



## Séminaire conjoint / Joint Seminar

Chaire de logistique et de transport et Chaire de recherche du Canada en distributique/  
Chair in Logistics and Transportation and Canada Research Chair in Distribution Management

### Ioannis Fragkos

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#### INTEGRATED PLANNING FOR MULTIMODAL FREIGHT NETWORKS WITH TIMETABLING DISRUPTIONS AND CUSTOMER SERVICE REQUIREMENTS

**Abstract:** Multimodal carriers are third-party logistics providers who utilize multiple modes of transportation to deliver timely door-to-door services to their customers. Notwithstanding frequent service disruptions, customers have ever-increasing expectations for on-time deliveries, posing significant challenges on tactical planning. Inspired by the operations of an actual carrier, we study the tactical decision planning problem of multimodal freight networks, considering operational disruptions, timetabling restrictions and explicit customer service requirements. Despite our focus on tactical planning, our models integrate (i) long-term commitments by penalizing deviations from strategic goals with (ii) last-minute operational planning decisions, which are recourse actions aiming to accommodate service disruptions. After improving the dual bound of our initial formulation, we provide reduced-sized models for the special cases of non-propagating delays and non-reactive last-minute decisions. This latter formulation is utilized to construct scenario-based and trip-based heuristics, which we combine in a hybrid search loop. Our computational study illustrates that our approach attains high-quality solutions for real-sized instances that are otherwise unsolvable by off-the-self optimization software, and a significant improvement over a non-trivial rolling horizon benchmark.

**Bio:** Ioannis Fragkos is Assistant Professor in the Department of Technology and Operations Management, within the Rotterdam School of Management (RSM). Before joining RSM, he was an instructor at University College London, London Business School and London School of Economics, and a research scientist with the Department of Logistics and Operations Management at HEC Montreal. His research focuses on decision analytics, decision support systems and the development of large-scale optimization models. His research has appeared in leading international academic journals, and has been applied in a variety of companies in the high-tech, maritime, transportation and education industries. Ioannis has collaborated with organizations such as the UK Department for Transport, Network Rail, the Noble Group, and London Business School. In 2016 he was a finalist for the Daniel H. Wagner Prize for Excellence in Operations Research Practice, together with a team of researchers from UVA Darden and University College London. He is a regular speaker at international conferences in the area of decision analytics, operations management and management science, and a member of the Institute for Operations Research and Management Science (INFORMS).

VENDREDI / FRIDAY

2 novembre 2018 /  
November 2<sup>nd</sup>, 2018  
10h30

Salle / Room 5441  
Pavillon André-Aisenstadt  
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