschaftswissenschaftliches Studium. 2023 (article accepted).
- Hausladen, I. (2022): Der Logistiksektor und die Quadratur des Kreises – Führen in und aus der Krise. In: T. Meynhardt, M. Kirchgeorg, A. Pinkwart, A. Suchanek & H. Zülch. (Eds.) (in print). Führen in der Krise. Neue Herausforderungen an das Leipziger Führungsmodell. HHL Academic Press.
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