LUT University: Research and Impact Assessment RIA 2019

Structure of Self-assessment reports
(Max 20 pages without Appendices)

Kindly use the guiding questions below each title in a way you find relevant. Also, the inclusion of other significant facts and merits concerning the UoA's research is welcomed. For 2.5 Future potential the advised minimum length is 2 pages. Otherwise you may use the pages in the way you see appropriate.

1. Organisation and scientific profile of the Unit of Assessment (UoA)

1.1 Scientific profile of the UoA. What are the main contents and focus areas of the research carried out? What is the rationale behind the choices?

1.2 Describe how the UoA contributes to the LUT strategy and profiling areas.

1.3 Describe how the LUT research platforms contribute to the scientific profile of the UoA.

1.4 Concise description of the UoAs organisation and composition (subunits, disciplines/fields, research centres (Academy of Finland's Centres of Excellence etc.).

1.5 Specify any specific tasks, roles or responsibilities the UoA has or which have an effect, e.g., on its priorities for research targets or resource allocation.

1.6 Short summary of the history of the UoA (2013-2018).

See separate Appendix 1 for the list of professors and associate professors of the UoA and Appendix 2 for other metrics of the UoA.

2. Scientific quality, academic impact, societal impact, research environment and future potential

2.1 Scientific quality and academic impact

2.1.1 Research goals
a) What are the current research goals in your UoA? ***Where do you aspire to be in 5–10 years' time with your research?*** Take also into consideration LUT Strategy in your goal description.
b) Explain the rationale for the selection of your research goals.

2.1.2 Research results

a) Name and describe the most important results of the research carried out in your UoA during the assessment period and provide relevant justifications on why those have been selected. Assess the significance of a result (Why is the result significant?), for example, from the perspective of scientific novelty. Describe *top five scientific achievements* (not a publication list) in the UoA in the LUT strategy period 2015–2018, highlighting the academic impact of the UoA. (Notable impact on the development of the field/science, influencing global research directions).

b) Describe generally research outputs of the UoA.

c) Analysis on research outputs

Comment upon your research outputs and indicators (as listed in Appendix 2) with regard to productivity, citations and publication channels. Noticeable changes over time? Potential for improvement? Are the results published in the best forums in the field?

d) Provide examples of the top 10 publications that showcase the scientific output of your UoA in in 2013–2018. Use Appendix 3 for the list of top 10 publications.

e) Describe the extent and impact of multidisciplinary collaboration of the research activities within LUT (LUT research platforms, other).

f) Name top 1-3 publications, which had not been published without LUT research platforms

g) Assessed against your own goals, how well do the outputs of the UoA match your goals and level of ambition?

h) Comment on your open science actions and achievements (publications, data, methods)

2.1.3   Research personnel (use Appendix 3)

a)   Name most important international prizes and/or recognitions of the UoA personnel

b)   Name max 10 most important positions in influential international academic and professional associations of the UoA personnel

c)   Name max 10 other most important international scientific expertise tasks and appointments

d)   Name max 10 UoA alumni employed by globally leading universities or research institutes

2.1.4 International benchmarks

Provide 1-3 examples from institutions/units outside of Finland you appreciate and would consider appropriate as a benchmark for your UoA in terms of activities, profile and standing in the scientific community. Include a short explanation of your choices.

2.2 Societal impact, and the entrepreneurial and innovative capacity

Societal impact is demonstrated by case studies provided by the UoAs (approximately one case/ five professors (Appendix 4). The cases should demonstrate the reach and significance of societal impact of

the UoA's research. (The panel will also assess how the UoA is developing its strategy to support and enable impact of its activities).

a) What are the target areas set for societal impact in your UoA?
b) Who are the stakeholders beyond academia that benefit from your research results and skills?
c) Which research questions in your research areas are most relevant to the identified stakeholders?
d) What are the goals related to your societal impact target areas? Consider also the past and future long-term targets in the UoA.
e) Explain the rationale for your selection of the societal impact goals in terms of their link to your research and its wider contribution and impact in society.
f) How does the University support the UoA to achieve the societal impact goals?

2.3 Research environment

Leadership, goal-setting and follow-up
a) Describe how the formal and informal leadership and management practices are organised within the UoA (and subunits, if applicable). Explain the roles of different actors (boards, heads, leaders, informal structures etc.) in the organisation.
b) What kind of support does LUT provide to research leadership in the UoA? What are the strengths and weaknesses of the support?
c) Provide a description of the research goal-setting procedures in the UoA. What are the strengths and weaknesses of the chosen procedures?
d) What kind of procedures do you have to track the progress towards reaching the goals? Give examples of methods of monitoring success and tracking development in the UoA. These can be quantitative (e.g., indicators) or qualitative measures (feedback methods, discussion events, seminars, regular meetings etc.).
e) What kind of development activities have you done in your UoA based on the follow-up measures? What are the strengths and weaknesses of your development activities?
f) Describe how individual researchers receive feedback on their performance.

Human resources, careers and recruitment
a) Describe the personnel structure and the roles of each personnel group in the UoA. What are the strengths and weaknesses? Refer to the metric data (Appendix 2) in the analysis.
b) How are you working to support researchers in their career (researchers in all phases of their career)?
c) How are you currently working to ensure that recruitment contributes to the high quality and sustainability of research and renewal? How appealing are the career and development possibilities in your unit for different personnel groups? How do you make sure your personnel structure is well prepared for the future?

Researcher education
a) Describe the practices of agreeing on the research topics and questions for doctoral thesis work. How are the doctoral students recruited and selected in your UoA?
b) What is the role of doctoral students in the research of the UoA?
c) How do you integrate the doctoral students into the community and research activities? How do doctoral students receive feedback about their progress?

Research infrastructures

a) Describe the research infrastructures you have or that is available for the UoA. How well does the infrastructure serve your research purposes?
b) How are you working to maintain and develop the research infrastructure in order to support high-quality research and renewal?
c) Describe investments (both current and planned) in infrastructure and facilities.
d) Describe UoA's participation in other research infrastructures: LUT (including research platforms) and outside.
e) Describe UoA's collaborative research environments (e.g. CoEs, shared spaces with other institutions)

Research funding
a) Describe your current funding situation and strategy. You can refer to the metric data in Appendix 2.
b) On what basis is the portfolio of different funding sources selected? What are the strengths and weaknesses of the chosen strategies? How well balanced is the portfolio, considering the research goals of the UoA?
c) What are your actions to succeed in getting *international competitive research funding*?
d) What is the contribution of LUT research platforms in getting external funding?
e) How do you work to secure funding, including predictable and sustainable funding from different sources?

Research collaboration and networks
a) Describe most important research collaboration and networks in the UoA
i. internationally (both networks and collaborations)
ii. with Finnish universities and research institutes
iii. with companies
iv. within LUT Research Platforms
v. within LUT otherwise
b) Specify most important multidisciplinary collaboration.
c) What kind of future plans have been made in relation to developing external and internal collaboration and networks? What are the strengths and weaknesses of the current situation?

Societal and contextual factors
a) Reflect on relevant factors/developments over the past five to six years. What kind of changes have or might influence the performance of the UoA in some way?
b) Give a forecast of the most important trends and developments for the coming years.

2.4 Future potential

For 2.5 Future potential the advised minimum length is 2 pages.

a) Describe future potential from the point of view of personnel
- where you are within the next 5-10 years (refer also to 2.1.1)
- recruitment strategy designed to strengthen the future potential
- age profile of the senior research staff
- the most important research recruitments in 2015-2018

- how attract the best international talents in the future, and how to retain that talent?

b) Describe future potential from the point of view of possible emerging research areas/themes based on the existing competences and the recruitment plan of the UoA.

SEPARATE APPENDICES

APPENDIX 1. List of professors and associate professors of the UoA: name, position, field of research, link to the LUT Research Portal, and h-index (Scopus).

APPENDIX 2. Metrics of the UoA.

APPENDIX 3. Top publications and personnel achievements of the UoA.

APPENDIX 4. Impact case studies.