This document defines the Terms of Reference for Panels carrying out the Aalto University Research, Art and Impact Assessment. This document shall be read in conjunction with the instructions that guide the Units of Assessment in preparing their assessment material. The Aalto University President approved this document on April 27, 2017 following discussions in the President’s Management Team on Jan 19, Feb 16, and April 27, 2017.

1 Background

Aalto University was formed in 2010 by a merger of three Finnish universities, Helsinki School of Economics, Helsinki University of Technology, and the University of Art and Design Helsinki. Following the Charter of Foundation, Aalto University has from the beginning ambitiously developed activities based on high quality research and artistic work, and ambitiously aimed at establishing itself as a world-class university. To stimulate and improve the research and artistic activities of the new university, the three universities organized a comprehensive international Research Assessment Exercise in 2009.

To follow up on the recommendations arising from the Research Assessment Exercise in 2009, Aalto University established Scientific and Artistic Advisory Boards for each of the six schools. The Advisory Boards have visited Aalto at regular intervals in 2012 (2013 for one school), 2014, and 2016, and provided feedback and recommendations for the development of the schools and departments. The Advisory Board recommendations have been used to develop the university organization, the research environment, as well as the research and artistic work.

At the same time, the Ministry of Culture and Education in Finland has expected Finnish universities to profile their research, on one hand to reduce overlapping themes and on the other hand to strengthen collaboration between universities. As an incentive for the profiling, the Academy of
Finland has allocated 50 M€/year through three consecutive calls for university profiling applications. Aalto University has focused the three applications to develop 1) university-wide key research areas, 2) multi-disciplinary research platforms, and 3) the innovation ecosystem. These efforts implement the updated Aalto University strategy (2015), which emphasizes excellence, multi-disciplinarity, entrepreneurship, and societal impact as crosscutting themes in all activities.

Aalto University is striving to build a university that is more competitive, more focused but also more collaborative across disciplines. We are committed to educate future visionaries and experts to solve complex challenges towards sustainable society. We invest in creating a research ecosystem that attracts the best in the world to work at Aalto University. As a tool for refocusing and strengthening research, Aalto University has defined and implemented a full-fledged tenure track career system: Since 2010, over 260 new professors have been recruited to Aalto leading to major renewal of faculty and research areas.

Aalto University identified seven key research areas that comprise four core competence areas: Arts and design knowledge building, Global business dynamics, ICT and digitalisation, Materials and sustainable use of natural resources, and three grand challenge research areas: Advanced energy solutions, Health and wellbeing, and Human-centered living environments. Seven major research infrastructures are funded through the Aalto significant infrastructure program. Thus, Aalto University invests in long-term, high-quality research, which forms the basis of educational leadership. Breakthrough discoveries, deeply integrated with design and business thinking, engineering excellence as well as multidisciplinary collaboration, enable systemic solutions and accelerate innovations.

Aalto University is now approaching the end its first ten-year period as one university. To document the development, to establish Aalto's international standing, and to identify future potential, the University organises a Research, Art, and Impact Assessment in 2018.

2 Organisation and Implementation of the Assessment

2.1 Aalto University Objectives of the Assessment

- To assess quality and potential of research, arts, design and architecture;
- To assess the success of multidisciplinary collaboration within Aalto;
- To assess Aalto’s research impact, artistic impact, societal impact, and innovative capacity;
- To identify leading international spearheads and emerging research strengths;
- To stimulate and encourage world-class research and artistic activities;
- To give feedback to the Units of Assessments;
- To position Units of Assessments nationally and internationally;
- To strengthen the Aalto University brand;
- To provide cases and evidence of Aalto's development.

2.2 Assessment Panels

The Assessment is carried out as a peer-review process conducted by external, international, independent, and high-level experts in fields relevant to Aalto’s research and artistic profile. The experts will be divided to Panels organized by research and artistic fields. Each Panel will assess one or more Units of Assessment. The Assessment is based on the following material:

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1 The term multi-disciplinarity is used as a collective term combining multi-, inter-, cross-, and trans-disciplinarity.
• Written self-assessments, including case studies, bibliometric data, and other indicators of quality and impact of the research and artistic work;
• Interviews conducted by the Panels during the site visit.

2.3 Assessment Fields
Research and Art Assessment Fields 1-4 cover Aalto's four core competence key research areas (see page 1). Each Assessment Field consists of several Units of Assessment that cover all Aalto University Schools and Departments.

Field 1: Arts, design and architecture
Field 2: Business and economics
Field 3a: Chemical engineering and physics
Field 3b: Engineering
Field 4: ICT and mathematics

Assessment Fields 5-7 cover the multi-disciplinary grand challenge key research areas. Combined in a single Unit of Assessment, each Unit includes researchers and research groups from various Aalto University Schools and Departments. Assessment Field 8 covers the university-wide innovation ecosystem as a whole, including also activities that take place outside the departments.

Field 5: Energy
Field 6: Health and wellbeing
Field 7: Living environment
Field 8: Innovation ecosystem

2.4 Units of Assessment
The Units of Assessment comprise the departments of Aalto University. Subunits such as research institutes or centres, research groups or equivalent will be assessed as parts of a Unit of Assessment. Multidisciplinary fields will be assessed as separate Units of Assessment. The Units of Assessment and their distribution to Assessment Panels are listed in Appendix 1.

2.5 Assessment Period
The Assessment period covers five years from 1 January 2013 to 31 December 2017, and the research, artistic and impact results described in the assessment materials relate to this period only. The Units of Assessment will submit evidence of the achievements during the five-year period and describe their future potential taking into account the faculty renewal that has taken place.

2.6 Organisation of the Assessment Management
An informal external advisory group takes part in the preparation of the Terms of Reference. The President’s Management Team provides overall oversight and guidance. An internal steering group oversees the Assessment execution. The RAI Office led by a Project Manager is in charge of the Assessment implementation. Appendix 2 presents the Assessment Management organisation.

2.7 Utilisation of the Assessment Results
The Research, Art, and Impact Assessment will provide Aalto University with essential information and recommendations regarding the strengths, potential, and challenges in research and artistic activities and their impact on society. The exercise will form a reference point for the future research and artistic assessments of Aalto University.

Aalto University will use the results and recommendations of the Assessment as well as the material collected during the process in setting goals and developing Aalto University strategy for the period beyond 2020.
3 Assessment Criteria

The Assessment Panels are asked to present, for each Unit of Assessment:

1. A statement on the research and artistic profile and how the activities relate to the Aalto University strategy and Key Research Areas;
2. Numerical ratings and written statements for each of the following elements:
   2.1. Excellence, quality and the extent and impact of multidisciplinary collaboration of the research and artistic activities;
   2.2. Impact of the research and artistic activities on the research/artistic community;
   2.3. Societal impact and the entrepreneurial and innovative capacity;
   2.4. Strengths and weaknesses of the research and artistic environment;
   2.5. Future potential;

Each Assessment Panel shall reach a collective decision based on the written material, interviews conducted during the site visits, additional material requested by the Panel Chair before/during the site visits, and discussions among the Panel members.

3.1 Research and Artistic Profile

The Panels are asked to evaluate the research and artistic profiles of the Units. The Unit’s profile shall be considered both in terms of comparing to international benchmarks and in relation to Aalto key research areas, strategy and multidisciplinary collaboration. Panels are invited to comment on subgroups of larger Units of Assessment where relevant. Panels are also invited to comment on the profile of the Unit as part of the Aalto University entity.

3.2 Numerical Ratings and Written Statements

The Panels are asked to rate numerically, in international perspective, the quality, impact, environment and potential of the research and artistic activities of the Units on a scale from 1 to 6 (1 = emerging, 2 = fair, 3 = good, 4 = very good, 5 = excellent, 6 = outstanding international level; see Appendix 3 for definition of the criteria for each element) and to motivate the numerical ratings in written statements. The written statements and numerical ratings together form the quality rating of the Units. Research and Artistic activities shall be considered whenever relevant for the Unit; Units do not necessarily have both types of activities.

In this assessment “international” is a quality indicator referring to the standing of the Units in the relevant international community. Thus, the breadth of international collaboration in the Unit by itself is not a criterion per se for grading the "international level".

3.2.1 Excellence, Quality and Multidisciplinary Collaboration of the Research and Artistic Activities

The Panels are asked to assess on all research and artistic work, whether fundamental or applied, topical or multidisciplinary with equal weight. The written comments shall address the quality and excellence of the activities as well as the scope and success of the multidisciplinary activities.

3.2.2 Impact of Research and Artistic Activities on the Scientific/Artistic Community

The Panels are asked to assess the impact of the research and artistic activities in terms of international leadership, influencing global research/art directions, citations, reach of the artistic work and activity, taking part in the international dialogue, and contributing to the development of the fields of research and artistic activities.
3.2.3 Societal Impact, and the Entrepreneurial and Innovative Capacity

The Panels are asked to assess the societal impact of the Units in terms of their influence on change, benefit or value added to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia. Impact also includes reduction or prevention of harm, risk, cost or other negative effects. Impact of the research and artistic activity may appear as or lead to:

- Societal quality (e.g. interaction with and communicating results to external stakeholders, engagement in entrepreneurial activities);
- Societal impact (e.g. influence on stakeholders or societal procedures);
- Valorisation (e.g. activities aimed at making results available and suitable for application in products, processes and services, utilization of innovation potential);
- Dissemination (e.g. activities aimed at making results widely known or providing stakeholders a window to current research and novel results).

Societal impact is demonstrated by case studies provided by the Units of Assessment. In the case studies, both quantitative and qualitative impact indicators shall be considered. Such indicators include but are not limited to expert tasks, popularised works, media visibility, activities and external funding resulting from collaboration with non-academic institutions (corporations, Tekes, EU), invention disclosures, patents, licenses, startup companies, cooperation with the public, private and third sector outside the academia and involvement in training programs for leaders and executives. Panels are also asked to assess how the Unit is developing its strategy to support and enable impact of its activities. The impact of teaching and education of Bachelor- and Master-level graduates falls out of the scope of this assessment. Connections between the research/artistic work and teaching of the Units is assessed in the Aalto University Teaching Assessment Exercise.

3.2.4 Strengths and Weaknesses of the Research and Artistic Environment

The Panels are asked to comment on the research and artistic leadership and long-term strategic planning of the Unit’s research and artistic activities, including human resources strategy and the focus of research/artistic activities. Further indicators include but are not limited to international networks and collaborations, availability and quality of support services, research and artistic infrastructures, databanks, technical staff, and the ratio of students to teaching personnel and the ratio of administrative to academic personnel.

The Panels are asked to identify assets of the research and artistic environment that require further strengthening and structural obstacles that prevent the Unit from realising its full potential. Although the Panels are not asked to evaluate individual researchers, they are invited to identify particular strength areas and the balance of the overall research profile of the Unit and of the University as a whole.

3.2.5 Future Potential of the Unit of Assessment

The Panels are asked to comment on the future potential and academic leadership within each Unit. The assessment shall consider the potential of:

- Researchers, engineers and artists in the international competition;
- Research and artistic environment to provide support for the chosen activities;
- Making an international level impact on the research/artistic community and/or society;

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2 UK REF 2014, [http://www.ref.ac.uk/](http://www.ref.ac.uk/)
• Emerging research or artistic fields.

The assessment may include but is not limited to indicators such as the vision and plans for the future, plans on utilizing the multidisciplinary opportunities at Aalto University, the level at which the Unit recognises its strengths and weaknesses, emerging future opportunities and challenges, and the plans for managing such factors. Issues such as age and career profile of the faculty and staff, the size of the Unit, and the ability of the Unit to attract high-quality and international doctoral students and faculty may play a role. Panels are invited to comment on the Unit’s infrastructure and the investments needed in the future to maintain the attractiveness. Further indicators may include the ability to secure competitive funding, the capacity to focus the Unit’s research and artistic activities on timely issues, or the existence of international collaboration networks.

3.3 Recommendations for the Future

The Panels are asked to provide recommendations on the future development of the Units. The recommendations shall focus on the Units, not on individual researchers. The recommendations shall support the Units in developing a roadmap from the present quality to the internationally excellent level and maximal societal impact, and in identifying necessary changes. The Panels are also invited to comment on the Units’ prospects for innovative new collaborations within the Aalto University. The Assessment Panel recommendations and strategic guidance may include:

• Research and artistic activities (e.g. disciplinary and multi-disciplinary activities, potential for innovative multidisciplinary activities in the Aalto context);
• Societal impact (e.g. strategy for increasing impact and creating networks);
• Research and/or artistic environment and infrastructure (e.g. investment and development needs);
• Research and/or artistic active personnel (e.g. personnel profile and strategy);
• Doctoral and post-doctoral training (e.g. role in research and/or artistic activities);
• Other issues.

Key topics to be addressed include:

• Main strengths, opportunities and challenges of the Unit;
• Recommendations for improvements.

4 Assessment Panels: Tasks, Responsibilities and Arrangements

4.1 Composition of the Assessment Panels

The Assessment Panels comprise a Chair and several members, who are internationally acclaimed scholars in the fields relevant for Aalto and for the Assessment Field. Chairs and Panel members for Fields 5-8 are assigned from Panel members for Fields 1-4.

4.2 Assessment Report

The Panels are asked to produce an Assessment Report for each Unit of Assessment separately, using an Assessment Form provided by the RAI Office. The report shall cover the following items (for report structure see Appendix 4):

• A general statement on the focus and strategy of the research and artistic activities;
• Numerical ratings and written statements for excellence, quality, multidisciplinary collaboration, impact on the research/artistic community, impact on society, entrepreneurial and innovative capacity, research/artistic environment, and future potential;
• Recommendations for the future.
The Panels shall aim to reach consensus statements for the report, and take into account all assessment documents and interviews during the site visits. Each Assessment Panel is expected to finish the final draft of the Assessment Report by the end of the site visit at Aalto University.

Each Assessment Panel is appointed a Chair to lead the Panel’s work. It is the Chair’s responsibility to ensure that the Panel produces its Report on time. The Chairs will have an opportunity to discuss together during the site visit. The final Assessment Reports are due two weeks after the site visit.

The Project Manager will compile the Final Report of the entire Assessment such that the finalised reports of the Assessment Panels are included in the Final Report without changes in the contents of the reports. Aalto University will publish the Final Report including the Assessment Reports both in printed and electronic form.

4.3 Preparatory work and Site Visit
Panel members are assumed to familiarize themselves with the material provided (approximately five weeks) prior to the site visit. The site visit will include interviews of different stakeholder groups, and provide an opportunity to clarify open issues. The site visit will be organized at Aalto University on August 27-31, 2018. The materials to be provided for the panels are listed in Appendix 5.

During the one-week site visit at Aalto University, the Panel members can
- Discuss in person with other Panel members;
- Interview researchers and artists representing various career phases;
- Get acquainted with the Units of Assessment;
- Meet representatives of Aalto University management.

The RAI Office will provide specific timetables for the site visit.

4.4 Confidentiality
The Panel members agree to refrain from making use and/or divulging to third parties any non-public material, facts, information, documents or other matters brought to the attention of Panel members during the Assessment. The materials included in the Assessment Reports as well as all the ratings are strictly confidential until the publication of the Final Report that summarises all the results. The Final Report is the main instrument for communicating the results of the Assessment.

4.5 Conflict of Interest
The Panel members are required to sign a declaration of the lack of conflict of interest. For example, the Panel members must not be engaged in joint research projects or joint publications with members of the Units of Assessment within their panel, or be engaged in other assessments with them (e.g. as evaluator or applicant of a research proposal). A Panel Member is disqualified if his/her impartiality is endangered. Panel Members shall not make individual contacts with members of the Units of Assessments. If such contacts are desired, the Panel Member should discuss the issue with the Assessment Organisation.

4.6 Remuneration
The University will cover the travel and accommodation costs of the panel members and provide a small remuneration for the assessment of the written material provided before the site visit, the site visit, and contributions to the Assessment Report.
Appendix 1: Assessment Panels

Mutually exclusive Assessment Fields (cover all Aalto departments)

Field 1: Arts, design and architecture
   1) Department of Architecture (ARTS)
   2) Department of Art (ARTS)
   3) Department of Design (ARTS)
   4) Department of Film, Television and Scenography (ARTS)
   5) Department of Media (ARTS)

Field 2: Business and economics
   6) Department of Accounting (BIZ)
   7) Department of Economics (BIZ)
   8) Department of Finance (BIZ)
   9) Department of Management Studies (BIZ)
  10) Department of Marketing (BIZ)
  11) Department of Industrial Engineering and Management (SCI)
  12) Department of Information and Service Economy (BIZ)

Field 3a. Chemical engineering and physics
   13) Department of Applied Physics (SCI)
   14) Department of Bioproducts and Biosystems (CHEM)
   15) Department of Chemical and Metallurgical Engineering (CHEM)
   16) Department of Chemistry and Materials Science (CHEM)
   17) Department of Neuroscience and Biomedical Engineering (SCI)

Field 3b. Engineering
   18) Department of Built Environment (ENG)
   19) Department of Civil Engineering (ENG)
   20) Department of Electrical Engineering and Automation (ELEC)
   21) Department of Electronics and Nanoengineering (ELEC)
   22) Department of Mechanical Engineering (ENG)

Field 4: ICT and mathematics
   23) Department of Communications and Networking (ELEC)
   24) Department of Computer Science (SCI)
   25) Department of Mathematics and Systems Analysis (SCI)
   26) Department of Signal Processing and Acoustics (ELEC)

Multidisciplinary Assessment Fields (cover part of Aalto, overlap Fields 1-4)

Field 5: Energy
   27) Energy Platform and other energy research

Field 6: Health and wellbeing
   28) Health Platform and other health and wellbeing research

Field 7: Living environment
   29) Living+ Platform and other living environment research

Field 8: Innovation ecosystem
   30) Design Factory and Aalto innovation ecosystem
Appendix 2: Assessment Organisation

Informal advisory group: Scientific and Artistic Advisory Board Chairs (S(A)AB)

- Professor Rachel Cooper, Chair of the SAAB of the School of Arts, Design and Architecture
- Professor Michael Myers, Chair of the SAB of the School of Business
- Professor Jens Rostrup-Nielsen, Chair of the SAB of the School of Chemical Technology
- Professor Daniel Baker, Chair of the SAB of the School of Electrical Engineering
- Professor Huseyin Sehitoglu, Chair of the SAB of the School of Engineering
- Professor Arto Nurminen, Chair of the SAB of the School of Science
- Professor Steven Beaumont, University of Glasgow, UK

Oversight and guidance: President's Management Team (PMT)

- President Tuula Teeri, Chair
- Provost Ilkka Niemelä
- Vice President Antti Ahlava, Campus Development
- Vice President Eero Eloranta, Education
- Vice President Tuija Pulkkinen, Research and Innovation
- Vice President Hannu Seristö, External Relations
- Vice President Anna Valtonen, Art and creative practices, also Dean of School of Arts, Design and Architecture
- Dean Ingmar Björkman, School of Business
- Dean Janne Laine, School of Chemical Technology
- Dean Jyri Hämäläinen, School of Electrical Engineering
- Dean Gary Marquis, School of Engineering
- Dean Jouko Lampinen, School of Science
- Chief Financial Officer Marianna Bom
- Chief Digital Officer Kati Hagros
- Director Sirkku Linna, Development
- Director, Jaakko Salavuo, Communications
- Director Tiia Tuomi, Human Resources

Steering group: Research and Innovation Steering Group (RISG)

- Vice President Tuija Pulkkinen, Chair
- Vice Dean Teemu Leinonen, School of Arts, Design and Architecture
- Vice Dean Timo Saarinen, School of Business
- Vice Dean Sirkka-Liisa Jämsä-Jouneila, School of Chemical Technology
- Vice Dean Vesa Välimäki, School of Electrical engineering
- Vice Dean Olli Varis, School of Engineering
- Vice Dean Esko Kauppinen, School of Science

Implementation: RAI office

- Project Manager Marjo Kettunen
- Head of Research Strategic Support Ella Bingham
- Senior adviser Antti Saaristo
- Senior specialist Teija Löytönen, Art and
- Specialist Anne Sunikka, ACRIS research information system
- Development Manager Pekka Saarela, School of Arts, Design and Architecture
- Development Manager Tuija Nikko, School of Business
- Development Manager Raili Pönni, School of Chemical Technology
- Development Manager Sakari Heikkilä, School of Electrical Engineering
- Development Manager Soile Koukkari, School of Engineering
- Development Manager Marja Niemi, School of Science
Appendix 3: Numerical rating scales for assessment

The numerical rating scale applied in the Assessment is the following:

6 - Outstanding International Level
5 - Excellent International Level
4 - Very Good International Level
3 - Good International Level
2 - Fair International Level
1 - Emerging International Level

For the purposes of defining quality levels, “international” is a quality benchmark. The wording “international level” shall not be equated with work on international themes. Here, “international level” indicates the Units' standing in comparison with internationally established research units in the same field of research. For example, the quality of the interaction between the Unit of Assessment and society (i.e. the societal impact) may be assessed to "Outstanding International Level" even if the interaction takes place mainly at the national or even local level, if this is the case also in the best international units in the same field of research. Detailed instructions for applying the scale to the different aspects of the Assessment are given below. The Panels are encouraged to use the full range of grades with grade 6 indicating exceptional quality, but yet realistic and attainable by the top Units of Assessment.

A3.1 Scientific and Artistic Excellence, Quality, and Multidisciplinary Collaboration

6 Outstanding International Level: In terms of quality of research / artistic work, the Unit of Assessment is comparable to the best international units in the same field. The results of the Unit demonstrate exceptional novelty and innovativeness. This requires quality that is world leading in terms of originality, significance and rigour. Work at this level is a primary point of reference in its field, i.e., contributions well known to the leading actors in that field.

5 Excellent International Level: The Unit’s research / artistic work exhibits quality that is internationally excellent in terms of originality, significance and rigour. Work at this level is apt to generate significant interest within the international research or artistic community, and is suitable for publication in leading international journals or publishers with rigorous editorial standard or equal standards for the quality of artistic output.

4 Very Good International Level: The Unit’s research / artistic work exhibits quality that is internationally recognized. Work at this level is suitable for publication in the leading international journals or publishers or equal standards for the quality of artistic output.

3 Good International Level: The Unit’s research / artistic work is of undisputed relevance for the international academic and/or artistic community. Work at this level is suitable for publication in well-known international journals or by well-known international publishers or equal standards for the quality of artistic output.

2 Fair International Level: The Unit’s research / artistic work is of possible relevance for the international academic community. Research or artistic outputs at this level is suitable for publication by international or national publishers or in well-known national journals or equal standards for the quality of artistic output.

1 Emerging International Level: The research and artistic outputs of the Unit of Assessment include new scientific or artistic knowledge. The Unit of Assessment mainly operates on a national level.
A3.2 Impact of the Research and Artistic Activities on the research / artistic community

6 Outstanding International Level: The Unit of Assessment's research / artistic outputs are published in the best forums in the field and have a notable impact on the development of the field. The Unit’s research results receive a large number of citations as compared to international standards of the field. The Unit’s artistic output is deemed outstanding by peer-review and has a notable effect on the field. The members of the Unit of Assessment are recipients of international prizes/recognitions and/or hold prestigious personal grants. The members of the Unit of Assessment hold important positions in influential academic and professional associations, are sought-after experts in tenure committees, chair appointments, research assessments, artistic jury duties or other professional tasks, and are regularly invited to speak at the most significant conferences in the field. The alumni of the Unit are employed by globally leading universities. The Unit is a sought-after member for international research and artistic networks and projects. The Unit is successful in securing external research and artistic funding e.g. from the Academy of Finland and likely hosts national and international centres of research or artistic excellence. The Unit’s impact on its field is comparable to the impact of the leading international units, taking into account the size of the Unit.

5 Excellent International Level: The Unit of Assessment is internationally acknowledged as a globally leading unit in its field. The Unit is a valued partner in international research / artistic projects and networks, and members of the Unit frequently take part in leadership and expert tasks in the field. The Unit is highly competitive in securing external research and artistic funding.

4 Very Good International Level: The Unit of Assessment is an important player in its field, and among the leading groups in its field within Europe. Members of the Unit hold potential for and take part in leadership and expert tasks in the field. The Unit participates in international research / artistic projects and networks and receives substantial external research and artistic funding.

3 Good International Level: The Unit of Assessment has a solid position in the international research and/or artistic community as a respected and well-known centre of expertise. The Unit’s impact is comparable to that of the leading groups within Scandinavia.

2 Fair International Level: The Unit of Assessment is in the process of establishing its position in the international scientific / artistic community as a recognised actor in its field. The Unit’s impact on the international community is irregular.

1 Emerging International Level: The Unit’s publications and other research / artistic impact is aimed mainly at the national research / artistic community.

A3.3 Societal Impact, Entrepreneurial and Innovative Capacity

6 Outstanding International Level: The Unit of Assessment has ubiquitous engagement with the society, and can demonstrate clear evidence of its influence in their case study examples. The research and artistic work at the Unit is highly relevant for the needs of the public and/or private sector making the Unit a valued research / artistic partner in activities also outside the academia. The members of the Unit are sought-after experts in the public and private sector, and the Unit is a key agent in the development of the society at large. The interaction between the Unit’s research and artistic activities and the society is comparable to that of the leading international units in the field. The members of the Unit are actively involved in corporate collaboration, entrepreneurial activities, and/or entrepreneurial research and education. The Unit actively and systematically supports innovative activities.
5 Excellent International Level: The Unit is exceptionally dynamic and wide-ranging in its interaction with the society, and compares with globally leading units in the field. The Unit is a highly valued partner for corporate collaboration and entrepreneurial activities, and systematically supports innovativeness. The Unit’s case studies demonstrate clear examples of significant influence on the society, either on the public, private or third sectors.

4 Very Good International Level: In international comparison within the Unit of Assessment’s field, cooperation between the Unit’s research and artistic activities and the society provide substantial impact in terms of their reach and significance.

3 Good International Level: In international comparison within the Unit of Assessment’s field, the cooperation between the Unit’s research and artistic activities and society is at the level expected of established academic units in the same field. The entrepreneurial and innovative capacity of the Unit is at an expected level compared to established units in the same field.

2 Fair International Level: Compared with international standards within the field of the Unit of Assessment, the interaction with the society plays an undersized role in the Unit’s activities. The entrepreneurial and innovative capacity of the Unit has potential to be at a higher level.

1 Emerging International Level: In comparison to other Unit of Assessments in the same field, the Unit’s research and artistic activities are at a stage where it is still seeking ways to interact with the surrounding society. The entrepreneurial and innovative capacity and level of activities are low.

A3.4 Research and Artistic Environment

6 Outstanding International Level: The research and artistic environment of the Unit of Assessment is fully comparable with the best international units in the field in terms of research and artistic management, strategy, environment and infrastructure. The Unit has globally unique capacities or combinations that make it highly attractive for globally leading experts in the field.

5 Excellent International Level: In international comparison, the Unit of Assessment offers an excellent research and artistic environment. The Unit has globally competitive capacities or combinations that make it attractive for high-class international experts in the field.

4 Very Good International Level: In international comparison, the Unit of Assessment offers a functional and suitable research and artistic environment. The Unit’s spearheads or combinations make it attractive at the European level for international experts in the field.

3 Good International Level: The Unit of Assessment is able to offer a research and artistic environment comparable to established academic institutions in the field across the world. The Unit’s spearheads or combinations make it attractive at the Scandinavian level for international experts in the field.

2 Fair International Level: The research and artistic environment at the Unit of Assessment is still developing towards the level expected from a reputable unit in the international scientific or artistic community in the Unit’s field research. The Unit’s spearheads or combinations make it attractive at the national level for experts in the field.

1 Emerging International Level: The Unit of Assessment is still developing an internationally comparable research or artistic environment.
A3.5 Future Potential

6 Outstanding International Level: The Unit of Assessment has the potential to become a flagship of the research or artistic activities and impact of Aalto University. The Panel expects that within the next 5-10 years the Unit will produce international breakthroughs in its field and attract globally leading scholars and artists and very promising doctoral students to work at the Unit. The research, technical and/or artistic excellence of the Unit of Assessment breed and is likely to continue to breed new innovations adding value to collaborating corporate partners and societal development at large. The Unit has the potential to reach in the near future the level of excellence comparable to the most notable units in the world in the Unit’s field.

5 Excellent International Level: The Unit of Assessment has the potential to be among the University’s top research, artistic, and impact activities. The Panel expects that within the next 5-10 years the Unit will produce globally recognized results in its field and attract globally leading scholars and artists and very promising doctoral students to work at the Unit. The research, technical and/or artistic excellence of the Unit of Assessment breed and is likely to continue to breed new innovations adding value to collaborating corporate partners and societal development at large. The Unit has the potential to reach in the near future the level of excellence comparable to the most notable units in the world in the Unit’s field.

4 Very Good International Level: The Unit of Assessment has the potential to establish itself as a well-known and respected actor in the international scientific or artistic community in its field. Within the next 5-10 years, the Unit can be expected to have reached results that make the Unit a much-valued partner in international research and artistic networks, and to hold a solid position in the European research and artistic arena. The innovative activities are actively pursued and are likely to bring new innovations and activities adding value to collaborating corporate partners and societal development at large.

3 Good International Level: Within the next 5-10 years, the Unit of Assessment has the potential to secure a position in the international scientific or artistic community as a solid performer and a trusted partner in international research or artistic networks. The Unit has capacities to be among the leading units in its field at the Scandinavian level. The Unit has a clear understanding and strategy how to develop new innovations and activities adding value to collaborating corporate partners and societal development at large.

2 Fair International Level: The Unit of Assessment has the potential to be a noted actor in its field and to be a nationally leading unit. The Unit can be expected to make contributions to the activities of the international scientific or artistic community.

1 Weak. The Unit of Assessment must work hard to be able to establish itself as an internationally recognised unit in its field within the near future.
Appendix 4: Structure of the Assessment Report

Each Panel shall produce a report on their findings and recommendations. The Assessment Report for each Panel shall have the following structure:

1. Summary and key recommendations for the area of the Panel
2. For each Unit of Assessment separately
   2.1. Assessment of the profile of research and artistic activities and relation to Aalto strategy and key research areas
   2.2. Assessment of excellence, quality and multidisciplinary collaboration
   2.3. Assessment of impact on the scientific/artistic community
   2.4. Assessment of the societal impact and the entrepreneurial and innovative capacity
   2.5. Assessment of the research and artistic environment
   2.6. Assessment of the future potential
   2.7. Recommendations for the future
3. Recommendations for the future for the area of the Panel
4. Concluding remarks

Appendix 5: Materials to be provided for the panels

Aalto University strategy and bibliometric analyses

- Aalto University Strategy 2016-2020
- Research output (bibliometric analyses) 2013-2017
- Artistic outputs (numerical information)

For each Unit of Assessment

- Facts concerning research/artistic active staff
- Facts concerning funding and resources for research and artistic activities
- Profile of research and artistic activities relation to Aalto Strategy and Key Research Areas
- International benchmarks (school/department level)
- Significant highlights as case studies, exceptional top performance
- Significant impact highlights as case studies, exceptional top performance
- Self-assessment including future outlook

Available on request

- Research Assessment Exercise 2009
- Teaching and Education Exercise 2011
- Aalto Schools' roadmaps or strategy implementation plans