FM 2012 Symposium Program
18th International Symposium
on Formal Methods
18e colloque international
sur les méthodes formelles

Cnam, Paris, France
27th – 31st August
du 27 au 31 août
http://fm2012.cnam.fr/
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Preface

Bonjour and welcome to Paris!

We are happy to present you this programme booklet of the 18th International Symposium on Formal Methods (FM 2012) and its satellite events, held at Conservatoire National des Arts et Métiers (Cnam Paris).

The events will start on Monday, August 27th, with INFINITY, TLA+ and UML&FM workshops, the Doctoral symposium, tutorial on Software Verification with VCC. On Tuesday, August 28th, FMDS, QFM and VDM workshops and tutorials on Theory of Domain Descriptions, CADP and Symbolic Analysis of GPU Programs will take place. Furthermore, the FHIES, FMICS, UTP and VECoS events will be held on both Monday and Tuesday.

From Wednesday, August 29th, to Friday, August 31st, the main conference, Industry Day (Thursday, August 30th) and Verification Competition (August 30th and 31st) will take place. On those days, the conference reception (Wednesday 29th) and conference dinner (Thursday 30th) will be held in selected locations in Paris.

This programme booklet contains all the information you need during the conferences and satellite events. Maps and directions to different locations and events are provided as well as detailed schedules of talks and sessions.

If you have any question regarding the conferences, workshops or the programme in general, feel free to ask any of our student volunteers or senior staff members present at the symposium. We will be happy to answer any questions and provide the information you require. The whole crew put a lot of effort into organizing this event and we hope that you will enjoy the conferences and your stay in Paris.

Explicitly, we want to thank all members of the various FM 2012 committees for their dedication and effort and a special thanks to our academic and corporate sponsors.

Kamel Barkaoui and Béatrice Bérard
General and Organizing Chairs
General Information

 Arrival
The registration desk is located at CNAM, 2 rue Conté 75003 Paris (Salon d'honneur - Access 37 - Level 1). Our crew will be wearing red shirts with the Cnam Logo. If you have any questions feel free to ask any of the crew or organisers.

 On-Site Registration
Up on first arrival we would like to ask you to check-in at our registration desk. Here, you will receive the conference bag containing proceedings, course material and further information. The registration desk is also the main contact point for any question regarding invoices and payment of fees. It is open from around 8 a.m. to 6 p.m. during the entire event and our crew members are happy to help you in any way they can.

If you should arrive late (e.g. during the conference opening or an invited talk) there is no problem to visit the lecture rooms first and check in during a break. In this case, follow the signs or ask one of our staff.

 Internet and PC Access
A wireless Internet connection is available to all participants during the entire event. You will receive the username and password with your conference bag. You can find more detailed information in your conference bag.

If you possess an EDU-Roam account you can use your regular account and configuration with the wireless network eduroam.

We also provide a number of notebooks for use near the registration desk. Using these, you can access the Internet, if you don’t bring your own notebook.
The conference and its satellite events take place in the rooms of the Cnam, 2 rue de Conté, 75003 Paris.

From Wednesday to Friday, the main conference will take place at the Amphi Georges Friedmann, access 33-level 2.

The Industry Day will be held at the Amphi Gaston Planté, access 35-level 1.

Tea/coffee will be served at 10:00 and 16:00 in the Galerie d’honneur, access 37-level 1.

From Monday to Tuesday, satellite events will take place in access 30-level -1 and access 31-level 2.

The exact locations of lecture rooms will be indicated at the conference site.

Tea/coffee will be served at 10:30 and 15:30 in the Galerie d’honneur, access 37-level 1.

Lunch from Monday 27th to Friday 31st will be served between 12:00 – 14:00 in the Cnam restaurant.

The symposium site is easily reached by public transportation:

Station « Arts et Métiers » (Metro 3, 11)

Station « Réaumur-Sébastopol » (Metro 4)

Station « République » (Metro 5, 8, 9)

Buses 20, 38, 39 and 47 also stop at Réaumur Sébastopol or Arts et Métiers.
Conference Location
2 rue Conté

Conference Reception
La chapelle du musée du Cnam
Social Programme

Conference Reception
The conference reception will take place in the Chapel Saint-Martin-des-Champs of "Arts et Métiers" Museum located in 60 Rue Réaumur 75003 Paris, near to conference location. The Foucault's pendulum which was exhibited during the International exhibition of Paris in 1855 is now in the chorus of this site.

The reception starts on Wednesday, August 29th at 19:00 and ends at 21:30.

Each participant will have a free access to the museum of "Arts et Métiers" during the conference. The Cnam museum is open from Tuesday to Sunday included, from 10:00 to 18:00. Night thursday to 21:30.

Conference Dinner
The conference Dinner will take place on Thursday, August 30th at 9pm in the bateau mouche “Capitaine Fracasse” located in “Ile aux Cygnes”, at the middle of Bir-Hakeim bridge (Paris 15ème, near Tour Eiffel), which can be reached from « Champ de Mars Tour Eiffel » station RER C or from Bir-Hakeim station metro line 6.

Please note that embarkation is at 20:30 and departure at 21:00 precisely.

Coming from the conference location, the best ways are the following:

First way
1. Take line 4, from Reaumur-Sebastopol station, to Saint-Michel station, where you change to RER C,
2. Take RER C from Saint-Michel Notre Dame, to Champ de Mars-Tour Eiffel,
3. Champ de Mars-Tour Eiffel is only a short walk to the “Ile aux Cygnes”.

Second way
1. Take line 8, from République station, to La Motte-Picquet-Grenelle station, where you change to line 6,
2. Take line 6 from La Motte-Picquet-Grenelle station, to Bir-Hakeim station,
3. Bir-Hakeim station is only a short walk to the “Ile aux Cygnes”.
Conference Dinner
bateau mouche
« Capitaine Fracasse »
## FM 2012 Week Schedule

### Formal Methods 2012 Symposium

*Chairs: Dimitra Giannakopoulou and Dominique Mery*

#### Wednesday, August 29th

<table>
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<tr>
<th>Time</th>
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<tr>
<td>08:30</td>
<td>Opening session</td>
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<tr>
<td>09:00</td>
<td>Invited talk by Martin Abadi - Software Security: A Formal Perspective</td>
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<tr>
<td>10:00</td>
<td>Coffee break</td>
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**10:30** - Verification

- Matthieu Carlier, Catherine Dubois and Arnaud Gotlieb - A certified constraint solver over finite domains
- Sam Owre, Indranil Saha and Natarajan Shankar - Automatic Dimensional Analysis of Cyber-Physical Systems
- Mathieu Giorgino and Martin Strecker - Correctness of pointer manipulating algorithms illustrated by a verified BDD construction
- Maurice H. Ter Beek, Franco Mazzanti and Aldi Sulova - VMC: A Tool for Product Variability Analysis (tool paper)

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**14:00** - Learning and control

- Fides Aarts, Faranak Heidarian, Harco Kuppers, Petur Olsen - Automata Learning Through Counterexample-Guided Abstraction Refinement
- Shang-Wei Lin, Yang Liu, Jun Sun, Jin Song Dong and Étienne André - Automatic Compositional Verification of Timed Systems (tool paper)
- Ammar Osaiweran, Tom Fransen, Jan Friso Groote and Bart van Rijnsoever - Experience Report on Designing and Developing Control Components using Formal Methods
- Étienne André, Laurent Fribourg, Ulrich Kühne and Romain Soulat - IMITATOR 2.5: A Tool for Analyzing Robustness in Scheduling Problems (tool paper)
- Nicolas D'Ippolito, Victor Braberman, Nir Piterman and Sebastian Uchitel - The Modal Transition System Control Problem

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<th>Time</th>
<th>Coffee break</th>
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**16:30** - Analysis and Debugging

- Andreas Bauer and Ylles Falcone - Decentralised LTL monitoring without central observer
- Evren Ermis, Martin Schäf and Thomas Wies - Error Invariants
- Virginia Aponte, Pierre Courtieu, Yannick Moy and Marc Sango - Maximal and Compositional Pattern-Based Loop Invariants
Thursday, August 30th

09:00 - Invited talk by Asaf Degani - Formal Methods in the Wild: Trains, Planes, & Automobiles
10:00 - Coffee break
10:30 - Modeling and Model Checking
James Heather and Steve Schneider - A Formal Framework for Modelling Coercion Resistance and Receipt Freeness
Yael Meller, Orna Grumberg and Karen Yorav - Applying Software Model Checking Techniques for Behavioral UML Models
Fu Song and Tayssir Touili - Efficient Malware Detection Using Model-Checking
Truong Khanh Nguyen, Jun Sun, Yang Liu, Jin Song Dong and Yan Liu - Improved BDD-based Discrete Analysis of Timed Systems
12:30 - Lunch
14:00 - Proofs and Synthesis
Grigore Rosu and Andrei Stefanescu - From Hoare Logic to Matching Logic
María Alpuente, Demis Ballis, Francisco Frechina and Daniel Romero - Julienne: a Trace Slicer for Conditional Rewrite Theories
Denis Cousineau, Damien Doligez, Leslie Lamport, Stephan Merz, Daniel Ricketts and Hernán Vanzetto - TLA+ Proofs (tool paper)
Daniel Plagge and Michael Leuschel - Validating B, Z and TLA+ using ProB and Kodkod
16:00 - Coffee break
16:30 - Distribution and Refinement
Mikael Asplund, Atif Manzoor, Melanie Bouroche, Siobhan Clarke and Vinny Cahill - A Formal Approach to Autonomous Vehicle Coordination
German Sibay, Sebastian Uchitel, Victor Braberman and Jeff Kramer - Distribution of Modal Transition Systems
Mirko Spasic and Filip Maric - Formalization of Incremental Simplex Algorithm by Stepwise Refinement
Julien Dormoy, Olga Koucharenko and Arnaud Lanoix - When Structural Refinement of Components Keeps Temporal Properties over Reconfigurations
21:00 - Conference Dinner
**Friday, August 31st**

**09:00** - Invited talk by Alan Wassye - Who Are We, and What Are We Doing Here?

**10:00** - Coffee break

**10:30** - Testing

- Maria Christakis, Peter Müller and Valentin Wüstholz - Collaborative Verification and Testing with Explicit Assumptions
- Yasuhiko Minamide and Shunsuke Mori - Reachability Analysis of the HTML5 Parser Specification and its Application to Compatibility Testing
- Rob Hierons, Mercedes Merayo and Manuel Nuñez - Using Time to Add Order to Distributed Testing

**12:30** - Lunch

**14:00** - Applications

- David Lazar, Andrei Arusoaie, Traian Serbanuta, Chucky Ellison, Radu Mereuta, Dorel Lucanu and Grigore Rosu - Executing Formal Semantics with the K Tool (tool paper)
- Soufiene Benkirane, Rachel Norman, Erin Scott and Carron Shankland - Measles Epidemics and PEPA: an exploration of historic disease dynamics using process algebra

**16:00** - Coffee break

**16:30** - Closing session
Industry Day

Chairs: Isabelle Perseil, Karim Djouani, Thierry Lecomte and Bruno Monsuez

Thursday, August 30th

08:30 - Opening session
09:00 - Invited talk by Asaf Degani, Formal Methods in the Wild: Trains, Planes, & Automobiles

10:00 - Coffee break

10:30 - Session 1
Jean-Raymond Abrial, Marseille, France, Formalizing hybrid systems with Event-B
Michael Leuschel, Formal Mind, Germany, ProB, ProR and Data Validation with B

12:30 - Lunch

14:00 - Session 2
Yannick Moy, AdaCore, France, The future of formal software verification in avionics
Viet Yen Nguyen, RWTH Aachen University/ESA, the Netherlands, Formal Modelling & Analysis of an European Satellite
Marcel Verhoef, Chess, the Netherlands, Embedding Formal Techniques into Industrial Product Development – Experiences with the DESTECS Approach

15:30 - Coffee break

16:00 - Session 3
Alessandro Fantechi, Università di Firenze, Italy, Trends in formal verification in the railway signalling domain
Weiqiang Kong, Kyushu University, Japan, Garakabu2: formal verification for ZIPC
Marc Antoni, SNCF, France, Practical formal validation method for interlocking systems

17:00 - Closing session

21:00 - Conference Dinner
Workshops

FMICS 2012
Chairs: Ralf Pinger and Marielle Stoelinga

Monday, August 27th

08:30 - Opening session
09:00 - Invited talk by Dimitria Giannakopoulou, NASA Ames, USA

10:30 - Coffee break

11:00 - Real time I
Vlad Popa and Wolfgang Schwitzer, Optimizing the Robustness of Software against Communication Latencies in Distributed Reactive Embedded Systems
Christel Baier, Marcus Daum, Benjamin Engel, Hermann Härtig, Joachim Klein, Sascha Klüppelholz, Steffen Märcker, Hendrik Tews and Marcus Völ, Waiting for locks: How long does it usually take?
Victor Bandur, Wolfram Kahl and Alan Wassyng, Microcontroller Assembly Synthesis from Timed Automaton Task Specifications

12:30 - Lunch

14:00 - Tools
Jiri Slaby, Jan Strejcek and Marek Trtík, Checking Properties Described by State Machines: On Synergy of Instrumentation, Slicing, and Symbolic Execution
Konrad Siek and Paweł T. Wojciechowski, A Formal Design of a Tool for Static Analysis of Upper Bounds on Object Calls in Java
Jiri Barnat, Lubos Brim, Petr Rockai, Jan Beran and Tomas Kratochvila, Partial Tool Chain to support Automated Formal Verification of Avionics Simulink Designs

15:30 - Coffee break

16:00 - Case studies
Sjoerd Cranen, Model checking the FlexRay startup phase
Rainer Droste, Christoph Läsche, Cilli Sobiech, Eckard Böde and Axel Hahn, Model-based Risk Assessment Supporting Development of HSE Plans for Safe Offshore Operations

Tuesday, August 28th

09:00 - Invited talk by Hubert Garavel, INRIA Grenoble Rhone-Alpes, France

10:30 - Coffee break

11:00 - Software verification
Elvira Albert, Bjarte M. Østvold and José Miguel Rojas, Automated Extraction of Abstract Behavioural Models from JMS Applications
**Edd Barrett and Andy King**, Range Analysis of Binaries with Minimal Effort  
**Nicolas Ayache, Roberto Amadio and Yann Regis-Gianas**, Certifying and reasoning on cost annotations in C programs

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<tr>
<td>12:30</td>
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| 14:00 | **Software Verification / Real-time 2**  
Loïc Correnson and Julien Signoles, Combining Analyses for C Program Verification  
Nouha Abid, Silvano Dal Zilio and Didier Le Botlan, Real-Time Specification Patterns and Tools  
Luca Ferrucci, Matteo Rossi, Dino Mandrioli and Angelo Morzenti, Modular Automated Verification of Flexible Manufacturing Systems with Metric Temporal Logic and Non-standard analysis |
| 15:30 | Coffee break                   |
| 16:00 | Closing session / ERCIM meeting |

**INFINITY 2012**  
*Chairs: Mohamed Faouzi Atig and Ahmed Rezine*  
**Monday, August 27th**

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<td>09:00</td>
<td><strong>Invited talk</strong> by Arnaud Gotlieb</td>
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<td>10:00</td>
<td>Lukasz Fronc, Effective Marking Equivalence Checking in Systems with Dynamic Process Creation</td>
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<td>11:00</td>
<td><strong>Invited talk</strong> by Ganesh Gopalakrishnan, Formal Correctness Methods at the Million CPU Scale</td>
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<td>12:00</td>
<td>Aurel Randolph, Hanifa Boucheneb, Abdessamad Imine and Alejandro Quintero, On Consistency of Operational Transformation Approach</td>
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<td>14:00</td>
<td><strong>Invited talk</strong> by Parosh Aziz Abdulla</td>
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<td>15:00</td>
<td>Gilles Geeraerts, Alexander Heußner and Jean-Francois Raskin, Queue-Dispatch Asynchronous Systems</td>
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<td>16:00</td>
<td><strong>Invited talk</strong> by Peter Habermehl</td>
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<td>17:00</td>
<td>Anjelika Votintseva, Andreas Ulrich and Stefanie Goetzfried, Overcoming Overall Analysis Complexity via Integrations</td>
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**Overture / VDM 2012**
*Chairs: Nico Plat, Claus Ballegard Nielsen and Steve Riddle*

**Tuesday, August 28th**

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<td><strong>Session 1</strong></td>
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<td>09:30</td>
<td><em>Carl Gamble, Martin Mansfield, and John Fitzgerald</em>, The Co-Simulation of a Cardiac Pacemaker using VDM and 20-sim</td>
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<td>10:00</td>
<td><em>José Antonio Esparza Isasa, Peter Gorm Larsen and Kim Bjerge</em>, Supporting the Partitioning Process in Hardware/Software Co-design with VDM-RT</td>
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<td><strong>Session 3</strong></td>
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<td><strong>Coffee break</strong></td>
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<td>16:00</td>
<td><strong>Session 4</strong></td>
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<td>17:00</td>
<td>Hands-on experience with the Overture platform</td>
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**QFM 2012**
*Chairs: Uli Fahrenberg, Axel Legay and Claus Thrane*

**Tuesday, August 28th**

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<td>11:00</td>
<td><strong>Invited talk</strong> by Boudewijn Haverkort</td>
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<td>12:00</td>
<td><strong>Session 2</strong></td>
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K.G.Larsen, R.Mardare, C.Thrane, Parameterized Metatheory for Continuous Markovian Logic

12:30 - Lunch

14:00 - Invited talk by Goran Frehse
15:00 - Session 3

15:30 - Coffee break

16:00 - Invited talk by Olivier Serre
17:00 - Session 4
I.Gazeau, D.Miller, C.Palamidessi, Non-local robustness analysis via rewriting techniques

TLA+ 2012
Chairs: Leslie Lamport and Stephan Merz

Monday, August 27th

08:30 - Opening session
09:00 - TLA+ Tools
Dominik Hansen, Michael Leuschel, TLA2B – A New Validation Tool for TLA+
Markus A. Kuppe, Current State of Distributed TLC
Stephan Merz, Hernán Vanzetto, Harnessing SMT Solvers for TLA+ Proofs

10:30 - Coffee break

11:00 - Experience Using TLA+
Chris Newcombe, Experience of Software Engineers Using TLA+, PlusCal and TLC
Tianxiang Lu, Stephan Merz, Christoph Weidenbach, Formal Verification of Pastry Using TLA+
Thomas L. Rodeheffer, Ramakrishna Kotla, Inserting Intentional Bugs for Model Checking Assurance

12:30 - Lunch

14:00 - Theory and Teaching
Paul-David Brodmann, Hannes Lau, Uwe Nestmann, Automated Generation of Refinement Mappings
Philippe Mauran, Philippe Quéinnec, Xavier Thérioux, Teaching Transition Systems and Formal Specifications with TLA+
Paul Tavolato, Friedrich Vogt, Integrating Formal Methods into Computer Science Curricula at a University of Applied Sciences

15:30 - Coffee break
16:00 - Discussion: Current and Future State of TLA+
UML&FM 2012
Chair: Isabelle Perseil

Monday, August 27th

08:30 - Opening session
09:00 - UML diagrams formalization
Luciano Baresi, Angelo Morzenti, Alfredo Motta and Matteo Rossi, "A Logic-based Semantics for the Verification of Multi-diagram UML Models"
Kenro Yatake and Toshiaki Aoki, "SMT-based Enumeration of Object Graphs from UML class diagrams"
Étienne André, Christine Choppy and Kais Klai, "Formalizing Non-Concurrent UML State Machines Using Colored Petri Nets"
10:30 - Coffee break
11:00 - Dynamic and real-time modeling
Jan Olaf Blech and Bernhard Schütz, Towards a Formal Foundation of Behavioral Types for UML State-Machines
Ning Ge, Marc Pantel and Xavier Crégut, Time Properties Dedicated Transformation from UML-MARTE Activity to Time Transition System
12:30 - Lunch
14:00 - Transformations
Li Dan, Xiaoshan Li and Volker Stolz, Model Querying with Graphical Notation of QVT Relations
Juliana Küster Filipe Bowles and Dulani Meedeniya, Strongly Consistent Transformation of Partial Scenarios
Petra Brosch, Sebastian Gabmeyer, Martina Seidl and Gerti Kappel, On Formalizing EMF Modeling Operations with Graph Transformations
15:30 - Coffee break
16:00 - Patterns and blocks
Jérémy Milhau, Frederic Gervais, Regine Laleau and Marc Frappier, Refinement Patterns for ASTD
Oscar Carrillo, Samir Chouali and Hassan Mountassir, Formalizing and Verifying Compatibility and Consistency of SysML Blocks
17:00 - Conclusions / Preparation of UML&FM 2013
VECoS 2012

Chairs: Nejib Ben Hadj Alouane and Patrice Moreaux

Monday, August 27th

08:30 - Opening session
09:00 - Invited talk by Francesco Flammini, Model-Based Approaches for Railway Safety, Reliability and Security

10:30 - Coffee break

11:00 - Real time
Annie Choquet-Geniet and Gaëlle Largeteau-Skapin, Resource minimization for multiprocessor real-time applications
Nouha Abid, Silvano Dal Zilio and Didier Le Botlan, A Verified Approach for Checking Real-Time Specification Patterns
Frédéric Boniol, Claire Pagetti and Jérôme Brome Ermont, End-to-end latency analysis in networked realtime systems

12:30 - Lunch

14:00 - Invited talk by Catuscia Palamidessi, Quantitative aspects of Secrecy and Privacy

15:30 - Coffee break

16:00 - Networking
Tung Vu, Laurent Decreusefond and Philippe Martins, An analytical model for evaluating outage and handover probability of cellular wireless networks
Rémi Diana and Emmanuel Lochin, Analytical Model of TCP Relentless Congestion Control
Malika Bourenane and Larbi Sekhri, Service Differentiation Using Reinforcement Learning In Wireless Networks

Tuesday, August 28th

09:00 - Invited talk by Giuliana Franceschinis, Formalisms and tools for performability optimization

10:30 - Coffee break

11:00 - Dependability
Géraldine Vache, Vincent Nicomettte and Kaâniche Mohamed, A Model-based security assessment approach: Vulnerability life-cycle, attacker behavior and administrator profile
Escheikh Mohamed and Kamel Barkaoui, Survivability Analysis of VMIMO link in Multi-hop Wireless Network
Martin Riedl and Markus Siegle, A Language for Reconfigurable dependable Systems: Semantics & Dependability Model Transformation

12:30 - Lunch
14:00 - Verification and Control
Romain Richard, Karen Godary-Dejean, Gregory Angles and David Andreu, LPT - A Tool for Parametric TPN Validation
Hélène Leroux and Jean-Marc Roussel, Algebraic synthesis of logical controllers with optimization criteria

15:30 - Coffee break

16:00 - Conclusions / Preparation of VECoS 2013

WS-FMDS 2012
Chairs: César Andrés and Luis Llana

Monday, August 27th

08:30 - Opening session
09:00 - Invited talk by Ana Cavalli. From active to passive testing
10:30 - Coffee break
11:00 - Session 1
Andreas Bollin and Abdollah Tabareh, Predictive Software Measures based on Z Specifications - A Case Study.
Simona Nica and Franz Wotawa, Using Constraints for Equivalent Mutant Detection.
Jasen Markovski, Scalable Minimization Algorithm for Partial Bisimulation

12:30 - Lunch

14:00 - Session 2
Maria Spichkova, Florian Hölzl and David Trachtenherz, Verified System Development with the AutoFocus Tool Chain.
Raúl Pardo and Fernando L. Pelayo, ROSA Analyser: An automatized approach to analyse processes of ROSA.

15:30 - Coffee break

16:00 - Closing session
### Co-located events

**FHIES 2012**  
*Chairs: Zhiming Liu, Isabelle Perseil, Alan Wassyng and Jens Weber*

#### Monday, August 27th

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Opening session</td>
</tr>
<tr>
<td>09:00</td>
<td>Invited talk by Jacques Grassi</td>
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<tr>
<td>10:00</td>
<td>Neeraj Singh and Dominique Mery, Closed-loop modeling of Cardiac Pacemaker and Heart</td>
</tr>
<tr>
<td>10:30</td>
<td>Coffee break</td>
</tr>
<tr>
<td>11:00</td>
<td>Session 1</td>
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<tr>
<td></td>
<td>Sara Bessling and Michaela Huhn, Enhancing Product Line Development by Safety Requirements and Verification</td>
</tr>
<tr>
<td></td>
<td>Nafees Qamar, Johannes Faber, Yves Ledru and Zhiming Liu, Automated Reviewing of Healthcare Security Policies</td>
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<tr>
<td>12:30</td>
<td>Lunch</td>
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<tr>
<td>14:00</td>
<td>Session 2</td>
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<td></td>
<td>Anders S. Henriksen, Lasse Nielsen, Thomas Hildebrandt, Nobuko Yoshida and Fritz Henglein, Trustworthy Pervasive Healthcare Services via Multi-party Session Types</td>
</tr>
<tr>
<td></td>
<td>Cristiano Bertolini, Jiri Srba and Zhiming Liu, Verification of Timed Healthcare Workflows Using Component Timed-Arc Petri Nets</td>
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<tr>
<td></td>
<td>Rokan Uddin Faruqui and Wendy MacCaull, OwlOntDB: A Scalable Reasoning System for OWL 2 RL Ontologies</td>
</tr>
<tr>
<td>15:30</td>
<td>Coffee break</td>
</tr>
<tr>
<td>16:00</td>
<td>Session 3</td>
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<td>Felipe Maia, Rafael Araujo, Luiz Carlos Muniz, Rayrone Zirtany, Luciano Coutinho, Samyr Vale, Francisco José Silva, Cincilla Pierpaolo, Ikram Chabouh, Sébastien Monnet, Luciana Arantes and Marc Shapiro, A Grid Based Distributed Cooperative Environment for Health Care Research</td>
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<tr>
<td>16:20</td>
<td>Panel discussion</td>
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<tr>
<td>19:00</td>
<td>Social Event</td>
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#### Tuesday, August 28th

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>09:00</td>
<td>Invited talk by Gerry Douglas</td>
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<tr>
<td>10:00</td>
<td>Session 4</td>
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<td></td>
<td>Ryan Crichton, Deshendran Moodley, Anban Pillay and Christopher Seebregts, An Interoperability Architecture for the Health Information Exchange in Rwanda</td>
</tr>
<tr>
<td>10:30</td>
<td>Coffee break</td>
</tr>
<tr>
<td>11:00</td>
<td>Panel Discussion on Global Health Care Challenges and the Impact of ICT</td>
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<td>Time</td>
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<tr>
<td>12:00</td>
<td>Lunch</td>
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<td>14:00</td>
<td><strong>Session 5</strong></td>
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<td><em>Oisín Cawley, Xiaofeng Wang and Ita Richardson</em>, Regulated Software Development - an Onerous Transformation</td>
</tr>
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<td></td>
<td><em>Adrian Rutle, Hao Wang and Wendy Maccaull</em>, A Formal Diagrammatic Approach to Compensable Workflow Modelling</td>
</tr>
<tr>
<td>15:30</td>
<td>Coffee break</td>
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<tr>
<td>16:00</td>
<td><strong>Session 6</strong></td>
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<td></td>
<td><em>Pieter Van Gorp, Irene Vanderfeesten, Willem Dalinghaus, Josh Mengerink, Bram van der Sanden and Pieter Kubben</em>, MDE Support for Process-Oriented Health Information Systems: from Theory to Practice</td>
</tr>
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<td><em>Elthon Oliveira, Leandro Silva, Hyggo Almeida and Angelo Perkusich</em>, An Approach For Controlling Human Physiology Based On The Supervisory Control Theory</td>
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<td></td>
<td><em>Alessandro Carlini, Giuseppina Gini, Pierluigi Dalla Rosa, Bartolomeo Montrucchio, Ivan Cenci, Francesca Maria Claudio, Giovanni Luongo and Jacopo Spigaroli</em>, Defining new structural and mobile support to improve hospital facilities access and usability</td>
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<tr>
<td>17:00</td>
<td>Wrap up</td>
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</table>

**UTP 2012**

*Chairs: Marie-Claude Gaudel and Burkhart Wolff*

**Monday, August 27th**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>09:30</td>
<td>Registration</td>
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<tr>
<td>10:30</td>
<td>Welcome coffee</td>
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<tr>
<td>11:00</td>
<td><strong>Invited talk</strong> by Jim Woodcock**, A unifying theory of undefinedness</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>14:00</td>
<td><strong>Session 1</strong></td>
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<td></td>
<td><em>Steve Dunne</em>, Conscriptions: a new relational model for sequential computations</td>
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<tr>
<td></td>
<td><em>Kun Wei, Jim Woodcock and Ana Cavalcanti</em>, Circus Time with Reactive Designs</td>
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<tr>
<td>15:30</td>
<td>Coffee break</td>
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<tr>
<td>16:00</td>
<td><strong>Session 2</strong></td>
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<td></td>
<td><em>Andrew Butterfield</em>, The Logic of UTP2</td>
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<td></td>
<td><em>Chengcheng Wu, Yongxin Zhao and Huibiao Zhu</em>, Unifying Operational Semantics with Algebraic Semantics for Instantaneous Reactions</td>
</tr>
<tr>
<td>19:30</td>
<td>UTP Symposium Dinner at Ambassade d’Auvergne, 22 Rue du Grenier Saint-Lazare, 75003 Paris</td>
</tr>
</tbody>
</table>
**Tuesday, August 28th**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 09:00 | **Session 3**<br>

*Huibiao Zhu, Peng Liu, Jifeng He and Shengchao Qin*, Mechanical Approach to Linking Operational Semantics and Algebraic Semantics for Verilog

*Stephan Van Staden and Tony Hoare*, Algebra Unifies Operational Calculi  
| 10:30 | Coffee break                                                                                        |
| 11:00 | Invited talk by *Jeremy Gibbons*, Unifying Theories of Programming with Monads                   |
| 12:30 | Lunch                                                                                             |
| 14:00 | **Session 4**<br>

*Frank Zeyda and Ana Cavalcanti*, Higher-Order UTP in Theories of Object-Orientation

*Riccardo Bresciani and Andrew Butterfield*, A probabilistic theory of designs based on distributions  
| 15:30 | Coffee break                                                                                        |
| 16:00 | Invited Lecture by *Huibiao Zhu, Jeff W. Sanders, Jifeng He and Shengchao Qin*, Denotational Semantics for a Probability Timed Shared-Variable Language |
| 17:00 | Discussion on the next symposium                                                                  |
Tutorials
Chairs: Serge Haddad and Fabrice Kordon

Monday, August 27th

Tutorial 1: Software Verification with VCC
Lecturer: Ernie Cohen, Microsoft Research, USA
Timeslots: 09:00 – 10:30, 11:00-12:30, 14:00-15:30 and 16:00-17:30

Tuesday, August 28th

Tutorial 2: Towards a Theory of Domain Descriptions
Lecturer: Dines Bjorner, DTU Informatics, Technical University of Denmark
Timeslots: 09:00 – 10:30, 11:00-12:30, 14:00-15:30 and 16:00-17:30

Tutorial 3: CADP: A Toolbox for the Construction and Analysis of Distributed Processes
Lecturer: Radu Mateescu, Inria Grenoble, France
Timeslots: 09:00 – 10:30 and 11:00-12:30

Tutorial 4: Symbolic Analysis of GPU Programs for Correctness and Performance
Lecturer: Ganesh Gopalakrishnan, University of Utah, USA
Timeslots: 14:00-15:30 and 16:00-17:30

Tea/coffee will be served at 10:30 and 15:30 in the Galerie d’honneur.
Lunch will be served between 12:00 – 14:00 in the Cnam restaurant.
Doctoral Symposium
Chairs: Christine Choppy, David Delayahe and Kaïs Klaï

Monday, August 27th

08:30 - Opening session
09:00 - Invited talk by Francesco Flammini, Model-Based Approaches for Railway Safety, Reliability and Security
10:30 - Coffee break
11:00 - Session 1
Andrius Velykis, Inferring the Proof Process
Marion Guthmuller, State equality detection for implementation-level model-checking of distributed applications
Manel Tekaya, Mohamed Taha Bennani and Refka Fouzai, Formal syntaxic and semantic models verification in the aspect oriented design
12:30 - Lunch
14:00 - Session 2
Miloud Bennama and Thouraya Bouabana Tebibel, An analysis system for UML2 Interaction Overview Diagrams
Patrice Carle, Christine Choppy, Romain Kervarc and Ariane Piel, Handling Breakdowns in Unmanned Aircraft Systems
Nouha Abid and Silvano Dal Zilio, A Verified Approach to Checking Real-Time Patterns on Fiacre Programs
15:30 - Coffee break
16:00 - Closing session

Verification Competition
Chairs: Marieke Huisman, Vladimir Klebanov and Rosemary Monahan

Thursday 30th and Friday 30st August

VerifyThis Verification Competition, as event attached to the FM 2012 symposium, aims to evaluate the usability of (mostly deductive) verification tools in a controlled experiment that could be easily repeated by others. The competition will offer a number of challenges presented in natural language. Participants have to formalize the requirements, implement a solution, and formally verify the implementation for adherence to the specification. Solutions will be judged for correctness, completeness and elegance.

The Verification Competition presentation is scheduled for 11:30 – 11:45 on Thursday August 30th (Access 30 – level 1 – room 03).
Committees

Organising committee

General Chairs
Kamel Barkaoui - CEDRIC, Cnam Paris
Béatrice Bérard - LIP6, University Pierre et Marie Curie

Finance Chairs
Bruno Monsuez, LEI, Ensta ParisTech
Nicolas Trèves, CEDRIC, Cnam, Paris

Workshops Chairs
Nihal Pekergin, LACL, University Paris-Est Créteil
Laure Petrucci, LIPN, University Paris Nord
Tayssir Touili, LIAFA, University Paris Diderot

Tutorial Chairs
Serge Haddad, LSV, ENS Cachan
Fabrice Kordon, LIP6, University Pierre et Marie Curie

Industry Day Chairs
Karim Djouani, LISSI, University Paris-Est Créteil
Thierry Lecomte, ClearSy R&D, Aix en Provence
Bruno Monsuez, LEI, Ensta ParisTech
Isabelle Perseil, LTCI, Telecom ParisTech

Doctoral Symposium Chairs
Christine Choppy, LIPN, Université Paris Nord, France
David Delayahe, CEDRIC, CNAM Paris, France
Kaïs Klaï, LIPN, University Paris Nord, France

Publicity Chairs
Hanna Klaudel, IBISC, University of Évry
Frédéric Lemoine, Computer Science Department, CNAM, Paris
Franck Pommereau, IBISC, University of Évry
Olivier Pons, CEDRIC, Cnam, Paris
**Programme committee**

**Programme Chairs**

Dimitra Giannakopoulou, NASA Ames, Research Center, Moffett Field  
Dominique Méry, LORIA et Université Henri Poincaré Nancy 1

Yamine Ait Ameur, France  
Keiijiro Araki, Japan  
Jos Baeten, The Netherlands  
Howard Barringer, UK  
Saddek Bensalem, France  
Bruno Blanchet, France  
Ahmed Bouajjani, France  
Patricia Bouyer, France  
Victor Braberman, Argentina  
Michael Butler, UK  
Andrew Butterfield, Ireland  
Ana Cavalcanti, UK  
Krishnendu Chatterjee, Austria  
Marsha Chechik, Canada  
Yu-Fang Chen, Taiwan  
Leonardo De Moura, USA  
Dino Distefano, UK  
Matt Dwyer, USA  
Bernd Finkbeiner, Germany  
John Fitzgerald, UK  
Dimitra Giannakopoulou, NASA Ames, USA (co-chair)  
Stefania Gniesi, Italy  
Patrice Godefroid, USA  
Ganesh Gopalakrishnan, USA  
Kim Gulstrand Larsen, Denmark  
Klaus Havelund, USA  
Ian J. Hayes, Australia  
Matthew Hennessy, Ireland  
Jane Hillston, UK  
Bart Jacobs, The Netherlands  
Claude Jard, France  
Panagiotis Katsaros, Greece  
Sarfrad Khurshid, USA  
Daniel Kroening, UK  
Marta Kwiatkowska, UK  
Pascale Le Gall, France  
Rustan Leino, USA  
Michael Leuschel, Germany  
Zhiming Liu, Macao  
Tom Maibaum, Canada  
Rupak Majumdar, Germany  
Annabelle Mciver, Australia  
Dominique Mery, France (co-chair)  
Cesar Munoz, USA  
Fernando Orejas, Spain  
Isabelle Perseil, France  
Andre Platzer, USA  
Shengchao Qin, UK  
S Ramesh, India  
Jean-Francois Raskin, Belgium  
Neha Rungta, USA  
Augusto Sampaio, Brazil  
Bernhard Schaeetz, Germany  
Wolfram Schulte, USA  
Kaisa Sere, Finland  
Bernhard Steffen, Germany  
Kenji Taguchi, Japan  
Francois Vernadat, France  
Willem Visser, South Africa  
Michael Whalen, USA
## CONFERENCE AT A GLANCE

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<th>Wednesday</th>
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<th>Friday</th>
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<td>August 27th</td>
<td>August 28th</td>
<td>August 29th</td>
<td>August 30th</td>
<td>August 31st</td>
</tr>
<tr>
<td><strong>Registration Desk at Salon d’honneur</strong>&lt;br&gt;Access 37-Level 1 : 08:00 – 17:00</td>
<td><strong>18th International Symposium on Formal Methods</strong>&lt;br&gt;<strong>FM 2012</strong>&lt;br&gt;Amphi Georges Friedmann&lt;br&gt;access 33-level 2 : 8:30-18:30</td>
<td><strong>Doctoral Symposium</strong>&lt;br&gt;Tutorial 2</td>
<td><strong>Industry Day</strong>&lt;br&gt;Amphi Gaston Planté&lt;br&gt;access 35-level 1&lt;br&gt;8:30-18:00</td>
<td><strong>Verification Competition</strong>&lt;br&gt;access 30-level -1 – Room 03&lt;br&gt;8:30-16:00</td>
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<td><strong>INFINITY</strong>&lt;br&gt;WS-FMDS</td>
<td><strong>TLA+</strong>&lt;br&gt;QFM</td>
<td><strong>UML-FM</strong>&lt;br&gt;VDM</td>
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<td><strong>FMICS</strong>&lt;br&gt;UTP&lt;br&gt;VECoS</td>
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<tr>
<td><strong>Tutorial 1</strong>&lt;br&gt;(9:00-12:00)&lt;br&gt;Tutorial 4 (14:00-17:30)</td>
<td><strong>Tutorial 3</strong>&lt;br&gt;</td>
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<td><strong>FHIeS</strong></td>
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<tr>
<td><strong>Coffee break</strong>&lt;br&gt;10:30 and 15:30</td>
<td><strong>Coffee break</strong>&lt;br&gt;10:00 and 16:00</td>
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<tr>
<td>Tea/coffee will be served in the Galerie d’honneur access 37-level 1</td>
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<tr>
<td>Lunch will be served at 12:00 - 14:00 in the Cnam restaurant</td>
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### Rooms
- Access 30-Level -1
- Access 31-Level 2
- 08:30-18:00
- Welcome Reception 19:00
- Cnam Museum
- Conference Dinner 21:00
- Bateau mouche
- End of FM 2012
- Week 18:00
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<thead>
<tr>
<th>Restaurants near Cnam</th>
<th>Address</th>
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<tbody>
<tr>
<td>Ambassade d'Auvergne</td>
<td>22 rue du Grenier Saint-Lazare</td>
<td>01 42 72 31 22</td>
</tr>
<tr>
<td>L'ami Louis</td>
<td>32 rue Vertbois</td>
<td>01 48 87 77 48</td>
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<tr>
<td>Le Bouledogue</td>
<td>20 rue Rambuteau</td>
<td>01 40 27 90 90</td>
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<tr>
<td>Terrasse des Archives</td>
<td>51 rue des Archives</td>
<td>01 42 72 17 57</td>
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<tr>
<td>Au Bascou</td>
<td>38 rue Réaumur</td>
<td>01 42 72 69 25</td>
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<td>Hall 1900</td>
<td>113 bd Baumarchais</td>
<td>01 48 87 58 67</td>
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<td>Le Taxi Jaune</td>
<td>13 rue Chapan</td>
<td>01 42 76 00 40</td>
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<td>Le Soleil en Cave</td>
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<td>01 42 72 26 25</td>
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<td>Station Rambuteau</td>
<td>20 rue Beaubourg</td>
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<td>Le Potager du Marais</td>
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<td>Les Arts et Métier</td>
<td>51 rue de Turbigo</td>
<td>01 48 87 83 25</td>
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<td>L'Absinthe Café</td>
<td>54 rue de Turbigo</td>
<td>01 48 87 79 30</td>
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<td>Café Léonard</td>
<td>57 rue de Turbigo</td>
<td>01 48 04 07 55</td>
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<td>Café de la Bourse</td>
<td>60 rue de Turbigo</td>
<td>01 42 78 45 22</td>
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<tr>
<td>Le Temple</td>
<td>87 rue de Turbigo</td>
<td>01 42 72 30 76</td>
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<tr>
<td>Auberge Nicolas Flamel</td>
<td>51 rue de Montmorency</td>
<td>01 42 71 77 78</td>
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<td>Jean Bernard Aoc</td>
<td>157 rue Saint Martin</td>
<td>01 42 74 49 45</td>
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<tr>
<td>Au vieux Molière</td>
<td>12 passage Molière</td>
<td>01 42 78 37 87</td>
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<td>168 rue Saint-Martin</td>
<td>01 42 76 93 99</td>
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<td>Piaf Café</td>
<td>74 rue des Archives</td>
<td>01 42 78 00 87</td>
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<tr>
<td>Le Connectable</td>
<td>55 rue des Archives</td>
<td>01 42 72 17 57</td>
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