

Nürnberg, Germany  
2.-4.3.2021



**embeddedworld2021**

Exhibition&Conference

... it's a smarter world

# CALL FOR PAPERS

## embedded world Conference

embedded.intelligent.systems - the innovators' place to be

embedded world Conference  
2.-4. March 2021, Nürnberg, Germany  
[www.embedded-world.eu](http://www.embedded-world.eu)



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### **Comments on the Conference:**

*"The embedded world Conference provides an excellent opportunity for engineers to come together to experience high quality technical content over three days. Personally, I enjoy speaking at the conference and the technical interactions with like-minded developers."*

Greg Davis, Director of Engineering, Compilers at Green Hills Software

*"Thank you guys for the excellent organization [as always]."*

Colin Walls, Embedded Software Technologist, Mentor, a Siemens Business

*"For me, the embedded world Conference is Europe's leading communication platform to engage with developers and decision makers. Every year, Arm participates at the conference track with our best experts on topics that should soon be significant for the embedded industry. I really enjoy the interaction with our users that provide us with their feedback. This makes embedded world special and my personal key event every year!"*

Reinhard Keil, Arm Germany

*"For high-tech professionals who want to stay ahead of the innovation curve, The Embedded World Conference offers a unique mix of well curated topics from industry and research. Year after year I return to the Conference to learn about technology trends and to connect with industry peers. What sets the Conference apart is the quality of the speakers, the relevance of the subjects, and the truly non-commercial content of the sessions. See you in Nuremberg!"*

Cesare Garlati, Founder Hex Five Security, California, USA



# embedded world Conference 2021

## *embedded.intelligent.systems*

### *– the innovators' place to be*

The embedded world Exhibition & Conference in 2020 will certainly be remembered by a lot of us due to the specific circumstances of Covid-19. Again, the embedded world Conference has proven its role as the world's leading meeting place for the embedded community. However, it was the last event in 2020 that allowed physical presence with personal interaction discussions, smalltalk, professional meetings and much more. Especially, after long weeks of lock-down, we appreciate more than ever the real life come together of the community, where experienced professionals team up to share their valuable knowledge and help each other in order to turn ideas and innovations into leading edge solutions and products.

Looking forward to its 19th edition, the Conference continues its concentration on future-oriented and challenging topics. We see more and more Artificial Intelligence (AI) and Machine Learning (ML) in real applications using embedded and Internet of Things (IoT) architectures: from autonomous vehicles to image recognition and embedded vision systems to preventive and demand-driven maintenance in Industrial IoT systems, from small edge computers to high-performance cloud servers. And increasingly, these applications are interconnected, balancing edge, cloud, and fog computing – with all its challenges for software, hardware and system design, device and application management, security, safety, connectivity, verification and testing, and more. These developments do not only continue to promise immense possibilities and extensive business opportunities, but are also closely associated with many technical, economic, social and ethical issues.

The embedded world Conference 2021 will cover all aspects of the development and application of embedded systems, from fundamental technologies to development processes and special fields of applications. It is one of the central strengths of the event to be cross-sectoral and interdisciplinary. The conference provides a platform to bring together experts from different domains and application areas of embedded systems in order to promote a holistic system design approach, to identify synergies and commonalities, and to strengthen the exchange of knowledge and experience. With over 2,100 participants, the embedded world Conference is the largest event of its kind in the world. Speakers are long-standing experts with

in-depth knowledge, vital ideas, and strategic thoughts. The audience are competent, knowledge-hungry embedded system developers, specialists, and project and product managers, who look for an intense exchange of ideas with the community. Furthermore, the conference is very much part of the dynamic environment of the embedded world Exhibition, which has become the annual international venue for the professional embedded developer community.

You are invited to present future-oriented technologies and solutions, new ideas and smart concepts for efficient development and life cycle processes. Use your presentation to initiate discussions and to help other engineers and managers to benefit from your experience.

Present a technical paper, describe practical insights in a hands-on workshop, outline your experience from implementation projects or present prototypes and application examples. Talks should be substantive, insightful and educational. Submissions promoting commercial technologies and products will not be accepted. Application-related contributions from research and pre-development are welcome to enrich the program.

If ongoing Covid-19 pandemic conditions prevent physical meetings, we plan to host a hybrid conference, making the best out of the given situation and allowing for maximum interaction possible using flexible and powerful online conference-tools. However, we will strive to be as real and as physically present as possible.

In addition to the presentation slots in the technical session, we also invite you as a lecturer of a "class" for either half a day or a full day. "Class" topics are dealt with in-depth and interactively with the participants.

Please submit your proposal using the following link: <https://www.embedded-world.eu>. Here you will also find detailed information. The Program Committee looks forward to receiving your submission by 30th September 2020.

A handwritten signature in blue ink, which appears to be 'A. Sikora'.

Prof. Dr. Axel Sikora, Conference Chairman

## Topics of interest include, but are not limited to:

### 1. Internet of Things – Platforms & Applications

- 1.1 Application Protocols & Profiles, e.g. OPC UA, MQTT, LWM2M, CANopen, ...
- 1.2 Edge/Fog/Cloud Computing
- 1.3 Cyber-Physical Systems
- 1.4 Cloud Services & Solutions
- 1.5 Industrial IoT - Technologies & Services
- 1.6 Embedded Internet Technologies & Web Services
- 1.7 Software Platforms for IoT
- 1.8 Data Management & Analytics

### 2. Connectivity Solutions

- 2.1 Wired Technologies
- 2.2 Wireless Technologies
- 2.3 Low Power Wide Area Networks (LPWAN)
- 2.4 Cellular Communication / NB-IoT / 5G / 6G
- 2.5 Connectivity, e.g. for Industry 4.0, Automotive, ...
- 2.6 Bluetooth

### 3. Embedded OS

- 3.1 RTOS
- 3.2 AutoSAR & Adaptive AutoSAR
- 3.3 Embedded Linux
- 3.4 Android
- 3.5 ROS
- 3.6 Virtualization, Separation & Partitioning
- 3.7 Safety OS
- 3.8 Multicore OS
- 3.9 Field Updates, e.g. OTA

### 4. Safety & Security

- 4.1 Functional Safety: Architectures
- 4.2 Functional Safety: Application of Standards
- 4.3 Security: Architectures
- 4.4 Security: Application of Standards
- 4.5 Cryptography in Software & Hardware
- 4.6 Long-Term Security & Post-Quantum Cryptography
- 4.7 Securing Embedded Communication
- 4.8 Securing Embedded Devices
- 4.9 Blockchain Technologies
- 4.10 Trusted Computing
- 4.11 Hacking

### 5. Board Level Hardware Engineering

- 5.1 Single-Core Microcontrollers
- 5.2 Multicore Microcontrollers
- 5.3 Memory Technologies
- 5.4 Sensors & Actuators
- 5.5 High Performance PCB Design
- 5.6 Dev. Processes & Methods for Board Level Design
- 5.7 Hardware Testing
- 5.8 Printed & Flexible Electronics
- 5.9 Hardware Prototyping
- 5.10 Packaging
- 5.11 Power Supply & Energy Management
- 5.12 Wireless Power Supply
- 5.13 Power over Ethernet, over RS232, ...
- 5.14 Ultra Low-Power Design
- 5.15 Free and Open Hardware (RaspPi, Arduino, ....)
- 5.16 Supply Chain

### 6. Software & Systems Engineering

- 6.1 Programming Languages & Standards
- 6.2 Coding Standards (e.g. MISRA)
- 6.3 Development Processes & Methods
- 6.4 Agile Development
- 6.5 Requirements Engineering
- 6.6 Design & Modeling
- 6.7 HIL, SIL, MIL, Virtual Integration
- 6.8 Verification & Validation
- 6.9 Static Design & Code Analysis
- 6.10 Debugging Techniques
- 6.11 Software & System Quality
- 6.12 High Performance Embedded Architectures

### 7. Embedded Vision

- 7.1 Application Case Studies & Business Cases for Embedded Vision
- 7.2 Hardware Components & System Integration for Embedded Vision
- 7.3 Software Tools (incl. AI) & Toolchains for Embedded Vision
- 7.4 IoT Connection & Cloud for Embedded Vision
- 7.5 Standardisation (e.g. Camera Interfaces)
- 7.6 Migration Paths from PC to Embedded Vision

### 8. Autonomous & Intelligent Systems

- 8.1 Sensor Systems & Integration
- 8.2 Sensor Fusion
- 8.3 Embedded Data Analytics
- 8.4 Embedded Machine Learning & Deep Learning
- 8.5 Embedded Artificial Intelligence & Applications
- 8.6 Algorithmics (Sensor Fusion)
- 8.7 ICs for Deep Learning
- 8.8 Qualification of AI Systems
- 8.9 AI in Safety Relevant Applications

### 9. Embedded Human-Machine-Interface

- 9.1 Usability & HMI Design
- 9.2 Embedded Graphics & HMI Development
- 9.3 Embedded HMI Test & Test Automation
- 9.4 Graphic Software Libraries
- 9.5 Augmented Reality
- 9.6 Graphics Accelerators
- 9.7 Gesture & Voice Recognition Systems

### 10. System-on-Chip (SoC) Design

- 10.1 Emerging Complex ICs & System Solutions
- 10.2 IP Core Design & Integration
- 10.3 Free and Open Hardware on IP- and IC-Level (RISC-V, MIPS, ....)
- 10.4 FPGA & ASIC Design
- 10.5 On-Chip Memory Trends & Technologies
- 10.6 Digital Design, Architectures & Systems
- 10.7 Analog, RF & Mixed-Signal Circuits & Systems
- 10.8 Ultra Low-Power Design
- 10.9 EDA Tools & Solutions for Leading-Edge SoCs
- 10.10 SoC Design Validation, Verification & Testability
- 10.11 Foundry Technologies
- 10.12 Trusted Electronics & Secure Elements

**Acceptance:**

Papers will be accepted based on the following criteria:

- novelty
- technological soundness
- technological significance
- experience of the speaker

**Slides:**

Presentation slides will be distributed to the registered audience after the event.

**Proceedings of embedded world Conference:**

Full papers of accepted contributions to the embedded world Conference will be published in a dedicated conference proceedings volume, with full ISBN registration, page numbers, and the possibility of subsequent download. The proceedings of the earlier years are available at <https://shop.weka-fachmedien.de/de/59-embedded-world>.

**Novel Ideas:**

The above list represents just a selection of the topics covered. You are welcome to submit further interesting suggestions related to the respective topic.

**Language:**

The conference language is English. All submissions must therefore be in English.

**No Promotion:**

Promotional or marketing-oriented presentations or pure product descriptions will not be accepted.

**Originality:**

Submissions to embedded world Conference 2021 should not have been published previously in a journal or conference proceedings, nor presented at another conference, nor currently under review or consideration for publication or presentation elsewhere.

**Presenters:**

Talks should be presented by speakers, who have strong public presentation skills and subject matter expertise.

The program committee reserves the right to cancel a contribution's acceptance, if the speaker, the subject or the content of the contribution was changed compared to the original submission.

The presenter guarantees to be physically present or – in exceptional circumstances – to present remotely or provide a suitable replacement speaker.

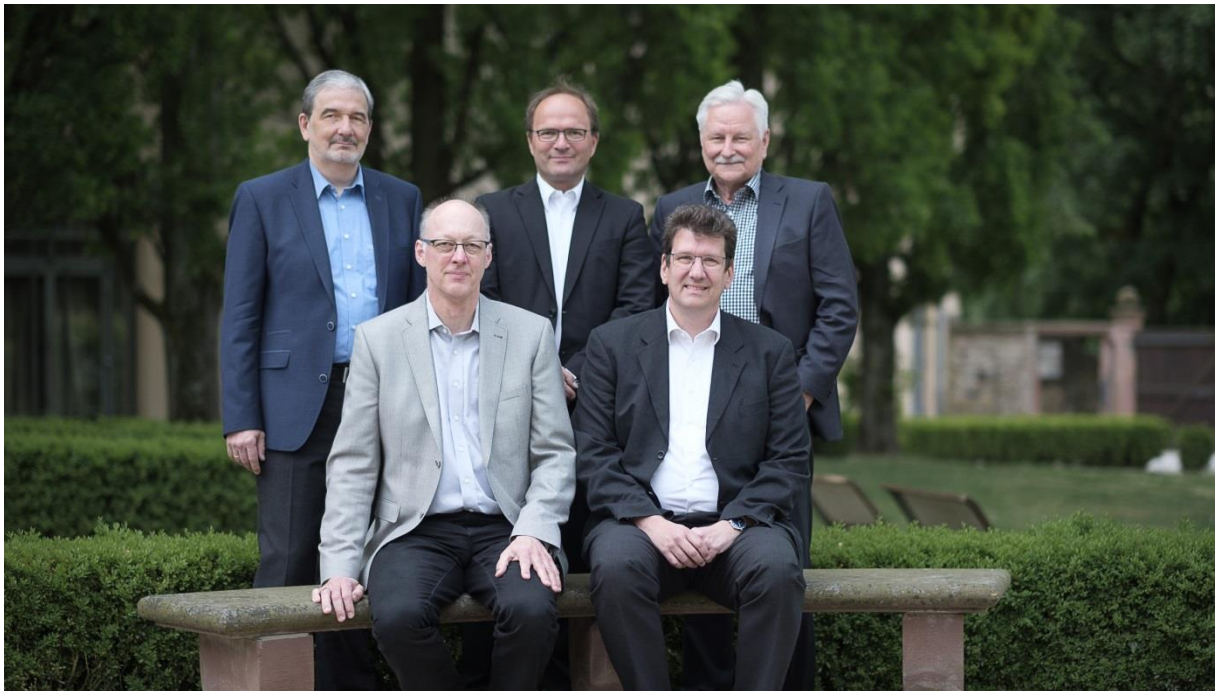
**Important Deadlines:**

- Abstract Submission: **September 30, 2020**
- Notification of Authors: **November 30, 2020**
- Final Paper (ISBN): **January 31, 2021**
- Final Presentation: **January 31, 2021**

Please find online details about the Call for Papers at: [www.embedded-world.eu](http://www.embedded-world.eu)

## STEERING BOARD 2021:

The steering board is the strategic think tank behind the embedded world Conference. Currently six senior engineers with excellent scientific and business records, with open minds and lots of ideas, shape the future direction of the embedded world Conference.



Dr. Bernd Hense, Joachim Kroll, Prof. Dr. Axel Sikora, Prof. Dr. Peter Fromm, Dr. Klaus Grimm (from left to right), Prof. Dr. Dirk Pesch (not in photo)

[www.embedded-world.eu](http://www.embedded-world.eu)

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[design-elektronik.de](http://design-elektronik.de)

embedded world Conference is organized by DESIGN&ELEKTRONIK,  
the leading German speaking magazine for embedded developers

## CONTACT embedded world Conference:

### Sales Manager:



Corina Prell  
WEKA FACHMEDIEN  
P +49(0)89/255 56-1393  
cprell@weka-fachmedien.de

### Project Manager:



Renate Ester  
WEKA FACHMEDIEN  
P +49(0)89/255 56-1349  
rester@weka-fachmedien.de

## EMBEDDED WORLD EXHIBITION:

Exhibitors interested in presenting their products at embedded world Exhibition, please contact:



Germany:  
Brigitte Seipt  
NürnbergMesse GmbH  
Messezentrum, 90471 Nürnberg, Germany  
P +49(0)911/86 06-8900  
brigitte.seipt@nuernbergmesse.de



USA, UK, Ireland:  
Michelle Eiser  
NürnbergMesse GmbH  
Messezentrum, 90471 Nürnberg, Germany  
P +49(0)911/86 06-8910  
michelle.eiser@nuernbergmesse.de



Anna-Maria Wengert  
NürnbergMesse GmbH  
Messezentrum, 90471 Nürnberg, Germany  
P +49(0)911/86 06-8585  
anna-maria.wengert@nuernbergmesse.de

Further contact: [info@embedded-world.eu](mailto:info@embedded-world.eu)

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