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City logistics for sustainable and liveable cities

25th January 2021 | 10.00 am - 5.00 pm (France) | 6.00 pm - 1.00 am (Japan)

Online

Mandatory registration: events_ffj@ehess.fr

City logistics aims to balance the economic growth and environmental friendliness, safety and security in cities. This workshop is to present recent advances of the research in modelling, planning and implementing city logistics and discuss issues and innovative solutions associated with urban freight transport for sustainable and liveable cities. We highlight the use of emerging technologies including ICT (Information and Communication technology), ITS (Intelligent Transport Systems), IoT (Internet of Things), AI (Artificial Intelligence), autonomous vehicles, and robots for city logistics. We discuss developing policies for city logistics considering the collaborations and coordination among stakeholders who are involved in urban freight transport, focusing on the data sharing between the public and private sectors. As many cities have implemented policy measures of city logistics, we discuss case studies and perspectives on sustainable urban freight transport from different countries in Europe and Japan. We finally propose the future perspectives on city logistics for sustainable and liveable cities based on the presentations and discussions in the workshop.



Program

10.00 | **Opening Remarks**

Sébastien Lechevalier (EHESS-FFJ), Pierre-Édouard Sorel (Michelin), Eiichi Taniguchi (FFJ, Kyoto University)

Session 1

Moderator: Laetitia Dablanc (University Gustave Eiffel, France)

10.15 | Recent advances in city logistics based on emerging technologies and public- private collaborations

Eiichi Taniguchi (EHESS-FFJ, Kyoto University, Japan)

10.35 | The importance of stakeholder engagement and trust in data sharing for city logistics

Michael Browne (University of Gothenburg, Sweden)

10.55 | Designing more efficient urban freight networks

Russell Thompson (The University of Melbourne, Australia)

11.15 | Innovations in urban logistics, the French case

Laetitia Dablanc (University Gustave Eiffel, France)

11.35 | Recent developments in City Logistics - The case of Rotterdam

Ron van Duin (Rotterdam University of Applied Sciences, The Netherlands)

11.55 | Discussion

12.45 | *Lunch break*

Session 2

Moderator: Jacques Leonardi (University of Westminster, UK)

14.00 | Towards optimizing urban logistics with sustainable considerations in the city of Bordeaux

Rémy Dupas (University of Bordeaux, France)

14.20 | Sustainable solutions in urban freight and logistics management: European experiences

Jacques Leonardi (University of Westminster, UK)

14.40 | Estimating the contribution of food retailers to global city logistics needs: a Territorial Intelligence approach

Jesus Gonzalez-Feliu (Excelia Business School, France)

15.00 | Discussion

15.30 | *Break*

15.50 | Investigating the use of small vehicles for delivery in medium sized cities: the case study of La Rochelle

Jean-Christophe Deschamps (University of Bordeaux, France)

16.10 | Urban logistics real estate in France: the new golden asset?

Diana Dizian (Afilog, France)

16.30 | Discussion

16.50 | Concluding Remarks

Michael Browne (University of Gothenburg, Sweden)

Speakers



Sébastien Lechevalier (President of FFJ, Professor at EHESS)

Sébastien Lechevalier is an Economist and a Professor at EHESS (School of Advanced Studies in the Social Sciences, Paris), specialised in Japanese economy and Asian Capitalisms. He is also founder and president of the Fondation France-Japon de l'EHESS (FFJ). He has been a Visiting Professor At Tokyo University, Kyoto University, Hitotsubashi University, Waseda University and Doshisha University.



Pierre-Édouard Sorel (Michelin)

Pierre-Édouard Sorel started his career with the Renault car company in Istanbul, Turkey, before joining in France in various product marketing positions. He has been working for Michelin for the last 15 years, in Sales, market intelligence, marketing as a Segment manager for and Intrapreneur to bring to market a new innovation. Since June 2020, he has joined the Movin'On Ecosystem within Michelin, to promote sustainable mobility and ecosystemic innovation. He graduated in 2008 from the Ecole des Hautes Etudes Commerciales (HEC) with a masters in management, and a specialization in Marketing.



Eiichi Taniguchi (Professor Emeritus, Kyoto University, Japan and FFJ/Michelin Fellow, EHESS, Paris)

Eiichi Taniguchi is Professor Emeritus of Transport and Logistics in Resilience Research Unit, Kyoto University, Japan. His research centres on City Logistics and urban freight transport modelling focusing on stochastic and dynamic vehicle routing and scheduling with time windows, multi-agent simulation considering behaviour of stakeholders who are involved in urban freight transport. Recently his research covers the health and security issues including humanitarian logistics after catastrophic disasters, home health care problems in aging society. He has published more than 200 academic papers and 11 books. He is President of the Institute for City Logistics in Kyoto. Currently he is a 2020 FFJ/Michelin Fellow at EHESS in Paris, France.

Title: Recent advances in city logistics based on emerging technologies and public-private collaborations

The presentation deals with recent advances in city logistics focusing on the three aspects: (a) the use of emerging technologies including Internet of Things (IoT), big data, Artificial Intelligence (AI), autonomous vehicles, and robots, (b) public-private collaborations, (c) the integrated platform. Firstly, the application of these emerging technologies allows us to take a data driven approach for the innovative solutions of city logistics. Multiagent simulations using big data and machine learning based models give a good example for taking insights of the interaction between stakeholders and the responses of freight carriers and shippers to policy measures implemented by municipalities. Autonomous vehicles are promising technologies for promoting sustainable urban freight transport in providing cost efficient and flexible delivery systems. Contactless delivery using autonomous delivery robots can provide healthy solutions for both deliverers and customers in the pandemic time. Secondly, public private collaborations are critical for successful implementation of policy measures of city logistics, since many stakeholders who have different objectives are involved in city logistics. Sharing data between public entities and private companies are also essential for understanding the state of transport and logistics activities in urban areas and evaluating the effects of policy measures, including urban consolidation centres, satellite hubs in the city, loading /unloading bays, time windows for access control, and low emission zones. Thirdly, the integrated platform for city logistics plays an important role for managing and optimising the urban freight transport systems by integrating the information systems in the cyber space and real operation of freight vehicles on the road networks. Better use of multiple freight transport modes can be

achieved on the platform, using roads, rails, barges, bicycles, trams in urban areas. We will discuss these topics of city logistics based on the recent research and case studies towards environmentally sustainable and liveable cities.



Michael Browne (Professor, University of Gothenburg, Sweden)

Michael Browne was appointed professor at the University of Gothenburg in 2015 having been part of the Visiting Professor Program. His main research focus is on urban logistics and freight transport and he provides academic leadership in the Urban Freight Platform a shared initiative between University of Gothenburg and Chalmers University of Technology supported by the Volvo Research and Education Foundations (VREF). He is committed to engaging practitioners and policy-makers with the research community on all aspects of logistics impacting on future urban goods transport. Before his appointment in Gothenburg he was a professor at the University of Westminster in London and also chaired the Central London Freight

Partnership, a role he has continued since moving to Sweden. He has been the project leader for many research studies concerned with urban logistics at national and international levels. He is the lead editor of the book '*Urban Logistics: Management, policy and innovation in a rapidly changing environment*' published in 2019.

Title: The importance of stakeholder engagement and trust in data sharing for city logistics

Current evidence shows that despite the dramatic increase in data availability connected to urban freight and logistics there are still many barriers to sharing data between the private sector and public authorities. These barriers (for example legal issues, competition, privacy and civil liberties, cost sharing etc) are recognised and there are already suggestions of how they can be overcome (regulations, subventions, access privileges etc). However, progress has until recently remained rather slow. There are strong arguments to see stakeholder engagement as a central activity that needs to form part of the strategy to increase data sharing in city logistics. Stakeholder engagement helps to build trust which in turn contributes to overcoming the inertia in relationships within and between private sector organisations and public authorities (Browne, Brettmo and Lindhom, 2019; Holguin Veras et al, 2020). Freight networks and partnerships offer a very helpful platform or starting point to enable more rapid development of data sharing initiatives. The presentation will focus on examples of data sharing from two freight networks where the presenter has been a participant (1) Central London Freight Quality Partnership and (2) Gothenburg Freight Network 'Godsnätverket i Göteborg'. The examples illustrate how data sharing is already happening and how this could be further developed. Examples to be discussed include data sharing related to changing the access arrangements for streets and data sharing on trends in deliveries resulting from changes in transport and logistics resulting from the COVID-19 pandemic.



Russel Thompson (Associate Professor, The University of Melbourne, Australia)

Russell is an Associate Professor in Transport Engineering at the University of Melbourne. He leads the Physical Internet Lab at the University of Melbourne and is Vice-President of the Institute for City Logistics based in Kyoto. Currently, Russell is actively involved in several urban freight projects in Melbourne and Sydney including High Productivity Freight Vehicles, Urban Consolidation Centres and Loading Dock Booking systems. He is currently conducting research studies investigating the benefits of the physical internet, parcel lockers, logistics sprawl, collaborative freight systems, road pricing, urban consolidation centres and multi-modal freight systems.

Russell has also contributed to a number of international studies relating to urban freight, including the European Union's Best Urban Freight Solutions (BESTUFS) project and the OECD report on urban distribution. He has co-authored over 10 books and 130 refereed publications. Russell co-edited a book, '*City Logistics: Mapping the Future*' (CRC Press, 2015) that presents a range of innovative solutions to increase the efficiency and reduce the impacts of freight in cities.

Title: Designing more efficient urban freight networks

Many large cities are experiencing an increase in the number of trucks and vans transporting goods as well as a decrease in the utilisation of freight vehicles. This leads to higher transport operating costs as well as more

emissions and noise. Freight systems in metropolitan regions are typically characterised by shippers operating their own vehicle fleets, transporting only their goods to their customers on a regular basis. Within specific sectors there is an opportunity to combine networks to reduce the distance travelled by freight vehicles. This can result in substantial savings in transport operating costs for carriers as well as reduced environmental costs from freight vehicles. Case studies illustrating how independent freight networks can be transformed into collaborative networks for transporting goods in Melbourne will be presented.



Laetitia Dablanc (Professor, Université Gustave Eiffel, France)

Laetitia Dablanc, an urban planner, is a Professor at the University Gustave Eiffel where she heads the Logistics City Chair. She is an Associate Professor at the University of Gothenburg, Sweden, and a member of MetroFreight, an international network of research on urban freight sponsored by VREF. She leads the Young Initiative of the World Conference of Transport Research Society. Her areas of research are freight transportation, freight and the environment, urban freight and logistics, freight policies, spatial issues related to logistics. She received a PhD in transportation planning from Ecole des Ponts-ParisTech, and a Master's degree in city and regional planning from Cornell University. She was initially trained in policy analysis and economics at Science Po Paris.

Title: Innovations in urban logistics, the French case

The major recent trends in urban logistics in France concern several fronts: Urban logistics real estate has changed considerably, with the demand for urban warehouses with innovative architectures (mixed-use, multi-storey buildings) and urban logistics micro-hubs, often in neglected urban areas (service stations, parking lots). Modes of transportation are changing: cargo-cycles and electric vans are no longer reserved for start-ups and are being adopted by major companies such as Chronopost, the main French express parcel operator. However, transport SMEs, which are experiencing economic difficulties, are much more reluctant to buy e-vans. Public policies on urban logistics adopt data analytics for urban freight models and carbon assessments. **Today's innovations will have a lasting impact on urban logistics:** Organizational innovations include new urban logistics chains based on route consolidation, the use of urban warehouses and new types of vehicles for the last miles. Autonomous deliveries are being tested. To be noted is the steady growth in on-demand delivery apps and the use of delivery gig workers (50,000 in Paris today, and more than 4,000 instant delivery micro-enterprises being created every month in France). This represents jobs for unskilled people in France who often have difficulty accessing employment, despite precariousness and work issues (sharing of accounts, almost always illegally). Efforts to provide training to these new freight workers are now discussed. **The pandemic influences urban logistics:** The health crisis is changing demand and reinforcing the demand of B2C (in September 2020, French people are consuming 26% more online than in February 2020, a rate that rises to 27% for food products). Traditional stores have become 'omni-channel'. The pandemic has also accelerated the adoption of low emission zones, zero emission zones and the implementation of bicycle lanes in French cities.



Ron Van Duin (Professor, Rotterdam University of Applied Sciences, The Netherlands)

Ron van Duin was appointed professor in port & city logistics at the Rotterdam University of Applied Sciences in 2016. Currently he is doing practice-based research in the field of ports, intermodal transport, ICT and city logistics in the port-city Rotterdam. Since 1994 Ron has been working at Delft University of Technology in the same fields with a stronger research interest on the modelling development. Since 1998 Ron has participated actively for the Institute for City Logistics while supervising many logistics master thesis students (>250), PhD-students (3) and author of many scientific papers.

Title: Recent developments in City Logistics - The case of Rotterdam

Ron van Duin will present the latest experiences in city logistics in Rotterdam. As for many municipalities the year 2025 will be the year of zero emission delivery to the inner-city. Many companies are struggling with this challenge. The municipality of Rotterdam takes a very active facilitating attitude to help, promote, stimulate new initiatives in this field. In the presentation the policy vision 'the city as a city lounge' will be explained.

There is not one silver bullet solution to tackle all problems. Therefore, new emerging distribution concepts are explained to support this policy vision. Electrification of vehicles, all kinds of dedicated hubs and new sharing concepts will be explained. These developments will help to make the next steps towards zero emissions.



Rémy Dupas (Professor, University of Bordeaux, France)

Rémy Dupas received his ph.D. degree in industrial and human automation control at University of Valenciennes in 1990. He worked as a knowledge engineer at ArcelorMittal for 3 years. In 1993, he joined Artois University as associate professor in computer science. Since 2007, he is professor at Bordeaux University. His research topics concern modeling and optimizing of transport and production planning problems using exact and heuristics solving methods. Recently he focuses on flow problems and vehicle routing problems in the context of city logistics.

Title: Towards optimizing urban logistics with sustainable considerations in the city of Bordeaux

The distribution of goods in crowded city centers is a major challenge. In this presentation, we propose a methodology for evaluating the performance of a parcel distribution network in city logistics. This methodology encompasses the main entities of a multi-tier distribution system made up of carriers depots, final destinations of parcels (proximity logistic spaces) located in the main street of city center and intermediate depots (urban consolidation centers), as well as the parcel flows between them. This methodology aims to optimize the transport flows (distance traveled) of a given distribution network while also quantifying the impact in terms of sustainable development by measuring gas emissions. Two different states of the network with different connectivity degrees are evaluated and compared: the current state of the network as well as its future state. The transport network modeling is based on a network flow, which is expressed in linear programming and implemented with an optimization solver. The validation of this methodology is based on the parcel distribution in the main shopping streets of the city of Bordeaux. A comparison of the distance reduction as well as the reduction of emissions of CO₂ is currently being carried out between the two different networks and will be discussed. The impact of the grouping of the parcels (i.e., pooling) on the total distance and the total number of trucks will also be discussed.



Jacques Leonardi (Senior research fellow, University of Westminster, UK)

Dr Jacques Leonardi is a senior research fellow in the Department of Planning and Transport, University of Westminster (UoW), with 28 years' research experience. He is developing and evaluating solutions in sustainable logistics. He has published widely on these topics and also teaches at the UoW and at EIGSI Engineering School in La Rochelle, France. He has also performed Consultancies for the European Commission, London, the OECD, French, Luxembourg, German, Indonesian and Chinese Governments.

Title: Sustainable solutions in urban freight and logistics management: European experiences

There is a lot of investigations and experimentations with diverse solutions for a more sustainable urban logistics in UK and Europe, but a limited number of initiatives demonstrate a long term success if measured in terms of business profit, applicable regulation, environmental benefits and social acceptance. Looking at evidence from CSR reports, supported by standards, and results of projects and documentations, the objective of the workshop contribution is to understand the mechanisms of various solutions, and show how benefits are generated for different stakeholders. Focus will be on business models and technology solutions on clean vehicles, intermodality, ITS and cooperation, and how these can be supported by suitable regulatory options such as Low Emission Zones, Environmental Standards or data collection frameworks.



Jesus Gonzalez-Feliu (Professor, Excelia Business School, France)

Jesus Gonzalez-Feliu is Full Professor in Supply Chain Management at Excelia Group La Rochelle Business School, and director of the department on Supply Chain, Purchasing and Project Management since April 2020. Previously, he was Assistant Professor (2014-2016) then Associate Professor (2017-2020) in Industrial Engineering at Ecole des Mines de Saint Etienne (EMSE). Before that, he was Post-Doctoral Researcher in Economics (2008-2011) then Permanent Research Engineer in Field Data Production (2011-2014) at the French National Center of Scientific Research, UMR5593 "Laboratoire d'Economie des Transports". He obtained his Master's degree

in Civil Engineering and Urban Planning in 2003 at INSA Lyon (France) and a Ph.D. in Computer and Systems Sciences - Operations Research in 2008 at Politecnico di Torino (Italy) and a French Habilitation to Direct Researches (HDR) in Economic Sciences in 2016 at Université Paris Est. His Ph.D. thesis focused on urban freight distribution solutions and two-stage vehicle routing problems. Since, he has developed research in the field of urban logistics, being recognized by his works on urban goods modelling, scenario assessment, evaluation and indicator construction and analysis of urban logistics platforms, among others. Moreover, he is working since 2015 on food logistics (mainly in food supply network configurations and the notion of food hubs) and since 2017 in urban and humanitarian logistics (working on the notions of social improvement logistics, food assistance supply chain improvement, maturity analysis and demand/supply modelling to anticipate recurrent crises). His research interests include urban logistics planning and policy, freight demand modeling, scenario assessment, collaborative logistics processes, action-research for decision support, vehicle routing optimization, sustainable supply chain management, territorial resilience and humanitarian logistics.

Title: Estimating the contribution of food retailers to global city logistics needs: a Territorial Intelligence approach

Food logistics takes a particular place in cities. Indeed, food is necessary to people's daily life, so its logistics becomes an essential element of city functions. However, city logistics has traditionally focused on parcel and pallet deliveries, placing food logistics in a secondary place, mainly because of the heterogeneity of processes and supply chains in food distribution (opposing the high homogeneity of parcel and pallet delivery sector). This is seen by many projects (the main ones related to urban consolidation) that focus on non-food sectors. In any case, food logistics remain a crucial function that has recently shown its limits and opportunities (during the different COVID-19 events). For those reasons it seems important to analyse the importance of food retailers in the urban logistics panorama. Thus, this talk will present a Territorial Intelligence framework to assess the current and the potential importance of food retailing in cities, based on a data-driven approach. The framework includes a data production phase based on standard datasets, a traffic generator, based on the well-known FTG methodology, and a TIA indicator estimation procedure. The framework is tested in the urban area of La Rochelle for which a set of food poles is present. Discussion and future developments are also presented.



Jean-Christophe Deschamps (Associate Professor, University of Bordeaux, France)

Jean-Christophe Deschamps obtained his PhD degree in 1994 and is associate professor at Bordeaux University. During the first years of his career, he was first interested in supply chain planning and performance analysis, before opening up to the study of transportation activities as a major factor in improving performance. His current research interest is actually focused on city logistics and concerns optimisation models and decision making processes integrating sustainable development and cooperation in the delivery chain. He has been involved in European and French projects since the mid-1990s, and was the leader of a French national project on smart products routing using ICT (2009-2013).

Title: Investigating the use of small vehicles for delivery in medium-sized cities: the case study of La Rochelle

The increasing population density of medium and large-sized cities and the e-commerce development poses a difficult problem of maintaining a satisfactory level of transportation services without significantly increasing congestion and pollution within the city. This presentation proposes to analyze the use of small vehicles in

an urban environment to carry out last mile freight operations and to define in which context their use proves to be interesting. The analysis is based on a Multi-Trip Time-Dependent Vehicle Routing Problem with Time Windows (MTTD-VRPTW) in which travel time and service time are dependent on the time slots within which customer deliveries must be made. The use of small and medium-sized vehicles is compared through a Design of Experiments (DOE). First experiments carried out intend to evaluate the input parameters that have the strongest impact on transportation performance, before the following ones allow a more detailed analysis of the context for which the use of small vehicles is economically interesting. The analysis thus developed will be applied to the city of La Rochelle and relies on realistic data collected from the ELCIDIS logistics platform (Urban Consolidation Center), located in the city center and operated by PROXIWAY. Beyond assessing the impact of the implementation of small vehicles on logistical efficiency, we will also discuss on how the location of the CDU on the outskirts of the city would penalize the transport operating time or not. (This work was carried out as part of Mohamed Guedria's thesis supervised by Jean-Paul Bourrières, Nicolas Malhéné and Jean-Christophe Deschamps).



Diana Dizian (Manager, AFiLOG, France)

Civil servant engineer and urban planner, Diana Dizian is director of the logistics real estate association in France since 2016. During the previous 15 years, she worked in various administrations (cities, region, metropolis) on freight issues.

Title: Urban logistics real estate in France : the new golden asset ?

This presentation aims to highlight the recent maturation of the urban logistics real estate market, with a convergent view of users, developers and investors represented by Afilog association. Afilog is the association bringing together since 2001 the stakeholders in logistics real estate: promoters, investors, constructors, architects, insurers, real estate services and operators (manufacturers, transporters, logistics services providers). Considered a few years ago as a very narrow segment on which only dedicated players ventured, urban logistics real estate is attracting more and more generalist players, proof of its performance, its strength and the maturation of its economic model. Public policies on urban logistics, traditionally focused on flows and vehicles, are increasingly concerned with real estate aspects. Alongside this growing interest, a wave of disaffection is also shaping this specific real estate market. While delivery men were praised as saviours of the locked down world, 2020 was at the same time marked by several attacks against the sector, mistakenly assimilated to e-commerce, itself assimilated to a large American e-commerce merchant accused of destroying the fabric of local commerce in France. Logistics is being swept by contrary winds. The outcome of the political choices is uncertain to date. One thing is certain : the demand for logistics spaces has never been so strong and the rent level so high.

