CREEN

Critical Events in Evolving Networks

European Project of the 6th Framework Programme

Objectives

- **to develop new methods to recognize emerging critical events in evolving complex networks, coupled networks and active agent networks**

- **to apply these methods to the analysis of the emergence of new research topics:**
  - **scientific avalanches**
  - **the sudden emergence of crises in a social institution - the public trust in science.**

The project focuses on social networks and more particularly on the spreading of information in scientific and public communication networks. We see as critical events the emergence of information avalanches linked to the emergence of a collective behaviour in large groups of social actors. The challenge of this interdisciplinary project is to combine models of information avalanches in mediated networks developed in the social sciences - in communication theory, media theory, and science and technology studies - with probabilistic models of data mining in complex networks and mathematical models about the evolution of complex networks developed in physics.

Empirically, we concentrate on the issue of how in science different topics appear, spread out through the scientific community and lead to epidemic-like behaviour (scientific avalanches) and how such scientific avalanches trigger and resonate with avalanches of information about science in the wider public. Data gathering in the project will be based on both bibliometric and webometric techniques.

The goal of the project is to develop policy recommendations based on a new and innovative understanding of critical events in mediated social networks with regard to scientific avalanches in science and the public understanding of science.

Consortium:

Faculty of Physics and the Center of Excellence for Complex Systems Research at Warsaw University of Technology

S.U.P.R.A.S. & G.R.A.S.P group at the University of Liege

Netherlands Institute for Scientific Information Services of the Royal Netherlands Academy of Arts and Sciences

Research Institute for Advanced Technologies and School of Computing and Information Technology at the University of Wolverhampton

Faculty of Informatics at the University of Karlsruhe

Selected papers:

- M. Baur et all, Visone - software for visual social network analysis
- T. Schank & D. Wagner, Finding, counting and listing all triangles in large graphs, an experimental study
- P. Fronczak, A. Fronczak & J.A. Holyst, Interplay between network structure and self-organized criticality
- A. Fronczak, P. Fronczak & J.A. Holyst, Fluctuation-dissipation relations for complex networks
- R. Lambiotte & M. Ausloos, From sand to networks: a study of multi-disciplinarity
- R. Lambiotte & M. Ausloos, Endo- vs. Exo-genous shocks and relaxation rates in book and music "sales"
- R. Prabowo & M. Thelwall, Evaluating feature selection methods for RSS feeds.
- M. Thelwall, R. Prabowo & R. Fairclough, Are raw RSS feeds suitable for broad issue scanning? A science concern case study

Status: Start Date: January 1st, 2005, in the New and Emerging Science and Technology Activity of the EU 6th Framework Programme, Call FP6-2003-NEST-Path.

Duration: ***3 years*** ***Granted EC Contribution:*** ***1.241 M€***

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