RGI NEWS

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European Virtual Campus for Biomedical Engineering, EVICAB

The European Commission has decided to fund the application "*European Virtual Campus for Biomedical Engineering, EVICAB*" coordinated by the Ragnar Granit Institute. The project director is Professor Jaakko Malmivuo. The project is under the Commission's e-Learning Programme, European virtual campuses.

The objective of the proposal is to develop, build up and evaluate sustainable, dynamical solutions for virtual mobility and e-learning that, according to the Bologna process,
(i) mutually support the harmonization of the European higher education programmes,
(ii) improve the quality of and comparability between the programmes, and
(iii) advance the post-graduate studies, qualification and certification. These practices will be developed, piloted and evaluated in the field of biomedical engineering and medical physics.

The partners of the project are:
- Mediamaisteri Group, Tampere, Finland
- Biomedical Engineering Centre, Tallinn University of Technology, Tallinn, Estonia
- Biomedical Engineering Institute, Kaunas University of Technology, Kaunas, Lithuania
- Department of Biomedical Engineering, Linköping University, Linköping, Sweden
- Department of Biomedical Engineering, Brno University of Technology, Brno, Czech Republic.

Because biomedical engineering is an interdisciplinary science, no university, especially the smaller ones, is able to alone provide a full up-to-date education program. The Internet gives a unique opportunity to unite the competence of the European universities and to produce a high quality and wide education program.

Earlier, the geographical distances have limited the students' access to different sources of information and sites of studies. Now, at the time of the Internet, every student and every university is equally close to the worldwide information sources.

The project lasts for two years, 2006-07.
www.rgi.tut.fi/evicab

International Education Program in Biomedical Engineering

Since 1991 the Ragnar Granit Institute has given all the biomedical engineering education in English. We were one of the first institutes in Finland to do so.

The number of our international students has continuously increased, bringing the number to about 50 in 2004. The students come from all parts of the world. The largest number come from the European Union. The number of students from Asia is also large.

The education system in the Finnish universities is now changing to follow the European Bologna process. This means that the studies will be divided to Bachelor and Master studies. At the Ragnar Granit Institute the biomedical engineering studies are mainly given in the Master of Science studies.

The European biomedical engineering education is under strong development under the BIOMEDEA project directed by the University of Stuttgart. The target of this project is the harmonization of the education and accreditation of the education programs. This will facilitate the mobility of the students and the teachers in this field.

Ragnar Granit Institute is actively participating the BIOMEDEA project and supporting it in order to develop our education according to the European standards.

The EVICAB project, the BIOMEDEA project and the international education in biomedical engineering at the Ragnar Granit Institute strongly support each other.

www.bmt.uni-stuttgart.de/biomedea/

www.rgi.tut.fi/educat.html
www.rgi.tut.fi/education/edu_int.htm
www.rgi.tut.fi/edu/index.htm

Internet examination

One interesting application of the Internet in education is Internet examination. In addition to the education at the RGI we have applied it in connection to the courses which Professor Jaakko Malmivuo has given elsewhere, like in Helsinki University of Technology, Tallinn University of Technology and Czech Technical University in Prague. In Internet examination the students make the examination at a computer class. The examination opens on the Moodle platform. The students may use all material available on the Internet. The only thing which is not allowed for them is communicating with other persons with e-mail etc.

Internet examination allows the students to make it also elsewhere than in the course location, for instance in their home university. This is beneficial in connection with intensive courses where the students come from different universities. Also the teacher may monitor the examination from anywhere in the world in real time.

The students have given very positive responses from the Internet examination. In addition to the aforementioned benefits, the students appreciate that the examination tests the students' ability to understand the principles and large entities taught in the course and they do not need to study small details and handbook information because such is easily available from the Internet.

www.rgi.tut.fi/edu/05prague/index.htm

HYVITE-Programme

The Ragnar Granit Institute promotes actively the Tampere Region User-Centred Wellbeing Technology Programme, HYVITE. It is based on the regional strategy of the higher education institutions in the Tampere Region which are:

* Tampere University of Technology
* University of Tampere
* Tampere Polytechnic
* Pirkanmaa Polytechnic

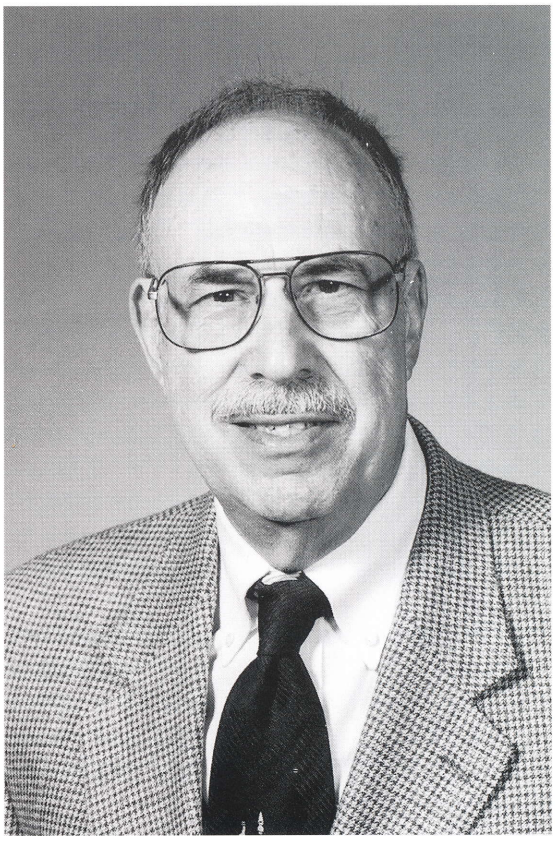
HYVITE-Programme aims at promoting human wellbeing at home, work and leisure under different circumstances. Versatile cooperation, scientific research, R&D and education are employed to attain the objectives.

www.hyvite.fi

David Geselowitz Received the Ragnar Granit Prize

The Ragnar Granit Prize was awarded to Professor David Geselowitz. He is Emeritus Professor of Biomedical Engineering of Pennsylvania State University, University Park, Pennsylvania, USA.

Dr. Geselowitz' past research has resulted in a number of major contributions, including demonstration of the significance of high frequency components of the electrocardiogram (ECG); first recording of the derivative of the ECG waveform; first recording of an artificial pacemaker pulse at the skin; the Miller- Geselowitz model of the human electrocardiogram which relates the body surface ECG to cardiac cellular action potentials; the bidomain model of heart muscle which enables bioelectric sources to be related to cellular action potentials; the use of multipoles as an equivalent cardiac generator, including their relation to body surface potentials and cardiac sources; development an algorithm for the single moving dipole representation of the ECG; a theory of impedance plethysmography; the theory of magnetic fields arising from bio-electric sources with applications to magnetocardiography, including simulation of the MCG; the concept of impressed currents to represent bioelectric sources; contributions to the solution of the volume conductor problem, including the effects of inhomogeneities and anisotropy.



David Geselowitz

International Research Project "Independent Living at Home" ITALH

The National Technology Agency of Finland, TEKES, has agreed to finance three projects that are part of the international research project ITALH. This project is in collaboration with Tampere University of Technology, Aarhus University, Denmark and University of California Berkeley, USA. The aim of the project is to develop solutions based on intelligent sensors, wireless solutions as well as advanced software architecture to support independent living at home especially for senior citizens.

The three funded projects are wearable well being solutions, support for home healthcare solutions and a project regarding light ambulatory or implantable sensor platform. All these projects will provide technology as well as test environment for the international collaboration. The overall funding volume of the three TEKES projects is almost 1M€ annually. The emphasis is on the wellness services as well as on the technology related to the body area sensors, networks, electronics as well as wireless mobile communication.

The three projects are to be coordinated by the Institute of Electronics, Ragnar Granit Institute, and the Institute of Measurement and Information Technology. In addition to these research institutes, the Institute of Biomaterials and the Research Unit of the Digital Media Institute from TUT as well as VTT Technical Research Centre of Finland join the Finnish research projects. The emphasis of the research conducted at the Ragnar Granit Institute is, on the one hand, new healthcare services supported by the new technology and, on the other hand, the designs of new physiological sensors.

Professor Jari Hyttinen is responsible of the Ragnar Granit Institute's contribution in this project. More information and seminar presentation regarding ITALH can be found at:

www.eecs.berkeley.edu/~eklund/projects/ITALH/
www.innovationsraadet.dk/uplfiler/
200410271018230.IA_TP_Oct_261004_Final.pdf
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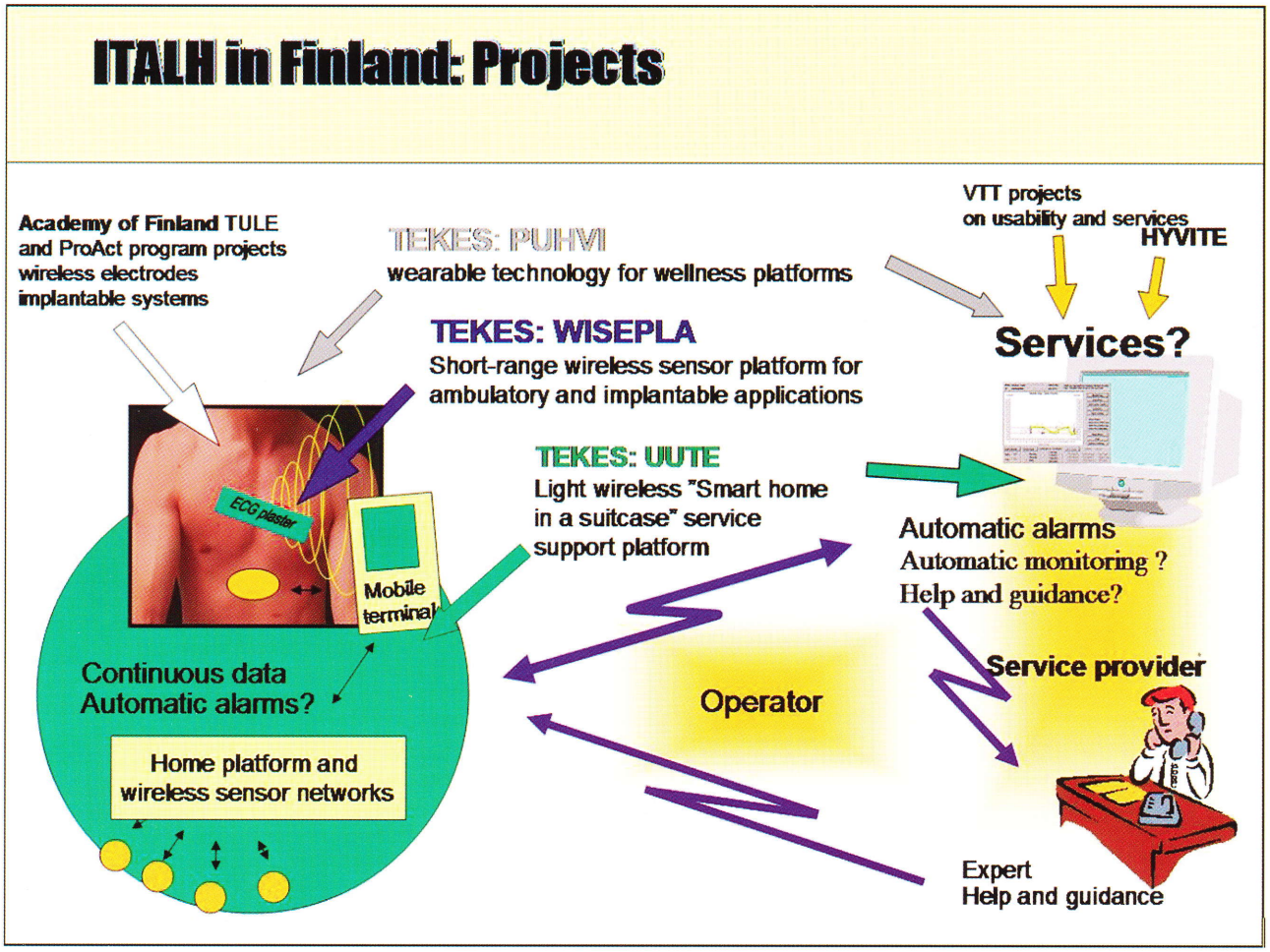

Ragnar Granit Poster

A delegation from Tampere University of Technology and Tampere Polytechnic visited in March a communal research center of elderly and disabled in Torino, Italy, named "Istituto di ricerca per la vecchiaia". The center makes research and developments of methods and services to facilitate the life of elderly and disabled people.

To increase its visibility, the center had prepared a series of posters of Nobel Prize winners who have developed this field. One of these posters illustrates Professor Ragnar Granit. The size of the poster is about 2 x 4 m.

When the director of the "Istituto di ricerca per la vecchiaia" learned that some members of the delegation represented the Ragnar Granit Institute, he wanted to donate this poster to the Ragnar Granit Institute.

This poster is now placed to the Biomedical Engineering Research Center of the Ragnar Granit Institute.

Ragnar Granit poster

"Studio i meccanismi psicofisici della visione stabilendo che la retina deve essere considerata come unvero e proprio centro nervoso, chiarendone anche l'ettrofisiologia."
"He studied the psychophysical mechanisms of the vision establishing that the retina has to be considered as a real nerve center, also clarifying its electrophysiology."

Season's Greetings

The personnel of the
Ragnar Granit Institute
wish to thank all their friends
for their co-operation during 2005
and wish everyone a
Merry Christmas
and
Successful New Year.