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Connecting Russian and European Measures
for Large-scale Research Infrastructures

Task 2.2 - summary

Developments for the data acquisition chain, for data preprocessing and computing

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Hiring status for T2.2

- ## WUT (completed):
  - 2 Firmware engineers hired for ¾ FTE each (Marek Guminski, Piotr Miedzik) since May 15.
  - 3 Volunteers contributing ca. ¼ FTE

- ## JINR (not hired yet):
  - 1 H/W enegineer - for PCB design and cabling developments
  - 1 S/W engineer - for data analysis

- ## FAIR (completed)
  - 1 FW specialist – Ingo Fröhlich
  - 1 SW specialist – Pierre-Alain Loizeau

What should be the schedule?

- Remainder: Milestones/Deliverables
  - There is one milestone associated:
    - MS8: Readout concept developed (24 months = 02.2022)
  - There are two milestones defined:
    - D2.3: Components of the STS data acquisition chain tested (24 months = 02.2022)
    - D2.4: Full functionality tests ofthe STS data acquisition chain (48 months = 02.2024)

What additionall steps will be necessary?

- Test setups should be created in JINR and in GSI to perform testing of the complete prototype readout chain

- The decision about supporting infrastructure (gitlab repositories, project management system)

- The licensing issues should be resolved (the development for research and scientific purposes may be done basing on academic licences. What about the final firmware used in „production" system at JINR?

- Development of the data processing software, are the resources sufficient?

Potential technical issues

- Decision about the readout reference clock (working with 125 MHz may require adaptation of GBT-FPGA core)

- Adaptation of the proposed GERI platform for operation with TFC

- Development of solution for triggered acquisition, based on existing triggerless system

Preliminary schedule FW/SW

- Proposed stages:
  - Tests with IPbus-based control and limited readout with GBTxEMU alone (until the end of 2020)
  - Hardware modifications needed to prepare prototype GERI board (until the end of 2020)
  - Quick port of DPB firmware to PCIe-controlled GERI platform (until the end of 2020)
  - Preliminary version of the low level software for GERI board (until the end of 2020)
  - Preparation of the production version of firmware for GERI board (until the half of 2021)
  - Development of the production version of the software for GERI board (until the Q3 of 2021)
  - Maintenance, and possible extensions of the FW/SW (2022-2024)
  - Development of diagnostic FW/SW (2022-2024)

Preliminary schedule - production

- BM@N FEB8 – start of serial production: Q1/2021;

- GBTxEmu for the pilot v.: Q2/2021

- Ordering final GERI boards with necessaru extensions: Q4/2021

- Limited version of readout with 42 modules (2022)

- Full version of readout with 292 modules (2023)

Thank you for your attention