Production version of BM@N Geometry Database

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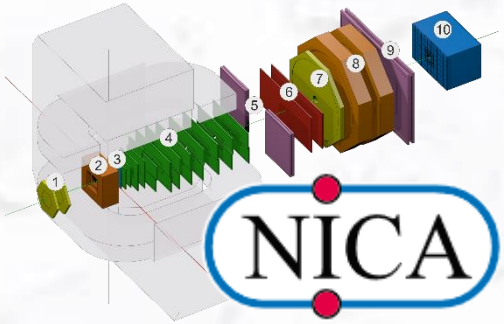
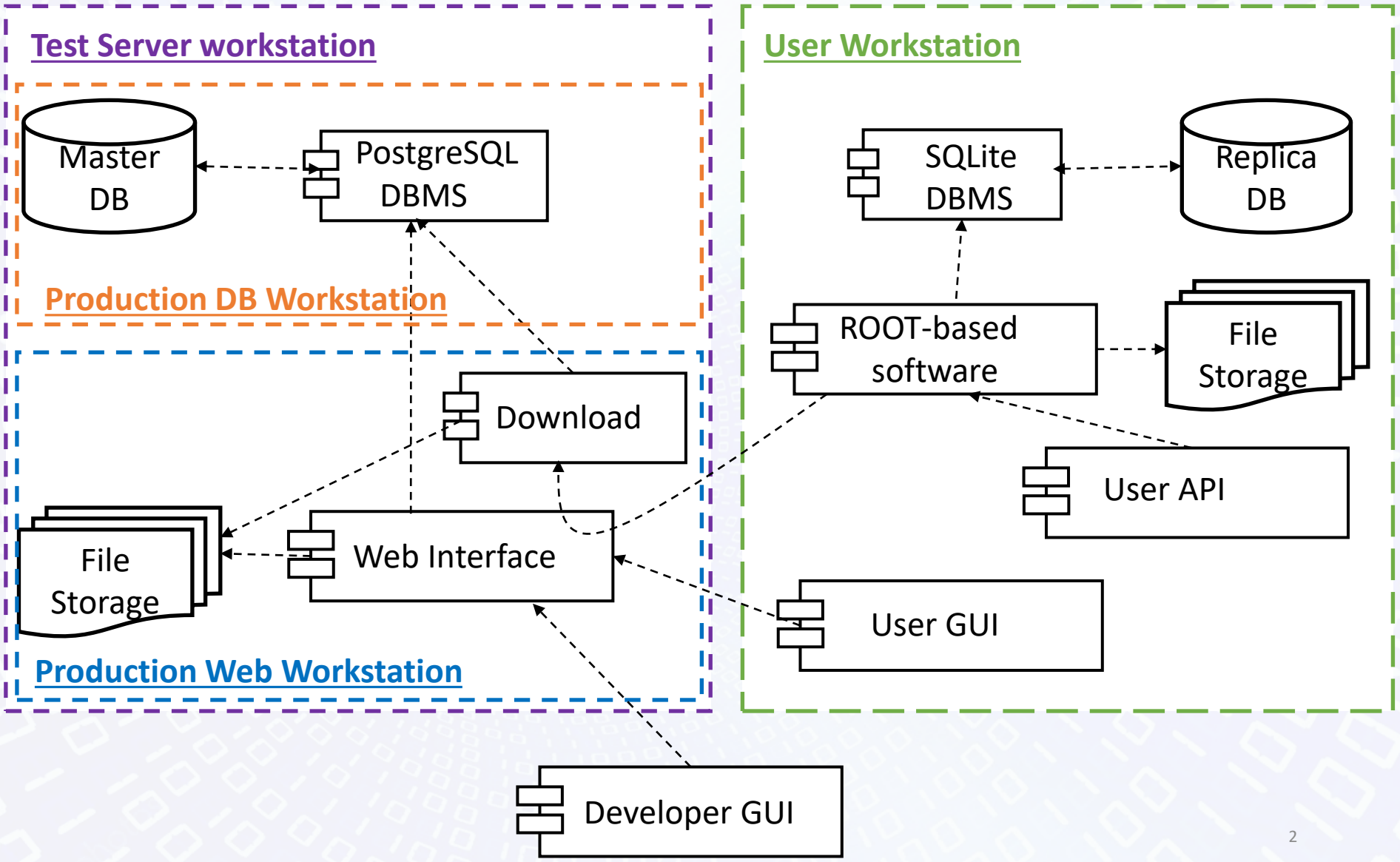


12th Collaboration Meeting of the BM@N, 12-18 May 2024

Joint Institute for Nuclear Research

General architecture of the Geometry Information System



Production computers for BM@N Geometry Database

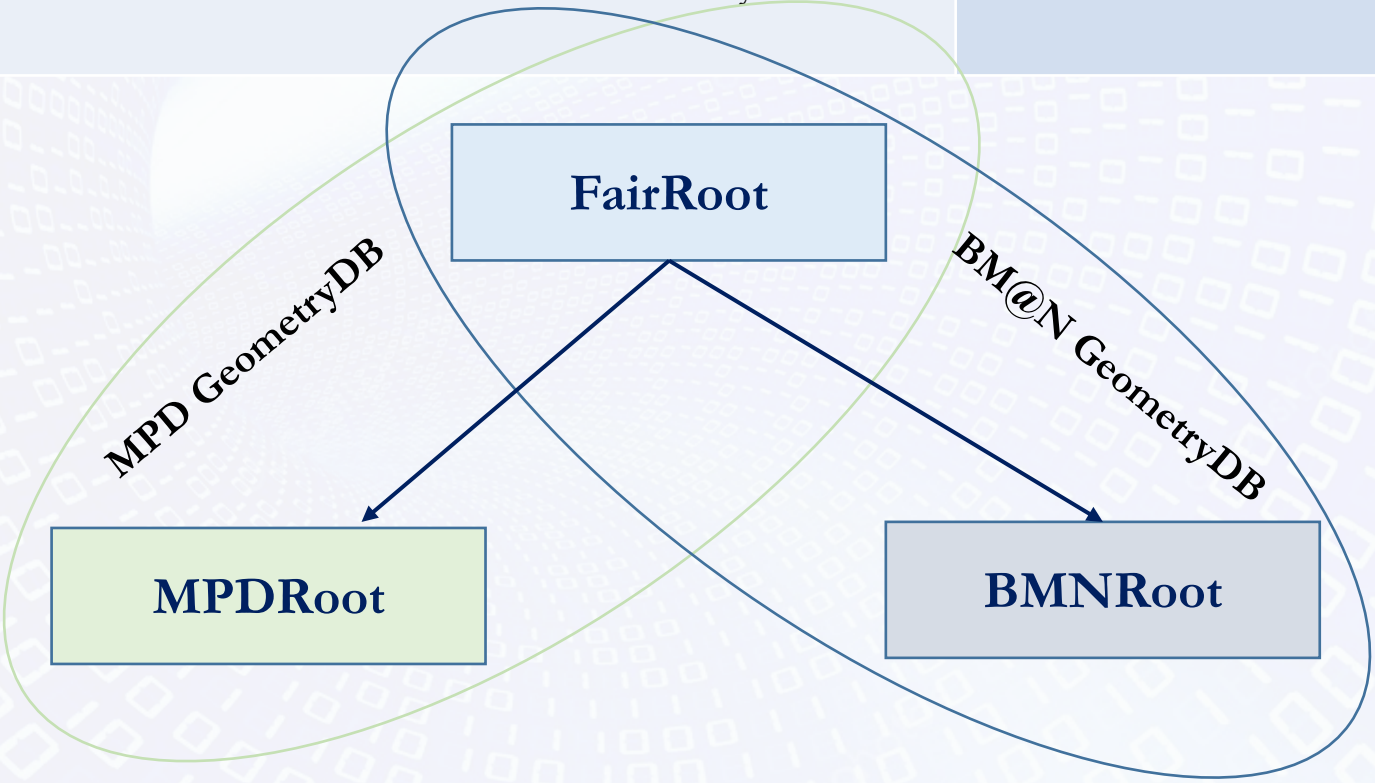
- DB Server
  - Proxmox container
  - bmn-geodb.he.jinr.ru
  - 4 cores
  - 8 GB RAM
  - 30GB SSD
  - AlmaLinux 9
  - PostgreSQL 14
- WEB Server
  - Virtual Machine
  - Bmn-web.jinr.ru
  - 16 cores
  - 32 GB RAM
  - 200 GB SSD
  - Ubuntu 22.04.4

New Installation

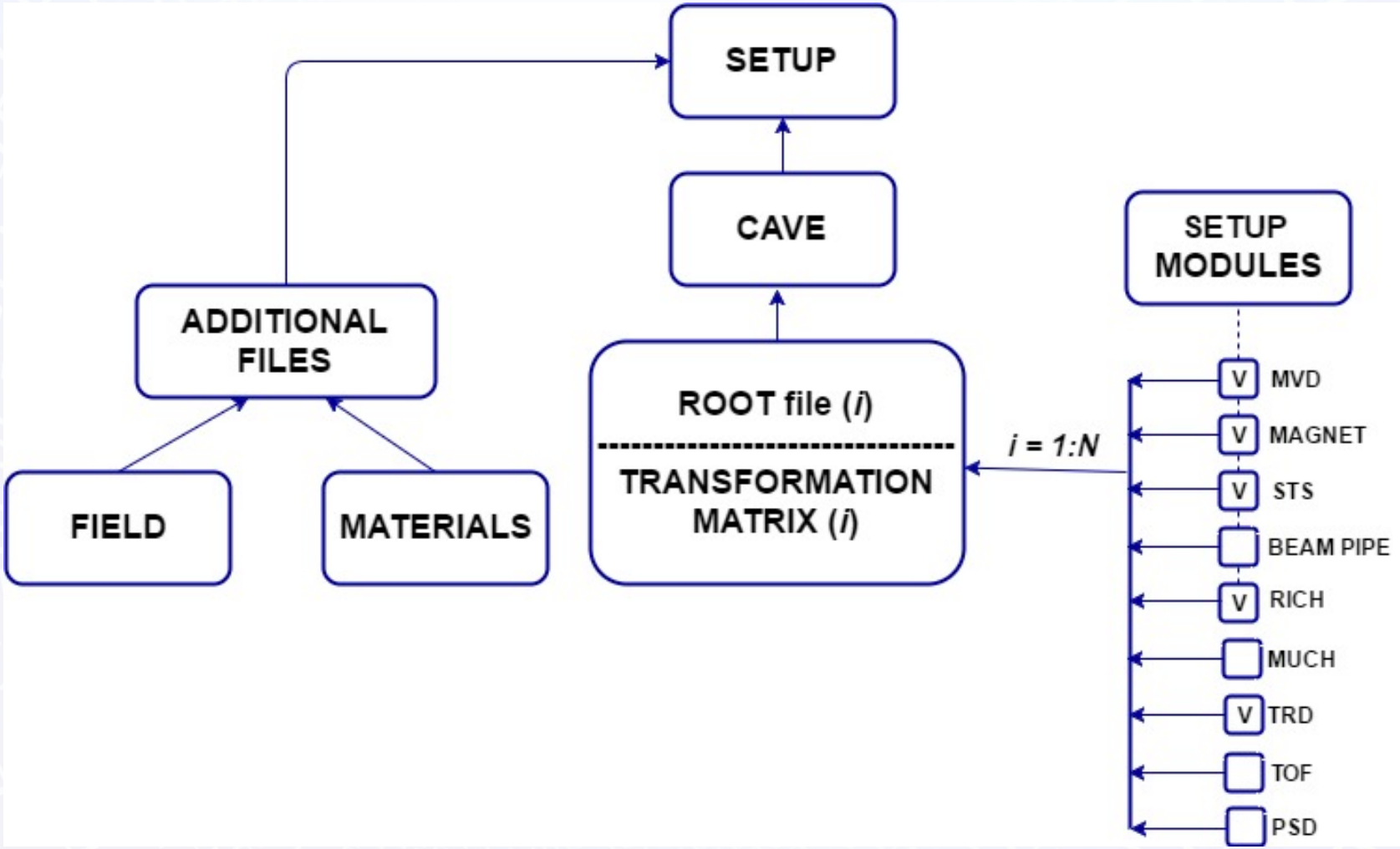
- Git: https://git.jinr.ru/nica_db/geo_platform
- Use common installation of BM@N services
- Support separate install DB and web
- Support install in Docker
- Support Keycloak authentication
- Downgrade requirements of additional software
  - Was FairSofr
  - Now only ROOT
- Install additional software (ROOT) while first starting the Web service

BM@N & MPD

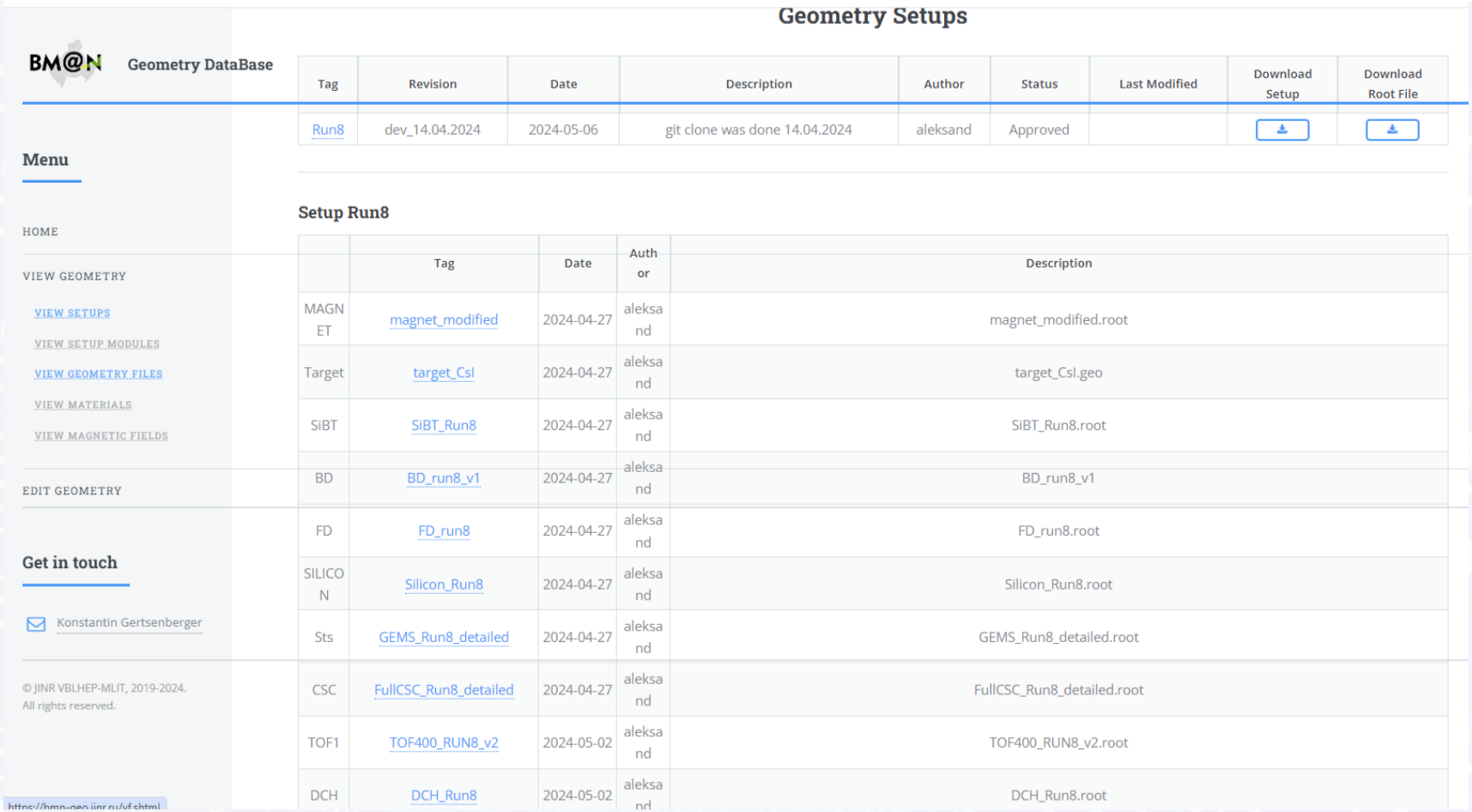
Common features	Differences
Approaches to the methods of simulations and reconstructions	The sets of Detectors
Software: FAIRSOFT, FAIRROOT **RunManager:** ➢ **FairRunSim** for the simulation runs ➢ **FairRunAna** for the reconstruction or analysis runs	



Setup Structure



Geometry Setups



BM@N Geometry DataBase

Menu

HOME

VIEW GEOMETRY

VIEW SETUPS

VIEW SETUP MODULES

VIEW GEOMETRY FILES

VIEW MATERIALS

VIEW MAGNETIC FIELDS

EDIT GEOMETRY

Get in touch

Konstantin Gertsenberger

https://bmn-geo.jinr.ru/vf.shtml

Geometry Setups

Tag	Revision	Date	Description	Author	Status	Last Modified	Download Setup	Download Root File
Run8	dev_14.04.2024	2024-05-06	git clone was done 14.04.2024	aleksand	Approved			

Setup Run8

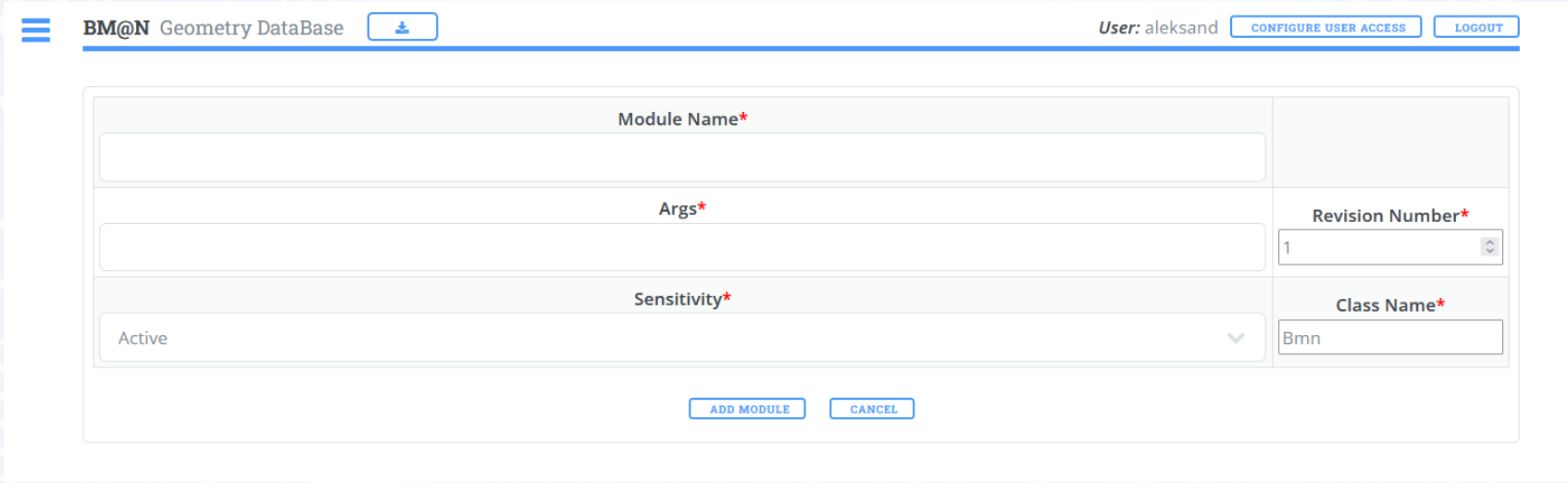
	Tag	Date	Author	Description
MAGNET	magnet_modified	2024-04-27	aleksand	magnet_modified.root
Target	target_CsI	2024-04-27	aleksand	target_CsI.geo
SiBT	SiBT_Run8	2024-04-27	aleksand	SiBT_Run8.root
BD	BD_run8_v1	2024-04-27	aleksand	BD_run8_v1
FD	FD_run8	2024-04-27	aleksand	FD_run8.root
SILICON	Silicon_Run8	2024-04-27	aleksand	Silicon_Run8.root
Sts	GEMS_Run8_detailed	2024-04-27	aleksand	GEMS_Run8_detailed.root
CSC	FullCSC_Run8_detailed	2024-04-27	aleksand	FullCSC_Run8_detailed.root
TOF1	TOF400_RUN8_v2	2024-05-02	aleksand	TOF400_RUN8_v2.root
DCH	DCH_Run8	2024-05-02	aleksand	DCH_Run8.root

Tags:
run8

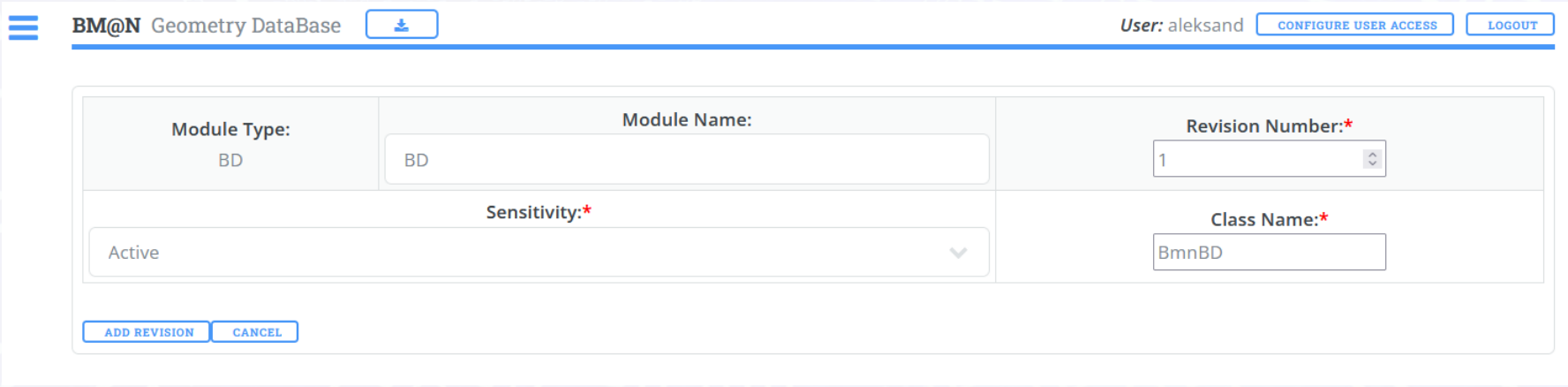
Revisions:
dev_14.04.2024

Create/Edit module

Create new module



Add new revision



Add new geometry file

New

Geometry Files

*You can edit the **Description** field. A new value is saved when the focus is lost.*

CREATE NEW FILE

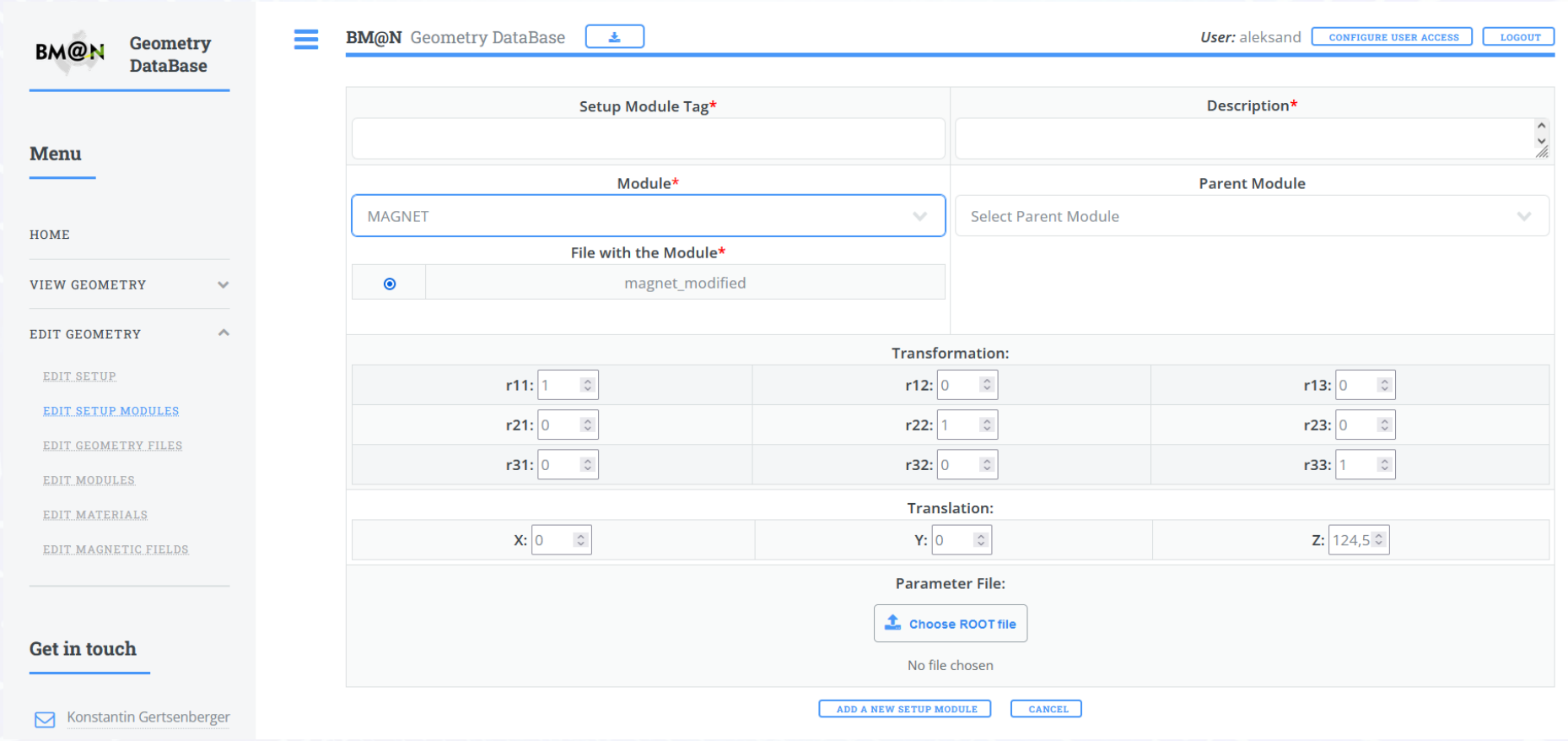
Module	Revision	Class Name	File Tag	Transformation	Date	Author	Description	
BD	1	BmnBd	BD_run8_v1		2024-04-27	aleksand	BD_run8_v1	
CAVE	1	FairCave	cave		2024-03-31	administrator	init	
CSC	1	BmnCSC	FullCSC_Run8_detailed		2024-04-27	aleksand	FullCSC_Run8_detailed.root	
DCH	1	BmnDch	DCH_Run8		2024-05-02	aleksand	DCH_Run8.root	
FD	1	BmnFD	FD_run8		2024-04-27	aleksand	FD_run8.root	
FHCAL	1	BmnFHCal	FHCal_for_run8_cm_rotationY_1.6deg_v1		2024-05-02	aleksand	FHCal_for_run8_CBM_20mods_NICA_34mods_54mods_hole_Zpos_977.8cm_Xshift_65.30cm_Yshift-0.8cm_rotationY_1.6deg_v1.root	
HODO	1	BmnHodo	Hodo_for_run8_v1		2024-05-02	aleksand	Hodo_for_run8_with_box_Zpos_970.2cm_Xshift_64.90cm_Yshift_-1.0cm_rotationY_1.6deg_v1.root	
MAGNET	1	FairMagnet	magnet_modified		2024-04-19	aleksand	magnet_modified.root	
NDET	1	BmnNdet	nDet_VETO_slices_rotY_-27.30	1 0 0 0 0 1 0 0 0 0 1 124.5	2024-05-02	aleksand	nDet_NEW_NUMBERING_VETO_25mm_5slices_PLA_2mm_Pb_8mm_9slices_Cu_30mm_Sc_25mm_G10_2mm_Air_no_hole_ZdistDET_1_595.617cm_rotY_-27.30deg_rotX_0.0deg.root	

Transformation Matrix

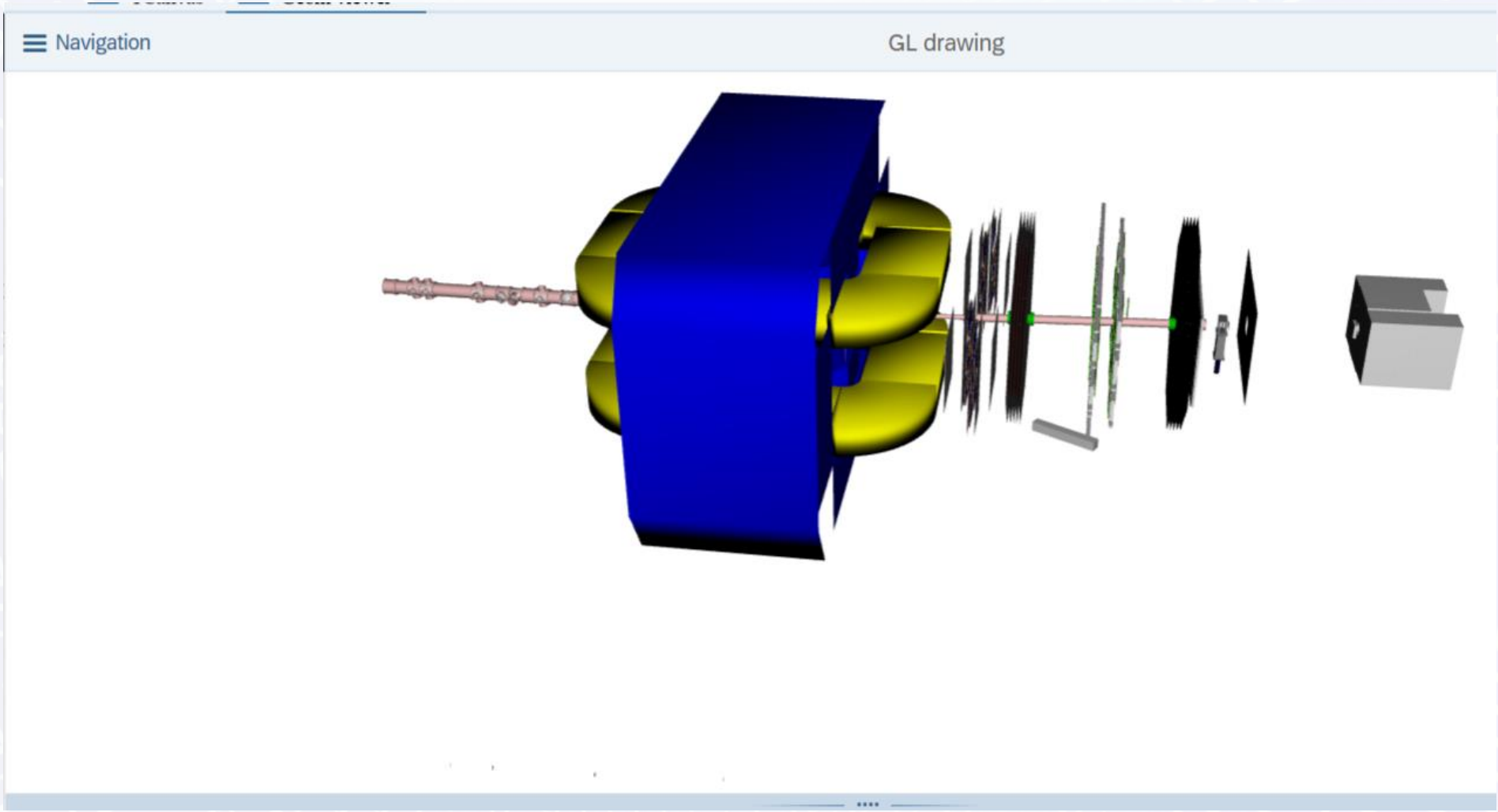
From create_rootgeom_MAGNET.C:

top->AddNode(MagnetContainerV, 0, new TGeoTranslation(XMagnetPos, YMagnetPos, ZMagnetPos));

Create/Edit setup module

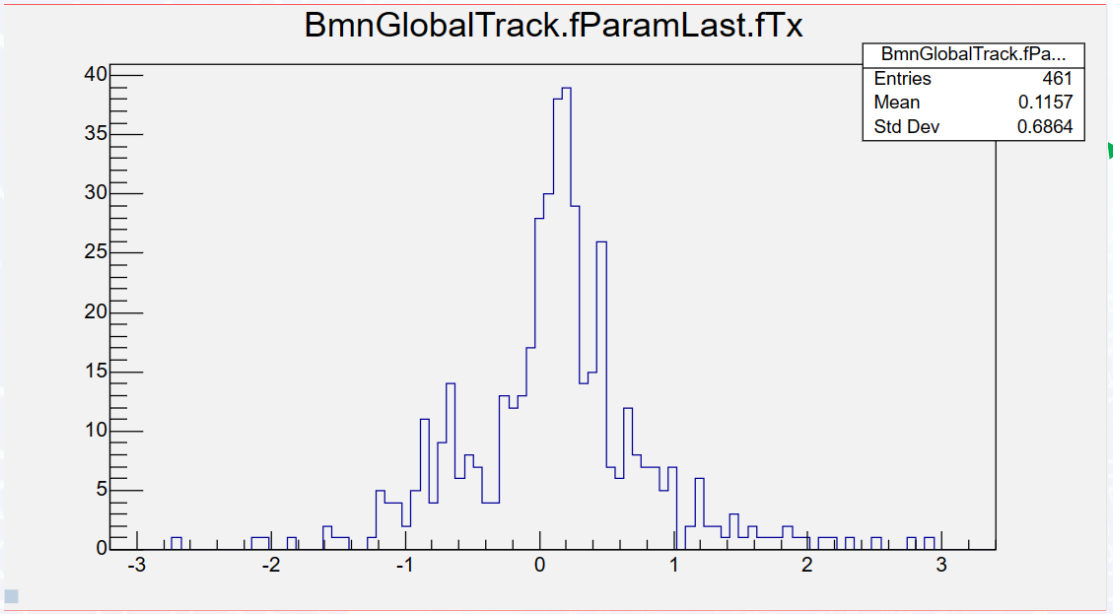


Geometry of Run8



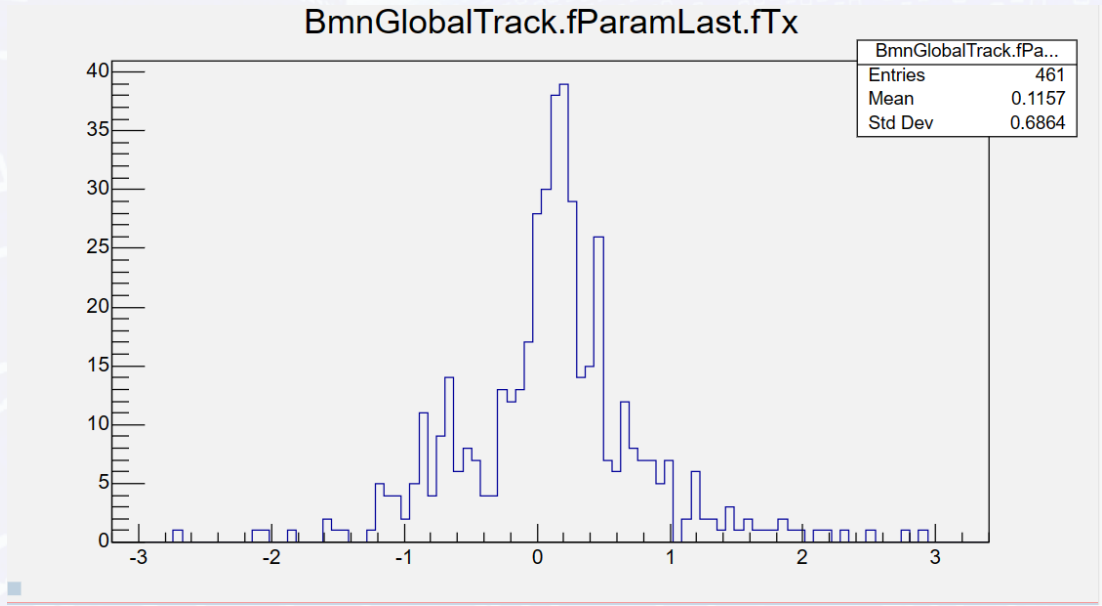
CheckOverlaps error still exist!

Verification geometry of Run8



Run: 8
Revision: dev_28.04.2023
Use DB: YES

Identical



Run: 8
Revision: Dev
Use DB: NO

Examples of using

- Change run_sim_bmn.C

```
//geometry(fRun); // load BM@N geometry
  GeoSetup* gSetup = GeoSetup::Instance();
  gSetup->loadSetupToFairRunSim("Run8");
```

Get/load magnetic field data for BmnFieldMap

```
FairField* sField = gSetup->getMagneticField(scale);
fRun->SetField(sField);
OR
 const char* pathToMagnetField= gSetup->getMagneticFieldPath();
```

- Get Parameter file

// at the moment it is only possible to get the full path to the file, because there is no general use case

```
gSetup->getParFilePath("csc");
```

Next steps

- **User GUID**
- **Implement** REST API service for communication with the Geometry Database