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embedded world Conference 2023
embedded.responsible.sustainable

embedded world Exhibition&Conference
14. – 16.3.2023, Nuremberg, Germany
www.embedded-world.eu
#ew23
Established in Nuremberg back in March 2003, the embedded world Conference is going into its 21st edition in 2023. The original concept of a unique combination of an exhibition for engineers and technical management on one hand and a world-leading conference at the intersection of applied research and industrial applications on the other hand has proven extremely successful. embedded world Exhibition & Conference is driven by technology as well as applications with a strong focus on system and cross-domain aspects.

For the next year’s edition, we have selected three increasingly important trends that are defining the slogan of this year’s anniversary edition:

- **embedded**: More and more intelligent devices get embedded into application systems, from Industry 4.0 over smart mobility, smart city and smart energy to smart home or smart health. More and more complex embedded devices enable safe and secure, efficient, interlinked, adaptive and intelligent functionalities of these applications.

- **responsible**: With the increase of complexity, of network exchange, of autonomy and of embedded intelligence, the dependability of systems continues to grow. Even if this might be especially important for functionally critical-safety applications, more and more embedded systems have a word to say. Especially in times of rapid development cycles in heterogeneous and international teams, the responsibilities of system, design and test engineers, of tools, of design processes and of production quality are gaining importance. Societal and ethical questions are to be regarded.

- **sustainable**: Sustainability for embedded systems also comes with manifold facets, which range from longevity, efficiency and stability of products, over adaptability of firmware, software and hardware for an extended life time, to the questions around decommissioning and recycling.

We invite you to contribute your talk/technical paper or class to the 21st edition of the embedded world Conference 2023 in Nuremberg. The event is dedicated to 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 essential strengths of the event to be cross-sectoral and interdisciplinary. The conference brings together experts from different domains and application areas of embedded systems in order to promote a holistic system design approach, to identify synergies, and to strengthen the exchange of knowledge and experiences. 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.

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 substantial, 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.

In addition to presentation slots in the technical sessions, we also invite you as a lecturer of a “class” for either half or full day classes. A “class” deals with an in-depth topic interactively with participants.

Submit your proposal using the following link: [www.embedded-world.eu](http://www.embedded-world.eu).

The Program Committee looks forward to receiving your submission by 7th October 2022.

We look forward to a thrilling execution for the embedded world Conference 2023 in Nuremberg.

Best wishes & stay safe

Prof. Dr.-Ing. Axel Sikora
Chairman of embedded world Conference
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
   - 1.9 Application Case Studies for IoT

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 Cloud Oriented OS
   - 3.7 Virtualization, Separation & Partitioning
   - 3.8 Safety OS
   - 3.9 Multicore OS
   - 3.10 Field Updates, e.g. OTA

4. **Safety & Security**
   - 4.1 Functional Safety: Architectures
   - 4.2 Functional Safety: Application of Standards
   - 4.3 High Availability & Fail Operational Systems
   - 4.4 Security: Architectures
   - 4.5 Security: Application of Standards
   - 4.6 Cryptography in Software & Hardware
   - 4.7 Low-Power Security & Post-Quantum Cryptography
   - 4.8 Securing Embedded Communication
   - 4.9 Securing Embedded Devices
   - 4.10 Blockchain Technologies
   - 4.11 Trusted Computing
   - 4.12 Hacking
   - 4.13 Qualification of Highly Complex HW and SW Systems
   - 4.14 Application Case Studies for Safe and Secure Systems

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

6. **Systems & Software Engineering**
   - 6.1 Development Processes & Methods (e.g. Agile, DevOps, ...)
   - 6.2 Programing Languages & Standards
   - 6.3 Coding Standards (e.g. MISRA)
   - 6.4 Requirements Engineering
   - 6.5 Design & Modeling
   - 6.6 Systems & Software Architectures
   - 6.7 Static Design & Code Analysis
   - 6.8 Testing & Debugging
   - 6.9 System & Software Quality
   - 6.10 Open Source Software
   - 6.11 Formal Verification

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

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 Explainable AI / Predictable AI
   - 8.7 Federated Learning
   - 8.8 ICs for Deep Learning
   - 8.9 Qualification of AI Systems
   - 8.10 Application Case Studies for Embedded AI
   - 8.11 AI in Safety Relevant Applications
   - 8.12 tinyML

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
   - 9.8 Application Case Studies for Embedded HMIs

10. **System-on-Chip (SoC) Design**
    - 10.1 Emerging Complex ICs & System Solutions
    - 10.2 IP Core Design & Integration
    - 10.3 Free and Open HW 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
    - 10.13 High-Speed I/O Interconnect
    - 10.14 On-Chip Interconnect & Network on Chip (NoC)

11. **Green and Sustainable Engineering**
    - 11.1 Engineering Ethics
    - 11.2 Engineering for Sustainability
    - 11.3 Lifecycle Engineering
    - 11.4 Circular Economy
    - 11.5 Legal Requirements and Standards
    - 11.6 Use Cases of Embedded Systems for Sustainability
        ([e.g. Smart Grids, ...])

12. **Cross-Domain Topics**
    - 12.1 RISC-V
    - 12.2 Open-Source
    - 12.3 Novel Development Processes for Embedded (Agile, DevOps, ...)
    - 12.4 High Performance Embedded Architectures
    - 12.5 AI in Safety Relevant Applications
    - 12.6 OSADL
    - 12.7 Standardization for Embedded Technologies
    - 12.8 Supply Chain Challenges
Please use capitalization in the title of your abstract submission

Acceptance:
Abstracts will be accepted based on the following criteria:

- Novelty
- Technological soundness
- Technological significance
- Experience of the speaker

Slides:
Presentation slides will be distributed to registered attendees after the event.

Novel Ideas:
The above list represents just a selection of the topics covered. You are welcome to submit additional interesting suggestions related to the respective topics.

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 2023 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.

Final Paper:
Authors of accepted submissions are invited to publish a paper in a dedicated conference proceedings volume, with full ISBN registration, page numbers, and the possibility of subsequent download. The proceedings of earlier years are available at https://shop.weka-business-communication.com

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.

Important Deadlines:
- Abstract Submission: October 7, 2022
- Notification of Authors: End of November, 2022
- Final Paper (ISBN) and Presentation: February 20, 2023

Submit your abstract here!
STEERING BOARD:

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, Dr. Klaus Grimm (retired from 2023 onwards), Prof. Dr. Dirk Pesch, Prof. Dr. Axel Sikora, Prof. Dr. Peter Fromm, Joachim Kroll

www.embedded-world.eu

embedded world Conference is organized by DESIGN&ELEKTRONIK, the leading German speaking magazine for embedded developers
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Review embedded world Conference 2022:

1,000 Attendees and Speakers from 42 Countries in 2022!

The embedded world Conference offered three days of knowledge transfer at the highest level. Around 1,000 attendees and speakers from 42 countries took the opportunity to interact with top-class experts and colleagues in 196 presentations, 10 classes, 3 keynotes, and 6 expert panels to exchange technical information and further their knowledge.

Various speakers offered interesting insights into a wide range of topics. The keynotes opened on Tuesday with Dr. Matthias Klauda, Executive Vice President R&D from the recently founded "Cross Domain Computing Solutions" division of Robert Bosch GmbH. He reported on "Brains and Nerves of Future Mobility - E/E Architectures of the Vehicle and Beyond." Steve Douglass, Corporate Vice President, research and development at Lattice Semiconductor, delivered his keynote on "Embracing Change: The Mandate for success in Next Generation Embedded Design." The third keynote was delivered by Patricia Shaw, CEO and founder of Beyond Reach Consulting, on Thursday. She spoke about "Responsible AI: From Principles to Practice."

Dr. Matthias Klauda, Robert Bosch

Patricia Shaw, Beyond Reach Consulting

Steve Douglass, Lattice Semiconductor

Calista Redmond, RISC-V

Gabriele Saucier, Design&Reuse