

RESEARCH CENTER

FIELD Networks, Systems and Services, Distributed Computing

Activity Report 2017

Section Highlights of the Team

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ASAP Project-Team

4. Highlights of the Year

4.1. Awards

• Anne-Marie Kermarrec received the Inria/Dassault Systems/Académie des science/ Innovation Award in 2017.

COAST Project-Team (section vide)

CTRL-A Project-Team (section vide)

MIMOVE Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards

- R. Teixeira was selected to appear in the 2017 list of "N2Women: Stars in Computer Networking and Communications".
- The AppCivist project, which is a joint initiative between the Social Apps Lab at UC Berkeley and the MiMove team at Inria, won the 2016-17 Chancellor's Award for Public Service in the category of Campus-Community Partnership in collaboration with the City of Vallejo [20].

BEST PAPERS AWARDS :

[19] **IEEE International Conference on Collaboration and Internet Computing**. R. ANGARITA, N. GEORGANTAS, V. ISSARNY.

MYRIADS Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

- The FogGuru project was accepted and started on September 1st 2017. FogGuru is a European H2020 Maria-Skłodowska-Curie Action (MSCA) European Industrial Doctorate (EID) training project which aims to to train eight talented PhD students with an innovative and intersectoral research program to constitute the next generation of European Cloud and Fog computing experts. It is coordinated by Guillaume Pierre.
- Cédric Tedeschi defended his *habilitation à diriger des recherches* summarizing his research activity of the last seven years.

5.1.1. Awards

- Best paper award for Timothée Haudebourg and Anne-Cécile Orgerie at the International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2017) for the paper entitled "On the Energy Efficiency of Sleeping and Rate Adaptation for Network Devices"
- Christine Morin has been selected to be included in the 2017 list of "N2Women:Stars in Computer Networking and Communications". The "N2Women:Stars in Computer Networking and Communications" is an annual list focusing in amazing women who have had a major impact in networking and/or communications.

BEST PAPERS AWARDS :

[34] ICA3PP 2017 - 17th International Conference on Algorithms and Architectures for Parallel Processing. T. HAUDEBOURG, A.-C. ORGERIE.

REGAL Project-Team (section vide)

SPIRALS Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards

María Gómez Lacruz defended her PhD thesis [58] in 2016 in the Spirals project-team. She is now a post-doctoral researcher at Saarland University, Germany. During her thesis, she worked in the domain of crowdsensed data. She proposed algorithms to mine traces of mobile applications in order to detect and reproduce application crashes. This research led to techniques that improve the robustness of mobile applications deployed in the wild. For these results, she was awarded an accessit for the thesis prize of the CNRS GDR *Génie de la programmation et du logiciel* (GPL). See http://gdr-gpl.cnrs.fr/node/284.

Benjamin Danglot and his colleagues—Thomas Durieux, Martin Monperrus, Simon Urli, contributing to the development of the Spoon software library—received the 2017 OW2 Community award for Spoon specific and dynamic community, and the use of Spoon in other projects. OW2 is an independent, global, open-source community that promotes the development of open-source middleware, generic business applications, and cloud computing platforms. Spoon is an OW2 project and a software building block that is used in many of our research activities and projects on self-adaptation. See https://www.ow2con.org/bin/view/2017/Awards_Results?year=2017&event=OW2con17.

Philippe Merle, Christophe Gourdin, and Nathalie Mitton (Inria Fun) received a best paper award in the 2nd IEEE International Congress on Internet of Things (ICIOT 2017) for their work on mobile cloud robotics. The paper proposes a novel interface to bridge the gap between cloud systems and mobile robot systems. See http://iciot.org/2018/news.html.

BEST PAPERS AWARDS :

[35] **2nd IEEE International Congress on Internet of Things, IEEE ICIOT 2017.** P. MERLE, C. GOUR-DIN, N. MITTON.

WHISPER Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

As part of a collaborative effort with Timothy Bourke, Lélio Brun, Marc Pouzet (Parkas team), Xavier Leroy (Gallium team), Lionel Rieg (Collège de France) and Pierre-Évariste Dagand, our work on a certified Lustre compiler was accepted at PLDI [13].

Julia Lawall was invited to present a talk as part of the Colloquium Jacques Morgenstern at Inria - Sophia Antipolis. The talk was entitled "Coccinelle: synergy between programming language research and the Linux kernel". A video of the presentation is available.⁰

The work of Julia Lawall on the Linux kernel was featured in the Linux Foundation's 2017 Linux Kernel Development Report.⁰

⁰https://www.canal-u.tv/video/inria/coccinelle_synergy_between_programming_language_research_and_the_linux_kernel.38185
⁰https://www.linuxfoundation.org/2017-linux-kernel-report-landing-page

ALPINES Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards and Recognitions

5.1.1.1. Laura Grigori elected Member of the SIAM Council January 2018 - December 2020.

AVALON Project-Team (section vide)

DATAMOVE Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Startup Company

Creation of the Ryax company ⁰ by two former PhD students, Yiannis Georgiou, David Glesser. Ryax Technologies builds software to enable the seamless execution of Big Data and IoT applications upon Hybrid computing infrastructures, distributed across Edge, Fog and Cloud environments. The core software named Ryax is a new generation resource manager.

5.1.2. Best Paper Nominee

Danilo Carastan-Santos, DataMove, Univ ABC, Brazil, was nominated for the Best Paper and Best Student Paper at Supercomputing 2017 for his paper *Obtaining Dynamic Scheduling Policies with Simulation and Machine Learning* [11].

⁰http://ryax-technologies.com/

HIEPACS Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

We have presented two approaches using a Block Low-Rank (BLR) compression technique to reduce the memory footprint and/or the time-to-solution of the sparse supernodal solver PaStiX. Thanks to this compression technique, we have been able to solve a 1 billion unknown system (a 3D Laplacian matrix $100 \times 100 \times 100.000$) on a single node with 3Tb of memory. The factorization time for this system was less than 6 hours using 96 cores, and the precision achieved at the first solve was 10^{-5} . With 10 additional iterative refinement steps, we reached easily 10^{-8} in double precision. The cost of one solve was limited to 280 seconds. We were able to save 9Tb over the 11Tb that would be requested by the direct solver. The last release of the software (PaStiX 6.0) includes these implementations and the description of the parameters are documented in solverstack/pastix.

2017 has been the last year of the FASTLA associate team that has been for 6 years the framework of fruitful and intense research collaborations with Lawrence Berkeley National Laboratory and Stanford University on data sparse numerical algorithms; the joint research addressed especially fast multipole techniques and low rank calculation in sparse linear algebra. This successful collaboration has been concluded by the participation of E. Ng, head of Applied Mathematics Department at Berkeley, to the two HDR juries of A. Guermouche andP. Ramet that have been defended on the same day, November 27th.

KERDATA Project-Team

4. Highlights of the Year

4.1. Highlights of the Year

- Euro-Par Steering Committee. Luc Bougé has been elected as the new Steering Commitee Chairman of the Euro-Par international conference on parallel and distributed processing. He is the successor of Prof. Christian Lengauer, University of Passau, Germany.
- IEEE Cluster 2017 conference. Three years after the 2014 edition, the KerData team had again a leading role in the organization of the 2017 edition: Gabriel Antoniu served as Program Chair, Alexandru Costan served as Submissions Chair.

IEEE Big Data 2017 conference. Alexandru Costan served as Posters Chair.

POLARIS Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Publications

The paper On the robustness of learning in games with stochastically perturbed payoff observations (Panayotis Mertikopoulos and Mario Bravo) has been selected to appear in the John Nash Memorial Special Issues of GEB (Games and Economic Behavior), May 2017.

5.1.2. Grants

Patrick Loiseau has been granted the "Chaire d'excellence" on *Human-aware learning in the digital society* from IDEX Grenoble.

ROMA Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

- Anne Benoit was the program co-chair of ICPP'17 and of SC'17 (technical papers).
- Altair, EDF, Michelin, LSTC, and Total have renewed for three years their memberships in the MUMPS consortium.

5.1.1. Awards

• Aurélien Cavelan was awarded an accessit award for the Gilles Kahn 2017 PhD thesis award.

STORM Project-Team (section vide)

TADaaM Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

Guillaume AUPY was the Technical Program vice-chair of SC'17. This is the main conference of the field gathering more than 12,700 attendees (practictionners, industrials and researchers) from 79 different nationalities. It is the first time someone from Inria is in charge of the technical program in 30 years of the conference. The Technical Program of SC17 comprises of 13 different elements (papers, workshops, panels, invited talks etc), for a total of 880 submissions from about 2900 unique individuals! 370 different volunteers participated in the review process of one or multiple elements of the Technical Program.

Guillaume MERCIER is the chairman of the Hardware Topologies Management Working Group of the MPI Forum. This working group was created officially in December by Inria's impulse and has been rallied since by many institutions taking part in the MPI Forum. The goal of this working group is to standardize hardware topologies management mechanisms and abstractions in the MPI standard.

ASCOLA Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Remarkable results: research and third-party funding

Regarding scientific results, the team has produced a number of outstanding results on Fog/Edge architectures, notably on how to leverage renewable energy in this context [29], [9], [8], [33]. In the software engineering domain, particularly notable contributions have been made on software adaptability [4], [11].

Concerning third-party funding, 2017 has seen the acceptance of the large industrial/academic Hydda project as well as the start of two individual projects, the Kerdata and ConnectTalent projects, both of which issue of highly-competitive calls.

5.1.2. The future: the Gallinette and Stack teams

After a 10-year adventure, the research path of the Ascola team finishes at the end of 2017 after having given rise to two new teams in 2017: the Gallinette team in April and the Stack team in November. These new teams pursue and diversify Ascola's main research domains, respectively formal methods for programming languages and distributed software systems. Note that because of the rather early split of the Gallinette team, we have not included the corresponding results in this year's Ascola report.

5.1.3. Awards

In 2017 members of the team have been awarded three research-related awards: two personal awards and a best paper award:

• Programme Jeunes Talents France Chine 2017:

Shadi Ibrahim was one of the 12 researchers selected for the "Programme Jeunes Talents France Chine" award (12 out of 54 applicants).

• ICA3PP-2017 Outstanding Leadership Award:

Shadi Ibrahim received an Outstanding Leadership Award as program chair of the ICA3PP-2017. BEST PAPERS AWARDS :

[27] The 7th International Conference on Cloud Computing and Services Science (CLOSER 2017). J. LEJEUNE, F. ALVARES, T. LEDOUX.

DIVERSE Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards

- Publications
 - Learning-Contextual Variability Models, IEEE Software
 - Correctness Attraction: A Study of Stability of Software Behavior Under Runtime Perturbation, Empirical Software Engineering

item Great positions for members (KTH, Univ Toulouse, Mc Gill, ...)

- Three new direct collaborations with Industrial partners: Orange, Nokia, Safran
- Great visibility for AmIUnique and several popularization actions
- Kermeta transfer to Obeo

FOCUS Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards

• Fabrizio Montesi, external collaborator in Focus, has been awarded the "Innovation Award 2017" from his university (University of Southern Denmark), for his work and contributions in the language Jolie.

INDES Project-Team (section vide)

PHOENIX Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

The College+ software, an assistive application on iPad for children with Autism Spectrum Disorders included in ordinary schools, has been distributed on the Apple store, starting in October 2017. https://itunes.apple.com/us/app/college/id1289697202

RMOD Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Release of Pharo 6

We released a new version Pharo (Pharo 6). More information at http://pharo.org.

5.1.2. Pharo Consortium joins InriaSoft

The Pharo Consortium is joining InriaSoft (part of the Inria Foundation).

5.1.3. Awards

- Guillermo Polito, Luc Fabresse and Stéphane Ducasse won the 1st place in the best paper award at IWST 2017.
- Sophie Kaleba and Clément Béra won the 3rd place in the best paper awards at IWST 2017.
- Benoit Verhaeghe won the 2nd place for SmartTest in the Innovation Technologies Award at ESUG 2017.
- Denis Kudriashov with PharoThings won the 3rd place in the Innovation Technologies Award at ESUG 2017.

5.1.4. Keynote at Programming 2017

Stéphane Ducasse and Guillermo Polito did a keynote presentation in Modularity 2017, hosted within Programming 2017.

TACOMA Team (section vide)

AGORA Team

5. Highlights of the Year

5.1. Highlights of the Year

- Hervé Rivano was appointed as a Full Professor at INSA Lyon, starting from September 2017.
- Oana Iova was appointed as an Associate Professor at INSA Lyon and joined the team, starting from September 2017.

COATI Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards

David Coudert and Nathann Cohen (LRI) won the Flinders Hamiltonian Cycle Problem (FHCP) Challenge 2016 (http://fhcp.edu.au/fhcpcs).

Guillaume Ducoffe, former PhD student of COATI, is the recipient of an accessit to the PhD prize Graphes "Charles Delorme" 2017 for his PhD thesis entitled "Metric properties of large graphs".

Frédéric Giroire and Joanna Moulierac are recipients of the Wilkes Award 2017 for the paper "Energy Efficient Content Distribution" [1] (The Wilkes Award is given once a year to the authors of the best paper published in the volume of *The Computer Journal* from the previous year).

DANTE Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Official launch of Dylnet:

The aim of DyLNet⁰ is to observe and characterise the relations between child socialisation and oral language learning during the preschool period by means of an innovative multidisciplinary approach that combines work in the fields of language acquisition, sociolinguistics and network science.

It is implemented through the 3-year follow-up of all the children and teaching staff (≈ 220) at a socially mixed preschool. The social interactions between individuals are recorded using wireless sensor technology which will record inter-individual proximity data at 5 second intervals. These sensors will be worn for one week every month for a period of 3 years. The children's language development is monitored on the basis of their results in general language tests and the recording of their social use of language in natural interactions, through microphones implemented on the sensors. Finally, the children's social profiles is identified by means of questionnaires sent to their families.

Thanks to the analytical power of the network science, the social interaction data will be matched against the children's linguistic performances and sociolinguistic usage. The task, in particular, will be to examine the influence of the children's social relations on their language development (if individuals stay in the same peer community between two observation times, does the linguistic distance between them falls over the same period?) and, equally, the influence of language on these social relations (if two individuals belong to the same linguistic group at time T, does the probability that they will be in the same peer community increase at time T + n?). We shall also examine the interactions between the pupils and the teaching staff – teachers and classroom assistants – in order to observe whether their frequency has an impact on the children's language development. Finally, DyLNet will result in the provision to the scientific community of a database indicating the relations between the recorded interaction frequencies and the language descriptions of a broad school community of children and adults followed up over three years.

Because preschool is the first step in a child's school career, it is necessary to understand how children from different social backgrounds integrate and adapt to it. Oral language plays a key role in this process because it is the mean and result of socialisation at school. Social inequalities are a key factor in this chain since, as of age 2, children from different backgrounds do not exhibit the same level of language skills and do not all use, to the same extent, the linguistic codes that are encouraged at school. These early differences, which are transmitted within the family, have given rise to numerous studies that have revealed the influence of the nature and quantity of the speech addressed to children in different social environments. However, these works tell us little about the influence of peers, which may modulate the impact of the family given that peer groups give rise to a certain social mix. The DyLNet project will bring an important insight to this under-researched issue.

5.1.2. Official launch of the Blaise Pascal Foundation

The foundation Blaise Pascal (hereafter denoted by FBP) has been created on the 14th of November 2016. Its founders are the CNRS and the University of Lyon. The objectives of the foundation are to promote mathematics and computer science and to attract young people to scientific fields like computer science and mathematics. The FBP closely pays attention to gender issues in these scientific domains and to the difficulties for disadvantaged public to embrace scientific careers.

The actions of the FBP focus on: - a support to actors that promote mathematics and computer science via allocated funding based on call of proposals; - a structuring of actors to increase the impacts of their actions, to coordinate the efforts and to share experiences; - a development of innovative experiences via summer camps and clubs of mathematics and computer science.

⁰https://dylnet.univ-grenoble-alpes.fr/dylnet-project?language=en

The FBP has received an initial funding from the French government and its founders. To maintain its activities in the long term, external funding must be raised. Additional information on the FBP can be found here: http://fondationblaisepascal.strikingly.com.

Isabelle Guérin Lassous is the managing director of the foundation Blaise Pascal.

5.1.3. Books on Dynamic Networks by Márton Karsai

After a book chapter on *Control Strategies of Contagion Processes in Time-varying Networks* in Temporal Network Epidemiology in collaboration with Nicola Perra [57], a full book on *Bursty Human Dynamics* was just released at the end of the year in collaboration with Hang-Hyun Jo and Kimmo Kaski [56].

5.1.4. Public Data Lab and Fake News Field Guide

In February 2017, Tommaso Venturini has founded the Public Data Lab in collaboration with researchers from King's College London, the University of Amsterdam, the Politecnico di Milano, the University of Aalborg and other European research centres.

The PDL (http://publicdatalab.org) a network of young European researchers working on digital data and public interventions. The Public Data Lab seeks to facilitate research, engagement and debate around the future of the data society. We want to develop and disseminate innovative research, teaching, design and participation formats for the creation and use of public data. We work in collaboration with an interdisciplinary network of researchers, practitioners, journalists, civil society groups, designers, developers and public institutions across the world. Our approach is characterized by:

- Intervention around social, political, economic and ecological issues;
- Participation through involving different publics in the co-design of our work;
- Artisanship in advancing the craft of developing data projects and experiences;
- Openness in sharing our research, data and code for all to use.

In 2007, The Public Data Lab has published Field Guide on Fake News (http://fakenews.publicdatalab.org), which exemplifies our empirical approach to public debate inquiry and the way in which we mobilize digital methods in collaboration with stakeholders. The field guide has been selected as one of the project to be showcased during the celebration of the 50 years of the Inria.

More recently the PDL has received a small funding by the OrganiCities programme (http://organicity.eu/opencall/) to "develop a prototype service to support people in experimentation with urban data". In the Save Our Air project we will experiment combining air quality data and discursive inscriptions about urban environment.

5.1.5. Inria 50th anniversary

This year Inria has celebrated its 50th anniversary. In [19] the authors reflect on Inria's evolution through the decades and present its vision for the future.

DIANA Project-Team

4. Highlights of the Year

4.1. Highlights of the Year

4.1.1. Reproducibility'17 workshop

Our team was strongly involved in the Reproducibility'17@SIGCOMM workshop. Damien Saucez served as a co-chair of the workshop. Chadi Barakat and Mohamed Naoufal Mahfoudi participated to the workshop discussions. Mohamed Naoufal also presented our paper Lessons Learned while Trying to Reproduce the OpenRF Experiment [21]. See section 6.3.1 for more details about the workshop results.

4.1.2. R2lab demonstration at SIGCOMM

We have demonstrated the deployment of a standalone 5G network in less than 5 minutes in the R2lab tesbed. All the network components (base station, subscriber management, serving and packet gateways, network trafic analyzers) were run automatically using the nepi-ng experiment orchestration tool. Download and upload performance to the Internet from a commercial phone located in the anechoic chamber was also performed. This demo has been presented at the ACM SIGCOMM conference in August 2017 [33].

4.1.3. MOOC Python 3

Arnaud Legout and Thierry Parmentelat are co-authors of the MOOC: "Python 3 : des fondamentaux aux concepts avancés du langage" that lasts 9 weeks on FUN, UCA. For the first session there were 11677 registered persons. This MOOC is a brand new version of the past MOOC on Python 2, and has been funded by UCA.

DIONYSOS Project-Team

5. Highlights of the Year

5.1. Awards

BEST PAPER AWARD :
[43] IEEE NCA 2017 - 16th IEEE International Symposium on Network Computing and Applications.
C. HARDY, E. LE MERRER, B. SERICOLA.

DYOGENE Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

B. Blaszczyszyn has just been appointed ENS adjunct professor in September 2017.

EVA Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

5.1.1. Awards

- 1. **Pascale Minet, Paul Muhlethaler** and Ines Khoufi received the best paper award for their paper "Coded Slotted Avoidance in a Wireless Network: Models and Simulations" at PEMWN 2017.
- SolSystem selected as one of the 10 testbeds at the IoT Solutions World Congress, Barcelona, Spain, 3-5 October 2017.
- 3. SmartMesh IP awarded "Internet of Things Product of the Year" at the Annual Creativity in Electronics (ACE) Awards, 6 December 2017. (Note: this is not a personal award)

5.1.2. 6TiSCH Standardization Virtually Completed

Time Synchronized Channel Hopping (TSCH) is a Medium-Access Control (MAC) technique in which nodes synchronize, and a schedule orchestrates all communication in the network. Inria-EVA created the IETF 6TiSCH Working Group in 2013. The goal of 6TiSCH is to get the best of both world by combining TSCH ("industrial" performance) and the ease of use of IPv6 through the IETF upper stack (6LoWPAN, RPL, CoAP). Since the creation of 6TiSCH in October 2013, **Thomas Watteyne** co-chairs the working group, helps drive its technical developments, and coaches authors and authors technical documents. 6TiSCH also encompasses and important security aspect, where we look how to enable nodes to join a network efficiently, which includes mutual authentication between node and network. The 6TiSCH security solution if based on PSK, and relies on AES-128 CCM*.

421 people now follow the 6TiSCH activities through its mailing-list, with a healthy mix of industrial and academic contributors. In 2017, 6TiSCH has produced 2 RFCs, 6 working group document in the process of being published, and various individual submissions. The working group has met 3 times in person during 2017, tens of times through Webex. Inria-EVA co-organized a 6TiSCH interop event (attended by 15 entities) in July 2017. 6TiSCH is now supported by all major open-source implementations (OpenWSN, Contiki, RIOT, TinyOS), and several companies are building commercial product lines with it. 6TiSCH has been playing a real role of catalyst for the academic low-power wireless community, which has now mostly moved towards TSCH/6TiSCH.

5.1.3. Over 1,000 Sensors Deployed on 3 Continents

Inria-EVA uses SmartMesh IP as a low-power wireless building block for building end-to-end solutions. Deploying real networks allows Inria-EVA to do system-level cross-disciplinary research. Inria-EVA oversees over 1,000 sensors deployed on 3 continents:

- http://snowhow.io/. Monitoring the snowmelt process in the California Sierra Nevada. 945 sensors deployed in 21 networks. Collaboration with UC Berkeley Prof. Steven Glaser.
- http://www.savethepeaches.com/. Predicting frost events in peach orchards. 120 sensors deployed in Mendoza, Argentina. Collaboration with local agronomy/networking teams
- http://smartmarina.org/. Monitoring the occupancy and per-boat water/electricity consumption of the 3rd largest marina in Europe (Cap d'Agde, 4300 boats). Inria-EVA is working on turning this activity into a startup company.

FUN Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

Valeria Loscrí has been elevated to the IEEE Senior Membership degree.

5.1.1. Awards

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BEST PAPERS AWARDS :
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[26] 2nd IEEE International Congress on Internet of Things, IEEE ICIOT 2017. P. MERLE, C. GOURDIN, N. MITTON.

GANG Project-Team (section vide)

INFINE Project-Team

4. Highlights of the Year

4.1. Awards

Laurent Massoulié received the Grand Prix Scientifique Cino Del Duca 2017, awarded by the French Academy of Sciences for his project on Social Information Networks. More details about the price here: http://www.academie-sciences.fr/fr/Prix-en-chimie-et-sciences-du-vivant/grand-prix-scientifique-fondation-simone-et-cino-del-duca.html. More details about his project here: https://www.inria.fr/en/centre/saclay/ news/laurent-massoulie-grand-prix-cino-del-duca.

Oliver Hahm received the 1st prize of Université Paris Saclay (Prix Doctorant ED STIC 2017) for his PhD work on RIOT, supervised by Emmanuel Baccelli.

4.2. Associated team - EMBRACE

2017 was the first year of the EMBRACE Associated team. The EMBRACE (IEveraging huMan Behavior for Resource AlloCation and services orchestration modEls) team is composed by members of the INFINE and by three Brazilian teams from three different Brazilian Universities. The EMBRACE project addresses the topic of designing efficient solutions for 5G networks taking into account human behavior, uncertainty, and heterogeneity of networking resources.

More information is available here: https://team.inria.fr/infine/embrace/

4.3. RIOT Summit 2017

We successfully organized in September 2017 the second RIOT Summit in Berlin. The RIOT Summit 2017 gathered 100+ enthusiastic industrial participants, makers and academics involved in RIOT. Relevant partners such as Cisco, Fujitsu, OTA Keys, Wolf SSL, as well as a number of SMEs and startups from various places in Europe gave talks on aspects of IoT communication, use cases IoT hardware, IoT open source community aspects and concepts for future IoT software and networks, as well as hands-on sessions and tutorials. See: http://summit.riot-os.org/#speakers.

MADYNES Team

5. Highlights of the Year

5.1. Highlights of the Year

- The team (Jérôme François and Lucas Nussbaum) organized the Cloud Days (GdR CNRS RSD, Virtualization and Cloud Action) in Loria (Nancy).
- Loic Rouch demonstrated in Blackhat Europe 2017 an attack to tack over a z-wave network https://www.blackhat.com/eu-17/briefings/schedule/#a-universal-controller-to-take-over-a-z-wavenetwork-8459.

BEST PAPER AWARD :

[17] IFIP/IEEE Symposium on Integrated Network and Service Management (IM) - AnNet workshop. S. LAGRAA, J. FRANCOIS.

NEO Project-Team

5. Highlights of the Year

5.1. Highlights of the Year

The NEO team underwent Inria's project-team creation process and was officially created as a project-team on 1/12/2017. Before then, it was a research team of Inria's research center Sophia-Antipolis Méditerranée.

5.1.1. Awards

The paper "Real-Time Fair Resource Allocation in Distributed Software Defined Networks", by Zaid Allybokus, Konstantin Avrachenkov, Jérémie Leguay and Lorenzo Maggi, received the Best Paper Award at *ITC*'29.

The paper "Ontology for a Voice Transcription of OpenStreetMap Data, The Case of Space Apprehension by Visually Impaired Persons", by Said Boularouk, Didier Josselin and Eitan Altman, received the WASET Best Paper Award.

The CEFIPRA project "Monte Carlo" received an excellent evaluation and was awarded an exceptional extension.

Eitan Altman was awarded the IEEE Technical Committee on Big Data (TCBD) the Distinguished Technical Achievement Recognition Award, for his outstanding technical leadership and achievement in stochastic modeling and big data analysis.

Giovanni Neglia has been nominated IEEE Infocom 2017 Distinguished TPC member based on "excellent performance in the review process."

BEST PAPERS AWARDS :

[17] **ITC 29 - 2017 29th International Teletraffic Congress.** Z. ALLYBOKUS, K. AVRACHENKOV, J. LEGUAY, L. MAGGI.

[34] World Academy of Science, Engineering and Technology. S. BOULAROUK, D. JOSSELIN, E. ALTMAN.

RAP2 Team (section vide)

SOCRATE Project-Team

4. Highlights of the Year

4.1. Highlights of the Year

4.1.1. Awards

Florent de Dinechin obtained the *community award* of the 27th International Conference on Field-Programmable Logic and Application (FPL17) for his software Flopoco, Parameterized Floating-Point Core Generator, see: https://www.fpl2017.org/awards/

4.1.2. Others

4.1.2.1. FIT/Grid5000 fusion

The mid-term evaluation of the FIT project was very well evaluated (excerpt of the report: "It is really hard to identify weaknesses of the equipment project"), FIT has also been promoted as national "Instrument de Recherche" and it is discussing with Grid5000 to apply to the status of TGIR (*Très grande infrastructure de recherche*). A ESFRI proposal has already been proposed (ESFRI is the european instrument for European Strategy on Research Infrastructures).

4.1.2.2. INSA-Lyon/Spie IoTS Chair

Spie-ICS funds a chair with the Citi-lab on IoT, Jean-Marie Gorce was the initiator of this big project (approximately 1M€ over 5 years) dedicated to Internet of Things, the Socrate team is highly involved in the Spie-IoT Chair