

INFORMATION

SUBMISSION KEY DATES

D, A, T, and E papers	Deadline: 14 September 2020 (abstract) 21 September 2020 (full paper)
Monday Tutorial proposals	Deadline: 14 September 2020
Friday Workshop proposals	Deadline: 14 September 2020
Special Session proposals	Deadline: 24 September 2020
PhD Forum	Deadline: 2 November 2020
Young People Programme	Deadline: 2 November 2020
European Projects	Deadline: 2 November 2020
Exhibition Theatre	Deadline: 2 November 2020
Notification of acceptance	Deadline: 13 November 2020
Camera-ready paper due date	Deadline: 2 December 2020
University Booth proposals	Deadline: 2 November 2020

Kindly note that all deadlines are strict and no extensions can be given.

CONFERENCE ORGANISATION

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CHAIRS

General Chair Franco Fummi University of Verona, IT Franco.fummi@univr.it	Programme Chair Ian O'Connor École Centrale de Lyon, FR ian.oconnor@ec-lyon.fr
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www.date-conference.com

CALL FOR PAPERS

SPECIAL SESSIONS

Special Sessions can take the form of (1) Panels, discussing visionary and controversial issues, (2) Hot-Topic Sessions, focusing on the introduction and discussion of new R&D problems, and (3) Embedded Tutorial Sessions, addressing trends in the technical domains that are of interest to the conference participants. Additional considerations will be given to Special Session proposals matching the DATE 2021 technical programme, Special Days, and Exhibition Campus focus areas: embedded artificial intelligence, silicon photonics, model-driven design of intelligent and autonomous systems, high performance computing in embedded systems, future and emerging technologies including More-Than-Moore and beyond CMOS technologies, new memories and computing architectures, with special focus on availability, reliability, safety, and security requirements.

Special Session proposals must consist of an extended summary of up to 1,500 words in a PDF file, describing the topic, the authors/speakers, plus the format and must be submitted via the DATE website by **24 September 2020**.

The submitter of a Special Session proposal will be notified of acceptance or rejection of his/her proposal by **13 November 2020**. In case of acceptance, contributors of accepted Special Sessions will be asked to submit final texts or statements of panellists, as appropriate, for publication in the proceedings as final, camera-ready manuscripts by **2 December 2020**. Panel sessions are entitled to one (1) page per panellists in the Proceedings; Hot-Topic Sessions are allocated a maximum of six (6) pages paper per speaker, or one single paper for the entire session which should not exceed ten (10) pages; Embedded Tutorial Sessions are allocated one single paper for the entire session which should not exceed ten (10) pages. As a rule of thumb, no more than four speakers per session should be planned for Hot-Topic and Embedded Tutorial Sessions.

For all accepted special sessions, it is the responsibility of the Special Session organizer(s) to ensure that the **2 December 2020** deadline is met, and all the camera-ready manuscripts from their respective Special Sessions are technically sound and meet the editorial standards of the DATE Proceedings. The Special Session Co-Chairs may decline the publication of the final manuscripts in the

DATE Proceedings if the above responsibility is not fulfilled. For more information, please contact:
Giovanni De Micheli and Marco Casale-Rossi,
specialsessions@date-conference.com

MONDAY TUTORIALS

DATE 2021 tutorials are designed to provide audiences with introductions to important topics in DATE technical areas as well as hands-on tutorials on design automation tools. Early career professionals as well as graduate students will benefit from the introductory-level material on these important topics and tools. Mid-career professionals can also benefit from the tutorials to extend their horizons. We welcome proposals for tutorial presentations in DATE technical areas. Proposals should be submitted before **14 SEPTEMBER 2020**, via the DATE submission website. For more information, please contact:

Mehdi Tahoori and Prabhat Mishra,
monday-tutorials@date-conference.com

PHD FORUM

The PhD Forum is a poster session hosted by EDAA, ACM SIGDA, and IEEE CEDA for PhD students who have completed their PhD thesis within the last 12 months or who are close to completing their thesis work. It represents an excellent opportunity for them to get feedback on their research and for industry to get a glance at the state of the art in system design and design automation. Proposals can be submitted via the DATE website until **2 November 2020**. For further information, please contact:

Robert Wille,
phd-forum@date-conference.com

YOUNG PEOPLE PROGRAMME

The Young People Programme is an initiative targeting PhD students with the goal of supporting their career development. PhD students will have an opportunity to present themselves to potential employers from EDA and microelectronics industries. If there is interest from company side, interviews will be arranged during the DATE conference. The initiative also includes activities to improve networking, seminars on how to present themselves effectively to HR representatives, and panels to stimulate discussion on how to publish effectively. In order to apply, PhD students should submit an application including their CV and an abstract of their work. Students participating in the PhD-Forum should also write in the PhD-Forum application their interest in the Young People Programme.

Proposals can be submitted via the DATE website until **2 November 2020**. For further information, please contact:
Sara Vinco and Anton Klotz,
young-people-program@date-conference.com

UNIVERSITY BOOTH

The University Booth fosters the transfer of academic work to industry. The University Booth is part of the DATE exhibition and is free of charge for presenters and their visitors. Research institutes and universities interested in demonstrating mature prototypes and pre-commercial results can find the submission details at www.date-conference.com/exhibition/u-booth. Submission deadline is **2 November 2020**. For more information, please contact:
Frédéric Pétrout and Nicola Bombieri,
university-booth@date-conference.com

MULTI-PARTNER INNOVATIVE RESEARCH PROJECTS

DATE 2021 program will include one or more sessions dedicated to multi-partner innovative and/or highly-technological research projects addressing the DATE 2021 topics. This includes EU-funded Projects (H2020, ECSEL, PENTA, European Innovative Training Networks (ITN), COST Actions, CleanSky projects, ...), Country- and Region-funded Projects, Projects funded by the European Space Agency, and Research projects funded by industry. Project Coordinators are invited to submit papers presenting preliminary ideas, work in progress, or lessons learned from the project. The Multi-Partner Innovative Research Projects session is an excellent opportunity to present your work to the DATE community and fulfilling the dissemination and outreach obligations of your project. Papers must be submitted before 2 November 2020 via the DATE website. For more information, please contact:

Francisco Cazorla,
european-projects@date-conference.com

Similar to previous editions, DATE offers the opportunity to rent a booth and/or meeting room for presenting project material or demonstrating DATE an ideal venue to meet your community and fulfil the dissemination and outreach obligations of your project. DATE conference is also an excellent opportunity to hold internal project (fringe) meetings between project partners. For booth rental and room reservations, please contact:
K. I. T. Group GmbH Dresden,
date@kitdresden.de

EXHIBITION THEATRE

The Exhibition Theatre, located in the exhibition area close to the booths, provides speaking opportunities to all interested exhibitors. The Exhibition Theatre programme is a mix of panel discussions and user presentations that give exhibition visitors and conference delegates a dynamic overview of key technical and business issues in electronic and embedded systems design and test. Submissions are invited from exhibiting companies and projects, industry consortia, technology groups, standards bodies, or any person with opinions on future industry trends.

Panels – discuss future trends, hot-topic technologies and business aspects of the Systems-on-Chip, EDA and IP markets. Panels combine invited industry experts and analysts for a more controversial look at the electronic design and test marketplace.

Customer Testimonials – allow exhibiting companies the chance to demonstrate their technical expertise and the advantages of their products through the experiences of a customer. More relevant to real-world designers than a regular sales pitch, offering engineers an insight into good working practices and current design methods, customer testimonial papers are a great way to draw a crowd at DATE.

Special Sessions – a selection of sessions (hot topic, tutorial) and invited speakers from the technical conference programme will be presented in the Exhibition Theatre, providing added value to exhibition visitors. Final deadline for Exhibition Theatre submissions: **2 November 2020**. For more information, please contact:
Jürgen Haase,
haase@edacentrum.de

FRIDAY WORKSHOPS

DATE invites proposals for Friday Workshops on emerging research and application topics in design and test of microelectronic systems. Topics that are not directly covered in the DATE technical programme representing new research directions with potential impact on future DATE technical areas are particularly welcome. For information and detailed descriptions on how to propose a workshop, please refer to the DATE website. Proposals should be submitted electronically by **14 September 2020**, via the DATE website. For more information, please contact:
Michael Glaß and Hiren D. Patel,
friday-workshops@date-conference.com

CALL FOR PAPERS

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Design,
Automation
and Test
in Europe

Alpexpo | Grenoble, France
Conference 1 - 5 February
Exhibition 2 - 4 February

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The 24th DATE conference and exhibition is the main European event bringing together designers and design automation users, researchers and vendors, as well as specialists in the design, test and manufacturing of electronic circuits and systems hardware and software. DATE puts a strong emphasis on both technology and systems, covering ICs/ SoCs, reconfigurable hardware and embedded systems, as well as embedded software.

The five-day event consists of a conference with plenary invited papers, regular papers, panels, hot-topic sessions, tutorials, workshops, special focus days and a track for executives. The scientific conference is complemented by a commercial exhibition showing the state-of-the-art in design and test tools, methodologies, IP and design services, reconfigurable and other hardware platforms, embedded software and (industrial) design experiences from different application domains, such as automotive, wireless, telecom and multimedia applications. The organisation of user group meetings, fringe meetings, a university booth, a PhD forum, vendor presentations and social events offers a wide variety of extra opportunities to meet and exchange information on relevant issues for the design automation, design and test communities. Special space will also be allocated for EU-funded projects to show their results.

THE CONFERENCE

The conference addresses all aspects of research into technologies for electronic and (embedded) systems engineering. It covers the design process, test, and tools for



design automation of electronic products ranging from integrated circuits to distributed large-scale systems. This includes both hardware and embedded software design issues. The conference scope also includes the elaboration of design requirements and new architectures for challenging application fields such as sustainable computing, Internet of Everything, security, healthcare and automotive systems. Persons involved in innovative industrial designs are particularly encouraged to submit papers to foster feedback from design to research. Panels, hot-topic sessions and embedded tutorials highlight and inform about emerging topics.

Special Days in the programme will focus on two areas bringing new challenges to the system design community:

Cyber-Physical Systems for I4.0 and Smart Industrial Processes:

As an extension of traditional embedded systems, cyber-physical systems (CPS) combine deeply intertwined physical and software components to build sensor-based, communication-enabled autonomous systems. Nowadays, CPS represent the key enabling technology for the implementation of the Industry 4.0 (I4.0) paradigm in production systems for automotive and industrial applications, networks of consumer smart home and robotics applications, systems of systems applications for transportation and autonomous driving. This DATE Special Day will focus specifically on the use of CPS as enablers for the adoption of tools such as Digital Twins, Artificial Intelligence, Machine Learning and Data Analytics to improve the effectiveness of modern industrial processes. Specific requirements for CPS-related sensors, as well as the trends in multi-domain simulation, expanding the scope of EDA into Technical Software Markets will also be addressed.

Sustainable High Performance Computing:

With forecasts arguing that by the end of the decade one fifth of global electricity consumption could be consumed by data-centers alone, charting a path towards sustainable high performance computing is of utmost importance. Emerging workloads such as data science and AI are rapidly becoming mainstream in many areas and are calling for even more performance across the board. While incremental gains in energy efficiency are observed, current technologies and practices alone are unlikely to enable orders-of-magnitude gains in energy

efficiency. Shaping a sustainable high-performance IT landscape therefore requires thinking outside the box, towards holistic multidisciplinary approaches having carbon-footprint capping as a central motivation, thereby performing much wiser use of multiple energy sources, accounting for their corresponding carbon emissions.

The special day on Sustainable High Performance Computing will report recent advances through technical and industrial sessions, tutorials and keynotes on the many aspects discussed above. Expected topics include (not limited to) energy and performance oriented heterogeneous and manycore architectures, hardware acceleration, emerging memory technologies, adaptive runtime systems and programming models, exascale-ready application design (scientific, AI, etc.), data-center-level design and energy optimisation techniques, energy delivery and management, cooling techniques, etc.

DATE 2021 will also host a timely Special Initiative on:

Autonomous Systems Design:

Fueled by the progress of artificial intelligence, autonomous systems become more and more integral parts of many Internet-of-Things (IoT) and Cyber-Physical Systems (CPS) applications, such as automated driving, robotics, avionics and industrial automation. Autonomous systems are self-governed and self-adaptive systems that are designed to operate in an open and evolving environment that has not been completely defined at design time. This poses a unique challenge to the design and verification of dependable autonomous systems. The DATE Special Initiative on Autonomous Systems Design on Thursday and Friday will include peer-reviewed papers, invited contributions and interactive sessions addressing these challenges.

More details and a specific call for contributions can be found online:

www.date-conference.org/asd



THE EXHIBITION

The vibrant accompanying exhibition represents a unique networking opportunity for vendors of tools and services for hardware and embedded software for the design, development and test of Systems-on-Chip, IPs, Embedded Systems, ASICs, FPGAs and PCBs. Furthermore, it is the perfect venue for industries to meet university professors to foster their university programme and especially for PhD students to meet their future employers.

A full programme in the Exhibition Theatre will again combine presentations by exhibiting companies, best-practice reports by industry leaders on their latest design projects and selected conference special sessions.

The full list of participating exhibitors and sponsors including their company profiles can always be found online:

www.date-conference.com/exhibitors-sponsors

TOPIC AREAS FOR SUBMISSION

Within the scope of the conference, the main areas of interest are organised in the following tracks. Submissions can be made to any of the track topics. For detailed descriptions of the topics, please refer to the DATE website:

www.date-conference.com

Track D: Design Methods and Tools addresses design automation, design tools and hardware architectures for electronic and embedded systems. The emphasis is on methods, algorithms, and tools related to the use of computers in designing complete systems. The track's focus includes significant improvements on existing design methods and tools as well as forward-looking approaches to model and design future system architectures, design flows, and environments.

This track is organised in the following topics:

- D1** System Specification and Modelling
- D2** System-Level Design Methodologies and High-Level-Synthesis
- D3** System Simulation and Validation
- DT4** Design and Test for Analogue and Mixed-Signal Circuits and Systems, and MEMS
- DT5** Design and Test of Hardware Security Primitives
- DT6** Design and Test of Secure Systems
- D7** Formal Methods and Verification
- D8** Network on Chip and Communication-Centric Design

- D9** Architectural and Microarchitectural Design
- D10** Low-power, Energy-efficient and Thermal-aware Design
- D11** Approximate Computing
- D12** Reconfigurable Systems
- D13** Logical and Physical Analysis and Design
- D14** Emerging Design Technologies for Future Computing
- D15** Emerging Design Technologies for Future Memories

Track A: Application Design is devoted to the presentation and discussion of design experiences with a high degree of industrial relevance, real-world implementations, and applications of specific design and test methodologies. Contributions should illustrate innovative or record-breaking designs, which will provide viable solutions in tomorrow's silicon, embedded systems, and large-scale systems. In topic A8, there is the opportunity to submit 2-page papers that expose industrial research and practice.

This track is organised in the following topics:

- A1** Power-efficient and Sustainable Computing
- A2** Smart Cities, Internet of Everything, Smart Consumer Electronics
- A3** Automotive Systems and Smart Energy Systems
- A4** Augmented Living and Personalized Healthcare
- A5** Secure Systems, Circuits and Architectures
- A6** Self-adaptive and Learning Systems
- A7** Applications of Emerging Technologies
- A8** Industrial Experiences Brief Papers

Track T: Test and Dependability covers all test, design-for-test, reliability, and design-for-robustness issues, at system-, chip-, circuit-, and device-level for both analogue and digital electronics. Topics of interest also include diagnosis, failure mode analysis, debug and post-silicon validation challenges, and test or fault injection methods addressing system security.

This track is organised in the following topics:

- T1** Modelling and Mitigation of Defects, Faults, Variability, and Reliability
- T2** Test Generation, Test Architectures, Design for Test, and Diagnosis
- T3** Dependability and System-Level Test

- DT4** Design and Test for Analogue and Mixed-Signal Circuits and Systems, and MEMS
- DT5** Design and Test of Hardware Security Primitives
- DT6** Design and Test of Secure Systems

Track E: Embedded Systems Design is devoted to the modelling, analysis, design and deployment of embedded software or embedded/cyber-physical systems. Areas of interest include methods, tools, methodologies and development environments. Emphasis will also be on model-based design and verification, embedded software platforms, software compilation and integration, real-time systems, cyber-physical systems, networked systems, and dependable systems.

This track is organised in the following topics:

- E1** Embedded Software Architecture, Compilers and Tool Chains
- E2** Real-time, Dependable and Privacy-Enhanced Systems
- E3** Machine Learning Solutions for Embedded and Cyber-Physical Systems
- E4** Design Methodologies for Machine Learning Architectures
- E5** Design Modelling and Verification for Embedded and Cyber-Physical Systems

COMMITTEES

A full list of the executive and programme committee members is available on the DATE website:

www.date-conference.com

SPONSORS

The event is sponsored by the European Design and Automation Association, the Electronic System Design Alliance, the IEEE Council on Electronic Design Automation, the European Electronic Chips & Systems Design Initiative, the ACM Special Interest Group on Design Automation, and the Russian Academy of Sciences.



In cooperation with IEEE Computer Society Test Technology Technical Council (TTTC), IEEE Solid-State Circuits Society (SSCS) and International Federation for Information Processing (IFIP).

SUBMISSION INSTRUCTIONS

All manuscripts for any technical topic of the D, A, T, and E tracks must be submitted for review electronically, following the instructions on the conference website: www.date-conference.com/submission-instructions

The accepted file format is PDF. Any other format or manuscripts received in hard-copy form will not be processed.

Papers can be submitted for either formal oral presentations or interactive presentation. Oral presentations require novel and complete research work supported by experimental results. Interactive presentations are expected to articulate emerging and future design, verification, or test problems including work-in-progress and identify open problems that merit innovative future research. These presentations are delivered on a poster in a face-to-face discussion area.

» **Submissions should not exceed 6 pages** in length for oral presentation papers and 4 pages in length for interactive presentation papers. Submissions in topic A8 (Industrial Experiences Brief Papers) cannot exceed 2 pages in length and must be industrial-centric on both the content and the majority of authors' affiliations.

» **WARNING:** You are not allowed to modify the list of authors after the submission deadline. It is mandatory to include the full list (in the correct order) when submitting the paper online. If your paper is accepted, you will not be able to modify this information later on.

All submitted papers should be formatted as close as possible to the final format: letter sheets, double column, single-spaced, Times or equivalent font of minimum 10pt. Paper templates are available on the DATE website for your convenience. To permit blind review, submissions must not include the author names, however prior work should be referenced in full, in a way that the reference is available without disclosing it is from the same authors. Any submission that is not in line with the above

rules will be rejected. Accepted papers not complying to the above-mentioned formatting instructions will not be included in the conference proceedings.

All papers will be evaluated with regard to their suitability for the conference, originality, and technical soundness. The Programme Committee reserves the right to reorient oral presentation papers to interactive presentations and vice versa, to obtain the most suitable presentation format.

» Submissions simultaneously under review or accepted by another conference, symposium, or journal will be rejected. Submitted manuscripts must not present material that has been previously published in other indexed research databases (e.g. arXiv), not to compromise the blind review process.

» Submitted papers may only be published in open access after the DATE 2021 TPC Meeting (10 November 2020).

FURTHER INSTRUCTIONS FOR SPECIAL SESSION SUBMISSIONS

In addition to the above-stated important instructions, e.g. w.r.t. author list and double submissions, please adhere to the following:

» **Session Chair/Co-Chair:** Every special session submission must name a chair and a co-chair. The chair and the co-chair are responsible for the preparation of the session – e.g. making sure that all presentations are uploaded in time / in a timely manner – and for the monitoring of the session; they cannot be selected among the moderators/panellists, or speakers/presenters.

REGISTRATION RULE FOR ALL ACCEPTED PAPERS

It is mandatory that at least one author of each accepted paper attends the conference to present the work. Please note that each paper shall be accompanied by at least one full conference registration at the speaker rate (i.e., two speaker registrations are needed for two accepted papers, e.g. from the main author or a co-author of the paper). In case of no attendance/presentation in person on-site, the paper will be deleted from the proceedings afterwards (despite full payment at the speaker rate).