Title: Portable Wireless KVM

Description: CERN is operating a large number of computers in several data-centers. While modern servers have a lot of remote-management facilities built in, it is not uncommon that one needs to connect Keyboard, Video and Mouse (KVM) to debug more complex issues. Commercial KVM solutions are very expensive and often cumbersome to use because they use proprietary protocols and software. In this project we want to create a prototype of a light-weight KVM, with wireless connectivity based on open-source hardware and software.

The project will be based on the SPICE software (https://spice-space.org) for the software and on the popular Arduino MKR VIDOR 4000 (https://store.arduino.cc/mkr-vidor-4000) platform for the hardware. The FPGA part of this platform will be used to connect to the video connector and the USB of the server. The microcontroller will be used for the network connection to present a SPICE client. Some small electrical adaptation board is likely to be needed.

Project content: 40% Computing, 10% Engineering, 50% Electronics (FPGA)

Training value: Programming FPGA, implementing and understanding Video and USB protocols, micro-controller and FPGA cooperation, wireless communication via microcontroller.

This project contains enough challenges for a tandem of stagiaires, for example split between hardware and software.

Skills and assets: C-programming, basic electronics, FPGA-programming (VHDL)

Contacts:

niko.neufeld@cern.ch

loic.brarda@cern.ch