



7th Collaboration Meeting of the BM@N
Experiment at the NICA Facility

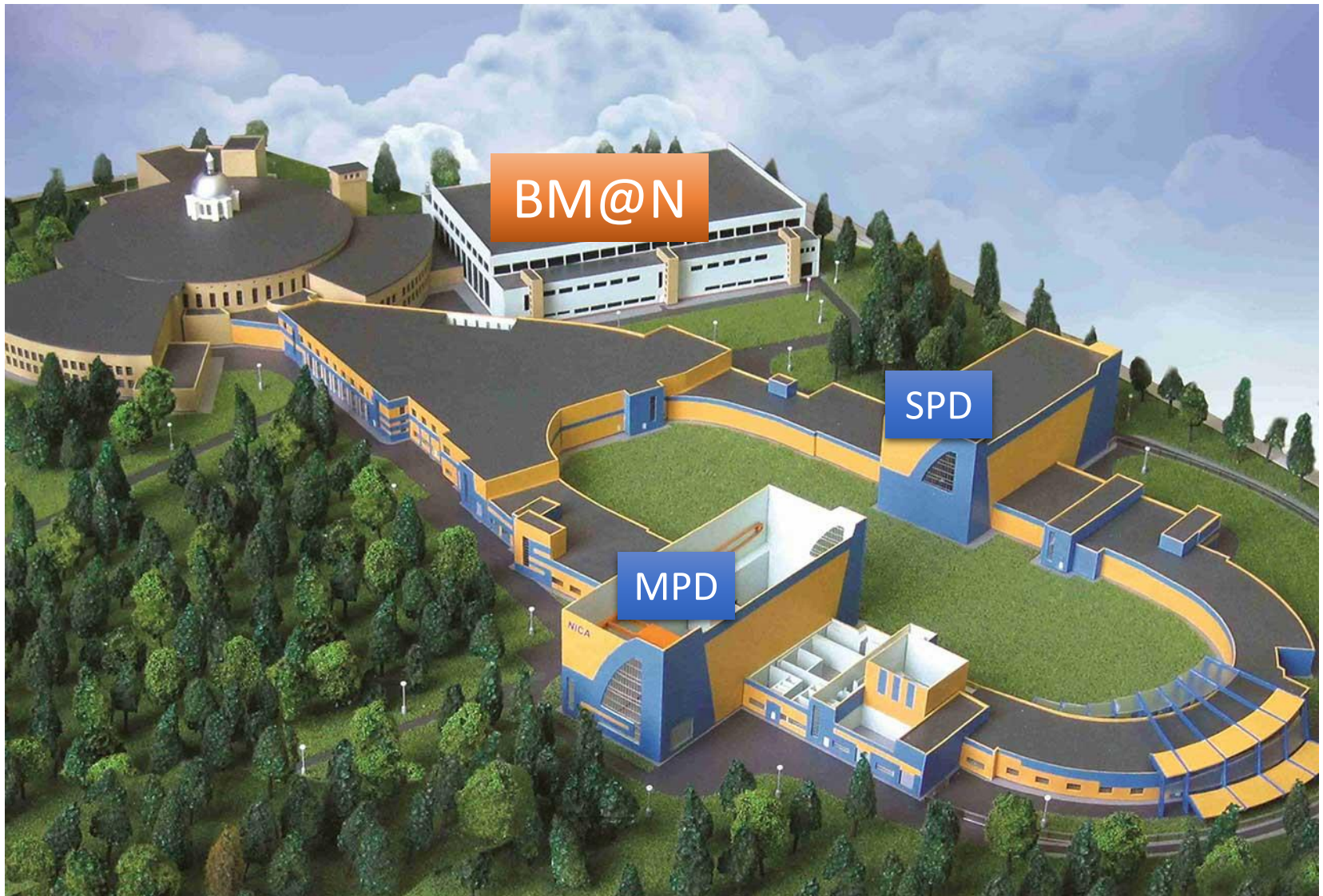
Deployment structure of the information services for BM@N on the NICA cluster

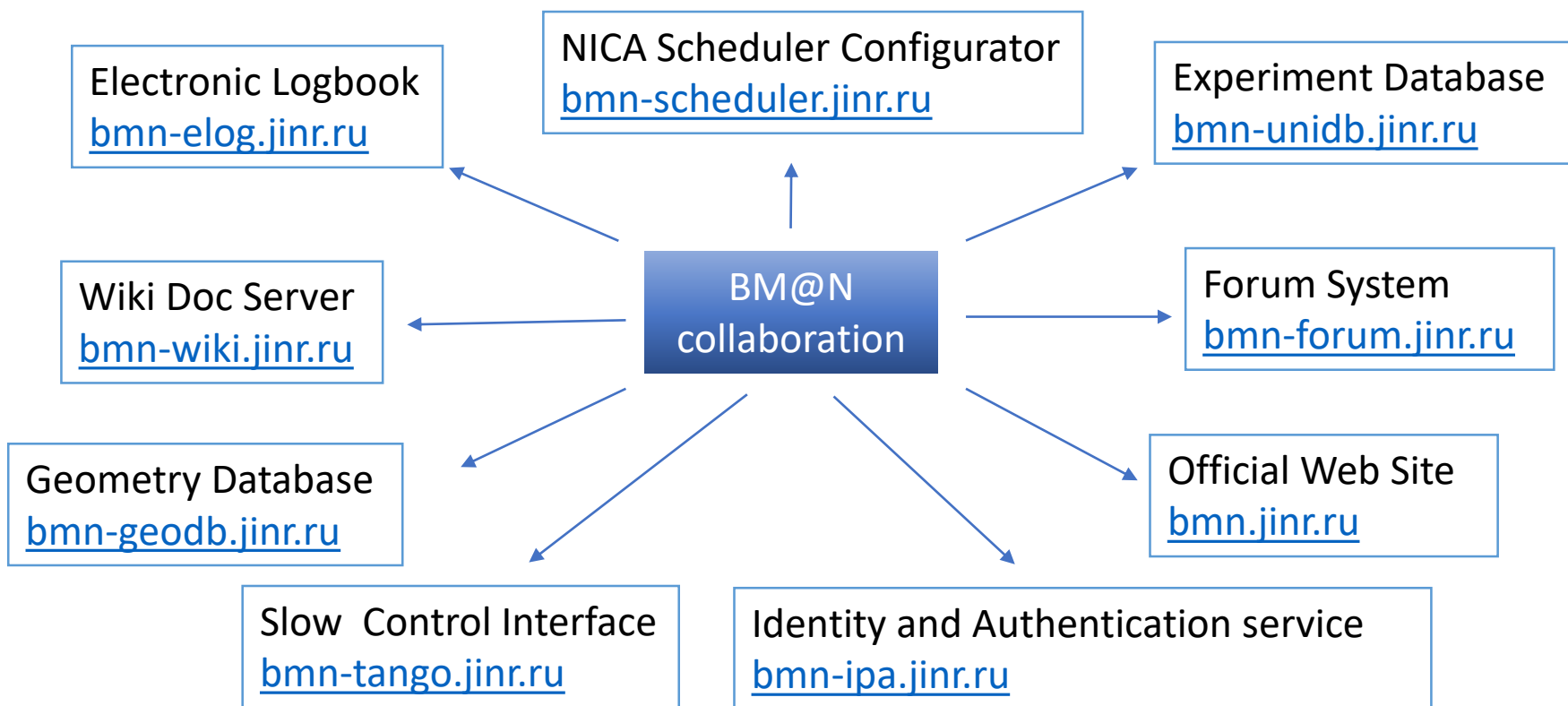
Ivan Slepov, JINR, Dubna

19.04.2021



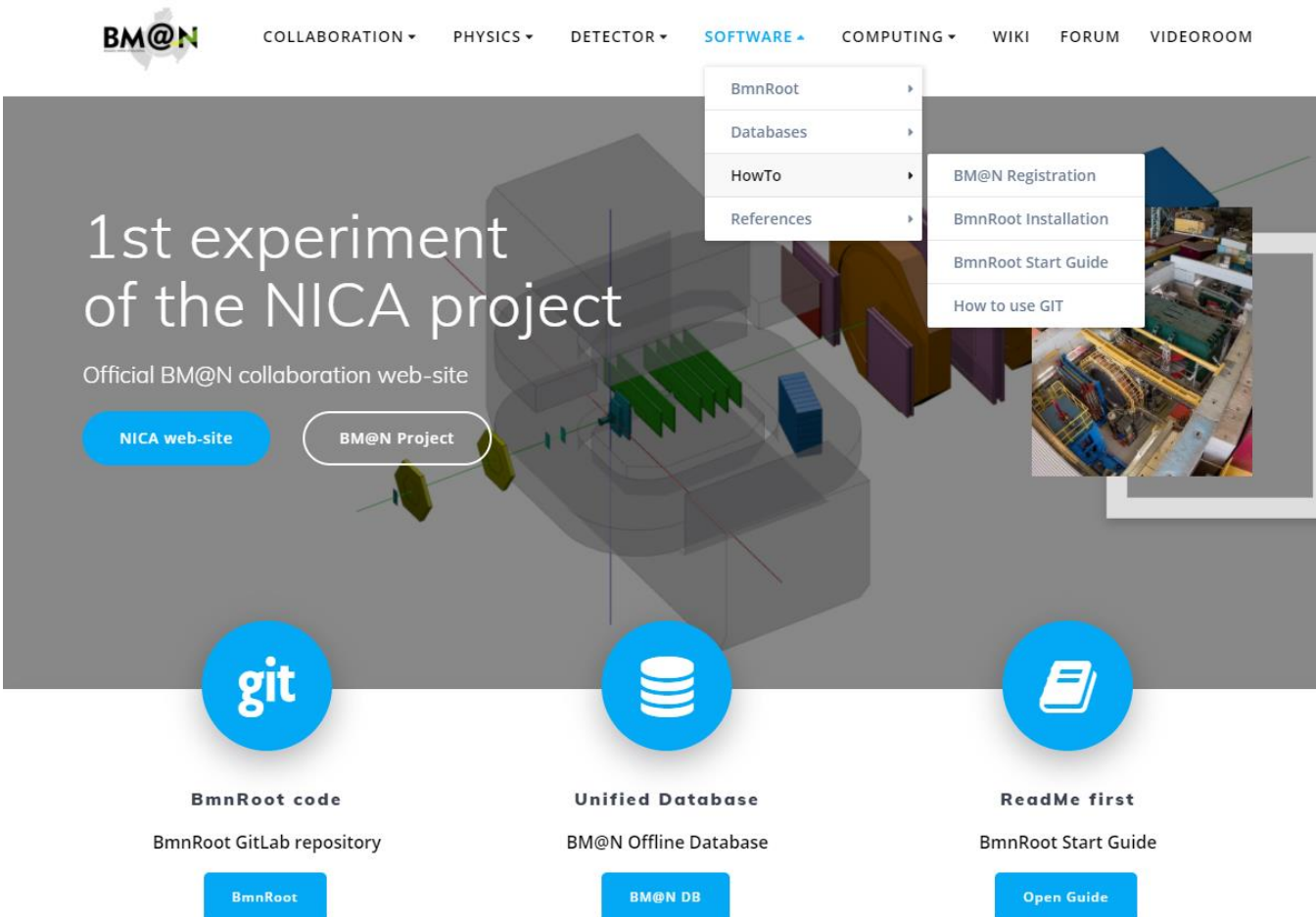
Nuclotron-based Ion Collider fAcility





Web services are mainly deployed on 3 servers on the NICA cluster:

- Web-services and web-sites on NC9
- Freeipa system on NC3
- BM@N DBs on NC13



Website –
bmn.jinr.ru

Platform – WordPress

Architecture –
PHP + MySQL + WP Plugins

Apache with SSL

Information about:

- Collaboration
- Physics
- Detectors
- Software
- Computing
- Web Services

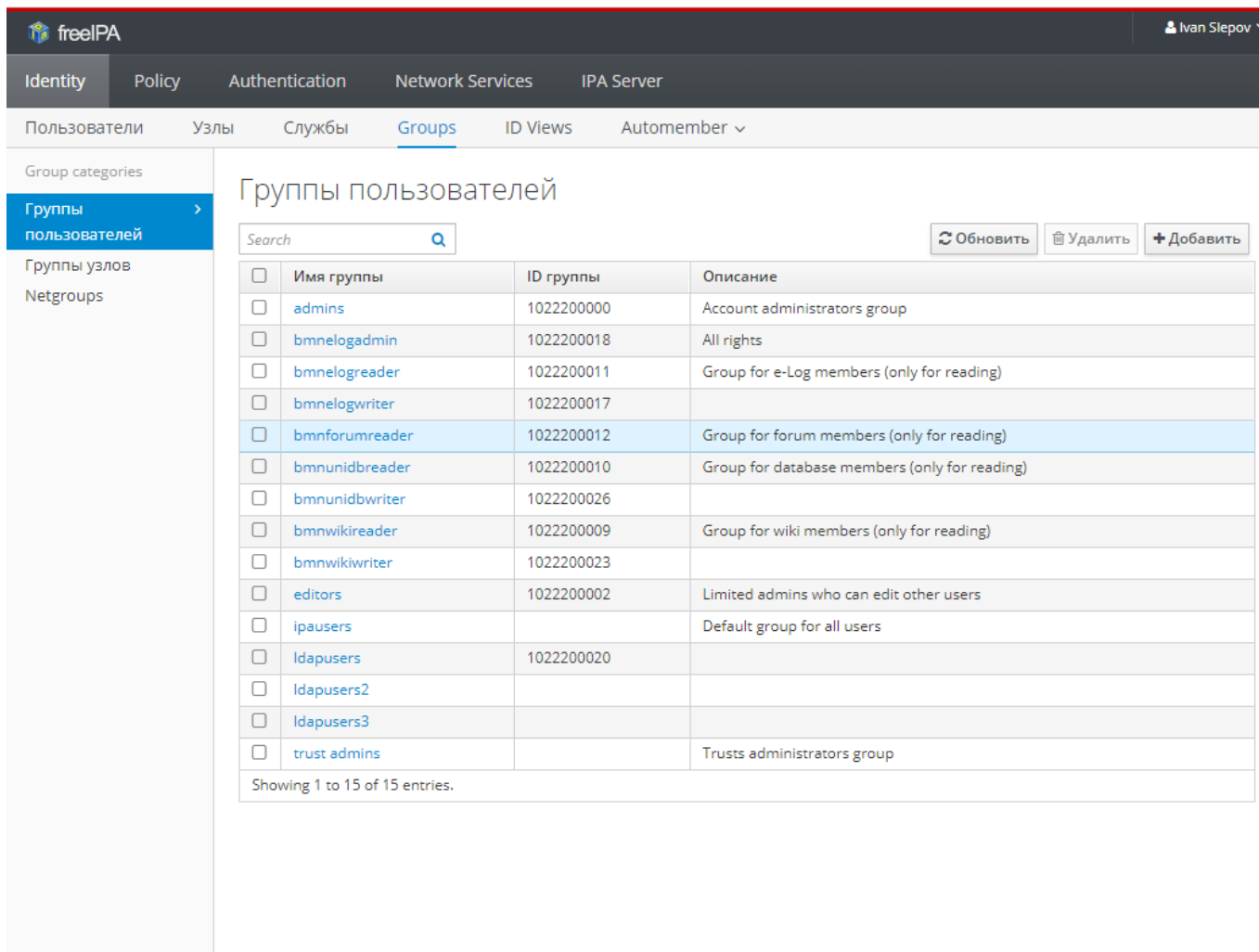
Identity and Authentication service

Website –
bmn-ipa.jinr.ru

Platform – FreeIPA

Stand-alone server for it

Architecture –
bind + sssd + krb5 +
apache with SSL



freelPA Ivan Stepanov

Identity Policy Authentication Network Services IPA Server

Пользователи Узлы Службы Groups ID Views Automember

Group categories

Группы пользователей

Группы узлов

Netgroups

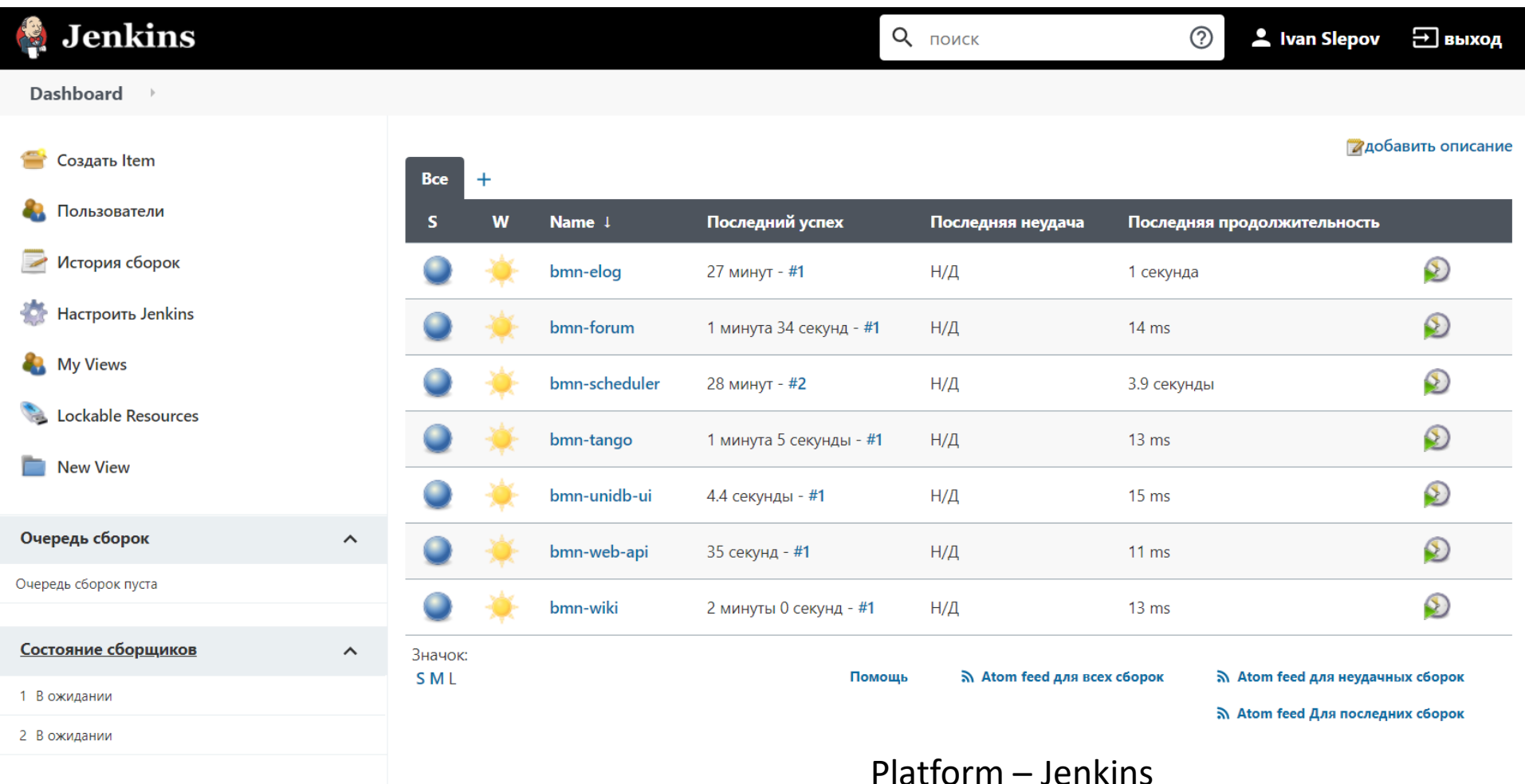
Группы пользователей

Search

Обновить Удалить +Добавить

☐	Имя группы	ID группы	Описание
☐	admins	1022200000	Account administrators group
☐	bmnelogadmin	1022200018	All rights
☐	bmnelogreader	1022200011	Group for e-Log members (only for reading)
☐	bmnelogwriter	1022200017	
☐	bmforumreader	1022200012	Group for forum members (only for reading)
☐	bmunidbreader	1022200010	Group for database members (only for reading)
☐	bmunidbwriter	1022200026	
☐	bmwikiwriter	1022200009	Group for wiki members (only for reading)
☐	bmwikiwriter	1022200023	
☐	editors	1022200002	Limited admins who can edit other users
☐	ipausers		Default group for all users
☐	ldapusers	1022200020	
☐	ldapusers2		
☐	ldapusers3		
☐	trust admins		Trusts administrators group

Showing 1 to 15 of 15 entries.



The screenshot shows the Jenkins Dashboard interface. At the top, there's a navigation bar with the Jenkins logo, a search bar, and user information (Ivan Slepov). The main content area is divided into a left sidebar with navigation links and a main table of build jobs.

Dashboard

Создать Item
Пользователи
История сборок
Настроить Jenkins
My Views
Lockable Resources
New View

Очередь сборок ^
Очередь сборки пуста

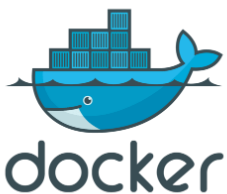
Состояние сборщиков ^
1 В ожидании
2 В ожидании

Table of Build Jobs:

S	W	Name ↓	Последний успех	Последняя неудача	Последняя продолжительность
		bm-n-elog	27 минут - #1	Н/Д	1 секунда
		bm-n-forum	1 минута 34 секунд - #1	Н/Д	14 ms
		bm-n-scheduler	28 минут - #2	Н/Д	3.9 секунды
		bm-n-tango	1 минута 5 секунд - #1	Н/Д	13 ms
		bm-n-unidb-ui	4.4 секунды - #1	Н/Д	15 ms
		bm-n-web-api	35 секунд - #1	Н/Д	11 ms
		bm-n-wiki	2 минуты 0 секунд - #1	Н/Д	13 ms

Значок:
S M L

[Помощь](#) [Atom feed для всех сборок](#) [Atom feed для неудачных сборок](#) [Atom feed Для последних сборок](#)



Website –
bm-n.jinr.ru:8080

Platform – Jenkins

Architecture –
Java



- Home
- LOCAL
- Dashboard
- App Templates
- Stacks
- Services
- Containers
- Images
- Networks
- Volumes
- Configs
- Secrets
- Swarm
- SETTINGS
- Users
- Endpoints
- Registries
- Settings

Container list

Containers

admin [my account](#) [log out](#)

Columns Settings

Start Stop Kill Restart Pause Resume Remove Add container

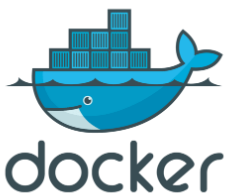
Search...

☐	Name	State Filter	Quick actions	Stack	Image	Created	Published Ports	Ownership
☐	jenkins_jenkins.p9mcg4peiphf9...	running		jenkins	jenkins/jenkins:its	2021-04-19 06:55:54	-	administrators
☐	unidb_web	running		bm-n-unidb	unidb_web	2021-04-09 13:27:32	4200:4200	administrators
☐	web_api	running		bm-n-unidb	web_api	2021-04-09 13:27:32	3000:3000	administrators
☐	bm-n-tango_tango-web_1	running		bm-n-tango	bm-n-tango_tango-web	2021-04-09 07:06:41	8050:8050	administrators
☐	bm-n-forum	running		-	local_discourse/bm-n-forum	2021-03-19 12:39:59	8090:80	administrators
☐	lhptest_wordpress_1	running		lhptest	wordpress:latest	2021-01-13 13:04:06	32811:80	administrators
☐	lhptest_db_1	running		lhptest	mysql:5.7	2021-01-13 13:04:06	-	administrators
☐	portainer	running		-	portainer/portainer-ce	2020-12-09 16:27:36	8000:8000 9000:9000	administrators
☐	xwiki-12.5.1-web	running		xwiki-1251	xwiki:12.5.1-mysql-tomcat	2020-11-11 11:13:31	8081:8080	administrators
☐	xwiki-12.5.1-db	running		xwiki-1251	mysql:5.7	2020-11-11 11:13:28	-	administrators

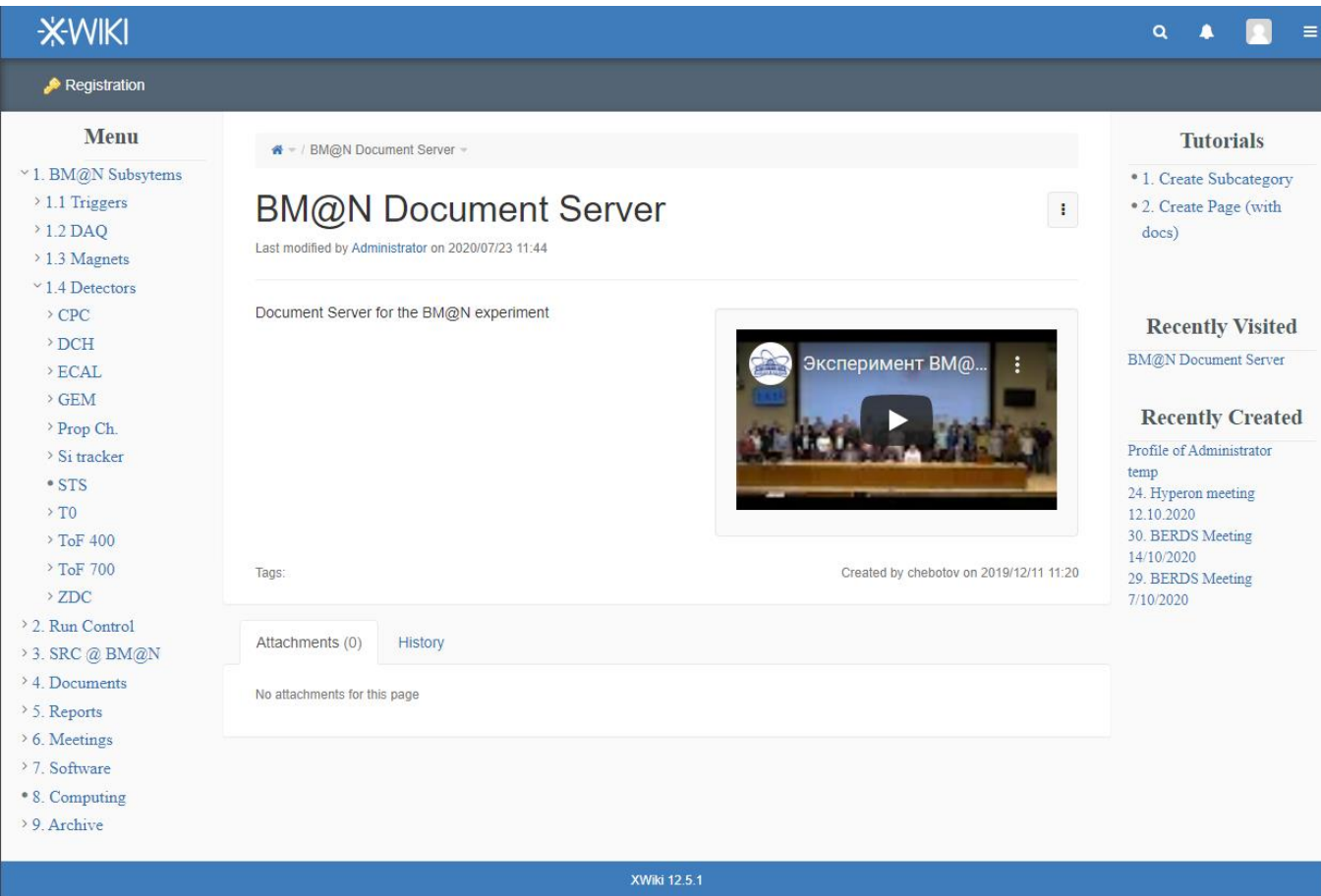
Items per page 10 1 2

Platform – Portainer

Architecture –
Docker container



Website –
bm-n.jinr.ru:9000



The screenshot shows the XWiki interface for the BM@N Document Server. The page title is "BM@N Document Server" and it was last modified by Administrator on 2020/07/23 11:44. The main content area features a video player with the title "Эксперимент BM@N...". The left sidebar contains a "Menu" with a tree structure of categories: 1. BM@N Subsystems (with sub-items 1.1 Triggers, 1.2 DAQ, 1.3 Magnets, 1.4 Detectors), 2. Run Control, 3. SRC @ BM@N, 4. Documents, 5. Reports, 6. Meetings, 7. Software, 8. Computing, and 9. Archive. The right sidebar includes "Tutorials" (Create Subcategory, Create Page), "Recently Visited" (BM@N Document Server), and "Recently Created" (Profile of Administrator, temp, 24. Hyperon meeting, 12.10.2020, 30. BERDS Meeting, 14/10/2020, 29. BERDS Meeting, 7/10/2020). The bottom of the page shows the XWiki version 12.5.1.

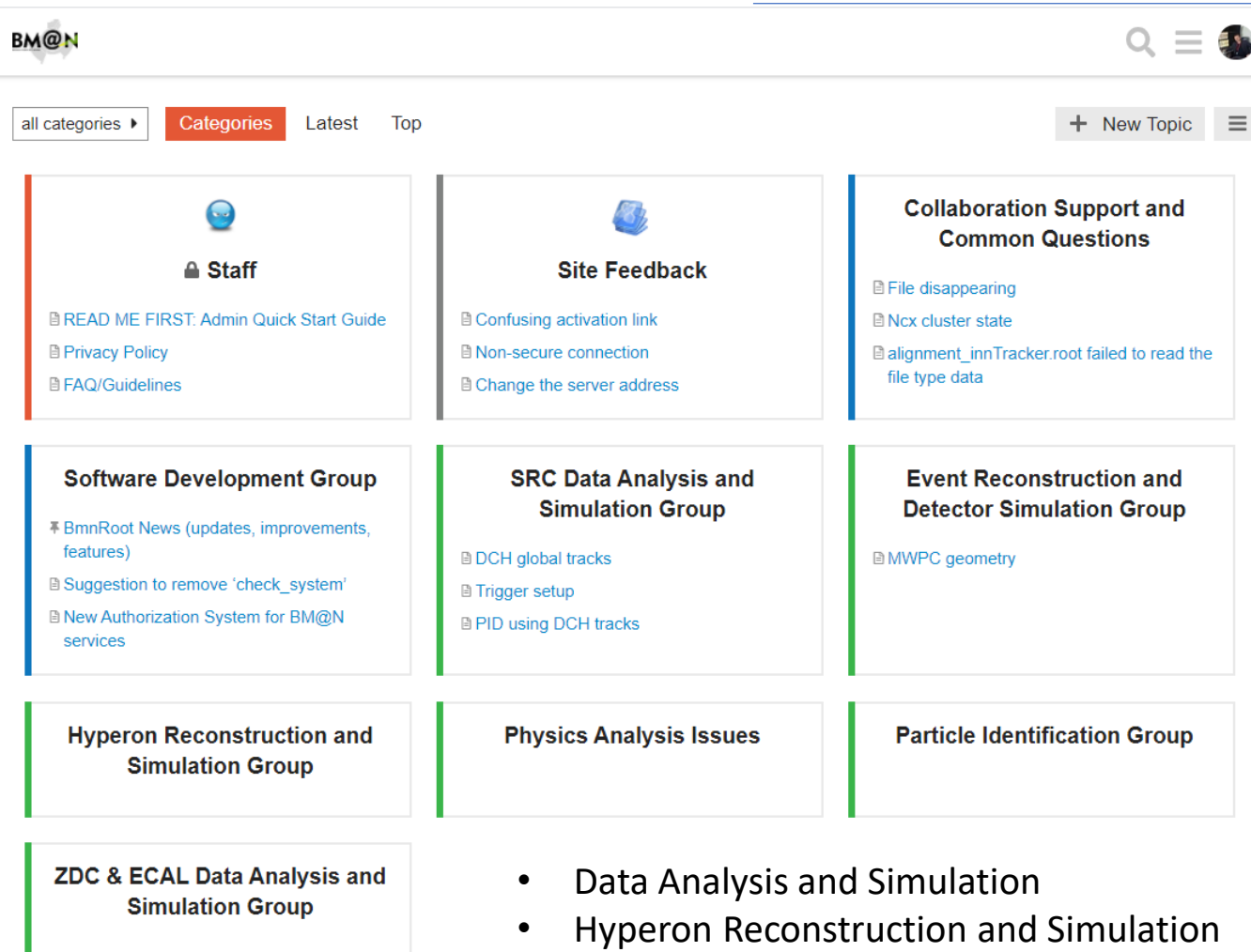
Website –
bm-n-wiki.jinr.ru

Platform – Xwiki

Architecture –
Docker containers:
Xwiki + MySQL

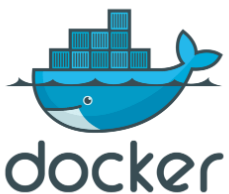
Documents about:

- BM@N Subsystems
- Run Control
- SRC for BM@N
- Comon documents
- Reports
- Software
- Computing
- Archive



The screenshot shows the BM@N Collaboration forum interface. At the top, there is a search bar and a user profile icon. Below the header, there are navigation links: "all categories", "Categories" (highlighted in red), "Latest", and "Top". A "New Topic" button is also visible. The main content area is divided into several sections:

- Staff**: Includes links for "READ ME FIRST: Admin Quick Start Guide", "Privacy Policy", and "FAQ/Guidelines".
- Site Feedback**: Includes links for "Confusing activation link", "Non-secure connection", and "Change the server address".
- Collaboration Support and Common Questions**: Includes links for "File disappearing", "Ncx cluster state", and "alignment_innTracker.root failed to read the file type data".
- Software Development Group**: Includes links for "BmnRoot News (updates, improvements, features)", "Suggestion to remove 'check_system'", and "New Authorization System for BM@N services".
- SRC Data Analysis and Simulation Group**: Includes links for "DCH global tracks", "Trigger setup", and "PID using DCH tracks".
- Event Reconstruction and Detector Simulation Group**: Includes a link for "MWPC geometry".
- Hyperon Reconstruction and Simulation Group**
- Physics Analysis Issues**
- Particle Identification Group**
- ZDC & ECAL Data Analysis and Simulation Group**



- Data Analysis and Simulation
- Hyperon Reconstruction and Simulation
- SRC Data Analysis and Simulation
- Physics Analysis Issues

Website –
bmn-forum.jinr.ru

Platform – Discourse

Architecture –
Docker containers

Redis + sidekiq + Discourse
Nginx + PostgreSQL

Forum groups:

- News
- Support
- Software development
- Event reconstruction
- Particle Identification

Menu Sign Out

BM@N Experiment Runs

Run Selector : *Period 6;* + ✎ -

Period	Run	Start Time	End Time	Beam	Energy, GeV	Target	Voltage, mV	Event Count	File Size, GB	Raw File Path	Geometry
6	1992	2017-03-18 23:55:33	2017-03-19 00:13:31	C	5.14	C	74.493333	57737	5.481	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1992	≡
6	1991	2017-03-18 23:33:48	2017-03-18 23:49:54	C	5.14	C	76.112108	65368	6.170	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1991	≡
6	1990	2017-03-18 23:31:00	2017-03-18 23:31:59	C	5.14	C	76.107547	6607	0.618	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1990	≡
6	1989	2017-03-18 23:26:47	2017-03-18 23:30:20	C	5.14	C	76.102794	29085	2.727	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1989	≡
6	1988	2017-03-18 22:58:22	2017-03-18 23:07:12	C	5.14	C	76.110363	41893	3.940	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1988	≡
6	1987	2017-03-18 22:44:02	2017-03-18 22:56:36	C	5.14	C	76.085479	79187	7.429	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1987	≡
6	1986	2017-03-18 22:40:21	2017-03-18 22:43:33	C	5.14	C	76.066589	24847	2.319	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1986	≡
6	1985	2017-03-18 22:29:55	2017-03-18 22:38:35	C	5.14	C	76.075318	47324	4.434	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1985	≡
6	1983	2017-03-18 22:21:51	2017-03-18 22:27:57	C	5.14	C	76.048702	53616	5.010	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1983	≡
6	1982	2017-03-18 16:56:23	2017-03-18 17:00:00	C	4.5	C	76.921612	5076	0.494	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1982	≡
6	1981	2017-03-18 16:35:49	2017-03-18 16:56:01	C	4.5	C	76.948587	261080	24.644	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1981	≡
6	1980	2017-03-18 16:21:09	2017-03-18 16:35:31	C	4.5	C	76.960804	208949	19.736	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1980	≡
6	1979	2017-03-18 16:06:39	2017-03-18 16:20:51	C	4.5	C	76.996687	209341	19.769	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1979	≡
6	1978	2017-03-18 15:54:32	2017-03-18 16:05:24	C	4.5	C	0.981394	112414	10.568	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1978	≡
6	1976	2017-03-18 13:28:33	2017-03-18 13:47:16	C	4.5	C	76.056474	84310	7.983	/eos/nica/bmn/exp/raw/run6/mpd_run_Glob_1976	≡

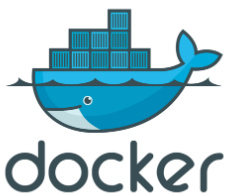
Website –
bmn-unidb.jinr.ru

Platform – Angular

Architecture –
Docker containers

Information about runs:

- Date
- Shift Leader
- Type of record
- Number of run
- Trigger
- DAQ status
- SP-41
- SP-57
- VKM2
- Beam
- Energy
- Target
- Comments



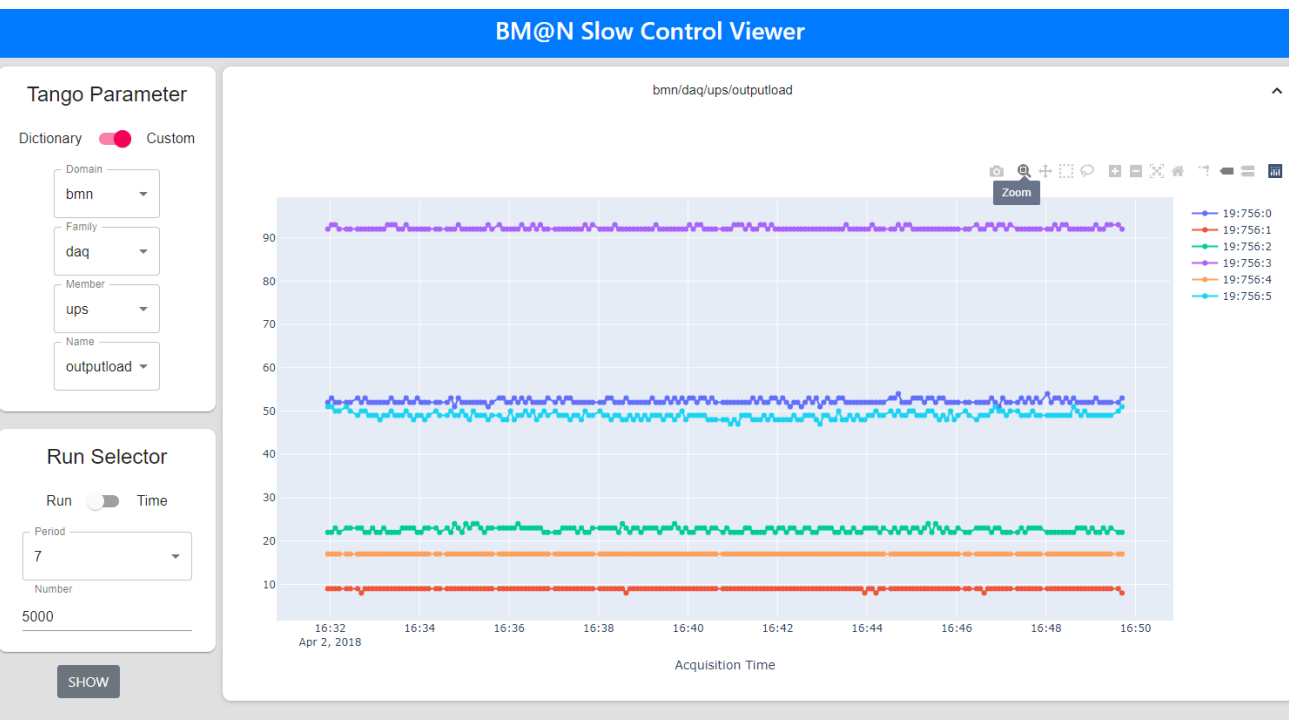
Website –
bm-n-tango.jinr.ru

Platform – self-written

Architecture –
Docker containers with
own launcher

Python + PostgreSQL

Apache Reverse Proxy with
SSL to Docker container



Date	Shift Leader	Type	No Run	Trigger	DAQ Status	SP-41, A	SP-57, A	VKM2, A	Beam	Energy, GeV	Target	Comment
2018-04-05 11:47:06	Rumyantsev	Inform All	5185 per.7	Special Trigger	All	0	0	0	Kr	2.94	Cu (2 mm)	End of the RUN7
2018-04-05 11:09:20	Rumyantsev	New Run	5184 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3 VKM2: I=125A, SP-57=50A, SP41=1250A; 100 k
2018-04-05 08:12:35	Rumyantsev	New Run	5183 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>2 VKM2: I=125A, SP-57=50A, SP41=1250A; 120 k
2018-04-05 07:46:35	Babkin	New Run	5182 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3 VKM2: I=125A, SP-57=50A, SP41=1250A; 208 kev
2018-04-05 07:41:29	Babkin	New Run	5180 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 201 kev
2018-04-05 07:25:08	Babkin	New Run	5179 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 201 kev
2018-04-05 06:01:07	Babkin	New Run	5178 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 201 kev
2018-04-05 05:27:39	Babkin	New Run	5177 per.7	Beam Trigger + Si >3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & Si>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 204 kev
2018-04-05 05:27:06	Babkin	New Run	5176 per.7	Beam Trigger + BD>3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & BD>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 150 kev
2018-04-05 04:47:27	Babkin	New Run	5174 per.7	Beam Trigger + BD>3	All	1250	50	125	Kr	2.94	Cu (2 mm)	Cu target; Tr= BC1 & BC2 & VC & BD>3; VKM2: I=125A, SP-57=50A, SP41=1250A; 213 kev

Website –
bmn-ellog.jinr.ru

Platform – self-written

Architecture –
PHP + PostgreSQL

Information about runs:

- Date
- Shift Leader
- Type of record
- Number of run
- Trigger
- DAQ status
- SP-41
- SP-57
- VKM2
- Beam
- Energy
- Target
- Comments

NICA-Scheduler Scheme Configurator [Documentation](#)

[Load XML Scheme](#) No file loaded [Download XML Scheme](#)

Global Job Scheme + Job

✗ [Job]: default + Macro

✗ [Macro]: + File

✗ [Job]: new job + Macro

✗ [Macro]: + File

Job Configuration

Name*
new job

Batch*
SGE
SLURM
TORQUE

Run Configuration

Mode*
local

CPU Count*
2

Configuration File Path

▼ Advanced Parameters

Queue

Priority

Log File Path

Hosts

Website –
bmn-scheduler.jinr.ru

Platform – self-written

Architecture –
HTML + JavaScript

Thank you for your attention!