Rationale and background of RDI activities

The Lahti University of Applied Sciences RDI Programme 2016-2018 is based on the strategy of Lahti UAS and it outlines the institution’s research, development and innovation (RDI) activities. The programme is underpinned by the vision of Lahti UAS: “Insightful, experiential and exploratory Lahti UAS 2020 - promoter of regional growth and international reformer of future learning.” In addition, the programme is based on regional strategies and programmes and the strategic orientations of European and national research and innovation policies.

The RDI activities of Lahti UAS are part of the national and regional research and innovation system, which operates in the context of international networks, an increasingly globalised competitive environment and active collaboration with partners and businesses. The activities follow a practice-based, development-focused and applied approach leading to concrete results. RDI activities facilitate skills and knowledge transfer and emphasise an international dimension and value networks. The aim is to generate activities that are transparent, practice-based and beneficial to organisations by responding to future needs and promoting the region’s growth, competitiveness, well-being and employment opportunities in the focus areas.

The framework for RDI activities is provided by the multidisciplinary focus areas specified in the new strategy of Lahti UAS: Design, Smart industry, Well-being and regenerative growth, and Clean and dynamic environment. A set of RDI themes in which Lahti UAS will seek national and international prominence have been selected based on the focus areas. The themes form the institution’s RDI programme concept, they are interdisciplinary and complementary, and create multisectoral platforms that encompass partners across the network and facilitate future solutions. The RDI themes are also used to regenerate the region’s skills and knowledge base and introduce areas of excellence in development as subjects of learning.

The RDI activities of Lahti UAS have a strong collaborative aspect with networks and businesses. The RDI actors of Lahti UAS are actively involved in national and, increasingly, international networks. The networks are based on project application areas (e.g. CBC, Interreg, Baltic Sea Region), programmes (e.g. Horizon 2020, CBC) or competence and focus areas. Key national networks include ARENE, the Open Science and Research Initiative ATT, and various research discipline-specific networks. Notable international networks include the European Association for Practitioner Research on Improving Learning (EAPRIL), the Service Design Network (SDN) and the University Industry Innovation Network (UIIN).

Lahti UAS adheres to the principles of good scientific practice and the objectives and principles of open science and research.

Scientific practice is based on the Finnish Advisory Board on Research Integrity guidelines for responsible conduct of research and procedures for handling allegations of misconduct. The guidelines are applied through self-regulation in the research community and within legislative requirements.

The objective of the Open Science and Research Initiative (ATT) is to enhance quality in research through openness and to increase the societal and social impact of science and research. The guiding principle is to ensure that scientific knowledge and the outcomes of research are shared as early and as extensively as possible. Methodologies, data and findings should be transparent, accessible and usable. The RDI activities of Lahti UAS are informed by these principles, and special attention is paid to the openness and continuing development potential of research data and findings.

Good scientific practice, open science and research

1. Reinforcing the intrinsic nature of science and research
Openness and repeatability increase the reliability and quality of science and research.

2. Strengthening openness-related expertise
Those working in the Finnish research system know how to harness the opportunities afforded by openness to boost Finland’s competitive edge.

3. Ensuring a stable foundation for the research process
Good, clear basic structures and services enable new opportunities to be harnessed at the right time and ensure a stable basis for research.

4. Increasing the social impact of research
Open science creates new opportunities for researchers, decision-makers, business, public bodies and citizens.

Ministry of Education and Culture, Finland 2014:21
Focus area-specific RDI themes

The RDI themes of each focus area form the structure of the RDI programme at Lahti UAS. The themes are multidisciplinary, complementary and they facilitate cross-sectoral expertise that supports the creation of future solutions. Focus area-based RDI activities are aimed at promoting the region’s growth and competitiveness and well-being and strengthening the internationalisation of its businesses and communities.

The chosen themes are delivered in collaboration with networks and businesses encompassing the region’s industries, SMEs, public and third sectors. The themes enhance Lahti UAS’s appeal as a partner of international standing and networking capabilities. They support Lahti UAS in its ambition to achieve international excellence.
The Design focus area of RDI deals with the integration of design expertise for economic competitiveness, circular economy and well-being. The aim is to make design RDI activity an integral part of regional and national design ecosystems.

**The industrial design** theme deals with the development of user-oriented, environmentally friendly products and services and resource-efficiency. The design approach is used to develop bio-based and other eco-efficient materials and to design material flows responsibly. Environmentally friendly design encompasses eco-efficient marketing, re-design, virtual production opportunities and the development of sharing economy.

**The information design** theme deals with information sharing by visual methods to concretise complex systems, such as ecosystemic environmental solutions, well-being service processes, big data and various user interfaces. Information design can be applied in a diverse branches of activity. The aim is to develop expertise related to information design and visualisation.

**The service design** theme deals with the development of user-oriented service processes related to different sectors. Service design methods are employed to generate service business, create new service concepts, promote circular economy and well-being. The design approach helps support well-being through everyday preventive actions, workplace well-being and sense of purpose.

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**Design**

- Multi-channel brand communications
- System visualisation and concretisation
- The psychology of usability in information design, usability testing

**Information design**
- Environmentally friendly product and service development
- Resource-efficiency in communication and design products
- Productisation of eco-efficient materials

**Industrial design**
- User-oriented design of service processes and concepts
- Service design tasks and communications related to circular economy and well-being

**Service design**
Smart industry enhances the competitiveness of the region’s industries and businesses and enables them to better respond to global challenges and customer needs. The development of smart industry is based on technologies and taking advantage of the opportunities offered by knowledge sharing and networks.

The **digital applications in production and service business** theme is based on digital technologies (e.g. cloud technologies, industrial internet, mobile internet, advanced materials, 3D printing, robotics), big data and uses of data in value creation and opportunities for businesses.

The **enhanced processes and practices** theme deals with the development of flexible, cost and resource-efficient, high-quality technologies, products and services. The main focus is on circular economy solutions, LEAN principles and a customer-driven approach.

The **network-based business models and service concepts** theme concentrates on global value chains, customer-orientation, crowdsourcing, open innovation, business regeneration and growth, and enhanced export performance. Social innovations that support well-being are one area with significant growth potential for service business in the industry sector.
Clean and dynamic environment

The Clean and Dynamic Environment focus area promotes circular economy. RDI activities are aimed at developing efficient ways of using the region’s resources and renewable energy solutions in cooperation with businesses and promoting sustainable urban structures.

The material efficiency theme promotes efficient use of the region’s wood, fibre, plastic and textile resources. The reuse of waste and secondary streams is promoted and their repurposing value is increased by discovering new uses as raw material. This will facilitate industrial symbiosis and new business opportunities in the region.

The sustainable urban environment theme promotes sustainable future urban structures through urban planning in areas such as green and appealing spaces and energy-efficiency. Surface and groundwater as well as environmental safety aspects, such as contaminated land areas and hazardous substances, are taken into account in planning activities.

The energy-efficiency and renewable energy theme promotes the region’s energy-efficiency and the use of renewable energies. Pilot initiatives under this theme include energy solutions such as solar energy and wind power for properties, and the development of solutions that promote the use of bio-energy.

- Circular economy solutions
- Wood, fibre composites, plastics and textiles - resource-wise and smart use
- Use of secondary material streams
- Industrial symbiosis
- Advanced waste management
- Renewable energy solutions
- Energy efficiency
- Bio-energy
- Energy ecosystems

- Green and attractive urban design
- Urban planning and technical solutions
- Rainwater solutions
- Safe living environment

- Material efficiency
- Energy efficiency and renewable energy
- Sustainable urban environment

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Well-being and regenerative growth

The Well-Being and Regenerative Growth focus area encompasses health promotion, inclusion, skills and employment. Healthy and empowered individuals and communities in a complex, dynamic and digital world are at the core of this focus area.

The **regeneration of user-centred welfare services** theme focuses on the development of preventive and self-management practices and services for health and well-being promotion. It also aims to promote inclusion at the individual and community level through personalised solutions, support skills in preventive and self-management practices, and develop technological welfare solutions.

The **healthy and safe living environment** theme focuses on the development of an inclusive and experiential environment through accessible and smart solutions. The theme aims to support practices that enhance well-being and increase knowledge of nature-based and health-focused physical activity.

The **service innovations** theme develops products, practices and innovative services, mobile and digital services through design thinking. Key development areas include promoting entrepreneurship and employment, supporting regenerative leadership, and promoting well-being at work.
Focus areas in the development of RDI activities

The development of regional and industry-specific centres of excellence, and enhanced cooperation

Multi-sectoral development of a growth model for Lahti has started based on the region’s strengths in line with the current government programme. The two overarching themes are the creation of an entrepreneurship ecosystem and the enhancement of competitiveness and well-being through design expertise and circular economy solutions. Key operational aspects include the Niemi campus, reference environments, the promotion of an experimental culture, and close links with the Helsinki metropolitan area (e.g. the Radanvarsi pilot environment, the Niemi innovation cluster, the trailblazer cluster for circular economy in Kujala, and the national cluster for design innovation). The aim is to significantly enhance interaction and cooperation between higher education institutions, businesses and the public sector in order to create prerequisites for entrepreneurial activity, commercial opportunities in research, and business growth. Regional higher education cooperation takes place as part of the cooperation programme with the Lahti University Consortium.

The development of innovation environments and an experimental culture

The Experiments, Protos and Demos strategic profile steers RDI activities towards creating an experimental culture at Lahti UAS. An experimental culture supports innovation and development activities and thus helps generate student enterprise and new commercial products and services. The impact and commercial potential of research are promoted by developing new practices. RDI projects are integrated into the learning environment to support competence development, and the development of new ideas is part of learning by experimentation. The experimental culture is supported by developing existing innovation environments and new pedagogical approaches to better serve the development of RDI activities and learning (e.g. Dynastart, Fumatec, Simulti). The aim is to launch new multidisciplinary development and experimentation environments. Rapid experimentation and subsequent testing of pilots and solutions in practice offer opportunities for integration with industry.

International competence networks and competitive international funding

The new phase of RDI activity in universities of applied sciences involves the strengthening of international partnerships and applying for international competitive funding. The aim is for Lahti UAS to become a sought-after partner in its focus areas and international competence networks. International project consortia will be created around focus area themes with Lahti UAS as the main project actor or partner. The organisation’s capabilities in sourcing national and international RDI funding will be developed further and refocused on international funding sources. Project management expertise will also be developed further as regards new funding sources. Competencies in the RDI themes of the institution’s focus areas and the associated networks will be utilised to channel external RDI funding to regional development.

Increasing the number of RDI actors and competence development

The increasingly prominent role of UAS RDI activities in economic regeneration creates additional demands for competence development. Competence development is based on teachers’ roles in facilitating learning, representing the institution in industry relations and networks, as RDI experts, and in fostering development competence in students. Student involvement in RDI activities is encouraged and increased. In addition to Bachelor’s degree students, the involvement of other students – especially those in Master’s degree programmes – will be increased in RDI activities. The integration of RDI activity, regional development and education promotes the development of students’ research, development and innovation skills, which are important competencies in a rapidly evolving labour market. To this end, the requirements of RDI activities will be taken into account in curriculum work, education planning and delivery.

Increasing openness in RDI

The Open Science and Research Roadmap defines the path for Finland to become a leading country for openness in science and research by 2017. The aim is to improve access to research data for further use, development and cumulative knowledge creation by other experts. The transparency of research methods, data and findings will be improved. Lahti UAS is involved in this development effort as a member of the higher education sector and contributes by systematically developing its competencies and activities towards more open practices. The aim is that all actors involved in research should be able to utilise the openness of research to ultimately enhance the competitiveness of our society as a whole.
Development of quality in RDI activities

The development of quality in RDI activities is based on the quality system and procedures of Lahti UAS. Development takes place through strategic development goals and the development focus areas outlined in the RDI programme. Annual development plans are drawn up based on the programme, including sub-targets, measures, responsibilities, indicators, feedback mechanisms and evaluation methods.
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