THE VIRTUAL MUSEUM OF STEM

EXHIBITION CREATION GUIDE

CONTENTS

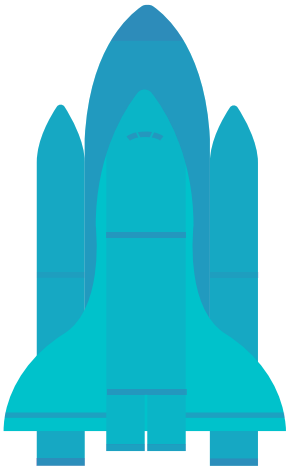
INTRODUCTION

What is a collection

The interesting aspect of a virtual museum is to offer a new perspective on academic or complex subjects. Each space of the museum will showcase 10 or 20 collections, each of which illustrates a topic.

A collection is a set of resources that together will enable the user to understand a subject. It should cover the subject from an academic point of view, but above all it should be a science communication tool that offers another point of view or explanation. Therefore, it is recommended not to limit oneself to copying the content of a textbook, but to think of examples, illustrations or metaphors to allow the user to have a practical perspective of the subject.

Each collection consists of a main element which will be accompanied by one or more additional elements.



The main element will be the central representation of the subject, the one through which the user can best understand the concept. It will be visible directly in the museum.

The additional elements will be there to enrich the explanation of the main element, provide further information, give context, examples of applications or direct the user to additional resources outside the museum. They will be accessible by clicking on icons when the user is in front of a collection.

THE MAIN ELEMENT

Description

The main element is the most important as it will be the hook between the user and the subject. It should be selected according to several factors:

- **Related to the subject:** it illustrates the subject with relevance and accuracy
- **Visual:** it must be understandable and attractive

Original: it must arouse the user's curiosity and make them want to explore the subject further.

Metadata

Short title

The short title of the element will be used mainly in the technical architecture of the museum or to summarize the collections.

Full title

The full title of the element will be used in the museum to name the element. As in a museum, a thumbnail will name the element and summarize its relationship to the subject in a few lines: this is where the full title of the element will appear.

Type

The main element can take several forms:

- **2D animation:** such as an archive video, interview, filmed or animated example...
- **2D static:** such as a historical table, a detailed explanation of the model, a plan...
- **3D animation:** such as an example of the subject animated in 3D, an example modelled in 3d and animated...
- **3D static:** such as a representation of a machine or an environment, the bust of a designer...

Explanations

When creating the main element of the collection, it is also important to include a short explanatory text. This should be no longer than 5-7 lines and should briefly summarize the link between the main item and the subject.

Link (if the element is provided by the partner)

If you are able to provide the main item, in whatever format, it is important to make it available to the platform development team.

On Dropbox, in the project folder on creating collections:

If you are able to provide the main item, in whatever format, it is important to make it available to the platform development team.

On Dropbox, in the project folder on creating collections:

- create a folder for the collection you are working on and name it explicitly: "subject".
- in the previous folder, create a folder for the main element: "main element" and place the file there.

- copy the link to the folder by right-clicking on the "main element" folder
- copy the link into the description of your collection (template below)

Conception explanation (if the element is provided by the partner)

If the element cannot be provided by the partner, for example if it is a 3D model animation, CIP's technical team will create it. It is therefore important that they have all the relevant information. There is no exhaustive list for this, but it is highly recommended to support your explanation with diagrams, drawings, photos...

THE ADDITIONAL ELEMENT(S)

Description

Additional elements are supplementary information: they are there to enrich the subject. It is important not to limit a collection to one main element.

Users may be looking for different things in a collection: understanding how an inventor came up with this tool, understanding what a mathematical concept is used for in real life, or providing a different approach to understanding it.

It is to meet these different needs that additional elements are essential to a collection.

Metadata

Usage

They can be used for different purposes, here is a non-exhaustive list:

- **Context:** describe the historical background, inventor(s), or creation history of the subject.
- **Deepening:** provide additional explanations that enrich the main element or bring a new approach.

Example/Exercise: Allow the user to experience the subject for themselves.

Short title

The short title of the element will be used mainly in the technical architecture of the museum or to summarize the collections.

Full title

The full title of the element will be used in the museum to name the element. As in a museum, a thumbnail will name the element: this is where the full name of the element will appear.

Type

The additional elements can be of different types, here is a non-exhaustive list:

- **Text:** a more detailed description of how the main element works, a quote from the inventor, an explanation of the historical context, etc.

- **Image:** diagram or drawing illustrating the invention or concept, painting representing the creator, etc.
- **Video:** interview with a specialist on the subject, presentation of the inventor, historical video or an animation explaining the concept, etc.
- **Audio:** interview with a specialist on the subject, presentation of the inventor, reading of a note by the inventor, etc.

Link (if the element is provided by the partner)

Please provide the platform development team with additional elements for your collection.

On Dropbox, in the project folder on collection creation:

- select the folder of the collection you are working on and create a folder for additional elements: "additional elements" and place the files in it.
- copy the link to the folder by right-clicking on the "main element" folder
- copy the link into the description of your collection (template below)

Precautions

Make sure that the quality of your elements is adequate. Whether it is for the general quality of the museum or for the respect of the rules of inclusion, these elements must:

- Be easy to read and understand. If a relevant archive is not easily understandable, it should be accompanied by a subtitle so that its content is fully accessible.

- Not be discriminatory. However, it is possible to talk about discrimination, for example if the inventor was a victim of discrimination or if the historical context includes discriminatory events.

If an item includes nudity or scenes of violence, please mention it on your item sheet. This will allow the technical team to add a notification to the user before they access it.

ANNEXES - COLLECTION CREATION SHEET

The collection

Museum part: <name of the museum part>

Subject: <use the term from the list>

Description: <structure of the collection in few lines>

The main element

Description

<explain why you choose this element and its advantages in relation to the subject>

Metadata

Short title: <must be short>

Full title: <can be long>

Type: <3D static/dynamic, 2D static/dynamic, audio...>

Explanations: <text – 5 to 7 lines maximum>

Link (if the element is provided by the partner): <dropbox link to the element you loaded on the project's dropbox>

Conception explanation

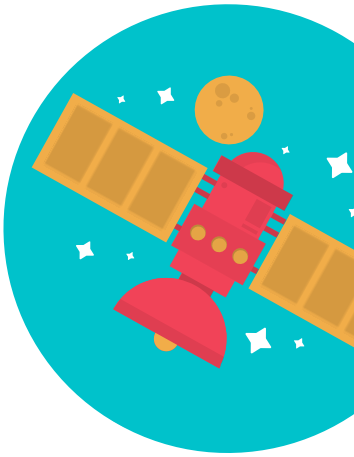
<be as specific as possible and do not hesitate to provide diagrams, pictures, or inspirations for the developers>

The additional element(s)

(1 per additional element)

Description

<explain why you choose this element and its asset on the subject>



Metadata

Usage: <extra explanations (text, audio, diagram), history...>

Short title: <must be short>

Full title: <can be long>

Type: <3D static/dynamic, 2D static/dynamic, audio...>

Link: <dropbox link to the element you loaded on the project's dropbox>

ANNEX - EXAMPLE (THALES THEOREM)

Collection

- **Museum part:** Exhibition of Hidden Mathematics
- **Subject:** Thales theorem
- **Description:** Thales' theorem is usually explained in a very theoretical way. This is why it is necessary here to start with a concrete application: the main element will therefore be the example of Thales' calculation of the height of a pyramid, which made him famous. The additional elements will provide the context of this discovery with a quick presentation of Thales and how he used it to calculate the height of a pyramid (supporting the main element). Also, the calculation itself will be detailed in a slightly more theoretical sheet as well as some examples and/or exercises.

Main element

a. Description

The main element will therefore be the example of the calculation of the height of a pyramid by Thales that made him famous. A simplified 3D model with a legend will allow the user to visualize the links between the different parts of the figure.

b. Metadata

Short name: Pyramid's height

Full name: How Thales used his theorem to discover the height of a pyramid

Type: 3D model static

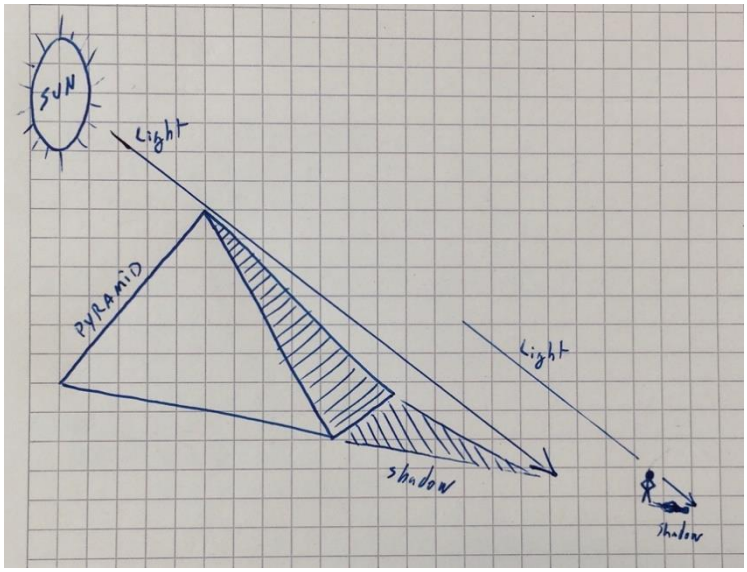
Explanation:

This model illustrates the method Thales used to calculate the height of the pyramid. By using the shadow of the pyramid and the shadow of himself (a height he knew), he was able to accurately calculate the height of the pyramid of Khufu.

For a more detailed explanation, please see the attached "..." item.

Link : none

c. Conception explanation



This element will be in static 3D. It will symbolize a pyramid and a man, illuminated by the sun and with shadows cast. It will follow this scheme:

It is also recommended to show the rays of light: users will find it easier to visualize the formation of the triangles and thus make the connection with Thales' theorem. Additional element 1 will be there to detail the process.

Additional elements 1/4

a. Description

A more theoretical explanation of how Thales' theorem works, including a parallel with the main element.

b. Metadata

Short title: Theorical explanations

Full title: Theorical explanations to support the example with the pyramid

Type: Text and graphs

Explanation:

Using the example of the pyramid (see main item), this additional item will go into a concrete explanation of Thales' application.

Diagrams will support the explanations to highlight the structure of the theorem in this example.

Link: < Put the link to the resource here >

Additional elements 2/4

a. Description

The history of Thales of Miletus.

b. Metadata

Short name: Thales’ history

Full name: Who was Thales of Miletus?

Type: Small video

Explanation: This video will explain the life of Thales: his contribution to geometry and also in philosophy. It is in English and has English subtitles.

Link: < Put the link to the resource here >

Additional elements 3/4

a. Description

The context in which Thales made this discovery.

b. Metadata

Short title: The world at the time of Thales

Full title: Explanations of the context in which Thales' theorem was discovered.

Type: Text and images of painting or sculpture

Explanation:

Beyond the discoverer himself, understanding the constraints of his world is important. This additional element will talk about the political, cultural and religious currents that Thales faced.

Link: < Put the link to the resource here >

Additional elements 4/4

a. Description

Some exercises with detailed solutions at the end. The solutions will also include projections in a concrete setting to facilitate the understanding of the users.

b. Metadata

Short title: Examples and exercises

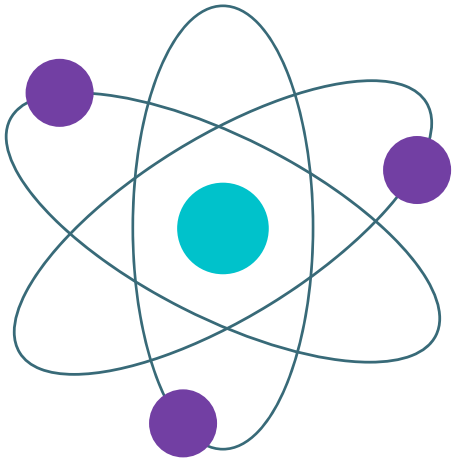
Full title: 5 exercises with detailed solutions

Type: Text and images

Explanation:

This element is a series of 3 concrete examples. They are each linked to a different domain: this offers several angles through which the user can grasp the concept.

The first part will explain 3 possible uses with an unanswered exercise. The second part will contain the answers to the exercises. Here are few ideas:



- Height of a cliff
- Perspective in a painting
- Eiffel Tower model (find whether the second floor is parallel to the ground)

Link: < Put the link to the resource here >

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