

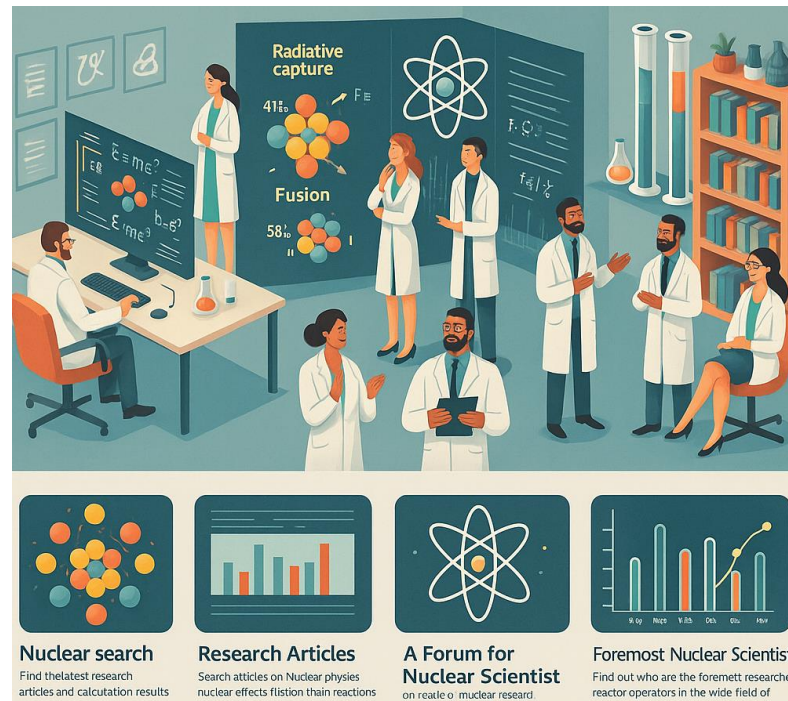
NAPMIX – STATUS OPENDATA4ITCS

NAPMIX Training Workshop 2026 – Metadata,
RDM & FAIR Integration

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the European Union

Content



1

NAPMIX implementation in OPENDATA4ICTS

2

Metadata in IBA experiments

3

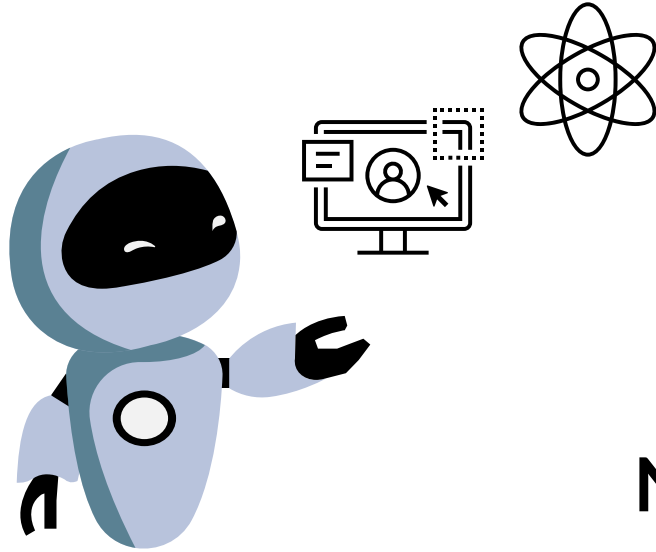
IABA-ICTS Metadata Portal

4

Implementation of Nuclear physics beamlines

5

End to end IBA Experimental Workflow

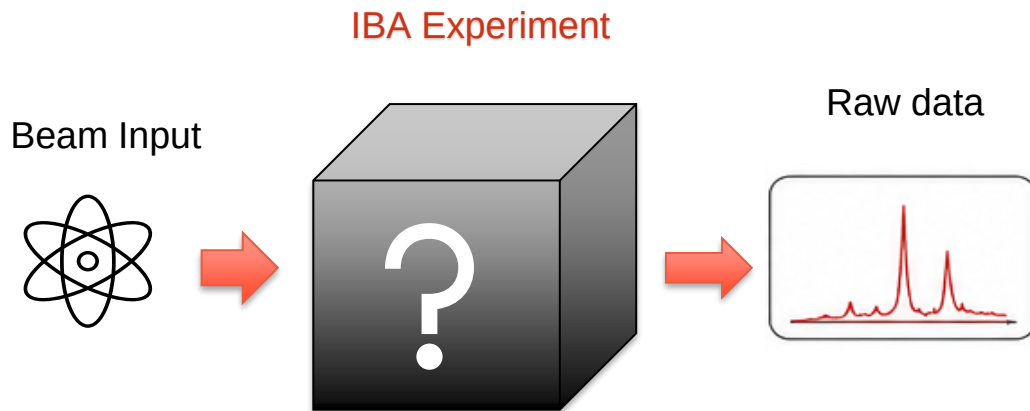


NAPMIX implementation in OPENDATA4ICTS

Why metadata matters?



Why metadata matter in IBA experiments workflows?



We don't know:

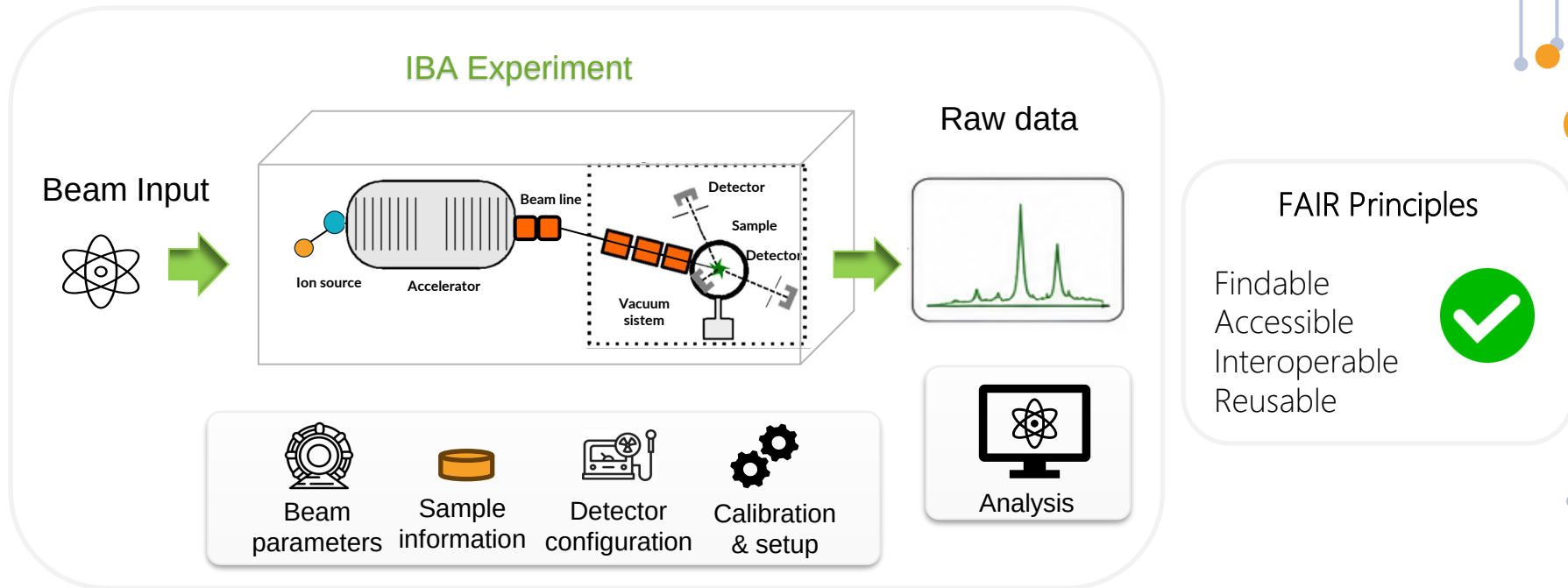
- Experimental conditions
- Sample and setup
- Detector configuration
- Calibrations, angles, etc



Cannot validate
Cannot trust
Cannot reuse

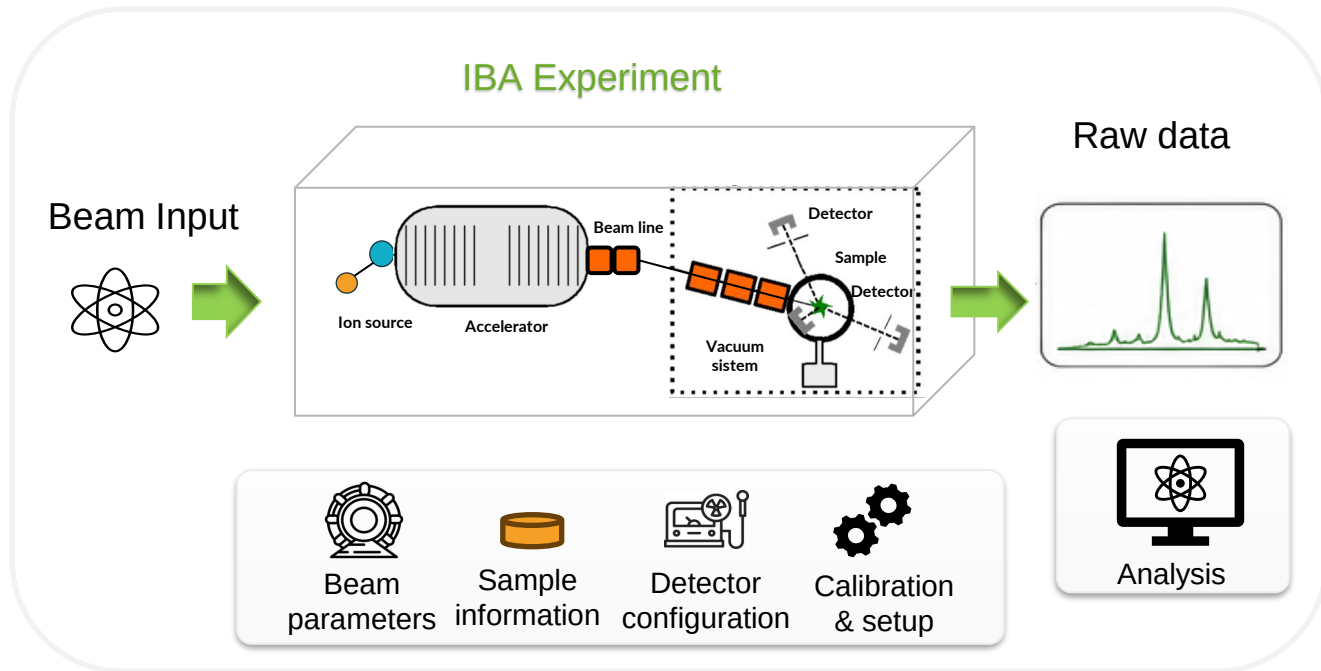
Without Metadata: The experiment is a black box

Why metadata matter in IBA experiments workflows?



With Metadata: The experiment is transparent and understandable

Why metadata matter in IBA experiments workflows?



Metadata = data about data

Describes:

- how was data generated?
- under which conditions?, by whom and for what purpose?

Metadata often lost after analysis

With Metadata: The experiment is transparent and understandable

OPENDATA4ICTS as a NAPMIX implementation use-case



- Focus on IBA infrastructures
- Adaptation of NAPMIX schemas to local experimental workflows
- Bridge between schema and real workflows

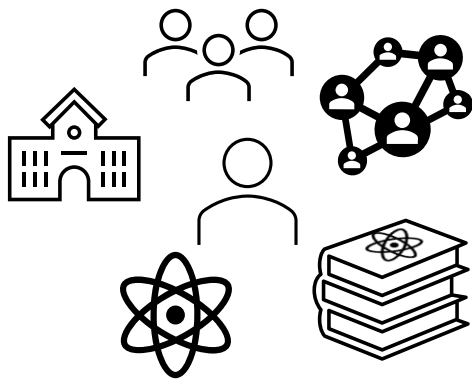
Within OPENDATA4ICTS, CNA and CMAM are implementing and adapting NAPMIX metadata concepts, schemas and workflows to accelerator-based IBA experimental environments.

Metadata in IBA experiments

General and scientific metadata

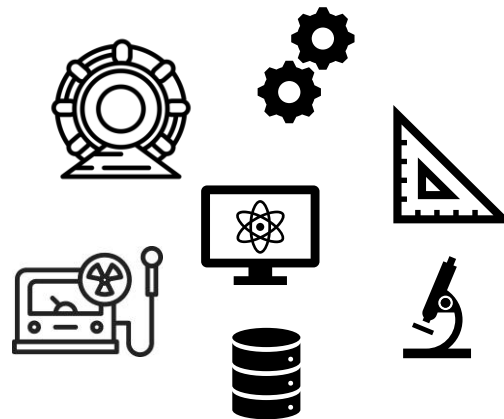


Metadata categories



General metadata

Proposal details
Researchers, institutions, beamlines,
techniques, experiment main
information

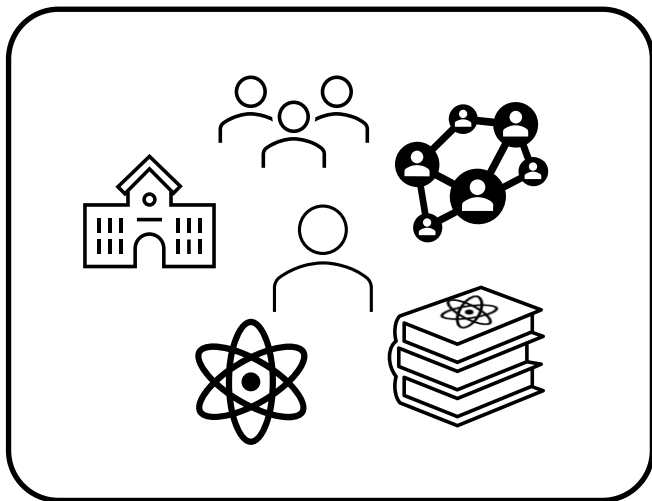


Scientific metadata

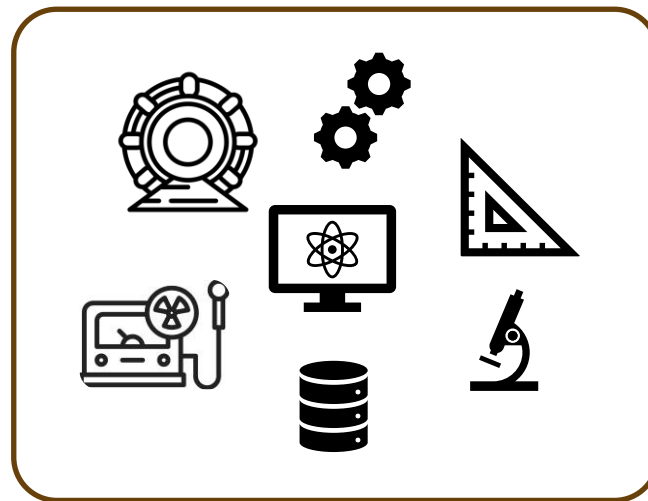
Experimental set up
Beam settings (geometry, angles, filters),
electronic chain, detectors, technique-
specific models.

Metadata categories

General metadata



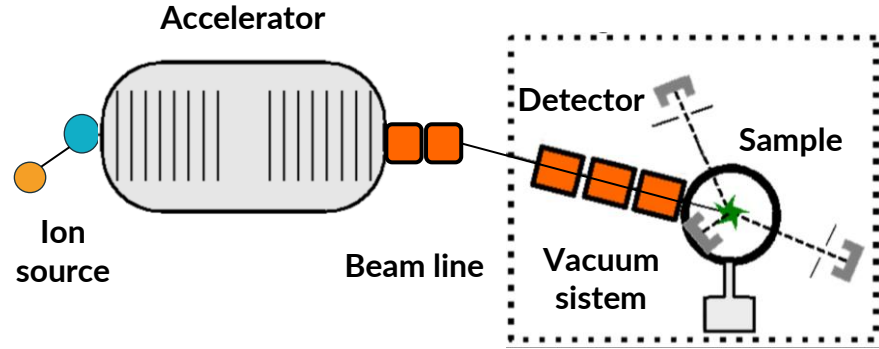
Scientific metadata



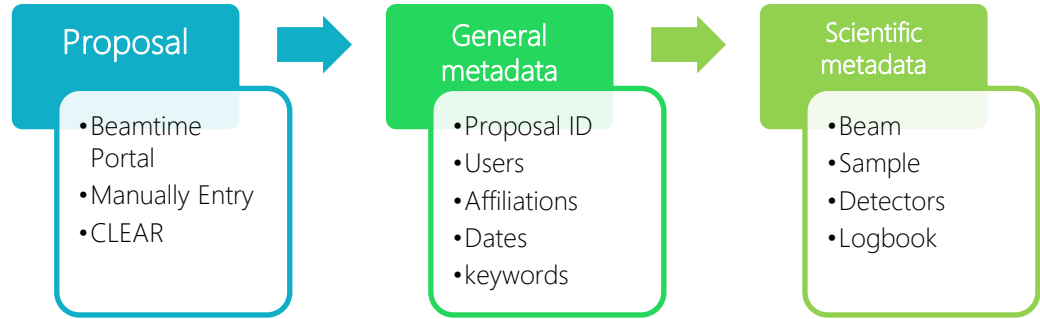
General metadata improve discoverability, while technical metadata ensure reusability

3 MV Tandem

CNAITS
Centro Nacional de Aceleradores
INFRAESTRUCTURAS CIENTÍFICAS
Y TÉCNICAS SINGULARES

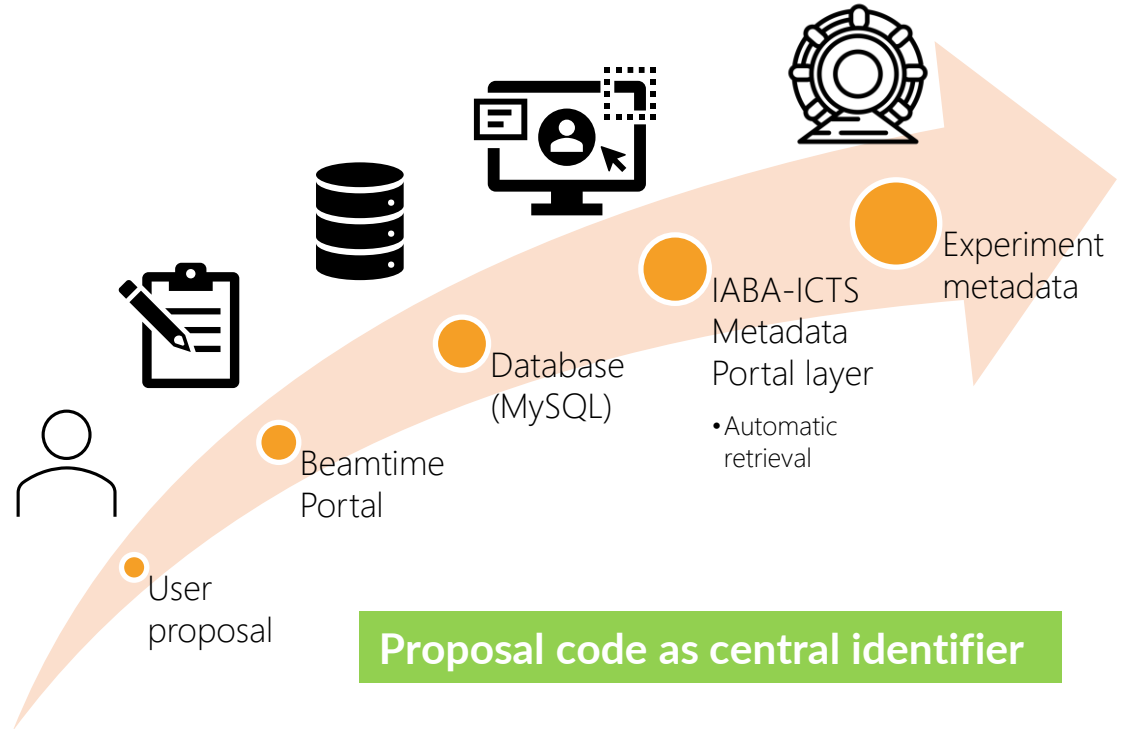


5 MV Tandem



General Metadata: Integration with the IABA Beamtime Portal

- General metadata are automatically retrieved from the CNA/CMAM proposal management system.
- Automatic linking of users and experiments
- Unified access across CNA and CMAM



General Metadata: Integration with the IABA Beamtime Portal

Proposals (Beamtime Portal)

- Institutions
- Infrastructures
- Beamlines
- Projects
- Researchers
- Techniques

Proposal Submission portal for CMAM and CNA

<https://beamtime.cmam.uam.es/>

IABA Proposal Management Portal

Carla Tatiana Muñoz Chimbo Home Profile Research data Logout

Users Proposals
Submitted proposals
Completed proposals
Unsubmitted proposals
[Create a New Proposal](#)

Proposal Request By Carla Tatiana Muñoz Chimbo

TITLE:

TYPE OF PROPOSAL:
You should not check any of the following options, if you proposal is research
- Is this proposal a commissioning? ☐
- Is this proposal for a teaching experiment? ☐
If you proposal is research:
- Is this experiment part of a PhD Thesis, Master work or any educational project? ☐

PARTICIPANTS:

Name	Last name	Institution

IABA ICTS (CNA+CMAM) IS MADE UP OF TWO NODES. YOU HAVE TO CHOOSE ONE OF THEM:
- CMAM node (beamlines: STD, Eufi, IMP, IuB, NEU, TOF, ACC); ☐
- CNA node (beamlines: CNA-STD, CNA-EXT, CNA-NEU, CNA-MC, CNA-IRR, CNA-FIX); ☐

BEAMS REQUESTED:
You must fill in all the fields. If you don't know some of them, please contact beamtime.iaba@uam.es, so that you can correctly complete your proposal.
If you have chosen the CNA node, you only have to choose beamlines belonging to this node (Example: CNA-STD).
One shift corresponds to 3 hours.

NO. SHIFTS	BEAMLINE	INSTRUMENT	CURRENT (nA)	NO. SAMPLES

Create Proposal

External proposal look:

Code: TOF013/25 [Search proposal](#)
Code must be the proposal ID without the P (e.g. 02004)

General information

Institution: Centro de Micro-Análisis de Materiales [Infrastructure: CMAM Tandem 5 MV](#)

Principal Investigator: Andrés Redondo

Beamline: [CMAM ERDA TOF](#) [Search...](#)

Techniques linked: [Time of flight \(ERDA\)](#) [Search...](#)

Title: * Multilayer Stacks

Abstract: Optical coatings for cryogenic GWDs must minimise mechanical losses and optical absorption while maintaining high reflectivity. Actual coatings are made of alternating high/low refractive index layers. While single-layer films have been extensively studied, multilayer stacks present additional challenges such as interlayer mixing, hydrogen redistribution, and accumulated stress, which can degrade performance.

Projects: CMAM internal project 2025

Submission date: 15/09/2025

[Cancel](#) [Create](#)

Proposal code as central identifier: TOF013/25

Scientific Metadata File Developed

We follow a modular approach where a common core is extended by technique-specific metadata models.

Common core metadata



Technique-specific extensions



Instrument-specific parameters

			
Implemented	In development	Implemented	In development
Standard beamline ERDA/RBS/PIGE/ PIXE	Microbeam chamber IBIC/PIXE/TRIIBIC Nuclear physics - HISPANOS - FNB	TOF-ERDA	Nuclear physics - NUC30 - NUC45

Scientific Metadata file for CNA STD ERDA / RBS / PIGE / PIXE

	- File name - Sample ID
Beam	- Ion and charge state - Energy - Current - Beam shape and width/height/diameter
Accelerator	- Injection and Terminal energy - Magnetic field
Geometry	Incident, exit and scattering angle
Filter	Material and thickness
Detector	- Model - Sample-detector distance - BIAS voltage
Electronics	- Shaping / Peaking time - Coarse / Fine / ADC gain - ADC range
Measurement	- Accumulated charge - Inverse current
	Notes

The screenshot shows a web-based form titled "Add ERDA". The form is organized into several sections, each with a title and a set of input fields:

- File name ***: A text input field.
- Sample ID ***: A text input field containing "Si3 ADA FRONT".
- Beam**:
 - Ion**: A dropdown menu showing "He - 4".
 - Charge State**: A text input field showing "2".
 - Energy**: A text input field showing "3" with units "MeV".
 - Current**: A text input field showing "0,5" with units "nA".
 - Beam shape**: A dropdown menu showing "Rectangular".
 - Beam width**: A text input field showing "0,5" with units "mm".
 - Beam height**: A text input field showing "3" with units "mm".
- Accelerator**:
 - Injection energy**: A text input field showing "72" with units "keV".
 - Terminal voltage**: A text input field showing "0,973" with units "MV".
 - Magnetic field**: A text input field showing "2740" with units "G".
- Geometry**:
 - Incident angle**: A text input field showing "70" with units "deg".
 - Exit angle**: A text input field showing "66" with units "deg".
 - Scattering angle**: A text input field showing "44" with units "deg".
- Filter**:
 - Filter present**: A checkbox that is checked.
 - Material ***: A text input field showing "Mylar".
 - Thickness**: A text input field showing "13" with units "mm".
- Detector**:
 - Detector**: A dropdown menu showing "PIPS 300 mm2".
 - Sample-detector distance**: A text input field showing "100" with units "mm".
 - BIAS voltage**: A text input field showing "40" with units "V".

At the bottom right of the form, there are "Save" and "Cancel" buttons.

Scientific Metadata file for CMAM STD ERDA-TOF

	- File name - Sample ID
Beam	- Ion and charge state - Energy and Current
Accelerator	- Injection and Terminal energy - Electromagnetic current
Geometry	Incident and exit angle
TOF Detector	- TOF detector model - Sample-T1distance - Length of flight - BIAS - TAC range and multiplier - ADC gain and range
Energy Detector	- Energy detector model - Sample-detector distance - BIAS voltage and shaping time - Coarse / Fine / ADC gain - ADC range
Coincidence	Coincidence window
	Notes

The screenshot shows a web interface for adding ERDA-TOF data. The form is titled 'Add ERDA-TOF' and includes several sections for parameter entry:

- File name *:** A text input field.
- Sample ID:** A text input field with 'Pyrex' entered.
- Beam parameters:**
 - Ion:** A dropdown menu showing 'Br - ...'.
 - Charge State:** A text input field with '4' entered.
 - Energy:** A text input field with '10' entered, followed by a unit dropdown set to 'MeV'.
 - Current:** A text input field with '1,3' entered, followed by a unit dropdown set to 'nA'.
- Accelerator parameters:**
 - Terminal Voltage:** A text input field with '1955,08' entered, followed by a unit dropdown set to 'MV'.
 - Electromagnet Current:** A text input field with '22,7' entered, followed by a unit dropdown set to 'A'.
 - Default values:** A red button.
- Geometry:**
 - Incident Angle β :** A text input field with '20' entered, followed by a unit dropdown set to 'deg'.
 - Exit Angle θ :** A text input field with '40' entered, followed by a unit dropdown set to 'deg'.
 - Diagram:** A schematic showing an 'Ion Beam' entering a sample at an angle β and exiting at an angle θ towards a 'Detector'.
- TOF Detector:**
 - TOF detector:** A dropdown menu showing 'TOF-DUCK 0.1'.
 - Sample-T1 Dist.:** A text input field with '245' entered, followed by a unit dropdown set to 'mm'.
 - Length of Flight:** A text input field with '457' entered, followed by a unit dropdown set to 'mm'.
 - BIAS:** A text input field with '-3600' entered, followed by a unit dropdown set to 'V'.
 - TAC Range:** A text input field with '200' entered, followed by a unit dropdown set to 'ns'.
 - TAC Mult.:** A text input field with '1' entered.

At the bottom right of the form are 'Save' and 'Cancel' buttons. Below the form, a note states: 'Each multilayer requires ~2 hours for alignment, calibration, and data collection. With 4-5 stacks, a total of ~8-10 hours is'.



IABA-ICTS Metadata Portal



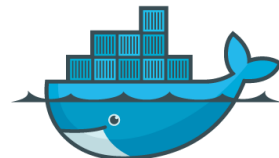


IBA-ICTS Metadata Portal

The IBA-ICTS Metadata Portal is a central hub for experimental metadata management in accelerator-based IBA infrastructures, built on NAPMIX concepts and schemas.

- Bridges experimental planning, execution and data archiving
- Provides guided metadata capture with validation
- Generates exportable, reusable JSON metadata
- Reduces complexity for researchers through structures form(User-friendly interface).

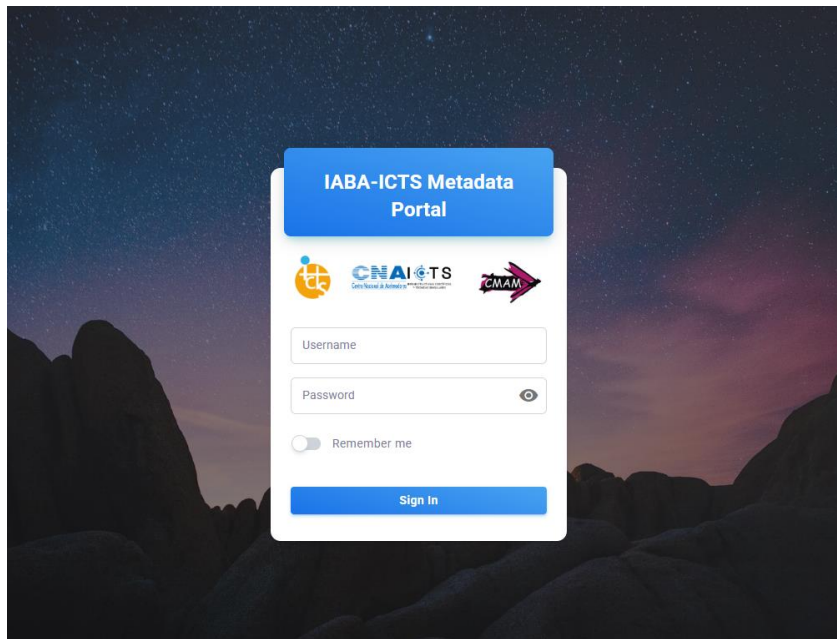
django



docker



Access & Deployment Model



Admin



CNA



CMAM



- Installed directly on Tandem accelerator workstations (data acquisition environment)
- Next step: beamline-specific user accounts
- Future evolution: individual researcher accounts
- Scalable structure aligned with experimental facility organization

Role-based Access Model



Admin User

- Full access across CNA and CMAM
- Manage users and permissions
- Configure: researchers, beamlines, techniques, projects, institutions
- Maintain internal metadata database structure



CNA user

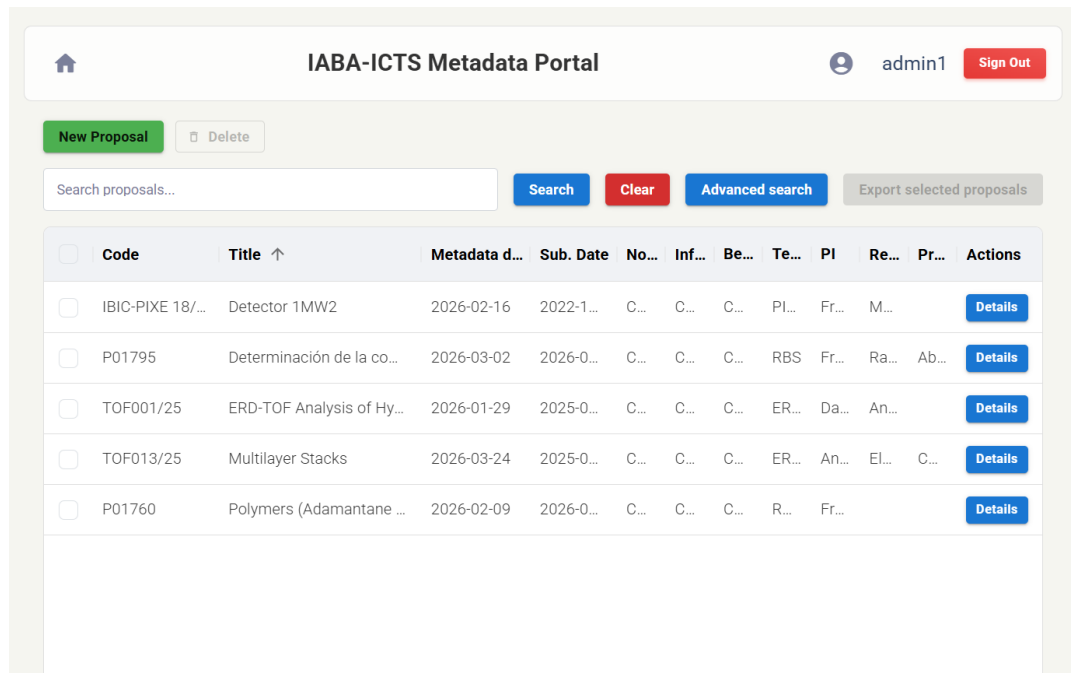
- Access to CNA proposals only
- Create and manage CNA proposals
- Register, edit, delete and export metadata
- Remove proposals without metadata



CMAM user

- Same capabilities scoped to CMAM environment
- Full lifecycle management of CMAM proposals and metadata

Proposal Dashboard (Main View)



The screenshot shows the 'IABA-ICTS Metadata Portal' interface. At the top, there is a header with a home icon, the portal name, a user profile 'admin1', and a 'Sign Out' button. Below the header, there are two buttons: 'New Proposal' (green) and 'Delete' (grey). A search bar with the placeholder 'Search proposals...' is followed by 'Search' (blue), 'Clear' (red), 'Advanced search' (blue), and 'Export selected proposals' (grey) buttons. The main content is a table with 12 columns: Code, Title, Metadata d..., Sub. Date, No..., Inf..., Be..., Te..., PI, Re..., Pr..., and Actions. The table contains five rows of proposal data, each with a 'Details' button in the Actions column.

☐	Code	Title ↑	Metadata d...	Sub. Date	No...	Inf...	Be...	Te...	PI	Re...	Pr...	Actions
☐	IBIC-PIXE 18/...	Detector 1MW2	2026-02-16	2022-1...	C...	C...	C...	PI...	Fr...	M...		Details
☐	P01795	Determinación de la co...	2026-03-02	2026-0...	C...	C...	C...	RBS	Fr...	Ra...	Ab...	Details
☐	TOF001/25	ERD-TOF Analysis of Hy...	2026-01-29	2025-0...	C...	C...	C...	ER...	Da...	An...		Details
☐	TOF013/25	Multilayer Stacks	2026-03-24	2025-0...	C...	C...	C...	ER...	An...	El...	C...	Details
☐	P01760	Polymers (Adamantane ...	2026-02-09	2026-0...	C...	C...	C...	R...	Fr...			Details

Overview of experimental proposals

Table of all registered experimental proposals Each entry includes:

- Proposal ID / code
- Experiment title
- Registration date
- Submission date
- Node & infrastructure
- Beamline & technique
- Researchers & project

Creating a new Proposal

General metadata registration options

1. Beamtime Portal import (recommended)
2. Manual Entry
3. CLEAR database (in development)

Create Proposal

Proposal source

[IMPORT FROM BEAMTIME PORTAL](#) [MANUAL ENTRY](#)

External proposal lookup

Code [Search proposal](#)

Code must be the proposal ID without the P (e.g. 02804)

General information

Institution Infrastructure

Principal Investigator

beamline [Search...](#)

Techniques linked [Search...](#)

Title

Abstract

[Cancel](#) [Create](#)

Creating a new Proposal

Create Proposal

Proposal source

IMPORT FROM BEAMTIME PORTAL MANUAL ENTRY

External proposal lookup

Code
TOF013/25 Search proposal

Code must be the proposal ID without the P (e.g. 02804)

General information

Institution
Centro de Micro-Análisis de Materiales

Infrastructure
CMAM Tandem 5 MV

Principal Investigator
Andrés Redondo

beamline
CMAM ERDA TOF Search...

Techniques linked
Time of flight ERDA Search...

Title *
Multilayer Stacks

Abstract
Optical coatings for cryogenic GWDs must minimise mechanical losses and optical absorption while maintaining high reflectivity. Actual coatings are made of alternating high/low refractive index layers. While single-layer films have been extensively studied, multilayer stacks present additional

Cancel Create

Beamtime Portal Import (recommended)

- Retrieve proposal using identifier code
- Metadata automatically imported from external database
- Extra field required: experimental techniques
- Ensures consistency and reduces manual input

Code: TOF013/25

Creating a new Proposal

Manual Entry

Create Proposal

admin1 [Sign Out](#)

Proposal source

[IMPORT FROM BEAMTIME PORTAL](#) [MANUAL ENTRY](#)

General information

Institution ▼ Infrastructure ▼

Principal Investigator ▼

beamline ▼

Techniques linked ▼

Title *

Abstract

[Clear form](#)

[Cancel](#) [Create](#)

- Used when no Beamtime Portal record exists
- Requires administrative approval
- User can work normally but internal dataset creation is restricted until validation

Proposal Detail View

 IABA-ICTS Metadata Portal  admin1 Sign Out

TOF013/25: Multilayer Stacks Add ERDA-TOF File Export proposal Export selected files Delete selected files

Abstract:

Introduction and Scientific Motivation

Optical coatings for cryogenic GWDs must minimise mechanical losses and optical absorption while maintaining high reflectivity. Actual coatings are made of alternating high/low refractive index layers. While single-layer films have been extensively studied, multilayer stacks present additional challenges such as interlayer mixing, hydrogen redistribution, and accumulated stress, which can degrade performance.

Submission date: 2025-09-15 **Institution:** CMAM **Infrastructure:** CMAM Tandem 5 MV
Beamlines: CMAM-ERDA-TOF **Techniques:** ERDA-TOF **PI:** Andrés Redondo
Researchers: Elena Herguedas, Carlos Garcia **Projects:** CMAM internal project 2025

Associated Files

ERDA-TOF

☐	File Name	Sa...	Ion	Ch...	En...	Un...	Cu...	Un...	In...	Un...	Ex...	Un...	TO...	TO...	Un...	De...	Bl...	Un...	C
☐	MAP015	Py...	Br ...	4	10	M...	1.3	nA	20	deg	40	deg	T...	-3...	V	T...	40	V	5

Full metadata management environment

- General and scientific metadata overview
- File-level management per experiment
- Actions:
 - Add file
 - Export proposal (JSON)
 - Export selected files (JSON)
 - Delete selected files

Scientific Metadata per File

Experiment-level data registration

- Each file = one experimental dataset (spectrum/run/setup change)
- Dedicated form per dataset
- Pre-filled default values when available
- Users only adjust relevant parameters
- Ensures consistency across experiments

Add ERDA-TOF

File name * Sample ID

Beam parameters

Ion Charge State Energy MeV Current nA

Accelerator parameters

Terminal Voltage MV Electromagnet Current A

Geometry

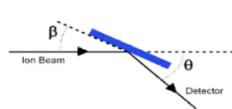
Incident Angle β deg

Exit Angle θ deg

TOF Detector

TOF detector Sample-T1 Dist. cm Length Of Flight cm BIAS V

Save Cancel



Iterative Metadata & Versioning

Incremental metadata capture

- Each new file inherits previous metadata
- Only modified parameters are updated
- Each entry requires a unique file name
- Enables fast and consistent experimental logging
- Logbook

Add ERDA-TOF

File name * Sample ID

Beam parameters

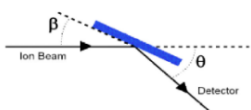
Ion Charge State Energy MeV Current nA

Accelerator parameters

Terminal Voltage MV Electromagnet Current A

[Default values](#)

Geometry



Incident Angle β deg

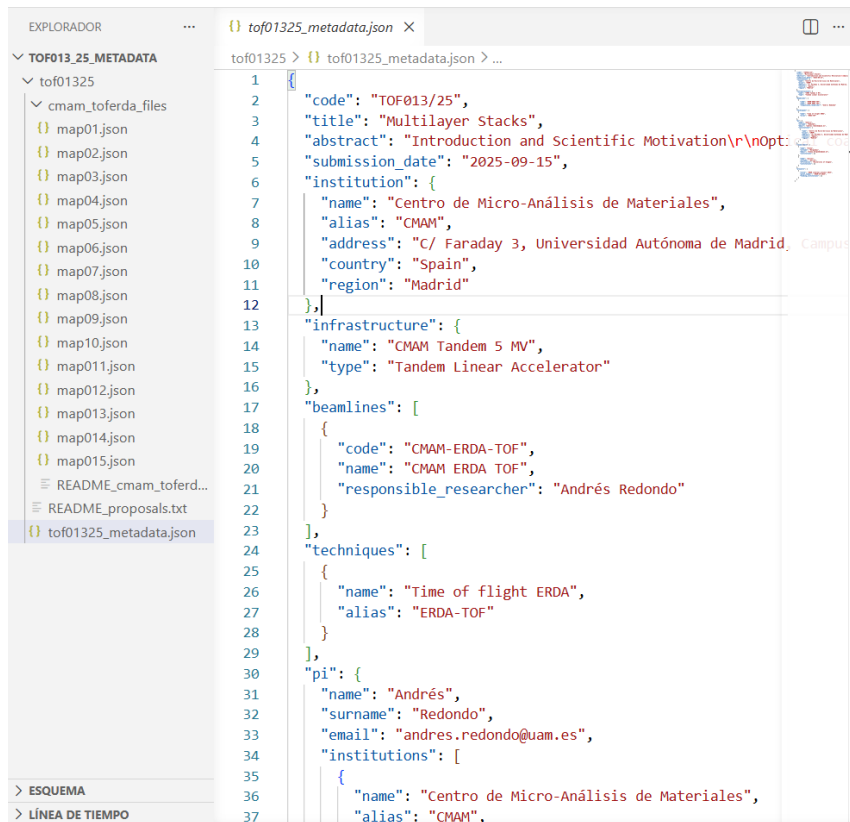
Exit Angle θ deg

TOF Detector

Export & FAIR integration

Incremental metadata capture

- Export full proposal as JSON
- Compatible with external repositories
- Researchers choose destination repository
- Future integration:
 - Direct Zenodo upload button

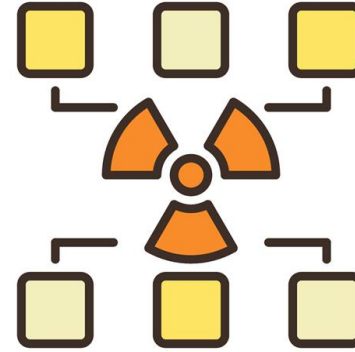


The screenshot shows a file explorer on the left with a tree view under 'TOF013_25_METADATA'. It lists a folder 'tof01325' containing a subfolder 'cmam_toferda_files' and several 'map' JSON files. Below these are 'README_cmam_toferd...' and 'README_proposals.txt'. The selected file is 'tof01325_metadata.json'. The main pane on the right displays the JSON content of this file, which is a structured metadata object for a TOF proposal.

```
1 {
2   "code": "TOF013/25",
3   "title": "Multilayer Stacks",
4   "abstract": "Introduction and Scientific Motivation\r\n\r\nOpt...",
5   "submission_date": "2025-09-15",
6   "institution": {
7     "name": "Centro de Micro-Análisis de Materiales",
8     "alias": "CMAM",
9     "address": "C/ Faraday 3, Universidad Autónoma de Madrid, Campus...",
10    "country": "Spain",
11    "region": "Madrid"
12  },
13  "infrastructure": {
14    "name": "CMAM Tandem 5 MV",
15    "type": "Tandem Linear Accelerator"
16  },
17  "beamlines": [
18    {
19      "code": "CMAM-ERDA-TOF",
20      "name": "CMAM ERDA TOF",
21      "responsible_researcher": "Andrés Redondo"
22    }
23  ],
24  "techniques": [
25    {
26      "name": "Time of flight ERDA",
27      "alias": "ERDA-TOF"
28    }
29  ],
30  "pi": {
31    "name": "Andrés",
32    "surname": "Redondo",
33    "email": "andres.redondo@uam.es",
34    "institutions": [
35      {
36        "name": "Centro de Micro-Análisis de Materiales",
37        "alias": "CMAM",
```

Scientific metadata models validated in real experiments

Technique	Facility/ Beamline	Experiment description	Principal Investigator
ERDA	CNA/STD	P01760: Polymers (Adamantane and others) thin films charac.	Javier Ferrer
RBS	CNA/STD	P017: Determination of the chemical composition of AlOx coatings with different stoichiometries	Javier Ferrer
TOF-ERDA	CMAM/STD	Characterization of Si ₃ N ₄ films (upcoming 24/03/2026).	Andrés Redondo Cubero



Implementation of Nuclear Physics beamlines



The Challenge: Nuclear Experiment Metadata

IBA Techniques:

Separate metadata file per technique/beamline

Standardized setups, electronic, acquisition systems

Fixed detector geometries

Similar type of detector between measurements

Technique-Specific Metadata

Nuclear Physics:

Highly variable setups and geometries

Custom detector combinations

Complex trigger and data acquisition systems

Increased number of parameters

Experiment-Specific Metadata

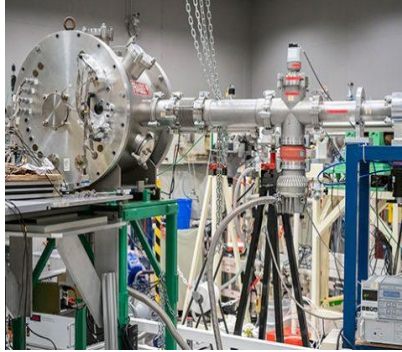


Nuclear Physics in ICTS facilities



CMAM

- NUC-30:

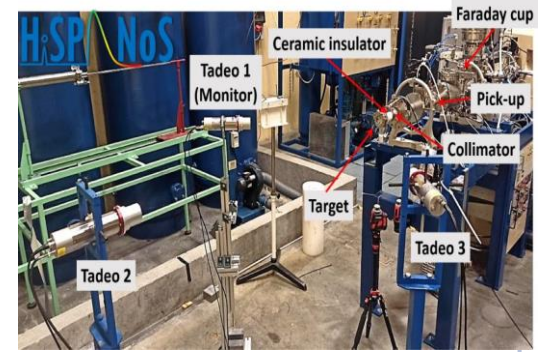


- NUC-45:



CNA

- HiSPANoS:



- FNB:



Proposed Implementations

Metadata file for each NP beamline:

- Dedicated metadata structure, dependent on the beamline
- Relation between beamline and experiment type (HiSPANoS → Neutron activation)

Additional fields:

- Target details
 - Geometrical configuration
- etc...

Parameter Lists:

- Possibility of creating a single file for several samples

Separation between static and dynamic metadata:

- Static: Default values can be stored in databases and reused (e.g. bias and dimensions of specific detector)
- Dynamic: Experiment-dependent parameters given by the user (e.g. angular range, distance from target)

Proposed Implementations

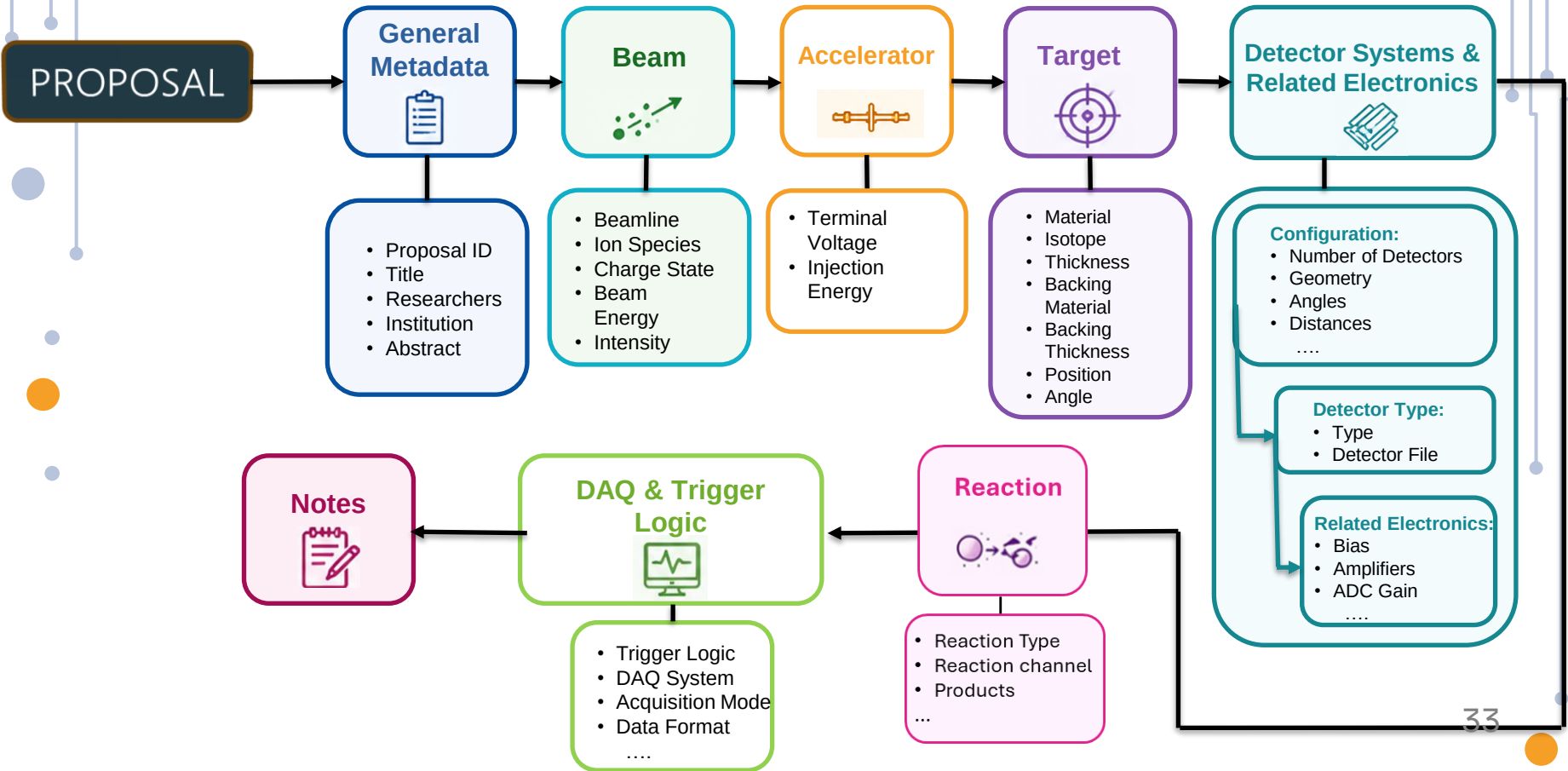
Detector / electronics databases:

- Predefined default parameters
- Reusable detector arrays and saved configurations
-  - Faster and more user-friendly metadata submission

Object-specific dynamic fields:

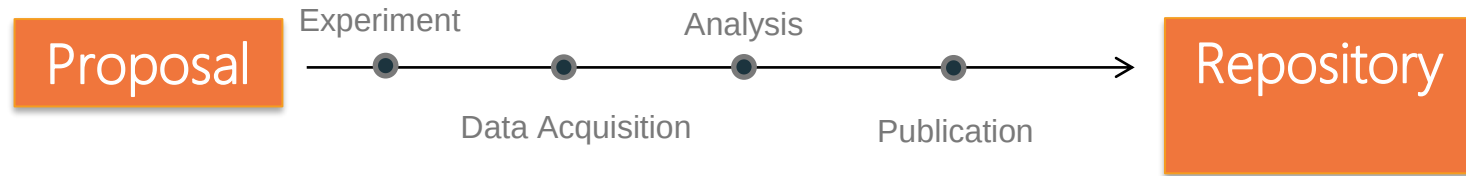
- Metadata file structure and fields generated according to the setup (e.g. detector number, type)
- Flexibility in metadata form generation, relevant to the experiment

Metadata Schema for Nuclear Physics



Future Tests @ CMAM

- STD Beamline: Testing metadata file generation for a simple case.
- Nuclear Beamline: Test End-to-End workflow



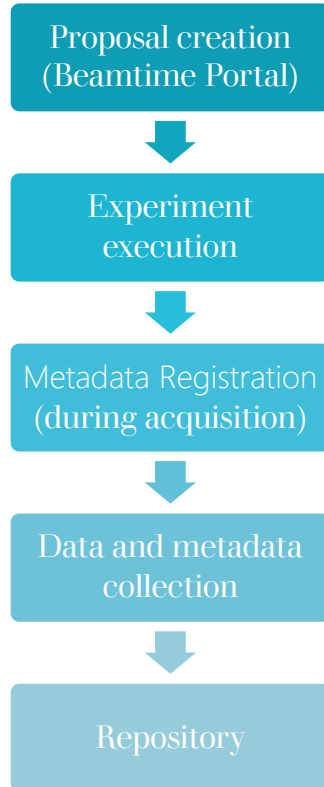
End to End Workflow



CNAI CTS
Centro Nacional de Aceleradores
INFRAESTRUCTURAS CIENTÍFICAS
Y TÉCNICAS SINGULARES



Proposal



Proposal Submission portal for CMAM and CNA

<https://beamtime.cmam.uam.es/>

IABA Proposal Management Portal

Carla Tatiana Muñoz Chimbo Home Profile Research data Logout

Users Proposals

- Submitted proposals
- Completed proposals
- Unsubmitted proposals
- ☒ Create a New Proposal

Proposal Request By Carla Tatiana Muñoz Chimbo

TITLE:

TYPE OF PROPOSAL:

You should not check any of the following options, if your proposal is research

- Is this proposal a commissioning? ☐
- Is this proposal for a teaching experiment? ☐

If you proposal is research:

- Is this experiment part of a PhD Thesis, Master work or any educational project? ☐

PARTICIPANTS:

Name	Last name	Institution

IABA ICTS (CNA+CMAM) IS MADE UP OF TWO NODES. YOU HAVE TO CHOOSE ONE OF THEM: *

- CMAM node (beamlines: STD, EdB, IMP, IdB, NUC, TOF, ACC) ☐
- CNA node (beamlines: CNA-STD, CNA-EXT, CNA-NEU, CNA-MC, CNA-IRR, CNA-FIS) ☐

BEAMS REQUESTED:

You must fill in all the fields. If you don't know some of them, please contact beamtime.iaba@uam.es that you can correctly complete your proposal.

If you have chosen the CNA node, you only have to choose beamlines belonging to this node (Example CNA-STD).

One shift corresponds to 3 hours.

NO. SAMPLES	BEAMLINE	INSTRUMENT	EXPERIMENT	CLUSTER (SOL)	NO. SAMPLES

PROPOSAL:

Guidelines for applicants:

The proposal should be concise, giving an accurate, concrete understanding of the proposed experiment. Points to be covered are indicated below:

- Abstract (one paragraph)
- Introduction and scientific motivation
- Main objectives and scientific relevance of the proposed experiment
- Description of the experimental set-up and technical procedure
- Detailed explanation of the estimated beam time required for the experiment as a justification of the number of shifts requested (three hours each)
- Results expected

(maximum characters: 5500)



The metadata registration process is proposal - driven

IBA Experiment



Proposal creation
(Beamtime Portal)



Experiment
execution



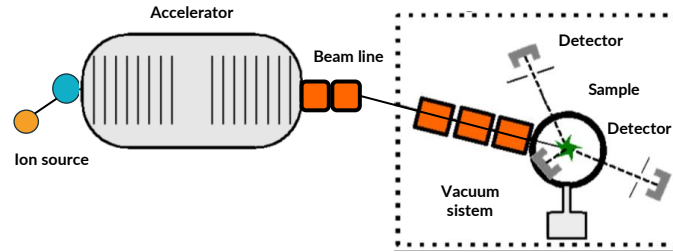
Metadata Registration
(during acquisition)



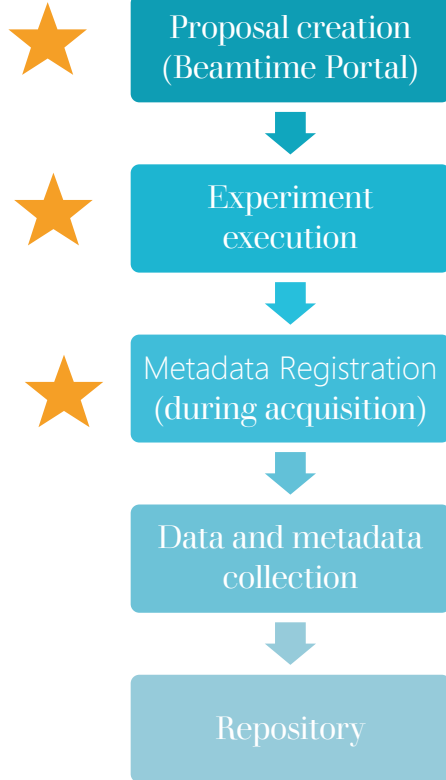
Data and metadata
collection



Repository

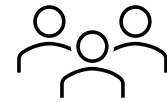


Registration general metadata

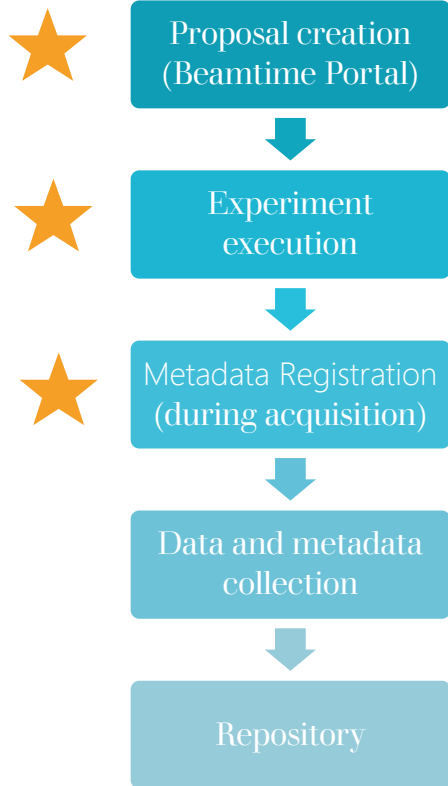


The screenshot shows the 'Create Proposal' form in a web application. The form is divided into several sections: 'Proposal source' with buttons for 'IMPORT FROM BEAMTIME PORTAL' and 'MANUAL ENTRY'; 'External proposal lookup' with a 'Code' field (containing 'TOF013/25') and a 'Search proposal' button; 'General information' with fields for 'Institution' (Centro de Micro-Análisis de Materiales), 'Infrastructure' (CMAM Tandem 5 MV), 'Principal Investigator' (Andrés Redondo), 'Beamline' (CMAM ERDA TOF), and 'Techniques linked' (Time of flight ERDA). There are also fields for 'Title *' (Multilayer Stacks) and 'Abstract' (Optical coatings for cryogenic GWDs must minimise mechanical losses and optical absorption while maintaining high reflectivity. Actual coatings are made of alternating high/low refractive index layers. While single-layer films have been extensively studied, multilayer stacks present additional...). The form has 'Cancel' and 'Create' buttons at the bottom.

- General metadata (proposal-level)
- Scientific metadata (setup, beam)
- Logbook (experimental tracking)



Registration scientific metadata



The screenshot shows a web form titled 'Add ERDA-TOF'. It contains several sections for data entry:

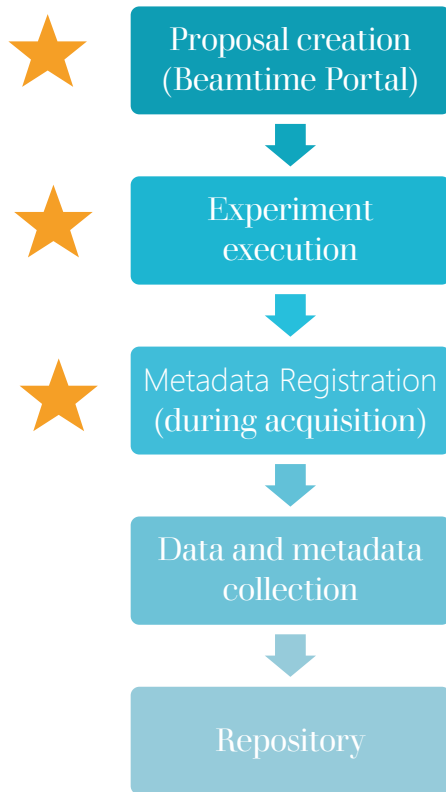
- File name *** and **Sample ID** input fields.
- Beam parameters** section with dropdowns for **Ion** and **Charge State**, and input fields for **Energy** (MeV) and **Current** (nA).
- Accelerator parameters** section with input fields for **Terminal Voltage** (MV) and **Electromagnet Current** (A), and a **Default values** button.
- Geometry** section featuring a diagram of an ion beam hitting a detector at an angle. The diagram labels the incident angle β , the exit angle θ , and the detector. Input fields for **Incident Angle β** and **Exit Angle θ** (both in degrees) are provided.
- TOF Detector** section with a dropdown for **TOF detector**, and input fields for **Sample-T1 Dist.** (cm), **Length Of Flight** (cm), and **BIAS** (V).

At the bottom right of the form are **Save** and **Cancel** buttons.

- General metadata (proposal-level)
- Scientific metadata (setup, beam)
- Logbook (experimental tracking)



Logbook

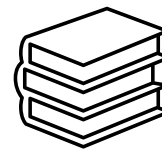


The screenshot shows a web form titled "Add ERDA-TOF" with the following sections:

- File name *** and **Sample ID** input fields.
- Beam parameters**: **Ion** (dropdown), **Charge State** (dropdown), **Energy** (MeV), and **Current** (nA).
- Accelerator parameters**: **Terminal Voltage** (MV) and **Electromagnet Current** (A). A **Default values** button is present.
- Geometry**: A diagram showing an **Ion Beam** incident at angle β and exiting at angle θ towards a **Detector**. Input fields for **Incident Angle β** and **Exit Angle θ** (both in degrees) are provided.
- TOF Detector**: **TOF detector** (dropdown), **Sample-T1 Dist.** (cm), **Length Of Flight** (cm), and **BIAS** (V).

Buttons for **Save** and **Cancel** are at the bottom right.

- General metadata (proposal-level)
- Scientific metadata (setup, beam)
- Logbook (experimental tracking)



Metadata in format JSON



Proposal creation
(Beamtime Portal)



Experiment
execution



Metadata Registration
(during acquisition)



Data and metadata
collection



Repository

IABA-ICTS Metadata Portal

P01760: Polymers (Adamantane and others) thin films charac.

Abstract:
Outline
Adamantane (ADA) is an organic compound w...

Submission date: 2026-01-15 Institution: CNA Infrastructure: CNA Tandem 3 MV Beamlines: CNA-STD
Techniques: ERDA, RBS PI: Francisco Javier Ferrer Fernandez Researchers: -- Projects: --

Associated Files

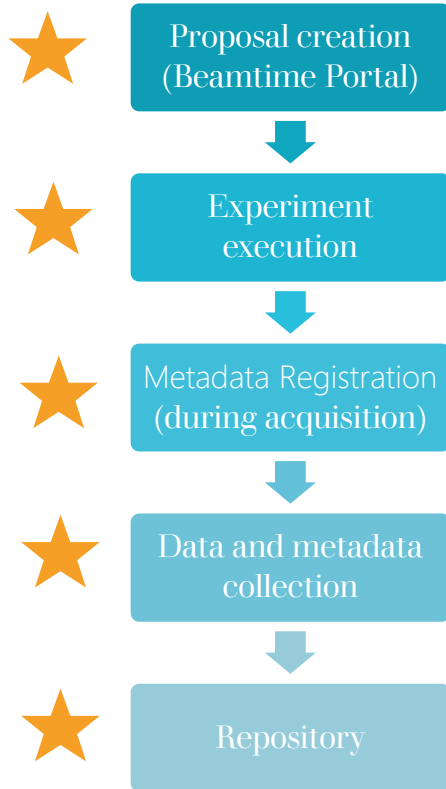
ERDA

File Na...	Sample...	Ion	Char...	Ene...	Cur...	E _{inj} ...	V _i (...	B _{inj} ...	Inc...	Exit...	Scatt...	Q
☐ Si3	Si3 AD...	He...	2	3	0.5	72	0.973	2740	70	66	44	0
☐ Si8	Si8 AD...	He...	2	3	0.5	72	0.973	2740	70	66	44	0
☐ F Ada...	F ADA...	He...	2	3	0.5	72	0.973	2740	70	66	44	0
☐ B Ada...	B ADA...	He...	2	3	0.5	72	0.973	2740	70	66	44	0



```
TOP01325_METADATA
su01325 > {} su01325_metadata.json > ...
1 {
2   "code": "TOP01325",
3   "title": "Multilayer stacks",
4   "abstract": "Introduction and Scientific Motivation\r\nOpt",
5   "submission_date": "2025-09-15",
6   "institution": {
7     "name": "Centro de Micro-Análisis de Materiales",
8     "alias": "CMAM",
9     "address": "C/ Faraday 3, Universidad Autónoma de Madrid",
10    "country": "Spain",
11    "region": "Madrid"
12  },
13  "infrastructure": {
14    "name": "CMAM-ERDA-TOP",
15    "type": "Tandem Linear Accelerator"
16  },
17  "beamlines": [
18    {
19      "code": "CMAM-ERDA-TOP",
20      "name": "CMAM ERDA TOP",
21      "responsible_researcher": "Andrés Redondo"
22    }
23  ],
24  "techniques": [
25    {
26      "name": "Time of flight ERDA",
27      "alias": "ERDA-TOP"
28    }
29  ],
30  "pi": {
31    "name": "Andrés",
32    "surname": "Redondo",
33    "email": "andres.redondo@uam.es",
34    "institutions": [
35      {
36        "name": "Centro de Micro-Análisis de Materiales",
```

Next step



This workflow integrates metadata generation directly into experimental routines.



NAPMIX implemented in real IBA infrastructures:

- Modular and interoperability metadata architecture
- Integrated end-to-end experimental workflows.

OPENDATA4ICTS demonstrates how NAPMIX can be operationalized in real Accelerator-based environments

You can find ICTS-IABA PORTAL

<https://cna.us.es/index.php/es/investigacion/proyectos-seleccionados/1254-proyecto-opendata>

INICIO INFORMACIÓN GENERAL INSTALACIONES SOLICITUDES DIVULGACIÓN NOTICIAS INVESTIGACIÓN EMPLEO INTRANET POLÍTICA DE DATOS

CNA ICTS
Centro Nacional de Aceleradores INFRAESTRUCTURAS CIENTÍFICAS Y TÉCNICAS SINGULARES

Últimas Noticias

- Publicación Convocatoria ofertas de contratos indefinidos INV-IND-10-2025-T-049.
- Encuentro de Usuarios RADIATE & Laserlab-Europe en Nanociencia – Sevilla, 19-21 de octubre de 2025
- ReMade@ARI CALL ANNOUNCEMENT
- Manuel García León Premio Fama -

Proyecto OPENDATA4ICTS

CATEGORÍA DE NIVEL PRINCIPAL O RÁIZ: INVESTIGACIÓN CATEGORÍA: PROYECTOS SELECCIONADOS
PUBLICADO: VIERNES, 11 OCTUBRE 2024

ALBA CMAM CNA Centro Nacional de Aceleradores

Referencia: RED2022-134332-I
Área: Ciencias Físicas
Subárea: Física de partículas y nuclear
Título: Datos en Abierto para Instalaciones Científico Técnicas Singulares Basadas en Aceleradores
Tipo: Redes ICTS

The optimal use of research infrastructures requires that the wider scientific community has adequate access to the data produced. This requires that data are produced and stored in a way that makes them easy to access. For that purpose, the FAIR principles (Findability, Accessibility,



Thank you!

The IABA-ICTS Metadata Portal
supports your experimental workflow
from start to finish.

