

# User experience and co-creation

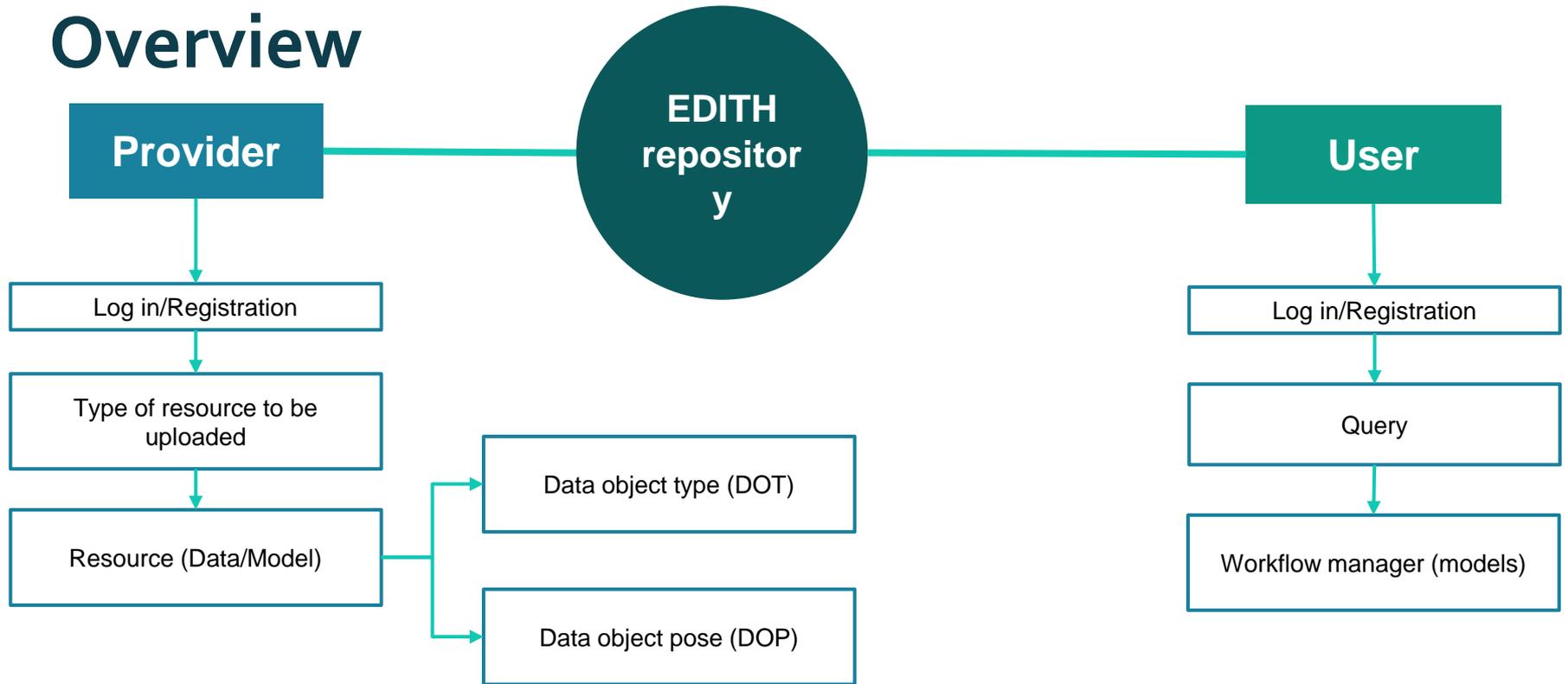
Deep Thinkers Meeting  
Rome, 16<sup>th</sup>-17<sup>th</sup> of May



EDITH is a coordination and support action funded by the Digital Europe program of the European Commission under grant agreement n° 101083771.



# Overview





**Welcome to EDITH catalogue**  
**Are you already registered on EDITH?**

Yes

No



### Create an account

### Two-step authentication

**Username**

user@mail.com

**Password**

\*\*\*\*\*

**Telephone**

**Field 2**

**Field 3**

**Field 4**

**Field 5**

**Field 6**

**Field 7**

**Field 8**

**Register**



# Log in

Username

user@mail.com

Password

\*\*\*\*\*

Send OTP



# Log in

Insert the OTP received on your email

Log in

# User experience

PROVIDER



EDITH is a coordination and support action funded by the Digital Europe program of the European Commission under grant agreement n° 101083771.



# Which action do you want to do?

Upload a resource

Use a resource

# What do you want to upload into the EDITH repository?

Dataset

Model

Algorithm

Good practice



▶ Data Object Type

▶ Data Object Pose

Large empty white area for content or data upload.



▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose



- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Semantics

Select the scale of the dataset



Molecular



Cell



Tissue



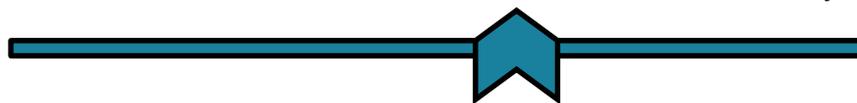
Organ



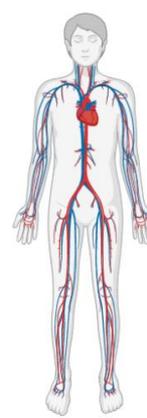
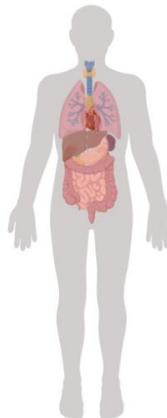
System



Body



Select to which part of the body the dataset is referred to





- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Semantics

Are dataset variables coded based on an ontology?

Yes

No





- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Semantics

Are dataset variables coded based on an ontology?

Yes

No

Select an ontology ▼

|   |
|---|
| Cancer research and management ontology |
| Foundational Model of Anatomy           |
| Vital Sign Ontology                     |
| Cardiovascular Disease Ontology         |
| Neuron Phenotype Ontology               |

...

The ontology you used is not listed here?





- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Semantics

Are dataset variables coded based on an ontology?

Yes

No

Select an ontology ▼

|   |
|---|
| Cancer research and management ontology |
| <b>Foundational Model of Anatomy</b>    |
| Vital Sign Ontology                     |
| Cardiovascular Disease Ontology         |
| Neuron Phenotype Ontology               |

...

The ontology you used is not listed here?





▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Semantics

Are dataset variables coded based on an ontology?

Yes

No

Select an ontology ▼

|   |
|---|
| Cancer research and management ontology |
| Foundational Model of Anatomy           |
| Vital Sign Ontology                     |
| Cardiovascular Disease Ontology         |
| Neuron Phenotype Ontology               |

...

The ontology you used is not listed here?



What to do if:

- The ontology is not present within EDITH
- The dataset does not follow an ontology?





▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No





1st  
scenario



▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No

Select the standard

| Select a standard ▼ |
|---------------------|
| HL7                 |
| OMOP                |
| CDISC               |
| openEHR             |
| other               |





1st  
scenario



- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Syntax

Is the dataset standardized?

Select the standard

| Select a standard ▼ |
|---------------------|
| HL7                 |
| OMOP                |
| CDISC               |
| openEHR             |
| other               |

| Version ▼ |
|-----------|
| v2        |
| v3        |
| FHIR      |





**1st  
scenario**



▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No

Select the standard

HL7 FHIR





2nd  
scenario



▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No

Select the standard

| Select a standard ▼ |
|---------------------|
| HL7                 |
| OMOP                |
| CDISC               |
| openEHR             |
| other               |





2nd scenario



- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Syntax

Is the dataset standardized?

Select the standard

| Select a standard ▼ |
|---------------------|
| HL7                 |
| <b>OMOP</b>         |
| CDISC               |
| openEHR             |
| other               |

| Version ▼ |
|-----------|
| CDM v3.0  |
| CDM v5.3  |
| CDM v5.4  |
| CDM v6.0  |





2nd  
scenario



▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No

Standard selected

OMOP CDM v5.4

An automatic mapping procedure will be adopted for the conversion from the current standard to HL7 FHIR (aka *metadata crosswalk*)





3rd  
scenario



▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No

Select the standard

| Select a standard ▼ |
|---------------------|
| HL7                 |
| OMOP                |
| CDISC               |
| openEHR             |
| other               |





**3rd  
scenario**



- ▼ Data Object Type
- ▶ Semantics
- ▶ Syntax
- ▶ Accessibility
- ▶ Data Object Pose

### Syntax

Is the dataset standardized?

Yes

No

Select the standard

| Select a standard ▼ |
|---------------------|
| HL7                 |
| OMOP                |
| CDISC               |
| openEHR             |
| <b>other</b>        |

Guided procedure  
for standard  
mapping



## 3rd scenario

### Guided procedure for standard mapping

Domain

Variable granularity

Other info



Any thoughts about these procedures for different scenarios?





▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

Is the dataset released under a license?

Yes

No





▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

Is the dataset released under a license?

Yes

No

Select the license

Select a license ▼

Open Access

Specific conditions





▼ Data Object Type

▶ Semantics

▶ Syntax

▶ Accessibility

▶ Data Object Pose

Is the dataset released under a license?

Yes

No

Select the license

Select a license ▼

Open Access

Specific conditions

Specific conditions ▼

Accept/Decline conditions

Signature on the document

Warranties

Other documentation needed



What about the adoption of this strategy?





▶ Data Object Type

▼ Data Object Pose

▶ Body

▶ Time

▶ Credibility

▶ Clustering

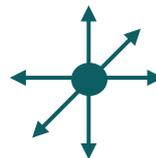




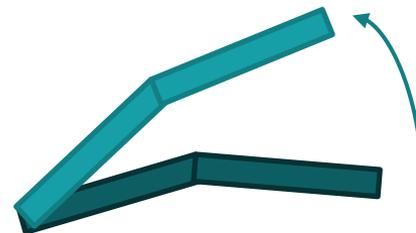
- ▶ Data Object Type
- ▼ Data Object Pose
  - ▶ Body
  - ▶ Time
  - ▶ Credibility
  - ▶ Clustering

## Body

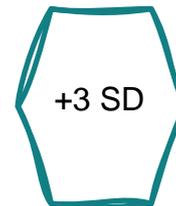
Rigid transformation



Multi-body rigid transformation



Elastic transformation



How to represent a dataset with different variables?





▶ Data Object Type

▼ Data Object Pose

▶ Body

▶ Time

▶ Credibility

▶ Clustering

## Time (Age)

It represents the age of the subject when the data were collected



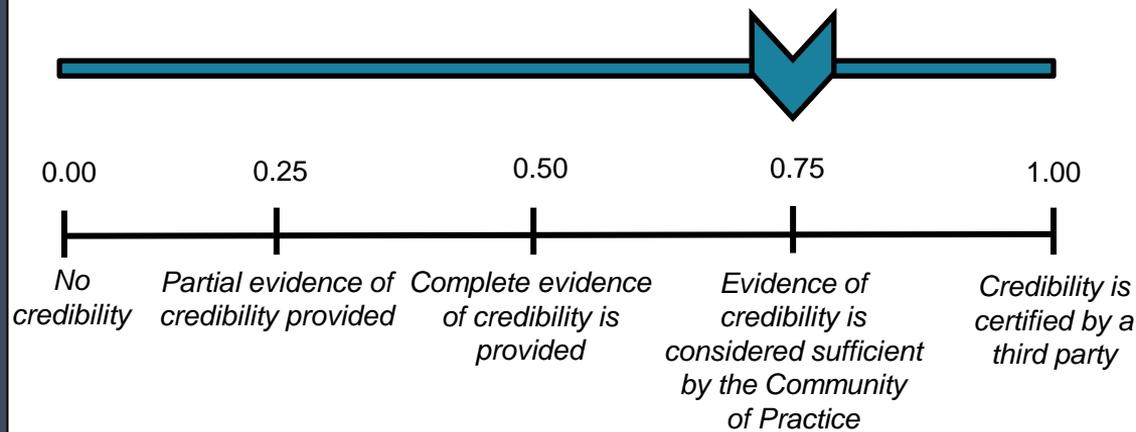
How to represent a dataset with different subjects?





- ▶ Data Object Type
- ▼ Data Object Pose
- ▶ Body
- ▶ Time
- ▶ Credibility
- ▶ Clustering

## Credibility



### Options for a reliable credibility rating

- Insert a third-party process for evaluating the credibility rating inserted by the provider
- Present a standardized procedure to reach a certain credibility rating
- The provider does not set a credibility rating, instead a third-party process assign a credibility ratings directly





▶ Data Object Type

▼ Data Object Pose

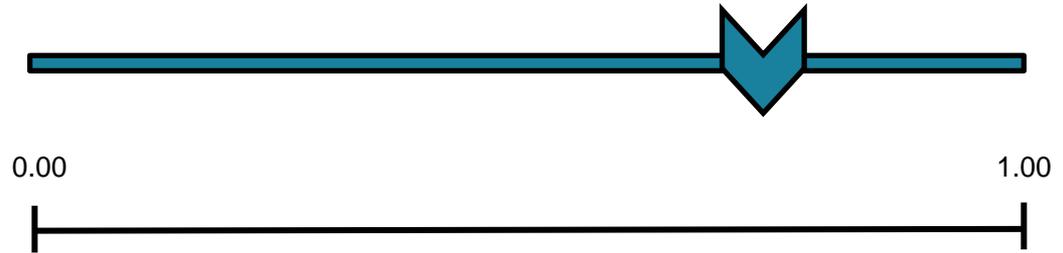
▶ Body

▶ Time

▶ Credibility

▶ Clustering

## Clustering



How to generalize this concept?



# User experience

USER



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# Which action do you want to do?

Upload a resource

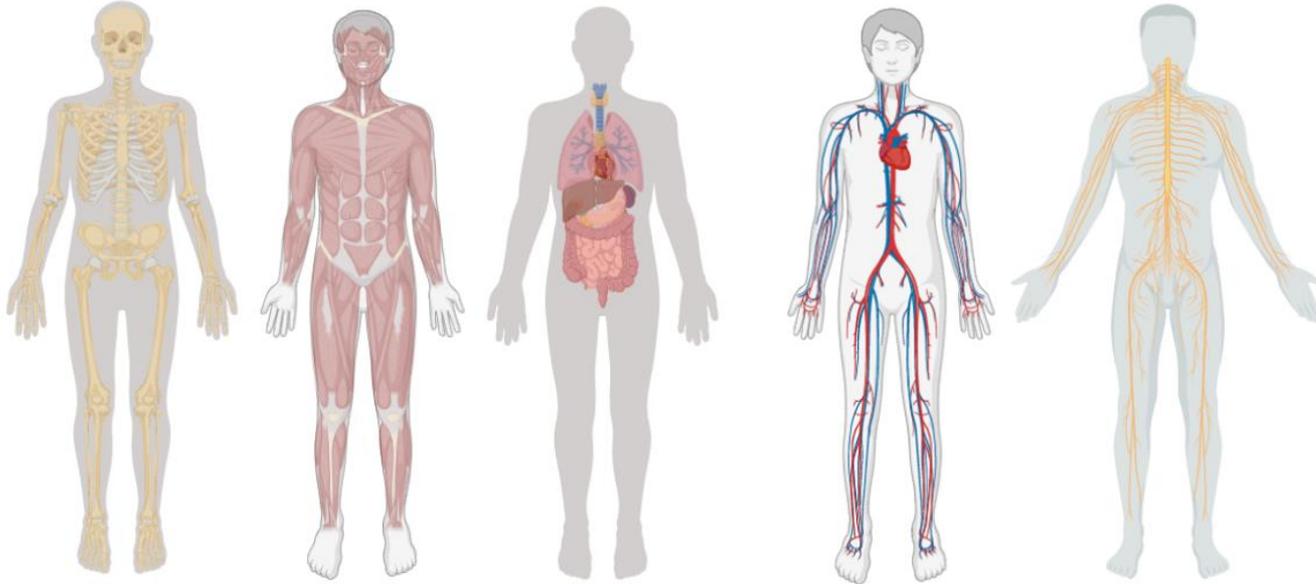
Use a resource

Example: Cardiac  
output in presence  
of atrial fibrillation

## Use a resource

Select the part of the body to explore

1st  
strategy

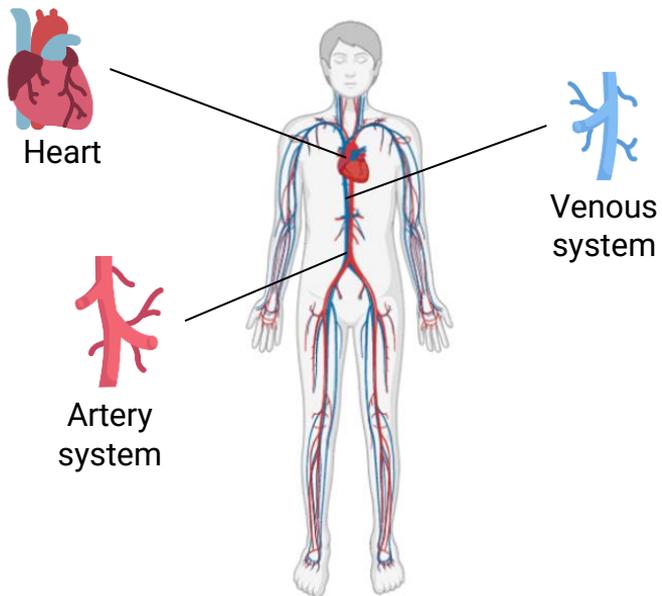


Example: Cardiac output in presence of atrial fibrillation

1st strategy

## Use a resource

Select the part of the body to explore



Cardiovascular system



1st  
strategy

Example: Cardiac  
output in presence  
of atrial fibrillation

## Use a resource

Select the part of the body to explore



Heart

**Model #1**      Ontology: ...      Credibility: ...  
[Abstract]      Accessibility: ...      Clustering: ...  
INPUT: ...      Body: ...  
OUTPUT: ...      Time (Age): ...

**Model #2**      Ontology: ...      Credibility: ...  
[Abstract]      Accessibility: ...      Clustering: ...  
INPUT: ...      Body: ...  
OUTPUT: ...      Time (Age): ...

**Model #3**      Ontology: ...      Credibility: ...  
[Abstract]      Accessibility: ...      Clustering: ...  
INPUT: ...      Body: ...  
OUTPUT: ...      Time (Age): ...

- Pre-select the type of resource (aka dataset, model, etc.)?
- Give the possibility to select the scale?

**Cardiovascular system**



## 2nd strategy

### Use a resource

Insert a query

Example: Cardiac output  
in presence of atrial  
fibrillation

Model of atrial fibrillation

#### **Model #1**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...

#### **Model #2**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...

#### **Model #3**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...



▼ Categories

▶ Dataset

▶ Model

▶ Algorithm

▶ Good practice

▼ Accessibility

▶ Free Access

▶ Controlled Access

▶ Restricted access

Taken from  
ebrains.eu

Other «metadata»  
info to be shown  
here to facilitate  
the search?



# 2nd strategy

## Use a resource

Insert a query

Example: Cardiac output  
in presence of atrial  
fibrillation

Model of atrial fibrillation

|                 |                    |                  |
|-----------------|--------------------|------------------|
| <b>Model #1</b> | Ontology: ...      | Credibility: ... |
| [Abstract]      | Accessibility: ... | Clustering: ...  |
| INPUT: ...      | ...                |                  |
| OUTPUT: ...     | Body: ...          |                  |
|                 | Time (Age): ...    |                  |

|                 |                    |                  |
|-----------------|--------------------|------------------|
| <b>Model #2</b> | Ontology: ...      | Credibility: ... |
| [Abstract]      | Accessibility: ... | Clustering: ...  |
| INPUT: ...      | Body: ...          |                  |
| OUTPUT: ...     | Time (Age): ...    |                  |

|                 |                    |                  |
|-----------------|--------------------|------------------|
| <b>Model #3</b> | Ontology: ...      | Credibility: ... |
| [Abstract]      | Accessibility: ... | Clustering: ...  |
| INPUT: ...      | Body: ...          |                  |
| OUTPUT: ...     | Time (Age): ...    |                  |



- ▼ Categories
- ▶ Dataset
- ▶ Model
- ▶ Algorithm
- ▶ Good practice
- ▼ Accessibility
- ▶ Free Access
- ▶ Controlled Access
- ▶ Restricted access

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ebrains.eu  
Other «metadata»  
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here to facilitate  
the search?



## 2nd strategy

### Use a resource

Insert a query

Example: Cardiac output  
in presence of atrial  
fibrillation

Model of cardiac output

#### **Model #1**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...

#### **Model #2**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...

#### **Model #3**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...



- ▼ Categories
- ▶ Dataset
- ▶ Model
- ▶ Algorithm
- ▶ Good practice
- ▼ Accessibility
- ▶ Free Access
- ▶ Controlled Access
- ▶ Restricted access

Taken from  
ebrains.eu  
Other «metadata»  
info to be shown  
here to facilitate  
the search?



# 2nd strategy

## Use a resource

Insert a query

Example: Cardiac output  
in presence of atrial  
fibrillation

Model of cardiac output

### **Model #1**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...

### **Model #2**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...

### **Model #3**

[Abstract]

INPUT: ...

OUTPUT: ...

Ontology: ...

Accessibility: ...

...

Body: ...

Time (Age): ...

Credibility: ...

Clustering: ...



- ▼ Categories
- ▶ Dataset
- ▶ Model
- ▶ Algorithm
- ▶ Good practice
- ▼ Accessibility
- ▶ Free Access
- ▶ Controlled Access
- ▶ Restricted access

Taken from  
ebrains.eu  
Other «metadata»  
info to be shown  
here to facilitate  
the search?

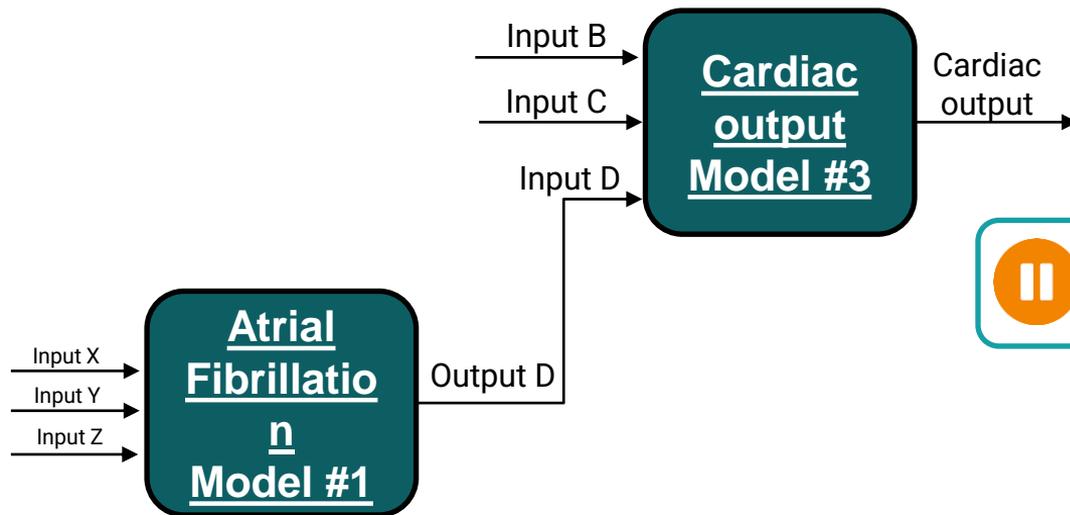


Example: Cardiac output  
in presence of atrial  
fibrillation

## Use a resource

Build the workflow

- ✓ All resources are actionable
- ✓ All resources are HPC-actionable
- ✓ Models input-output are compatible
- ✗ Some inputs are missing



 Play simulation

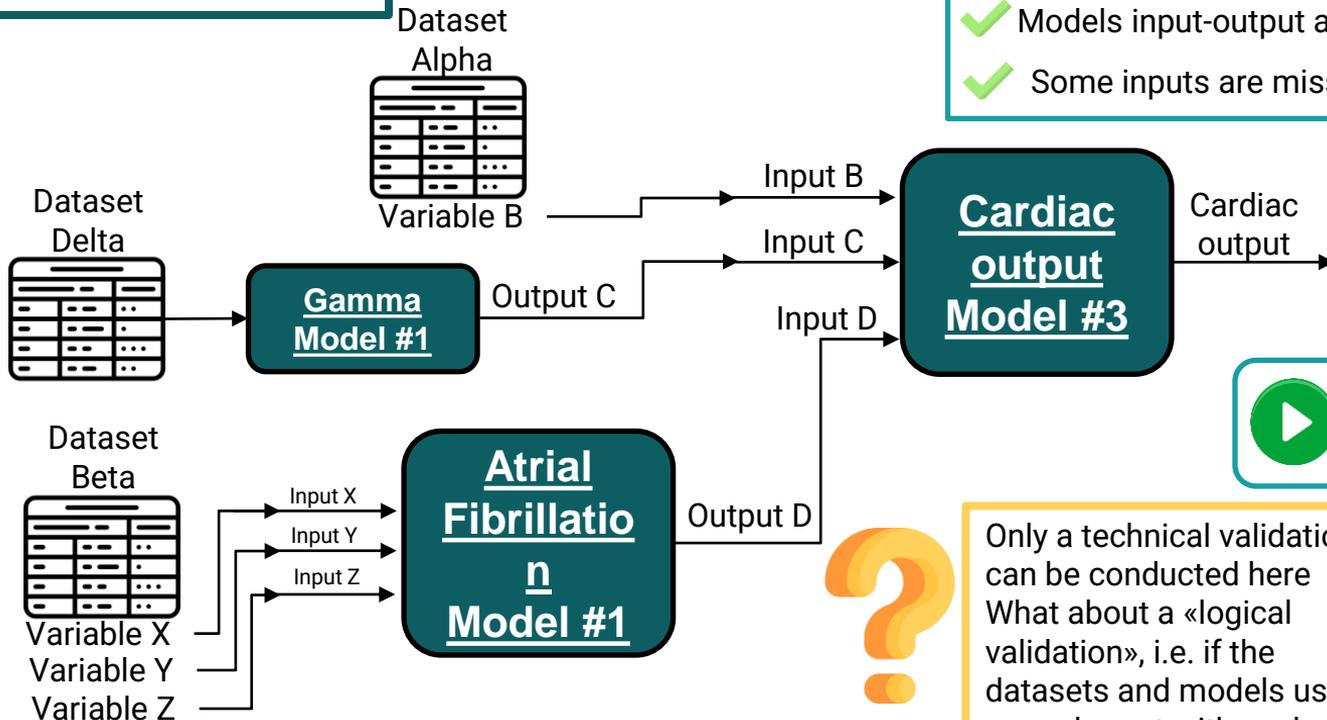


Example: Cardiac output in presence of atrial fibrillation

## Use a resource

Build the workflow

- ✓ All resources are actionable
- ✓ All resources are HPC-actionable
- ✓ Models input-output are compatible
- ✓ Some inputs are missing



Play simulation



Only a technical validation can be conducted here  
What about a «logical validation», i.e. if the datasets and models used are coherent with each other?

