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## **ERC Scale-FreeBack Seminar program**

Karl Henrik Johansson, March 8th 2018 (Gipsa Lab DAUTO)

11h00 – 11h45 Karl Johansson talk “Control of vehicle platoons and their influence on traffic” – Salle des Séminaires B208, DAUTO

*Abstract:* Road goods transportation is mainly done by individual long-haulage trucks with no real-time coordination or global optimization. In this talk, we will discuss how to create a networked control system architecture with an integrated logistic system coordinating fleets of trucks traveling together in vehicle platoons. From the reduced air drag, platooning trucks traveling close together can save more than 10% of their fuel consumption. We will discuss new results on how to safely and efficiently control vehicle platoons despite influence of road topology variations and traffic. We also study how automatically controlled platoons effect traffic congestion and how the congestion depends on the fraction of platooned vehicles, intra-platoon spacing and other characteristics. Experiments done on European highways will illustrate system performance and safety requirements. The presentation is mainly based on joint work with collaborators at KTH, MIT, and Scania.

Karl Henrik Johansson is Director of the Stockholm Strategic Research Area ICT The Next Generation and Professor at the School of Electrical Engineering and Computer Science, KTH Royal Institute of Technology. He received MSc and PhD degrees from Lund University. He has held visiting positions at UC Berkeley, Caltech, NTU, HKUST Institute of Advanced Studies, and NTNU. His research interests are in networked control systems, cyber-physical systems, and applications in transportation, energy, and automation. He is a member of the IEEE Control Systems Society Board of Governors, the IFAC Executive Board, and the European Control Association Council. He has received several best paper awards and other distinctions. He is a Distinguished Professor with the Swedish Research Council and a Wallenberg Scholar and he has received the Future Research Leader Award from the Swedish Foundation for Strategic Research and the triennial Young Author Prize from IFAC. He is Fellow of the IEEE and the Royal Swedish Academy of Engineering Sciences, and he is IEEE Distinguished Lecturer.

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