City logistics and smart delivery
AGCO seminar

Sabine Limbourg
University of Liege
sabine.limbourg@uliege.be

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The current and expected growing number of people living and working in cities and the limited space available inside city centres implies a greater exchange of inbound and outbound freight flows between city centres and their surrounding regions. Urban freight transports provide economic benefits to society but are also responsible for negative externalities such as congestion, air and water pollution, climate change, accidents and noise. Access restrictions are one of the most applied measures to control urban traffics in the city's specific areas. A growing use of urban trucks based on electric, hydrogen and hybrid technologies or non-motorized transport such as bikes reduces pollutant emissions, noise and road congestion by making night deliveries and avoiding morning and afternoon peak periods.

This seminar's objective is to discuss how to efficiently distribute shipments to customers from several cities by a freight transport operator. This delivery company has several vehicles to carry products to customers or small depots located at different cities' points. We consider the whole distribution network, allowing us to make decisions at firm, delivering companies and small depots level (Aguayo et al., 2020). Then we consider a platform bringing together several freight transport operators. Freight bundling is a central characteristic of the systems in focus. Besides, pricing decisions can be simultaneously integrated by extending a bilevel programming formulation (Tawfik and Limbourg, 2019). Finally, Unmanned Aerial Vehicle, which is also known as a drone, is examined as a possible way to facilitate biomedical transportation. We deal with the drone network design problem for biomedical material transportation. Four location models are developed and applied to Brussels and its periphery with respect to the associated market in terms of biomedical product flows. In the context of separate case studies of scenario-based analysis, the experiments show that charging stations is useful for extending the mission ranges and gaining market share. The results also show the possibility of gradually implementing the bases without requiring any significant changes, such as closing a base (Dhote and Limbourg, 2020).

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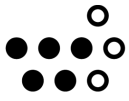

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