

Our heart
beats
embedded.

Measurement, calibration & validation
for any vehicle at its best



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Product Manager – Data Analytics and Modeling
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- Dipl.-Ing. Mechanical Engineering
- Joined ETAS in 2012
- 20 years experience in data-based modeling, model-based calibration and data analytics
- Projects include calibration, test-bench automation, Design-of-Experiments, and more



Christoph Nißle

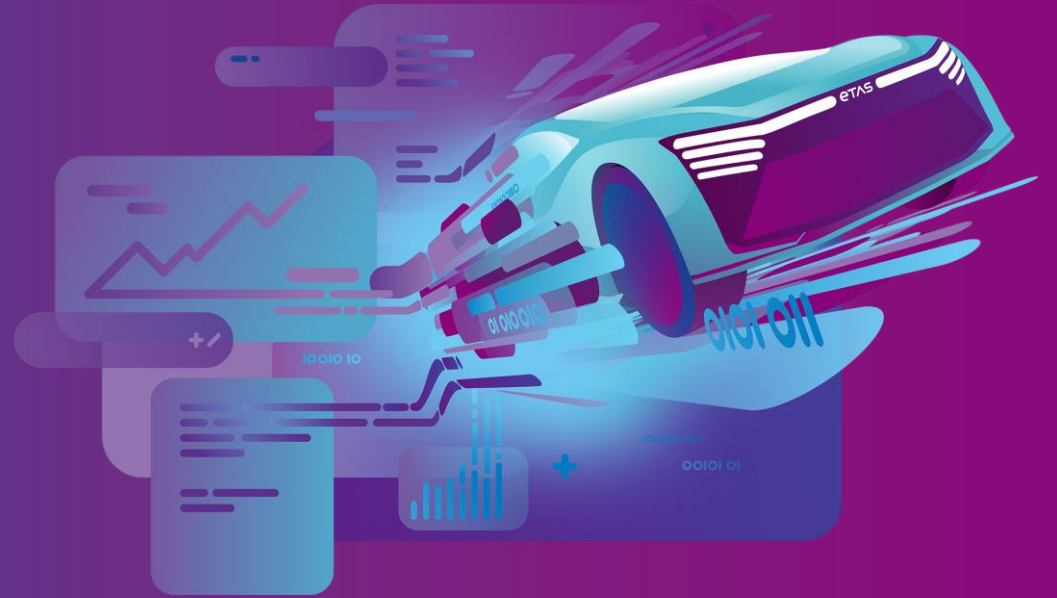
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- B.Sc. Computer Science, Master of Information Technology
- Joined ETAS in 2023
- 13 years experience in building software solutions
- Projects include cloud services, application software and large scale software products



Content

1. Nothing has changed – everything has changed
2. Achieving optimal performance with maximum efficiency
3. Future-readiness with integrated workflows across domains and organizations
4. Future trends and potentials of methods and tools



Measurement, calibration & validation

Nothing has changed – everything has changed

Then



Demanding tasks **had** to be done during calibration:

- access ECU(s)
- measure many signals
- check documentation
- understand dependencies
- calibrate/optimize parameters
- automate where it is helpful
- ...

Now

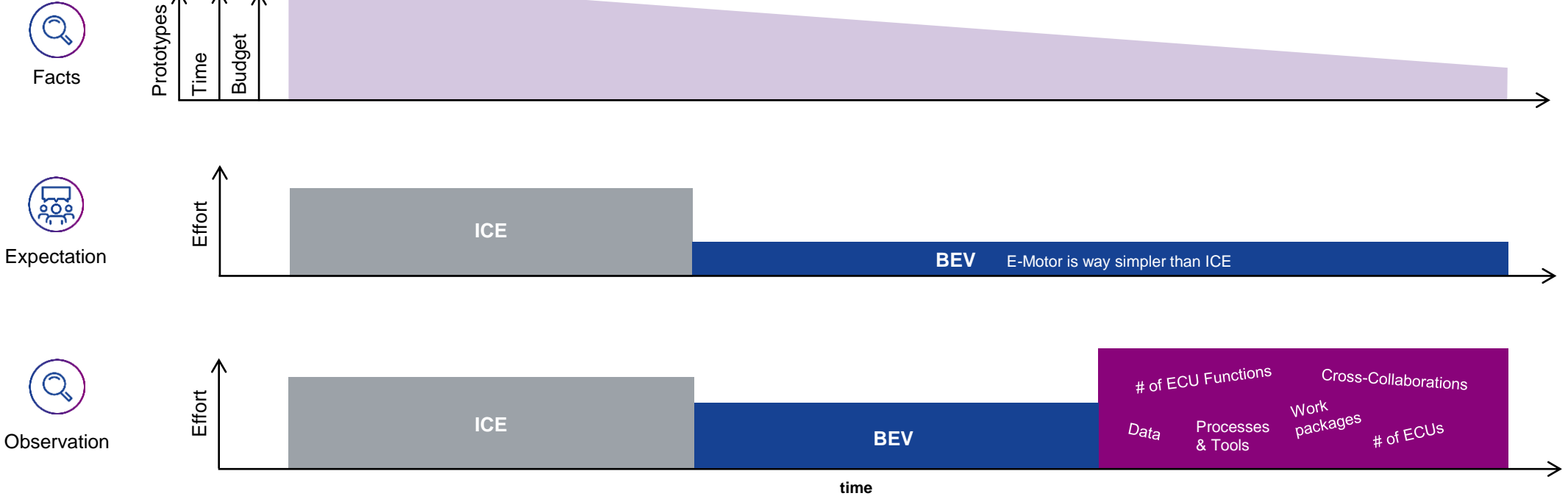


Demanding tasks **have** to be done during calibration:

- access ECU(s)
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- ...

Everything changes? Our big picture

Measurement, calibration and validation in automotive (software & hardware) development

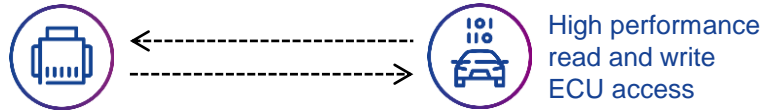


- Compared with ICE, the complexity of a single electric motor is significantly reduced
- Interacting components, more ECUs with more computing power for new cross-domain functionality overcompensate the loss

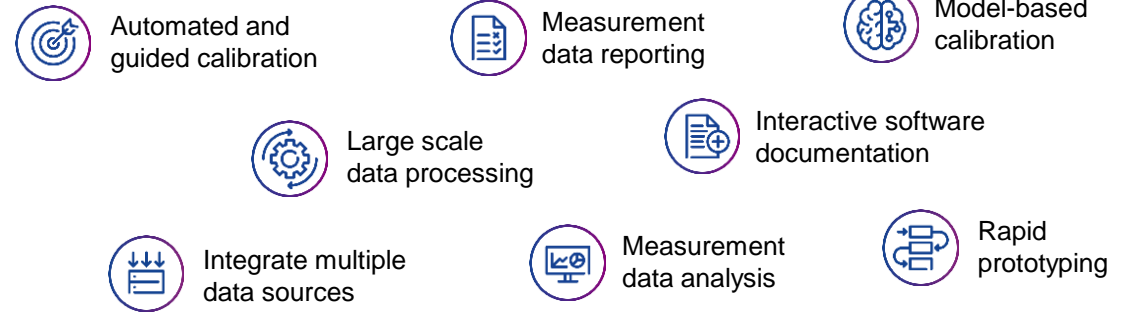
Access ECU data right at the source

Achieving optimal performance with maximum efficiency






Strong at the core



...with a robust envelope

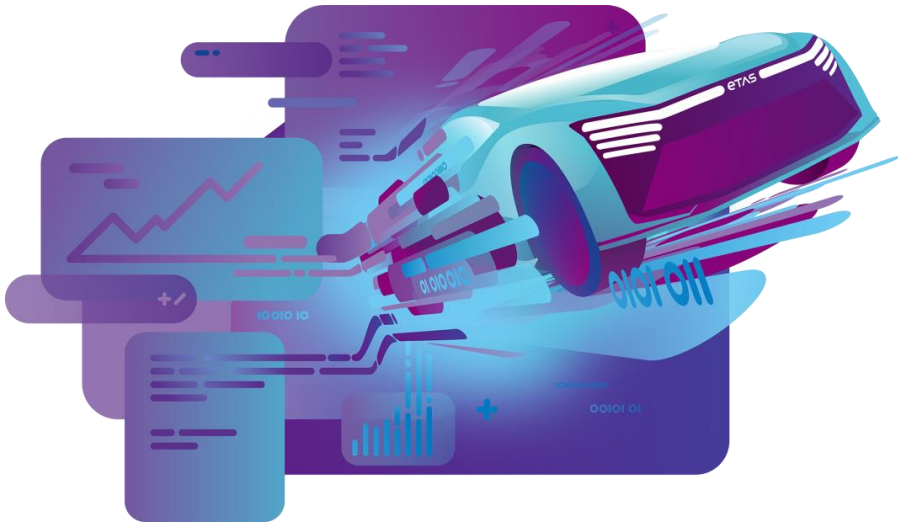


Inside-out perspective: What are the upcoming challenges?

-  – Release the barriers: Cross-domain applications dominate
-  – Finally: More computing power and new EE architectures
-  – Shift frontloading tasks to your backend: Automation & virtualization
-  – Mine, train, deploy and repeat: Data-driven development for pre- and post SOP
-  – Enabling collaboration between new players and established giants

Key takeaways

ETAS Webinar - Measurement and calibration for any vehicle at its best



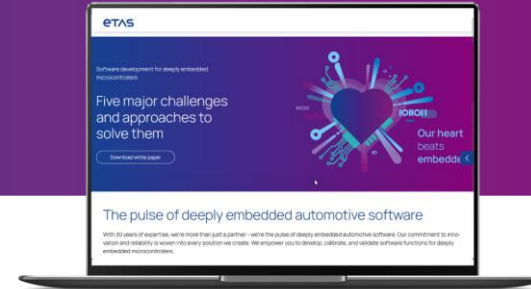
1. What was or is right for ICE is not wrong for xEV
2. Constantly fewer test vehicles, time and budget increase the need for tools and methods
3. Integration into existing development workflows is essential for efficiency
4. Tools must work together seamlessly across supplier boundaries
5. Cloudification and AI change the way how tools are used and who takes decisions

Q & A

Contact us to discuss your needs

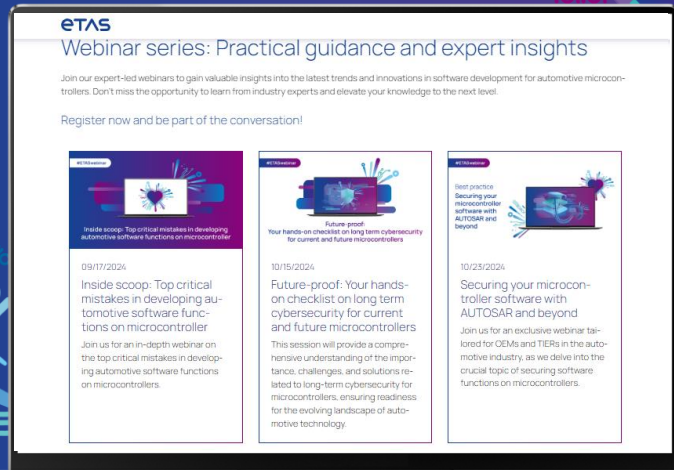


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 <p>Webinar Inside scoop: Top critical mistakes in developing automotive software functions on microcontroller</p>	 <p>Webinar Future-proof: Your hands-on checklist on long term cybersecurity for current and future microcontrollers</p>	 <p>Webinar Best practice: Securing your microcontroller software with AUTOSAR and beyond</p>
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Coming up webinar in this series:

Opportunities and limits of virtual testing

Nov. 26th, 4-5 PM CET

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Thank you!