

# EURANDOM

## Executive Summary of the Annual Report 2003

### 1. MISSION STATEMENT

The present executive summary is based on the figures in the annual report of EURANDOM covering 2003, and refers to the years 1998 - 2003.

The mission of EURANDOM is to foster research in the stochastic sciences and their applications. It achieves this mission by helping talented young researchers find their way to tenured positions in academia and industry, by carrying out and facilitating research through postdoctoral and graduate appointments, visitor exchange and workshops, and by taking initiatives for collaborative research at the European level.

### 2. RESEARCH PROGRAMMES

#### 2.1. Interacting Stochastic Systems

moves at the interface between probability theory, statistical physics and ergodic theory. The goal is to study the complex behaviour of systems with a large number of interacting stochastic components. The main applications are in physics, chemistry and biology.

#### 2.2. Stochastics of Extremes and Risk Analysis

focusses on theoretical and applied issues in probability and statistics related to finance, insurance and economics. It has built up particular expertise in the area of extreme value theory. In 2002 reinsurance was added as a key topic.

#### 2.3. Statistical Information and Modelling

is concerned with mathematical statistics. Part of the focus is on statistical models and data of high

dimension, such as arising in signal and image analysis, quantum physics or epidemiology. Another part of the focus is on experimental design, where the goal is to apply algebraic methods for constructing designs and to extend the Gröbner basis approach, applying it to real data sets. The programme is expanding in the area of quality control and reliability.

#### 2.4. Stochastic Networks

is concerned with the performance analysis and optimisation of stochastic networks. The research ranges from the study of paradigms for the description of congestion networks, via the analysis of stability conditions of queueing networks, to control and optimisation issues. Telecommunications and computer- and manufacturing networks provide important application areas.

#### 2.5. Computational Molecular Biology

focusses on statistical inference and probabilistic modelling for biomolecular processes as well as biomedical data. The programme runs with the support of biological and mathematical institutions in The Netherlands, in Europe and in the USA. Postdocs spend a couple of months abroad at a biological institute.

### 3. STAFF AND RESEARCH

Each programme hosts on average four to six postdocs and graduate students, is supervised by scientific advisors, and is guided by an international steering committee.

EURANDOM offers attractive scientific surroundings to conduct research on random phenomena. Since its start, some 60 postdocs and graduate students have been working at EURANDOM. About 25 junior researchers are working at EURANDOM at any time. Most of the

researchers (80 %) have found tenured positions in academia or industry after they left the institute.

At the moment EURANDOM is in the process of re-aligning its research into three, larger, thematically organised research programmes, operational by the summer of 2004.

### 4. FACTS AND FIGURES

#### 4.1. Workshops and conferences

Workshops and conferences held at EURANDOM in 2003:

\* January 15-18, 2003

**Statistical Learning in Classification and Model Selection** SIM

\* January 23-25, 2003

**Dependence in Extreme Value Theory** SERA

\* February 12 and 13, 2003

**Tutorial Reinsurance: Actuarial Aspects** SERA

\* February 20-22, 2003

**Statistical Aspects of Microarray Data** CMB (Aarhus)

\* March 13 and 14, 2003

**Benelux-Workshop on Performance Analysis of Communication Systems** SN

\* April 23-26, 2003

**Joint Workshop on Statistical Data Mining and Pro-Enbis Meeting** SIM

\* June 23-27, 2003

**Dutch-Hungarian Workshop on Randomness in Space and Time** (Budapest) ISS

\* September 8-11, 2003

**Heavy Traffic Analysis and Process Limits of Stochastic Networks** SN

\* September 18 and 19, 2003

**AON Re Europe Science Team Meeting, Statistical Issues in Actuarial Risk Modelling:**

**Dependence Modelling and Detrending** SERA

\* October 16, 2003

**"STIELTJES AFTERNOON".**



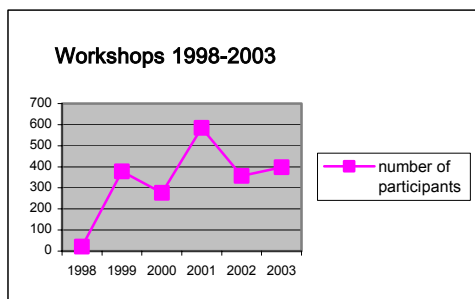
\* December 8-10, 2003

**Gibbs vs. non-Gibbs in Statistical Mechanics and Related Fields** ISS

Two of these workshops were organised abroad (Aarhus and Budapest). Furthermore, EURANDOM sponsored the 39<sup>th</sup> Dutch Mathematical Congress at Tilburg University.

**Number of workshops at EURANDOM 2003: 9.**

**Total number of participants: 530**



**4.2. Lectures and Seminars**

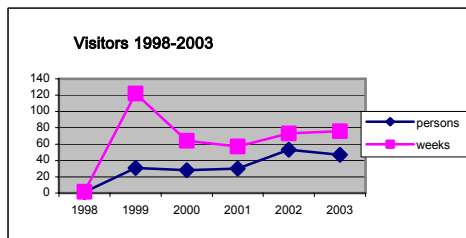
Lectures and seminars are organised on a regular basis within the framework of each of the five research programmes. Sometimes seminars are joint events, e.g. the SN-SOR seminar with TU/e, the Mark Kac seminar and the Quantum seminar.

**Number of lectures and seminars 2003: 95**

**4.3. Visitors**

In 2003, EURANDOM hosted 2 long-term visitors (for 3 months), 4 medium-term visitors (for 1 month), and 41 visitors for a shorter period (a few days up to 4 weeks).

**Number of visitors 2003: 46**  
**Total duration of stay: 75,5 weeks**

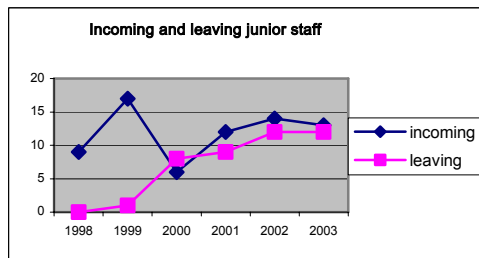


**4.4. Staff**

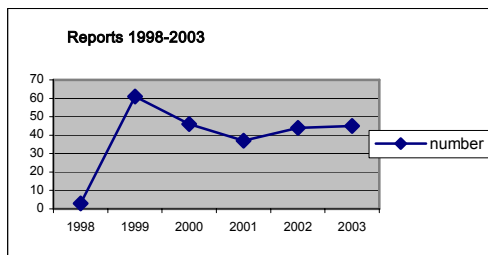
	Staff	Dir.	Adm.	Advi.
People in numbers *	37	3	5	14
People in fte**	23.7	2	3,7	2,7

\* total  
 \*\*fulltime equivalent

**The total number of junior staff on December 31, 2003 was 23.**



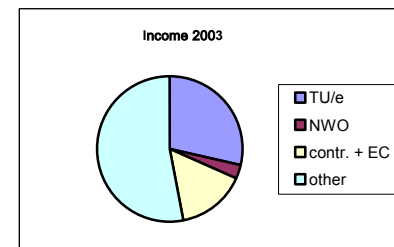
**4.5. Publications**



**In 2003, 45 EURANDOM Reports appeared. 98 publications appeared in international refereed journals**

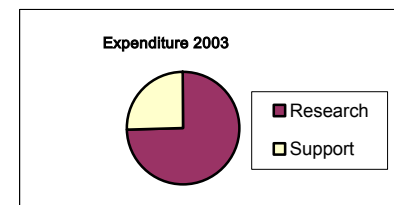
**5. FINANCE**

The following figures report on income and expenditure:



*Research includes costs of salary of postdocs and graduate students, scientific director, scientific advisors, EURANDOM chair, library, workshops & visitors and travel costs.*

*Support includes salary of the administrative staff and managing director, offices, software, maintenance and service, depreciation and general costs.*



*WTH*  
 Prof.dr. W.Th.F. den Hollander,  
 Scientific Director  
 Eindhoven, May 2004

The full text of the Annual Report 2003 is available at the EURANDOM secretariat, [office@eurandom.tue.nl](mailto:office@eurandom.tue.nl).  
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