



Joint Institute for Nuclear Research

Storage Service for Scientific Documentation

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29 October 2024

Introduction



- 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]

Instructions

[Your Account](#)

[Preferences](#)

[Apply to Groups](#)

[Limit Groups](#)

[DocDB Statistics](#)

[About DocDB](#)

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. Pokatasshkin, 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. Pokatasshkin, 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

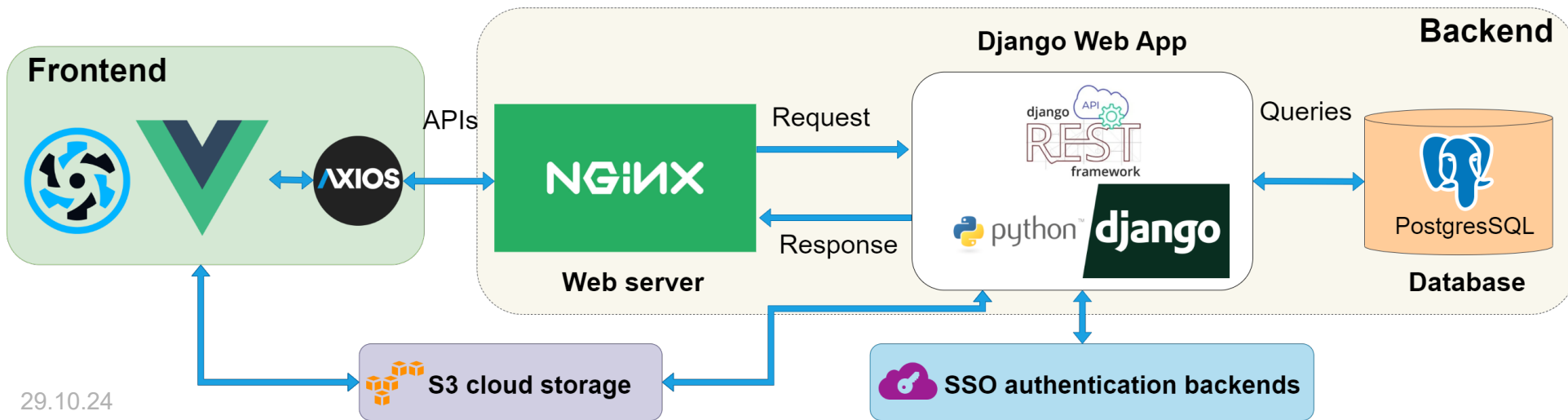


- The goal of the project is to provide a centralized, multi-community documentation storage service for collaborative activities
 - Implement the Core Features of the DocDB system
 - Enhance the access rights system to support groups and projects with flexible access control
- Specific requests from collaborations for organization of cooperation on publication activities and reports
 - Per-document editors
 - Document discussion system
 - Custom meta-data fields in documents
 - Built-in event calendar
 - Notification system
 - Document review process

SciDocsCloud Software Platform



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



Organizational Structure



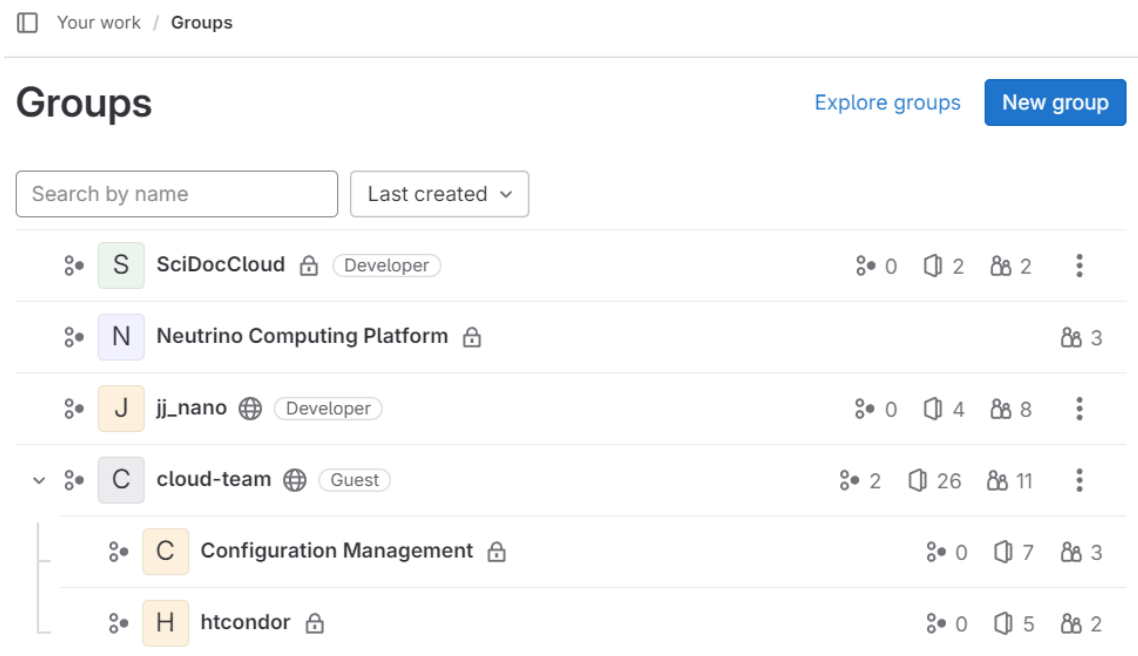
- **Hierarchical organization**
groups / subgroups → *projects* → *documents*
- The idea comes from GitLab
 - Using GitLab terminology
 - Project ≈ GitLab project
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- Document as an abstract entity
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 - Collection of files
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The screenshot displays the MLIT organizational structure interface. On the left is a navigation sidebar with a search icon, a language dropdown set to 'EN', and a list of menu items: 'MLIT', 'Manage', 'Topics', 'Keywords', 'Document Types', and 'Settings'. The main content area shows the breadcrumb 'JINR > MLIT', the MLIT logo, and the text 'MLIT Group ID: 16'. Below this are two buttons: '+ NEW SUBGROUP' and '+ NEW PROJECT'. A section titled 'Subgroups and projects' lists four subgroups: 'Cloud Team' (1 document, 0 projects, 6 users), 'SciDocsCloud' (0 documents, 1 project, 6 users), 'MICC', and 'Management' (0 documents, 0 projects, 6 users). Each subgroup entry includes a dropdown arrow, a plus icon, a letter icon, the subgroup name, and icons for document count, project count, and user count.

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The screenshot shows the 'Groups' page in GitLab. 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 names, roles, and statistics. The groups listed are:

Group Name	Role	Members	Projects	Subgroups
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 displays the BM@N project interface. The left sidebar contains navigation options: Manage, Topics, Keywords, Document Types, and Settings. The main content area shows the project name 'BM@N' with ID 183 and a '+ NEW DOCUMENT' button. Below this is a filter bar with options for Hide Column Filter, #, Keywords, Document Type, Topics, Description, Abstract, Authors, Created at, Last Update, and Template. A table lists documents with columns for #, Title, Topics, Authors, and Last Update. The table contains three entries:

#	Title	Topics	Authors	Last Update
66-v4	Beam Lifetime and Beam Collimation in NICA Collider Operating in Heavy Ion Mode	Beam cooling, Beam dynamics, Collider, Machine detector interface, Safety, Vacuum	Сергей Иванович Плучков	3 minutes ago
69-v0	ТЕХНИЧЕСКИЙ ПРОЕКТ УСКОРИТЕЛЬНОГО КОМПЛЕКСА NICA, Том IV	Beam instrumentation, Collider, Cryogenics, Design reports, Engineering, Safety	Григорий Владимирович Трубников	23 days ago
68-v0	Present and approved accelerator facilities	Beam optics, Collider, Linac, Synchrotrons	Валерий Анатольевич Лебедев	about 1 month ago

Records per page: 20 1-20 of 65

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The screenshot shows a web interface for managing project members. The breadcrumb navigation is: Home > NICA > Acceleration division > Members. The page title is "Project Members" with a subtitle "You can invite a new member to Acceleration division". There is a blue button labeled "+ INVITE MEMBERS". Below this is a table of members.

Account	Source	Role
Ivan Sokolov <small>It's you</small> isokolov@jlnr.ru		OWNER
Nikita Balashov balashov@jlnr.ru	Direct member	Author
Valerij Lebedev	Direct member	Viewer
Oksana Timoshenko	Direct member	Maintainer

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The screenshot shows a web application interface. On the left is a sidebar menu with a top navigation bar containing a logo, 'EN', and a square icon. The sidebar menu items are: 'R Reports', 'Manage', 'Topics' (highlighted with an orange border), 'Keywords', 'Document Types', and 'Settings'. The main content area has a breadcrumb trail: 'JINR > MLIT > Cloud Team > SciDocsCloud > Reports > Topics'. Below the breadcrumb is a blue header for 'Topics' with a tag icon and the text 'Topics can be applied to documents'. A '+ NEW TOPIC' button is present. A search bar is located below the header. The main content is a table with columns '#', 'Topic', and 'Description'. The table contains three rows of data, each with a topic tag and a 'Reports' icon. At the bottom right, it says 'Records per page: 20' and '1-3 of 3'.

#	Topic	Description
1081	Cloud service Reports	
1083	Infrastructure Reports	
1082	Script Reports	

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The screenshot displays a web interface for a document management system. The main content area shows details for a document titled "Storage Service for Scientific Documentation". It includes a "Default" tab, a "Document Title" dropdown, a "Keywords" field, a "Description" field, and a list of "Authors" (Nikita Alexandrovich Balashov and Ivan Alexandrovich Sokolov). Below this are sections for "Topics" (Cloud service), "Files (2)" (including a document and an image), and "Comments (6)". A comment from Ivan Sokolov is visible, stating "Добавил презентацию и заметки".

On the right side, there is a sidebar with the following information:

- Editors(4)**: Sokolov Ivan, Gerckenberger Konstantin, Balashov Nikita
- Document #:** reports-doc-75-v11 (latest)
- Submitted by:** Ivan Sokolov
- Updated by:** Ivan Sokolov
- Document Created:** 10 May 2024, 18:09
- Revised:** 11 Oct 2024, 15:35
- Latest Version:** reports-doc-75-v11
- Other Versions:**
 - reports-doc-75-v10 (Created at: 11 Oct 2024, 15:33)
 - reports-doc-75-v9 (Created at: 11 Oct 2024, 15:25)
 - reports-doc-75-v8 (Created at: 11 Oct 2024, 15:22)
 - reports-doc-75-v7 (Created at: 11 Oct 2024, 15:21)
 - reports-doc-75-v6 (Created at: 11 Oct 2024, 13:43)
 - reports-doc-75-v5 (Created at: 10 May 2024, 18:35)

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The screenshot shows a web interface for a document titled "Storage Service for Scientific Documentation". The interface is organized into several sections:

- Editors (4):** Sokolov Ivan, Gerckenberger Konstantin, Balashov Nikita.
- Document #:** reports-doc-75-v11 (latest)
- Submitted by:** Ivan Sokolov
- Updated by:** Ivan Sokolov
- Document Created:** 10 May 2024, 18:09
- Revised:** 11 Oct 2024, 15:35
- Latest Version:** reports-doc-75-v11
- Other Versions:** A list of previous versions including reports-doc-75-v10, reports-doc-75-v9, reports-doc-75-v8, reports-doc-75-v7, reports-doc-75-v6, and reports-doc-75-v5, each with its creation date and time.

The main content area includes:

- Document Title:** Storage Service for Scientific Documentation
- Keywords:** (empty field)
- Description:** Report on the 12th Collaboration Meeting of the BM@N Experiment at the NICA Facility
- Authors:** Nikita Alexandrovich Balashov (balashov@jnr.ru) and Ivan Alexandrovich Sokolov (isokolov@jnr.ru)
- Topics:** Cloud service
- Files (2):** "Статья (Sokolov_Balashov_SciDocCloud_Article_v3.docx)" (260.14 KB, Document) and "Архитектура (Development Stac.png)" (321.58 KB, Image)
- Comments (6):** A comment by Ivan Sokolov from 5 months ago: "Добавил презентацию и заметки". It has 3 replies, with the last reply by Nikita Balashov 5 months ago.

An orange arrow points from the text "Document as an abstract entity" in the list to the main content area of the document page.

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The screenshot displays a web interface for a document titled "Storage Service for Scientific...". The breadcrumb navigation shows the path: JINR > MLIT > Cloud Team > SciDocsCloud > Reports > reports-doc-75. The document is identified as "Reports Document 75-v11 (latest)".

Key interface elements include:

- Editors (4):** A list of users: Sokolov Ivan, Gercenberger Konstantin, and Balashov Nikita.
- Document #:** reports-doc-75-v11 (latest)
- Submitted by:** Ivan Sokolov
- Updated by:** Ivan Sokolov
- Document Created:** 10 May 2024, 18:09
- Revised:** 11 Oct 2024, 15:35
- Latest Version:** reports-doc-75-v11
- Other Versions:** A list of previous versions with their creation dates: reports-doc-75-v10 (11 Oct 2024, 15:33), reports-doc-75-v9 (11 Oct 2024, 15:25), reports-doc-75-v8 (11 Oct 2024, 15:22), reports-doc-75-v7 (11 Oct 2024, 15:21), reports-doc-75-v6 (11 Oct 2024, 13:43), and reports-doc-75-v5 (10 May 2024, 18:35).
- Document Title:** Storage Service for Scientific Documentation
- Keywords:** A dropdown menu.
- Description:** Report on the 12th Collaboration Meeting of the BM@N Experiment at the NICA Facility
- Authors:** Nikita Alexandrovich Balashov (balashov@jinr.ru) and Ivan Alexandrovich Sokolov (isokolov@jinr.ru).
- Topics:** A tag for "Cloud service".
- Files (2):** A list of files, highlighted with an orange box:
 - Статья (Sokolov_Balashov_SciDocCloud_Article_v3.docx) - 260.14 KB, Document type.
 - Архитектура (Development Stac.png) - 321.58 KB, Image type.
- Comments (6):** A comment from Ivan Sokolov 5 months ago: "Добавил презентацию и заметки". It has 3 replies, with the last reply from Nikita Balashov 5 months ago.

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The screenshot displays a web interface for a document management system. The main content area shows details for a document titled 'Storage Service for Scientific Documentation'. It includes fields for 'Keywords', 'Description', and 'Authors' (Nikita Alexandrovich Balashov and Ivan Alexandrovich Sokolov). There are sections for 'Topics' (Cloud service), 'Files' (two files: a document and an image), and 'Comments' (one comment by Ivan Sokolov). On the right side, there is a sidebar with 'Editors(4)' and a 'Documents' list. The 'Documents' list is highlighted with an orange border and contains a list of document versions from v5 to v11, with v11 being the latest. An orange arrow points from the 'Version control' text in the list to the 'Documents' list in the interface.

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The screenshot displays a document management interface for a document titled "Storage Service for Scientific...". The interface includes a breadcrumb trail (JINR > MLIT > Cloud Team > SciDocsCloud > Reports > reports-doc-75), a document title, a "Default" tab, and an "UPDATE DOCUMENT" button. The document title is "Storage Service for Scientific Documentation". The keywords are "Storage Service for Scientific Documentation". The description is "Report on the 12th Collaboration Meeting of the BM@N Experiment at the NICA Facility". The authors are Nikita Alexandrovich Balashov (balashov@jinr.ru) and Ivan Alexandrovich Sokolov (isokolov@jinr.ru). The topics are "Cloud services". The files section contains two files: "Статья (Sokolov_Balashov_SciDocCloud_Article_v3.docx)" (260.14 KB, Document) and "Архитектура (Development Stac.png)" (321.58 KB, Image). The comments section shows a comment by Ivan Sokolov 5 months ago: "Добавил презентацию и заметки", with 3 replies, the last by Nikita Balashov 5 months ago. The right sidebar shows the document's metadata: "Document #:" (reports-doc-75-v11 (latest)), "Submitted by:" (Ivan Sokolov), "Updated by:" (Ivan Sokolov), "Document Created:" (10 May 2024, 18:09), "Revised:" (11 Oct 2024, 15:35), and "Latest Version:" (reports-doc-75-v11). The "Other Versions:" section lists previous versions: reports-doc-75-v10 (Created at: 11 Oct 2024, 15:33), reports-doc-75-v9 (Created at: 11 Oct 2024, 15:25), reports-doc-75-v8 (Created at: 11 Oct 2024, 15:22), reports-doc-75-v7 (Created at: 11 Oct 2024, 15:21), reports-doc-75-v6 (Created at: 11 Oct 2024, 13:43), and reports-doc-75-v5 (Created at: 10 May 2024, 18:35). An orange arrow points from the "Editors" section in the sidebar to the "Editors" list in the main content area.

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 - **Comments**

A screenshot of a web interface showing a comments section. The title is "Comments (6)". There are three visible comments. The first comment is by Ivan Sokolov, 5 months ago, with the text "Добавил презентацию и заметки". Below it is a summary bar indicating "3 REPLIES" and "Last reply by Nikita Balashov 5 months ago". The second comment is by Konstantin Gercenberger, 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 by Ivan Sokolov, 5 months ago, with the text "Хорошо". Below the comments is a text input field with a "Reply..." placeholder and a "COMMENT" button. At the bottom of the interface is a rich text editor toolbar with icons for bold, italic, link, underline, text color, font color, list, and indent, followed by a "Write a comment here..." text area.

Role-based Access Model



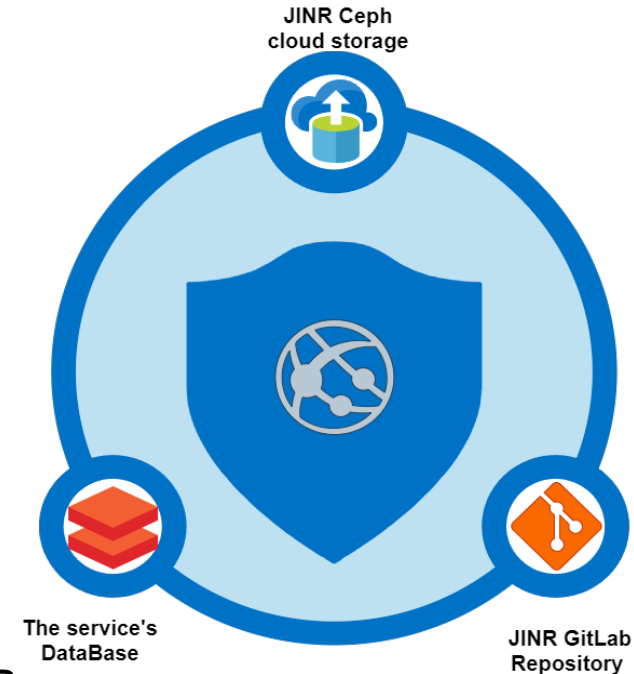
- Access restriction to groups or projects based on roles similar to GitLab
- Currently implemented roles: Owner, Maintainer, Author and Viewer
- Group/project membership
- Nested groups membership

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				+

Storage Service for Scientific Documentation



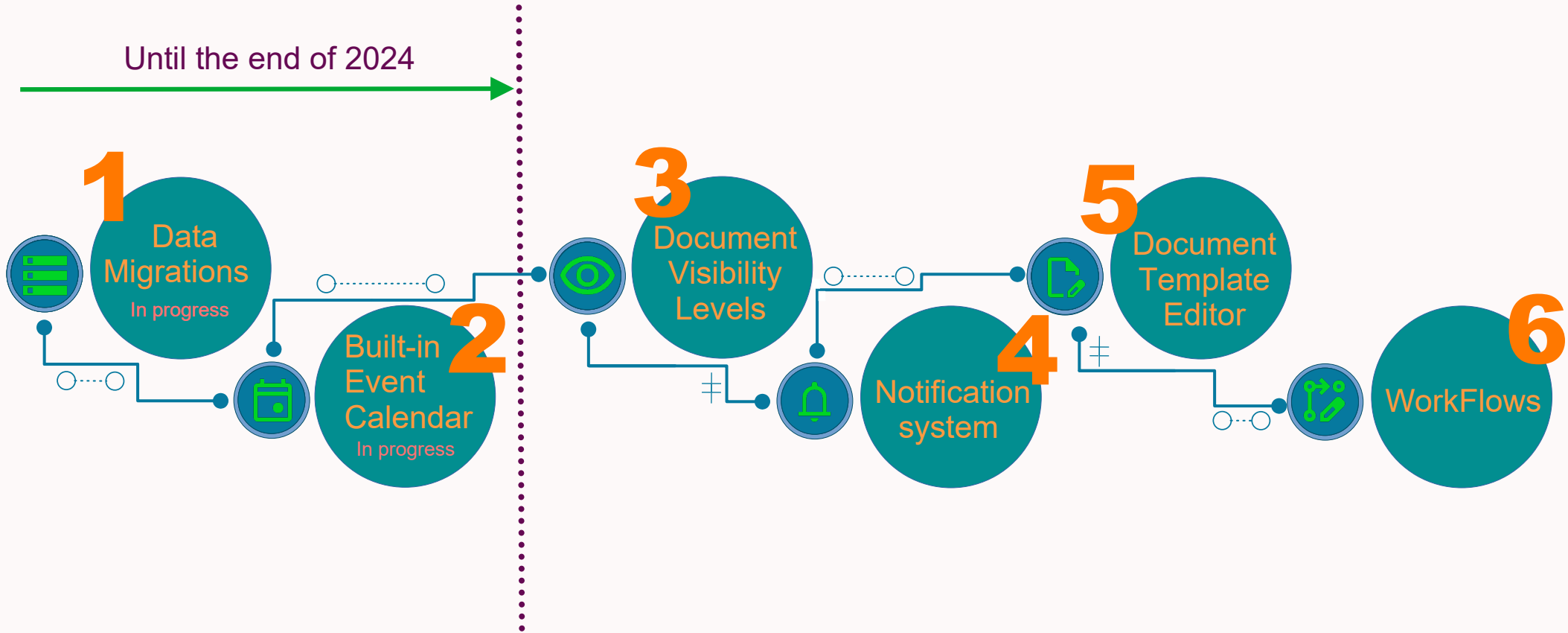
- The platform-based service has been deployed at JINR
 - JINR's Ceph cloud storage
 - Triple replication provided by Ceph
 - Easily scalable
 - Nightly Backups for Service Meta Information Database
 - Deployed on a VM in the JINR Cloud
 - Quick recovery after hardware failure
- Available to JINR employees and collaborators via *JINR Single Sign-On* (SSO) accounts at docs.jinr.ru



Road Map



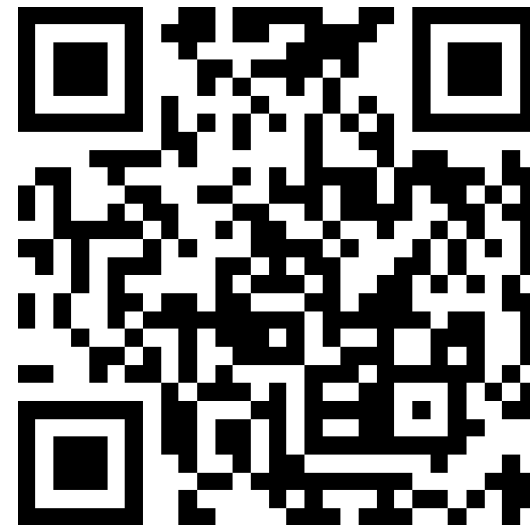
Until the end of 2024



Conclusion and FeedBack



- The SciDocsCloud platform is free and open-source software
 - Documentation in progress
 - Opportunities for contributions coming soon
 - Git-repository will be published soon
- The platform-based Storage Service for JINR research groups has been deployed
- The service is available to JINR employees and collaborators → docs.jinr.ru
- For questions, bug reports, or suggestions contact us at docs@jinr.ru



Thanks for your attention!

Platform Database Model

