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# ARCO



Augmented Representation of Cultural Objects

## UKOLN involvement in the ARCO Project

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## Overview

Work Packages

User Requirements Specification

ARCO Data Model

Types of Requirements

Museum User Trials

Metadata for Museum Artefacts

Overview of the AMS

Metadata Management Tools

Use of Standards



## Work Packages

WP1: Coordination and Reporting

WP2: User Requirements and Specifications (UKOLN lead)

WP3: Object Modeller

WP4: Interactive Model Refinement and Rendering

WP5: Object Relational Database System

WP6: XML, Metadata schemas and XSL

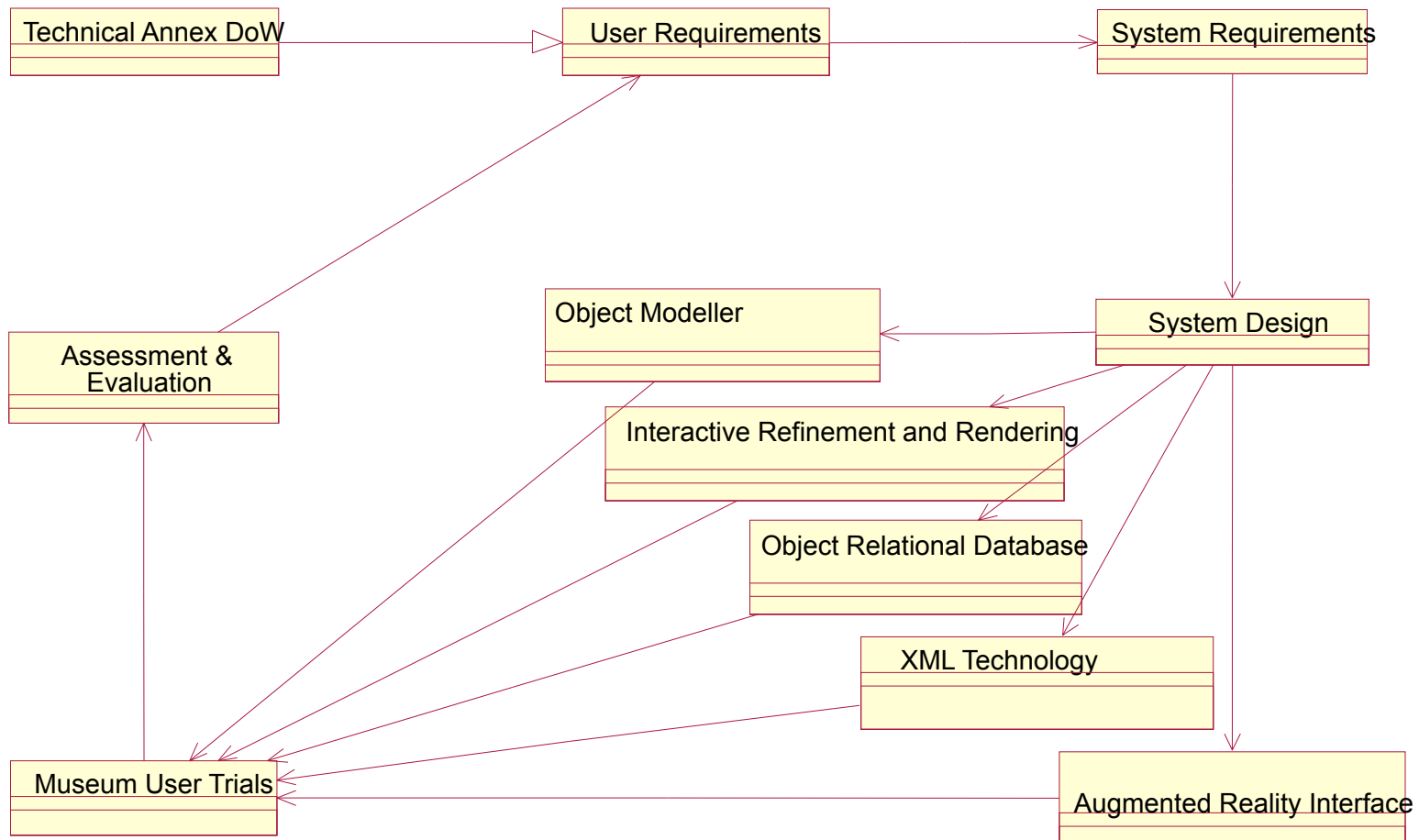
WP7: Augmented Reality Interface

WP8: System Integration, Assessment and Evaluation

WP9: Exploitation, IPR and Dissemination



# Iterative Prototype Development, Assessment and Evaluation



# User Requirements Specification

## Purpose

- identification of major categories of user
- gather requirements and expectations

## Identification of users

- curator, conservator, picture researcher, metadata manager, educational users, marketing users, researcher, general public

## Gathering requirements

- task analysis, usage scenario building, user trials, questionnaire survey



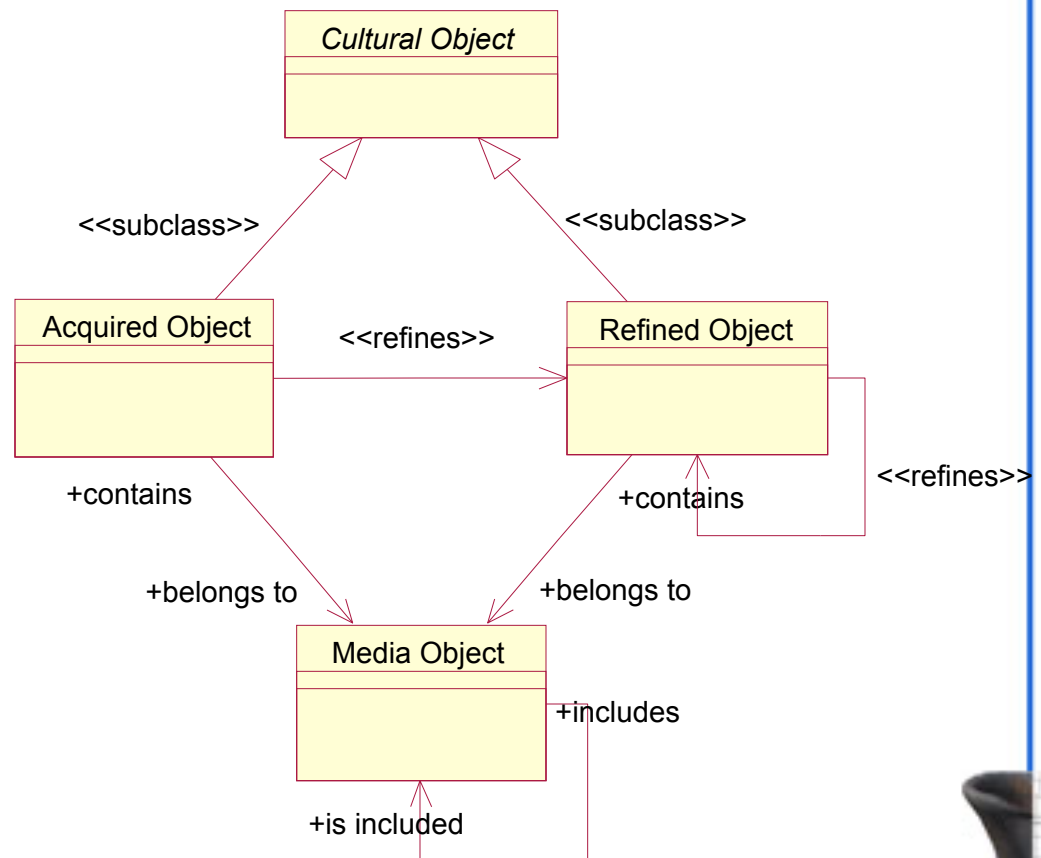
# ARCO Data Model

**Cultural Object:** curatorial metadata, surrogate for physical artefact

**Acquired Object:** digital representation of artefact

**Refined Object:** acquired object which has been modified

**Media Object:** individual objects which make up a digital representation



## User Requirements

UR0 –Museum curators and end users

UR1 –Selection of artefacts

UR2 –Digitisation process

UR3 –Object Modeller

UR4 –Interactive Model Refinement and Rendering

UR5 –ARCO Content Management Application

UR6 –Augmented Reality Interface

UR7 –Metadata





## Museum User Trials

### Objectives:

- Test whether user requirements are indeed being met
- Feedback into quality assurance loop

### How?

- Interactive testing and assessment of ARCO components
- Development of questionnaire based on each prototype
- Documented feedback from user trials



## Metadata for (Digital) Museum Artefacts

- **AMS – ARCO Metadata Schema** is used for describing cultural archives stored in the ARCO database
- AMS is used throughout the whole ARCO process from digitisation to visualisation ...
- ... by various ARCO user groups

Cataloguer, Digital Photographer, Object Modeler, Object Refiner, ARIF Content Designer, ARCO End-user



# Overview of the AMS

- AMS includes:
  - Resource discovery metadata
  - Descriptive curatorial metadata
  - Technical metadata (preservation)
  - Use Type (intelligence, effort report)
- AMS elements:
  - Adopted from standards (DCMES, mda SPECTRUM)
  - ARCO specific elements
- Interoperability
- Implemented with XML Schema

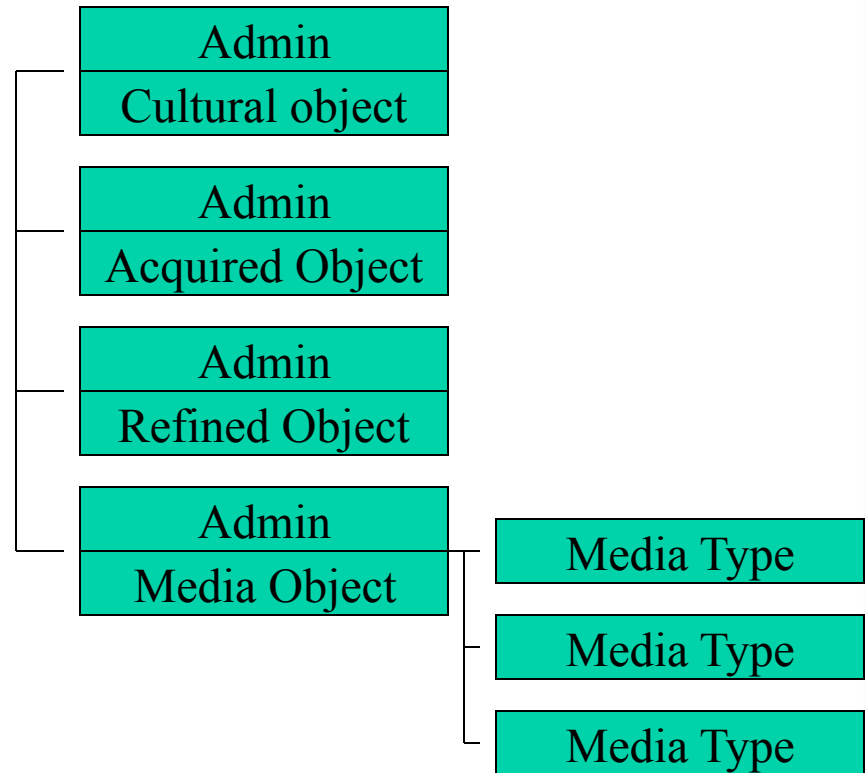
## AMS Metadata Editor

The screenshot shows the AMS Metadata Editor interface. On the left is a tree view of metadata elements. The root is 'Cultural Object AMS', which branches into 'Acquired Object' and 'Cultural Object'. Under 'Cultural Object', there are several elements: 'Complete', 'Description', 'Format Medium : Brass', 'Name : Golden Mortar', 'Name Alternative : ho...', 'Rights : Sussex Past', 'Source : LEWSA:1933', and 'Type : mortar'. Below these is 'Refined Object', which contains: 'Creator : unknown us...', 'Date Created : 2003-0...', 'Format : image/jpeg i...', 'Format Extent : 4293 I...', 'Identifier : KT18712', 'Name : AO 001 refine...', 'Refines : KT151, KT18...', and 'Rights : Sussex Past'. A context menu is open over the 'Cultural Object' node, showing 'Add' and 'Delete' options. To the right of the tree, a list of metadata elements is displayed, including: Source, Name, Name Alternative, Creator, Contributor, Date Created, Type, Description, Completeness, Condition, Production Period, Production Method, Format Medium, Dimensions, Coverage Spatial, Components, Rights, and Owner.



# AMS – Logical Structure

- Acquired Objects are described by:
  - Cultural Object metadata
  - Acquired Object metadata
- Refined Objects are described by:
  - Cultural Object metadata
  - Acquired Object metadata
  - Refined Object metadata
- Media Objects are described by:
  - General Media Object metadata
  - Media Type Specific metadata (six media types at present)



# AMS Vocabulary

## **Administrative**

Creator, Date Created, Date Modified

## **Cultural Object**

Source, Name, Creator, Object Production Date, Type, Rights, Completeness, Condition, Production Period, Production Technique, Material, Dimension, Components, Owner, Acquisition Source, Accession Date, Field Collection Date, Field Collection Method, Field Collection Place, Field Collector

## **Acquired Object**

Identifier, Name, Creator, Contributor, Reproduction Method, Date Created, Description, Rights, Format, Format Extent

## **Media Object**

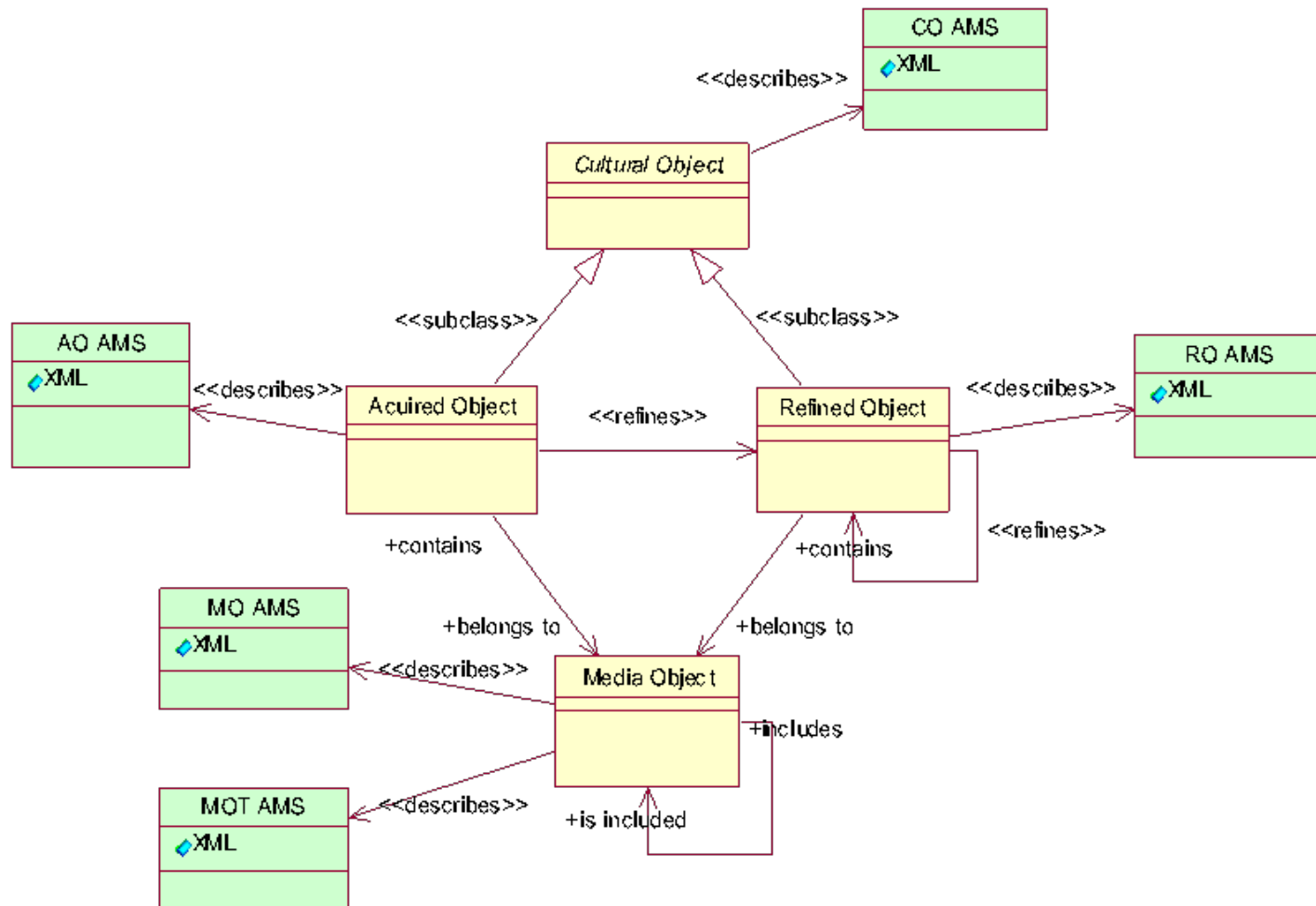
Name, Type, Subject, Description, Date Created, Format Extent, Rights, Skill Level, Person Effort

## **Media Type Specific**

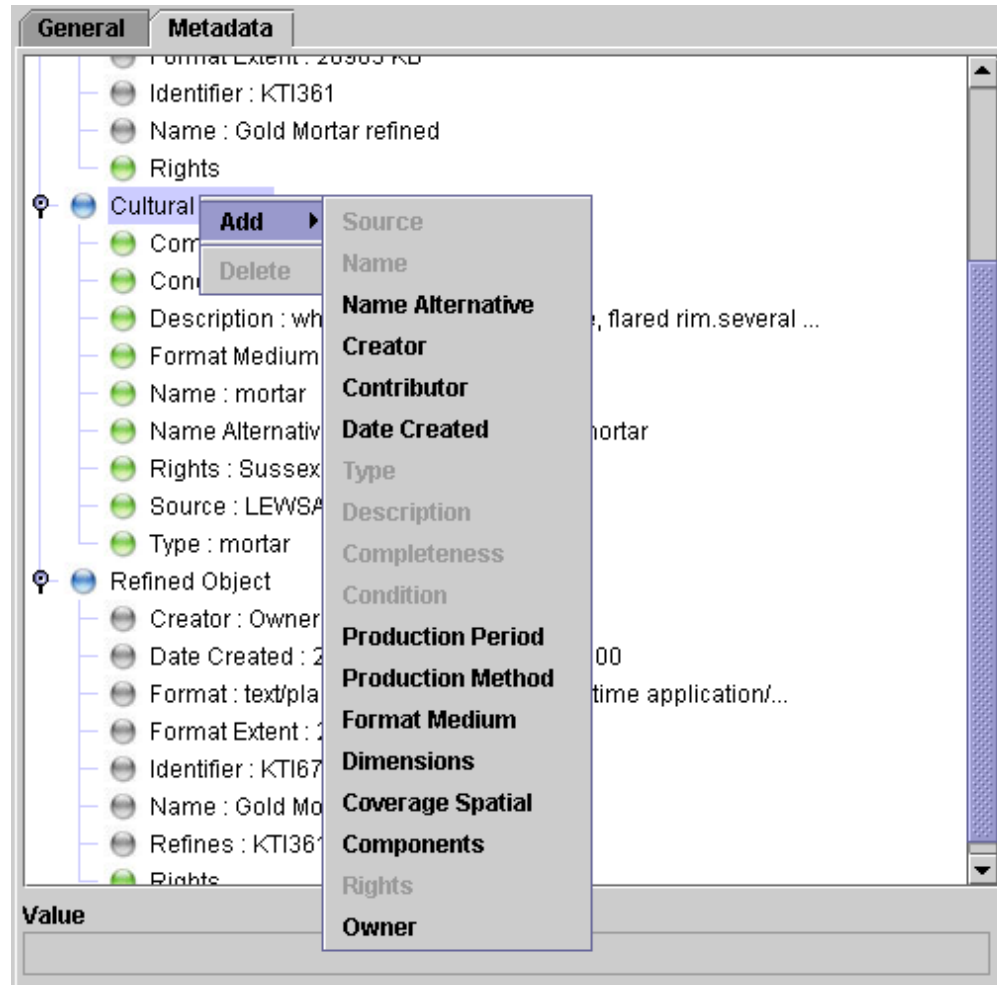
Simple Image, Description, 3D Studio MAX Project, VRML Model, Panorama Image, Multiresolution Image



## AMS in the ARCO Data Model



## ARCO Metadata Editor



# ARCO Metadata Editor: Content Guidelines

The screenshot shows the ARCO Metadata Editor interface. It has two tabs: 'General' and 'Metadata'. The 'Metadata' tab is active, displaying a tree view of metadata for a 'Gold Mortar refined' object. The tree view includes fields like 'Identifier', 'Name', 'Rights', 'Cultural Object', 'Completeness', 'Condition', 'Description', 'Format Medium', 'Name', and 'Name Alternative'. The 'Name' field is selected, and a tooltip is displayed over it. The tooltip contains the following text:

**Definition:**  
A formal name given to the Cultural Object within the ARCO system

**Content Description:**  
Where possible, the name of the original artefact should be used. Where a name does not exist, a caption could be used instead. Where a name or caption does not exist, a one-sentence description of the content should be added

Below the tooltip, the 'Value' field is visible, containing the text 'mortar'.





## AMS Manager

**2003-01-16 : 0.1 by Jacek**

```

<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XML Spy v4.3 U (http://www.xmlspy.com) by Nick M... -->
<xsd:schema xmlns:arco="http://www.arco-web.org/namespaces/a...
  <xsd:annotation>
    <xsd:documentation>This schema was developed by the ARCO c...
  </xsd:annotation>
  <xsd:element name="mediaObjectDescription">
    <xsd:annotation>
      <xsd:appinfo>
        <arco:displayName>Description Media Object</arco:display...
        <arco:definition>Metadata associated with the Description M...
        <arco:content>Not Editable</arco:content>
      </xsd:appinfo>
    </xsd:annotation>
  </xsd:element>
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="technique" maxOccurs="unbounded">
        <xsd:annotation>
          <xsd:appinfo>
            <arco:displayName>Technique</arco:displayName>
            <arco:identifier>http://www.arco-web.org/schemas/arco/tech...
            <arco:definition>The technique used to acquire a descriptio...
          </xsd:appinfo>
        </xsd:annotation>
      </xsd:element>
    </xsd:sequence>
  </xsd:complexType>

```



# Metadata display over the Internet

The screenshot shows a web interface for the Victoria & Albert Museum. On the left is a navigation pane with a tree structure:

- Victoria & Albert Museum
  - Queen Victoria
    - Daily Use Objects
      - Only mortars
      - Sub room
        - Castor
        - Cup
        - Match Box
        - Egg Cup

The main content area features a toolbar with icons for CO, DB, a portrait, a magnifying glass, VRML, a cube, a building, and another building. Below the toolbar, the 'Cultural Object Metadata:' section lists the following details:

- Source: LEWSA:1964.1.158
- Name: castor
- Name Alternative: trophy
- Type: farming, awards
- Description: whole:form:cylindrical with fitted domed lid.strapwork handle footed base.engraved legend opposite handle
- Completeness: Complete
- Condition: Good
- Production Method: engraved
- Format Medium: Brass
- Rights: Sussex Past



# A touch-screen display within a museum



**Cultural object museum data:**

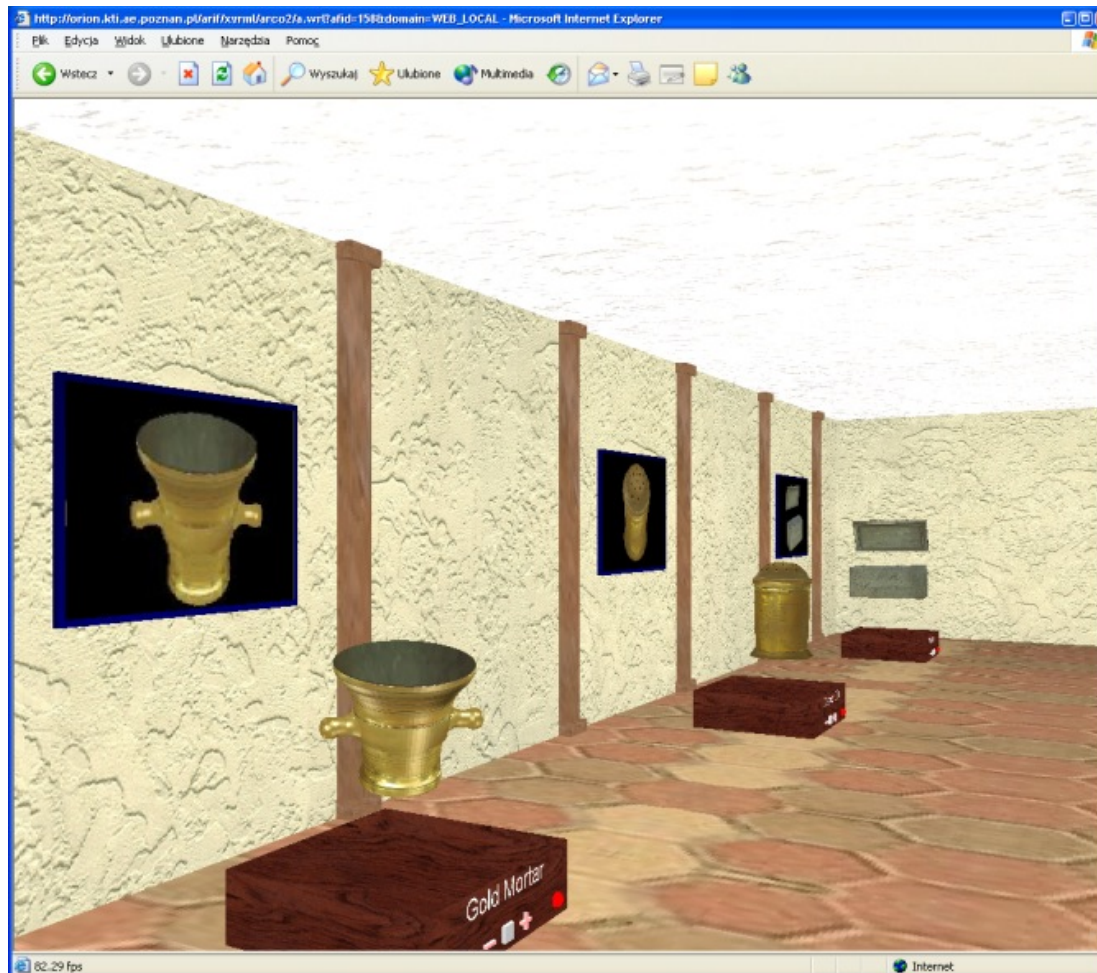
- Source: LEWSA:1964.1.158
- Name: castor
- Name Alternative: trophy
- Type: farming, awards
- Description: whole:form:cylindrical with fitted domed lid.strapwork handle footed base.engraved legend opposite handle
- Completeness: Complete
- Condition: Good
- Production Method: engraved
- Format Medium: Brass
- Rights: Sussex Past

**ARCO database data - acquired object (AO) metadata:**

- Identifier: KTI341
- Name: Castor (A)
- Creator: unknown user
- Date Created: 2003-01-16T16:10:47Z
- Description: Descr
- Rights:
- Format:
- Format Extent: 15832 KB



## A 3D Gallery



## Use of Standards

- Internet standards
  - XML, VRML/X3D, HTML
- W3C Recommendations
  - XML Schema, XSLT, XPath
- Metadata standards
  - mda SPECTRUM
  - Dublin Core Metadata Element Set
- 3D graphics standards
  - VRML/X3D, OpenGL, DirectX

