

IFIP General Assembly, Poznań (Poland), 23–24 September 2018

## TC1 “Foundations of Computer Science” Activity Report

*Jacques Sakarovitch, TC1 chair*

### 1 TC1 News

#### Membership

There have been changes of national representatives during this year: the Austrian Computer Society (OCG) has nominated Prof. Aart Middeldorp in replacement of Prof. Werner Kuich, the Japanese Computer Society (OCG) has nominated Prof. Nao Hirokawa in replacement of Prof. Naoki Kobayashi, the Brazilian Computer Society (SBC) has nominated Prof. Leila Ribeiro to replace Prof. Augusto Sampaio. Nominations of representatives for six member societies are currently under process.

TC1 web page: [ifip-tc1.org](http://ifip-tc1.org) gives an up-to-date member list; IFIP web page: [www.ifip.org/bulletin/bulltcs/memtc01.htm](http://www.ifip.org/bulletin/bulltcs/memtc01.htm) gives the member list for every Working Group as well.

#### Officers

TC1 is still missing a secretary. The search for a next TC Chair is under process and proves to be not so simple.

#### Working Group administration

WG 1.06 and WG 1.08 chairs have been reelected for a second term. WG 1.10 has been dormant for the last two years. Ways to bring it back to activity are under search.

### 2 Working Groups News

The list and the activity reports of the eight working groups of TC1 is to be found in the following appendix.

Working Groups are the place where the scientific activity of TC1 takes places. They all have either their own flagship conferences (WG 1.02, 1.03, 1.05) or they are deeply involved in the organisation of conferences with which they colocate their own workshops and business meetings (WG 1.03, 1.06, 1.07, 1.08, 1.09). After the discussion at the 2015 business meetings, four of these conferences are now regularly registered as IFIP event, which is a significant increase from the past.

The WG activity reports, and their web pages give a good account of the scientific subjects that their communities are currently tackling.

# Appendix A

## Reports from Working Groups

Prof. Georg Moser (Giessen, Germany) has been elected chair of WG 1.06 for a second term in September 2017. Dr. Martin Avanzini (Inria, France) replaces Dr. Ugo Dal Lago as secretary.

Prof. Ilaria Castellani has been elected chair of WG 1.08 for a second term in March 2018. Prof. Mohammad Mousavi remains secretary for this second term.

Chair and secretary of WG 1.10 have offered their resignations. TC 1 is currently looking for a new chair who would be able to bring the working group back to operation. There is no activity report for WG 1.10.

The list of Working Groups of TC1, with their chairs, vice-chairs and secretaries as of 1 September 2018, is thus established as follows.

			WG Chairs/Vice-Chairs	WG Secretaries		
1.02		Descriptive Complexity	Martin Kutrib	Martin.Kutrib@informatik.uni-giessen.de	Andreas Malcher	andreas.malcher@informatik.uni-giessen.de
			Rogério Reis	rvr@dcc.fc.up.pt		
1.03		Foundations of System Specification	Lutz Schröder	lutz.schroeder@fau.de		
			Markus Roggenbach	m.roggenbach@swan.ac.uk		
1.05		Cellular Automata and Discrete Complex Systems	Pedro P. B. de Oliveira	pedrob@mackenzie.br	Katsunobu Imai	imai@hiroshima-u.ac.jp
			Nazim Fatès	nazim.fates@loria.fr		
1.06		Term Rewriting	Georg Moser	georg.moser@uibk.ac.at	Martin Avanzini	martin.avanzini@inria.fr
1.07		Theoretical Foundations of Security Analysis and Design	Riccardo Focardi	focardi@dsi.unive.it	Luca Viganò	luca.vigano@kcl.ac.uk
			Véronique Cortier	cortier@loria.fr		
1.08		Concurrency Theory	Ilaria Castellani	ilaria.castellani@inria.fr	Mohammad Reza Mousavi	m.r.mousavi@hh.se
1.09	2.15	Verified Software	Jean-Christophe Filliâtre	jean-christophe.filliatre@lri.fr	Natarajan Shankar	shankar@csl.sri.com
1.10		String Algorithms & Applications				

The period covered by the reports is essentially 1 July 2017 – 1 July 2018

## WG 1.02 – Descriptive Complexity

**Chair:** Prof. Martin Kutrib, Universität Giessen, Germany

**Vice-Chair:** Prof. Rogério Reis, Universidade do Porto, Portugal

**Secretary:** Dr. Andreas Malcher, Universität Giessen, Germany

**Home page:** [www.informatik.uni-giessen.de/ifipwg1.2](http://www.informatik.uni-giessen.de/ifipwg1.2)

### 2017-18 BRIEF ACTIVITY REPORT

Descriptive 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 descriptive 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 descriptive complexity of bio-inspired computing models and the relationship between descriptive complexity and software reliability.

The scope of the working group encompasses all aspects of descriptive complexity, both theory and application. These aspects include but are not limited to

- descriptive complexity of formal systems and structures,
- various measures of descriptive complexity of automata, grammars, languages and of related systems,
- trade-offs between descriptive complexity and mode of operation,
- circuit complexity of Boolean functions and related measures,
- succinctness of description of (finite) objects,
- descriptive complexity in resource bounded or structure bounded environments,
- structural complexity,
- descriptive complexity of formal systems for applications (for example, software reliability, software and hardware testing, modeling of natural languages),
- descriptive 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 descriptive complexity and its applications.

## Organisation of WG and Membership

### Chairpersonship

Prof. Martin Kutrib, Universität Giessen, Germany

The past chair, Prof. Giovanni Pighizzini, Università degli Studi di Milano, Italy, has served for two terms from 2011–2014 and 2015–2017. According to the IFIP rules he and the Vice-Chair Prof. Helmut Jürgensen, University of Western Ontario, London, Canada, could not be reelected for another term. During the WG meeting on July 3, 2017 in Milano, Prof. Martin Kutrib, Universität Giessen, Germany, was elected as new WG chair and Prof. Rogério Reis Universidade do Porto, Portugal as new Vice-Chair. Dr. Andreas Malcher, Universität Giessen, Germany, remains secretary of the WG.

### New members

The membership of the IFIP Working Group 1.02 has been maintained as follows: Martin Kappes, Germany, Heinz Schmitz, Germany, Karel Culik, USA, and Steven Homer, USA, have been excluded, since they have not been active in the field of descriptonal complexity for many years. Stavros Konstantinidis, Canada, Yo-Sub Han, Republic of Korea, and Galina Jirásková, Slovakia, have been appointed as new members.

### New organisation rules

No changes during this period.

## Scientific activities and meetings

### Events organised by the Working Group

- *19th International Conference on Descriptonal Complexity of Formal Systems (DCFS 2017), Milano, Italy, July 3–5, 2017 (IFIP Working Conference).*

The conference was organized, under supervision of the DCFS steering committee, by Giovanni Pighizzini (University of Milano), who was PC co-chair with Cezar Câmpeanu (Charlottetown/PE, Canada). The scientific part was consisting of 4 invited lectures and 20 regular contributions, selected by a program committee after a standard reviewing process. The proceedings have been published in LNCS series. A special issue of the International Journal of Foundations of Computer Science, devoted to extended versions of selected papers has been prepared and it is expected to be published in 2018. Around 40 participants attended the conference. Many of them are members of the WG.

- *20th International Conference on Descriptonal Complexity of Formal Systems (DCFS 2018), Halifax, Nova Scotia, Canada, July 25–27, 2018 (IFIP Working Conference).*

The conference was organized, under supervision of the DCFS steering committee, by Stavros Konstantinidis (Saint Mary's University, Halifax) who was PC co-chair with Giovanni Pighizzini (University of Milano). The scientific part was consisting of 3 invited lectures and 19 regular contributions, selected by a program committee after a standard reviewing process. The proceedings have been published in

LNCS series. A special issue of Theoretical Computer Science, devoted to extended versions of selected papers is planned. Around 40 participants attended the conference. Many of them are members of the WG.

### Formal meetings of the Working Group

- July 3, 2017, on the occasion of DCFS 2017.
- July 25, 2018, on the occasion of DCFS 2018.

### Forthcoming events

- *21th International Conference on Descriptive Complexity of Formal Systems (DCFS 2019)*.  
The conference will be held from July 17 to July 19, 2019 in Košice, Slovakia, and it will be organized by Galina Jirásková.
- *22th International Conference on Descriptive Complexity of Formal Systems (DCFS 2020)*.  
The conference will be held in 2020 in Vienna, Austria, and it will be organized by Rudolf Freund.

### Publications

- Giovanni Pighizzini, Cezar Câmpeanu (eds.): *Descriptive Complexity of Formal Systems – 19th IFIP WG 1.02 International Conference, DCFS 2017, Milano, Italy, July 3–5, 2017, Proceedings*. Lecture Notes in Computer Science 10316, Springer 2017.
- Stavros Konstantinidis, Giovanni Pighizzini (eds.): *Descriptive Complexity of Formal Systems – 20th IFIP WG 1.02 International Conference, DCFS 2018, Halifax, NS, Canada, July 25–27, 2018, Proceedings*. Lecture Notes in Computer Science 10952, Springer 2018.
- *Journal of Automata, Languages and Combinatorics*, Volume 22 (1–3), September 2017, Special Issue with Selected and Extended Papers of the 18th International Conference on Descriptive Complexity of Formal Systems (DCFS 2016), guest editors: Cezar Câmpeanu, Florin Manea, Giovanni Pighizzini, Jeffrey O. Shallit.
- *Information and Computation*, Volume 259 (2), April 2018, Special Issue with Selected and Extended Papers of the 17th International Conference on Descriptive Complexity of Formal Systems (DCFS 2015), guest editors: Alexander Okhotin, Jeffrey O. Shallit.

## WG 1.03 — Foundations of System Specification

**Chair:** Prof. Lutz Schröder, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

**Vice-Chair:** Prof. Markus Roggenbach, Swansea University, Wales, UK

**Home page:** [ifipwg13.cs.ovgu.de](http://ifipwg13.cs.ovgu.de)

2017-18 BRIEF ACTIVITY REPORT

### Organisation of WG and Membership

#### Chairpersonship

The current chair and vice-chair were reelected for a further three-year period of office at the working group meeting in Royal Holloway in July 2018, on the understanding that a similar rota as in the previous period will be kept.

#### New members

The group welcomes Ana Sokolova, Universität Salzburg, and Sabine Glesner, Technische Universität Berlin, as new members. Andrzej Tarlecki has been granted emeritus status. The group is keeping a stable membership level of around 40 members (excluding emeritus members), and has considered 7 observers in the current report period.

#### New organisation rules

The working group has clarified at the meeting in Royal Holloway that membership issues are decided by relative majority.

### Scientific activities and meetings

The working group has held meetings in

- Berlin, Germany, September 4–5, 2017
- Royal Holloway, Egham, UK, July 5–7, 2018

#### Events organised by the Working Group

- The *7th Conference on Algebra and Coalgebra in Computer Science, CALCO 2017* was held on June 14–16, 2017, in Ljubljana, Slovenia, in colocation with the 33rd Conference on Mathematical Foundations of Programming Semantics, MFPS XXXIII.
- The *10th International Conference on Graph Transformation, ICGT 2017*, was held in Marburg, Germany, on July 17–21, 2017, as part of the federated conference *Software Technologies: Applications and Foundations (STAF)*.

- The *11th International Conference on Graph Transformation, ICGT 2018*, was held on June 25–26, 2018, in Toulouse, France, as part of the federated conference *Software Technologies: Applications and Foundations (STAF)*.
- The *14th IFIP WG 1.3 International Workshop on Coalgebraic Methods in Computer Science, CMCS 2018*, was held as a workshop at the *European Joint Conferences on Theory and Practice of Software, ETAPS 2018* in April 2018 in Thessaloniki, Greece.
- The *24th International Workshop on Algebraic Development Techniques, WADT 2018*, was held at Royal Holloway, University of London, Egham, UK, on July 2–5, 2018, in colocation with the Leverhulme School on Graph Transformation Techniques, LSGT 2018

### **Forthcoming events**

- The *8th Conference on Algebra and Coalgebra in Computer Science, CALCO 2019* will be held in London, UK, in June 2019, in colocation with the 35th Conference on Mathematical Foundations of Programming Semantics, MFPS XXXIII.

## WG 1.05 — Cellular Automata and Discrete Complex Systems

**Chair:** Prof. Pedro P.B. de Oliveira, Mackenzie University, São Paulo, Brazil

**Vice-Chair:** Dr. Nazim Fatès, INRIA Nancy, France

**Secretary:** Prof. Katsunobu Imai, Hiroshima University, Japan

**Home page:** [www.iec.hiroshima-u.ac.jp/ifip15](http://www.iec.hiroshima-u.ac.jp/ifip15)

### 2017-18 BRIEF ACTIVITY REPORT

The Working Group 1.5, on Cellular Automata and Discrete Complex Systems, reestablished in 2008, has the following attributions:

- To establish and maintain a permanent, international, multidisciplinary forum for the collaboration of researchers in the field of Cellular Automata (CA) and Discrete Complex Systems (DCS).
- To provide a platform for presenting and discussing new ideas and results.
- To support the development of theory and applications of CA and DCS (e.g. parallel computing, physics, biology, social sciences, and others) as long as fundamental aspects and their relations are concerned.
- To identify and study within an inter- and multidisciplinary context, the important fundamental aspects, concepts, notions and problems concerning CA and DCS.

The scope of the working group encompasses all fundamental aspects of cellular automata and discrete complex systems, including: Dynamics, Algebraic aspects, Complexity issues, Emergent properties, Formal language processing, Models of parallelism and distributed systems, Phenomenological descriptions, Scientific modeling and Practical applications.

## Organisation of WG and Membership

### Chairpersonship

The 2018 annual admin meeting of WG 1.5 took place during AUTOMATA 2018, on June 20th, with the following attendance:

*Members of the WG 1.5:* Andy Adamatzky, Alberto Dennunzio, Nazim Fatès (*Vice-Chair*), Henryk Fukś, Katsunobu Imai (*Secretary*), Teijiro Isokawa, Martin Kutrib, Andreas Malcher, Pedro de Oliveira (*Chair*), Ville Salo, Thomas Worsch.

*Guest:* Jan Baetens.

The meeting started with the Chair presenting some slides prepared by the organiser of AUTOMATA 2019, Alonso Castillo-Ramirez, about the advanced status of the organisation, including data testifying the safety in the city of the event, Guadalajara

city, Mexico. As shown in the slides, the organisation basically follows the latest editions of AUTOMATA, and the expected registration fee is 100 Euros, covering coffee breaks, three lunches, conference dinner, guided tour, and the IFIP fee.

The Chair then informed that two invitations had been made with respect to the organisation of AUTOMATA 2020, and both have been accepted. Very soon, we will discuss and decide about this.

## **New members**

The following new members had been proposed and were approved with no restriction:

- *Georgios Sirakoulis*: Professor, Democritus University of Thrace, Xanthi, Greece.
- *Ilkka Törmä*: University of Turku, Turku, Finland.

## **New organisation rules**

In order to facilitate future organisations of AUTOMATA, the Chair of WG 1.5 made available the latest version of a document on *Guidelines for Organising AUTOMATA*, that has already been passed on to the organisers of AUTOMATA 2019 and prospective candidates for AUTOMATA 2020.

We also discussed the reviewing process of AUTOMATA this year, as it had led to the question about the degree of overlap the submissions should be allowed to have with papers submitted to other events or even papers already published elsewhere. It is a clear consensus that the content of the submissions in the full papers category has to remain as they have always been: totally novel. However, given the fact that the exploratory papers track do not undergo the strict reviewing process the full paper category does, the Programme Committee is granted authority to decide and act about exceptional cases where some degree of content overlap would be noticed.

As for the fact that the current term of the Chair of WG-1.5 finishes in the end of 2018, it was recalled that no member of the group has been nominated or has stepped forward so far. In this regard, the election will be held next November, and we agreed that it will be held by means of the Belenios voting system ([www.belenios.org](http://www.belenios.org)), after a recommendation of the member Guillaume Theyssier; in fact, this is a very reliable voting system that has been used by various members of our group, in polls within IFIP and beyond. Nazim Fatès will be in charge of setting up the system, and in the coming weeks he will send out an email with instructions about the ballot.

## **Scientific activities and meetings**

### **Events organised by the Working Group**

- AUTOMATA 2018 - The 24th International Workshop on Cellular Automata and Discrete Complex Systems, Ghent, Belgium, in June 20-22, 2018.

The event was successfully organised by Jan Baetens, having the programme committee co-chaired by Martin Kutrib. The event had 35 participants, and the

technical programme had 10 full paper talks and 11 exploratory paper talks, representing authors from 11 nationalities (Belgium, Brazil, England, Finland, France, Germany, India, Italy, Japan, Poland and Vietnam). Three invited talks had been scheduled, but Michael Schreckenberg's talk had to be cancelled due to a medical situation, and he was substituted by volunteers Luca Mariot and Nazim Fatès (as a curious note, Schreckenberg was going to talk about cellular automata models for traffic, but in the day before he was hit in Germany by a bicycle...). Further details of the event are available in <http://www.automata2018.ugent.be/programme.html>.

### **Forthcoming events**

- AUTOMATA 2019 - The 25th International Workshop on Cellular Automata and Discrete Complex Systems, to be held at Guadalajara University, Guadalajara city, Mexico, in June 26-28, 2019, organised by Dr. Alonso Castillo-Ramirez, under the auspices of the Department of Mathematics, University Center of Exact Sciences and Engineering.

The website of the event is <https://automata2019.wordpress.com>.

- AUTOMATA 2020 - The 26th International Workshop on Cellular Automata and Discrete Complex Systems. Two firm biddings have been made, but we have not yet decided which one will be taken.

### **Publications**

- J.M. Baetens and M. Kutrib (eds). Cellular Automata and Discrete Complex Systems: 24th IFIP WG 1.5 International Workshop - Proc. of AUTOMATA 2018. *Lecture Notes in Computer Science* 10875, Springer: Heidelberg - Germany, 2018.
- J.M. Baetens and M. Kutrib (eds). *Exploratory Papers of AUTOMATA 2018 - The 24th International Workshop on Cellular Automata and Discrete Complex Systems*, 108 pages, Ghent University: Ghent - Belgium, 2018.

## **WG 1.06 — Term Rewriting**

**Chair:** Prof. Georg Moser, Innsbruck University, Austria

**Secretary:** Dr. Martin Avanzini INRIA Sophia Antipolis, France

**Home page:** [cbr.uibk.ac.at/ifip-wg1.6/](http://cbr.uibk.ac.at/ifip-wg1.6/)

### 2017-18 BRIEF ACTIVITY REPORT

The Working Group aims to promote research efforts in rewriting and its applications. For that it aims to establish close cooperation between existing groups and to facilitate the emergence of new ones. It wants to increase awareness of rewriting techniques in the computer science community at large and foster development of applications of theoretical advances.

## **Organisation of WG and Membership**

The annual meeting of the IFIP WG 1.6 in 2018 has been co-located to FLOC 2018, in Oxford, July 6–19, 2018. The meeting takes place on Sunday, July 8, 2018.

### **Chairpersonship and Secretary**

Georg Moser is acting chair of the Working Group. His term will end in 2020, after having been re-elected at the last annual meeting of the WG in Oxford on September 9, 2017.

### **New members**

We have invited three speakers for the annual meeting:

- Beniamino Accattoli, INRIA Saclay, France
- Martin Avanzini, INRIA Sophia Antipolis, France
- Luigi Liquori, INRIA Sophia Antipolis, France

All three of them have given impressive presentations and thus have become members shortly after the meeting. Unfortunately, Tetsuo Ida and Aaron Stump resigned their membership due to changes in their research direction.

### **New organisation rules**

Since last year, Martin Avanzini acts as secretary. His term will end in 2021.

## Scientific activities and meetings

The 10th *International Summer School (ISR for short)* was held in Cali, Colombia. The school took place from July 30 to August 3, 2018. The school was organised by Camilo Rocha. See the School's website for further information on the organisation and success of the school:

[www.javerianacali.edu.co/eventos/international-school-rewriting-2018](http://www.javerianacali.edu.co/eventos/international-school-rewriting-2018)

Apart from the above presentations by invited speakers, Frédéric Blanqui reported on the ISR and presented the proposal to hold the 11th ISR in Paris. Following the presentation, the assembly discussed various issues of the organisation of the proposed school and later on decided unanimously in favour of the proposal.

Furthermore, H elene Kirchner gave an (informal) report on FSCD, focusing on the role of rewriting in the conference series and its instance in 2018. Moreover, the assembly continued on earlier discussions on the review culture in conference in the area of Theoretical Computer Science. There was a motion to discuss these issues more broadly at the business meeting of FSCD. This motion will be forwarded to the FSCD SC.

Finally, during the business meeting the future role of the WG was discussed. Focusing on visibility, it was agreed that the WG should attract researchers from outside the field that apply rewriting technology. This could be done in the context of an annual meeting with invited talks solely dedicated to applications, or to a special event possibly co-allocated with a conference from application domains.

### Events organised by the Working Group

- The 11th International School on Rewriting will be organised in Paris in 2019.

### Forthcoming events

- The next annual meeting is currently planned to be co-located with ISR 2019, but the date has not yet fixed.

## **WG 1.07 — Theoretical Foundations of Security Analysis and Design**

**Chair:** Prof. Riccardo Focardi, University of Venezia, Italy

**Vice-Chair:** Prof. Véronique Cortier, University of Nancy, France

**Secretary:** Prof. Luca Viganò, King's College London, UK

**Home page:** [www.dsi.unive.it/IFIPWG1.7/](http://www.dsi.unive.it/IFIPWG1.7/)

### 2017-18 BRIEF ACTIVITY REPORT

The WG 1.7 promotes activities in the area of theoretical foundations of security analysis and design, and has been established in 1999. It 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.

### **Organisation of WG and Membership**

Currently the WG has 32 members, from 15 countries and 4 continents:

- Europe: 23 (France, UK: 5, Germany: 3, Italy: 2, Austria, Belgium, Denmark, Ireland, Luxemburg, Netherlands, Spain, Switzerland: 1)
- America: 7 (USA)
- Asia: 1 (China)
- Australia: 1

### **Chairpersonship**

Prof. Riccardo Focardi, University Ca' Foscari, Venice, Italy, elected on 2 March 2016.

### **New members**

No new memberships occurred in the last year.

### **Scientific activities and meetings**

#### **Remarkable results in the field of the WG**

The creation of Principles of Security and Trust (POST), the sixth main conference of ETAPS, and the continuous contribution to its organization as Program Chairs is one of the major outcomes of the WG. POST was 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 events originated volumes in the LNCS series and sometimes special issues of archive journals.

The HotSpot workshop is the informal counterpart of POST. Its informal flavour stimulates the exchange of new ideas in the field of foundations of security. It is the annual WG event where business meetings usually occur.

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 journals; as PC members of many international conferences, and as PC and chairs; as well as in the dissemination of the theory and methodology of security in Universities, international schools (e.g. FOSAD school below), seminars etc.

## Events organised by the Working Group

Since June 2017, the WG members have organized the following events:

- 22nd European Symposium on Research in Computer Security (ESORICS 2017), Oslo, Norway on September 11-13, 2017. Dieter Gollman and Simon Foley, co-chairs;
- 17th International School on Foundations of Security Analysis and Design (FOSAD 2017) University Residential Center of Bertinoro, Italy 28 August - 2 September 2017;
- 7th International Conference on Principles of Security and Trust (POST 2018), 14-21 April 2018, Thessaloniki, Greece. Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2018. Ralf Küsters, co-chair;
- 31st IEEE Computer Security Foundations Symposium (IEEE CSF). Co-located with FLOC 2018. July 9-12, 2018, Oxford, UK. Stéphanie Delaune, co-chair.

Unfortunately the Sixth Workshop on Hot Issues in Security Principles and Trust (HotSpot 2018) (planned to be affiliated with ETAPS 2018, April 2018, Thessaloniki, Greece. Chair Cas Cremers) has been cancelled as we did not get enough submissions. As a consequence, we skipped the annual meeting that is traditionally co-located with the workshop. We are organizing a WG meeting in September 2018 (through video conferencing). During the meeting we will discuss the reason of this lack of submission and the future of the HotSpot workshop.

## Forthcoming events

- 18th International School on Foundations of Security Analysis and Design University Residential Center of Bertinoro, Italy. 27-31 August 2018;
- 8th International Conference on Principles of Security and Trust (POST 2019). 6 - 11 April 2019 Prague, Czech Republic. Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2019;
- Sixth Workshop on Hot Issues in Security Principles and Trust (HotSpot). Date and place to be decided;
- 32nd IEEE Computer Security Foundations Symposium July 2019, NJ, USA. Stéphanie Delaune, co-chair.

## Publications

- Lujo Bauer, Ralf Küsters (Eds.): Principles of Security and Trust - 7th International Conference, POST 2018, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2018, Thessaloniki, Greece, April 14-20, 2018, Proceedings. Lecture Notes in Computer Science 10804, Springer 2018, ISBN 978-3-319-89721-9;
- Simon N. Foley, Dieter Gollmann, Einar Snekkenes (Eds.): 22nd European Symposium on Research in Computer Security, Oslo, Norway, September 11-15, 2017, Proceedings, Parts I and II. Lecture Notes in Computer Science 10492 and 10493, Springer 2017, ISBN 978-3-319-66401-9 and 978-3-319-66398-2;
- Stephen Chong, Stéphanie Delaune (Eds.): 31st IEEE Computer Security Foundations Symposium (IEEE CSF). Co-located with FLOC 2018. July 9-12, 2018, Oxford, UK. Proceedings, IEEE Press.

## WG 1.08 — Concurrency Theory

**Chair:** Dr. Iliaria Castellani, INRIA Sophia Antipolis, France

**Secretary:** Prof. Mohammad Reza Mousavi, University of Leicester, UK

**Home page:** [www.concurrency-theory.org/organizations/ifip](http://www.concurrency-theory.org/organizations/ifip)

### 2017-18 BRIEF ACTIVITY REPORT

The aim of this working group is to develop the theoretical foundations of concurrency, exploring the frontiers of existing theoretical models like process algebra and various process calculi, so as to obtain a deeper theoretical understanding of concurrent and parallel systems.

## Organisation of the WG and Membership

Currently, the WG has 53 members (11 women, 42 men). Since the WG creation in 2005, there has been a turnover of -13, + 14. The gender balance (20 % of women) seems to be slightly higher than that of the concurrency community at large, and we have been constantly trying to improve it, both when recruiting new members and when sending invitations to the events we organised.

### Chairpersonship

There was a round of elections held by the TC chair in 2017 and Dr. Iliaria Castellani (INRIA Sophia Antipolis, France) and Prof. Mohammad Reza Mousavi (University of Leicester, UK) were re-elected, respectively, as the chairperson and the secretary of the WG.

### Remarkable results in the field of the WG

The paper entitled: “Multiparty asynchronous session types” by the late Kohei Honda (late WG member), by Nobuko Yoshida (WG member) and by Marco Carbone has received the Most Influential POPL Paper Award 2018, see <http://www.sigplan.org/Awards/POPL/>.

This award is given every year to a paper presented at the POPL conference ten years earlier. The citation for the award is available from the above-mentioned webpage.

### Events organised by the WG

- TRENDS 2017: This edition of the WG annual event TRENDS was held on September 9, 2017, in Berlin, as a satellite workshop of CONCUR 2017. For this edition we experimented with a new formula, turning the half-day workshop into a full-day workshop, and soliciting a number of “highlight talks” to complement the invited talks.

The programme consisted of the following 2 invited talks:

- Marieke Huisman (University of Twente, The Netherlands): A Verification Technique for Deterministic Parallel Programs
- Jan Peleska (University of Bremen, Germany): Trends in Concurrency Theory - the Tester’s Perspective

and of the following 8 highlight talks:

- Javier Esparza: Static Analysis of Deterministic Negotiations
- Ana Sokolova: Convex Algebras for Probabilistic Systems
- Antonin Kucera: A Symbolic Approach to Optimizing Mean-Payoff in Continuous-Time Markov Chains with Alarms  
(based on joint work with Christel Baier, Clemens Dubslaff, Lubos Korenciak, and Vojtech Rehak)
- Paola Giannini: Delegation in multiparty sessions  
(based on ongoing work with Ilaria Castellani and Mariangiola Dezani-Ciancaglini)
- Ugo Montanari: Decomposition Structures for Soft Constraint Evaluation Problems
- Rob van Glabbeek: Ensuring Liveness Properties of Distributed Systems
- Mario Bravetti: Significant Decidable Variants of Asynchronous Session Subtyping (based on joint work with Marco Carbone and Gianluigi Zavattaro)
- Loic Helouët: Combining Free choice and Time in Petri Nets

TRENDS was followed by the WG Business Meeting.

- TTCS 2017: The Second IFIP International Conference on Topics in Theoretical Computer Science (TTCS 2017), was held from September 12 to September 14, 2017, at the School of Computer Science, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. For this edition of TTCS, we received 20 submissions from 10 different countries. An international Program Committee comprising 32 leading scientists from 13 countries reviewed the papers providing on average four review reports for each paper. We accepted eight submissions for presentation at TTCS 2017. The program also included four invited talks:

- Mahdi Cheraghchi, Imperial College, UK
- Lukasz Jez, University of Wroclaw, Poland
- Jaco van de Pol, University of Twente, The Netherlands
- Peter Csaba Olveczky, University of Oslo, Norway

Additionally, the program featured two talks and one tutorial in the PhD Forum, which were not included in the proceedings.

### **Forthcoming events**

A new edition of TRENDS will be organised on September 8, 2018 in Beijing, China. It will be co-located with CONCUR 2018 and will be followed by the WG business meeting. The program consists of a a full-day workshop, with a number of “highlight talks” and the following 2 invited talks.

- Nobuko Yoshida, Imperial College, London, UK. Behavioural Type-Based Static Verification Framework for Go.
- Alessandro Abate, Oxford University, UK. Verification of cyber-physical systems via formal abstractions.

We are planning another edition of the Open Problems in Concurrency Theory event to be co-located with POPL 2019 in Portugal. A proposal for the event has been sent and is under review by the POPL organisation committee.

## Publications

The following volume of LNCS dedicated to the post-proceedings of TTCS has appeared:

Mohammad Reza Mousavi, Jiri Sgall: Topics in Theoretical Computer Science - Second IFIP WG 1.8 International Conference, TTCS 2017, Tehran, Iran, September 12-14, 2017, Proceedings. Lecture Notes in Computer Science 10608, Springer 2017.

Two special issues of the Journal of Logical and Algebraic Methods in Programming (JLAMP) have been organised by the IFIP WG 1.8 chair and secretary, to cover the topics treated in the past editions of TRENDS.

- JLAMP SI: TRENDS14-15: JLAMP special issue on Trends in Concurrency Theory (selected invited contributions from the workshops TRENDS 2014 and 2015), Volume 87, February 2017: <https://doi.org/10.1016/j.jlamp.2017.01.002>
- JLAMP SI: TRENDS16: JLAMP special issue on Trends in Concurrency Theory (selected invited contributions from the workshops TRENDS 2015 and 2016): the reviewing process is now concluded and the three selected papers are under print.

Another JLAMP special issue, dedicated to the Open Problems in Concurrency Theory (OPCT 2016) event, has been organised by the IFIP WG 1.8 chair and secretary, together with the WG members Pedro D'Argenio and Ana Sokolova. The submitted papers are currently under review or revision.

## WG 1.09/2.15 — Verified Software

**Chair:** Dr. Jean-Christophe Filliâtre, CNRS, Orsay, France

**Secretary:** Dr. Natarajan Shankar, SRI International, US

**Home page:** <https://www.lri.fr/~filliatr/1.9/>

### 2017-18 BRIEF ACTIVITY REPORT

The aims of 1.9/2.15 are to contribute to a comprehensive theory of programming that covers the features needed to build practical and reliable programs; to contribute to a coherent toolset that automates the theory and scales up to the analysis of industrial-strength software; and to collect realistic, verified programs as part of the Verified Software Initiative (VSI) Repository.

Since the creation of the group in 2011, we are having two meetings a year. These meetings are sometimes co-located with conferences of our domain (e.g. CAV, POPL) to limit travels, though this is not a rule.

We invite different observers to attend our meetings each time, and we collectively decide to elect some of them as new members whenever they participated actively and constructively to our meetings.

Our meetings encourage talks on work in progress and leave much room to discussion. Each talk is typically given one hour.

We also run the VSTTE conference and the Verified Software Competition ([vscomp](http://vscomp.org/) <http://vscomp.org/>, not to be confused with the VerifyThis competition, another competition of our domain).

## Organisation of WG and Membership

### New members

No changes in the members during the period.

### New organisation rules

No changes in the organisation rules during the period.

## Scientific activities and meetings

### Events organised by the Working Group

- We initially planned to have a meeting co-located with NFM 2018 (in April) but too few members were available and we opted for a co-location with FLoC instead.
- Meeting on July 13-14 2018, Oxford, UK (at Kellogg College). Co-located with FLoC.

Number of WG members present at the meeting: 13

Number of WG observers present at the meeting: 4 (Radu Grigore, Jan Hoffmann, Yannick Moy, Thomas Wies). We invited more of them initially, but several declined, sometimes at the very last moment.

In addition to talks, we had discussion sessions on the following topics: teaching program verification / what should we be doing about security.

- We contribute to the organization of VSTTE. VSTTE was co-located with CAV in 2017 (July 22-23, 2017, Heidelberg, Germany) and in 2018 (July 18-19 2018, Oxford, UK).

### **Forthcoming events**

- We plan to have our next meeting in Austin, TX, USA next April hopefully with the help of the ACL2 people.
- We plan to have a meeting in Cambridge during summer 2020.