FORAC Research Consortium
Pavillon Adrien-Pouliot, Université Laval
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www.forac.ulaval.ca

DOCTORAL RESEARCH PROJECT (PhD)

Exploring Value Chain Collaboration Models and Assessing Their Profitability

FRENCH LANGUAGE	Although most of our research team at the FORAC consortium are fluent in English and can facilitate your arrival at Université Laval, our students are expected to be able to communicate in French within the first year of their arrival in Quebec City.
Research domain:	Forestry, decision support system, planning/optimization
Prior education:	Forestry, Industrial Engineering
Research context:	The FORAC research consortium is a strong partnership between stakeholders in the forest products industry (businesses and governments). Based at Université Laval (Quebec City, Canada), we offer our partners world-class multidisciplinary research expertise. We bring together expertise in the fields of forest engineering, wood engineering, industrial engineering, mechanical engineering, administrative sciences and computer science. Our mission is to support the forest products industry in the design and effective management *from the forest to the customer*. FORAC aims to be a Canadian and international reference in the field of integration and optimization of the value creation network. Researchers are developing decision support and decision support methods that leverage the potential of data to improve planning, coordination and control of operations across all business lines (forest operations, transport and logistics, processing plants, etc.).
Project description:	The forest value chain is composed of numerous organizations that often operate independently and with limited coordination in the production and distribution of wood-based products (Rönnqvist et al., 2023). In a context of increasing labour scarcity and rising operational complexity, new collaborative approaches between firms offer significant potential to improve efficiency, resilience, and competitiveness (Lachance et al., 2021). This PhD aims to investigate how inter-firm collaboration can transform forest resources more efficiently and enhance market responsiveness. The research will systematically identify and characterize different collaboration models across the value chain, including shared production planning, pooled logistics and transportation, joint capacity management, and collaborative product development. Promising collaboration strategies will be selected based on feasibility and expected economic benefits. These strategies will then be evaluated using advanced mathematical modeling approaches, first under deterministic conditions and subsequently in stochastic environments to account for uncertainty in demand, supply, and operational constraints. A comparative performance analysis will ultimately provide decision-support insights to determine which collaboration models are most suitable under different industrial contexts. The candidate will work in close collaboration with a professor from the Université du Québec à Trois-Rivières. Expected Start date: As soon as possible
Financing:	Scholarship of $ 27,000 scholarship per year for a length of 11 full-time sessions (i.e. three years and two semesters). This scholarship is indexed once a year. Participation bonuses of up to $5,250 annually are available. Additional funds are available to cover the costs of participation in international conferences (with article) and travel expenses (collaboration with partners, industrial visits, field study).
To apply:	Interested candidates can apply by sending their application (*including: CVs, transcripts and motivation letter*) to the following email address: recrutement@forac.ulaval.ca or contact the professor to discuss the project directly: Mikael Rönnqvist, Full professor, Faculty of Science and Engineering, mikael.ronnqvist@gmc.ulaval.ca