Position Description

1. General Information

Name of the position	**Value Network Modelling for Regenerative Mobility: Integrating Cross-Sectoral Systems and Tracing Electronics from Power Plants to Car Wheels**
Foreseen enrolment date	September 2025
Position is funded by	• COFUND, Marie Skłodowska-Curie Actions (MSCA), Horizon Europe, European Union • LUT University • RMIT University
Research Host	LUT University
PhD awarding institutions	LUT University & RMIT University
Locations	Primary: Kouvola, Finland Secondary: Melbourne, Australia
Salary	32 600 EUR annual **gross** salary (2 716 EUR monthly gross salary)
Supervisors	• Marko Torkkeli, Professor, LUT University • Adeel Tariq, Post Doctoral Researcher, LUT University • Anne-Laure Mention, Professor, RMIT University (TBC) • RMIT Associated Supervisor TBC • Industry Partner: Kempower
Group of discipline	Industrial Engineering & Management, Decision Making and Electrification

2. Research topics (only one of these projects will be funded)

Project 1: ***Integrating Value Network Models for Regenerative Mobility Systems: Bridging the Energy, Electronics, and Mobility Sectors***
In this research, Doctoral candidate can explore how valued network models can be leveraged to integrate the energy, electronics, and mobility sectors to create regenerative mobility systems. As the demand for sustainable transportation solutions increases, integrating these sectors becomes critical for the development of systems that promote energy efficiency, reduce environmental impact, and enable the circular economy. This study aims to explore the potential synergies between energy production, advanced electronics, and mobility infrastructures, focusing on how they can be seamlessly connected to foster regenerative solutions in transportation. Moreover, the candidate can understand how value network models can effectively represent the interconnections

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between the energy, electronics, and mobility sectors, and how they can be used to optimize resource flows and enhance system sustainability. Candidate is required to have computational or modelling skills and forecasting for this topic.
Supervisors: Marko Torkkeli (LUT), Adeel Tariq (LUT), Anne-Laure Mention (RMIT)
Research Fields: Value Network Models, Electric Mobility Systems, Electrification of Mobility and Regeneration

Project 2: ***Role of Lifecycle Assessment in Evaluating the Sustainability of Cross-Sectoral Value Networks for Mobility***
This research will explore the role of lifecycle assessment (LCA) in evaluating the sustainability of cross-sectoral value networks within the mobility sector. As the mobility industry evolves toward sustainability, understanding the environmental, economic, and social impacts of cross-sectoral value networks—spanning energy, manufacturing, transportation, and technology—is critical. This study investigates how LCA can be employed to assess and optimize the sustainability performance of these interconnected systems, providing insights into the full lifecycle impacts from production to end-of-life. Candidate can explore how LCA methods can be applied to cross-sectoral mobility networks, considering factors such as resource extraction, energy use, emissions, and waste generation across the entire lifecycle of mobility solutions. Moreover, candidate can also examine how LCA can quantify the sustainability performance of mobility value networks, identifying opportunities for improvement and areas where environmental impacts can be minimized or mitigated.
Supervisors: Marko Torkkeli (LUT), Adeel Tariq (LUT), and Anne-Laure Mention (RMIT)
Research Fields: Life Cycle Assessment, Value Network Models, Electric Mobility Systems, Electrification of Mobility and Regeneration

Project 3*: Optimizing Energy Storage Systems and Materials for Circular Use within Regenerative Mobility Frameworks*
In this topic, candidate can focus on optimizing energy storage systems, particularly batteries, and materials for circular use within regenerative mobility frameworks. As the world transitions toward sustainable mobility, there is a growing need to design energy storage systems and materials that can be reused, repurposed, and recycled, contributing to the circular economy. Candidate will explore how energy storage technologies, including batteries, can be integrated into regenerative mobility systems to minimize waste, reduce environmental impact, and enhance the efficiency of resource usage across the entire lifecycle of mobility solutions. Candidate can focus on understanding how energy storage systems, such as batteries, can be optimized for circular use, focusing on improving longevity, rechargeability, and recyclability to support regenerative mobility frameworks. Additionally, candidate can explore the role of materials in energy storage systems, with a focus on identifying sustainable materials that can be used in battery production and recycling, and how these materials can contribute to a circular economy within mobility systems.
Supervisors: Marko Torkkeli (LUT), Adeel Tariq (LUT), and Anne-Laure Mention (RMIT)

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Research Fields: Value Network Models, Electric Mobility Systems, Electrification of Mobility, Optimization, and Regeneration

3. Employment Benefits and Conditions

LUT University offers a 48-month full time work contract (12-month term, extended for 36 months provided that the studies progress satisfactorily). There is a probation period of 6 months and the annual workload for researchers is 1,612 hours / year.

The remuneration, in line with the European Commission rules for Marie Skłodowska-Curie grant holders, and in line with the General collective agreement for Finnish universities, will consist of a **gross annual salary** of est. 32 600 EUR (excl. holiday bonus) with salary increases up to 44 700 EUR as the studies proceed. Of this amount, the estimated first year **net salary*** to be perceived by the researcher is 2 080 EUR per month. However, the definite amount to be received is subject to national tax legislation.

For more information on Finnish taxation visit here https://www.vero.fi/en/individuals/tax-cards-and-tax-returns/tax_card/tax-percentage-calculator/.

**Net salaries can fluctuate in accordance with an individual's personal circumstances (marital status, age, disability, family and dependents, etc. The above indicative net salaries offer an approximation of what a single person in their early 20s could expect to receive in their bank account after taxes.)*

Benefits include

- Becoming a Marie Skłodowska-Curie fellow and be invited to join the Marie Curie Alumni Association
- Access to all the necessary facilities at LUT University and RMIT University
- Tuition fees exemption at both PhD awarding institutions
- Travel allowance to cover flights and accommodation for participating in DREAM+PLAN events
- Up to 12 months in Australia
- Occupational health care
- Paid sick leave for a limited period
- Holiday bonus
- 6 weeks paid holiday + Finnish public holidays (all together about 8 weeks).
- Social security coverage

4. PhD enrolment

Successful candidates for this position will be enrolled by the following institutions and must comply with their specific entry requirements, in addition to DREAM+PLAN's conditions.

LUT University

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To enrol in a Doctorate program, you must meet the general conditions, namely:

- a relevant Master's degree awarded by a university
- a relevant Master's degree awarded by a university of applied sciences; or
- a relevant applicable study programme abroad which in the awarding country gives eligibility for the corresponding level of higher education.

International degrees:

- The degree has to be an official or recognised degree in its country of origin.
- As a rule, at least four-year of education is required including a master's thesis or corresponding final thesis.
- In all cases the doctoral programme in question considers case by case whether degrees earned abroad provide a sufficient foundation for postgraduate studies at LUT University.
- The precondition for the recognition of European degrees is that the degree is a university degree combination earned in accordance with the Bologna Process principles (3+2 years). The applicant is required to submit information in English (for example a Diploma Supplement) on the scope and the level of the degree/s obtained abroad when applying to LUT.
- If you apply for the right to study for a doctoral degree with an international degree, please contact LUT Doctoral School for additional instructions before submitting study right application documents.
- **Economics and Business Administration:** One-year (60 ECTS credits) MBA-degrees do not generally qualify for doctoral studies. Candidates with an MBA-degree and their eligibility to apply will be considered case-by-case.

More information: https://www.lut.fi/en/research/doctoral-school

RMIT University

Visit the website: https://www.rmit.edu.au/research/research-degrees/how-to-apply

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