INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

RC-Specific Evaluation of SigMe – Multisensory Signals and Meanings

Seppo Saari & Antti Moilanen (Eds.)
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University of Helsinki
Administrative Publications 80/136
Evaluations
2012
The Researcher Community (RC) was a new concept of the participating unit in the evaluation. Participation in the evaluation was voluntary and the RCs had to choose one of the five characteristic categories to participate.

Evaluation of the Researcher Community was based on the answers to the evaluation questions. In addition, a list of publications and other activities were provided by the TUHAT system. The CWTS/Leiden University conducted analyses for 80 RCs and the Helsinki University Library for 66 RCs. Panellists, 49 and two special experts in five panels evaluated all the evaluation material as a whole and discussed the feedback for RC-specific reports in the panel meetings in Helsinki. The main part of this report is consisted of the feedback which is published as such in the report.

Chapters in the report:
1. Background for the evaluation
2. Evaluation feedback for the Researcher Community
3. List of publications
4. List of activities
5. Bibliometric analyses

The level of the RCs' success can be concluded from the written feedback together with the numeric evaluation of four evaluation questions and the category fitness. More conclusions of the success can be drawn based on the University-level report.

RC-specific information:

**Main scientific field of research:** Social Sciences

**Participation category:** 4. Research of the participating community represents an innovative opening

**RC's responsible person:** Vainio, Martti

**RC-specific keywords:**
- Vision
- Hearing
- Speech
- Perception
- Psychophysics
- Language
- Audiovisual processing
- Short-term memory
- Working memory
- Phonetics
- Psycholinguistics
- Grounded cognition

**Keywords:**
- Research Evaluation
- Meta-evaluation
- Doctoral Training
- Bibliometric Analyses
- Researcher Community

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Foreword

The evaluation of research and doctoral training is being carried out in the years 2010–2012 and will end in 2012. The steering group appointed by the Rector in January 2010 set the conditions for participating in the evaluation and prepared the Terms of Reference to present the evaluation procedure and criteria. The publications and other scientific activities included in the evaluation covered the years 2005–2010.

The participating unit in the evaluation was defined as a Researcher Community (RC). To obtain a critical mass with university-level impact, the number of members was set to range from 20 to 120. The RCs were required to contain researchers in all stages of their research career, from doctoral students to principal investigators (PIs). All in all, 136 Researcher Communities participated in this voluntary evaluation, 5857 persons in total, of whom 1131 were principal investigators. PIs were allowed to participate in two communities in certain cases, and 72 of them used this opportunity and participated in two RCs.

This evaluation enabled researchers to define RCs from the “bottom up” and across disciplines. The aim of the evaluation was not to assess individual performance but a community with shared aims and researcher-training activities. The RCs were able to choose among five different categories that characterised the status and main aims of their research. The steering group considered the process of applying to participate in the evaluation to be important, which lead to the establishment of these categories. In addition, providing a service for the RCs to enable them to benchmark their research at the global level was a main goal of the evaluation.

The data for the evaluation consisted of the RCs’ answers to evaluation questions on supplied e-forms and a compilation extracted from the TUHAT – Research Information System (RIS) on 12 April 2011. The compilation covered scientific and other publications as well as certain areas of scientific activities. During the process, the RCs were asked to check the list of publications and other scientific activities and make corrections if needed. These TUHAT compilations are public and available on the evaluation project sites of each RC in the TUHAT-RIS.

In addition to the e-form and TUHAT compilation, University of Leiden (CWTS) carried out bibliometric analyses from the articles included in the Web of Science (WoS). This was done on University and RC levels. In cases where the publication forums of the RC were clearly not represented by the WoS data, the Library of the University of Helsinki conducted a separate analysis of the publications. This was done for 66 RCs representing the humanities and social sciences.

The evaluation office also carried out an enquiry targeted to the supervisors and PhD candidates about the organisation of doctoral studies at the University of Helsinki. This and other documents describing the University and the Finnish higher education system were provided to the panellists.

The panel feedback for each RC is unique and presented as an entity. The first collective evaluation reports available for the whole panel were prepared in July–August 2011. The reports were accessible to all panel members via the electronic evaluation platform in August. Scoring from 1 to 5 was used to complement written feedback in association with evaluation questions 1–4 (scientific focus and quality, doctoral training, societal impact, cooperation) and in addition to the category evaluating the fitness for participation in the evaluation. Panellists used the international level as a point of comparison in the evaluation. Scoring was not expected to go along with a preset deviation.

Each of the draft reports were discussed and dealt with by the panel in meetings in Helsinki (from 11 September to 13 September or from 18 September to 20 September 2011). In these meetings the panels also examined the deviations among the scores and finalised the draft reports together.

The current RC-specific report deals shortly with the background of the evaluation and the terms of participation. The main evaluation feedback is provided in the evaluation report, organised according to the evaluation questions. The original material provided by the RCs for the panellists has been attached to these documents.
On behalf of the evaluation steering group and office, I sincerely wish to thank you warmly for your participation in this evaluation. The effort you made in submitting the data to TUHAT-RIS is gratefully acknowledged by the University. We wish that you find this panel feedback useful in many ways. The bibliometric profiles may open a new view on your publication forums and provide a perspective for discussion on your choice of forums. We especially hope that this evaluation report will help you in setting the future goals of your research.

Johanna Björkroth
Vice-Rector
Chair of the Steering Group of the Evaluation

Steering Group of the evaluation
Steering group, nominated by the Rector of the University, was responsible for the planning of the evaluation and its implementation having altogether 22 meetings between February 2010 and March 2012.

Chair
Vice-Rector, professor Johanna Björkroth

Vice-Chair
Professor Marja Airaksinen
Chief Information Specialist, Dr Maria Forsman
Professor Arto Mustajoki
University Lecturer, Dr Kirsi Pyhältö
Director of Strategic Planning and Development, Dr Ossi Tuomi
Doctoral candidate, MSocSc Jussi Vauhkonen
Panel members

**CHAIR**  
Professor Hebe Vessuri  
Social anthropology  
Venezuelan Institute of Scientific Research, Venezuela

**VICE-CHAIR**  
Professor Christine Helm  
Psychology, neurobiology of early-life stress, depression, anxiety, functional somatic disorders  
Charité University Medicine Berlin, Germany

Professor Allen Ketcham  
Ethics and social philosophy, applied Social philosophy, ethics of business  
Texas A&M University – Kingsville, USA

Professor Erno Lehtinen  
Education, educational reform  
University of Turku, Finland

Professor Enzo Mingione  
Urban sociology  
University of Milan - Bicocca, Italy

Professor Giovanna Procacci  
Political sociology, transformation of citizenship, social rights, social exclusion, immigration policy  
University of Milan, Italy

Professor Inger Johanne Sand  
Law, public law, legal theory  
University of Oslo, Norway

Professor Timo Teräsvirta  
Time series econometrics  
Aarhus University, Denmark

Professor Göran Therborn  
General sociology  
University of Cambridge, Great Britain

Professor Liisa Uusitalo  
Consumer behaviour (economic & social theory), marketing and communication research  
Aalto University, School of Economics, Finland

The panel, independently, evaluated all the submitted material and was responsible for the feedback of the RC-specific reports. The panel members were asked to confirm whether they had any conflict of interests with the RCs. If this was the case, the panel members disqualified themselves in discussion and report writing.

Added expertise to the evaluation was contributed by two members from the Panel of Humanities.

**Experts from the Panel of Humanities**  
Professor Erhard Hinrichs  
Professor Pauline von Bonsdorff
EVALUATION OFFICE
Dr Seppo Saari, Doc., Senior Adviser in Evaluation, was responsible for the entire evaluation, its planning and implementation and acted as an Editor-in-chief of the reports.

Dr Eeva Sievi, Doc., Adviser, was responsible for the registration and evaluation material compilations for the panellists. She worked in the evaluation office from August 2010 to July 2011.

MSocSc Paula Ranne, Planning Officer, was responsible for organising the panel meetings and all the other practical issues like agreements and fees and editing a part the RC-specific reports. She worked in the evaluation office from March 2011 to January 2012.

Mr Antti Mollanen, Project Secretary, was responsible for editing the reports. He worked in the evaluation office from January 2012 to April 2012.

TUHAT OFFICE
Provision of the publication and other scientific activity data
Mrs Alja Kaltera, Project Manager of TUHAT-RIS served the project ex officio providing the evaluation project with the updated information from TUHAT-RIS. The TUHAT office assisted in mapping the publications with CWTS/University of Leiden.

MA Liisa Ekebom, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation. She also assisted the UH/Library analyses.

BA Liisa Jäppinen, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation.

HELSINKI UNIVERSITY LIBRARY
Provision of the publication analyses
Dr Maria Forsman, Chief Information Specialist in the Helsinki University Library, managed with her 10 colleagues the bibliometric analyses in humanities, social sciences and in other fields of sciences where CWTS analyses were not applicable.
Acronyms and abbreviations applied in the report

External competitive funding
AF – Academy of Finland
TEKES - Finnish Funding Agency for Technology and Innovation
EU - European Union
ERC - European Research Council
International and national foundations
FP7/6 etc. /Framework Programmes/Funding of European Commission

Evaluation marks
Outstanding  (5)
Excellent  (4)
Very Good  (3)
Good  (2)
Sufficient  (1)

Abbreviations of Bibliometric Indicators
P - Number of publications
TCS – Total number of citations
MCS - Number of citations per publication, excluding self-citations
PNC - Percentage of uncited publications
MNCS - Field-normalized number of citations per publication
MNJS - Field-normalized average journal impact
THCP10 - Field-normalized proportion highly cited publications (top 10%)
INT_COV - Internal coverage, the average amount of references covered by the WoS
WoS – Thomson Reuters Web of Science Databases

Participation category
Category 1. The research of the participating community represents the international cutting edge in its field.
Category 2. The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.
Category 3. The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.
Category 4. The research of the participating community represents an innovative opening.
Category 5. The research of the participating community has a highly significant societal impact.

Research focus areas of the University of Helsinki
Focus area 1: The basic structure, materials and natural resources of the physical world
Focus area 2: The basic structure of life
Focus area 3: The changing environment – clean water
Focus area 4: The thinking and learning human being
Focus area 5: Welfare and safety
Focus area 6: Clinical research
Focus area 7: Precise reasoning
Focus area 8: Language and culture
Focus area 9: Social justice
Focus area 10: Globalisation and social change
1 Introduction to the Evaluation

1.1 RC-specific evaluation reports

The participants in the evaluation of research and doctoral training were Researcher Communities (hereafter referred to as the RC). The RC refers to the group of researchers who registered together in the evaluation of their research and doctoral training. Preconditions in forming RCs were stated in the Guidelines for the Participating Researcher Communities. The RCs defined themselves whether their compositions should be considered well-established or new.

It is essential to emphasise that the evaluation combines both meta-evaluation\(^1\) and traditional research assessment exercise and its focus is both on the research outcomes and procedures associated with research and doctoral training. The approach to the evaluation is enhancement-led where self-evaluation constituted the main information. The answers to the evaluation questions formed together with the information of publications and other scientific activities an entity that was to be reviewed as a whole.

The present evaluation recognizes and justifies the diversity of research practices and publication traditions. Traditional Research Assessment Exercises do not necessarily value high quality research with low volumes or research distinct from mainstream research. It is challenging to expose the diversity of research to fair comparison. To understand the essence of different research practices and to do justice to their diversity was one of the main challenges of the present evaluation method. Understanding the divergent starting points of the RCs demanded sensitivity from the evaluators.

1.2 Aims and objectives in the evaluation

The aims of the evaluation are as follows:

- to improve the level of research and doctoral training at the University of Helsinki and to raise their international profile in accordance with the University’s strategic policies. The improvement of doctoral training should be compared to the University's policy.\(^2\)
- to enhance the research conducted at the University by taking into account the diversity, originality, multidisciplinary nature, success and field-specificity,
- to recognize the conditions and prerequisites under which excellent, original and high-impact research is carried out,
- to offer the academic community the opportunity to receive topical and versatile international peer feedback,
- to better recognize the University’s research potential.
- to exploit the University's TUHAT research information system to enable transparency of publishing activities and in the production of reliable, comparable data.

1.3 Evaluation method

The evaluation can be considered as an enhancement-led evaluation. Instead of ranking, the main aim is to provide useful information for the enhancement of research and doctoral training of the participating RCs. The comparison should take into account each field of science and acknowledge their special character.

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\(^1\) The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics or comparable analyses.

\(^2\) Policies on doctoral degrees and other postgraduate degrees at the University of Helsinki.
The comparison produced information about the present status and factors that have lead to success. Also challenges in the operations and outcomes were recognized.

The evaluation approach has been designed to recognize better the significance and specific nature of researcher communities and research areas in the multidisciplinary top-level university. Furthermore, one of the aims of the evaluation is to bring to light those evaluation aspects that differ from the prevalent ones. Thus the views of various fields of research can be described and research arising from various starting points understood better. The doctoral training is integrated into the evaluation as a natural component related to research. Operational processes of doctoral training are being examined in the evaluation.

Five stages of the evaluation method were:
1. Registration – Stage 1
2. Self-evaluation – Stage 2
3. TUHAT\(^3\) compilations on publications and other scientific activities\(^4\)
4. External evaluation
5. Public reporting

1.4 Implementation of the external evaluation

Five Evaluation Panels
Five evaluation panels consisted of independent, renowned and highly respected experts. The main domains of the panels are:
1. biological, agricultural and veterinary sciences
2. medicine, biomedicine and health sciences
3. natural sciences
4. humanities
5. social sciences

The University invited 10 renowned scientists to act as chairs or vice-chairs of the five panels based on the suggestions of faculties and independent institutes. Besides leading the work of the panel, an additional role of the chairs was to discuss with other panel chairs in order to adopt a broadly similar approach. The panel chairs and vice-chairs had a pre-meeting on 27 May 2011 in Amsterdam.

The panel compositions were nominated by the Rector of the University 27 April 2011. The participating RCs suggested the panel members. The total number of panel members was 50. The reason for a smaller number of panellists as compared to the previous evaluations was the character of the evaluation as a meta-evaluation. The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics and comparable analyses.

The panel meetings were held in Helsinki:
- On 11–13 September 2011: (1) biological, agricultural and veterinary sciences, (2) medicine, biomedicine and health sciences and (3) natural sciences.
- On 18–20 September 2011: (4) humanities and (5) social sciences.

\(^3\) TUHAT (acronym) of Research Information System (RIS) of the University of Helsinki
\(^4\) Supervision of thesis, prizes and awards, editorial work and peer reviews, participation in committees, boards and networks and public appearances.
1.5 Evaluation material

The main material in the evaluation was the RCs’ self-evaluations that were qualitative in character and allowed the RCs to choose what was important to mention or emphasise and what was left unmentioned.

The present evaluation is exceptional at least in the Finnish context because it is based on both the evaluation documentation (self-evaluation questions, publications and other scientific activities) and the bibliometric reports. All documents were delivered to the panellists for examination.

Traditional bibliometrics can be reasonably done mainly in medicine, biosciences and natural sciences when using the Web of Science database, for example. Bibliometrics, provided by CWTS/The Centre for Science and Technology Studies, University of Leiden, cover only the publications that include WoS identification in the TUHAT-RIS.

Traditional bibliometrics are seldom relevant in humanities and social sciences because the international comparable databases do not store every type of high quality research publications, such as books and monographs and scientific journals in other languages than English. The Helsinki University Library has done analysis to the RCs, if their publications were not well represented in the Web of Science databases (RCs should have at least 50 publications and internal coverage of publications more than 40%) – it meant 58 RCs. The bibliometric material for the evaluation panels was available in June 2011. The RC-specific bibliometric reports are attached at the end of each report.

The panels were provided with the evaluation material and all other necessary background information, such as the basic information about the University of Helsinki and the Finnish higher education system.

Evaluation material

1. Registration documents of the RCs for the background information
2. Self evaluation material – answers to the evaluation questions
3. Publications and other scientific activities based on the TUHAT RIS:
   3.1. statistics of publications
   3.2. list of publications
   3.3. statistics of other scientific activities
   3.4. list of other scientific activities
4. Bibliometrics and comparable analyses:
   4.1. Analyses of publications based on the verification of TUHAT-RIS publications with the Web of Science publications (CWTS/University of Leiden)
   4.2. Publication statistics analysed by the Helsinki University Library - mainly for humanities and social sciences
5. University level survey on doctoral training (August 2011)
6. University level analysis on publications 2005–2010 (August 2011) provided by CWTS/University of Leiden

Background material

University of Helsinki
- Basic information about the University of the Helsinki
- The structure of doctoral training at the University of Helsinki
- Previous evaluations of research at the University of Helsinki – links to the reports: 1998 and 2005

The Finnish Universities/Research Institutes
- Finnish University system
- Evaluation of the Finnish National Innovation System
- The State and Quality of Scientific Research in Finland, Publication of the Academy of Finland 9/09

The evaluation panels were provided also with other relevant material on request before the meetings in Helsinki.
1.6 Evaluation questions and material

The participating RCs answered the following evaluation questions which are presented according to the evaluation form. In addition, TUHAT RIS was used to provide the additional material as explained. For giving the feedback to the RCs, the panellists received the evaluation feedback form constructed in line with the evaluation questions:

1. Focus and quality of the RC’s research
   - Description of
     - the RC’s research focus.
     - the quality of the RC’s research (incl. key research questions and results)
     - the scientific significance of the RC’s research in the research field(s)
   - Identification of the ways to strengthen the focus and improve the quality of the RC’s research

The additional material: TUHAT compilation of the RC’s publications, analysis of the RC’s publications data (provided by University of Leiden and the Helsinki University Library)

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

2. Practises and quality of doctoral training
   - Organising of the doctoral training in the RC. Description of the RC’s principles for:
     - recruitment and selection of doctoral candidates
     - supervision of doctoral candidates
     - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
     - good practises and quality assurance in doctoral training
   - Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training, and the actions planned for their development.

The additional material: TUHAT compilation of the RC’s other scientific activities/supervision of doctoral dissertations

A written feedback from the aspects of: processes and good practices related to leadership and management
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

3. The societal impact of research and doctoral training
   - Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
   - Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training.

The additional material: TUHAT compilation of the RC’s other scientific activities.

A written feedback from the aspects of: societal impact, national and international collaboration, innovativeness
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)
4. International and national (incl. intersectoral) research collaboration and researcher mobility
   - Description of
     - the RC’s research collaborations and joint doctoral training activities
     - how the RC has promoted researcher mobility
   - Identification of the RC’s strengths and challenges related to research collaboration and
     researcher mobility, and the actions planned for their development.
   A written feedback from the aspects of: scientific quality, national and international collaboration
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

5. Operational conditions
   - Description of the operational conditions in the RC’s research environment (e.g. research
     infrastructure, balance between research and teaching duties).
   - Identification of the RC’s strengths and challenges related to operational conditions, and the
     actions planned for their development.
   A written feedback from the aspects of: processes and good practices related to leadership and
   management
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

6. Leadership and management in the researcher community
   - Description of
     - the execution and processes of leadership in the RC
     - how the management-related responsibilities and roles are distributed in the RC
     - how the leadership- and management-related processes support
       - high quality research
       - collaboration between principal investigators and other researchers in the RC
       - the RC’s research focus
       - strengthening of the RC’s know-how
   - Identification of the RC’s strengths and challenges related to leadership and management, and
     the actions planned for developing the processes

7. External competitive funding of the RC
   - The RCs were asked to provide information of such external competitive funding, where:
     - the funding decisions have been made during 1.1.2005-31.12.2010, and
     - the administrator of the funding is/has been the University of Helsinki
   - On the e-form the RCs were asked to provide:
     1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The
        Finnish Funding Agency for Technology and Innovation , EU, ERC, foundations, other national funding
        organisations, other international funding organisations), and
     2) The total sum of funding which the organisation in question had decided to allocate to the RCs

Competitive funding reported in the text is also to be considered when evaluating this point.
A written feedback from the aspects of: scientific quality, scientific significance, societal impact,
innovativeness, future significance
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

8. The RC’s strategic action plan for 2011-2013
   - RC’s description of their future perspectives in relation to research and doctoral training.
   A written feedback from the aspects of: scientific quality, scientific significance, societal impact, processes
   and good practices related to leadership and management, national and international collaboration,
   innovativeness, future significance
   - Strengths
   - Areas of development
9. Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC’s fitness to the chosen participation category
A written feedback evaluating the RC’s fitness to the chosen participation category
- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

10. Short description of how the RC members contributed the compilation of the stage 2 material
Comments on the compilation of evaluation material

11. How the UH’s focus areas are presented in the RC’s research?
Comments if applicable

12. RC-specific main recommendations based on the previous questions 1-11

13. RC-specific conclusions

1.7 Evaluation criteria

The panellists were expected to give evaluative and analytical feedback to each evaluation question according to their aspects in order to describe and justify the quality of the submitted material. In addition, the evaluation feedback was asked to be pointed out the level of the performance according to the following classifications:
- outstanding (5)
- excellent (4)
- very good (3)
- good (2)
- sufficient (1)

Evaluation according to the criteria was to be made with thorough consideration of the entire evaluation material of the RC in question. Finally, in questions 1-4 and 9, the panellists were expected to classify their written feedback into one of the provided levels (the levels included respective descriptions, ‘criteria’). Some panels used decimals in marks. The descriptive level was interpreted according to the integers and not rounding up the decimals by the editors.

Description of criteria levels

Question 1 – FOCUS AND QUALITY OF THE RC’S RESEARCH

Classification: Criteria (level of procedures and results)

Outstanding quality of procedures and results (5)
Outstandingly strong research, also from international perspective. Attracts great international interest with a wide impact, including publications in leading journals and/or monographs published by leading international publishing houses. The research has world leading qualities. The research focus, key research questions scientific significance, societal impact and innovativeness are of outstanding quality.

In cases where the research is of a national character and, in the judgement of the evaluators, should remain so, the concepts of ”international attention” or “international impact” etc. in the grading criteria above may be replaced by ”international comparability”.
Operations and procedures are of outstanding quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality.

**Excellent quality of procedures and results (4)**

Research of excellent quality. Typically published with great impact, also internationally. Without doubt, the research has a leading position in its field in Finland.

Operations and procedures are of excellent quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality.

**Very good quality of procedures and results (3)**

The research is of such very good quality that it attracts wide national and international attention.

Operations and procedures are of very good quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

**Good quality of procedures and results (2)**

Good research attracting mainly national attention but possessing international potential, extraordinarily high relevance may motivate good research.

Operations and procedures are of good quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

**Sufficient quality of procedures and results (1)**

In some cases the research is insufficient and reports do not gain wide circulation or do not have national or international attention. Research activities should be revised.

Operations and procedures are of sufficient quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

**Question 2 – DOCTORAL TRAINING**

**Question 3 – SOCIETAL IMPACT**

**Question 4 – COLLABORATION**

**Classification: Criteria (level of procedures and results)**

**Outstanding quality of procedures and results (5)**

Procedures are of outstanding quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality. The procedures and results are regularly evaluated and the feedback has an effect on the planning.

**Excellent quality of procedures and results (4)**

Procedures are of excellent quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality. The procedures and outcomes are evaluated and the feedback has an effect on the planning.

**Very good quality of procedures and results (3)**

Procedures are of very good quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and
management are documented and operations and practices are to large extent in alignment with the
documentation. The ambition to develop the community together is of very good quality.

**Good quality of procedures and results (2)**

Procedures are of good quality, shared occasionally in the community. The practices and quality of
doctoral training/societal impact/international and national collaboration/leadership and
management are documented and operations and practices are to large extent in alignment with the
documentation. The ambition to develop the community together is of good quality.

**Sufficient quality of procedures and results (1)**

Procedures are of sufficient quality, transparent and shared in the community. The practices and
quality of doctoral training/societal impact/international and national collaboration/leadership and
management are occasionally documented and operations and practices are to some extent in
alignment with the documentation. The ambition to develop the community together is of sufficient
quality.

**Question 9 – CATEGORY**

Participation category – fitness for the category chosen

The choice and justification for the chosen category below should be reflected in the RC's responses to the
evaluation questions 1–8.

1. The research of the participating community represents the international cutting edge in its field.
2. The research of the participating community is of high quality, but the community in its present
   composition has yet to achieve strong international recognition or a clear break-through.
3. The research of the participating community is distinct from mainstream research, and the special
   features of the research tradition in the field must be considered in the evaluation. The research is
   of high quality and has great significance and impact in its field. However, the generally used
   research evaluation methods do not necessarily shed sufficient light on the merits of the
   research.
4. The research of the participating community represents an innovative opening. A new opening can
   be an innovative combination of research fields, or it can be proven to have a special social,
   national or international demand or other significance. Even if the researcher community in its
   present composition has yet to obtain proof of international success, its members can produce
   convincing evidence of the high level of their previous research.
5. The research of the participating community has a highly significant societal impact. The
   participating researcher community is able to justify the high social significance of its research.
   The research may relate to national legislation, media visibility or participation in social debate,
   or other activities promoting social development and human welfare. In addition to having
   societal impact, the research must be of a high standard.

**An example of outstanding fitness for category choice (5)**

The RC's representation and argumentation for the chosen category were convincing. The RC recognized
its real capacity and apparent outcomes in a wider context to the research communities. The specific
character of the RC was well-recognized and well stated in the responses. The RC fitted optimally for the
category.

- Outstanding (5)
- Excellent (4)
- Very good (3)
- Good (2)
- Sufficient (1)

The above-mentioned definition of outstanding was only an example in order to assist the panellists in
the positioning of the classification. There was no exact definition for the category fitness.

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5 The panels discussed the category fitness and made the final conclusions of the interpretation of it.
1.8 Timetable of the evaluation

The main timetable of the evaluation:

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<table>
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<tbody>
<tr>
<td>1. Registration</td>
<td>November 2010</td>
</tr>
<tr>
<td>3. External peer review</td>
<td>May–September 2011</td>
</tr>
<tr>
<td>4. Published reports</td>
<td>March–April 2012</td>
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<tr>
<td></td>
<td>University level public report</td>
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<td></td>
<td>RC specific reports</td>
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</table>

The entire evaluation was implemented during the university’s strategy period 2010–2012. The preliminary results were available for the planning of the following strategy period in late autumn 2011. The evaluation reports will be published in March/April 2012. More detailed time schedule is published in the University report.

1.9 Evaluation feedback – consensus of the entire panel

The panellists evaluated all the RC-specific material before the meetings in Helsinki and mailed the draft reports to the evaluation office. The latest interim versions were on-line available to all the panellists on the Wiki-sites. In September 2011, in Helsinki the panels discussed the material, revised the first draft reports and decided the final numeric evaluation. After the meetings in Helsinki, the panels continued working and finalised the reports before the end of November 2011. The final RC-specific reports are the consensus of the entire panel.

The evaluation reports were written by the panels independently. During the editing process, the evaluation office requested some clarifications from the panels when necessary. The tone and style in the reports were not harmonized in the editing process. All the reports follow the original texts written by the panels as far as it was possible.

The original evaluation material of the RCs, provided for the panellists is attached at the end of the report. It is essential to notice that the exported lists of publications and other scientific activities depend how the data was stored in the TUHAT-RIS by the RCs.
2 Evaluation feedback

2.1 Focus and quality of the RC’s research

- Description of
  - the RC’s research focus
  - the quality of the RC’s research (incl. key research questions and results)
  - the scientific significance of the RC’s research in the research field(s)
- Identification of the ways to strengthen the focus and improve the quality of the RC’s research

ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness

Strengths
The main strength is the innovative research approach of the RC which is based on the novel collaboration of researchers of visual and auditory perception. There is also many sided methodological expertise involved in the RC. The aims are ambitious and the RC’s target is to publish in international top journals. Earlier publications of the members of the RC give evidence that the group has relevant expertise needed in this new research programme.

Areas of development
Because the RC is newly founded and the new research approach to study perception and comprehension related to multimodal signals is only a plan of future work, it is difficult to evaluate the scientific quality of the RC’s research. It is clear that the plan is ambitious but is it too ambitious for a relatively small group? Even though the senior members do have some articles in highly prestigious journals the publication records are not as convincing as in many other social science groups in this evaluation.

Remarks
It should be discussed whether the 2 research groups in this newly formed RC would be best co-joined with CNC (another RC in this evaluation with converging interests).

Numeric evaluation: 3 (Very good)

2.2 Practises and quality of doctoral training

- Organising of the doctoral training in the RC. Description of the RC’s principles for:
  - recruitment and selection of doctoral candidates
  - supervision of doctoral candidates
  - collaboration with faculties, departments/institutes, and potential graduate schools/docoral programmes
  - good practises and quality assurance in doctoral training
  - assuring of good career perspectives for the doctoral candidates/fresh doctorates
- Identification of the RC’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.
- Additional material: TUHAT compilation of the RC’s other scientific activities/supervision of doctoral dissertations

ASPECTS: Processes and good practices related to leadership and management

Strengths
An innovative and methodologically strong research community is a good environment for doctoral training. The senior members of the RC have been successful in supervising high-level dissertations during last years.
Areas of development
There is very little concrete content in the description of the doctoral training and most of the text is
describing what the RC will do but not very much what have been done during the evaluation period. This
is of course understandable because the RC has been created quite recently. It would be good to know
how long ago the RC was created.

Numeric evaluation: 3 (Very good)

2.3 The societal impact of research and doctoral training

- Description on how the RC interacts with and contributes to the society (collaboration with public,
  private and/or 3rd sector).
- Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training.
- Additional material: TUHAT compilation of the RC’s other scientific activities.

ASPECTS: Societal impact, national and international collaboration, innovativeness

Strengths
The topics of the RC are fist of all basic research in nature. However these issues can have very important
practical implications as well. The earlier (and still on going) work related to the speech synthesis
development has had important direct impact on practices in quite many fields in society.

Areas of development
All the examples of societal impact are based on application of the speech technology research but there
are no plans how the results of the new integrative research approach could have practical impact.

Numeric evaluation: 4 (Excellent)

2.4 International and national (incl. intersectoral) research collaboration and researcher mobility

- Description of
  - the RC’s research collaborations and joint doctoral training activities
  - how the RC has promoted researcher mobility
- Identification of the RC’s strengths and challenges related to research collaboration and researcher
  mobility, and the actions planned for their development.

ASPECTS: Scientific quality, national and international collaboration

Strengths
Even though the description of collaboration is not very informative and only list numbers of collaborators
of some names of centers of excellence, it is possible to believe that the RC is well networked nationally
and internationally. The RC has also plans for new internationally funded collaborative research projects.

Areas of development
In spite of the large international collaboration the RC expressed in the self evaluation report there is
surprisingly little international doctoral students or researchers in the group. According to the publication
list the international collaboration has so far not resulted in many internationally coauthored publications.

Numeric evaluation: 3 (Very good)
2.5 Operational conditions

- Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC’s strengths and challenges related to operational conditions, and the actions planned for their development.

**ASPECTS: Processes and good practices related to leadership and management**

The new Institute of Behavioral Sciences seems to offer a very good environment for this RC. Researchers representing different disciplines belong now to the same administrative unit. They also have good technical infrastructure for the kind of research they are doing.

2.6 Leadership and management in the researcher community

- Description of
  - the execution and processes of leadership in the RC
  - how the management-related responsibilities and roles are distributed in the RC
  - how the leadership- and management-related processes support
    - high quality research
    - collaboration between principal investigators and other researchers in the RC
    - the RC’s research focus
    - strengthening of the RC’s know-how
- Identification of the RC’s strengths and challenges related to leadership and management, and the actions planned for developing the processes

**ASPECTS: Processes and good practices related to leadership and management**

The description of leadership and management is mainly dealing with the future plans. The principles described in the self evaluation report seem promising and will be helpful for strengthening the RC in future.

2.7 External competitive funding of the RC

- The RCs were asked to provide information of such external competitive funding, where:
  - the funding decisions have been made during 1.1.2005–31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- On the e-form the RCs were asked to provide:
  1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organizations), and
  2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.

**Competitive funding reported in the text is also to be considered when evaluating this point.**

**ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness and future significance**

The RC has managed to get moderate number of external funding from many different sources including industry and Finnish Funding Agency for Technology and Innovations, which is not so typical for research groups in social sciences. It is easy to believe that this kind of research community has good changes to get application oriented research funding in future. A bigger challenge is to be successful in competition about basic research funding.
2.8 The RC’s strategic action plan for 2011–2013

- RC’s description of their future perspectives in relation to research and doctoral training.
  ASPECTS: Scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

In fact almost the whole self-evaluation report can be seen as a strategic action plan because the RC is recently created. The RC seems to have good general ideas what kind of research unit they want to develop. In order to reach the general aims the RC should pay more attention to the development of methodological expertise, improving the international visibility of publications and organization of young researcher training.

2.9 Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC’s fitness to the chosen participation category.
Category 4. The research of the participating community represents an innovative opening.

The RC has selected the participation category 4 which seem to fit well in their situation as a new multidisciplinary unit. The new collaboration and research programme creates possibilities for creative openings but on the same time there is a risk that they do not have the capacity needed to fulfill successfully the ambitious programme.
  Numeric evaluation: 5 (Outstanding)

2.10 Short description of how the RC members contributed the compilation of the stage 2 material

The report was compiled by the senior members of the RC.

2.11 How the UH’s focus areas are presented in the RC’s research

Focus area 4: The thinking and learning human being

The research programme of the RC fits very well in the focus area “thinking and learning human being”

2.12 RC-specific conclusions

The RC has a very promising plan but the main concern among the evaluation panel was if they have enough people and expertise to implement the plan. One opportunity is to merge with the cognitive neuroscience RC or at least develop some kind of strategic alliance. It was also unclear if there are other groups in the world studying the same questions. A close collaboration with some international groups could also build the capacity the RC needs in carrying out its ambitious research programme.
3 Appendices

A. Original evaluation material
   a. Registration material – Stage 1
   b. Answers to evaluation questions – Stage 2
   c. List of publications
   d. List of other scientific activities

B. Bibliometric analyses
   a. Analysis provided by CWTS/University of Leiden
   b. Analysis provided by Helsinki University Library (66 RCs)
NAME OF THE RESEARCHER COMMUNITY:
Multisensory Signals and Meanings (SigMe)

LEADER OF THE RESEARCHER COMMUNITY:
Academy Research Fellow Martti Vainio, Institute of Behavioural Sciences

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW:

- Material submitted by the RC at stages 1 and 2 of the evaluation
  - STAGE 1 material: RC’s registration form (incl. list of RC participants in an excel table)
  - STAGE 2 material: RC’s answers to evaluation questions
- TUHAT compilations of the RC members’ other scientific activities 1.1.2005-31.12.2010

NB! Since Web of Science (WoS)-based bibliometrics does not provide representative results for most RCs representing humanities, social sciences and computer sciences, the publications of these RCs will be analyzed by the UH Library (results available by the end of June, 2011)
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

1 RESPONSIBLE PERSON

Name: Vainio, Martti
E-mail:
Phone: +358919123607
Affiliation: Institute of Behavioural Sciences
Street address: Vironkatu 1

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): Multisensory Signals and Meanings
Acronym for the participating RC (max. 10 characters): SigMe

Description of the operational basis in 2005-2010 (eg. research collaboration, joint doctoral training activities) on which the RC was formed (MAX. 2200 characters with spaces): All human cultural transmission and exchange rests on social behaviour and communication. The key to understanding the bases of behaviour and communication is to unveil the interplay between human sensory systems in interactive contexts: the transformation of the physical world of e.g., visual and auditory signaling, into the perceptual world of meaningful mental representations, and their use in goal-directed behaviour and social communication. The Multisensory Signals and Meanings Group investigates the extent to which human comprehension of the visual environment, speech and language is grounded in multisensory interaction and action.

The research community represents an innovative combination of research fields that have come to close contact via the process that has resulted in the recent forming of the Institute of Behavioural Sciences at the University of Helsinki. The community has studied topics in human vision, hearing and speech using methods of psychophysics, psycholinguistics, brain imaging, computational modeling and speech synthesis. The underlying, common denominator is the unraveling of the emergence of meaning in a multisensory environment.

The community has been formed from two previous groups, Visual Science and Phonetics and Speech Synthesis Research Groups. The research topics in vision include neural and perceptual interaction at the early and intermediate processing levels of the visual system; how features and shapes are remembered; and the planning and control of goal-directed hand movements based on visual information. The research topics in hearing, speech and language include the interaction of prosodic and grammatical features, interaction of linguistic and visual information processing and modeling prosody in speech synthesis.
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RC-SPECIFIC STAGE 1 MATERIAL (registration form)

The forming of the new research community allows us to reach the critical mass necessary for both innovative scientific synergy and successful doctoral and postdoctoral training. A further important benefit is an increased potential for attracting external funding and high-level international collaboration.

3 SCIENTIFIC FIELDS OF THE RC

Main scientific field of the RC’s research: social sciences
RC’s scientific subfield 1: Behavioral Sciences
RC’s scientific subfield 2: Psychology
RC’s scientific subfield 3: Neurosciences
RC’s scientific subfield 4: --Select--
Other, if not in the list: Phonetics, Psycholinguistics

4 RC’S PARTICIPATION CATEGORY

Participation category: 4. Research of the participating community represents an innovative opening

Justification for the selected participation category (MAX. 2200 characters with spaces): The community is formed by merging two previously separate research groups: Visual Science and Phonetics and Speech Synthesis Research Groups, which have newly discovered joint interests under the topic of how humans extract meaning from multisensory signals. The aim of the community is to advance the understanding of human communication and interaction mediated via vision and audition. For any living being, the only way to be in contact with the external world is through the different sensory modalities, which enable them to receive signals from the environment, and to react to them appropriately due to the elaborate processing involving interactions between perceptual, cognitive and motor systems. In humans, extraction of meaningful representations is at a high level, including the unique capability to use language and speech for communication. The community has strong expertise in visual and speech perception, and common methodology including psychophysics, psycholinguistics and modeling. We also share a genuine will for collaboration within this novel approach, as well as up-to-date research facilities (e.g. custom-designed vision and speech laboratories, audio and video editing systems, articulograph). Even though there are no previous joint endeavours, the participating research groups have independently shown achievements in both internationally high-level research and doctoral training. One factor contributing to the joining of interests is that some of the community’s new senior members have conducted research in the area of multisensory perception (not under assessment here, since done elsewhere). The new cross-disciplinary community undertakes research where the tradition has been to study audition and vision separately from each other, and frequently also separately from factors that are often considered more cognitive, such as language and memory. The community’s research focuses on the multisensory basis of human visual and speech comprehension and will help to bridge this gap between related research traditions.

5 DESCRIPTION OF THE RC’S RESEARCH AND DOCTORAL TRAINING

Public description of the RC’s research and doctoral training (MAX. 2200 characters with spaces): The aim of the new Multisensory Signals and Meanings research community is to advance the understanding of
human communication and interaction mediated via vision and audition. We study these topics in vision, hearing and speech with a multidisciplinary approach, using methods of psychophysics, psycholinguistics, brain imaging and computational modeling. During the current evaluation period 2005-2010, research topics in vision include neural and perceptual interactions at early and intermediate processing levels of the visual system, planning and control of goal-directed hand movements based on visual information, and memory of visual features and shapes. Research topics in hearing, speech and language include the role of prosody, sentence structure and reference in spoken language processing, interaction of linguistic and visual information in discourse comprehension, mathematical modeling of hearing and modeling of speech production through high-quality naturalistic speech synthesis. In the future, the emphasis will shift to studying the interaction between sensory and motor systems in the extraction of meaning, thus merging these previously separate research fields.

The doctoral students participate in the activities of the research community, e.g., seminars and dissemination of the research, as full members of the group. The multidisciplinary nature of the research entails that the students acquire knowledge and skills in various traditionally distinct areas, starting from signal processing and programming to understanding mental representations. Research training has a further emphasis on technical skills, so that having completed their studies, students are competent to independently carry out all phases of research from setting up the laboratory, designing and conducting experiments, to scientific publishing.

The research community combines the expertise of vision, hearing and language researchers to study information processing at different levels of human sensory and cognitive systems through experimentation and modeling in order to unravel how meaning emerges from the interplay between visual, auditory and motor signals in a multisensory environment.

**Significance of the RC's research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces):** The Multisensory Signals and Meanings research community represents an innovative combination of research fields and methods to study human information processing in a multisensory environment. It aims to advance the understanding of how vision and audition mediate communication and interaction. The community is formed by merging two previously separate research groups. With the resulting synergy, it provides an efficient and productive environment for scientific research and doctoral training. It facilitates scientific breakthroughs, and increases the possibility for attracting external funding and international collaboration. From a practical point of view, the new community enables more effective use of research laboratories and creates opportunities to offer multidisciplinary teaching, especially for the graduate students.

The new cross-disciplinary community undertakes research in topics where the tradition has been to study vision, audition and speech separately from each other. For the University, the contribution of the research community is unique: similar research on the topic is not conducted elsewhere in Finland. The community’s quality standards of doctoral training are high and have a strong emphasis to train students within multiple disciplines to gain thorough understanding in multisensory signal and meanings. Consequently, the doctoral candidates trained by the group have an advantageous combination of knowledge and methodological skills. At the same time SigMe complements the research conducted in other groups within the University.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

(e.g., cognitive neuroscience) by offering a novel viewpoint on multisensory processing. The strength of the community lies in highly proficient researches with an internationally significant background on methodological, technical, and theoretical aspects of vision, hearing and language processing. State-of-the-art research facilities, e.g., custom-designed vision and speech laboratories, an articulograph and audio/video editing systems, provide an excellent research environment. The community’s research focus has potential to attract high-level doctoral students and national and international collaboration.

Keywords: Vision, Hearing, Speech, Perception, Psychophysics, Language, Audiovisual processing, Short-term memory, Working memory, Phonetics, Psycholinguistics, Grounded cognition

6 QUALITY OF RC’S RESEARCH AND DOCTORAL TRAINING

Justified estimate of the quality of the RC’s research and doctoral training at national and international level during 2005-2010 (MAX. 2200 characters with spaces): During the period under evaluation, the research community has published more than 30 articles in major international peer-reviewed journals in the fields of vision, hearing, speech and language, two ground-breaking new textbooks in Finnish, as well as numerous book chapters and peer-reviewed conference papers. Considering the low number of researchers, the available resources, and the fact that four of the senior researchers have been employed at the University of Helsinki for less than half of the period under evaluation, the output of the community is very good.

The scope of the published research reports is fairly broad comprising multiple research topics with several different methods. The topics range from the neural interactions at the early processing levels of the visual system to the controlling of goal-directed hand movements, and from modeling low-level speech production to discourse comprehension. These topics have been investigated with behavioral methods, computational modeling and speech synthesis as well as brain imaging. The researchers in the community have also made significant contributions to the development of the new behavioral method in vision research (classification images, reverse correlation applied to visual psychophysics).

The quality of the doctoral training during the period under evaluation has also been very good. The two PhD theses on vision were graded to the highest mark by internationally highly respected researchers, and were also awarded the Faculty award. Due to good progress of the current graduate students, 3-5 PhD theses will be completed within the next 1-2 years.

Comments on how the RC’s scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces): Since the development of the research community is still in progress, the scientific productivity and doctoral training should be assessed based on the previous accomplishments in the fields of vision, hearing and speech. However, it should also be noted that some of the researchers in the community have already conducted research on audiovisual perception and have several published articles on this topic relevant to the new community (not included in the evaluation since the persons were not affiliated with the University of Helsinki at that time). In addition to the quantity of the doctoral training, the quality of the PhD theses should be acknowledged.
The thus far relatively narrow research fields and the small number of researchers (both in the field in general and in the community) should also be taken into account when evaluating the traditional measures of scientific productivity (number of publications, citations etc.). One method of assessing the researcher community could be the evaluation of the progress of scientific productivity and doctoral training during the period under evaluation. The potential of the new community to produce scientific breakthroughs in understanding the emergence of meaning in the multisensory environment should also be assessed for the future research, based on previous accomplishments and the new research plans.

The community publishes research articles in major international journals in the fields of perception, visual neuroscience, speech, language, cognition, and multisensory processing. There is special emphasis on the high quality of the published articles, on relevant and topical research questions, as well as on the state-of-the-art methods and technical aspects. A significant part of the research also focuses on developing and applying new methods, especially to the multidisciplinary research. The research community focuses mainly on international research with a further national interest in the form of popular science, textbooks and textbook chapters.
**LIST OF RC MEMBERS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Last name</th>
<th>First name</th>
<th>PI-status (TUHAT, 29.11.2010)</th>
<th>Title of research and teaching personnel</th>
<th>Affiliation</th>
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<tr>
<td>1</td>
<td>Saarinen</td>
<td>Jussi</td>
<td>x</td>
<td>Professor</td>
<td>Institute of Behavioural Sciences</td>
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<tr>
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<td>Aaltosen</td>
<td>Olli</td>
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</tr>
<tr>
<td>3</td>
<td>Vainio</td>
<td>Martti</td>
<td>x</td>
<td>Docent, Senior Researcher (Academy Research Fellow)</td>
<td>Institute of Behavioural Sciences</td>
</tr>
<tr>
<td>4</td>
<td>Järviövi</td>
<td>Juhani</td>
<td></td>
<td>Docent, University Researcher</td>
<td>Institute of Behavioural Sciences &amp; Max Planck Institute for Psycholinguistics, Nijmegen</td>
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<td>Pentti</td>
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<td>Kaisa</td>
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<td>Lari</td>
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<td>Institute of Behavioural Sciences &amp; Helsinki University Central Hospital, Department of Pediatric and Adolescent Medicine</td>
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<td>18</td>
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INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

**BACKGROUND INFORMATION**

Name of the RC’s responsible person: Vainio, Martti

E-mail of the RC’s responsible person:

Name and acronym of the participating RC: Multisensory Signals and Meanings Group, SigMe

The RC’s research represents the following key focus area of UH: 4. Ajatteleva ja oppiva ihminen - The thinking and learning human being

Comments for selecting/not selecting the key focus area:

**FOCUS AND QUALITY OF RC’S RESEARCH (MAX. 8800 CHARACTERS WITH SPACES)**

- Description of the RC’s research focus, the quality of the RC’s research (incl. key research questions and results) and the scientific significance of the RC’s research for the research field(s).

The Multisensory Signals and Meanings Group (SigMe) investigates the extent to which human comprehension of the environment, speech and language is grounded on multisensory interaction and action. In the past, the community members have approached these and related phenomena from separate points of view, as members of separate research groups. These groups have recently discovered common interests in these areas and identified human multisensory processing as the interface that provides a mutual focus with new and exciting avenues of scientific and intellectual progress. The research community combines the expertise of vision, hearing, and language researchers to study information processing at different levels of human sensory and cognitive systems through experimentation and modelling, in order to unravel how meaning emerges from the interplay between visual, auditory and motor signals in a multisensory environment. The agenda of the community is expressly cross-disciplinary: it combines the know-how in traditionally distinct areas of perceptual psychology, speech sciences, linguistics and computational modelling that the community shares via the expertise of its members. Starting from visual and auditory signal processing and progressing to meaning extraction and modelling, the group intends to take on the challenge of unravelling some of the central issues of human information processing as it takes place in a wider multisensory context. This will include understanding the principles, mechanisms, and neurological and mental representations underlying human signal processing and meaning extraction as well as the interaction of the different sensory modalities with each other, with the motor system, and with the surrounding environment.

The community was formed technically by merging previously existing research groups centred on visual sciences, speech sciences, phonetics and speech synthesis and modelling, which have joint interests under the topic of how humans extract meaning from multisensory signals. The broad aim of the community is to advance the understanding of human communication and interaction mediated via vision and audition. The community has strong expertise in visual and speech perception, and common methodology including psychophysics, psycholinguistics and modelling. We also share a genuine will for collaboration within this novel approach, as well as the means to carry it out in terms of up-to-date research facilities, including custom-designed vision and speech laboratories, audio and video editing systems, and a state-of-the-art articulograph laboratory.

Since the community was formed only recently, there are no joint endeavours that would show published results. However, the participating research groups have independently shown
achievements in both internationally high-level research and doctoral training. Furthermore, the community has active ongoing research and is planning joint activities.

The community publishes research articles in major international top journals in the fields of perception, visual neuroscience, speech, language, cognition, and multisensory processing. There is special emphasis on the high quality of the published articles, on relevant and topical research questions, as well as on the state-of-the-art methods and technical aspects. A significant part of the research also focuses on developing and applying new methods, especially to multidisciplinary research. The research community focuses mainly on international research with a further national interest in the form of popular science, textbooks and textbook chapters.

A concrete example of the new research line within the community is the investigation of the relationship between perception, motor action and language. We are planning a series of experiments studying the connections and potential common origins between manual gestures (grasping) and speech production (articulation). It has been suggested that speech and language have evolved from manual gestures. We shall investigate the potential connections between the manual gestures of grasping and the oral gestures of speech production. Grasping large objects requires a power grip, and grasping small objects requires a precision grip. In our first experiment, the idea is that open vowels such as the Finnish [ae] are related to the power grasp via the large aperture in both. Conversely, we hypothesize that closed vowels such as the Finnish [i] are related to the precision grasp via the small aperture in both. In the experiments, participants simultaneously perform precision or power grasps and utter vowels [ae] or [i]. We predict that grasping large as opposed to small objects when producing speech increases sound volume and the first formant (F1) frequency of uttered vowels. Next, we shall extend the investigation to speech perception by studying whether motor acts (articulation or grasping) influence the categorization of heard speech sounds. For example, we expect grasping to shift the category boundary away from the grasp-congruent heard vowel. We also expect the sensory-motor interactions to be stronger for multisensory speech, i.e. when the talker’s face is seen together with the voice, since audiovisual speech is known to activate the speech motor system more strongly than heard speech alone.

The new cross-disciplinary community undertakes research where the tradition has been to study audition and vision separately from each other, and frequently also separately from factors that are often considered more cognitive, such as language and memory. The community’s research focuses on the multisensory basis of human visual and speech comprehension and will help to bridge this gap between related research traditions.

- **Ways to strengthen the focus and improve the quality of the RC’s research.**

  The forming of the community allows us to reach the critical mass necessary for innovative scientific synergy and successful doctoral and postdoctoral training. A further important benefit is an increased potential for attracting external funding and high-level international collaboration.

  One of the important characteristics of the community is that it spans the scientific continuum from purely basic research to applications in a very natural manner. Many of the ideas and results produced are directly applicable to modern information and medical technologies. As an example, previous long-standing work on modelling speech production has led to new insights into the speech production mechanisms as well as into industrial and scientific co-operation.

  The simplest way to strengthen the focus of the group is to plan and execute new projects - such as the one described above - and find resources for them. To that end, the community’s leadership is being organized to improve both the dissemination of information both within and outside the group and to co-ordinate the search for funding.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

2 PRACTISES AND QUALITY OF DOCTORAL TRAINING (MAX. 8800 CHARACTERS WITH SPACES)

- How is doctoral training organised in the RC? Description of the RC’s principles for recruitment and selection of doctoral candidates, supervision of doctoral candidates, collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes, good practises and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

Considering the current size of the group, the available resources, and the fact that four of the senior researchers have been employed at the University of Helsinki for less than half of the period under evaluation, the output and the quality of the community’s doctoral training is very good. The two PhD theses in visual sciences were awarded the highest mark by internationally highly renowned external reviewers and received the Faculty award. In addition to the University of Helsinki, members of the community have supervised and are supervising doctoral theses in other Finnish and international universities and research institutes (for example, the University of Stockholm, the University of Frankfurt and the Max Planck Institute for Psycholinguistics in Nijmegen, the Netherlands). Due to the good progress of the current graduate students, 3-5 PhD theses will be completed within the next 1-3 years. In addition, the group aims to attract funding for another 5 PhD positions that will commence by the year 2013.

With the resulting synergy, SigMe provides an efficient and productive environment for undergraduate and doctoral training. By facilitating scientific innovation and the possibility for attracting external funding and international collaboration, the community forms an attractive environment for motivated top-level students. From a practical point of view, the new community enables a more effective use of the existing up-to-date research and teaching facilities and creates opportunities to offer multidisciplinary instruction, especially for graduate students.

For the University of Helsinki, the contribution of the research community is unique: similar research on the topic is not conducted elsewhere in Finland. The community’s quality standards of doctoral training are high, and have a strong emphasis to train students within multiple disciplines to gain a thorough understanding of multisensory information processing. Consequently, the community’s aim is that the postgraduate students trained by the group will have an advantageous combination of knowledge and methodological skills that will be clearly beneficial for them on the job market as well as beneficial for the group as a whole in attracting new PhD candidates. At the same time, SigMe complements the research conducted in other groups within the University (e.g., cognitive neuroscience) by offering a novel viewpoint on multisensory processing. The strength of the community lies in highly proficient researchers with an internationally significant background on methodological, technical, and theoretical aspects of vision, hearing and language processing. The state-of-the-art research facilities, e.g., custom-designed vision and speech laboratories, an articulograph and audio/video editing systems, provide an excellent research environment.

As a standard practice in the visual science group and psychology in general, the recruitment of doctoral candidates has begun very early, already during the undergraduate studies. Undergraduate courses in psychophysical research followed by the Master’s thesis have formed a continuum during which the interest and potential of students have been continuously assessed and fostered. This process has proved valuable and the community will adopt and continue this practice as the core method for monitoring and recruitment of future doctoral students. Additionally, the community will seek for suitable PhD candidates by advertising the positions nationally and internationally. This will also enhance national and international networking and create openings for future collaborations.

Doctoral training will be coordinated by the senior researchers in the community. The community is in the process of creating a coordinative structure that will best serve the purposes of
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doctoral, as well as post-doctoral, training and research. The managerial duties of the community will be shared among three people: the community leader and two coordinators, one of which will be responsible for the quality and practices of doctoral training. The doctoral students will be supervised by (at least) one of the senior members of the community. In addition, each candidate will be co-supervised by another senior researcher. The co-supervisor will be selected according to her suitability given the topic of the thesis as well as according to the student’s own preference. As an integral part of the doctoral studies, each student will be encouraged to spend a sizable period of their studies at an International collaborating university or research institute relevant to their thesis project.

The community will collaborate with the relevant graduate schools (e.g., Langnet, Psykonet). Naturally, the community will coordinate both the research and training with the department, as well as according to the standardized practices in the faculty and the university.

The community will actively work towards developing the industrial collaboration in both clinical and technological fields. The cross-disciplinary orientation of the community and researcher training will ensure that the students acquire knowledge and skills in various areas of psychology, visual and speech sciences, linguistics and computational modelling, which are highly advantageous in seeking employment both in the field of research, be it conducted in or outside educational institutes, and applied sciences and industry. Therefore, our research training has a further emphasis on technical and computational skills and the potential applicability of the research outside the core scientific context. For example, the current expertise in speech technology will be expanded to new fields in e.g., computer game and interface development. The community will seek collaboration at the highest level in terms of both technological and scientific interest and relevance, making it worthwhile for both the academic and industrial partners as well as medical establishments. The community will aim at planning collaborative projects directly with industrial partners as well as taking part in larger collaborative projects at both national and international level, and thus the aim is to tie doctoral training and doctoral research in with applications and applied research from the start.

- **RC’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.**

The strengths in SigMe’s doctoral training include strong experience in supervision combined with multidisciplinarity and national and international networks. The community has succeeded in recruiting very talented doctoral students. The completed PhD theses have been of a highest quality because of the good level of students, combined with the expert supervision. In the future, the students will benefit further from the combined expertise of supervisors with various areas of expertise, enabling innovative cross-disciplinary research approaches. In addition to SigMe’s supervisors, the students have opportunities to join the existing national and international collaborations. The main challenge facing doctoral training within the community is the low level of funding. This is likely to be amended as the community starts to apply for funding for the new research topic with the larger research group. The SigMe will also be attractive to new talented doctoral students, who are interested in novel, challenging cross-disciplinary research.

<table>
<thead>
<tr>
<th>3 Societal Impact of Research and Doctoral Training (Max. 4400 Characters with Spaces)</th>
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</table>

- **Description of how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).**

The most important impact of the community’s contribution to the society has been through its work on speech synthesis. Transforming text or symbols to speech is a good example of the kind of application that the community’s research can contribute to and produce. Speech synthesis is widely used by individuals both with and without disabilities. Currently, individuals with visual impairment are the main
users of the technology. Another important user group involves people who need augmented and alternative communication methods due to various reasons ranging from birth defects to trauma. The synthesis group within the community has co-operated with both industrial and public partners nationally and internationally since the 1990’s. Projects have ranged from developing systems that transform BLISS symbols into natural language and speech and developing new, physiologically based, signal generation for high-quality speech synthesis. Funding for the projects has been received both from industry (e.g., Nokia) and 3rd sector funding agencies (NUH; Nordic Development Centre for Rehabilitation Technology). The community, therefore, has important experience in working with non-academic partners.

As a general plan, the SigMe will actively increase its interaction with the public, private and 3rd sectors. This will be done in close co-operation with both the faculty and the innovation services provided by the University. The community has identified educational technology as one of the important future challenges and opportunities to have a meaningful societal impact. We already have plans to exploit speech technology in a language instruction setting together with the automatic speech recognition group at Aalto University. Computer aided learning fits well with the activities at both the department and the faculty. The situation in this respect is very promising, as the bulk of the work will be done within the faculty, which is actively fostering studies in all fields of human development and learning. Organizationally, this is reflected in the recent establishment of the CICERO learning network to support interdisciplinary research on learning. CICERO will provide a platform for research teams and units. The community aims to become an active member of this network (see http://www.cicero.fi/).

- **Ways to strengthen the societal impact of the RC’s research and doctoral training.**

The community will work actively towards developing further industrial collaboration in both clinical and technological fields. The collaboration in speech technology will be expanded to new fields in e.g., computer game and interface development. The research focus of the group will guarantee that the collaboration will be on the highest level in terms of both technological and scientific interest and relevance making the collaboration worthwhile for both the academic and industrial partners. Similarly new collaboration will be developed with clinical and medical establishments. The collaborative projects will be planned directly with industrial partners, as well as taking part in larger collaborative projects on both national and international level. The community will actively participate in the strategic initiatives, such as SHOKs (http://bit.ly/gKIQgp) on both IT and medical technologies. Computer-aided language teaching is a new, but especially relevant, field that the group has identified and will seek to develop in collaboration with research groups in Aalto University.

- **Description of the RC’s research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.**

The community has an extensive network of collaborators both nationally and internationally. Of more than 50 high-level collaborators (professor level) about half are international. Much of the international collaboration is with the best universities and research institutes, e.g., Cambridge and Oxford Universities, University College London, and the Max Planck Institute. Several senior members of the community have spent considerable time abroad in distinct universities and research institutes bringing with them extremely valuable collaborative networks as well as know-how in terms of planning, conducting and organizing research and doctoral training. Nationally the community is connected to all relevant units and there are several collaborative projects with the various centres of excellence (e.g.,

The RC members are currently supervising more than ten doctoral students at the University of Helsinki. Additionally, a number of the RC members collaborate in supervising several PhD projects at other national and international universities, such as the University of Turku, the University of Frankfurt and the University of Stockholm.

- RC’s strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

The community has working connections and collaborations with many international institutions, enabling direct exchange and mobility with high-level universities and research institutes for both the current group members and for its doctoral and postdoctoral students. In addition to encouraging mobility for the student members, the senior members have plans to enhance collaboration by visiting and carrying out research at the collaborating institutions. To this end, the community will take on the challenge to initiate and develop internationally funded research projects among the existing networks and will further seek to expand the current collaborations to novel areas and new partners. With respect to all speech related research the community will exploit its status as the main group conducting research in phonetics in Finland as well as its status as the co-ordinator and maintainer of the Finnish Speech and Communication Research Collegium, which is an unofficial organization of around one hundred researchers in all speech related fields in Finland (http://bit.ly/gzKrRe).

5 OPERATIONAL CONDITIONS (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).

The community is located in a department that has a very good basic infrastructure for experimental psychological research. In addition, there is a state-of-the-art phonetics laboratory with high-quality voice and video recording equipment and a sound-proofed recording studio. For articulatory research the laboratory is equipped with a Carstens EMA 500 articulograph. Through the close co-operation with the Signal Processing and Acoustics Department at Aalto University, the group has access to anechoic chambers and standardized listening rooms. The visual psychophysics laboratories contain three high-precision systems for generating visual and auditory stimuli, running experiments, and for sophisticated data analysis. The displays have 12-15 bit greyscale resolution that enables measurements for visual stimuli at contrast threshold level. In the main system for visual psychophysics, the visual display is driven by a state-of-the-art ViSaGe stimulus generator. The system for visuo-motor experiments is equipped with custom-made software and a precision/power grip response device as well as a touch-screen display. In the system for audio-visual experiments, Matlab with Psychophysics and PsychPortAudio Toolboxes are used to present audio-visual stimulus with high precision (<1 ms synchrony error). The system contains CRT-display (Sony Multiscan CPD G420), multichannel audio card (Creative SB X-Fi), and active speakers (Genelec 6010A speakers). The displays of the three systems are regularly calibrated using colorimeter (Cambridge Research Systems ColorCal), luminance meter (Minolta LS-110) or spectrometer (Avantes AVS-USB2000). The systems have been updated recently (during the past four years) and are expected to operate for several years for now on. For computationally intensive tasks the community uses the supercomputers provided by CSC (CSC — IT Center for Science Ltd administered by the Ministry of Education, Science and Culture).

In terms of operational conditions related to teaching, the RC is in an ambivalent state. Currently some of the senior researchers have relatively heavy teaching loads. On the other hand, there
are a number of senior members with minimal amount of administrative and teaching duties. I.e., there are problems in terms of balance between research and other duties, but they are mainly on the level of individuals.

- **RC’s strengths and challenges related to operational conditions, and the actions planned for their development.**

The community enjoys a relatively good local research infrastructure with additional links to relevant local groups covering most of the long term needs for conducting research. The community has a fair number of senior researchers with a moderate (undergraduate level) teaching load. However, there is a lack of field equipment (e.g., eye-tracking and recording equipment). Moreover, the teaching load is not divided evenly between the RC members. Both the infrastructural and teaching needs will be some of the main concerns in developing the leadership and management structure of the community (see below).

### 6 LEADERSHIP AND MANAGEMENT IN THE RESEARCHER COMMUNITY (MAX. 4400 CHARACTERS WITH SPACES)

- **Description of the execution and processes of leadership in the RC, how the management-related responsibilities and roles are distributed in the RC and how the leadership-related processes support high quality research, collaboration between principal investigators and other researchers in the RC, the RC’s research focus and strengthening of the RC’s know-how.**

The community is aiming to expand in the near future, and has thus decided that it requires structured organizational management from the start. Especially, there are coordinative needs that benefit from a managerial structure in order to be carried out effectively.

The community is currently in the process of organizing its leadership with regard to both research and doctoral training. The community will be formally directed by a senior member with co-ordinators for both research and training. However, the final responsibility for any actions in the community will rest with the principal investigators and the leadership will in most parts serve only to enable and coordinate. However, the leader and co-ordinators will have explicit tasks and responsibilities. One of the main tasks of the leadership is to ensure that the community will enjoy its academic freedom to the full. That is, the leadership will in no way judge individual scientific decisions, opinions etc. and will actively attend to any attempts to do so from outside the community. Moreover, the leadership will actively protect the researchers from intervening administrative duties that it regards unnecessary.

The SigMe leader takes overall responsibility for the group, supported by the research and training coordinators. The main duties of the leader include:

- ensuring effective operation of the community and ensuring that all relevant efforts are focused towards achieving its objectives;
- coordinating community level work in terms of balancing the group’s work between research and teaching duties;
- communicating with the department, faculty and university in order to ensure necessary resources;
- effective management of knowledge and intellectual property;
- to be the point of contact to the department, faculty and the university;
- overseeing the planning, writing, and submission of grant proposals and ensuring their quality;
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• to be the first point of contact for parties outside the community;

The research and training co-ordinators will assist the SigMe leader in decision-making and will have the responsibility for synchronisation, motivation and communications between the principal investigators and the community as a whole regarding their respective roles.

• RC’s strengths and challenges related to leadership and management, and the actions planned for developing the processes.

The senior members of the community have substantial experience and skills to develop a meaningful and working leadership that best fits the community. The overall plans will be done according to the description above in consultation with both the department and the faculty. Where necessary, leaders of other research communities will be consulted.

7 EXTERNAL COMPETITIVE FUNDING OF THE RC

- Listing of the RCs external competitive funding, where:
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki

- Academy of Finland (AF) - total amount of funding (in euros) AF has decided to allocate to the RC members during 1.1.2005-31.12.2010: 869000

- Finnish Funding Agency for Technology and Innovation (TEKES) - total amount of funding (in euros) TEKES has decided to allocate to the RC members during 1.1.2005-31.12.2010: 148000

- European Union (EU) - total amount of funding (in euros) EU has decided to allocate to the RC members during 1.1.2005-31.12.2010:

- European Research Council (ERC) - total amount of funding (in euros) ERC has decided to allocate to the RC members during 1.1.2005-31.12.2010:

- International and national foundations - names of international and national foundations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the foundations: Suomen Kulttuurirahasto, Nokia Oyj
  - total amount of funding (in euros) from the above-mentioned foundations: 240000

- Other international funding - names of other international funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations: Economic and Social Research Council
  - total amount of funding (in euros) from the above-mentioned funding organizations: 69000

- Other national funding (incl. EVO funding and Ministry of Education and Culture funded doctoral programme positions) - names of other national funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations:
RC-SPECIFIC STAGE 2 MATERIAL

- total amount of funding (in euros) from the above-mentioned funding organizations:

<table>
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<tr>
<th>B 8 RC’S STRATEGIC ACTION PLAN FOR 2011–2013 (MAX. 4400 CHARACTERS WITH SPACES)</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>● Description of the RC’s future perspectives in respect to research and doctoral training.</td>
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</table>

The short-term (2011-2013) action plan for the research community consists of strengthening its internal collaboration. This will be done primarily by initiating a joint research line, and secondarily by establishing a new leadership and management structure as described above. The leadership will (together with all principal investigators) hold regular meetings, where the scientific progress of the separate teams (e.g., status of manuscripts under preparation, upcoming conferences) as well as the financial issues of the whole unit are discussed and planned. The separate teams will organize their internal practices based on the project structures and PhD course activities. Meetings of the entire personnel will be arranged bimonthly. E-mail lists and a collaborative wiki-based system will be established for general announcements and collaborative work, respectively.

In terms of the scientific focus, the new joint research line on multisensory and motor interactions and language will be initiated, in addition to continuing the ongoing research on well-established topics, including visual perception, speech processing and modeling. The aim is to produce a minimum of 15 international journal papers by 2013. Four PhD theses are expected to be completed within this period, and 5 new ones started.

In early 2011, a detailed plan for obtaining external funding will be written. As a general plan, the community will submit at least six major proposals to the Finnish Academy during the time. The newly established collaboration within the EU (with one already submitted proposal in the FP-7 and another in the COST framework) will be strengthened and new collaborations will be sought. By the end of the period the group will submit at least one proposal to compete for funding from the European Research Council (starting grant). The doctoral training will be funded mostly by the external projects. Additionally, self-funded candidates will be sought both nationally and internationally. The community will also collaborate with the relevant graduate schools (Langnet, Psychology). Both funding and doctoral training will be coordinated by senior researchers in the group. The necessary tasks for coordination will be identified and the respective duties will be planned explicitly. The coordinative duties will be cycled and the appointments will be based on voluntary choice. Naturally, the community will coordinate both the research and training with the department, as well as the faculty and university. All in all, it will develop a coordinative structure that will best serve the purposes of research and doctoral (as well as post-doctoral) training. The leadership will be shared by three persons: the SigMe leader and two coordinators for research and doctoral training, respectively. The main task of the managerial leadership will be to foster the bottom-up process of developing new ideas into actual working projects.

<table>
<thead>
<tr>
<th>9 SHORT DESCRIPTION OF HOW THE RC MEMBERS HAVE CONTRIBUTED TO THE COMPILATION OF THE STAGE 2 MATERIALS (MAX. 1100 CHARACTERS WITH SPACES).</th>
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</thead>
<tbody>
<tr>
<td>The written material has been produced and compiled by LV, MV, KT, VS, JJ. Other members of the community have commented on the text at various stages. All senior members took part in a meeting where the general guidelines for the compilation of materials were planned and decided upon.</td>
</tr>
</tbody>
</table>
1 Analysis of publications

- Associated person is one of Jussi Jukka Saarinen, Juhani Järvinen, Ville Mäkinen, Juha Anttila, Markku Kiveläinen, Tiina Vapaatalo, Tarja-Liisa Peromaa, Satu Kerttu Maria Saalasti, Olli Kalevi Aittonen, Pentti Laurinen, Kalea Tiippana, Maarit Vainio, Martti Vainio, Lari Vainio, Mona Laitinen, Lauri Oskari Nurminen, Tarja-Liisa Peromaa, Satu Kerttu Maria Saalasti.

<table>
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<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total Count 2005 - 2010</th>
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<td>4</td>
<td>9</td>
<td>9</td>
<td>8</td>
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<td>41</td>
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<td>A3 Contribution to book/other compilations (refereed)</td>
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<td>3</td>
<td>10</td>
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<td></td>
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</tr>
<tr>
<td>A4 Article in conference publication (refereed)</td>
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<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>18</td>
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<td>1</td>
<td>1</td>
<td>3</td>
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<td>B2 Contribution to book/other compilations (non-refereed)</td>
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<td>C2 Edited book, compilation, conference proceeding or special issue of journal</td>
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<td>E1 Popular contribution to book/other compilations</td>
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INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

SigMe/Vainio

2 Listing of publications

A1 Refereed journal article

2005

2006

2007

2008


2009


2010


A3 Contribution to book/other compilations (refereed)

2006

INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

SigMe/Vainio


2009


2010


A4 Article in conference publication (refereed)

2005


2006


2007


2008

2009


2010


B1 Unrefereed journal article

2005


2008


B2 Contribution to book/other compilations (non-refereed)

2005


2010


B3 Unrefereed article in conference proceedings

2009

2005

2006

2008

2009

2010

E1 Popular article, newspaper article

2006

E1 Popular contribution to book/other compilations

2009
# Analysis of activities 2005-2010


<table>
<thead>
<tr>
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</tr>
<tr>
<td>Prizes and awards</td>
<td>2</td>
</tr>
<tr>
<td>Editor of research journal</td>
<td>3</td>
</tr>
<tr>
<td>Peer review of manuscripts</td>
<td>10</td>
</tr>
<tr>
<td>Membership or other role in national/international committee, council, board</td>
<td>5</td>
</tr>
<tr>
<td>Membership or other role in public Finnish or international organization</td>
<td>2</td>
</tr>
<tr>
<td>Participation in radio programme</td>
<td>1</td>
</tr>
</tbody>
</table>
2 Listing of activities 2005-2010

Supervisor or co-supervisor of doctoral thesis

Jussi Jukka Saarinen,

Olli Kalervo Aaltonen,
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2005 → 2011
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 24.11.2006
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2007 → 2011
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2008 → 2012
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2008 → 2011
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2008 → 2011
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 21.06.2009
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2009 → 2011
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2009 → 2012
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2009 → 2012
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 21.06.2010
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 09.04.2010
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2010 → 2012
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2010 → 2012
Väitöskirjatyön ohjaus, Olli Kalervo Aaltonen, 2010 → 2012

Kaisa Tiippana,
PhD supervision, Kaisa Tiippana, 2005 → 2011, Finland

Lari Vainio,
Traffic psychology: Safety in motorcycling, Lari Vainio, 2009 → ...

Prizes and awards

Viljami Salmela,
Teacher of the year, Viljami Salmela, 03.05.2007
Faculty PhD Thesis Award, Viljami Salmela, 10.06.2010, Finland

Editor of research journal

Jussi Jukka Saarinen,
Perception & Psychophysics, Jussi Jukka Saarinen, 03.10.2005 → 31.12.2005, United States

Martti Vainio,
Puhe ja kieltieteilinen aikakauslehti, Martti Vainio, 01.01.2005 → 31.12.2005, Finland

Juhani Järvičivi,
Puhe ja Kieli [Speech and Language], Juhani Järvičivi, 01.01.2005 → 31.12.2009, Finland

Peer review of manuscripts

Martti Vainio,
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

SigMe/Vainio

Journal of the Acoustical Society of America, Martti Vainio, 2004 → 2005, United States
Journal of the Acoustical Society of America, Martti Vainio, 2005 → …, United States
Journal of Phonetics, Martti Vainio, 13.10.2006
Journal of Phonetics, Martti Vainio, 23.11.2010, Netherlands

Kaisa Tiippana,
Experimental Brain Research, Kaisa Tiippana, 2006 → 2010
Speech Communication, Kaisa Tiippana, 2009 → …

Lari Vainio,
Breaking the flow of action, Lari Vainio, 2008 → …
External Motor Imagery in Children, Lari Vainio, 2009 → …

Viljami Salmela,
Journal of Vision, Viljami Salmela, 2009 → …
Journal of Vision, Viljami Salmela, 2010 → …

Membership or other role in national/international committee, council, board

Martti Vainio,
Arvioijapoolin jäsenyys, Martti Vainio, 01.01.2005 → …, Finland
Suomen tieteen tila ja taso 2009 / The state and quality of scientific research in Finland, Martti Vainio, 10.2009, Finland
ISCA SynSIG board member, Martti Vainio, 2010 → 2015

Juhani Järviäki,
President, Juhani Järviäki, 01.01.2009 → 31.12.2011

Lari Vainio,
The 12th European Workshop on Imagery and Cognition, Lari Vainio, 2010 → …

Membership or other role in public Finnish or international organization

Viljami Salmela,
Division of young researchers, Finnish Psychological Society, Viljami Salmela, 2003 → 2009, Finland
Division of young researchers, Finnish Psychological Society, Viljami Salmela, 2005 → 2006, Finland

Participation in radio programme

Martti Vainio,
YLE1 radiohaastattelu, Martti Vainio, 01.2005, Finland
The bibliometric analyses by Helsinki University Library (HULib)

**Background:** The bibliometric analyses – especially citation analyses – have raised a lot of discussion and critics among researchers in social sciences and humanities. Researchers view that bibliometric analyses are often unfair to these fields of sciences because they do not give a good enough picture of the publishing. Citation databases – Web of Science and Scopus – cover only weakly the main publications in these fields. Also, in humanities and social sciences monograph is still the main form of publishing, and it does not include in these article databases.

At the University of Helsinki, the above mentioned concerns have been taken into account in the evaluation. The Evaluation Office has ordered analyses from the Helsinki University Library (HULib) for the participating researcher communities that are weakly represented in Web of Science. The database for the HULib analyses is TUHAT (https://tuhat.halvi.helsinki.fi/portal/en/) including all the publications that the researchers have considered important.

Based on this data, information specialists at HULib have carried out the following analyses:

1) Number of authors/publication/year as a table; a pie of authors/publication in the period 2005-2010;
2) Language of publication/year; a pie of language of publication in the period 2005-2010;
3) Articles/journal/year; journals have been compared by ISSN with the Norwegian, Australian and ERIH (2007-2008) journal ranking lists; number of articles in ranked journals;
4) Publisher/monograph type (according to TUHAT database); monographs have been compared with the Norwegian publisher ranking list. According to this, it has been counted how many monographs are published by a leading scientific publisher (2) or a scientific publisher (1).
5) Conference publications (from TUHAT database) especially in computer sciences; compared with the Australian conference ranking list.

Where relevant, some additional analyses and notes concerning the publication culture of a scientific field have been added. Overall, these analyses complement the other evaluation material and lists of the publications of the participating researcher communities.

If the publications of the RCs were less than 50 or and the internal coverage less than 40 percentage, the WoS analyses were considered not reliable. These RCs were 58 altogether.

In addition, both Leiden and Library analyses were done to the RCs if WoS analyses covered less than 40 per cent of the peer review (A+C) publications of the RC. These RCs were 8 altogether.

The appendix includes the analyses of the RC under discussion.
Analysis of publications by Helsinki University Library – 66 RCs altogether

**Biological, Agricultural and Veterinary Sciences**
Luukkanen, Olavi – VITRI
Valsta, Lauri – SUVALUE

**Natural Sciences**
Abrahamsson, Pekka – SOFTSYS
Kangasharju, Jussi – NODES
Ukkonen, Esko – ALKO
Väänänen, Jouko – HLG

**Humanities**
Aejmelaeus, Anneli – CSTT
Anttonen, Pertti – CMVG
Dunderberg, Ismo – FC
Havu, Eva – CoCoLoC
Heikkipää, Markku – RCSP
Heinämaa, Sara – SHC
Henriksson, Markku – CITI
Janhunen, Juha – LDHFTA
Kajava, Mika – AMNE
Klippi, Anu – Interaction
Knuutila, Simo – PPMP
Koskenniemi, Kimmo – BAULT
Lauha, Aila – CECH
Lavento, Mika – ARCH-HU
Lukkarinen, Ville – AHCII
Lyytikäinen, Pirjo – GLW
Mauranen, Anna – LFP
Meinander, Henrik – HIST
Nevalainen, Terttu – VARIENG
Petersson, Bo – ILLC
Puikkonen, Tuja – Gender Studies
Pyrhönen, Heta – ART
Ruokanen, Miikka – RELDIAL
Saarinen, Risto – RELSOC
Sandu, Gabriel – LMPS
Tarasti, Eero – MusSig
Vehmas-Lehto, Inkeri – TraST
Östman, Jan-Ola – LMS

**Social Sciences**
Airaksinen, Timo – PPH
Engeström, Yrjö – CRADLE
Granberg, Leo – TRANSRURBAN
Haila, Anne – Sociopolis
Hautamäki, Jarkko – CEA
Heinonen, Visa – KUMU
Helén, Ilpo – STS
Hukkinen, Janne – GENU
Jallinoja, Riitta – SBII
Kaartinen, Timo – SCA
Kettunen, Pauli – NordSoc
Kivinen, Markku – FCRES
Koponen, Juhan – DEVERELE
Koskenniemi, Martti – ECI
Kultti, Klaus – EAT
Lahtelma, Elina – KUFE
Lanne, Markku – TSEM
Lavonen, Jari – RCMER
Lehtonen, Risto – SocStats
Lindblom-Ylänne, Sari – EdPsychHE
Nieminen, Hannu – MECOL
Nuotio, Kimmo – Law
Nyman, Göte – MEFORE
Ollikkainen, Markku – ENFIFO
Pirttilä-Backman, Anna-Maija – DYNASOBIC
Rahkonen, Keijo – CulCap
Roos, J P – HELPS
Simola, Hannu – SOCE-DGI
Sulkunen, Pekka – PosPus
Sumelius, John – AG ECON
Vainio, Martti – STRUTSI

The next appendix includes the analyses of the RC under discussion.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

PUBLICATION DATA 2005-2010

RC SigMe / PI Vainio

Basic statistics

Researcher Community: Multisensory Signals and Meanings (SigMe)
Members: 18, with 3 Principal Investigators¹
Participation category: 4 (research of the participating community represents an innovative opening)
Main scientific field: Social sciences (perceptional and cognitive psychology, visual neuroscience, neurolinguistics, phonetics)²
Publication data entries into the UH Research Information System within the period 2005–2010: 83³

![Graph showing SigMe: no. of publications per year 2005-2010](image1)

![Graph showing SigMe: outputs in national publication categories 2005-2010](image2)
Number of publications with different authorship patterns, per year and in total

<table>
<thead>
<tr>
<th>No. of AUTHORS</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<th>2010</th>
<th>Grand Total</th>
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<td>11</td>
<td>13</td>
<td>19</td>
<td>18</td>
<td>83</td>
</tr>
</tbody>
</table>

Table 1

As shown in Figure 3, less than tenth of SigMe publications are single authored. Joint publications include two to eight authors per paper. The largest number (25) of joint publications results from collaboration between three authors.
Number of publications in different languages, per year and in total

<table>
<thead>
<tr>
<th>LANGUAGE of PUBLICATION</th>
<th>YEAR</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>en_English</td>
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<td>7</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>60</td>
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<tr>
<td>fi_Finnish</td>
<td></td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>7</td>
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<td>19</td>
<td>18</td>
<td>83</td>
</tr>
</tbody>
</table>

Table 2

Languages of publication by publication types

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<th>PUBLICATION TYPE</th>
<th>LANGUAGE</th>
<th>ENG</th>
<th>FIN</th>
<th>Grand Total</th>
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<td>a1 refereed research article</td>
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<td>38</td>
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<tr>
<td>a3 refereed book section</td>
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<td>9</td>
<td>11</td>
</tr>
<tr>
<td>a4 refereed conference article</td>
<td></td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>b1 writing in scientific journal</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>b2 nonreviewed book section</td>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>b3 nonreviewed conference article</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>c2 edited book or conference proceedings</td>
<td></td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>e1 popular article in magazine or newspaper</td>
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<tr>
<td>e1 popular contribution to book</td>
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<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>60</td>
<td>23</td>
<td>83</td>
</tr>
</tbody>
</table>

Table 3

English is clearly the predominant language of refereed research articles (a1) and refereed conference contributions (a4). The proportion of publications written in Finnish is larger in book-type scientific publishing (a3, c2). In addition, Finnish is used exclusively in the few non-refereed scientific articles (b1, b2, b3), and in popular publications (e1, e2).
<table>
<thead>
<tr>
<th>JOURNAL TITLE</th>
<th>YEAR</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Grand Total</th>
</tr>
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<td>Vision Research</td>
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<td>1</td>
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<td>Journal of the Acoustical Society of America</td>
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<td>3</td>
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<td>Journal of Vision</td>
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<td>Puhe ja kiel [Speech and Language]</td>
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<td>Corpus Linguistics and Linguistic Theory</td>
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<tr>
<td>Journal of the Optical Society of America, A: Optics, Image Science, and Vision</td>
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<td>Neuroscience Letters</td>
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<td>PLoS One</td>
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<tr>
<td>Psykologia [Journal of the Finnish Psychological Soc.]</td>
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<tr>
<td>Clinical Neurophysiology</td>
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<tr>
<td>Cognition</td>
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<tr>
<td>European Journal of Neuroscience</td>
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<tr>
<td>Helsingin Sanomat [National newspaper]</td>
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<tr>
<td>International Journal of Oral and Maxillofacial Surgery</td>
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<tr>
<td>International Journal of Psychophysiology</td>
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<td>Journal of Motor Behavior</td>
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<tr>
<td>Journal of Phonetics</td>
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<tr>
<td>Journal of Psycholinguistic Research</td>
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<tr>
<td>Journal of the Society for Information Display</td>
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<tr>
<td>Language and Cognitive Processes</td>
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<tr>
<td>Neuropsychologia</td>
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<tr>
<td>Transportation Research, Part F: Traffic Psychology and Behaviour</td>
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<td>1</td>
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<td></td>
</tr>
</tbody>
</table>

Grand Total # of journal contributions by year & in total | 5 | 5 | 9 | 10 | 7 | 8 | 44 |

In Table 3 are shown the 29 periodicals, i.e., journals, newspapers and magazines, which have been contributed by SigMe over the six-year-period of 2005–2010. Only journal contributions were reckoned in, i.e.,

- refereed contribution to journal / a1 article
- non-refereed contribution to journal / b1 writing in scientific journal
- contribution to journal / e1 popular article.

Total amount of journal contributions by members of SigMe in 2005–2010: 44.
Contributions to UHR classified publications 2005–2010

UHR classified publications are journals or series that fulfill specific criteria given by The Norwegian Association of Higher Education Institutions (UHR). There are two levels: Ordinary publication channels (Level 1) and highly prestigious publication channels (Level 2).

<table>
<thead>
<tr>
<th>Norway Journal List Title</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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<td><strong>1 Ordinary publication channels</strong></td>
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Table 5
Only publications in journal contribution categories were taken into account in the calculation, i.e., refereed research article (a1), non-refereed scientific writing (b1), and popular article (e1). Total amount of journal contributions by members of SigMe in 2005–2010: 44.

There are altogether 25,120 journals in the Norwegian register, which makes it one of the largest journal impact indices.

Apart from getting almost all of their papers published in classified journals, members of SigMe have also managed to get their papers accepted to the most important journals in the fields of neuroscience and perceptual psychology. Almost ⅓ of their scientific journal articles have appeared in journals classified by UHR as “highly prestigious”.

Regarding the amount of periodicals, the overall share of Level 2 journals in the Norwegian Social Science Data Service register is 8.8%, and even in the category of Psychology no more than 16%, while among the periodicals contributed by SigMe, 10 out of 29 are included in Level 2. With regard to this, the proportion of highly prestigious channels of SigMe publications may be considered to be relatively high.

“Unverified publication channels” are scientific journals that have not been proposed to the Norwegian Social Science Data Service register. These are typically national publications. Among SigMe’s publication channels over the evaluation period, the only unverified scientific publication is Psykologia, the journal of the Finnish Psychological Society.
**Contributions to ERIH classified publications 2005–2010**

Purpose of The European Reference Index for the Humanities (ERIH) is to develop and to maintain an impact assessment tool for European research journals. Journal classification processes are conducted by discipline-specific expert panels. In the ERIH 2007 Initial List there are three categories:

A = International publications, both European and non-European, with high visibility and influence among researchers in the various research domains in different countries, regularly cited all over the world.

B = International publications, both European and non-European, with significant visibility and influence in the various research domains in different countries.

C = European publications with a recognized scholarly significance among researchers in the respective research domains in a particular readership group in Europe; occasionally cited outside the publishing country, though the main target group is the domestic academic community.

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Table 6 shows the number of SigMe papers published in ERIH classified journals. Out of the 29 periodicals contributed by members of SigMe, a total of 19 appear on the ERIH 2007 Initial Lists. They are included on the core discipline lists of Linguistics, Musicology, and Psychology, many of them on various lists simultaneously. There are no major differences between discipline-specific classifications. Only in the case of *Journal of the Acoustical Society of America*, the musicological classification would have been B instead of the linguistic one, which is A. Only the linguistic classification was included in this investigation.
In Table 6, the discipline-specific lists are indicated by letter codes: (Psy) stands for the Psychology 2007 List, (M) for the Music & Musicology List, and (Lng) respectively for Linguistics.

Fig. 6

Only publications in journal contribution categories were taken into account in the calculation, i.e., refereed research article (a1), non-refereed scientific writing (b1), and popular article (e1).

Total amount of journal contributions by SigMe in 2005–2010: 44. Total amount of scientific journal contributions: 43. Nearly two-thirds (28) of the papers have been published in journals with ERIH classification.

It should be noted that scholarly journals of high quality may be missing from ERIH, either for being founded three years or less before the closing dates of the second peer-review round (2008–2011), or for not being submitted to ERIH at all. The ERIH 2007 Initial Lists contain 6,021 titles, though most journals are included in several discipline-specific lists simultaneously. In terms of extent and scope, the ERIH lists are significantly smaller than the other well-known bibliometric indices.

Recent revision of ERIH caused two changes to the categories of SigMe contributed journals:

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Consequently, compared to the ERIH 2007 Initial List, the number of SigMe articles in INT1 (A) journal category has increased from 13 to 18. INT2 (B) category has decreased with 3, from 10 to 7 papers, while the number of papers in NAT (C) journals has decreased from 5 to 3. The total amount of classified journals and the respective articles has not changed.
Contributions to ERA classified publications 2005–2010

The Excellence in Research for Australia (ERA) initiative assesses research quality within Australia's higher education institutions. To support the evaluation, discipline-specific tiered quality rankings have been developed for peer reviewed journals. The tiers for the Australian Journal Ranking are:

A* = one of the best journals in its field; all papers of a very high quality, influential within the field; acceptance rates typically low; editorial board dominated by field leaders.

A = majority of papers of a very high quality; authors earn credit by getting their papers published in the journal; acceptance rates quite low; editorial board includes a reasonable fraction of well known researchers.

B = journal has solid, but not outstanding reputation; only a few papers of a very high quality; important publication channel for PhD students and early stage researchers; may be regional journals with high acceptance rates; only few leading researchers in editorial boards.

C = quality, peer reviewed journals that do not meet the criteria of the higher tiers.

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<td>3</td>
<td></td>
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<tr>
<td>Neuroscience Letters</td>
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<tr>
<td>Puhe ja kieli [Speech and Language]</td>
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<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Transportation Research Part F-Traffic Psychology and Behaviour</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Grand Total # of contributions to classified journals by year and in total</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 7
Table 6 shows the counts of SigMe contributions to journals which have quality ratings on the ERA 2010 Ranked Journal List.

Only publications in journal contribution categories (a1, b1, e1) were taken into account in the calculation. Total amount of journal contributions by the members of SigMe in 2005–2010: 44. A great majority (40) have been published in ERA ranked journals.

Summary of classifications of periodicals contributed by SigMe

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>American Journal of Medical Genetics. Part A</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological Psychology</td>
<td>2</td>
<td>A</td>
<td>A</td>
<td></td>
<td></td>
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<tr>
<td>Clinical Neurophysiology</td>
<td>1</td>
<td>B</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>2</td>
<td>A*</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corpus Linguistics and Linguistic Theory</td>
<td>2</td>
<td>A</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Journal of Neuroscience</td>
<td>1</td>
<td>A</td>
<td></td>
<td></td>
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<tr>
<td>Experimental Psychology</td>
<td>1</td>
<td>B</td>
<td>A</td>
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<tr>
<td>Helsingin Sanomat</td>
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<td></td>
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<tr>
<td>IEEE Transactions on Audio, Speech and Language Processing</td>
<td>2</td>
<td>A*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Journal of Oral and Maxillofacial Surgery</td>
<td>1</td>
<td>A</td>
<td></td>
<td></td>
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<tr>
<td>International Journal of Psychophysiology</td>
<td>2</td>
<td>B</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal of Autism and Developmental Disorders</td>
<td>2</td>
<td>A</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal of Motor Behavior</td>
<td>1</td>
<td>A</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal of Neurophysiology</td>
<td>1</td>
<td>A</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journal of Phonetics</td>
<td>2</td>
<td>A*</td>
<td>A</td>
<td></td>
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<tr>
<td>Journal of Psycholinguistic Research</td>
<td>1</td>
<td>B</td>
<td>B</td>
<td></td>
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</tr>
<tr>
<td>Journal of the Acoustical Society of America</td>
<td>2</td>
<td>A*</td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>
There are 19 conference contribution records linked to SigMe in the UH Research Information System within the period of 2005–2010. ERA ranking has been verified only for one conference. The focal research fields of SigMe, speech sciences and perceptual psychology, do not appear on the ERA 2010 Ranked Conference List as individual Fields of Research (FoR).

The only ranked conference is Interspeech, The Annual Conference of International Speech Communication Association. Members of SigMe have presented five papers at Interspeech conferences over the period of 2005–2010.


Details of these 12 unclassified conferences could be checked on the grounds of RIS publication records:

UHR authorized publishers of SigMe books and book contributions 2005–2010

The classification criteria of The Norwegian Association of Higher Education Institutions (UHR) is applied not only to evaluate journals, but to point out publishers’ scientific level, too. There are two levels: ordinary publishers (Level 1) and highly prestigious publishers (Level 2). The UHR list of publishers contains 2,333 publishers in total.

In the case of “other” scientific level (Table 7), a publisher may be newly proposed for evaluation, or publisher’s peer review practices may be varied or unclear. The “unlisted” category includes publishers who do not appear on the UHR list.

In total, SigMe has used 9 different publishers as publication channels for their monographs.\textsuperscript{x}

\begin{table}
\centering
\begin{tabular}{|l|c|c|c|c|c|}
\hline
\textbf{UHR PUBLISHER LEVEL (1, other) / PUBLISHER} & \textbf{2005} & \textbf{2006} & \textbf{2008} & \textbf{2009} & \textbf{2010} \\
\hline
1 Ordinary scientific publishers & 1 & 1 & 1 & 3 & \\
Cambridge Scholars (UK) & 1 & 1 & & & \\
CSLI Publications (UK) & 1 & 1 & & & \\
Peter Lang (Germany) & & & & & \\
other publishers & 2 & 2 & 5 & 9 & \\
Otava (Finland) & & & 5 & 5 & \\
University of Helsinki & 2 & 2 & & 4 & \\
unlisted publishers & 1 & 1 & 2 & 4 & 8 \\
Association of Speech and Language Research (Finland) & 1 & 1 & & & \\
Tampere University Press & 2 & 2 & & & \\
University of Turku, Centre for Cognitive Neuroscience & 1 & 4 & 5 & & \\
\hline
\textbf{Grand Total} & \# of book-type publications by year and in total & 3 & 3 & 1 & 8 & 5 & 20 \\
\hline
\end{tabular}
\caption{Table 9}
\end{table}
## Number of different types of book publications per publisher

<table>
<thead>
<tr>
<th>Publisher</th>
<th>Publication type</th>
<th>a3 refereed contribution to book</th>
<th>b2 non-refereed contribution to book</th>
<th>c2 edited book or compilation</th>
<th>e1 popular contribution</th>
<th>Total of book publications / publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Association of Speech and Language Research (Finland)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>Cambridge Scholars (UK)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CSLU Publications (UK)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Otava (Finland)</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Peter Lang (Germany)</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Tampere University Press</td>
<td></td>
<td>2</td>
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<td></td>
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<tr>
<td>University of Helsinki</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>University of Turku, Centre for Cognitive Neuroscience</td>
<td></td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>11</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 10
Some additional bibliometric measures

Fig. 8

SigMe: countries of publication 2005-2010

- Estonia
- Finland
- France
- Germany
- Greece
- Italy
- Japan
- Netherlands
- Russia
- United Kingdom
- United States

Fig. 9

SigMe: national vs. international publishing 2005-2010

- National
- International

Fig. 10

SigMe: countries of publication in groups

- Finland
- Nordic countries
- The rest of Europe
- Anglophone (UK, USA)
- The rest of the world
Fig. 11

SigMe: no. of publication types by year

- Refereed contribution to journal / a1 article
- Refereed contribution to book or anthology / a3 reviewed book section
- Refereed conference contribution / a4 reviewed conference article
- Non-refereed contribution to journal / b1 writing in scientific journal
- Non-refereed contribution to book or anthology / b2 nonreviewed book section
- Non-refereed conference contribution / b3 nonreviewed conference article
- Book or anthology / c2 edited book compilation or conference proceedings special
- Contribution to journal / e1 popular article
- Contribution to book / e1 popular book section
The SigMe PIs:
The Institute of Behavioural Sciences
- Olli Aaltonen, Professor, General Phonetics
- Jussi Saarinen, Professor of Psychology, Director of the Institute of Behavioural Sciences
- Martti Vainio, Academy Research Fellow, General Phonetics.

Excerpts from the description of the RC’s publishing strategy: “[I]t should […] be noted that some of the researchers in the community have already conducted research on audiovisual perception and have several published articles on this topic relevant to the new community [not included in the evaluation since the persons were not affiliated with the University of Helsinki at that time]. […] The thus far relatively narrow research fields and the small number of researchers (both in the field in general and in the community) should also be taken into account when evaluating the traditional measures of scientific productivity (number of publications, citations etc.). One method of assessing the researcher community could be the evaluation of the progress of scientific productivity and doctoral training during the period under evaluation. [...] The community publishes research articles in major international journals in the fields of perception, visual neuroscience, speech, language, cognition, and multisensory processing. There is special emphasis on the high quality of the published articles, on relevant and topical research questions, as well as on the state-of-the-art methods and technical aspects. [...] The research community focuses mainly on international research with a further national interest in the form of popular science, textbooks and textbook chapters.”

The primary RC publication data was extracted from the University of Helsinki Research Information System TUHAT in April 8, 2011, and collectively prepared for further analyzing in May 12, 2011, at the Helsinki University City Centre Campus Library. – Closer investigation of the SigMe dataset revealed one duplicate record, which was removed. The removed record related to a refereed research article (a1, 2009). The number of publication records thus reduced from 84 to 83. – Contact concerning the calculations of SigMe RIS publication data: P. Kaihoja, Librarian, City Centre Campus Library / Behavioural Sciences,

Although yearbooks are often counted as periodicals, according to the Finnish national classification of publications they are to be categorized as book sections (usually a3).

Number of journal articles in the primary SigMe publication data: 45. After removing of a duplicate record, the total of journal articles is 44, including 40 refereed research articles (a1).

Subcategories INT1 and INT2 on the ERIH 2011 Revised List, together with NAT, may be considered to be equivalents to the former Initial List categories, which were indicated respectively by letters A, B, C.

Journals that commenced in 2008 have been considered too new to be assigned a quality rating on the ERA 2010 Journal List. A total of 397 proposed journals were considered not to meet the criteria for inclusion. A total of 20,712 peer reviewed journals are included. In order to distinguish core publications to different fields of research (FoR) and to derive citation benchmarks, The Australian Research Council (ARC) has consulted Scopus based citation analysis services.

The calculations were based on publication records in these national classification categories:
- a3 refereed contribution to book
- b2 non-refereed contribution to book
- c2 edited book or compilation
- e1 popular contribution to book.
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Administrative Publications 80/136
Evaluations

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