



# Séminaire du CIRRELT

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## CALIBRATED ROUTE FINDER – SOCIAL, SAFE, ENVIRONMENTAL AND COST-EFFECTIVE TRUCK ROUTING

**Abstract:** The online route generation system, Calibrated Route Finder (CRF), successfully finds the best route when many conflicting objectives are involved by using Analytics in a collaborative environment. The system has been in use since 2009 and makes use of many different and diverse Big Data sources that are revised continuously. A key component in the system is the use of an innovative inverse optimization process that establishes more than 100 weights to balance distance, speed, social values, environmental impacts, traffic safety, stress, fuel consumption, CO2 emissions, and costs. Methodological and analytic development now enables measurement and inclusion of hilliness and curvature. In addition, rules that considers legal and practical issues relating to turning in intersections, as well as time delays, fuel consumption, and CO2 emissions due to waiting, acceleration and braking, is also being incorporated. Today the system is used by all major forest companies and in 60% (out of two million) of transports in the sector. It has resulted in a paradigm shift from manually, imprecise and unilaterally determined routes to automatically determined routes decided jointly between the parties. It has also enabled standardization, promoted collaboration, and reduced costs, which has strengthened the competitiveness of the Swedish forest industry on the international market.

**Note:** Mikael Rönnqvist is a professor in industrial engineering at Département de génie mécanique (Université Laval). He currently holds a Canada Research Chair (tier 1) in Operations Research in Natural Resources. He is a member of the research organisations/networks FORAC, VCO and CIRRELT. His research interests are in the areas of industrial and practical use of Operations Research, in particular in the forest industry. He has been involved in the development of many industrial decision support systems based on optimization. Professor Rönnqvist completed his Ph.D. in optimization at Linköping University in 1993. He has held academic positions in Sweden, New Zealand, Norway and Canada.

JEUDI

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11 h 00

Local 2332  
Pavillon A  
École de technologie supérieure  
Ouvert à tous

**Organisateur:**  
*Mustapha Ouhimmou*



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