

Chair of Process
and Data Science

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40th International Conference on Application and Theory of Petri Nets and Concurrency (Petri nets 2019)
June 23-28, 2019, Aachen, Germany

Welcome

by the general chair Wil van der Aalst



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**over 520 participants for all three
conferences (420+ ICPM)**

40th edition of our conference

special session on Friday afternoon

**like 2003 co-located with a new
conference (then BPM, now ICPM)**

Thanks to our platinum sponsors

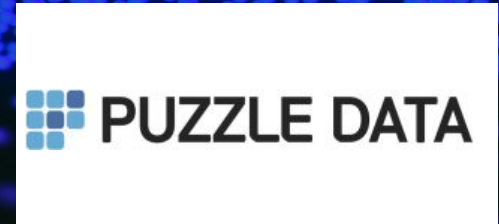
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 **PROCESSGOLD**

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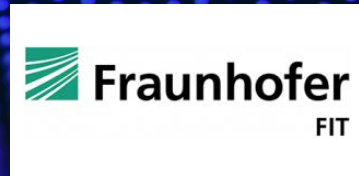
Thanks to our gold sponsors



Thanks to our silver and bronze sponsors



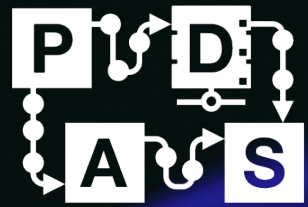
Thanks to our cooperation partners



Thanks

- **Participants**
- **Authors and presenters**
- **PC chairs (Susanna Donatelli and Stefan Haar), also for ACSD (Jörg Keller and Wojciech Penczek)**
- **PC members**
- **Demo chair: Bas van Zelst**
- **Publicity chair: Anna Kalenkova**

Thanks



Chair of Process
and Data Science

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Sunday DC + PN course

Reception dinner on Monday

	Monday, June 24			Tuesday, June 25				Wednesday, June 26		Thursday, June 27		Friday, June 28	
	Petri Nets (WS&T)		ICPM	Petri Nets (WS&T)		ICPM/Industry Day		Petri Nets	ICPM	Petri Nets	ACSD	Petri Nets	
	Sky Lounge 1	Press Conf.	Club Lounge 1	Press Conf.	Sky Lounge 1	Sky Lounge 4	Club Lounge 1	Press Conf.	Club Lounge 1	Club Lounge 1	Press Conf.	Club Lounge 1	
09:00 - 10:30	PN Course Lars Kristensen	PNSE'19 Moldt, Kindler	Opening by General Chair and PC Chairs Keynote Wil van der Aalst	ATAED'19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	Tutorial Ekkart Kindler	09:00 - 09:10 Opening Wil van der Aalst 09:10 - 09:30 Marc Kerremans (Gartner) 09:30 - 10:00 Julian Leberherz (Deloitte) 10:00 - 10:30 Marc Gittler, Patrick Greifzu (DHL)	9:00 - 9:15 Opening by General Chair and PC chairs 09:15 - 10:15 CAP Lecture Luca Gardelli	Conformance Checking	09:00 - 10:00 Opening Jörg Keller Invited Talk Philippas Tsigas	10:00 - 10:30 Stochastic Models	10:00 - 10:30 Arbitration	09:00 - 10:00 Invited Talk Dirk Fahland 10:00 - 10:30 Open Nets
10:30 - 11:00	Coffee Break			Coffee Break				Coffee Break		Coffee Break		Coffee Break	
11:00 - 12:30	PN Course Lars Kristensen	PNSE'19 Moldt, Kindler	Data Pre- Processing	ATAED'19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	Tutorial Ekkart Kindler	11:00 - 11:30 Piergiorgio Grossi (Credem Banca) 11:30 - 12:00 Carsten Schöne (Merck) 12:00 - 12:30 Tool demo teasers	Synthesis	Emerging Applications of Process Mining	Concurrent Processes	Synthesis and Verification	11:00 - 12:00 Parameterics and Combinatorics	
12:30 - 13:30	Lunch Break + Market			Lunch Break + Market				Lunch Break + Market		Lunch Break		Lunch Break	
13:30 - 15:00	PN Course Serge Haddad	PNSE'19 Moldt, Kindler	Automated Process Discovery	ATAED'19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	Tutorial Ekkart Kindler	13:30 - 14:00 Michael Wiese (Ernst & Young) 14:00 - 14:30 Bart Prudon (Medtronic) 14:30 - 15:00 David Whyte (Canadian Financial Services)	Semantics	Data Analysis & Monitoring	Algorithmic Aspects	Dataflow and Parallel Computing	Retrospective and Perspective of PN Research 40 years of PN Conferences 13:30 - 14:50 Session 1	
15:00 - 15:30	Coffee Break			Coffee Break				Coffee Break		Coffee Break		14:50 - 15:10 Coffee Break	
15:30 - 17:00	PN Course Serge Haddad	PNSE'19 Moldt, Kindler	Process Mining Applications	ATAED'19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	Tutorial Ekkart Kindler	15:30 - 16:00 Gia-Thi Nguyen (Siemens) 16:00 - 16:30 Sudhendu Rai (AIG Investments) 16:30 - 17:15 Panel on the future of process mining	Models with Extensions	Predictive Monitoring	Tools	Processes	15:10 - 16:30 Session 2	
	17:00 - 17:15 Break			17:15 - 18:00 Get-Together				17:00 - 17:15 Break		16:50 - 17:30 PN Tool Demonstrations Bas van Zelst		16:30-17:00 Coffee Break	
	17:15 - 18:15 Invited Tutorial Gal, Weidlich			18:15 - 22:30 Meeting Steering Committee Petri Nets (Inside, invited guests only)			After Party (by Celonis) 18:30 - 01:00		17:15 - 18:15 Tool Demo Fair		19:30 Dinner Kurparkterrassen (Dammstraße 40, Aachen)		17:00 - 18:00 Session 3
	19:30-23.30 Dinner Forum M (Buchkremerstraße 1-7, Aachen)								19:30 Sightseeing tour Aachen				18:30 - 20:00 IEEE Task Force on Process Mining (open to all)

Petri nets / ACSD program (see booklet)

Today

Thursday ACSD

Thursday Petri nets

Friday Petri nets

Program
40th International Conference on Application and Theory of Petri Nets and Concurrency



Wednesday - June 26, 2019 - Press Conference Room
Room 140

Opening Session: General Chair and PC chairs 08:30 - 9:15
Hourly for General Chair introduction of program by PC Chairs

Carl Adam Petri Lecture (CAD) 09:15 - 10:15
General Chair and PC Chairs, General Chair, General Chair

Luca Cardelli: Programmable Molecular Networks

Synthesis 11:00 - 12:30
General Chair: Thomas Oster
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: Modeling and Verification for the Synthesis of Concurrent Petri Nets
Keynote: Synthesis of Petri Nets for System and Software Engineering

Seminars 13:30 - 15:00
General Chair: Karsten Borg
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Models with extensions 15:00 - 17:00
General Chair: Karsten Borg
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

(Optional Annual IEEE Task Force on Process Mining Meeting (18:30 - 20:00))
Sightseeing tour - 19:30 - see separate page for route information

Program
19th International Conference on Application of Concurrency to System Design



Thursday - June 27, 2019 - ACSD

ACSD 2019

Program
The ACSD conference is co-located with the 40th International Conference on Application and Theory of Petri Nets and Concurrency (ATPN) in the same location as the main conference.

Session Chair: 09:00 - 10:00 - Room Club Lounge 1

Invited talk ACSD (Shared ACSD and Petri nets) - Philippe Tsigas
Lock-free Data Sharing in Concurrent Software Systems
(Petri nets with Ring Data Structure ACSD Process in Shared Conference Room)

Adaptation 10:00 - 10:30 (Press Conference Room)
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Synthesis and Verification 11:00 - 12:30 (Press Conference Room)
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Tools 13:00 - 14:30
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Program
40th International Conference on Application and Theory of Petri Nets and Concurrency



Thursday - June 27, 2019 - Room - Club Lounge 1

Session Chair: 09:00 - 10:00
General Chair: Jörg Hoffmann

Invited talk ACSD (Shared ACSD and Petri nets) - Philippe Tsigas
Lock-free Data Sharing in Concurrent Software Systems

Stochastic Models 10:00 - 10:30
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Concurrency Processes 11:00 - 12:30
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Algorithmic Aspects 13:30 - 15:00
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Tools (20 minutes per talk) 15:30 - 16:50
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Tool Demonstrations 16:50 - 17:30
General Chair: Jörg Hoffmann

Program
40th International Conference on Application and Theory of Petri Nets and Concurrency



Friday - June 28, 2019 - Room - Club Lounge 1

Invited talk Petri nets (Shared ACSD and Petri nets) 09:00 - 10:00
General Chair: Jörg Hoffmann

Dist. Failure - Decoding, Discovering, and Understanding Multi-Dimensional Processes
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Parameterized and Combinatorics 11:00 - 12:00
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Session: 12:00 - 12:30
General Chair: Jörg Hoffmann
Keynote: On the Role of Synthesis in System and Software Engineering
Keynote: On the Role of Synthesis in System and Software Engineering

Press conference room

Press conference room

Club lounge 1
Tool demonstrations in Club lounge 2

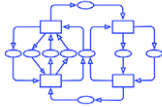
Club lounge 1
Note closing session: Champagne from France

40th Petri Net Conference (Friday afternoon)



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Program
40 years of Petri Net Conferences



Friday - June 28, 2019 - Room - Club Lounge 1

Retrospective and Perspective of Petri Net Research

On the occasion of the 40th birthday of the Petri net community, a special session will take place just after the closing of the Petri Net Conference. Outstanding speakers will reflect on the history of Petri net research and its future. This event is open to everybody and not only to participants of the Petri Net Conference.

Session 1: 13:30 - 14:50

(Chair: Jörg Desel)

13.30 Wolfgang Reisig: How it all began

14.10 Maciej Koutny: The Petri net community today (including statistics)

Session 2: 15:10 - 16:30

(Chair: Alex Yakovlev)

15.10 Gianfranco Balbo: 35 years of (generalized) stochastic Petri nets for performance analysis

15.30 Javier Esparza: 25 years of net unfoldings and true-concurrency analysis tools

15.50 Wil van der Aalst: 20 years of workflow Petri nets, initiating the biggest success story of Petri nets

16.10 Fabrice Kordon: 10 years of model checking contests with Petri nets

Session 3: 17:00 - 18:00

(Chair: Jetty Kleijn)

17.00 P.S. Thiagarajan: Some thoughts on Carl Adam Petri, Petri nets, concurrency theory and biology

Dinner to celebrate 40 years of Petri nets

(invited guests only) - Hotel „Zur Abtei“ Kornelimünster



FernUniversität in Hagen

Session 1 (chair Jörg Desel)

13.30 Wolfgang Reisig: How it all began

14.10 Maciej Koutny: The Petri net community today (including statistics)

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Session 3 (chair Jetty Kleijn)

17.00 P.S. Thiagarajan: Some thoughts on Carl Adam Petri, Petri nets, concurrency theory and biology

Social events remaining

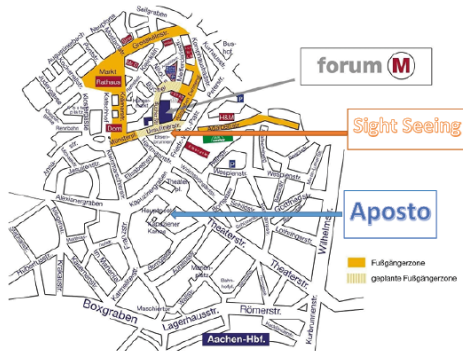


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SIGHTSEEING TOUR - WEDNESDAY, JUNE 26, 2019, 19:30

Meeting point: Tourist Info Eisenbrunnen, Friedrich-Wilhelm-Platz, 52062 Aachen

The sightseeing tour will show Aachen, the 2000-year-old city that is well known for being home to the first UNESCO World Heritage Site in Germany. It's impossible to overestimate the significance of Aachen's magnificent cathedral. The burial place of Charlemagne (Carl der Große). It's where more than 30 German Kings were crowned and where pilgrims have flocked since the 11th century. Also do not miss the old city, the beautiful city hall, and the Eisenbrunnen. If you have registered for the tour, make sure to be at the tourist info Eisenbrunnen at the Friedrich-Wilhelm-Platz at 19.30.



Wednesday 19:30

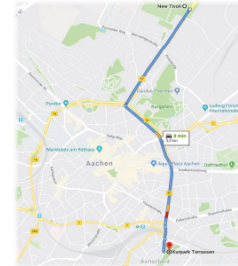


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Conference Dinner Petri Nets / ACS D - Kurpark-Terrassen

Thursday, June 27th, 19.30

Dammstraße 40, 52066 Aachen



By public transport

From Sportpark Söers station, take line 51 to the Rosenquell station. Head northwest on Kulturwerkstraße toward Söersallee. Turn left onto Dammstraße. You can also take line 51 or line 21 from Eisenbrunnen to Rosenquell. Walking takes about 20 minutes from Eisenbrunnen.

By car

Head southwest on Krefelder Str./B57 toward Am Gut Wolf (0.4 km). Use the left 2 lanes to turn left onto Kurparkallee (0.900 m). Continue onto Heiterichallee/B1/B204. Continue to follow B1/B204 (1.1 km). Continue onto Kurparkumstraße/B57 (57 m). Keep left to continue on Jägerstraße/Kurparkumstraße. Continue to follow Kurparkumstraße (190 m). Turn right onto Dammstraße. Kurpark will be on the left.



Thursday 19:30

The background is a dark blue gradient with a complex, wavy pattern of small, light blue dots. The dots are arranged in a way that creates a sense of depth and movement, resembling a digital or data visualization. The overall effect is a textured, three-dimensional appearance.

Enjoy the conference!

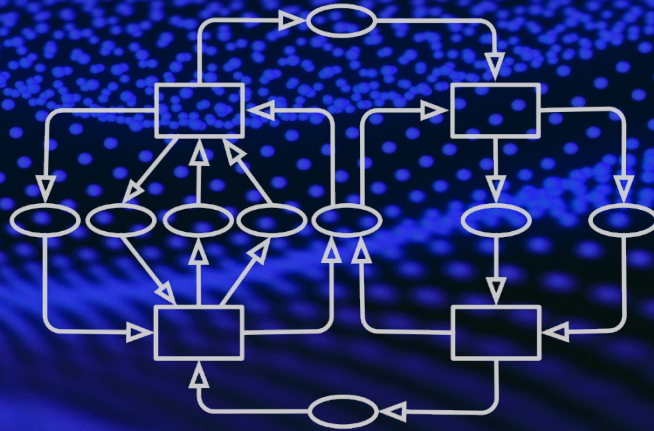
40th International Conference on Application and Theory of Petri Nets and Concurrency (Petri nets 2019)
June 23-28, 2019, Aachen, Germany

Welcome

by the PC chairs
Susanna Donatelli and Stefan Haar

Petri Nets 2019

40th International Conference on Application and
Theory of Petri Nets



Program Committee
Aachen, June 26, 2019

Submissions+Reviewing

- **41** papers submitted (33 regular, 8 tool papers)
- authors from 19 different countries
- Each paper was reviewed by three reviewers ...
- ... after some adjusting : avoid conflict of interest, balance workload, etc.
- (Almost) all reviews came in on time - thanks !
- Selection process with electronic discussions
- ... that intensified when closing in on borderline papers
- Entire process until proceedings generation supported by Easychair
- At the end of the process: **23** papers selected (19 regular, 4 tool papers)

Conference program

- **Three invited lectures: the Carl Adam Petri distinguished lecture + two invited (one for Petri Nets and one for ACSD)**
- **Sessions on: Synthesis, Semantics, Analysis of extended PN models, Stochastic models, Concurrent processes, Algorithmic aspects of verification, Open nets, Parametrics and combinatorics**
- **A tool session with 4 tool presentation**
- **A tool demo with 9 tools on Thursday afternoon**

Carl Adam Petri Distinguished Lecture: Luca Cardelli

- Assistant Director at Microsoft
- Research Cambridge, UK
- Royal Society Research Professor, U of Oxford
- π -Calculus, Continuous Markov Processes
- (Reactive) Systems Biology
- Natural Computability, Molecular Semantics
- Cell Cycle Switch, Phosphorelays, Immune System
- ...

Topic CAP lecture:

Programmable Molecular Networks



Invited Speaker: Dirk Fahland (Friday)

Research (excerpts)

- Associate Professor Eindhoven
- University of Technology (TU/e)
- Complex and distributed Systems
- Process mining
- data engineering.
- Workflows
- Artifacts
- Precision Measures
- Log Pattern detection
- Data Quality
- ...

Invited lecture on

**Describing, Discovering, and Understanding
Multi-Dimensional Processes**



Thanks to:

- Easychair for reliable and smooth support of selection process
- the PN Steering committee for their support
- the organizers in Aachen for giving the pace
- Springer Verlag for the proceedings
- and ...

Thanks to: Program Committee

Elvio Amparore, Italy

Paolo Baldan, Italy

Didier Buchs, Switzerland

Maximilien Colange, France

Jose Manuel Colom, Spain

Isabel Demongodin, France

Susanna Donatelli, Italy (Co-chair)

Javier Esparza, Germany

Dirk Fahland, The Netherlands

Gilles Geeraerts, Belgium

Stefan Haar, France (Co-chair)

Henri Hansen, Finland

Petr Jancar, Czech Republic

Ryszard Janicki, Canada

Gabriel Juhas, Slovakia

Anna Kalenkova, Germany

Ekkart Kindler, Denmark

Jetty Kleijn, The Netherlands

Michael Köhler-Bußmeier, Germany

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Arnaud Sangnier, France

Irina Virbitskaite, Russia

Matthias Weidlich, Germany

Karsten Wolf, Germany

Thanks to: Additional Reviewers

Kamila Barylska

Benoit Delahaye

Marcin Piatkowski

Claudio Antares Mezzina

Tiziana Cimoli

Leonardo Brenner

Johannes Metzger

Jorge Julvez

Natalia Garanina

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Rabah Ammour

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Sebastian Muskalla

Prakash Saivasan

Peter Chini

Philipp J. Meyer

Nataliya Gribovskaya

Thomas Brihaye

Anna Gogolinska

Petr Osicka

Dimitri Racordon

Carl Adam Petri Lecture (CAP) 09:15 – 10:15

(Shared ACSD and Petri Nets, Session Chair: Stefan Haar)

Luca Cardelli. Programmable Molecular Networks

Synthesis 11:00 – 12:30

(Session Chair: Thomas Chatain)

Raymond Devillers - Articulation of Transition Systems and its Application to Petri Net Synthesis

Ronny Tredup - Hardness Results for the Synthesis of b -bounded Petri Nets

Ronny Tredup - Fixed Parameter Tractability and Polynomial Time Results for the Synthesis of b -bounded Petri Nets

Semantics 13:30 – 15:00

(Session Chair: Karsten Wolf)

David Frutos Escrig, Maciej Koutny and Lukasz Mikulski - Reversing Steps in Petri Nets

Ryszard Janicki - On Interval Semantics of Inhibitor and Activator Nets

Lukasz Mikulski and Ivan Lanese. - Reversing Unbounded Petri Nets

Note the error in the printed booklet (online is correct).