

**Presentation**

- Title:** Towards Embedded Virtualization for Critical Systems
- Target Audience:** Developers
- Presenter:** Daniel Rossier
- Company:** School of Business and Engineering Vaud (HEIG-VD), Yverdon
- Abstract:** The EmbeddedXEN project aimed at porting the XEN hypervisor and guest operating systems tailored to ARM-based embedded systems with the support of hard realtime applications. Such an infrastructure enables the possibility to start two OS simultaneously on the same 32-bits microcontrollers, providing the necessary isolation between the guest operating systems. Currently, EmbeddedXEN supports a paravirtualized version of Linux for non-realtime application, and a hard realtime OS based on the Xenomai core system. The idea of in this approach has been to isolate the high-level Xenomai API from its native *nanokernel* (I-Pipe) and to adapt it on the hypervisor accordingly.

Another major innovation resides in the way how the hypervisor and guest OSES are managed; embedded systems require to have a minimal overhead in the kernel. For this reason, the hypervisor, the guest Linux and the guest Xenomai are maintained in a single binary image and parsed at the setup time of the domains. The porting strategy has led us to consider an efficient way in managing the integration and the compilation of the different components, and to keep the same philosophy of building than Linux. Although several components remain to be ported in EmbeddedXEN, first results and performance assessment are really encouraging taking into account that no modification in the hypervisor scheduler has been done yet.