Report of the software coordinator

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JINR

SPD Collaboration Meeting
5 November 2024

SPD Software & Computing Project

Online filter

Offline computing system

Offline software

- SpdRoot
- SAMPO: a Gaudi-based framework

Databases

SPD Online Filter

- Steady progress with middleware development, more details in Nikita's talk.
- Some hardware, which can be used for testing and prototyping, will be installed in next 6-8 month.
- Realistic simulation of time slices and the first attepmt to unscramble the events (Samara group, more details in Alexandra’s talk on Thursday)
- ML tools are ready for integration. Progress is reported at CHEP (Krakow) and MMCP (Yerevan) conferences. ML production chain needs to be designed.
- Development of applied software and settling of data processing workflows should be forced.
- …. More details in the report of Danila.

SpdRoot

Main tool for physics studies for the near future

Current release 4.1.6 (21 October 2023)

No major updates since last Collaboration Meeting

Few bugfixes necessary for mass production

Git repository: http://git.jinr.ru/nica/spdroot

Containers: easy start with SpdRoot

- **Docker**

  docker pull jemtchou/spdroot:4.1.6

  docker run -it jemtchou/spdroot:4.1.6

- **Singularity**

  singularity run -H /my/workdir spdroot-4.1.6.sif "run_spdroot_sim.C(10,\"run_555.root\",\"param_555.root\",77777777)"

  spdroot-4.1.6.sif is available at */cvmfs/spd.jinr.ru/images*

This is the recommended way of using SpdRoot!

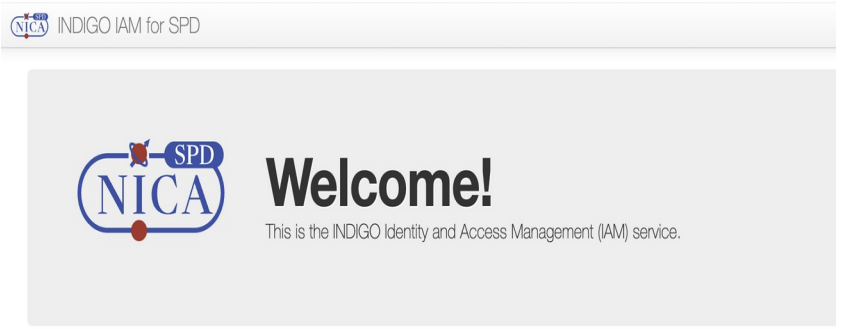
No not try to install from source unless you really need it!

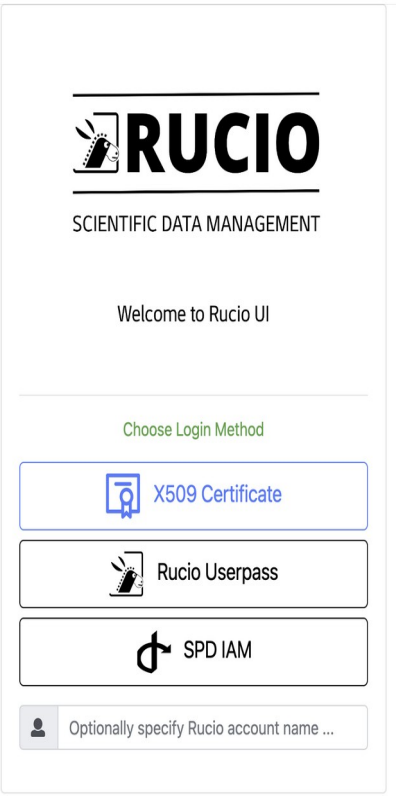
SAMPO

- There is a good progress in making the new framework *(more details in Lev's report)*
- Multithreaded Gaudi is understood
- The Pythia interface, the GeoModel service and Geant4 services and methods were redesigned. EventModel is reconsidered *(Lev + Valeria Zharova from MEPHI)*
- Study of ACTS for tracking *(Evgeny Arlyapov from MEPHI)*
- Standalone simulation of the detector response *(Vahagn Ivanyan)*
- Detector description is being optimized *(Aytadzh + Evgeny Tchernyaev)*
- Integration to CI/CD in Gitlab is under way *(Rinat)*

Offline computing system

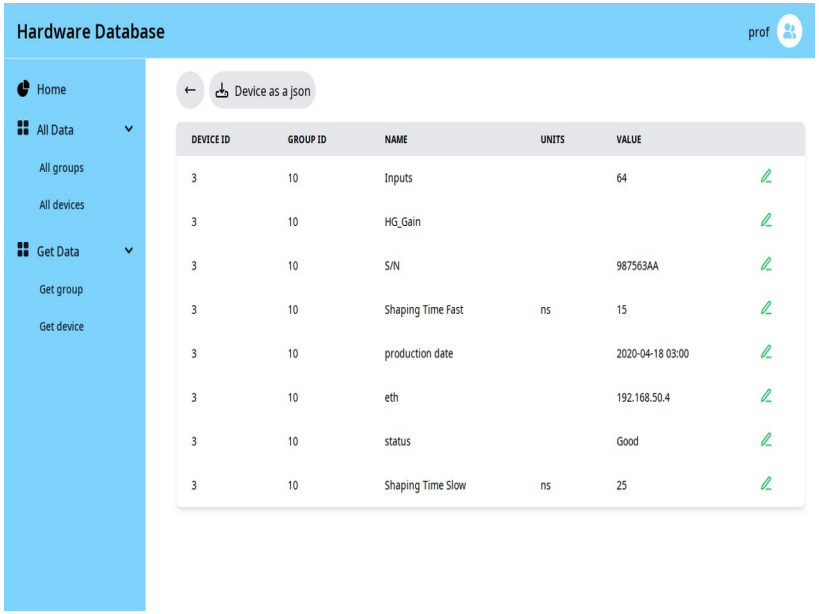
- IAM Authorization service in production
- Rucio data management system in production and integrated with PanDA
- Production system operated on scale in PNPI and JINR
  - Mass production test run, more than 35 TB of data simulated and reconstructed
- Control panel of the production manager under development
- Samara state university in going to purchase some hardware
- More details in Artem's and Alexey talks

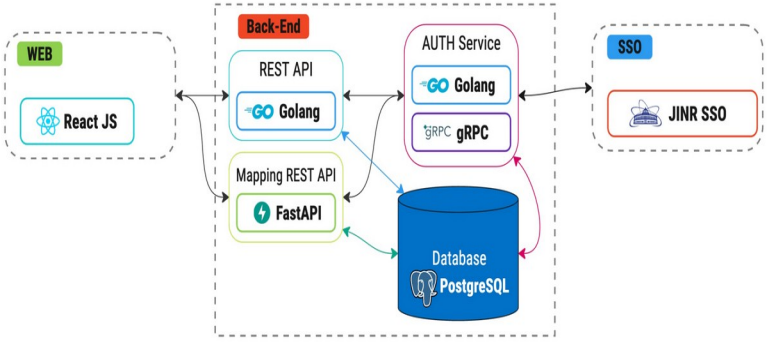




Databases

- Hardware database prototype is ready. Interface deployed on virtual machine and can be tested by JINR users. **Input from the detector subgroups is strongly required.**
- EventIndex development in progress. First version of client interface is done. Research on data loading optimisation shows good results . Development of code for data indexing started.
- Function prototype of the Physics Metadata information system has been developed. Machinery for testing, development and logging created.
- More details in the report of Fedor Prokoshin





(Minimum) manpower request

- Core services + DevOps — 5 FTE
  - core services (git, vm, containers…), devops, online filter hardware
- Online Filter — 6 FTE
  - *middleware (4), application (2)*
- Offline Software — 10 FTE
  - *core fw (1), DD+MagF (1), simu (1), reco (6), tests (1)*
- Offline Computing — 12 FTE (+ 1-2 FTE/Tier-2)
  - Panda (1), Rucio (1), Workflow (1), Monitoring (1), Ops (2), Tier-0 (4), Tier-1 (2)
- AI/ML — 2 FTE
  - Tracking (1), FARICH (1)
- Databases — 5 FTE
  - Exp Dbs (2), EventIndex (2), CRIC (1)

TOTAL — **40 FTE (+ 1-2 FTE/Tier-2)**

~14 → 16 FTE available now