Q&A With Frank Riemenschneider

(Sr. Marketing/PR Manager, SEGGER)

Climate Neutral in 2021,
Every Year Counts!

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Germany-based SEGGER is well-known for its embedded hardware tools, development suites, and embedded OS. But did you know that it is also involved with addressing ethical electronics and sustainability problems in the electronics industry? As a sponsor of the pioneer edition of the World Ethical Electronics Forum (WEEF), SEGGER is highlighting its commitment to education, sustainability, and equal opportunity. Frank Riemenschneider talks about SEGGER's approach to these topics, as well as the company's new technical developments.

Elektor: SEGGER is involved with the pioneer edition of the World Ethical Electronics Forum (WEEF). What attracted SEGGER to the WEEF 2021 event?

Riemenschneider: WEEF fits very well with our company DNA. In general, in this context there are three things that we stand for: education and training, sustainability and protection of the environment, and fairness and equal opportunity. We have always believed that ethics should be an important motivation for action in business in general, so of course also in the embedded industry, and therefore we very much welcome the fact that you have created this new congress.

Elektor: How is SEGGER helping the fight against climate change?

Riemenschneider: There are two approaches to this: what we do ourselves as a company and how we can help others. Let's start with SEGGER itself. We have decided to become climate neutral as a company, not in 2030 or even 2040, but in 2021. We believe every year counts, so we want to start as soon as possible.

To achieve this goal and the TÜV certification, we are working in energy-efficient office buildings with state-of-the-art technology equipped with heat pumps and solar panels. We also use energy-efficient transportation, e.g. e-company cars, plug-in hybrids and company bicycles. Furthermore, our products are manufactured in Monheim, Germany, by employees working according to German social and ethical standards.

But even more influential are our customers, who produce billions of end-user devices and who benefit significantly from our energy-efficient products and designs. Last but not least, we support technology projects to reduce emissions, e.g. zero emission race cars [1].

Elektor: Tell us about SEGGER's commitment to fairness, integrity, ethical conduct, and compliance.

Riemenschneider: It is all connected. SEGGER stands for fairness for all stakeholders, meaning customers, business partners, and employees, e.g. through fair license agreements, cooperation on an equal footing, and — of particular importance to us — the opportunity for social advancement within the company.

Elektor: How does that present itself in concrete terms?

Riemenschneider: SEGGER has a very strong commitment to training and highly values its apprenticeship program. The company culture is focused on rewarding performance with promotion. Our CTO and some product managers are former apprentices who made it all the way to the top of the company through outstanding performance.

Elektor: In a March 2021 blog post, you wrote: "SEGGER Microcontroller stands for two points which significantly influence our future: Equal opportunity and, derived from this, the

fight against climate change." How is SEGGER addressing equal opportunity? And how does this relate to the fight against climate change?

Riemenschneider: As I said before, from our point of view, these are directly related because we believe that climate change can and must be tackled in a socially acceptable way, not through bans, but through innovations.

The more young people have the opportunity to develop innovative and energy-saving devices, the sooner we will achieve global climate neutrality. To make the world a better place know-how is required for game-changing projects. This applies especially to software packages that are necessary for professional training and for hobbyists.

Unfortunately, not all schools and universities in this world — nor all students or simply curious, technically interested young people — can afford expensive software that they would need for a good education. For these people, we have introduced our "Friendly Licensing" model so that everyone can learn with leading edge software packages regardless of their financial circumstances.

Elektor: Tell us a bit more about the "Friendly Licensing" model. Who benefits from it?

Riemenschneider: For non-commercial use or for evaluation purposes, you — regardless of whether you are an individual person or a legal entity — are welcome to use the software free of charge under this license. "Non-commercial use" means using the software for teaching, learning, studying, or projects that do not have a commercial background, and "Evaluation" means you are trying out the software for possible future use.

In practice students, tutors, teachers, or private individuals can use our software in universities, colleges, non-profit organizations, or at home. Hobbyists can use it for projects, courses, classes, training, and self-education.
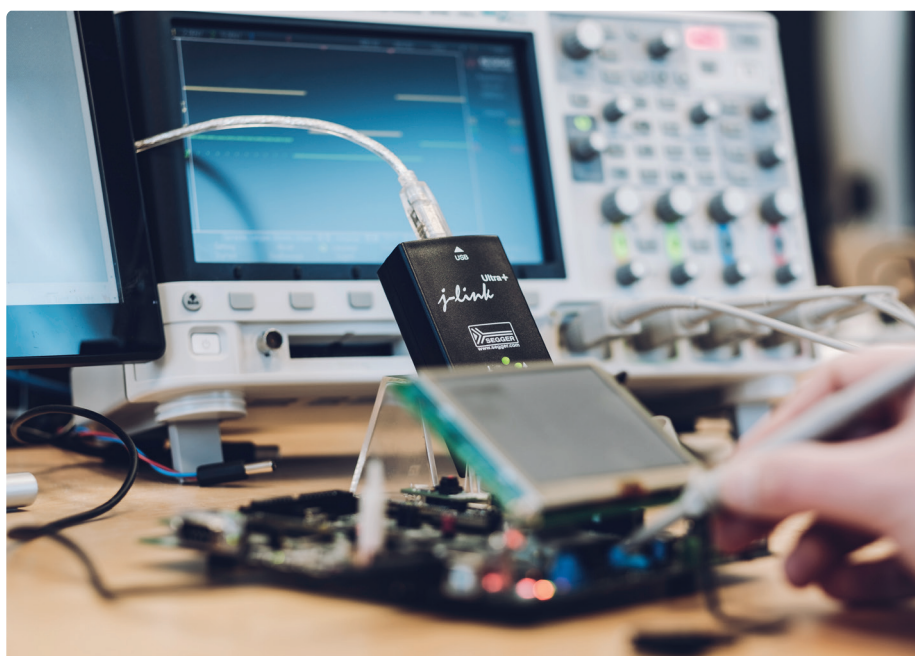
Elektor: SEGGER has a history of supporting education. For instance, you make J-Link EDU and J-Link EDU Mini available for educational purposes at very reasonable prices. Can you share some information about the company's involvement with educational institutions?

Riemenschneider: Apart from our entire software offering under "Friendly Licensing," we provide our debug probes for educational purposes at greatly reduced prices. Together with our software, you could use them in a university course to teach and learn about embedded applications and systems for example. You could also use them at home to learn how to develop an embedded system.

Elektor: Let's turn to the global chip crisis. How has it affected SEGGER and the production of hardware tools?

Riemenschneider: We are not affected by the chip crisis, because we use our own software emPower OS as a basis for our hardware. As a satisfied SEGGER customer has already explained [2], emPower OS makes you independent of specific hardware, i.e. if a chip is no longer available, you can switch to another one in a very short time. Of course, not only have we benefited from this, but so have our customers, who were spared a production standstill.

The chip crisis shows very clearly how important strategic obsolescence management is, i.e. keeping the architecture modular in terms of hardware and software right from the product design stage so that dependencies on specific chip manufacturers or even individual products do not arise. Unfortunately, many companies have decided to use free development software from chip manufacturers for cost reasons. This has led to complete dependency and the consequences we read about every day in the business press.

Elektor: SEGGER's well-known products include the Embedded Studio development suite and the previously mentioned emPower OS which includes embOS RTOS and other components for connectivity, security, and much more. Any interesting new developments?

Riemenschneider: Of course, I will not make any product announcements here before the official launch, but I can tell you that we are continuously developing all software packages such that they are increasingly interesting not only for end customers, but also for semiconductor manufacturers and are licensed by them.

Elektor: For Embedded Studio, as well as embOS, you are supporting RISC-V cores. Are you planning to get even more involved in that eco-system in the next few years?

Riemenschneider: In China in particular, where we are now also represented with our own subsidiary in Shanghai, RISC-V is experiencing a gigantic upswing. Every week, new chip manufacturers are founded that are designing CPUs based on RISC-V.

But even in the USA, manufacturers such as market leader SiFive are experiencing a surge in demand and well-known major chip manufacturers are implementing RISC-V cores on their SoCs in addition to Arm CPUs. Our runtime library emRun for RISC-V is so good that, in addition to other manufacturers like Haawking in China [3], SiFive has also licensed it for its own IDE to reduce code size and generate faster code [4].

Elektor: RUST is a buzzword in the hardware programming scene. It is a language which can overcome a lot of C's security risks. Is SEGGER planning support for RUST in the near future?

Riemenschneider: As I said, I can't make any future product announcements here, so unfortunately, I can't comment on that at this time. But let me say a few words about security: Security is a big thing in all areas and growing with IoT. EmCrypt and emSecure, also part of emPower OS, have all of these algorithms covered — we sell them as products, but we also use the libraries in our debug probes and flashers. With the debug probes, Arm has secure

and non-secure modes, there is a clear trend toward that, as there is with flashers. There's clearly more need for encryption and authentication certificates. There is no one way of doing it, and our goal is to support all options.

Elektor: Do you think that artificial intelligence (AI) can make program-ming easier and safer in the future? Is SEGGER involved with AI technology?

Riemenschneider: When it comes to AI in embedded applications, we are still at the very beginning, so it would be unreliable to make general statements at this point about the extent to which software development will become safer or easier. The fact is that we are in constant exchange with our customers and business partners about their require-ments and will continue to support them in the development of their applications in the future, regardless of which methods they are developed with. ⏮

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About Frank Riemenschneider

Frank Riemenschneider studied electrical engineering with a focus on microprocessors and microelectronics at Leibniz University Hannover. During this time, he wrote several books about software development in assembler.

After several years in industry as a project manager in Japan and Singapore, among others, and in leading positions at leading B2B electronics magazines, he has been working as Senior Marketing and PR Manager at SEGGER Microcontroller since March 2021.

About SEGGER

SEGGER Microcontroller has over twenty-nine years of experience in Embedded Computing Systems, producing cutting edge software libraries, J-Link and J-Trace debug and trace probes, a line of Flasher in-System Programmers and software development tools. SEGGER's all-in-one solution emPower OS provides an RTOS plus a complete spectrum of software libraries including communication, security, data compression and storage, user interface software and more. Using emPower OS gives developers a head start, benefiting from decades of experi-ence in the industry.

SEGGER's professional software and tools for Embedded System development are designed for simple usage and are optimized for the requirements imposed by resource-constrained embedded systems. The company also supports the entire development process with affordable, high-quality, flexible, easy-to-use tools.

The company was founded by Rolf Segger in 1992, is privately held, and is growing steadily. SEGGER also has a U.S. office in the Boston area and branch operations in Silicon Valley, Shanghai and the UK, plus distributors on most continents, making SEGGER's full product range available worldwide.

Why SEGGER?

In short, SEGGER has a full set of tools for embedded systems, offers support through the entire development process, and has decades of experience as the Embedded Experts. In addition, SEGGER software is not covered by an open-source or required-attribution license and can be integrated in any commercial or proprietary product, without the obligation to disclose the combined source. Finally, SEGGER offers stability in an often volatile industry making SEGGER a very reliable partner for long-term relationships. For additional information, please visit **www.segger.com**.

— ▬ WEB LINKS ▬ ——————————————————————

[1] Forze Hydrogen Racing - Pole position thanks to SEGGER:
   https://casestudies.segger.com/forze-hydrogen-racing-pole-position-thanks-to-segger/
[2] Concepts against supply bottlenecks:
   https://c.a.segger.com/fileadmin/documents/Press_Articles/2021/211004_DE_Press_SEGGER_Carel_Industries_emPower_
   OS.pdf
[3] Haawking licenses SEGGER's emRun for RISC-V:
   https://c.a.segger.com/fileadmin/documents/Press_Releases/2021/210831_EN_PR_Web_SEGGER_emRun_Haawking_
   Germany.pdf
[4] SEGGER's emRun Runtime Library Licensed by SiFive for Superior Code Size and Performance Improvements:
   https://c.a.segger.com/fileadmin/documents/Press_Releases/2021/210527_EN_PR_Web_SEGGER_emRun_SiFive.pdf