

中国科学院高能物理研究所  
*Institute of High Energy Physics*  
*Chinese Academy of Sciences*



高能所計算中心  
IHEP Computing Center

# Document Management System in IHEP

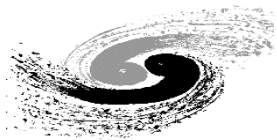


HOU Fengyao, LUO Qi, QI Fazhi, QI Mengyao, WANG li, SUN Zhihui

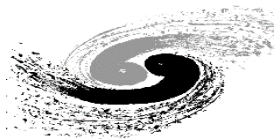
March 23, 2023

Institute of High Energy Physics(IHEP), CAS

<https://docs.ihep.ac.cn>

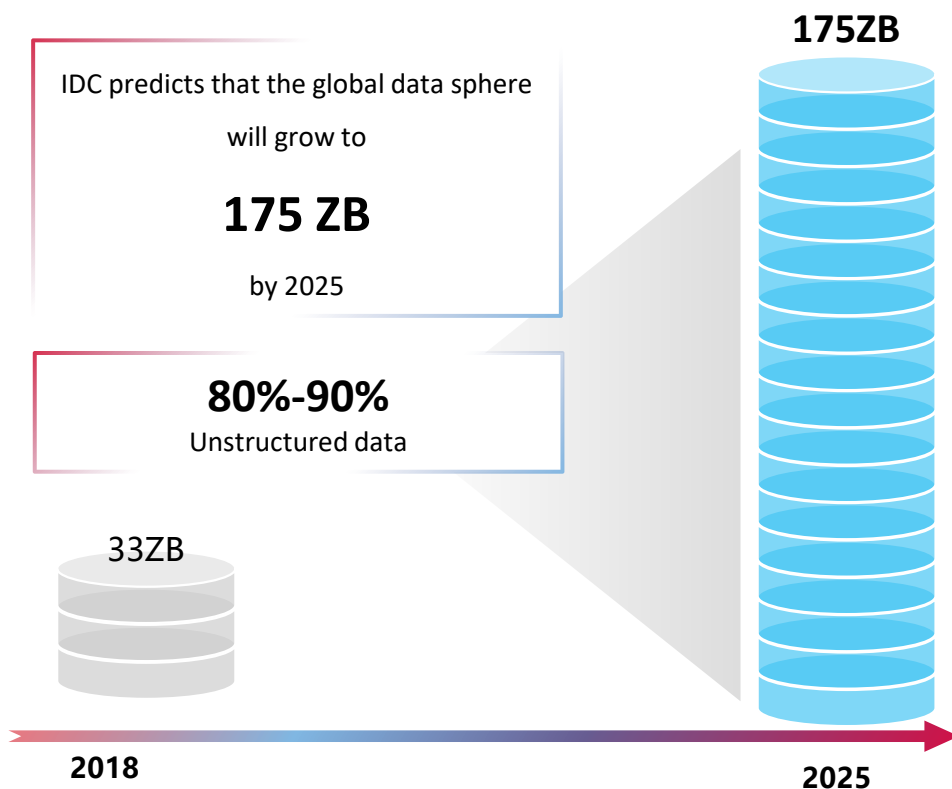


- **Challenges**
- **IHEP Docs**
  - **Introduction**
  - **Architecture**
  - **Functions**
  - **Integrated applications**
- **Outlook**



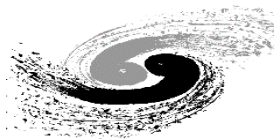
## Document Management System is required.

Unstructured data are rapidly increasing and hard to manage or utilize.



Office collaboration and mobility become a new office trend.





# IHEP Docs: Introduction

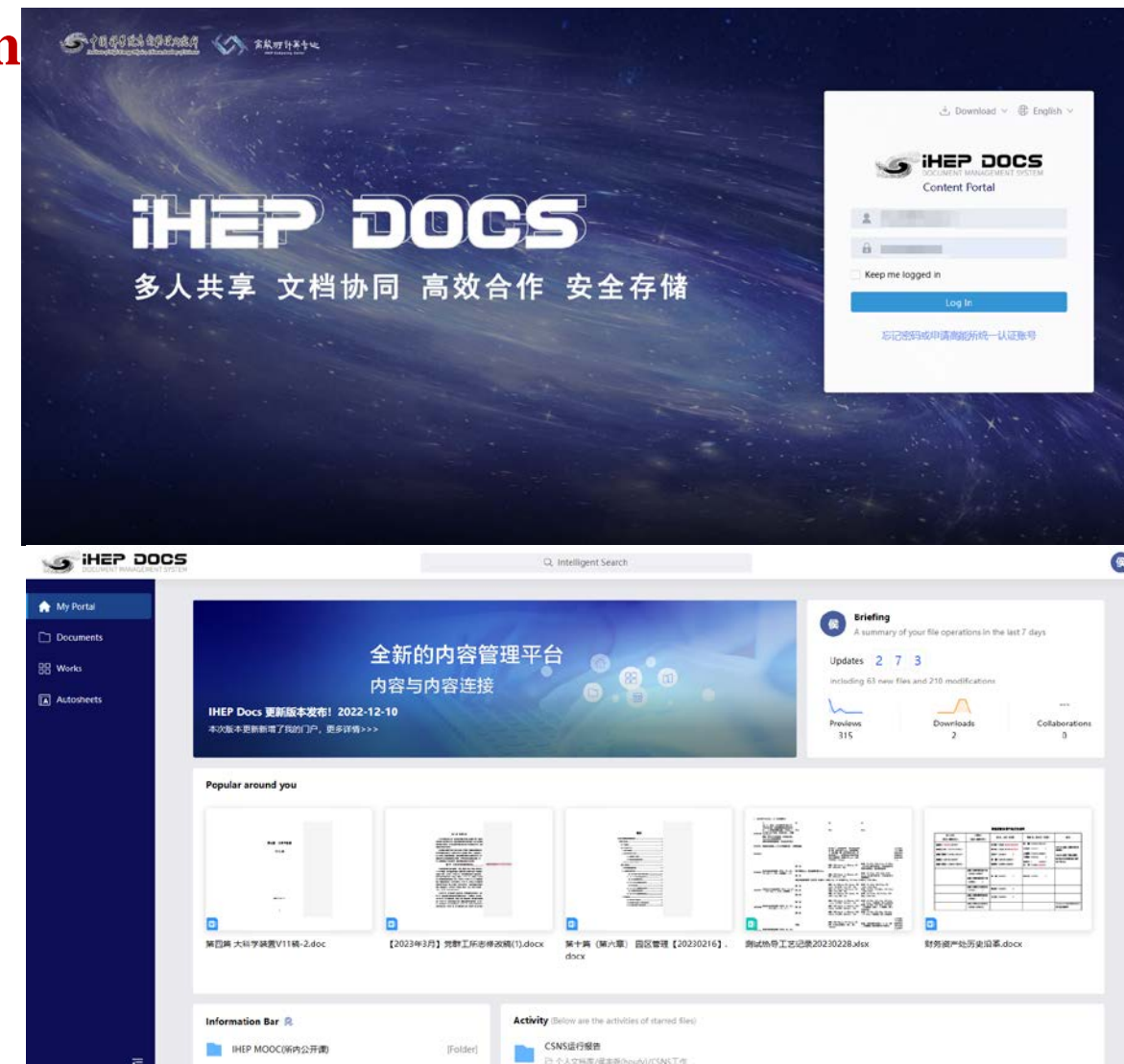


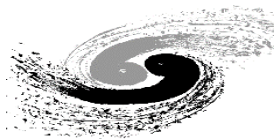
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## A document management system for collaboration

### About IHEP Docs:

- **IHEP SSO Authentication** : over 20,000 users
- **Storage**: reliable s3 storage in IHEP , 200TB
- **Functions**:
  - Unified user portal
  - Document management
    - share and sync, permission management
  - Document Collaboration
    - Office online, PDF, OCR, CAD, multimedia
  - Intelligent search
  - Smart Form:
    - Data collection, data visualization
  - Integrated applications
    - Application and approval, file collection
    - Anti virus, watermark
- **Facilities**: CSNS, CSNSII, HEPS, HERD,LHAASO,...

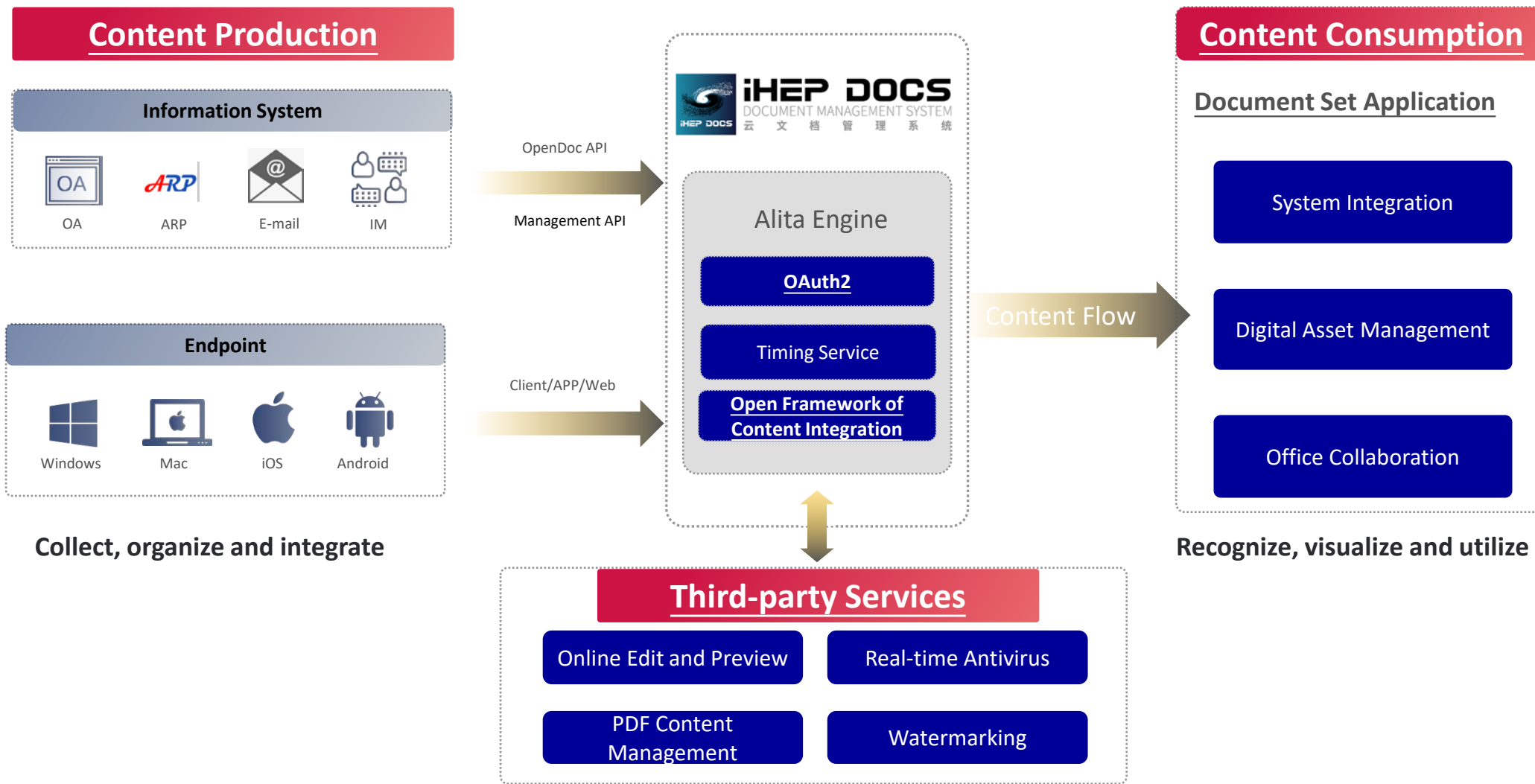


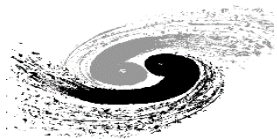


# IHEP Docs: Introduction



As a content bus, provides a unified life-cycle document management.





# IHEP Docs: Introduction



## A popular document management system in IHEP.

| Online on Sep. 7, 2022 |                           |                              |
|------------------------|---------------------------|------------------------------|
| <b>Accounts</b>        | <b>Daily Active Users</b> | <b>Peak concurrent users</b> |
| >20,000                | ~150                      | ~200                         |
| <b>Total files</b>     | <b>Documents</b>          | <b>Multimedia</b>            |
| >340,000               | >150,000                  | >87,000                      |
| <b>Antivirus Scan</b>  | <b>Clear virus</b>        | <b>Quarantine Virus</b>      |
| >150,000               | ~160                      | ~160                         |
| <b>Departments</b>     | <b>Facilities</b>         | <b>Teams</b>                 |
| All in IHEP            | ~5                        | IHEP & Cooperator            |

There are 346892 files in this system as follows:

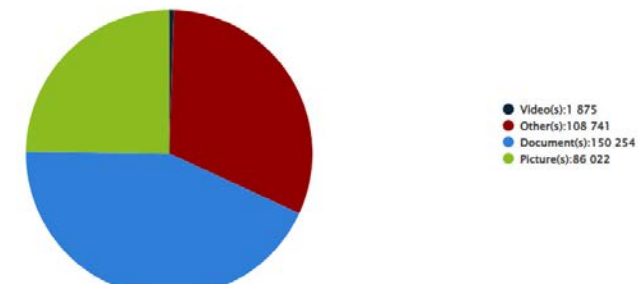
Document: Office documents (including MS Office, WPS), PDF, TXT, etc.

Picture: png, bmp, jpg, etc.

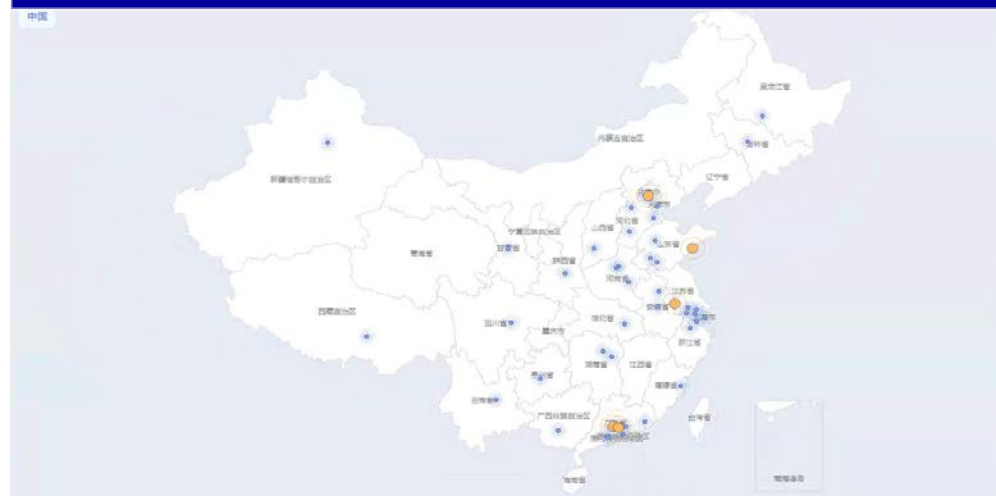
Picture: png, bmp, jpg, etc.

Others: files excluding those mentioned above

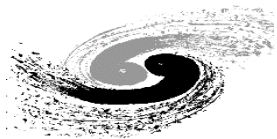
File Statistics



## The proportion of different types of files



Distribution of users in China



## IHEP Docs Architecture



## IHEP SSO Authentication

### Integrated Applications

#### Document Lib

personal Department Others

#### Document Manage

|                |          |            |
|----------------|----------|------------|
| History        | Security | Auto sheet |
| Water marketin | tags     | permission |
| Work flow      | Research | Data sync  |

#### Collaboration

multi-Media CAD OCR Sketching Drawing

#### Office Online

DOC PPT XLS PDF

### IHEP Docs

#### Organization

Organization Account

#### Permission

Users Department Document

#### Security

|            |            |
|------------|------------|
| Classify   | encryption |
| Life cycle | auditor    |
| Vision     | Work Flow  |

#### Meta Data

Index data Meta data Application data

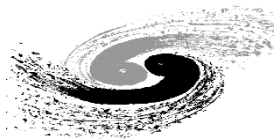
#### Integreation

OA Email Archive

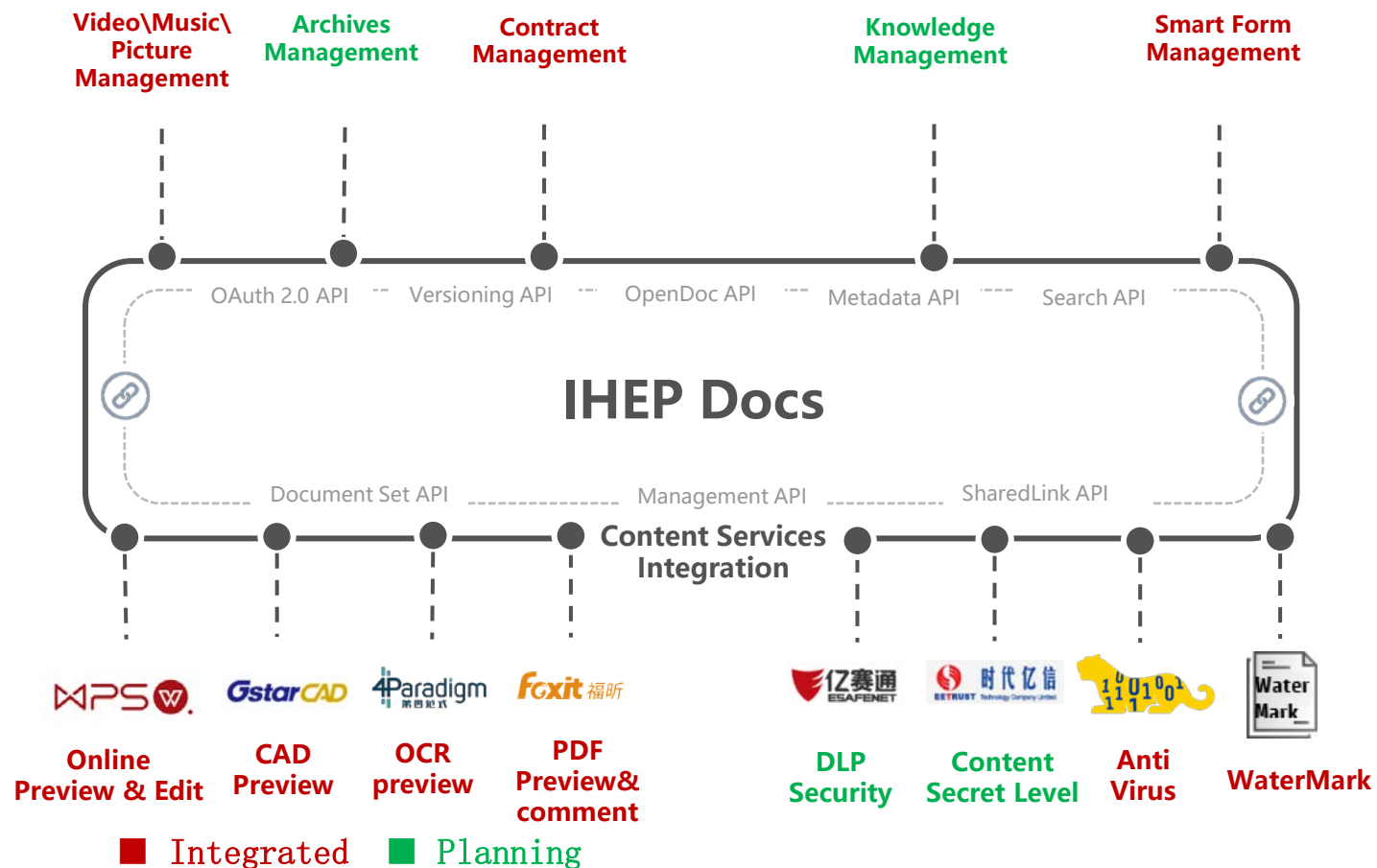
### Hardware

#### Servers

#### S3 Storage (200TB)



As a content bus, integrates data and applications in the same workspace.



## Document Management

Provide full life cycle management of data and ensure data security.

Library services, search, metadata management, version control, file check-in and check-out, access control.



## Collaboration

Build a workspace for collaboration between teams and departments

sharing documents, previewing online, editing or commenting online, and collecting files.



## Application components

Customize contents.

Open API framework, smart form, workflow

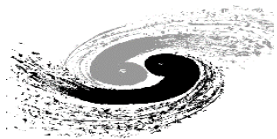


## Application Integration

Deeply integrate with applications to exchange documents and use them.

Content Bus API, Intelligent Content Management.



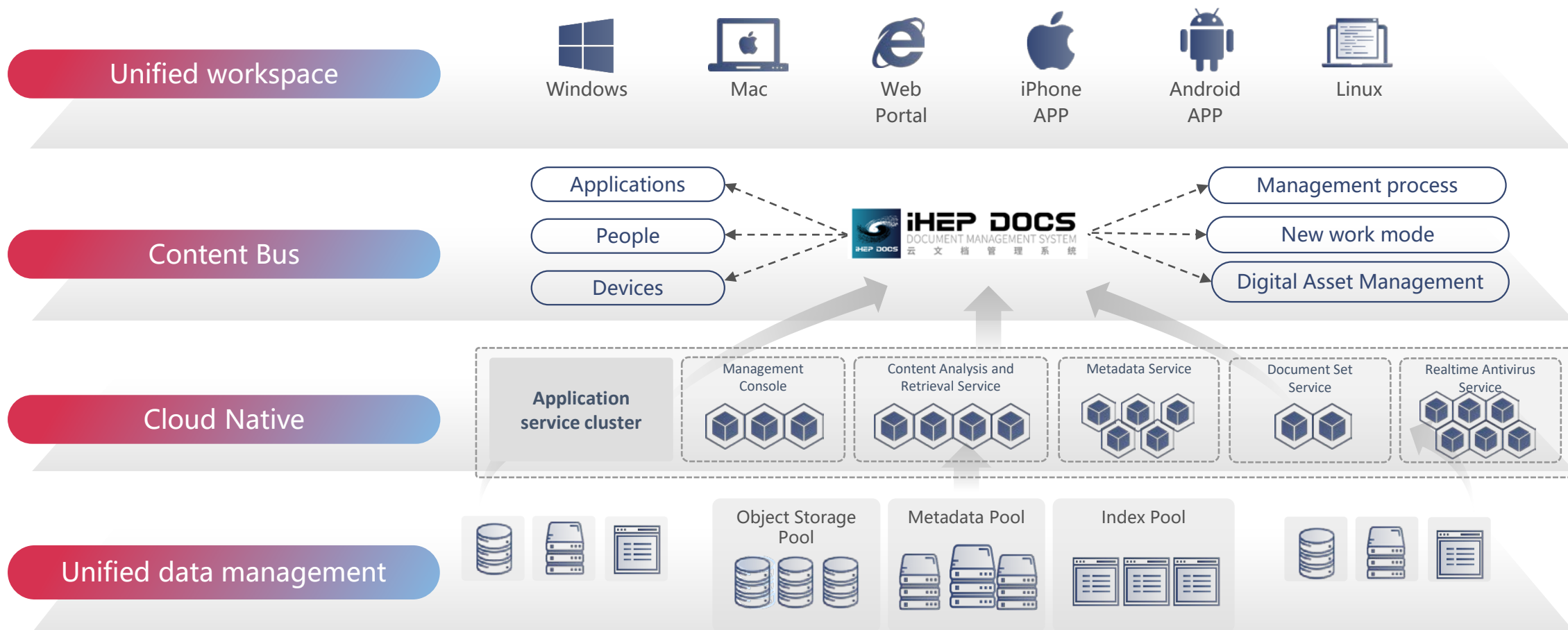


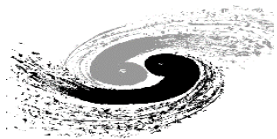
# IHEP Docs: Architecture



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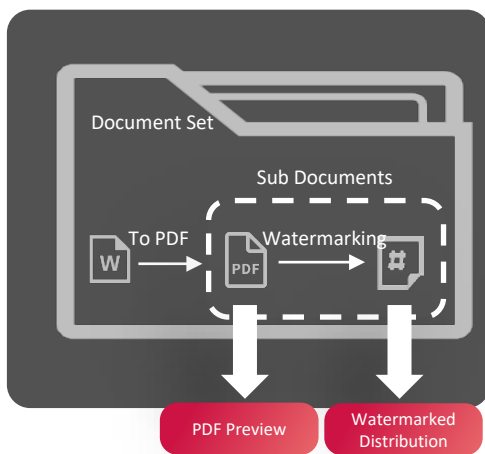
## A modern cloud native architecture





## A life-cycle document management

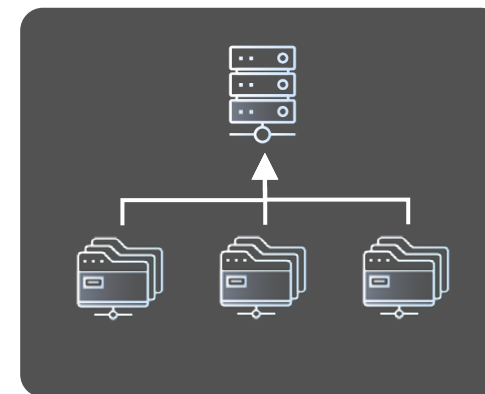
### Reducing Repeated Data

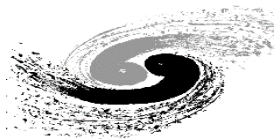


### Life cycle Management

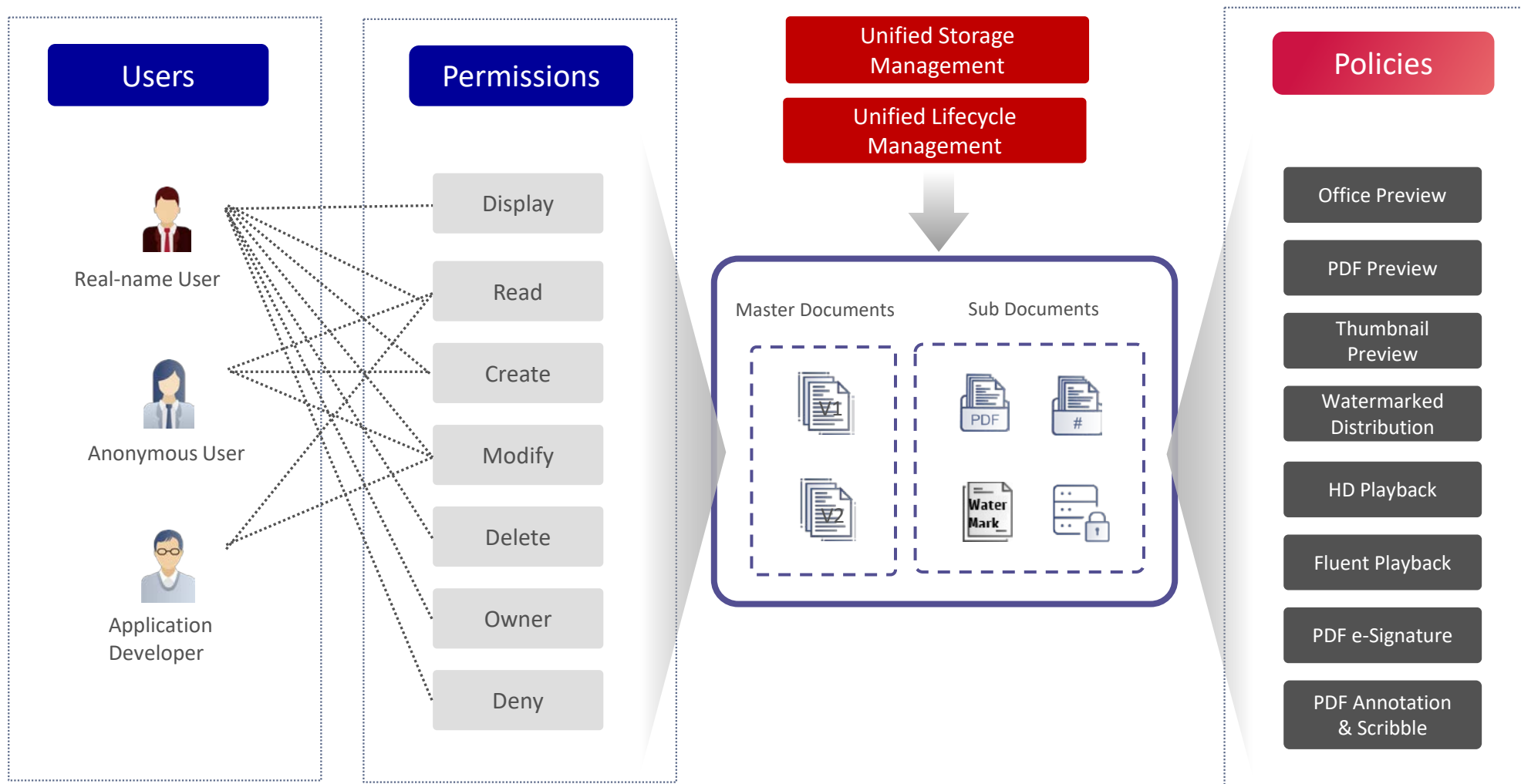


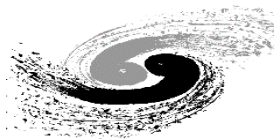
### Advanced Architecture



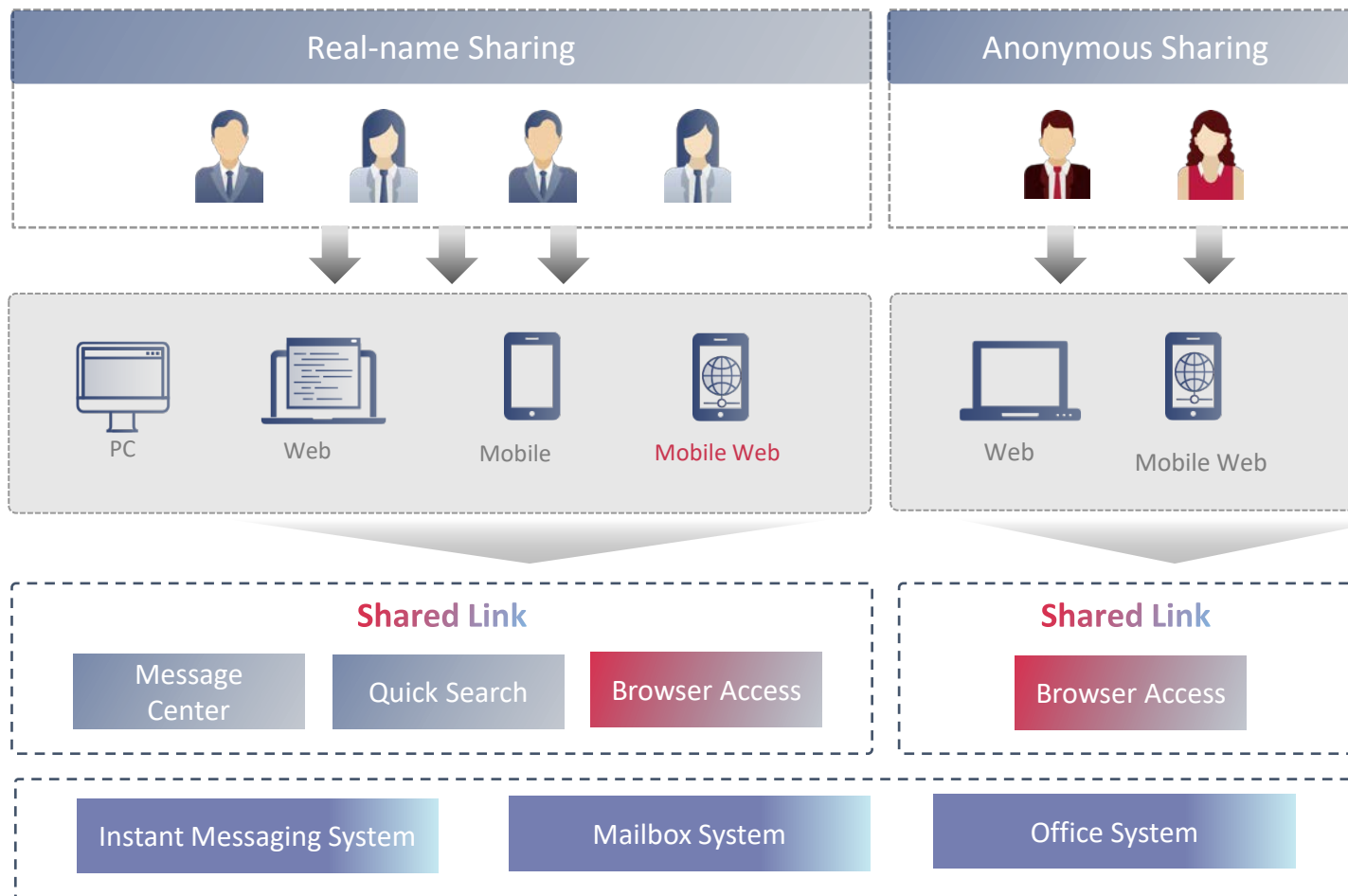


## A precise permission of document management and content management





## A consistent sharing experience on any endpoint device



Real-name, shared content access across all endpoints

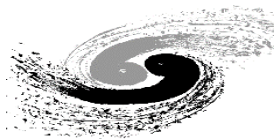
Add paths for accessing shared content on mobile Web clients;

Unified Shared Link

Links can be accessed through the browser with a consistent operating experience.

Application Integrations

It supports to push and open the access through one-click operation of Shared Link on third-party applications, such as mailbox system, and office automatic system, etc.



## A precise sharing permission

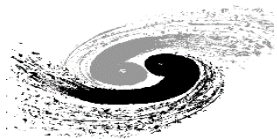
The screenshot shows the IHEP Docs interface with a file named '1609.02552.pdf' selected. A context menu is open over the file, highlighting the 'Share' option. A sub-menu is visible, showing 'Share with users' (For the collaboration within your Org.) and 'Share with anyone' (For the collaboration beyond your Org.).

Below the context menu, a QR code is displayed with the text 'Scan QR Code to access this file' and 'Download: png svg'.

On the right side, the 'Share - 1609.02552.pdf' dialog is open. It shows the 'Share with users' and 'Share with anyone' options. The 'Add visitors' field is empty. The 'Permissions' table is visible, showing the user '齐孟尧(qmy)' with 'Display/Preview/Download' permissions. The 'Expires' field is set to 'Never'.

| Permissions                                | Expires | Action |
|--|---------|--------|
| Display/Preview/...                        | Never   | ✕      |
| Display                                    |         |        |
| Display/Create                             |         |        |
| Display/Preview                            |         |        |
| Display/Preview/Download                   |         |        |
| Display/Preview/Download/Create/Modify     |         |        |
| Display/Preview/Download/Create/Modify/... |         |        |
| No Access                                  |         |        |

At the bottom of the dialog, there is a 'Share File Link' section with icons for link, QR code, and email. Below it, a note states: 'People with permissions can access via the link or QR code'. There are 'Save' and 'Cancel' buttons at the bottom right.



## An intelligent search with full text search, image search, and tag search

### Unified Content Portal



Full-text Search

Image Search

Search by Tag

### Content Analysis and Search Service



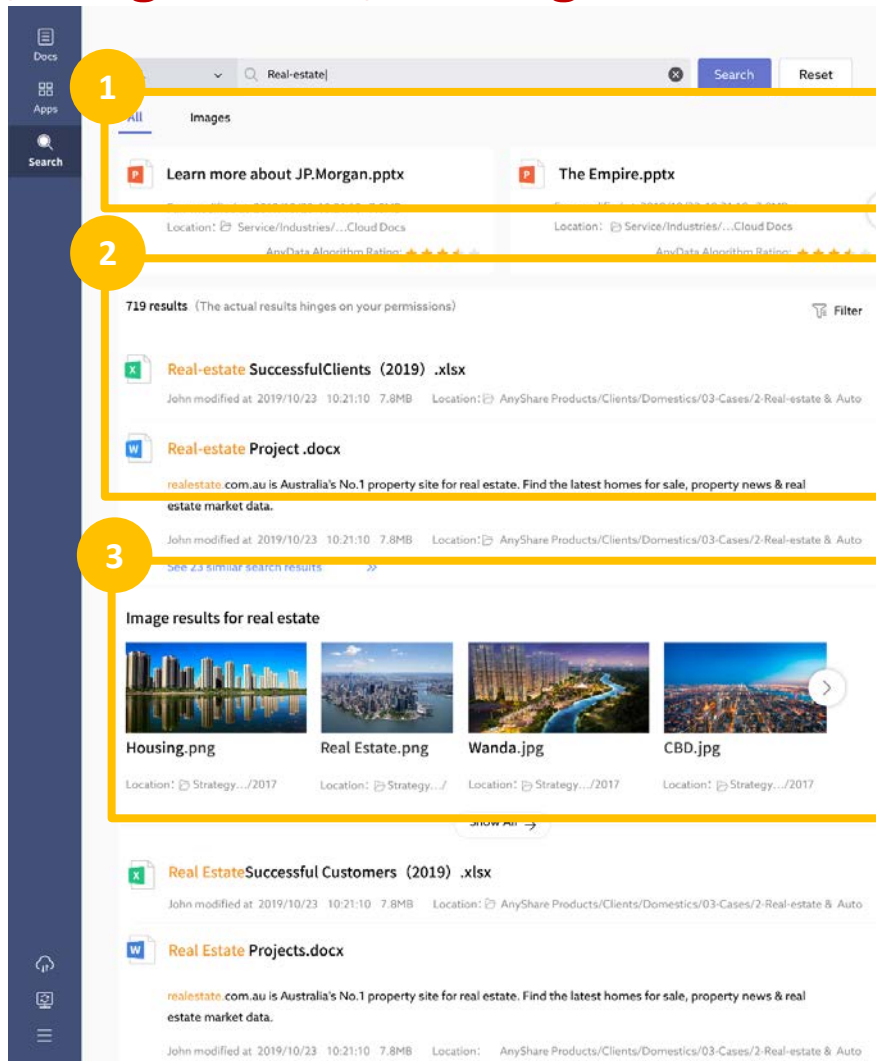
### Basic Attribute

Metadata Pool

File Abstract

Catalogue

Tag



### Knowledge-based search

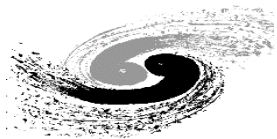
Recommends related docs

### Integrated search

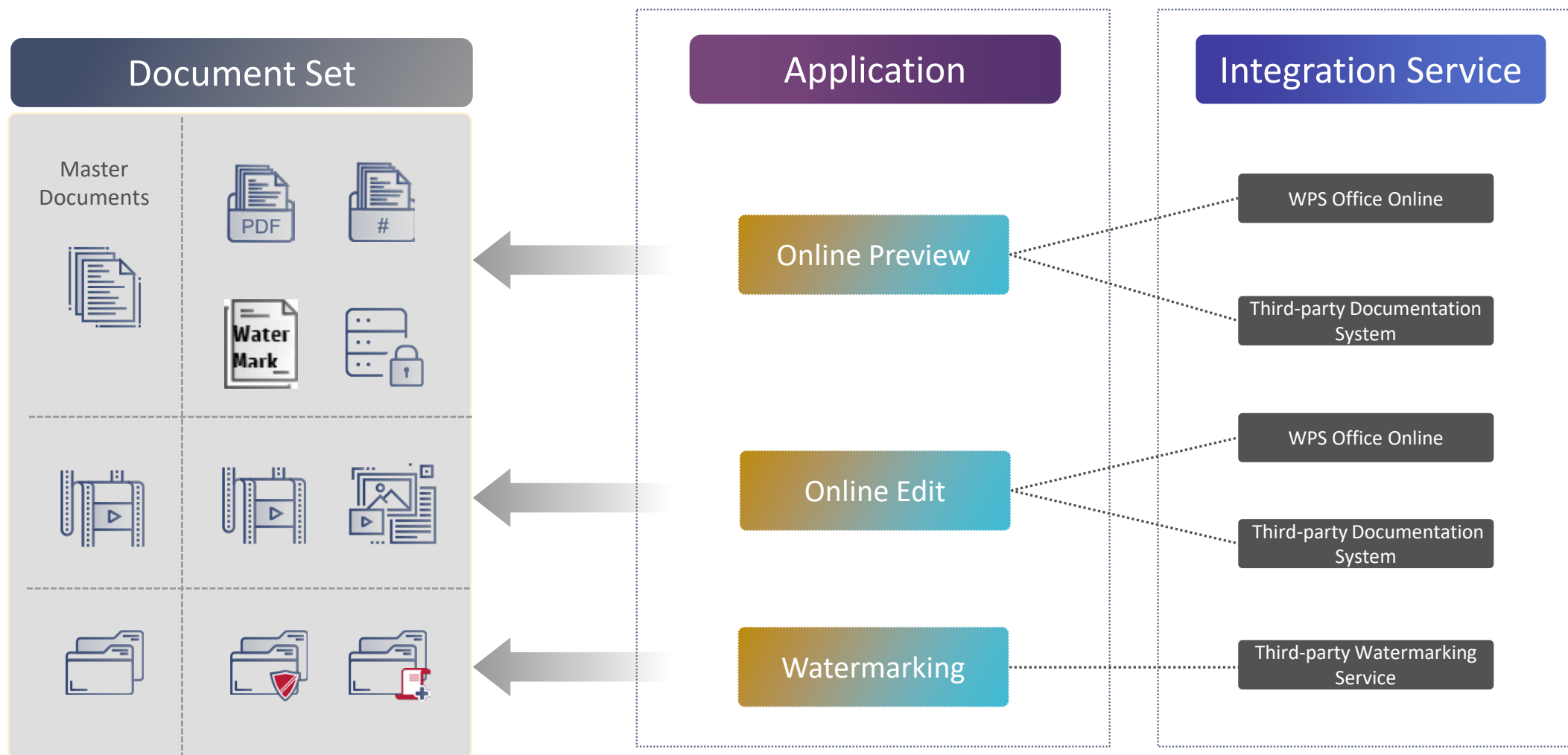
Search related documents.

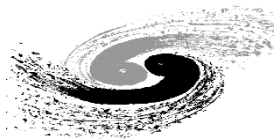
### Integrated search

Search related images.



A unified workplace Integrated a powerful office online and other collaboration applications

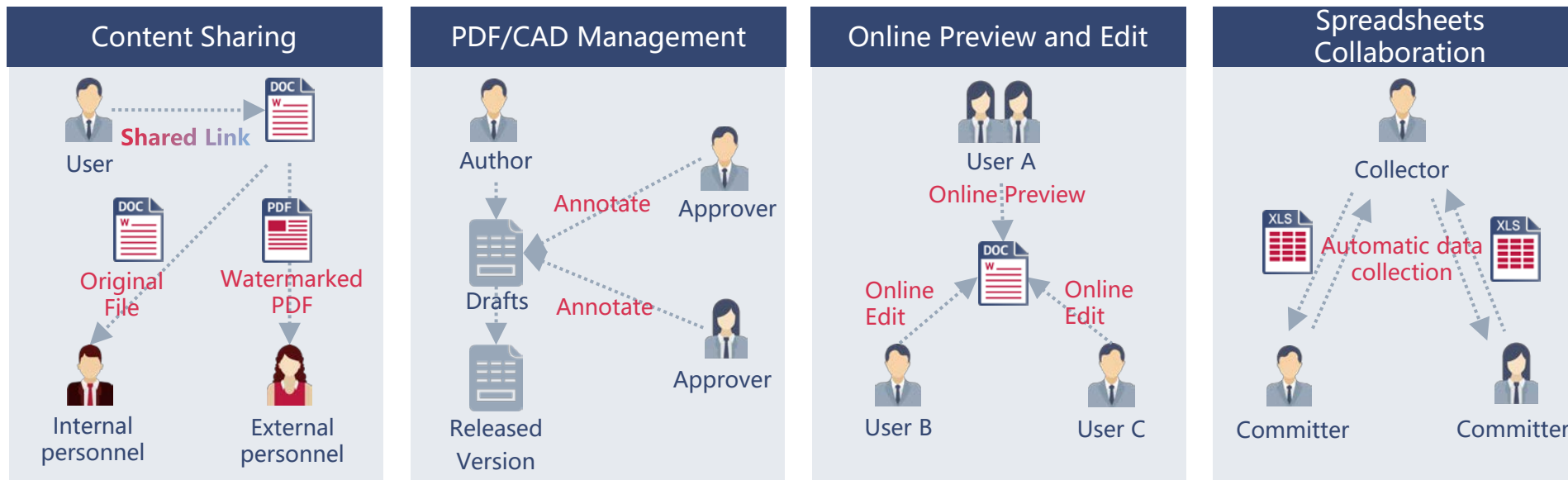




# IHEP Docs: Applications



## An efficient office collaboration in IHEP Docs



Restrict visible content in shared documents.

Automatically convert into PDF files to avoid confusing during approval.

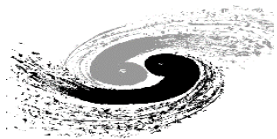


Support real time co-authoring to improve efficiency.

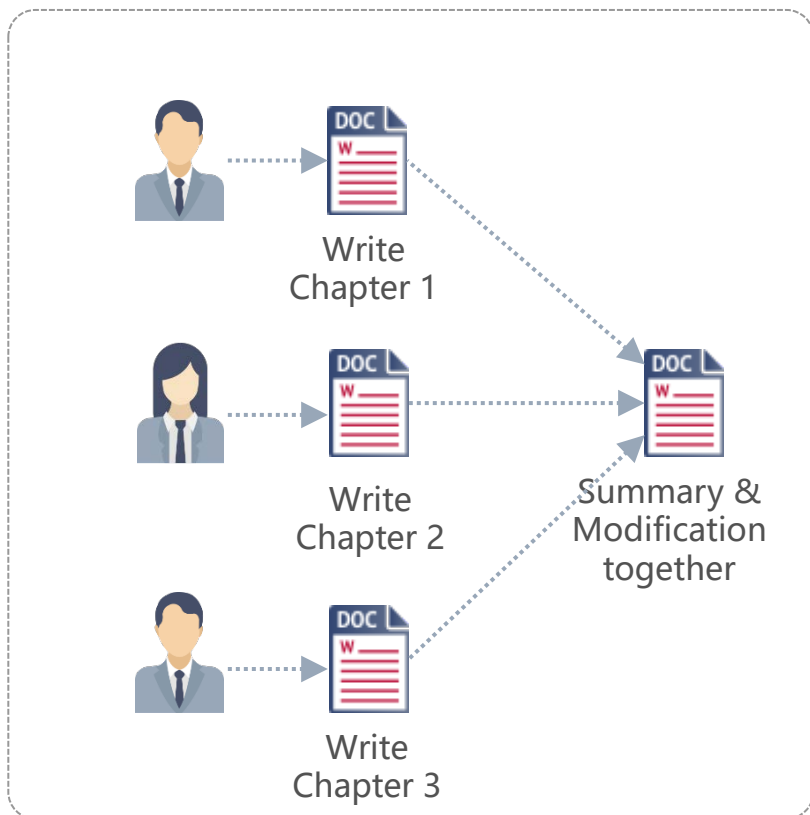
Automatic distribution, collection and consolidation.



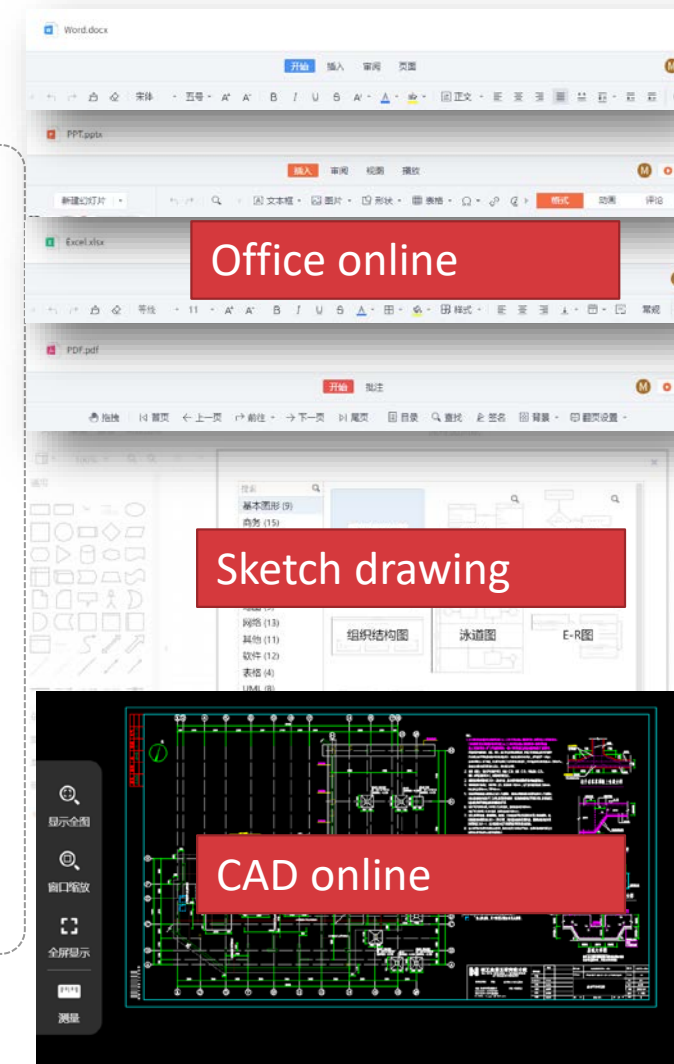
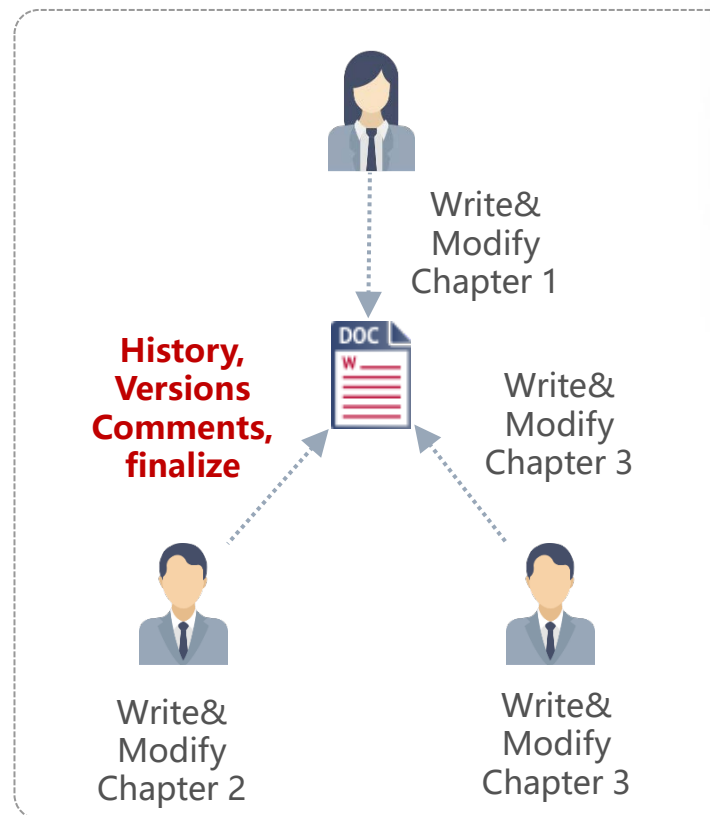


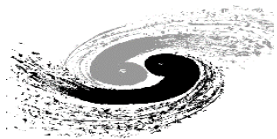


## An example of easy document collaboration.

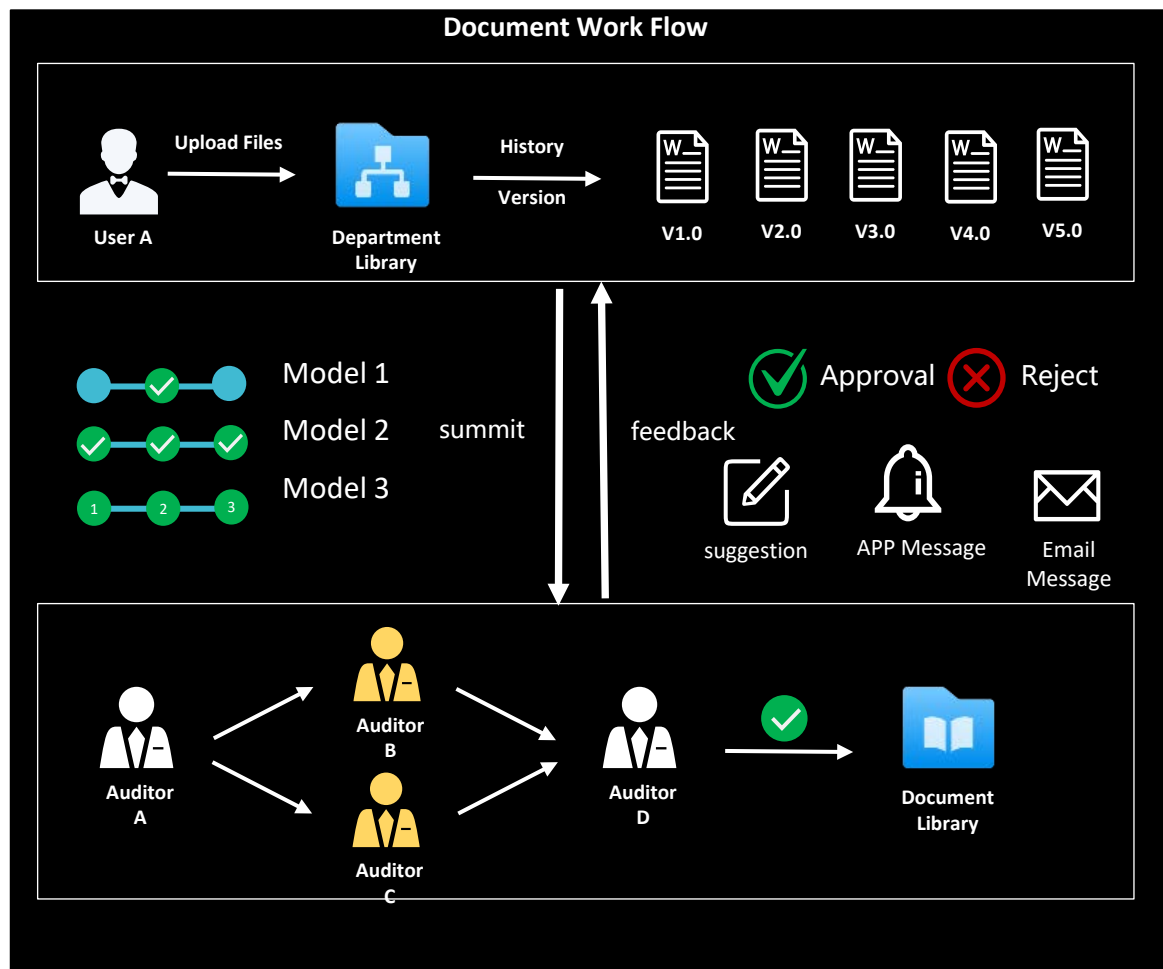


collaboration





## Integrated workflow applications



**New** [Close]

Relay Name: \*

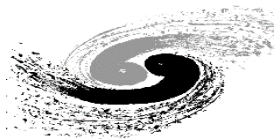
Target: \*

Subfolder:

Scope: \*

Workflow:

Note:  0/300



## A smart Form to collect, summarize, and visualize data automatically

Untitled Form      This form will be auto saved

**Form**

- DropDown
- Date&Time
- Address
- Grid
- MultiDropDown
- Number
- File

**Personal Info**

- Name
- Gender
- Phone
- Email
- ID Number
- Date of birth
- Age
- Height
- Weight

**Scoring items**

- Satisfaction
- Ratings
- Rating Grid

**Common**

- Time
- Date
- Temperature
- Link

**Social Info**

- Occupation
- Degree
- Age Group
- Annual Income
- Province City District

Add Field      Post

**Customer Satisfaction Survey**

Thank you for purchasing our product from AISHU where we hope your buying experience is excellent. Please help us to improving our sales experience by answering some questions about your

**\* 1, Name**

Enter details here, and

This is for the submitte

Content Restriction: Off

---

**\* 1, How's the product**      Single-line text

You can enter here

Required

---

**2, Email**

Enter details here, and

This is for the submitte

---

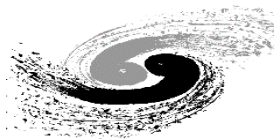
**3, Satisfaction**

Enter details here, and use Enter for Wrapping

1      2      3      4      5

Not satisfied at all      Very satisfied

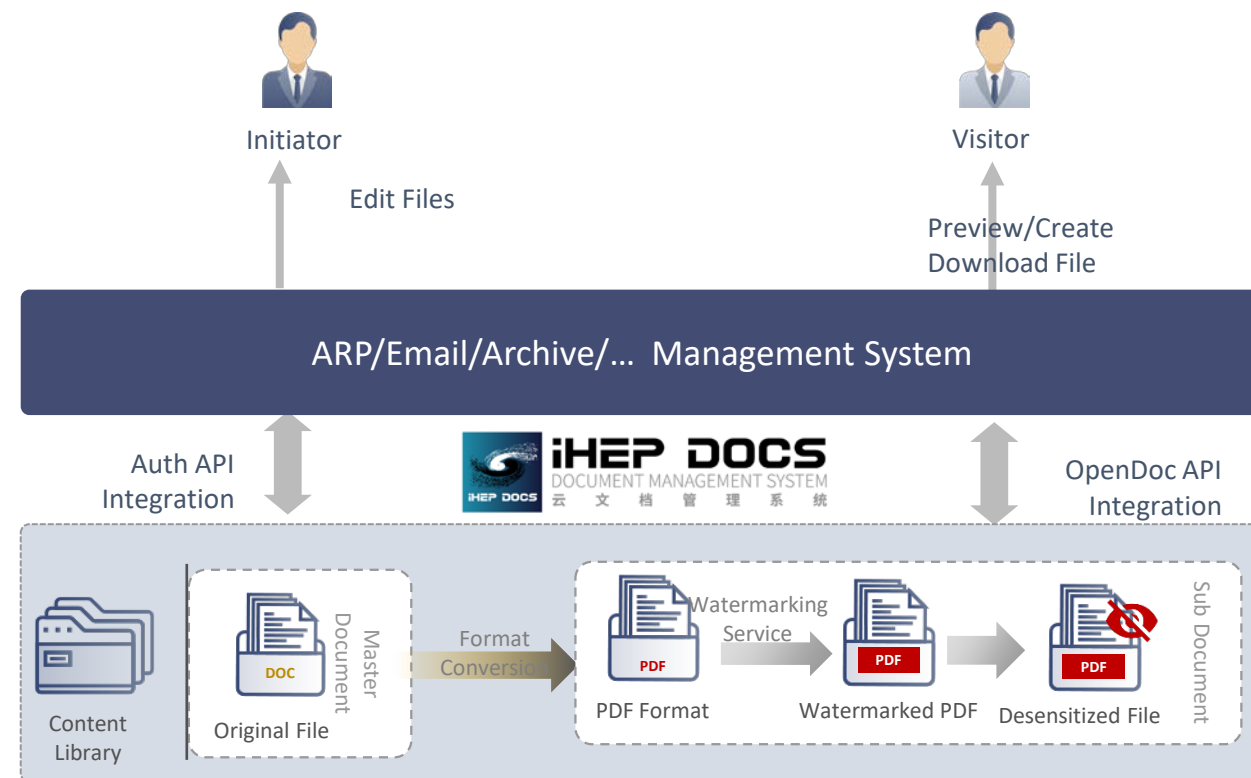
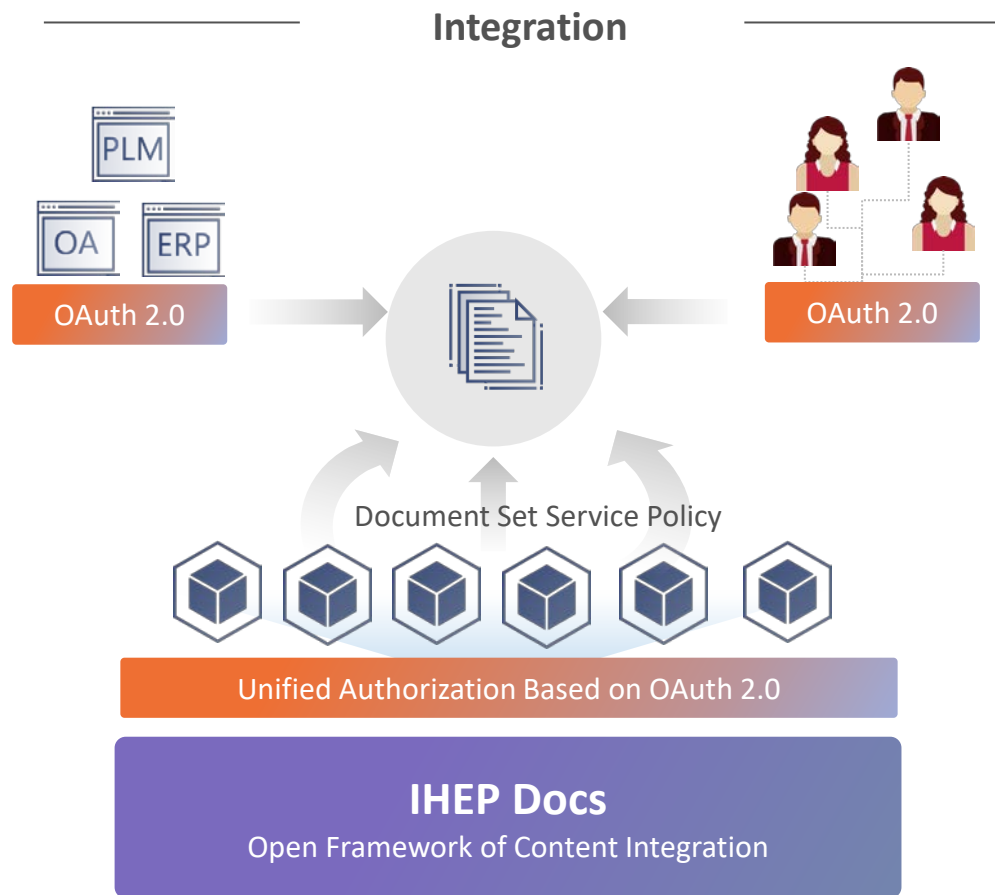
Click or Drag & Drop the items from the left to here

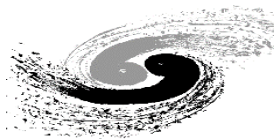


# Outlook: Integration



## To integrate OA and other information system in IHEP

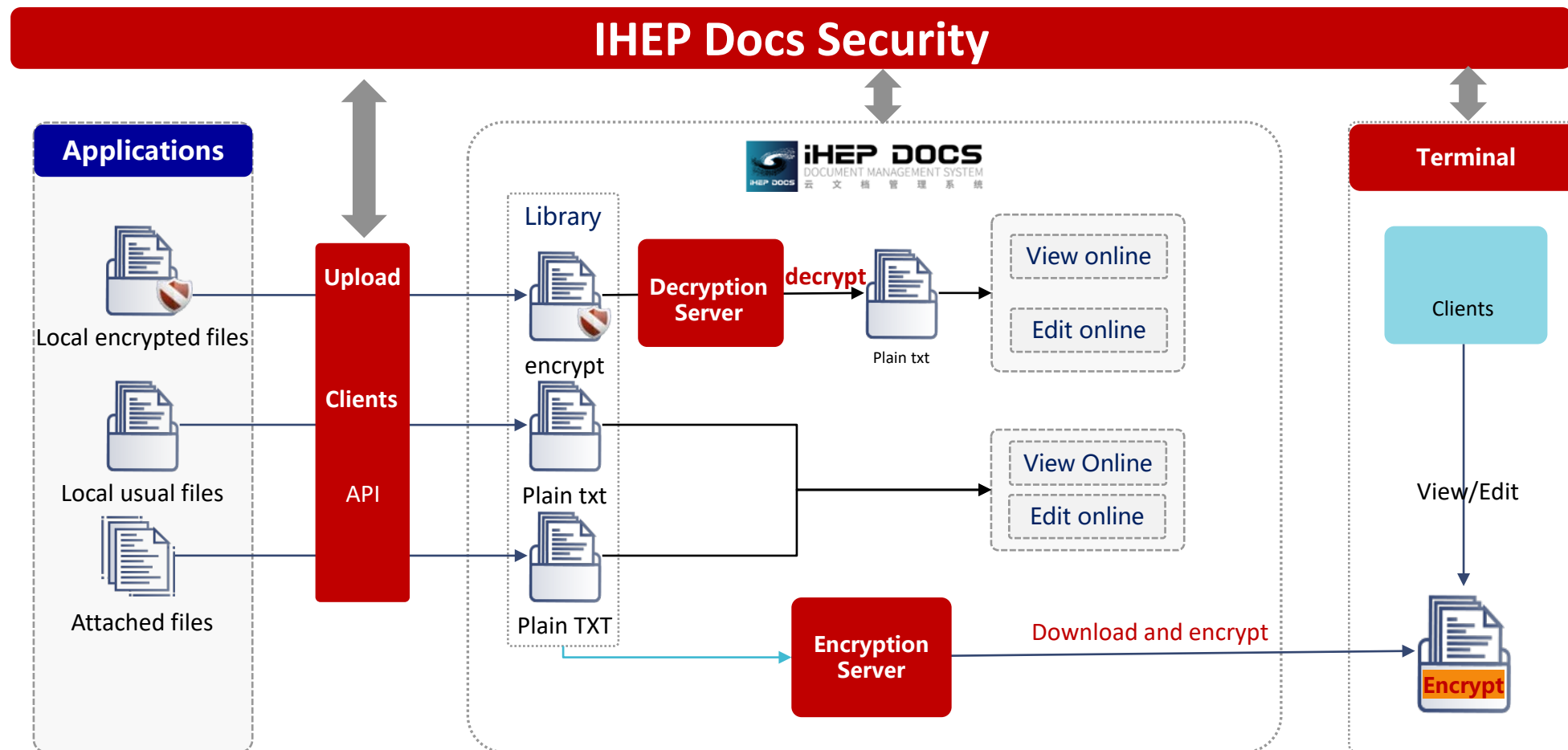




# Outlook: Document Security



To build a document security system to protect the data of users and organization.

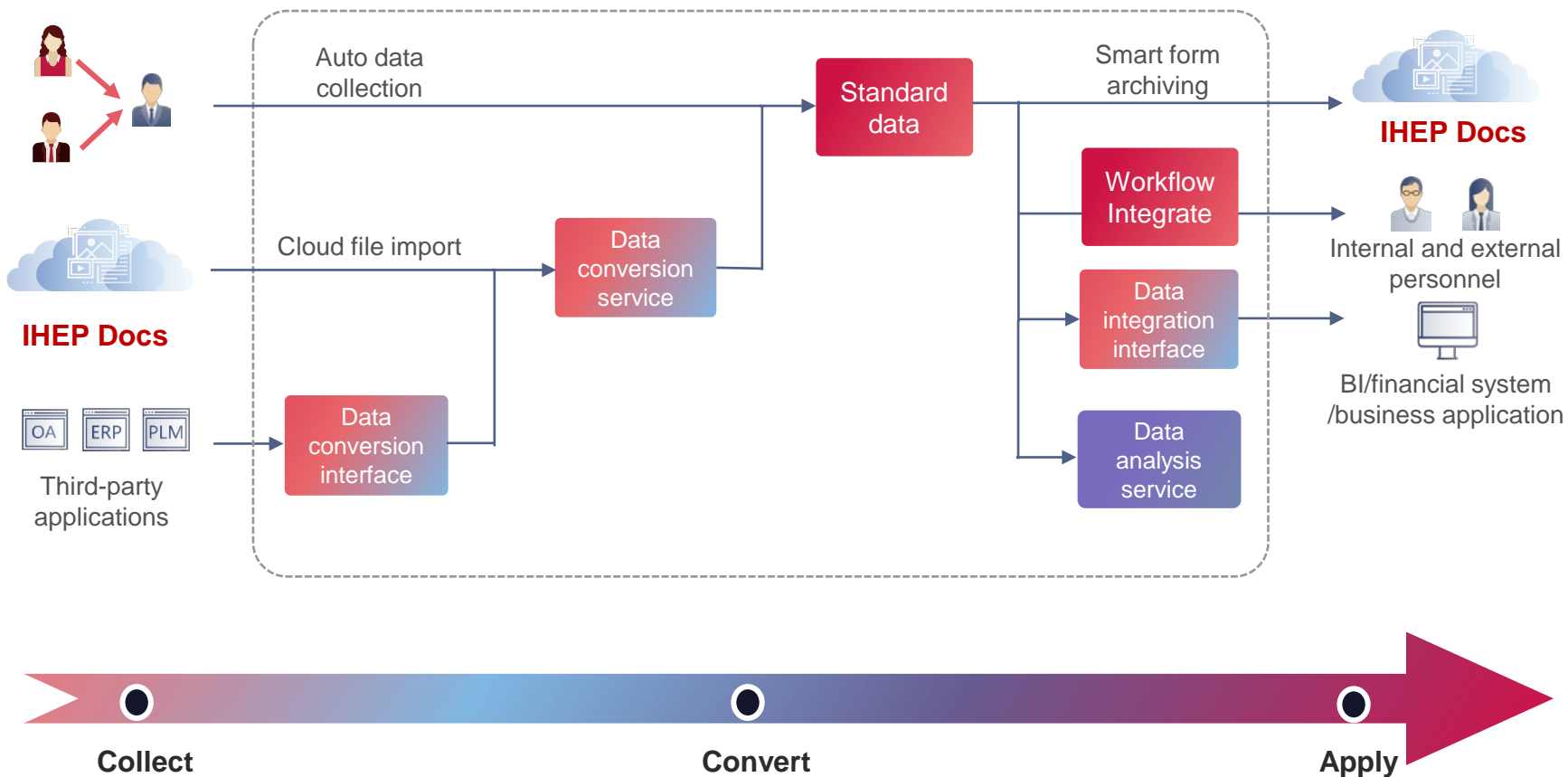




# Outlook: Smart Form



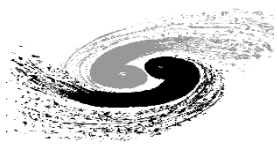
## To integrate IHEP Docs + Smart Form + Work Flow into automatic data processing



1. Task Allocation

2. Project Scheduling

3. Issue Trace



# Outlook: Knowledge Service



## To integrate individual data and organize them into knowledge content to utilize



Knowledge Portal

- News
- Events
- Knowledge Graph



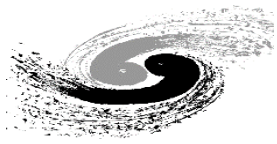
Knowledge Base

- Document Classification
- Document Tag
- Smart Search



Knowledge Community

- Group & Network
- Q&A
- Wikipedia



## ■ IHEP Docs is a document management system

- Modern architecture
- Useful and powerful Functions
- Integrated document collaborations
- Powerful integrated interfaces

## ■ Outlook and some plans

- To integrate IHEP Docs with Information system
- To integrate smart Form with workflow
- To organize the data into knowledge platform
- To ensure document security