TC1 "Foundations of Computer Science" Activity Report

Jacques Sakarovitch, TC1 chair

1 TC1 News

Two members of TC1 have passed away in this year: Alberto Bertoni and Wilfried Brauer. Their memories have been recalled at the business meeting. Their obituaries have been published by EATCS and IFIP.

New members

1. Lars Birkedal (Aarhus) for ?? (Denmark), in replacement of Mogens Nielsen

2. Volker Diekert (Stuttgart) for GI (Germany), in replacement of Wilfried Brauer

3. Gerhard Jäger (Bern) for SI (Swiss), in replacement of Jose Rolim

4. Augusto Sampaio (Pernambuco) for SBC (Brazil), in replacement of Imre Simon

5. Ilaria Castellani (Nice-Inria), new WG 1.8 Chair

6. Gary Leavens (Florida), new WG 1.9/2.15 Chair

Arto Salomaa (Finland) has been appointed Honorary member of TC1.

Business metting

2014 business meeting of TC1 has taken place in Rome (Italy), colocated with TCS 2014 (see below) with 14 attendees.

Working Groups

Appendix ?? the list and the activity reports of the nine working groups of TC1.

Secretary

TC1 is still missing a secretary.

2 Key points

2.1 New web site

TC1 has a new web page at `www.ifip-tc1.org` where can be found, in particular, the updated list of members and links to web pages of every Working Group.

2.2 Organisation of TCS 2014

IFIP TCS (for Theoretical Computer Science) is a biannual conference organised under the sponsorship of TC1 and colocated with WCC since 2000, as the descendant of the "Theory Track" in the former WCC's. We have decided to keep the pace and to organise a TCS conference in spite of the non-existence of WCC this year.

It has taken place in Rome, 1–3 September, colocated with CONCUR, the main conference in the field of WG1.8. A half-day session has given the floor to WG's and three of them (1.2, 1.5, and 1.8) have taken the opportunity to present some of the important problems and results that arose recently in their scope.

With 76 submissions and 26 accepted papers, TCS 2014 has been been a successful conference, in progress in comparison with the three presious editions.

2.3 Creation of a new Working Group

TC1 has received a proposal for the creation of a new Working Group entitled *String Algorithmics & Applications* . This proposal has been sent to TC1 members, and discussed at the last Business Meeting The attending members and those who have sent apologies have unanimously expressed their support for the creation of the working group.

The proposal has thus been presented with confidence to IFIP TA. (*cf.*Appendix A).

Appendix A

Proposal for the creation of a new Working Group within TC1

TC1 has received a proposal for the creation of a new Working Group entitled

String Algorithmics & Applications

This proposal has been sent to TC1 members, and discussed at the last Business Meeting which was held in Rome on 31 August, 2014. The attending members and those who have sent apologies have unanimously expressed their support for the creation of the working group.

The proposal is thus presented with confidence to IFIP TA.

String algorithmics consists in the study of combinatorial properties of sequences of symbols — often called *words* but strings aim at a broader meaning — and in the building of efficient algorithms based on those properties.

One can track down the origin of the study of combinatorial properties of words in some mathematical work at the beginning of last century (Axel Thue), but the area really began to exist in the second half of the century with on one hand-side explosion of computers and the possibility of processing very large amount of data which are very often strings (texts) and on the other hand-side the discovery of DNA and that biology is also matter of (very large) strings.

String algorithmics is characterised by the well-defined object under study: combinatorial properties of words, and the large number of areas that are relevant to that kind of modellisation: from text compression to data mining to computational biology, to name a few.

The aims of the creation of a working group on that subject is to structuring, and giving visibility to the whole ICT community to, the activity of a large and dynamical community of researchers working essentially in an academic environment (rough evaluation of 1000 researchers for 2000 refereed papers a year)

Besides the relevance and the quality of the area from a scientific point of view the following points have convinced the TC1 members to supporting the proposal.

- There is no overlap, or not much, or not outside some aspects of the applications, with existing WG's, in TC1 or in other TC's.

- The proposers are strong and internationally well-known scientists.

- The members of the tentative list for the working group are also well-known researchers, and cover the variety of the subsubjects in the area and the communities involved.

Appendix B

Reports from Working Groups

The list of Working Groups of TC1, with their chairs, vice-chairs and secretaries as on 1st June 2014, is established as follows.

Ilaria Castellari and Mohammad Reza Mousavi have been appointed chair and secretary of WG 1.8 on 30 May 2014.

WG List

			WG Chairs		WG Secretaries	
1.1		Continuous Algorithms and Complexity	Arthur Werschulz	agw@dsm.fordham.edu	Anargyros Papageorgiou	ap@cs.columbia.edu
1.2		Descriptional Complexity	Giovanni Pighizzini	pighizzini@di.unimi.it	Andreas Malcher	andreas.malcher@ informatik.uni-giessen.de
			Helmut Jürgensen			
1.3		Foundations of System Specification	Till Mossakowski	till.mossakowski@ iws.cs.uni-magdeburg.de	Christine Choppy	christine.choppy@ lipn.univ-paris13.fr
1.4		Computational Learning Theory	Arun Sharma	arun.sharma@qut.edu.au		
			Paul Vitanyi	paul.vitanyi@cwi.nl		
1.5		Cellular Automata and Discrete Complex Systems	Jarkko Kari	jkari@utu.fi	Nicolas Ollinger	nicolas.ollinger@ univ-orleans.fr
1.6		Term Rewriting	Jürgen Giesl	giesl@ informatik.rwth-aachen.de	Peter Schneider-Kamp	petersk@imada.sdu.dk
			Hans Zantema	h.zantema@tue.nl		
1.7		Theoretical Foundations of Security Analysis and Design	Pierpaolo Degano	degano@di.unipi.it	Riccardo Forcardi	focardi@dsi.unive.it
			Véronique Cortier	cortier@loria.fr		
1.8		Concurrency Theory	Ilaria Castellani	ilaria.castellani@ inria.fr	Mohammad Reza Mousavi	m.r.mousavi@hh.se
1.9	2.15	Verified Software	Gary Leavens	leavens@eecs.ucf.edu		

4

WG 1.2 — Descriptional Complexity

Chair : Giovanni Pighizzini
Vice-Chair : Helmut Jürgensen
Secretary : Andreas Malcher

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Overview of WG Activites

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. Since 2002 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 in 2013

A formal WG 1.2 meeting was held on July 25, 2013, on the occasion of
DCFS 2013 - International Workshop on Descriptional Complexity of
Formal Systems, London, Ontario, Canada, July 22 25, 2013.

The next formal WG 1.2 meeting has been already held on the occasion
of DCFS 2014 - International Workshop on Descriptional Complexity of
Formal Systems, Turku, Finland, August 5-8, 2014.

Changes in WG Membership

No changes during 2013

WG Topics

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

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.

Events related to the Working Group in 2013

 DCFS 2013: International Workshop on Descriptional Complexity of
Formal Systems, London, Ontario, Canada, July 22 25, 2013.

The workshop has been organized by Helmut Jürgensen (University of
London/Ontario). The scientific part was consisting of 4 invited
lectures and 22 regular contributions, selected by a program committee
after a standard reviewing process. The Program Committee co-chairs
were and Rogério Reis. The proceedings have been published on LNCS
series. A special issue of the International Journal of Foundations
of Computer Science, devoted to extended versions of selected papers
is underway. 45 participants attended the workshop. Many of them are
members of the WG.

 DLT 2013: Conference on Developments in Language Theory, Marne la
Vallée, France, June 18-21, 2013

 CIAA 2013: Conference on Implementation and Application of Automata,
Halifax, Nova Scotia, Canada, July 16-19, 2013

NCMA 2013: Workshop on Non-Classical Models of Automata and
Applications, Ume, Sweden, August 13-14, 2013

Events in 2014

 DCFS 2014: International Workshop on Descriptional Complexity of
Formal Systems, Turku, Finland, August 5-8, 2014.

The workshop is organized, under supervision of the DCFS steering
committee, by Alexander Okhotin, who is be the co-chair of the Program
Committee together with Helmut Jürgensen and Juhani Karhumäki.

Publications in 2013

 Proceedings of the 15th International workshop Descriptional
Complexity of Formal Systems, DCFS 2013 (Guest Editors: Helmut
Jürgensen and Rogério Reis, editors), Lecture Notes in Computer
Science 8031, Springer, 2013.

WG 1.3 — Foundations of System Specification

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Chair : Till Mossakowski
Secretary : Christine Choppy
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 IFIP WG 1.3 meeting was held in Rome on March 16, 2013,
  with 21 members and 10 observers.  Ten talks were delivered.

 IFIP WG 1.3 sponsored coonference in 2013:

- CALCO 2013, September 2 to 6 in Warsaw, with 35 talks

 IFIP WG 1.3 has 43 members from all continents:

Europe: 1 BE, 9 DE, 2 ES, 4 FR, 5 IT, 3 NL, 2 PL, 11 UK
Africa: 1 DZ
Asia: 1 JP
Australia: 1 AU
America: 1 BR, 1 CA, 1 US
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WG 1.5 — Cellular Automata and Discrete Complex Systems

Chair : Jarkko Kari
Secretary : Nicolas Ollinger

                    2013 Brief Activity Report

The Working Group met during the AUTOMATA 2013 workshop in Giessen,
Germany on September 17-19:

http://www.informatik.uni-giessen.de/automata2013/

The workshop program consisted of three invited talks by members of the
working group (Pedro de Oliveira, Enrico Formenti and Nazim Fates), as well
as presentaitons of 8 full papers and 11 exploratory papers out of 30
submissions. The invited and full papers were published in LNCS 8155
proceedings book by Springer. This was the first time AUTOMATA published
its proceedings in the LNCS series. The exploratory papers were less
rigorously refereed and were published as a locally printed technical
report.

The WG meeting took place in September 18 and was attended by 9 members of
the group. The meeting decided that AUTOMATA 2014 will be organized by
T.Isokawa in Himeji, Japan, and that AUTOMATA 2015 will take place in
Turku, Finland. The minutes of the meeting are attached below.

Jarkko Kari, Chair of WG 1.5

Meeting of IFIP WG 1.5
Wednesday, September 18, 2013
16:45 - 17:35

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attending WG members:

P. De Oliveira
N. Fates
E. Formenti
J. Kari
M. Kutrib
A. Malcher
H. Nishio

V. Terrier
T. Worsch

Topics:

1. AUTOMATA 2014
2. AUTOMATA 2015

There were no requests to discuss further topics.

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1. AUTOMATA 2014

H. Nishio presented a proposal by Teijiro Isokawa to organize AUTOMATA
2014 in Himeji (Japan) on July 7-9, 2014.

There were no proposal to organize 2014 somewhere else.

Since the workshop will already be in July, deadlines for submission are
already pretty close. This lead to some discussion about the form of the
proceedings. It was agreed that it is a good idea to continue with the two
types of submissions as we have had in recent years: Normal refereed
submissions that appear in the public proceedings, and explaratory papers
with a later submission deadline and with shorter time slots in the
program.

* The exploratory papers could appear - if possisble - on some locally
  printed booklet as usual.

* Concerning the main proceedings it was agreed that LNCS this year
  worked well, and it would be good to try to continue with them.
  Because of the deadline problem there was a suggestion to look into
  the possibility of distributing the papers to participants only in the
  electronic form (USB key), and then having the LNCS proceedings appear
  in print only after the confernce.

  T. Isokawa will check the possibilities.

In the end the WG unanimously approved Isokawa's offer to organize
AUTOMATA.

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2. AUTOMATA 2015

If the venue of an upcoming AUTOMATA workshop is only decided upon one year
ahead can lead (and sometimes does lead) to unnecessary problems and

complications. The WG should try to make its decisions two years ahead.
This gives organizers more time to look for sponsors etc.

Following this suggestion J. Kari presented his proposal to organize
AUTOMATA 2015 in Turku (Finland), probably in mid June.

There were no proposal to organize 2014 somewhere else.

The WG unanimously approved Jarkko's offer to organize AUTOMATA 2015.

WG 1.6 — Term Rewriting

Chair : Jürgen Giesl
Vice-Chair : Hans Zantema
Secretary : Peter Schneider-Kamp

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As usual, the minutes of the meeting are on the website of the working group:

http://verify.rwth-aachen.de/IFIP-WG1.6/

 Annual meeting of the working group (usually before or after the
International Conference on Rewriting Techniques and Applications (RTA),
which is the main conference in our field).

 Annual organisation of the International Summer School on Rewriting
(ISR). The school is aimed at master and PhD students, researchers, and
practitioners interested in the study of rewriting concepts and their
applications. Since 2006, it took place in France, Austria, Brazil, The
Netherlands, and Spain. Forthcoming schools are planned in Chile, Germany,
and Australia.

 Discussions and advice on the future of the RTA conference.

 Maintenance of the list of open problems in rewriting.

 Maintenance of the rewriting home page.

WG 1.7 — Theoretical Foundations of Security Analysis and Design

Chair : Pierpaolo Degano
Vice-Chair : Véronique Cortier
Secretary : Riccardo Focardi

Home page: www.dsi.unive.it/IFIPWG1_7

2013 Brief Activity Report

The WG 1.7 mainly aims at investigating the theory of security, as well as of privacy and trust, at discovering and promoting new areas of application of theoretical techniques in computer security and at supporting the systematic use of formal techniques in the development of security related applications.

Currently it has 28 members, from 14 countries (USA: 8 1/2; France: 4; Italy, UK: 3; Germany: 2; Australia, Belgium, China, Denmark, Ireland, Luxemburg, Netherlands: 1; Israel: 1/2); a new members joined us at the last meeting, on 5 April in Grenoble.

The main activities of the WG in organising scientific events concern establishing and running:

Principles Of Security and Trust (POST), the sixth main conference of ETAPS, established in 2012 after 11 years of the Workshop on Issues in the Theory of Security (WITS) that became in 2011 an associated conference at ETAPS, under the name of Theory of Security and Applications (TOSCA). Almost always, these WS originated volumes in the LNCS series and special issues of archive journals. The issue of POST 2014 had a number of particpants ranging from 60 to 75. The creation of POST is one of the major outcomes of the WG;

a special issue of the Journal of Computer Security devoted to selected papers of POST 2013; similarly there will be a special issue of the Journal of Computer Security for POST 2014;

2ˆ Workshop on Hot Issues in Security Principles and Trust (HotSpot), a satellite event of ETPAS, that in this year had 17 submissions and about 35-40 participants;

International School on Foundations of Security Analysis and Design FOSAD, organised since 2000.

The WG is involved in the organisation of POST, HotSpot and FOSAD also in the years to come.

Needless to say, the members of the WG are actively involved in national and international projects on security; as members of the editorial boards of many highly reputed jornals; as PC members of many international conferences, and as PC and chairs (e.g. POST 2015); as well as in the dissemination of the theory and methodology of security in Universities, international schools (e.g. the mentioned FOSAD or the PhD school BISS (more than 40 participants, mainly from Italy) that takes place yearly), seminars etc.

WG 1.8 — Concurrency Theory

Chair : Ilaria Castellani
Secretary : Mohammad Reza Mousavi

2013 Brief Activity Report

IFIP WG 1.8 is an active working group with about 50 members. During the
last year, WG 1.8 has been organising several scientific activities, of
which the following list provides a concise overview:

 25 Years of Combining Compositionality and Concurrency (WS25CCC):

This event was organised from August 6 to August 9, 2013, in Hotel Loreley
in Königswinter (near Bonn) in Germany and marked the 25th anniversary of a
seminal event organised in 1988 with the same title (CCC) and the same
scope at the same location. About one third of the participants of the
1988 event responded positively to the invitation to the 2013 event.

The 2013 workshop, just like the 1988 edition, was by invitation only and
attracted 34 participants, many of whom were members of IFIP WG 1.8. The
meeting revealed a multitude of research directions, with a general trend
towards developing verification tools and putting ideas into practice.

A special issue of Acta Informatica is being organised to publish selected
papers from this event. A report of this event has been published by the
chair of IFIP WG 1.8 in the Bulletin of EATCS
(http://bulletin.eatcs.org/index.php/beatcs/article/view/234/226).

 TRENDS 2013 and 2014

These workshops have been organised as satellite events of the yearly
international conference on concurrency theory (CONCUR). The TRENDS
workshop, started in 2012, has become the annual regular event of WG 1.8,
open to external researchers and students. It is meant to provide an
overview of the recent trends in the area of concurrency theory.

The programme of the event is put together by the chair and the secretary
of IFIP WG 1.8 and features 4 invited talks given by a balanced mix of
senior and junior top researchers in the field. In 2013, the event brought
together about 25 participants.

A fixed item on the programme of TRENDS is the yearly IFIP WG 1.8 business
meeting.

Bertinoro OPCT 2014

The Open Problems in Concurrency Theory seminar was organised from June 18 to June 21, 2014, in the picturesque town of Bertinoro, Italy. This event aimed at identifying the most important open problems in the field of concurrency theory and was co-sponsored by WG 1.8. It was a very successful and vigorous meeting, attracting about 45 participants and featuring more than 40 very interesting talks. Also, throughout the event some very interesting ideas and initiatives came up for sharing and collaboratively solving open problems in concurrency theory.

IFIP WG 1.8 is actively pursuing these ideas and it hopes to bring some of them to reality soon.

WG 1.9 / 2.15 — Verified Software

Chair : Gary Leavens

2013 Brief Activity Report

Meeting at Saarbrucken, Germany, March 3-6, 2013

This meeting was hosted by Prof. Dr. Wolfgang Paul at Saarbrucken
University. This meeting was attended by over 20 people, with a good
selection of members and observers.

VSTTE Conference, Atherton, Ca. USA, May 17-19, 2013

Our flagship conference is Verified Software: Theories, Tools and
Experiments. In 2013 this was held on May 17-19 in Atherton, California,
which is in Silicon Valley. The program featured 4 keynotes (by Alex Aiken
of Stanford, Nikil Swamy of Microsoft Research, Andre Platzer of
Carnegie-Mellon University, and Sandrine Blazy of Rennes University) and 18
papers.

The conference was immediately followed by the Summer School on Formal
Techniques, organized by working group member Dr. Natarajan Shankar. This
meant that the conference was attended by several graduate students, and
that many top speakers were available for the summer school.

Meeting at Orlando, Florida, December 9-12 2013

This meeting was hosted by Prof. Gary T. Leavens at the University of
Central Florida in Orlando, Florida. This meeting was attended by 10
members (which is a good percentage out of 15) and 5 observers. More
observers were invited but could not attend.

It was decided that the next meeting would be held in conjunction with the
Vienna Summer of Logic, in July 2014, where the next VSTTE is occurring.
At this meeting we elected Dr. Matthew Parkinson to membership.