

Joint Institute for Nuclear Research

Document Management Service

Ivan Sokolov*, Nikita Balashov

17 December 2024



- Scientific groups collaborate on various types of documents
 - Articles
 - Abstracts
 - Presentations
 - Reports, etc
- Common challenges of collaborative work
 - Organizing safe and structured documents storage
 - Tracking changes of documents
 - Restricting access to documents
 - Sharing of documents
- Many scientific projects generate a significant amount of documents (meta-information + files)



Background and Motivation



- Scientific communities use various software tools for document storage and collaboration
 - DocDB
 - Xwiki
 - CERN Document Server, etc.
- Several **independent** instances of the DocDB system are deployed at JINR
 - BM@N
 - Baikal-GVD
 - Shared instance for Neutrino projects at JINR
 - Accelerator Division No.1 of the VBLHEP accelerator complex
- Experience with these systems has shown
 - Not fully met requirements:
 - Functional
 - Security and reliability
 - System support and improvement are complex

Document Database

[DocDB Home] [Administer] [New] [Search] [Last 20 Days] [List Authors] [List Topics] [List Events] [Help]

Administer DocDB

Create or change documents or other information

Search for (Advanced)

Show Neutrino-doc-# -v

Show documents modified in the last days

Calendar of events or today's events

List:

- ◊ [Authors](#)
- ◊ [All documents](#)
- ◊ [Topics](#)
- ◊ [Groups](#)
- ◊ [Keywords](#)

XWIKI

Registration BM@N Logbook BM@N Forum BM@N Database

Menu

- > 1. BM@N Subsystems
- > 2. BM@N Runs
- > 3. SRC @ BM@N
- > 4. Documents
 - > 4.1 BM@N Management
 - > 4.2 Project
 - > 4.3 BM@N CDR
 - > 4.4 BM@N TDR
 - 4.5 Articles
 - > 4.6 Internal Notes
 - 4.7 Theses
 - > 4.8 Students
 - > 4.9 BM@N Setup
- > 5. Reports
- > 6. Meetings
- > 7. Software
- > 8. Computing

4.5 Articles

Last modified by Alexander Chebotov on 2023/08/01 07:52

Attachments

Year	Authors	Journal	Title of Article
2020	A. Galavanov, M. Kapishin, V. Karjavine, S. Khabarov, E. Kulish, V. Lenivenko, A. Makarkin, A. Maksymchuk, G. Pokatashkin, I. Ruffanov, S. Vasiliev	IOP	Large area BM@N GEM detectors (PDF)
2020	3. A. Galavanov, M. Kapishin, V. Karjavine, S. Khabarov, Y. Kirushin, E. Kulish, N. Kuzmin, V. Lenivenko, A. Makarkin, A. Maksymchuk, S. Pokatashkin, I. Ruffanov, S. Vasiliev	IOP	Status of the GEM/CSC tracking system of the BM@N experiment (PDF)

Tutorials

- 1. Create Subcategory
- 2. Create Page (with docs)

Recently Created

- 12. BERDS Meeting 24/04/2024
- Profile of Dmitry Nikitin 11. BERDS Meeting 10/04/2024
- 10. BERDS Meeting 03/04/2024
- 09. BERDS Meeting 27/03/2024

Recently Visited

- 4. Documents
- 1. BM@N Subsystems
- 6.1 Collaboration

Project Overview

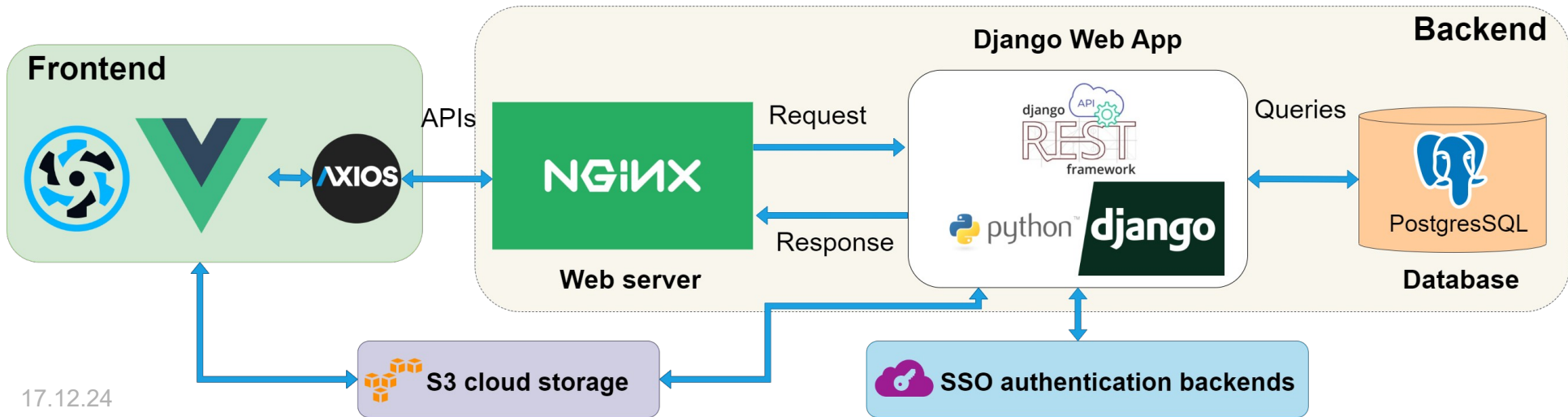


- The goal of the project is to provide a centralized, multi-community documentation storage service for collaborative activities
 - Implement the Core Features of the DocDB system
 - Enhance the access rights system to support groups and projects with flexible access control
- Specific requests from collaborations:
 - Per-document editors (BM@N)
 - Document discussion system (BM@N, SPD)
 - Custom meta-data fields in documents (BM@N)
 - Built-in event calendar (Baikal-GVD, Neutrino projects at JINR)
 - Notification system (All groups)
 - Document review process (BM@N)

SciDocsCloud Software Platform



- Development of a more secure, reliable and feature-rich software platform
 - Utilizing modern software development tools
 - Leveraging our experience with DocDB system
 - Supporting LocalFS and S3-compatible Cloud storage backends for document files
 - Supporting Single-Sign-On (SSO) authentication
 - Free and open-source software
- Document Management Service (DocMS) for JINR research groups is based on this platform



Organizational Structure



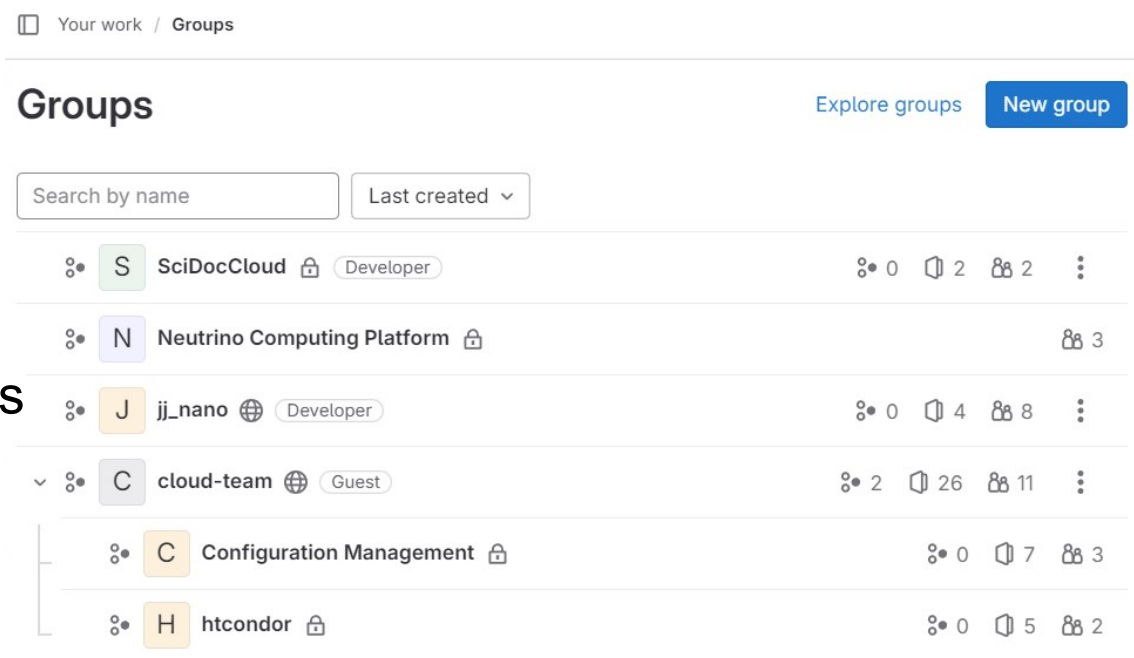
- **Hierarchical organization**
groups / subgroups → *projects* → *documents*
- The idea comes from GitLab
 - Using GitLab terminology
 - Project ≈ GitLab project
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A screenshot of a web interface showing the organizational structure of the Meshcheryakov Laboratory of Information Technologies (MLIT). The interface is divided into two main sections. On the left is a navigation sidebar with a green logo at the top, followed by a language dropdown set to 'EN', a home icon, and a list of menu items: 'MLIT', 'Manage', 'Topics', 'Keywords', 'Document Types', and 'Settings'. The main content area on the right is titled 'MLIT' with 'Group ID: 12' below it. It features a blue logo with 'MLIT' and 'JINR' text, and two buttons: '+ NEW SUBGROUP' and '+ NEW PROJECT'. Below these is the text 'Meshcheryakov Laboratory of Information Technologies (MLIT)'. A section titled 'Subgroups and projects' lists several subgroups: 'Cloud Team' (with 0 members, 2 projects, and 3 users), 'JINR Cloud', 'SciDocsCloud', and 'MICC'. Each subgroup has a small icon and a list icon to its left.

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The screenshot shows the GitLab 'Groups' page. At the top, there is a breadcrumb 'Your work / Groups' and a 'New group' button. Below the title 'Groups', there are search and filter options: 'Search by name' and 'Last created'. The main content is a list of groups with their details:

Group Name	Role	Members	Projects	Repositories
SciDocCloud	Developer	0	2	2
Neutrino Computing Platform				3
jj_nano	Developer	0	4	8
cloud-team	Guest	2	26	11
Configuration Management		0	7	3
htcondor		0	5	2

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The screenshot shows a web interface for the 'Accelerator Department' project. The breadcrumb path is 'NICA > Accelerator Department'. The page title is 'Accelerator Department' with 'Project ID: 10'. A 'NEW DOCUMENT' button is visible. Below the title, there are filter controls for 'Hide Column Filter', 'Keywords', 'Document Type', 'Topics', 'Description', 'Abstract', and 'Authors'. A table lists documents with columns for '#', 'Title', 'Topics', 'Authors', and 'Last Update'. The table contains four rows of document entries.

#	Title	Topics	Authors	Last Update
70-v1	Polarized Light Ions in NICA	Beam cooling Beam dynamics Electronics & feedbacks Collider Engineering	Валерий Анатольевич Лебедев	2 minutes ago
71-v0	Unity of strong science: CP results in Minsk			5 days ago
73-v2	S-Cooling @ NICASoftware concept and requirements	Beam cooling Beam instrumentation Collider Software	Владимир Сергеевич Шпаков	26 days ago
36-v9	Lectures: Colliders	Beam dynamics Beam optics Collider	Валерий Анатольевич Лебедев	about 2 months ago

Accelerator applications

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The screenshot shows a web application interface. On the left is a sidebar menu with options: Accelerator Department, Manage, Members (selected), Topics, Keywords, Document Types, and Settings. The main content area is titled 'Project Members' and includes a sub-header 'You can invite a new member to Accelerator Department' with a '+ INVITE MEMBERS' button. Below this is a table of members:

Account	Source	Role
Ivan Sokolov It's you isokolov@jinr.ru		OWNER
Nikita Balashov balashov@jinr.ru	Direct member	Author
Valerij Lebedev valebedev@jinr.ru		OWNER
Oksana Timoshenko timoshenko@jinr.ru	Direct member	Author
Evgenij Gorbachev egorbe@jinr.ru	Direct member	Author
Roman Pivin	Direct member	Author

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The screenshot shows a web application interface. On the left is a sidebar menu with the following items: 'Accelerator Department', 'Manage', 'Topics' (highlighted with an orange box), 'Keywords', 'Document Types', and 'Settings'. The main content area is titled 'Topics' and includes a '+ NEW TOPIC' button and a search bar. Below the search bar is a table with the following data:

#	Topic	Description
102	Accelerator applications Accelerator...	Применение ускорителей
96	Beam cooling Accelerator...	Охлаждение пучка
93	Beam dynamics Accelerator...	Динамика пучка
100	Beam instrumentation Accelerator...	Диагностики пучка
94	Beam optics Accelerator...	Пучковая оптика

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The screenshot displays a document management interface for a document titled "Development of a document database...". The interface includes a breadcrumb trail: MLIT > Cloud Team > SciDocsCloud > scidocscloud-doc-1. A blue "UPDATE DOCUMENT" button is visible. The document is associated with "SciDocsCloud Document 1-v14 (latest)".

Document Title: Development of a document database platform "SciDocCloud"

Keywords: Information system, IT, service, web

Description: Статья для публикации в PEPAN

Authors: Ivan Alexandrovich Sokolov (isokolov@jinr.ru), Nikita Alexandrovich Balashov (balashov@jinr.ru)

Files (1): Sokolov_Balashov_SciDocCloud_Article_v3.docx (260.14 KB, Document type)

Notes and Changes: Статья принята на печать. Ожидаем публикации

Editors (4): Fraid Alexxx, Sokolov Ivan, Testov Ivan

Document #: scidocscloud-doc-1-v14 (latest)

Submitted by: Ivan Sokolov

Updated by: Ivan Sokolov

Document Created: 23 Nov 2024, 17:41

Revised: 10 Dec 2024, 16:59


Latest Version: scidocscloud-doc-1-v14

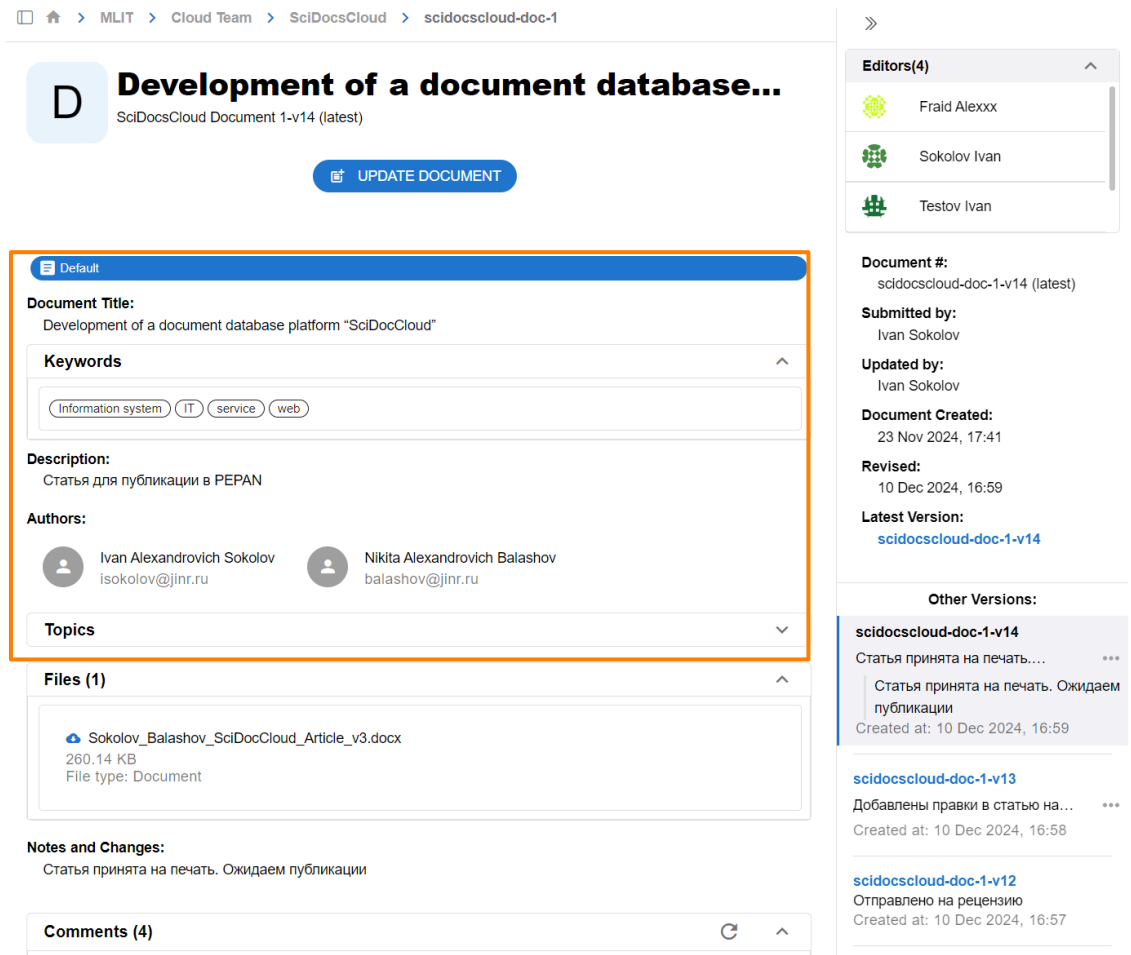
Other Versions:

- scidocscloud-doc-1-v14: Статья принята на печать... (Created at: 10 Dec 2024, 16:59)
- scidocscloud-doc-1-v13: Добавлены правки в статью на... (Created at: 10 Dec 2024, 16:58)
- scidocscloud-doc-1-v12: Отправлено на рецензию (Created at: 10 Dec 2024, 16:57)

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The screenshot displays the SciDocCloud interface for a document titled "Development of a document database...". The document is associated with the project "SciDocCloud Document 1-v14 (latest)". A blue "UPDATE DOCUMENT" button is visible. The document form includes the following fields:

- Document Title:** Development of a document database platform "SciDocCloud"
- Keywords:** Information system, IT, service, web
- Description:** Статья для публикации в РЭПАН
- Authors:** Ivan Alexandrovich Sokolov (isokolov@jinr.ru) and Nikita Alexandrovich Balashov (balashov@jinr.ru)
- Topics:** (empty)
- Files (1):** Sokolov_Balashov_SciDocCloud_Article_v3.docx (260.14 KB, Document type)
- Notes and Changes:** Статья принята на печать. Ожидаем публикации
- Comments (4):** (empty)

On the right side, the document's metadata is shown:

- Editors(4):** Fraid Alexxx, Sokolov Ivan, Testov Ivan
- Document #:** scidocscldoc-doc-1-v14 (latest)
- Submitted by:** Ivan Sokolov
- Updated by:** Ivan Sokolov
- Document Created:** 23 Nov 2024, 17:41
- Revised:** 10 Dec 2024, 16:59
- Latest Version:** scidocscldoc-1-v14

Below the metadata, there is a section for "Other Versions":

- scidocscldoc-1-v14:** Статья принята на печать... (Created at: 10 Dec 2024, 16:59)
- scidocscldoc-1-v13:** Добавлены правки в статью на... (Created at: 10 Dec 2024, 16:58)
- scidocscldoc-1-v12:** Отправлено на рецензию (Created at: 10 Dec 2024, 16:57)

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The screenshot displays a document management interface for a document titled "Development of a document database...". The interface includes a breadcrumb trail (MLIT > Cloud Team > SciDocsCloud > scidocscloud-doc-1), a document title, a "UPDATE DOCUMENT" button, and a "Default" tab. The document title is "Development of a document database platform 'SciDocCloud'". The keywords are "Information system", "IT", "service", and "web". The description is "Статья для публикации в PEPAN". The authors are Ivan Alexandrovich Sokolov and Nikita Alexandrovich Balashov. The topics are listed under a dropdown menu. The "Files (1)" section is highlighted with an orange box and contains a file named "Sokolov_Balashov_SciDocCloud_Article_v3.docx" (260.14 KB, File type: Document). The "Notes and Changes" section shows "Статья принята на печать. Ожидаем публикации". The "Comments (4)" section is also visible. On the right side, there is a sidebar with "Editors(4)" (Fraid Alexxx, Sokolov Ivan, Testov Ivan), "Document #:" (scidocscloud-doc-1-v14 (latest)), "Submitted by:" (Ivan Sokolov), "Updated by:" (Ivan Sokolov), "Document Created:" (23 Nov 2024, 17:41), "Revised:" (10 Dec 2024, 16:59), "Latest Version:" (scidocscloud-doc-1-v14), and "Other Versions:" (scidocscloud-doc-1-v14, scidocscloud-doc-1-v13, scidocscloud-doc-1-v12).

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The screenshot displays a document management interface for a document titled "Development of a document database...". The interface includes a breadcrumb trail (MLIT > Cloud Team > SciDocsCloud > scidocscloud-doc-1), a document ID (D), and a "UPDATE DOCUMENT" button. The document title is "Development of a document database platform 'SciDocCloud'". The keywords are "Information system", "IT", "service", and "web". The description is "Статья для публикации в PEPAN". The authors are Ivan Alexandrovich Sokolov and Nikita Alexandrovich Balashov. The document has one file attached: "Sokolov_Balashov_SciDocCloud_Article_v3.docx". The document is in a "Default" state. The interface also shows a list of editors (Fraid Alexxx, Sokolov Ivan, Testov Ivan), document metadata (Document #, Submitted by, Updated by, Document Created, Revised, Latest Version), and a list of other versions (scidocscloud-doc-1-v14, scidocscloud-doc-1-v13, scidocscloud-doc-1-v12). An orange arrow points from the "Version control" text in the list to the "Other Versions" section in the screenshot.

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The screenshot displays a document management interface for a document titled "Development of a document database...". The interface includes a breadcrumb trail: MLIT > Cloud Team > SciDocsCloud > scidocscloud-doc-1. A blue button labeled "UPDATE DOCUMENT" is visible. The document title is "Development of a document database platform 'SciDocCloud'". The keywords are "Information system", "IT", "service", and "web". The description is "Статья для публикации в PEPAN". The authors are Ivan Alexandrovich Sokolov and Nikita Alexandrovich Balashov. The document has one file attached: "Sokolov_Balashov_SciDocCloud_Article_v3.docx". The document is in a state of "Статья принята на печать. Ожидаем публикации". The interface also shows a list of editors (4) and other versions of the document.

Editors(4)

- Fraid Alexxx
- Sokolov Ivan
- Testov Ivan

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Updated by: Ivan Sokolov

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 - **Comments**

The screenshot displays a 'Comments (6)' section. The first comment is from Ivan Sokolov, posted 5 months ago, with the text 'Добавил презентацию и заметки'. Below it, a summary indicates '3 REPLIES' with the last reply by Nikita Balashov. The second comment is from Konstantin Gercenberger, also 5 months ago, with the text: 'Так как у меня будет суммарный доклад по проведенным работам просьба присылать свои презентации мне, как можно раньше, чтобы у меня было время спокойно сформировать свою презентацию. Крайне желательно не позже этих выходных. Можно присылать черновые еще версии, чтобы я составил свой доклад, а потом уже подменил итоговыми версиями слайдов'. Below this comment is a 'COLLAPSE REPLIES' button. The third comment is from Ivan Sokolov, 5 months ago, with the text 'Хорошо'. At the bottom of the screenshot is a rich text editor with a toolbar containing icons for bold, italic, link, underline, text color, font color, list, and indent, followed by a text input field with the placeholder 'Write a comment here...' and a blue 'COMMENT' button.

Role-based Access Model



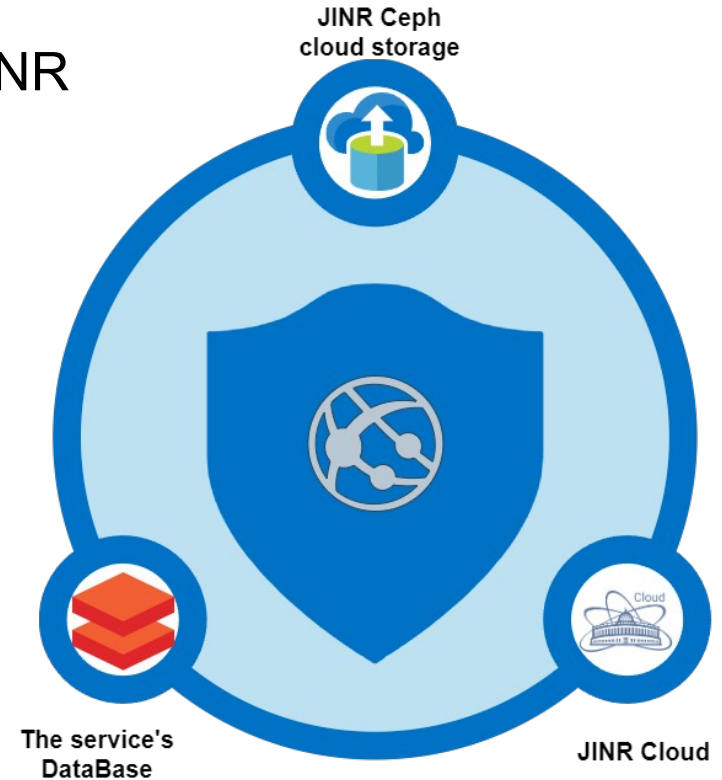
- Access restriction to groups or projects based on roles similar to GitLab
- Each member is assigned a role, which determines what they can do in the project
- Currently implemented roles: Owner, Maintainer, Author, and Viewer
- Nested groups membership

Action	Viewer	Author	Maintainer	Owner
View all	+	+	+	+
Use comment block		+	+	+
Create document		+	+	+
Update document		+ -	+ -	+
Create group			+	+
Create project			+	+
Create subgroup			+	+
Manage members			+	+
Manage topics			+	+
Manage keywords			+	+
Manage document type			+	+
Edit group			+	+
Edit project			+	+
Remove project				+
Remove group				+
Remove document				+
Manage editor list				+

Document Management Service (DocMS)



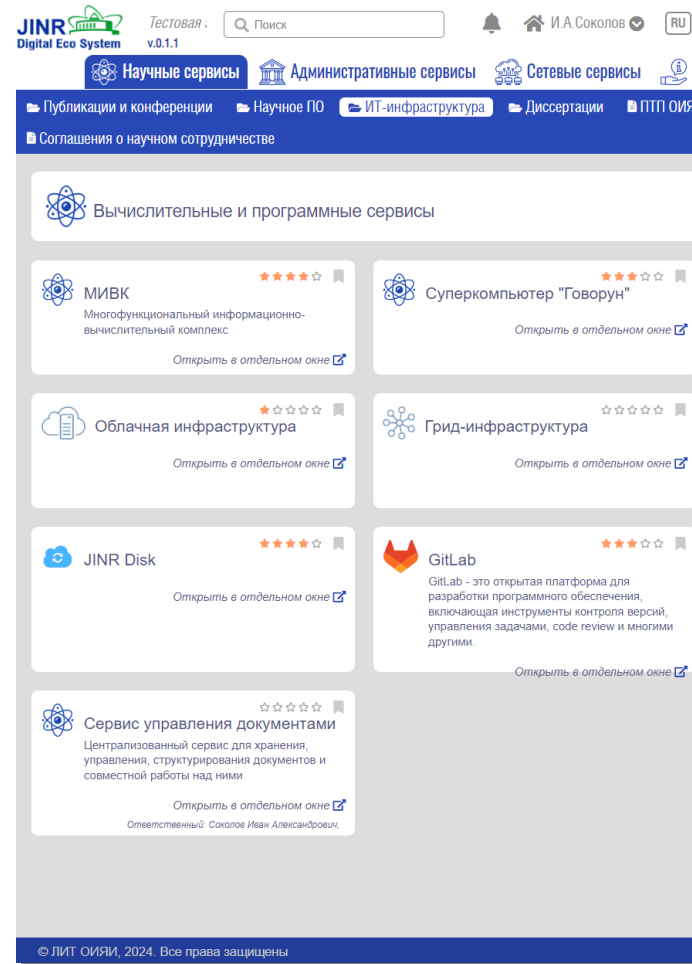
- The platform-based service has been deployed at JINR
→ **Document Management Service (DocMS)**
- **DocMS** – centralized service for storing, managing, organizing, and collaborating on documents
 - JINR Cloud storage
 - Triple replication
 - Easily scalable
 - Nightly Backups for Service Meta Information Database
 - Deployed on a VM in the JINR Cloud
 - Quick recovery after hardware failure



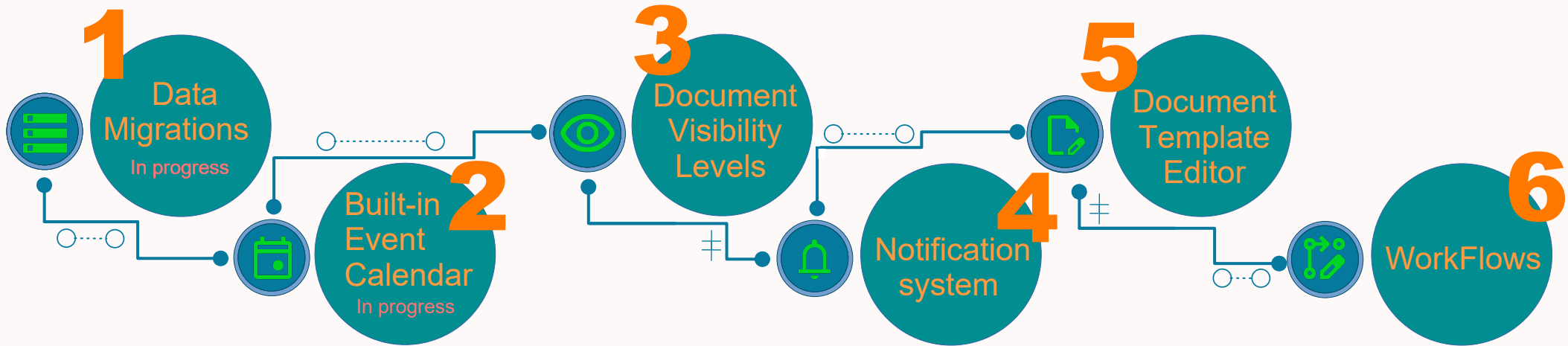
Document Management Service (DocMS)



- Integrated into the *JINR Digital Ecosystem*
- Available to JINR employees and collaborators via JINR Single Sign-On (SSO) accounts at docs.jinr.ru or the *JINR Digital Eco System*
- Actively used and tested by the BM@N collaboration
- Document and user migration mechanism from DocDB is ready for the Accelerator Division
- Upcoming migrations: SPD, Baikal-GVD and Neutrino projects at JINR




Road Map



Conclusion and FeedBack



- The **SciDocsCloud** platform is free and open-source software for storing and tracking of documents
- **The Document Management Service** for JINR research groups has been deployed based on this platform
- The service is available to JINR employees and collaborators  docs.jinr.ru and the [JINR Digital Eco System](#)
- The migration of existing JINR DocDB instances to the DocMS → *in progress*
- For questions, bug reports, or suggestions contact us at docs@jinr.ru





- **Публикации**

- > Balashov, N., **Sokolov, I.** Development of a Document Database Platform «SciDocCloud». Phys. Part. Nuclei – Vol. 55. – 2024. – P. 479–481

- > Balashov N.A., **Sokolov I.A.** Development of a document database platform SciDocCloud, Физика элементарных частиц и атомного ядра – 2024, Т. 55, Вып. 3. С. 624

- > Balashov N.A., **Sokolov I.A.** Прототип сервиса хранения научной документации «SciDoc sCloud», Information and Telecommunication Technologies and Mathematical Modeling of High-Tech Systems 2024 (ITTMM 2024)/Book of Abstracts– 2024, С. 4

- **Личный вклад**

Представленная платформа разрабатывается с «чистого листа». Являюсь основным проектировщиком, аналитиком, дизайнером и разработчиком. Мой вклад включает создание архитектуры платформы, разработку её функционала, проектирование интерфейсов и организацию взаимодействия с пользователями. Провожу анализ требований и обеспечиваю интеграцию с другими системами и сервисами ОИЯИ. Весь процесс разработки сопровождается тестированием и доработками с учётом отзывов пользователей и запросов от участников коллабораций





Additional Slides

Example of Organizational Structure in Platform

