FRONTIER RESEARCH FOR PRACTICAL APPLICATIONS

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CWI

CWI is the national research institute for mathematics and computer science. Since its foundation in 1946, the institute has acquired a prominent position in the research world. CWI co-founded the European Research Consortium for Informatics and Mathematics ERCIM (1989), and participates in the Telematics Institute and the Sciencepark Amsterdam (WTCW). CWI manages the World Wide Web Consortium Office in the Benelux.

MISSION

◆ Frontier research in mathematics and computer science
◆ Knowledge transfer to society in general, and trade & industry in particular

FINANCES

Total annual budget (2003) 13 million euro:
◆ Basic subsidy from the Netherlands Organization for Scientific Research NWO (70%)
◆ Participation in (inter)national research programmes and commissions from industry and government (30%)

STAFF

Total staff 193 fte:
◆ 128 fte researchers (30 full professors) + 10 fte seconded
◆ 55 fte supporting staff

POSITIONING

CWI performs fundamental research on themes derived from societal needs, which are continuously renewed. There is close cooperation with universities and national graduate schools and, on the road to concrete applications, also with industry and large knowledge institutions, including Philips, the Netherlands Organization of Applied Research TNO, Thales, MARIN, the ministry of Public Works, ASML, and Lucent Technologies. CWI is involved in the transfer of applications through spin-off companies, for example Data Distilleries (data mining) and Eidetica (knowledge management systems).
CWI Incubator B.V. supports these starting companies from idea to product.

SCIENTIFIC RESEARCH

Academia

CWI

TNO,
Technological Institutes

Industrial Research
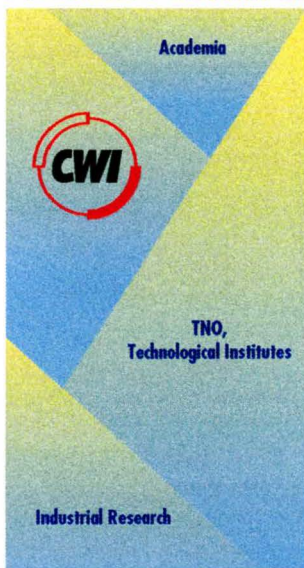
APPLICATIONS

SCIENTIFIC RESEARCH

CWI research is grouped into clusters of interdisciplinary themes.

Cluster
  ◆ *Theme*

Probability, Networks and Algorithms
  ◆ Networks and Logic -- Optimization & Programming
  ◆ Advanced Communication Networks
  ◆ Stochastics
  ◆ Signals and Images
  ◆ Cryptology and Information Security

Software Engineering
  ◆ Interactive Software Development and Renovation
  ◆ Specification and Analysis of Embedded Systems
  ◆ Coordination Languages
  ◆ Evolutionary Systems and Applied Algorithmics
  ◆ Convergent Media Interfaces

Modelling, Analysis and Simulation
  ◆ Nonlinear PDEs: Analysis and Scientific Computing
  ◆ Computing and Control
  ◆ Nonlinear Dynamics and Complex Systems

Information Systems
  ◆ Standardization and Knowledge Transfer
  ◆ Data Mining and Knowledge Discovery
  ◆ Multimedia and Human-Computer Interaction
  ◆ Visualization
  ◆ Quantum Computing and Advanced Systems Research

SUPPORT

Supporting facilities for the researchers include an excellent library, advanced computing facilities, and a publication service. In addition, support is provided regarding project management, acquisition, public relations and science information.

Some key functions
Library
Computing infrastructure
Communication and Publication
International and national programmes
Science information

Function Name	Telefone (+31 20 592...)	E-mail (....@cwi.nl)
General Director		
J.K. Lenstra	4178	Coby.van Vonderen
Cluster Leader *Theme Leader*		
A. Schrijver	4087	Lex.Schrijver
A.M.H. Gerards	4045	Bert.Gerards
M.R.H. Mandjes	4195	Michel.Mandjes
J. van den Berg	4088	J.van.den.Berg
H.J.A.M. Heijmans	4057	Henk.Heijmans
R.J.F. Cramer	4166	Ronald.Cramer
P. Klint	4126	Paul.Klint
P. Klint	4126	Paul.Klint
J.C. van de Pol	4137	Jaco.van.de.Pol
J.J.M.M. Rutten	4116	Jan.Rutten
J.A. La Poutré	4082	Han.La.Poutre
D.C.A. Bulterman	4300	Dick.Bulterman
J.G. Verwer	4095	Jan.Verwer
A. Doelman	4226	Arjen.Doelman
B. Koren	4114	Barry.Koren
U.M. Ebert	4206	Ute.Ebert
M.L. Kersten	4066	Martin.Kersten
M.L. Kersten	4066	Martin.Kersten
M.L. Kersten	4066	Martin.Kersten
H.L. Hardman	4147	Lynda.Hardman
R. van Liere	4118	Robert.van.Liere
H.M. Buhrman	4076	Harry.Buhrman

Collaborative virtual reality workspace.

Contact Person		
A.L. Ong	4030	Ay.Ong
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G.M.T. Nieuwendijk	4181	Godelief.Nieuwendijk
F.A. Roos	4033	F.A.Roos
A.C. Kik	4248	Annette.Kik

COOPERATION AND KNOWLEDGE TRANSFER

CWI maintains a broad spectrum of contacts with companies and institutions, usually through joint participation in a project. Besides there are direct commissions from industry and the government CWI presents itself annually to the world of trade & industry in October.

CWI participates in several European projects and is a partner in many national projects from NWO (for example through its foundations for the technical sciences STW), the Telematics Institute, and others. Academic partners are mainly found in NWO projects, industrial participation is compulsory in for example projects from STW and the Telematics Institute.

CWI's active role in the ERCIM consortium, in which major research institutions from 18 European countries are represented, leads to cooperation with several European partners. Bilateral agreements have been concluded with ERCIM members Fraunhofer (Germany), INRIA (France) and SZTAKI (Hungary).

CWI's international research partners include:

Trade & industry
Akzo Organon
ASML
Falck
France Télécom
IBM
KPN
Logica CMG
Lucent Technologies
Microsoft
Nokia
Philips
Shell
Thales

Research centres
CCLRC
INRIA
Fraunhofer ICT Group
and 14 other ERCIM members
Max Planck Gesellschaft

Universities
Barcelona
Bonn
Columbia Un.
Cambridge
ETH Zürich
Gent
London
München
Singapore
Waterloo

Bio-Informatics research: mathematical modeling and interactive visualization of biological processes

RECENT APPLICATIONS

- Optimization of railroad traffic
- Integrated services in telecommunication networks
- Traffic control of urban motorway networks
- Image processing on the Web
- Renovation of existing software
- Interactive visualisation for modeling complex phenomena
- Testing of embedded software with formal methods
- Component-based software
- Evolutionary methods for e-commerce and management
- Models for biochemical processes in living cells
- Optimal shape of ship hulls
- Factoring the RSA-155 data security code
- Querying large distributed multimedia databases
- SMIL – language for multimedia presentations on the Web
- XHTML – a bridge from HTML to XML
- Discrete tomography
- Image recognition of whale tail fins