ORSHIN

OPEN-SOURCE RESILIENT HARDWARE AND SOFTWARE FOR INTERNET OF THINGS

HOW TO DESIGN EMBEDDED AND CONNECTED DEVICES TAKING ADVANTAGE OF OPEN SOURCE HARDWARE (AND SOFTWARE)

Project status after one year

The consortium is getting closer while the work is becoming more intense and the collaborations deeper. Having so many experienced and hard working experts in our team makes the ORSHIN project unique and leads to promising outcomes. In the past year we worked hard on our idea, develop new concepts and advanced methodology of open source hardware and software for the Internet for Things (IoT).

Consortium meeting

The ORSHIN team met in Austria on a two-day technical meeting that successfully took place on 23rd - 24th October 2023. The meeting was hosted by Technikon in Villach. As it has been a year since the project started, there were many important topics to be addressed. All seven partners gathered with a focus on current research activities, the upcoming deliverables and further technical discussions. The consortium aligned on the ongoing process of the WPs and upcoming cross-WP activities, including, advisory board collaborations and scientific publications. During this face-to-face meeting, TEC took the opportunity to record a couple of interviews with the partners that will be featured on the project website soon.

Conferences:

We are happy to share the participation of ORSHIN in the following events:

01 HOST conference

We participated on IEEE International Symposium on Hardware Oriented Security and Trust in Washington DC, USA in May 2023. At this year's event we had a pleasure presenting a paper "**Lightweight Countermeasures Preventing from Linear Code Extraction Attacks on a RISC-V Core**" by the authors Théophile Gousselot, Olivier Thomas, Jean Max Dutertre, Olivier Potin and Jean Baptiste Rigaud.

02 RISC-V workshop in Barcelona

We organised a workshop during the RISC-V summit in Barcelona in June 2023. We presented the main results that the ORSHIN project achieved until then, and the challenges for the future. In particular, we discussed the results achieved in work package 2 Trusted Life Cycle and Requirements Analysis, that concluded at the end of June, and the updates for work package 3 Models for formal verification, work package 4 Effective Security Audits and work package 5 Secure Auth and Comms.

03 CHES 2023

At the recent Cryptographic Hardware and Embedded Systems (CHES) 2023 conference in September, our partner Tropic Square had the unique opportunity to showcase their pioneering pilot project, TROPIC01, to the international community of cryptographers and researchers. In a field where building stronger security is the shared value of the community, this event provided an ideal platform for highlighting the significance of the ORSHIN project. Guido Bertoni from Security Pattern, happened to chair the Rump session that took place at CHES. Along with the valuable addition of Benedikt Gierlichs from KU Leuven, who also attended the same conference, our representation became more robust with the total of three ORSHIN partners. With the advantage of having a booth already set up for Tropic Square, our partners synergized their presence at CHES to raise awareness about the ORSHIN initiative and its crucial role in advancing security in cryptographic hardware and embedded systems.

04 Cyber Resilience Act (CRA) Conference

Two members of ORSHIN, Texplained and Eurecom, gave a talk at the conference held in Sophia Antipolis mid October. The theme of the conference focused on the new European CRA law, and its impact on the IoT devices market. Olivier Thomas , founder & CTO of Texplained gave a talk entitled „**Cyber Resilience Act & IC security evaluation**". He presented how IC security evaluation has been done so far, its pros and cons, and how this could be handled in the future, for a more secure world. Aurélien Francillion also gave a talk and presented ORSHIN as a promising project in the context of the emerging need for security in an increasingly connected world.

05 And many more

visit the ORSHIN blog to find out more (DATE 2023, WiSec´23 etc.)

Publications:

We would like to point out a few of our most recent papers

- The paper "**Lightweight Counter-measures Against Original Linear Code Extraction Attacks on a RISC-V Core**" was published at HOST on 1st 3rd May 2023. The authors are Théophile Gousselot, Olivier Thomas, Jean Max Dutertre, Olivier Potin and Jean Baptiste Rigaud.
- The paper "**E Spoofer: Attacking and Defending Xiaomi Electric Scooter Ecosystem**" was published at Wi-

Sec'23 on 31st May 2023. The authors are Marco Casagrande, Riccardo Cestaro, Eleonora Losiouk, Mauro Conti and Daniele Antonioli.

- The paper "**MicroProfiler: Principled Side Channel Mitigation through Microarchitectural Profiling**" was published at Euro SP23 on July 3 - 7 2023. The authors are Marton Bognar, Hans Winderix, Jo Van Bulck, Frank Piessens

Updates:

01 WP2 successfully finished!

We concluded work package 2 in June 2023, and we prepared two reports referring to the tasks Methodology for the trusted life cycle of OSH and Security requirements in the trusted life cycle of OSH. The main goal of this work package was to define a methodology for the development of secure embedded devices. Indeed, security is a process, thus it is necessary to develop security procedures, especially for the design of devices. In this work, we proposed and articulated the concept of Trusted Life Cycle. Moreover we defined the processes and product requirements that are necessary for the implementation of the Trusted Life Cycle. The proposed procedures have been put in perspective with the relevant cybersecurity standards and complementing them. We also enriched our deliverables with many interesting and useful use cases, to make them as complete as possible.

02 Deliverables

Stay tuned to our website updates as we will share public deliverables there once accepted by the European Commision (EC).

Outlook

Having completed the first project year, ORSHIN goes full steam ahead into year two . We look forward to presenting and discussing the technical work done so far as well as our future plans with the project's advisory board. We are also eager to discuss possibilities for standardization and certification with relevant organizations. Most important, we are excited to continue doing great research!

Video material created

Explainer video
- Short video prepared by TEC
- Presenting the vision of the project
- Including main aims for next year

WP2 video
- SEC as WP2 led presented their work
- focused on Trusted Life Cycle
- put together by TEC to help inform the public regards the achievements of ORSHIN partners

Upcoming Events

ACM CCS 2023 Conference
26th - 30th November 2023 @Copenhagen Tivoli Congress Center, Denmark

ORSHIN Review meeting
Summer 2024

All past and upcoming events can be found on the ORSHIN official webpage:

horizon-orshin.eu/events