

Estonian Programme for Centres of Excellence in Research

Estonian Ministry of Education and Research

Authorized representative: Estonian Academy of Sciences

I The General Programme

The programme was launched by the Ministry in 2001 with the following objectives:

- to create the conditions for high-level research compatible with the strategy of research and development in Estonia;
- to establish the conditions for Estonian centres of excellence to join the international net-work according to the European Union's research policy;
- to encourage the co-operation between the research groups working in the close or complementary areas;
- to create the mechanism for elaborating, developing and implementing innovative ideas.

The objectives and a set of criteria for the selection were proposed by the Research Competency Council, using largely the Finnish experience.

The procedures were set up for the two-phased competition. The Research Competency Council reviewed all the applications (altogether 30) in the first phase. Those applications satisfying most of the prerequisites were chosen for the second phase. In the second phase the international peer-reviewing was organized by the Higher Education Quality Assessment Centre of Estonia. The teams of evaluators were chosen largely by the Academy of Finland. The final evaluation took place in November 2001.

Based on the results of the evaluation the Ministry nominated first six Centres of Excellence in Research in December, 2001 and in 2002 added four Centres to the list. The present number of Centres of Excellence in Research is ten for 2003-2006.

Next call is expected in 2006.

II The Complexity Programme

The studies on complexity are carried out in two Centres: both by their programmes.

1. Centre for Nonlinear Studies (CENS) of the Institute of Cybernetics at Tallinn University of Technology. The present programme is launched by the Council of CENS and approved by the International Advisory Board. It includes:

- fractality in nature (statistical topography, heart rate variability, turbulent diffusion, econophysics);
- complexity in nonlinear wave motion (solitons and coherent wave fields, phase-transformation fronts, anomalies of water waves, extreme waves);
- complexity in biophysics (*in silico* modelling of cardiac contraction and cell energetics, internal variables).

2. Centre for Dependable Computing (CDC) of the Institute of Cybernetics at Tallinn University of Technology. The present programme (approved by the International Advisory Board) includes:

- software complexity (structured and computational complexity in distributed computing and web-based applications);
- complexity in software – intensive systems (time-aware interaction-centred models of computation, time-counting systems with multiple metric times and simultaneous use of three time concepts, holistic self-organizing systems).

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