CUSTOM HARDWARE PLATFORM BASED ON INTEL EDISON MODULE

D. Pedretti, D. Bortolato, F. Gelain, M. Giacchini, D. Marcato, M. Montis, S. Pavinato, J. A. Vasquez, INFN-LNL, Legnaro (PD), Italy
M. Bellato, R. Isocrate, INFN Sez. Di Padova, Padova, Italy

WEM307
What inspired this work

Context:

Selective Production of Exotic Species.

Magnet power supply control system:
We aim extending the control reach to small groups of magnet power supplies and we are developing a low cost and low power microprocessor board which acts as an Ethernet to RS232 translator and is capable of running the EPICS software IOC.

SPES is a second generation ISOL radioactive ion beam facility in construction at the National Laboratory of Legnaro – INFN – Italy. To achieve the benefit of a distributed control system, a big effort is required for embedding the control of a single instrument or a small group of devices.
A custom, low power and low cost desktop PC

1. **Computer on Module**
   - Towards a general purpose embedded system

2. **First prototype - key features:**
   - PoE+ 30W
   - Ethernet TCP/IP
   - USB 2.0
   - RS232/RS422
   - 20 x GPIO
   - microSD
   - Wi-Fi
   - x86 architecture

3. **Debug**
   - A revision of the DC power distribution was necessary to improve the network performance.
Conclusions

- DIN-RAIL mounting.
- Low power: less than 3W with no USB devices.
- x86 architecture makes software development straightforward.
- PoE is a great benefit in an Ethernet distributed control system.

- We could boot a full Linux distribution and successfully run an EPICS software IOC.
- The prototype proved to be an adequate solution for embedding the control of different equipments in our accelerator complex: magnets power supply, oscilloscopes, stepper motors.