Report of TC1 on Foundations of Computer Science

Takayasu Ito
(TC1 Chair)

Takayasu Ito
(TC1 Chair)

Introductory Remarks

TC1 has been established since January 1st, 1997. The first TC1 chair was Prof Giorgio Ausiello (Italy), who served two terms (six years), leading to establish the current structure of TC1. In September, 2003 the election of the new chair was held, and.the current TC1 chair (Takayasu Ito) was unanimously elected through electronic voting. He has been the TC1 chair since January 1st, 2003. The secretary of TC1 was Prof Roberto Gorrieri (Italy) until the end of 2003, and Prof Naoki Kobayashi (Japan) has been appointed as the new secretary of TC1 on January 1st, 2003. The last TC1 meeting chaired by the past chair was held at Montreal on August 27, 2002, and the first TC1 meeting chaired by the new chair was held at Berlin on February 26, 2003, as reported below. There have been some changes in the TC1 membership, following the decision made at the Montreal meeting.

This report is organized as follows:

1. Meetings
2. Changes in Membership and Officers
3. Working Group Activities
4. IFIP TC1 Conferences
5. Publications
6. Progress and Status
7. Other Issues

Appendix: Activity Reports of Working Groups of TC1

1. Meetings

The following meetings of TC1 and its WGs have been held in *2002   2003*.

[TC1 Meetings]

TC1 Meeting	August 27, 2002	Montreal, Canada
TC1 Meeting	February 26, 2003	Berlin, Germany
TC1 Meeting	August, 2004	Toulouse, France

Two TC1 meetings were held since August, 2002; one at Montreal on August 27, 2002, and another at Berlin on February 26, 2003. The Montreal meeting organized by the past chair was held during WCC 2002, having five TC1 members. The main issues at the Montreal meeting were (1) election of the new chair and (2) changes in TC1 membership.The Berlin meeting was held at the time of Symposium on Theoretical Aspects of Computer Science (STACS'03), having four TC1 members. The main issue at the Berlin meeting was the financial matter incurred by the organizational and financial failure of WCC 2002 at Montreal. The next TC1 meeting will be held in August, 2004 during TCS 2004 (Toulouse), a subconference of WCC 2004 (Toulouse, France).

[WG Meetings] (June, 2002　July, 2003)

WG1.1 Meeting	August, 2002	Minneapolis, USA
WG1.1 Meeting	October, 2002	Schloss Dagstuhl, Germany
WG1.1 Meeting	July, 2003	Sydney, Australia
WG1.1 Meeting	*September, 2003*	Berlin, Germany
WG1.2 Meeting	August 21--24, 2002	London, Ontario, Canada
WG1.2 Meeting	July 12--14, 2003	Budapest, Hungary
WG1.3 Meeting	September 22—24, 2002	Chiemsee, Germany
WG1.3 Meeting	June 1—4, 2003	Menorca, Spain
WG1.4 Meeting	November 24—26, 2002	Luebeck, Germany
WG1.4 Meeting	*August 24—27, 2003*	Washington, DC., USA
WG1.6 Meeting	July 25, 2002	Copenhagen, Denmark
WG1.6 Meeting	June 12, 2003	Valencia, Spain
WG1.7 Meeting	September 23-27, 2002	Bertinoro, Italy
WG1.7 Meeting	April 5—6, 2003	Warsaw, Poland
WG1.7 Meeting	*March, 2004*	Barcelona, Spain

2. Changes in Membership and Officers

The TC1 members are categorized as follows:

    a) Representatives from IFIP Member Organizations

    b) Members recommended by TC1 and approved by the relevant IFIP Member Organizations

c)   Members recommended by TC1, who are experts in the area of TC1.

Note that the members of the categories a) and b) have full voting rights.

Some members have left, and some new members have joined in. The current TC1 members are as follows:

TC1 Members (2003)

J. Heintz (AR)*, W. Kuich (AT)*, P.D. Eades (AU)*, B. Sendov (BG)*,

I. Simon (BR)*, H. Jurgensen (CA), N. Santoro (CA), D. Wood (CA),

R. Baeza-Yates (CL)*, Y. Feng (CN)*, J. Gruska (CZ)*, W. Brauer (DE)*,

G. Hotz (DE), M. Nielsen (DK)*, J. Diaz (ES)*, M. Nivat (FR)*,

J. Sakarovitch (FR), A. Salomaa (FI)*, C.A.R. Hoare (GB), R. Milner (GB),

D.T. Sannella (GB)*, N. Missielis (GR)*, P. Spirakis (GR), Z. Esik (HU)*,

G. Ausiello (IT)*, Bertoni (IT), U. Montanari (IT), Takayasu Ito (JP)*,

J. de Bakker (NL), P. van Emde Boas (NL), J. van Leeuwen (NL)*, G. Rozenberg (NL),

A.   Sernadas (PT)*, J. Blazewicz (PL)*, Tarlecki (PL), V. Batagelj (SI)*,

B.   Rovan (SK)*, S. Charmonman (TH)*, H. Hinchey (US; IEEE)*,

D.S. Johnson (US; ACM)*, J.C. Mitchell (US), M.O. Rabin (US), J. T. Traub (US),

L.G. Valiant (US), A. van der Walt (ZA)*

   [N.B.] * indicates a representative from an IFIP Member Organization.]

The TC1 Chair is Takayasu Ito (JP), and the TC1 secretary is Naoki Kobayashi (JP).

[N.B.]: Some membership changes in Working Groups are explained in Section 7.

3. Working Group Activities

The activities of Working Groups form the most important and essential parts of TC1 activities. Currently, TC1 has the following seven working groups:

WG1.1 on Continuous Algorithms and Complexity [Chair: J.F. Traub (US)]

WG1.1 continues its active activities having several workshops in 2002   2003; one at Minneapolis and another at Schloss Dagstuhl (Germany) in 2002, and also two workshops in 2003. WG1.1 expands its area of topics to cover a new area of continuous quantum computation.

WG1.2 on Descriptional Complexity [Chair: D. Wotscke (DE)]

The aims of WG1.2 are to promote research in all aspects of descriptional complexity. The latest emphasis has been on the descriptional complexity of bio-inspired computing models, quantum computing, cell automata and software reliability. WG1.2 organizes Workshop on Descriptional Complexity of Automata, Grammars and Related Structures

(DCFS Workshop) every year, and it continues to publish a special issue of DCFS Workshop in Journal of Automata, Languages and Combinatorics..

WG1.3 on Foundations of Systems Specification [Chair: P.D. Mosses (DK)]

WG1.3 organized two meetings in 2002, and the latest meeting was held at Menorca (Spain) on June 2 4, 2003. WG1.3 has elected the new chair Jose Luiz Fiadeiro (GB) at the Menorca meeting, and he will start serving as the WG1.3 chair on January 1st, 2003. One of the most important activities of WG1.3 has been the Common Framework Initiative (CoFI) for system specification, and the current WG1.3 chair P. D. Mosses has led to publishing two books on CASL (Common Algebraic Specification Language) that will be published from Springer in 2003. Also, WG1.3 is working on the FLIRTS initiative (Formalism, Logic, Institution Relating, Translating, and Structuring).

WG1.4 on Computational Learning Theory [Chair: A. Sharma (AU)]

The activities of WG1.4 have been actively done in connection with ALT (International Conference on Algorithmic Learning Theory) and COLT (ACM Conference on Learning Theory). In these years they are closely connected with International Conference on Discovery Science, International Conference on Machine Learning, and International Conference on Knowledge Discovery and Data Mining. These conferences are held every year, and an annual meeting of WG1.4 is usually organized at the time of the ALT conferences.

WG1.5 on Cellular Automata [Chair: G. Mauri (IT)]

No report is available from WG1.5 Chair and its Secretary at the time of writing this report.

WG1.6 on Term Rewriting [Chair: C. Kirchner (FR)]

The activities of WG1.6 have been actively done in connection with RTA (International Conference on Rewriting Theory and Applications. WG1.6 meeting in 2002 was held at Copenhagen (DK) on July 25, 2002, together with a workshop with six speakers, and its meeting in 2003 was held at Valencia (Spain) on June 12, 2003. WG16 is actively working on promotion of rewriting to other research domains by preparing an e-book, and on preparation of a database of examples in rewriting.

WG1.7 on Theoretical Foundations of Security Analysis and Design [Chair: R. Gorrieri]

WG1.7 is active in organizing two workshops on Theory of Security; one at Portland (US) at the time of ACM POPL 2002, and another at Warsaw (PL) at ETAPS 2003. In addition, it organized International School on Foundations of Security Analysis and Design (FOSAD 2002) at Bertinoro (IT) in 2002. WG1.7 published a tutorial book based on FOSAD 2000 as Springer LNCS Vol.2171, and a special issue on Foundations of Security Analysis and Design in Theoretical Computer Science Vol.283, No.2 (2002).

At the WG1.7 meeting held on April 6, 2003 the current chair R. Gorrieri was re-elected as the chair for another term, starting on January 1st, 2004.

All Working Groups of TC1 are active, having their annual meetings and workshops, and also publishing a number of books, proceedings, and special issues in journals. More details of the Working Group activities are given in Appendix of this report.

4. IFIP TC1 TCS Conferences

Besides WG activities one of the most important TC1 activities is to organize the International Conference on Theoretical Computer Science (IFIP TC1 TCS Conference). The first TCS conference was successfully held at Sendai (Japan) in August, 2000. Its conference chairs were Giorgio Ausiello and Takayasu Ito, and its PC chairs were Jan van Leeuwen, Peter Mosses, Masami Hagiya, and Osamu Watanabe. The second TCS conference was held on August 25-30, 2002 as a subconference of WCC 2002 at Montreal. Its conference chair was Nicola Santoro, and its PC chairs were R. Baeza-Yates and U. Montanari. The TCS 2002 was scientifically successful, but it has been damaged by the organizational and financial failure of WCC 2002.

TCS 2004 will be held as a subconference of WCC 2004 to be held at Toulouse (France) in August, 2004. It will consist of two tracks:

Track (1) on Algorithms and Complexity

Track (2) on Logic, Semantics, and Specification

following the tradition of TCS 2000 and TCS 2002.

The conference chair of TCS 2004 is Jean-Jacques Levy (INRIA, France), and the PC chairs are Ernst Mayr (Technical Univ of Muenchen) and John Mitchell (Stanford Univ).

The Steering Committee of TCS 2004 consists of the following members:

G. Ausiello (chair), R. Beaza-Yates, W. Brauer, T. Ito, J.-J. Levy, E. Mayr, J. Mitchell, U. Montanari, M. O. Rabin, N. Santoro, J. Traub

Jean-Jacques Levy (TCS 2004 Conference Chair) is the TC1 representative to WCC 2004 IPC (International Program Committee) chaired by Reino Kurki-Suonio.

5. Publications

The publications of TC1 and its Working Groups are as follows.

1) Theoretical Computer Science, Proc. of Int'l Conference IFIP TCS 2000, (Eds.) J. van Leeuwen, O. Watanabe, M. Hagiya, P. D. Mosses, and T. Ito, Lecture Notes in Computer Science, Vol. 1872, Springer (2000)

2) Foundations of Information Technologies in the Era of Network and Mobile Computing, Proceedings of Int'l Conference IFIP TCS 2002, (Eds.) R. Baeza-Yates, U. Montanari, N. Santoro, Kluwer Academic (2002)

3) Special Issue on Concurrency Theory, (Ed.) T. Ito, *Information and Computation*, Vol. 177, No. 2 (2002)

4) Special Issue on Descriptional Complexity of Automata, Grammars and Related Structures, *Journal of Automata, Languages and Combinatorics*, Vol.5, No.3 (2000)

5) Special Issue on Descriptional Complexity of Automata, Grammars and Related Structures, *Journal of Automata, Languages and Combinatorics*, Vol.6, No.4 (2001)

6) Special Issue on Descriptional Complexity of Automata, Grammars and Related Structures, *Journal of Automata, Languages and Combinatorics*, Vol.7, No.4 (2002)

7) Special Issue on Descriptional Complexity of Automata, Grammars and Related Structures, *Journal of Automata, Languages and Combinatorics*, *to appear* (2003)

8) Special Issue on Descriptional Complexity of Formal Systems, Theoretical Computer Science, to appear (2003)

9) CASL User Manual, (Ed.) P. Mosses, Lecture Notes in Computer Science, Springer, to appear (2003)

10) CASL Reference Manual, (Ed.) P. Mosses, Lecture Notes in Computer Science, Springer, to appear (2003)

11) Special Issue on Foundations of Security Analysis and Design, *Theoretical Computer Science*, Vol.283, No.2 (2002)

6. Progress and Status

TC1 and its activities are steadily established and developed since it started in January 1st, 1997, forming seven WGs and initiating TCS conferences.

[WG Activities]

WG1.1 is continuing its active and interesting activities, expanding its area so as to include quantum computation. WG1.2 is doing its steady activities, having its annual worshop and publishing regularly a journal special issue based on the workshop. WG13 is very active in conducting the CoFI (Common Framework Initiative) and the FLIRTS initiative, producing two publications on Common Alegraic Specification Language (CASL) that will be published as two volume of Springer LNCS in 2003. WG1.4 and WG1.6 are active in connection with their related international events; WG1.4 with ALT and COLT, and WG1.6 with RTA. It is hoped that the events organized by WG1.4 and WG1.6 would become IFIP official events. (Note that ALT, COLT and RTA are international events that

have longer histories than TC1, WG1.4 and WG1.6.) WG1.7 is the newest WG of TC1. It has started actively in organizing workshops and tutorials, publishing books and journal special issues on Foundations of Security Analysis and Design. The activity of WG1.5 is not visible since no report is available.

[TCS Conferences]

TCS 2000 that was held independently of WCC was successful. TCS 2002 that was held as a subconference of WCC 2002 looks scientifically successful, but it has failed, incurred by the organizational financial failures of WCC 2002. It is hoped that TCS 2004 at WCC (Toulouse) would be a successful one. TCS (Theoretical Computer Science) has grown and has been considered to be an important theory area comparable to mathematics, theoretical physics and theoretical economics with close relation to them. Future TCS conferences may be re-considered, taking into account the importance of TCS in foundations of science and technology.

[Publications]

TC1 and its WGs have been active in publishing conference proceedings and journal special isuues, but most of them haven't created any royalities. It is important for TC1 and WGs to publish books that create royalities which can be used to vitalize activities of TC1 and WGs.

[Emerging Theory Areas]

There are several important emerging theory areas such as theoretical aspects of DNA and biological computing, quantum computing, theoretical aspects of global computation, theoretical aspects of human-centered computing, etc. It would be interesting to consider creation of new WGs to cover these areas.

7. Other Issues

(1) Changes of Members and Officers in Working Groups

There are several changes in WG officers and members.

[WG1.3]

At the meeting held on June 2 4, 2003 the WG1.3 has made the following decision.

  a) New WG1.3 chair (starting on January 1st, 2004)

   Jose Luiz Fiadeiro (GB) has been unanimously elected as the new chair.

   [The current secretary Christine Choppy will continue to serve.]

 a) New WG1.3 Member (starting on January 1st, 2004)

   Dominique Duval (FR)

 b) Termination of WG1..3 membership (terminating on December 31, 2003)

   Jean-Pierre Jouannaud (FR)

[WG1.7]

At the meeting held on April 6, 2003 the WG1.7 has made the following decision.

   a) WG1.7 chair (starting on January 1st, 2004)

       Roberto Gorrieri (IT) has been unanimously re-elected as the chair.

       [The current vice-chair C. Meadows and current secretary R. Focardi will continue to serve.]

   b) New WG1.7 Member (starting on January 1st, 2004)

       Jan Juerjens (DE)

       Jean-Jacques Quisquater (BE)

   c) Termination of WG1.7 membership (to be terminated on December 31, 2003)

       C. Jonsson (SE), U. Maurer (CH), Y. Moses (IL)

Note that the termination of WG members is decided by the corresponding WG when they are NOT active in the WG activities.

(2) Description of Role of a TC1 Member

Following the discussions of the Technical Assembly meeting at Bilbao the TC1 is discussing on Draft description of Role of a TC1 member. The following draft has been prepared by the TC1 chair for discussion through emails.

The Role of an IFIP TC1 Member   <Draft>

- TC1 members are asked to provide information to the Technical Committee about the latest important progress on research and education on foundations of computer science in the spirit of AIMS and SCOPE of TC1.

- TC1 members should attend annual TC1 meetings, or send their apologies when they are unable to attend.

- TC1 members should join in and promote TC1 activities, participating events of TC1 and its Working Groups, and exchanging and expressing their opinions and views at TC1 meetings or by use of emails and internet as the leading scientists in the area of foundations of computer science.

- It is expected that the representative from the IFIP member organizations would report about the latest important R&D activities on TCS in their organizations or countries.

- TC1 members should watch WGs' activities, and collaborate to them, providing advices, comments and suggestions on their research directions and activities.

- TC1 members should collaborate in promotion of TC1 activities, hosting TC1 events and sending participants to TC1 events that are open to the public.

(3) On financial issues of TCS 2002 at Montreal

The financial issues (mainly, reimbursement of travel costs of invited speakers) incuured by the WCC 2002 Organizing Committee have been one of the most serious issues of TC1, since the Berlin meeting held on February 26, 2003.

TCS 2002 Conference Chair N. Santoro and its TCS 2002 Steering Committee Chair G. Ausiello have been in charge of clarifying the issue. If none of the WCC 2002 Organizing Committee, Canadian Information Processing Society, Quebec Information Society and the IFIP EB (Executive Board) does not take care of the issue of reimbursement the issue will be discussed at the next TC1 meeting. For this discussion it has been asked to the TCS 2002 Chairs Santoro and Ausiello to submit a document of requesting use of the TC1 fund for the reimbursements, together with copies of documents like invitation letters (that explain what and how the invited speakers are supported), copies of payments for airfares and hotels if the invitations would have included support for these payments. It would be necessary for the TCS 2002 Chairs Santoro and Ausiello to check if the invited speakers of TCS 2002 are properly treated by the Organizing Committee and the authority of WCC 2002; if not, they need to submit some properly written report for discussions at the next TC1 meeting.

(4) On E-mail Discussions on Technical Issues and Business Matters

Reflecting lack of participants at past TC1 meetings the TC1 chair has proposed use of email discussions on Technical Issues and Business matters, although some critical issues such as important financial matters and election of a new TC1 chair should be discussed at the TC1 meeting.

(5) On Vice Chairmen of TC1

For the case of emergency that the current TC1 chair cannot play his role as the chair he has proposed to discuss having two Vice Chairmen of TC1 (one from the area of Algorithms and Complexity, and another from the area of Logic, Semantics and Specification). Some email discussions on this issue will be continued.

APPENDIX: Activity Reports of Working Groups of TC1

This appendix consists of two parts of containing the reports of the
Working Groups:

  WG1.1 on Continuous Algorithms and Complexity [chair: J. F. Traub]

  WG1.2 on Descriptional Complexity [chair; D. Wotschke]

  WG1.3 on Foundations of Systems Specification [chair: P. D. Mosses]

  WG1.4 on Computational Learning Theory [chair: A. Sharma]

  WG1.5 on Cellular Automata [chair: G. Mauri]

  WG1.6 on Term Rewriting [chair: C. Kirchner]

  WG1.7 on Theoretical Foundations of Security Analysis and Design
        [chair: R. Gorrieri]

 *Part I consists of six reports submitted in February, 2003; no report
is submitted from WG1.5.*

 *Part II consists of four reports submitted in July, 2003; no report
is submitted from WG1.4, WG1.5 and WG1.6.*

Part I: WG Reports submitted in February, 2003

[WG1.1 Report] (chair: J. F. Traub)

*WG 1.1 on Continuous Algorithms and Complexity is chaired by Joseph F.
Traub; the Secretary is Arthur G. Werschulz. There was a three day meeting
on Continuous Algorithms and Complexity at the August 2002 FoCM
(Foundations of Computational Mathematics) conference in Minneapolis,
Minnesota (USA). In addition, there was a workshop at the Schloss
Dagstuhl
(Germany) conference in October 2002.*

   *A new area of activity for WG 1.1 is continuous quantum computation.
At the FoCM conference there was a plenary lecture on quantum computation
by Professor Stefan Heinrich. Furthermore, there were a number of
talks at the Dagstuhl workshop on quantum computation.*

   *There will be two major meetings in 2003. A number of the sessions
at
ICIAM, which will be held in Sydney in July 2003, will be on Continuous*

Algorithms and Complexity. In addition, Professor Harold Niederreiter will present a plenary lecture. The second meeting will be MC 2003 to be held in Berlin in September 2003. Again, a substantial part of this meeting will be on Continuous Algorithms and Complexity.

The members of WG 1.1 stay in touch via CAC-NET. This is an electronic newsletter which is sent to over 250 people.

[WG1.2 Report] (chair: D. Wotschke)

WG 1.2 on Descriptional Complexity is chaired by Detlef Wotschke with Helmut Juergensen and Chandra Kintala both serving as vice-chairmen.

Descriptional Complexity has many facets and appears in different forms in various areas. Therefore the activities of WG 1.2 are subdivided into several subareas: Kolmogorov Complexity; Descriptional Complexity for Grammars, Automata and Related Structures; Descriptional Complexity and Software Reliability; Descriptional Complexity and Mathematical Linguistics.

In recent past, WG 1.2 has held the following meetings:
- DCAGRS'2001 - Workshop on Descriptional Complexity of Automata, Grammars and Related Structures, Vienna, Austria, July 20 - 22, 2001, in cooperation with DLT'2001, July 16 - 20, 2001.
- DCFS'2002 - Workshop on Descriptional Complexity of Formal Systems, London, Ontario, Canada, August 21-24, 2002.

The following meetings are being planned for 2003/04:
- DCFS'2003 - Workshop on Descriptional Complexity of Formal Systems, Budapest, Hungary, July 12-14, 2003, in cooperation with DLT'2003.
- Workshop on Descriptional Complexity and Mathematical Linguistics, date and location to be determined.
- Workshop on Kolmogorov Complexity and its Applications, date and location to be determined.
- DCFS'2004 - Workshop on Descriptional Complexity of Formal Systems, date and location to be determined.

Publications:

A selection of papers of

   DCAGRS'99 - Descriptional Complexity of Automata, Grammars and
      Related Structures, Magdeburg, Germany, July 1999, which
      was held by WG 1.2,

  appeared as a special issue in

   Journal of Automata, Languages and Combinatorics, Vol. 5, No.
   3, Editors: J. Dassow and D. Wotschke, Otto-von-Guericke-
   Universitaet Magdeburg, 2000.

A selection of papers of

   DCAGRS'2000 - Descriptional Complexity of Automata, Grammars
      and Related Structures, London, Ontario, Canada, July
      2000, which was held by WG 1.2,

  appeared as a special issue in

   Journal of Automata, Languages and Combinatorics, Vol. 6, No.
   4, Editors: J. Dassow, H. Juergensen and D. Wotschke, Otto-von-
   Guericke-Universitaet Magdeburg, 2001.

A selection of papers of

   DCAGRS'2001 - Descriptional Complexity of Automata, Grammars
   and Related Structures, Vienna, Austria, July 2001, which was
   held by WG 1.2,

  will appear as a special issue in

   Journal of Automata, Languages and Combinatorics, Vol. 7, No.
   4, Editors: J. Dassow and D. Wotschke, Otto-von-Guericke-
   Universitaet Magdeburg, 2002.

A selection of papers of

-   DCFS'2002 - Workshop on Descriptional Complexity of Formal
   Systems, London, Ontario, Canada, August 2002, which was held
   by WG 1.2,

  will appear as a special issue in

   Journal of Automata, Languages and Combinatorics, in Fall 2003.

[WG1.3 Report] (chair: P. D. Mosses)

The second meeting of WG 1.3 in 2002 was for 2.5-days, and held at
Frauenchiemsee, near Munich, 22-24 September. The meeting was co-located

with WADT: Workshop on Algebraic Development Techniques, which is sponsored and organized by WG 1.3. The meeting was attended by 17 members, 10 observers, and 4 accompanying young researchers; it included 16 1-hour presentations (4 of which formed a joint session with the AGILE project on Mobility) and an administrative session. Abstracts of the presentations are available from the WG1.3 web pages.

The next WG 1.3 meeting is to be a 4-day meeting at Cala Galdana, on Menorca, 1-4 June 2003. The administrative session is to include the election of a new chair for WG 1.3: the present chair is stepping down at the end of 2003.

Apart from WADT, WG 1.3 sponsored ICGT'02: International Conference on Graph Transformation, Barcelona, October 2002. The conference was organized primarily by, and of considerable interest to, WG 1.3 Members; there were numerous satellite events, and more than 100 participants.

Current activities of WG 1.3 include the long-term Common Framework Initiative (CoFI), which is presently consolidating supportive materials for users of CASL, as well as continuing the development of CASL-based tools. Moreover, the FLIRTS initiative (Formalism, Logic, Institution - Relating, Translating and Structuring) has recently been revived.

An outline of the proposed IFIP book on CASL has been sent to the prospective publishers through the Executive Director of IFIP, but so far there has not been any confirmation of plans for publication.

After the appointment of two new members and one resignation in 2002, the membership of WG 1.3 is now 34 Members and 4 Members Emeriti.

[WG1.4 Report] (chair: A. Sharma)

The most recent event in the learning theory calendar was ALT'02 (The 13th International Conference on Algorithmic Learning Theory) held in Luebeck, Germany during November 24-26, 2002. ALT'02 was again collocated with DS'03 (International Conference on Discovery Science), as the practice of collocating a theoretical conference in learning with a practical conference has worked very well. The two conferences shared invited speakers. They were: Susumu Hayashi (Kobe University),

John Shawe-Taylor (Royal Holloway, University of London), Gerhard Widmer (Austrian Research Institute for Artificial Intelligence) and Rudolf Kruse (University of Magdeburg). The E.M. Gold Award Winner for the best student paper at ALT'02 was given to Daniel Reidenbach for his paper "A Negative Result on Inductive Inference of Extended Pattern Languages".

The next main event on the learning theory calendar will be the COLT'03 (Conference on Learning Theory). It will be held in Washington, DC during 24-27 August 2003. This is a change of venue from the earlier considered venue of Dartmouth, New Hampshire. COLT'03 will attempt a number of new experiments this year and will include the Seventh Kernel Workshop. Both these events will be collocated with ICML (International Conference on Machine Learning) and KDD (The Ninth ACM SIGKDD International

Conference on Knowledge Discovery and Data Mining) also being held in Washington, D.C. In addition there will be tutorials and invited papers in two target areas (Game Theory and Natural Language processing) and a later submission deadline for clearly stated one-page open problems. The Kernel Workshop has traditionally been held at NIPS (Neural Information Processing Conference); in 2003, it will constitute one day at COLT. Its papers will go through the regular COLT reviewing process (with a dedicated kernel area chair), and will be published in the COLT proceedings.

As the Chair was unable to attend the ALT'03 meeting in Luebeck in November 2002, the subject of change of Chair and other changes to WG1.4 could not be undertaken. This is a priority for the coming learning theory events.

[WG1.5 Report] (chair: G. Mauri)

<No report is available.>

[WG1.6 Report] (chair: C. Kirchner)

Short Report on IFIP WG-1.6 Activity
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

Past meeting: July 25, 2002, Copenhagen, Denmark

Participants: 14

This workshop has been the occasion for the presentation of five
new high-level results in term rewriting:
- Modular Termination Proofs Using Dependency Pairs
  by J gen Giesl.
- On Modularity in Context-sensitive Rewriting

  by Bernhard Gramlich.
- Deciding satisfiability problems by rewrite-based deduction:
  experiments in the theory of arrays
  by Maria Paola Bonacina.
- Lambda-calculus with end-of-scope
  by Vincent van Oostrom.
- Computational restrictions of rewriting in functional programming
  by Salvador Lucas.
In addition, Nachum Dershowitz has presented its ongoing works and
cooperations.
These research presentations have been followed by the business meeting,
where we have discussed of several important subjects: the promotion
of rewriting to other research domains (by the preparation of an e-book);
the preparation of a database of examples in rewriting (useful for
education, but also for researchers); the evolution of the group
membership; the events related to rewriting.

Next meeting: June 12, 2003, Valencia, Spain, during the RDP event.
(http://www.dsic.upv.es/~rdp03/wg16/)

Besides those meetings, the group is active the whole year by its
mailing-list, and also by its web page, related to the rewriting home
page and consulted by most of the researchers in our domain at
rewriting.loria.fr

[WG 1.7 Report] (chair: R. Gorrieri)

WG 1.7 on Theoretical Foundations of Security Analysis and Design has 23 members from 16 countries; it is chaired by Roberto Gorrieri, with Cathy Meadows and Riccardo Focardi serving as vice-chairwoman and secretary, respectively. Since the date of the last report, WG 1.7 has promoted (or is promoting) the following events:

- Workshop on Issues in the Theory of Security (WITS '02) January 2002, University of Portland, USA, as a satellite event of POPL 2002, (scientific
coordinator: Paul Syverson);
http://www.dsi.unive.it/IFIPWG1_7/wits2000.html.

- International School on Foundations of Security Analysis and Design (FOSAD) 23-27 September 2002, Bertinoro, Italy (scientific coordinators:
R.Focardi, R.Gorrieri) http://www.CS.UniBO.it/fosad/

- Workshop on Issues in the Theory of Security (WITS '03) 5-6 April 2003,
Warsaw, Poland, as a satellite event of ETAPS'03 (scientific coordinator:
Roberto Gorrieri)
http://www.dsi.unive.it/IFIPWG1_7/wits2003.html

- Workshop on Issues in the Theory of Security (WITS '04) March 2004, Barcelona, Spain, as a satellite event of ETAPS'04 (scientific coordinator:
Peter Ryan)
http://www.dsi.unive.it/IFIPWG1_7/wits2004.html

Publications:

- Volume 2171 of the Springer series LNCS-Tutorials has been published, with a collection of tutorial papers covering all the main courses of

the FOSAD 2000 school.

- A special issue of the journal TCS, edited by R.Gorrieri, on "Foundations

of Security Analysis and Design" has appeared as volume 283/2 in June 2002.

We are debating the issue of extending the WG to other geographical areas not yet represented.

The last meeting was held during WITS'02 in Portland, while the next WG

meeting will be held at WITS'03 (Warsaw, Poland), where on the agenda there will be the issue of election of new chairman, vice-chairman and secretary

(end of term).

Part II: WG Reports submitted in July, 2003

[WG1.1 Report]

WG 1.1 on Continuous Algorithms and Complexity is chaired by Joseph F.Traub; the Secretary is Arthur G. Werschulz.

There are two major meetings in 2003. A number of the sessions at ICIAM, which was held in Sydney in July 2003, were on Continuous Algorithms and Complexity. Professor Harold Niederreiter presented a plenary lecture on this topic at the conference. The second meeting will be MC 2003 to be held in Berlin in September 2003. Again, a substantial part of this meeting will be on Continuous Algorithms and Complexity.

Looking ahead to 2004, there will be a workshop at Schloss Dagstuhl in September. This workshop is limited to only 40 leading researchers chosen from all over the world. One of the main topics will be quantum computing.

The members of WG 1.1 stay in touch via CAC-NET. This is an electronic newsletter which is sent to over 250 people.

[WG1.2 Report]

Name of WG: WG 1.2 on Descriptional Complexity

Name of WG chair and secretary:

Chair: Prof. Detlef Wotschke
*   University of Frankfurt, Frankfurt, Germany*

Vice-Chairs: Prof. Helmut Juergensen
*   University of Potsdam, Potsdam, Germany,*
*   University of Western Ontario, London/Ontario, Canada*
*   Dr. Chandra Kintala*
*   Vice-President, AVAYA Labs Research, Basking Ridge,*
*   NJ, USA*

Secretary: Bettina Sunckel
*   University of Frankfurt, Frankfurt, Germany*

Overview of WG1.2 Activities:

Descriptional complexity has historically been a multidisciplinary area of study, with contributions from automata theory, computational complexity, cryptography, information theory, probability,statistics, pattern recognition, machine learning, computational learning theory, computer vision, neural networks, formal languages and other fields. The aims of the working group are therefore to promote research in all aspects of descriptional complexity through conferences, publications, and more informal means of scientific interaction such as electronic news groups. In 2002-2003 particular emphasis was and is being placed on the descriptional complexity of bio-inspired computing models and the relationship between descriptional complexity and software reliability.

Meetings of WG: (List of WG meetings held in 2003 - 2003)

A WG 1.2 meeting was held at the occasion of DCFS'2003 ? Workshop on Descriptional Complexity of Formal Systems, Budapest, Hungary,July 12-14, 2003.

Another WG 1.2 meeting is being planned for late 2003 or early 2004.

Changes in WG Membership: None

WG1.2 Activities:

Descriptional complexity has historically been a multidisciplinary area of study, with contributions from automata theory, computational complexity, cryptography, information theory, probability,statistics, pattern recognition, machine learning, computational learning theory, computer vision, neural networks, formal languages and other fields. The aims of the working group are therefore to promote research in all aspects of descriptional complexity through conferences, publications, and more informal means of scientific interaction such as electronic news groups.

Furthermore the WG tries to promote interaction and the exchange of

information across traditional discipline boundaries and to provide a point of contact for all researchers in all disciplines interested in descriptional complexity and its applications.

The scope of the working group encompasses all aspects of descriptional complexity, both theory and application. These aspects include but are not limited to
- *descriptional complexity of formal systems and structures*
- *various measures of descriptional complexity of automata, grammars, languages and of related systems*
- *trade-offs between descriptional complexity and mode of operation*
- *circuit complexity of Boolean functions and related measures*
- *succinctness of description of (finite) objects*
- *descriptional complexity in resource-bounded or structure-bounded environments*
- *structural complexity*
- *descriptional complexity of formal systems for applications (e.g. software reliability, software and hardware testing,modelling of natural languages) descriptional complexity aspects of nature-motivated (bio-inspired) architectures and unconventional models of computing*

In order to achieve these goals, WG 1.2 organizes workshops like DCFS (Descriptional Complexity of Formal Systems), which is mentioned below, on a regular basis. These workshops consist of invited papers by well-known researchers, submitted papers and group discussions about the future trends of descriptional complexity as well as areas closely related to descriptional complexity.

WG1.2 Events: Events held (2002 - 2003):

- DCFS'2002 - Workshop on Descriptional Complexity of Formal Systems, London, Ontario, Canada, August 21-24, 2002, organized by Prof. Juergen Dassow, Prof. Helmut Juergensen and Prof. Detlef Wotschke
Number of participants: 41

Publications:

-   Conference Proceedings (University of Western Ontario,
       edited by Helmut Juergensen, Juergen Dassow, Detlef Wotschke)
Special issue in Journal of Automata, Languages and
Combinatorics, will appear in late 2003 or early 2004

- DCFS'2003 - Workshop on Descriptional Complexity of Formal Systems,
    Budapest, Hungary, July 12-14, 2003, in cooperation with DLT'2003,
    organized by Prof. Csuhaj-Varhu and Prof. Detlef Wotschke
    Number of participants: 38
    Publications:
- Conference Proceedings (Computer and Automation Research Institute
  (SZTAKI) of the Hungarian Academy of Sciences (MTA),
       edited by Dr. Erzsebet Csuhaj-Varhu and Prof. Detlef Wotschke)
- Special issue of selected papers in Theoretical Computer Science,
  will appear in Spring 2004

Events planned :
-   Descriptional Complexity of Grammar Systems, early 2004,
       probably in Austria or Hungary
- DCFS'2004 - Workshop on Descriptional Complexity of Formal Systems,
       July or August 2004, probably in Canada
- Workshop on Descriptional Complexity and Mathematical Linguistics,
       date and location to be determined.
- Workshop on Kolmogorov Complexity and its Applications,
       date and location to be determined.
Related Events in 2003:
- DLT'2003 - 7th International Conference on Developments in Language
  Theory
       July 7 - 11, 2003, Szeged, Hungary

Publications:
----
1)   A selection of papers of
       DCAGRS'99 - Descriptional Complexity of Automata, Grammars and
         Related Structures, Magdeburg, Germany, July 1999, which was held

by WG 1.2,
　　appeared as a special issue in
　　　　Journal of Automata, Languages and Combinatorics, Vol. 5, No.3,
　　　Editors: J. Dassow and D. Wotschke, Otto-von-Guericke-Universitaet
　　　　Magdeburg, 2000.
2)　A selection of papers of
　　　　DCAGRS'2000 - Descriptional Complexity of Automata, Grammars
　　　　and Related Structures, London, Ontario, Canada, July 2000,

　　　　which was held by WG 1.2,
　　appeared as a special issue in
　　　　Journal of Automata, Languages and Combinatorics, Vol. 6, No. 4,
　　　　Editors: J. Dassow, H. Juergensen and D. Wotschke,
　　　　Otto- von-Guericke-Universitaet Magdeburg, 2001.
3)　A selection of papers of
　　　　DCAGRS'2001 - Descriptional Complexity of Automata, Grammars and
　　　Related Structures, Vienna, Austria, July 2001, which was held by
　　　　WG 1.2,
　　appeared as a special issue in
　　　　Journal of Automata, Languages and Combinatorics, Vol. 7, No.4,
　Editors: J. Dassow and D. Wotschke, Otto-von-Guericke-Universitaet
　Magdeburg, 2002.
4)　A selection of papers of
　　　　DCFS'2002 - Workshop on Descriptional Complexity of Formal Systems,
　　London, Ontario, Canada, August 2002, which was held by WG 1.2,
　　will appear as a special issue in
　　　　Journal of Automata, Languages and Combinatorics, in Fall, 2003.
5)　A selection of papers of
　　　　DCFS'2003 - Workshop on Descriptional Complexity of Formal Systems,
　　　　Budapest, Hungary, July 12-14, 2003,
　　will appear as a special issue in
　　　　Theoretical Computer Science, in Spring 2004.
Comments on Status of WG:

　　　　WG 1.2 will focus as its next projects on the descriptional
complexity of grammar systems, membrane computing, quantum computing

and cellular automata. Also the area of descriptional complexity and software reliability will be explored further.

[WG1.3 Report]
 Report of WG on Foundations of System Specification (July 26, 2003)
 Name of WG chair: Peter D. Mosses
 Name of WG secretary: Christine Choppy
 Overview of WG activities:
    The primary activities of WG1.3 during 2002-2003 concerned:
      - CoFI (Common Framework Initiative);
      - FLIRTS initiative (Formalism, Logic, Institution -
        Relating, Translating and Structuring); and
      - organization of co-sponsored workshops and conferences.
 Meetings of WG:
    * Chiemsee (Germany), 22-24 September 2002
    * Cala Galdana, Menorca (Spain), 1-4 June 2003
 Changes in WG Membership:
    * New Members: Dominique Duval, Tom Maibaum, Till Mossakowski
    * New Member Emeritus: Eric Wagner
    * Resignations: Jean-Pierre Jouannaud, Amilcar Sernadas
    * Peter Mosses is stepping down as chair at the end of 2003;
      Jos?ELuiz Fiadeiro has been elected chair from January 2004.

WG Activities:
      The WG1.3 activities during the past year included preparation of
 a publishing proposal for a book on CASL, the Common Algebraic
 Specification Language, the design of which was proposed by CoFI (the
 Common Framework Initiative for algebraic specification and
 development) and subsequently approved by WG1.3. In April 2003,
 Springer agreed to publish the CASL book as two volumes of LNCS (IFIP
 Series): a User Manual and a Reference Manual, with accompanying CD-ROM.
 A draft of the book, comprising 700 pages, was made available from the
 CoFI web pages <www.cofi.info> in July 2003. Provided that the
 finalization of the material is completed as planned by mid-October,
 the book should appear in print by the end of the year.
      WG1.3 activities included also the FLIRTS initiative (Formalism,

Logic, Institution - Relating, Translating and Structuring), which addresses foundational issues associated with the use of different kinds of logical specification. FLIRTS was a track in the 16th International Workshop on Algebraic Development Techniques.

Finally, WG1.3 members were prominent in the organization of the co-sponsored workshops and conferences listed below.

WG Events: (Events closely related and affiliated to WG)
  * 16th WADT: International Workshop on Algebraic Development Techniques,
      25-28 September 2002, Chiemsee (Germany)
      Organizing committee (all WG1.3 Members):
        Michel Bidoit (Cachan, France)
        Hans-J?rg Kreowski (Bremen, Germany)
        Peter Mosses, chair (Aarhus, Denmark)
        Fernando Orejas (Barcelona, Spain)
        Francesco Parisi-Presicce (Rome, Italy)
        Donald Sannella (Edinburgh, Scotland)
        Andrzej Tarlecki (Warsaw, Poland)
        Martin Wirsing (Munich, Germany)
      Number of participants: 61
      Proceedings: Springer LNCS, to appear, 2003.
  * ICGT 2002: 1st International Conference on Graph Transformation,
      8-12 October 2002, Barcelona (Spain)
      Organizing Committee:
      Andrea Corradini (Pisa, Italy) - WG1.3 Member
      Hartmut Ehrig (chair; Berlin, Germany) - WG1.3 Member
      Hans-J?rg Kreowski (Bremen, Germany) - WG1.3 Member
      Fernando Orejas (local organizer; Barcelona) - WG1.3 Member
      Grzegorz Rozenberg (Leiden, The Netherlands)
    Number of participants: 116
    Proceedings: Andrea Corradini, Hartmut Ehrig, Hans-J?rg Kreowski,
      Grzegorz Rozenberg (Eds.):
        "Graph Transformation",
    First Int'l Conference, ICGT 2002. LNCS 2505 Springer, 2002.

Publications:

* *CASL User Manual.*
  Michel Bidoit and Peter Mosses, CoFI (Common Framework Initiative).
  Springer LNCS (IFIP Series), to appear, 2003.
* *CASL Reference Manual.*
  CoFI (Common Framework Initiative), edited by Peter Mosses.
  Springer LNCS (IFIP Series), to appear, 2003.

Comments on Status of WG:

Over the past 5 years, WG1.3 has contributed to the consolidation of the algebraic approach to system specification in connection with CoFI and the design of the Common Algebraic Specification Language. The imminent publication of the CASL Book should reinforce the position of CASL (with its sub-languages and extensions) as an emerging de facto standard formalism for algebraic specification.

WG1.3 has also increased its activities regarding other approaches to system specification, such as graph transformation, and the co-algebraic approach. The background and interests of several of the new members elected in recent years reflects this trend of increasing breadth.

WG1.3 meetings are held every 9 months (every other meeting held in conjunction with WADT), which entails a rotation in the time of year of meetings. As a rule, talks last about 60 minutes, with plenty of discussion. The meetings are generally well-attended by members and observers alike. Due partly to its engagement in the CoFI and WADT activities, WG1.3 has not yet organized official IFIP events.

[WG1.7 Report]
Report of WG 1.7 "Foundations of Security Analysis and Design"

Name of WG chair: Roberto Gorrieri
Name of WG secretary: Riccardo Focardi

Overview of WG activities:

organisation of several workshops and publications of a book and journal special issues

Meetings of WG: one meeting in Warsaw, April 6, 2003

Changes in WG Membership:

New members: Jan Juriens (D), Jean-Jacques Quisquater (B)

Inactive members that will be removed if they do not appear at the next meeting: B. Jonsson (Sweden), U. Maurer (CH), Y. Moses (IL).

WG Activities: organisation of several workshops and publications of a book and journal special issues

WG Events: WITS Workshop on Issues in the Theory of Security

Warsaw (Poland), 5-6 April 2003

organiser: R.Gorrieri

number of participants: 55

publication: informal proceedings

http://www.dsi.unive.it/IFIPWG1_7/wits2003.html

WISP Workshop on Issues in Security and Petri Nets

Eindhoven (NL), 23 June 2003

organisers: R.Gorrieri, N.Busi and F.Martinelli

number of participants: 25

publication: technical report of Eindhoven Technical University

http://www.iit.cnr.it/staff/fabio.martinelli/wisp-cfp.html

FAST Workshop on Formal Aspects in Security & Trust (FAST)

Pisa, Italy, September 8 2003

organiser: F. Martinelli

publication: ENTCS volume

http://www.iit.cnr.it/FAST2003

In preparation:

- Workshop on Issues in the Theory of Security (WITS '04) April 2004, Barcelona, Spain, as a satellite event of ETAPS 2004, organiser: Peter Ryan; http://www.dsi.unive.it/IFIPWG1_7/wits2004.html.

- International School on Foundations of Security Analysis and Design (FOSAD) 19-25 September 2004, Bertinoro, Italy (scientific

coordinators: A.Aldini, M.Bravetti and R.Gorrieri)

http://www.CS.UniBO.it/fosad/

Pulications: besides the three volumes mentioned above, we are
   preparing:
- A second volume of the Springer series LNCS-Tutorials is in
   preparation, with a collection of tutorial papers covering all the
   main courses of the FOSAD school for the years 2001 and 2002. Expected
   publication time:early 2004.
- A second special issue of the journal TCS, edited by R.Gorrieri,
    on "Foundations of Security Analysis and Design" is planned to be
   published next year.

Comments on Status of WG:
 The WG is rather healthy and several activities take palce and new
 are starting.
 All the activities produce no real economic income for the WG as they
 Are organised freely. However, the visibility of the WG and its
 influence is increasing every year.