

IAW

IMAGE ANNOTATION WORKBENCH





Systemik Solutions is an innovative platform development and content consulting group.

We build 'big content' platforms for the public sector and open-source digital humanities platforms with academia.
Our forte is the realisation of immersive, engaging research and consulting experiences.



DH PLATFORMS

Big content

- GHAP – Mapping
- SIA Workbench - Stylometry
- AI Thematic Workbench (Codifynd) - OpenAI

Small content

- READ Workbench - Philology
- IAW - Image Annotation Workbench – Cross Discipline
- NitroNode Aggregate Workbench – Cross Discipline

CMS

- Power Drupal – Cross Discipline
- WordPress/Heurist – Cross Discipline

Codifynd

Machine learning through cognitive services enables the discovery of themes and sentiment from 'big content' repositories. Codifynd integrates these technologies with data visualisation in an innovative interface to support knowledge workers in the immediate acquisition of insights: a new capability to build organisational knowledge.

[GO TO SITE](#)[SUPPORT](#)

Gazetteer of Historical Australian Placenames

The Gazetteer of Historical Australian Placenames (GHAP) makes accessible aggregated data on 'all' placenames in Australia, including historical names, based on data from the Australian National Placenames Survey, and the National Composite Gazetteer. Researchers can contribute their own layers of cultural data.

[GO TO SITE](#)[SUPPORT](#)

Heurist

Heurist is a comprehensive database environment, developed at the University of Sydney, which enables researchers, without programming, to manage complex Humanities datasets through design, import, explore and publish workflows. Richly featured, flexible and iterative at its essence, Heurist supports scalable humanities research, visualization and publishing.

[GO TO SITE](#)[SUPPORT](#)

IA Workbench

Intelligent Archive (IA) Workbench is a platform for computational and statistical analysis of style in texts, developed by the University of Newcastle. It enables you to easily organise large collections of texts into sets, manage metadata, generate word and n-gram frequencies, handle XML tags, and generate results that can be exported for analysis and for visualisation.

[GO TO SITE](#)[SUPPORT](#)

Image Annotation Workbench

Image Annotation Workbench provides a workflow for annotation & publishing of International Image Interoperability Framework (IIIF) images across institutional repositories. Annotations can combine semantic tags from domain specific vocabularies with critical analysis references. Researchers can collaborate and publish the annotated images as research outputs.

[GO TO SITE](#)[SUPPORT](#)

PerformX Accessibility Workbench

PerformX® Accessibility Workbench provides a self-service portal for managing the conversion of existing pdf, doc or html files to WCAG 2 accessibility standards. PerformX® Accessibility Workbench supports the management and tracking of an end-to-end estimation, conversion, augmentation and compliance verification service for individual files or batch conversion.

[GO TO SITE](#)[SUPPORT](#)

PerformX Content Workbench

PerformX® Content Workbench automates the migration of large-scale existing sites to the Drupal CMS platform. Conventional content mapping and migration are transformed with paradigm-shifting process improvements and a disruptive cost model. It includes specialized modules for migration to GovCMS and for rendition in Codifynd, another of our platforms.

[GO TO SITE](#)[SUPPORT](#)

Power Drupal CMS

Power Drupal CMS supports digital humanities projects and publications developed in collaboration with Power Publishing at the University of Sydney. This versatile CMS supports research data integration, collaborative publishing and user engagement. It provides sophisticated visualisation metaphors, including semantic node graphs and interactive mapping.

[GO TO SITE](#)[SUPPORT](#)

NitroNode Aggregate Workbench

NitroNode Aggregate Workbench enables encapsulation of a range of non-traditional research outputs (NITRO) for art and cultural history items. The aggregation of diverse outputs across disciplinary boundaries—from introductory to specialist analysis—as constituents of a node supports a rich user experience for both elite scholarship and community engagement.

[GO TO SITE](#)[SUPPORT](#)

READ Workbench

READ Workbench supports the integration of researchers, resources, tools and processes in the collaborative development of manuscript and inscription corpora for Indic languages. It delivers open source READ philological research capability, configured for individual projects, as SaaS. It provides a scalable framework for institutional collaboration.

[GO TO SITE](#)[SUPPORT](#)

COLLECTIONS

- Demo Ian
- Image Gandhara
- + Add Collection

COLLECTIONS > VIEW COLLECTION

[Edit](#)
[+ Add Image Set](#)
[Import from Institution](#)
[Share](#)

Delete

Image Gandhara

Ian David McCrabb 15/01/2024

☰ ☐



Schist Buddha Triad (year 5)

Ian David McCrabb - 15/01/2024

⋮



Schist Lintel, Buddha and Attendants

Ian David McCrabb - 15/01/2024

⋮



Schist Bodhisattva Head

Ian David McCrabb - 15/01/2024

⋮



4

RESEARCH CURATION PEDAGOGY

- RESEARCH AFFORDANCES
- CURATORIAL PRACTICE
- PEDAGOGICAL APPLICATION

PLATFORM VALUE PROPOSITION

- THE ACCESS AND TECHNICAL CONSTRAINTS ATTENDANT ON IMAGES HOSTED IN INSTITUTIONAL REPOSITORIES HAS PROVEN AN OBSTACLE TO EFFECTIVE COLLABORATION ON THE SCHOLARLY ANALYSIS OF IMAGES OF SIGNIFICANT CULTURAL ASSETS.
- THE UBIQUITOUS ADOPTION OF THE INTERNATIONAL IMAGE INTEROPERABILITY FRAMEWORK (IIIF) IN EMERGENT DIGITAL HUMANITIES PROJECTS IN THE GLAM SECTOR PRESENTS THE OPPORTUNITY FOR SEAMLESS COLLABORATION IN THE GRANULAR ANALYSIS AND DOCUMENTATION OF IMAGE COMPONENTS.
- WHILST IIIF IS OPEN-SOURCE, IT REQUIRES A BACK-END SYSTEM AND FRONT-END DEVELOPMENT IN ORDER TO BE IMPLEMENTED FOR AN INSTITUTION OR A PROJECT. THE VALUE PROPOSITION IS THAT IAW SUPPORTS RESEARCHERS WITH A GENERIC FRAMEWORK TO IMMEDIATELY APPLY SEMANTIC TAGS FROM RESEARCH SPECIFIC TAXONOMIES ON IMAGES STORED ACROSS MULTIPLE INSTITUTIONAL REPOSITORIES AND PUBLISH THESE ANNOTATIONS AS RESEARCH OUTPUTS.

PLATFORM DEVELOPMENT

- PROOF OF CONCEPT - SYSTEMIK
- PLATFORM DEVELOPMENT – AUSTRALIAN RESEARCH DATA COMMONS AND SYSTEMIK

PILOT PROJECTS

- OPENING AUSTRALIA'S MULTILINGUAL ARCHIVE
- GANDHARAN BUDDHAS
- UPPER INDUS

GANDHARAN BUDDHAS

- THE MET
- NATIONAL GALLERY OF AUSTRALIA
- ART GALLERY NSW
- POWER INSTITUTE – UNIVERSITY OF SYDNEY
- PESHAWAR MUSEUM

VOLUME 32 NO. 1 MARCH 2023



THE JOURNAL OF
THE ASIAN ARTS SOCIETY
OF AUSTRALIA

TAASA Review



Brahmanical cord

Tags

Notes

necklace set brahmanical cord passing
under right armpit with amulet boxes (kavaca)

figures > literary persons > bodhisattva
bodhisattva: general features > ornaments of
bodhisattva > necklace set

Close

IMAGE ANNOTATION PRACTICES

- OUTLINING OF COMPONENTS OF IMAGES
- LABELLING AND IDENTIFICATION (MULTILINGUAL)
- SCHOLARLY NOTES
- SEMANTIC TAGGING
- VOCABULARY DEVELOPMENT
- GROUPING AND SEMANTIC LINKING
- ANALYSIS OF ANNOTATIONS DATA
- PUBLICATION OF NTRO

IMAGE ANNOTATION COLLABORATION

PARTNERS

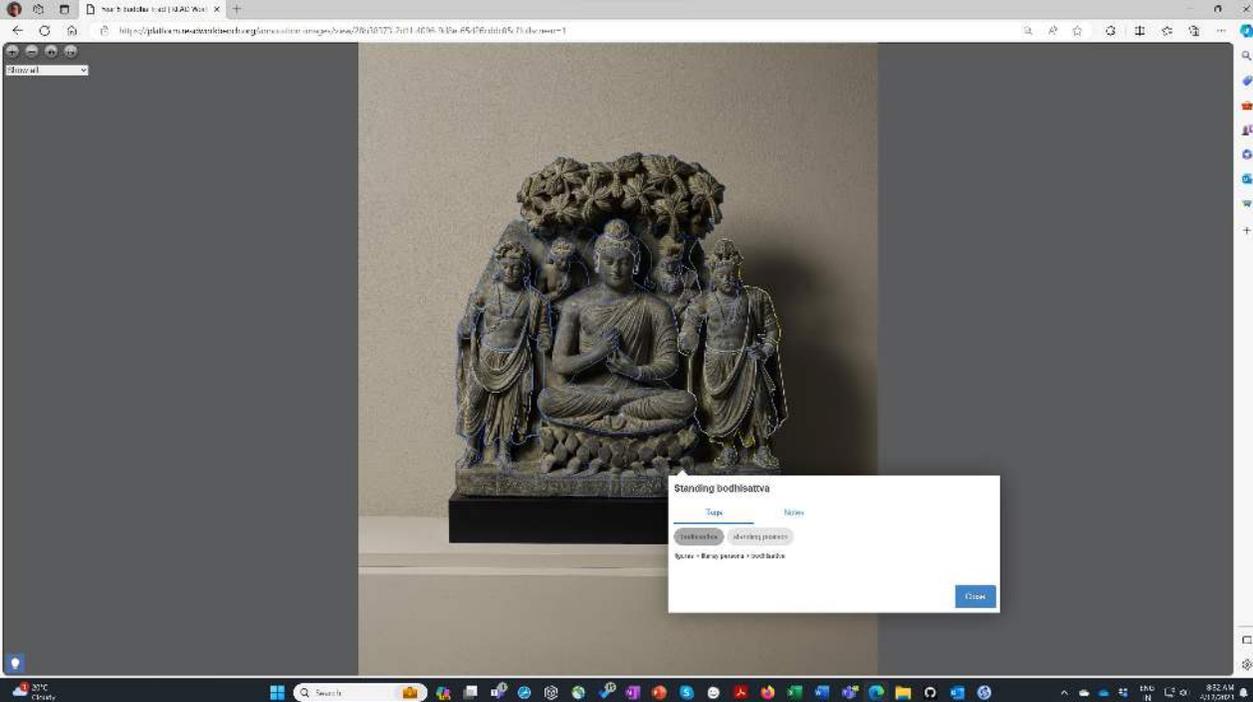
- UNIVERSITIES
- GLAM INSTITUTIONS
- INDEPENDENT RESEARCHERS

COLLABORATORS

- CHIEF INVESTIGATOR / RESEARCHER
- CURATOR
- DIGITAL DESIGN
- RESEARCH ASSISTANT

PILOT OBJECTIVES

- CROSS DISCIPLINARY RESEARCH
- ACCESSIBILITY
- DIGITAL REPATRIATION
- MANY VOICES



ICAD Reader

Features Editing Advanced

Custom Follow

ICAD Reader

Features Editing Advanced

Search

meridathana

Transliteration by Meridathana

Charya meridathana

Theodotus - Swāt - meridathana in "Meridathana" (2014)

1. meridathana meridathana

RESEARCH OUTPUTS

- ANNOTATED IMAGE AS A NTRO
- PEER REVIEWED JOURNAL ARTICLES (DIGITAL AND CONVENTIONAL)
- ANNOTATIONS AS SEARCHABLE DATA
- ANNOTATIONS AS TRAINING SET FOR AI

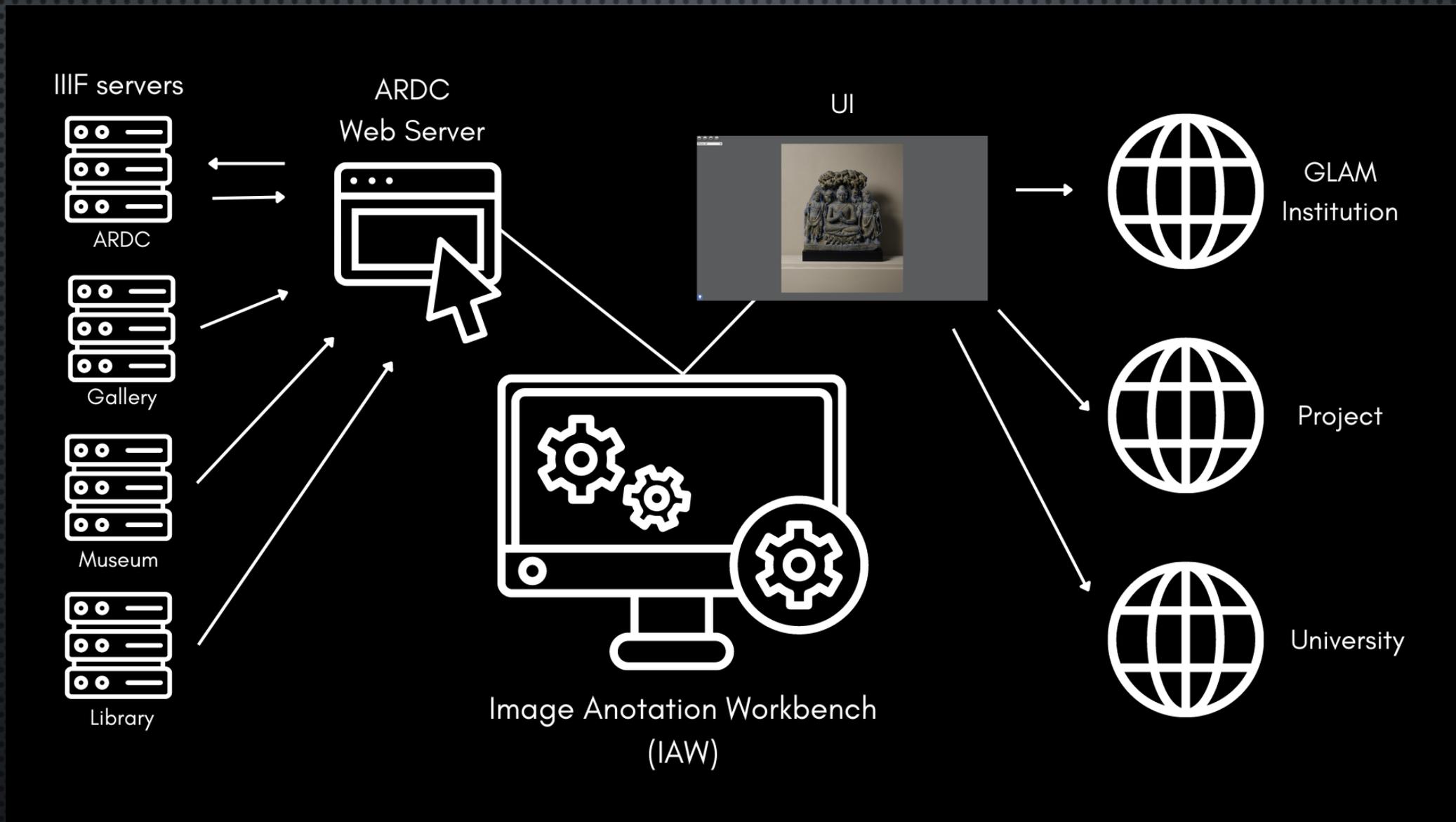
INTERNATIONAL IMAGE INTEROPERABILITY FRAMEWORK (IIIF)

IIIF IS A SET OF SHARED API STANDARDS FOR THE RICH AND HIGH-QUALITY DELIVERY OF IMAGES ONLINE. DEVELOPED COLLABORATIVELY BY A COMMUNITY OF THE WORLD'S LEADING LIBRARIES, MUSEUMS, UNIVERSITIES, AND OTHER CULTURAL HERITAGE INSTITUTIONS, IIIF AIMS TO PROVIDE RESEARCHERS, SCHOLARS, AND OTHER USERS WITH CONSISTENT AND ROBUST ACCESS TO VISUAL MATERIALS.

CORE STRENGTH OF IIIF IS ITS SUPPORT FOR INTEROPERABILITY. IMAGES AND OBJECTS FROM DIFFERENT INSTITUTIONS CAN BE VIEWED AND COMPARED SIDE-BY-SIDE IN THE SAME VIEWER. IIIF IS NOT JUST A SET OF TECHNICAL SPECIFICATIONS, BUT ALSO A COMMUNITY. INSTITUTIONS AND INDIVIDUALS CONTRIBUTE BY DEVELOPING TOOLS, SHARING BEST PRACTICES, AND PROVIDING GUIDANCE FOR IMPLEMENTING IIIF STANDARDS. IIIF IS BUILT ON OPEN STANDARDS, ENSURING THAT IT IS FREELY AVAILABLE TO ANYONE. THIS ENCOURAGES WIDE ADOPTION AND FOSTERS A RICH ECOSYSTEM OF COMPATIBLE TOOLS AND RESOURCES.

IMAGE API, PRESENTATION API, SEARCH API, ANNOTATION API

IAW PLATFORM ARCHITECTURE



SERVICE PATTERN

THE PLATFORM IS AN EXEMPLAR OF A DIGITAL SERVICE PATTERN THAN EMPHASISES MODULARITY, REUSABILITY AND MULTIPLE ACCESS METHODS.

- IIF IMAGE SERVER (OPTIONAL WORKSPACE)
- IAW SERVER (PROVIDES AN API TO ALL SERVICES)
- IAW APPLICATION (RESEARCHER UI)

RESEARCHERS CAN INTERACT WITH IAW EITHER THROUGH THE IAW APPLICATION (A CONVENTIONAL UI) OR THROUGH THE API.

SUSTAINABILITY STRATEGY

THE KEY COMPONENTS OF THE SUSTAINABILITY STRATEGY.

- OPEN-SOURCE STACK
- IIIF AND WEB ANNOTATION STANDARDS
- IIIF MANIFEST
- PERSISTENT ID'S
- IMAGE ARCHIVE

COLLECTIONS

- Demo Ian
- Image Gandhara
- + Add Collection

COLLECTIONS > VIEW COLLECTION

[Edit](#)
[+ Add Image Set](#)
[Import from Institution](#)
[Share](#)

[Delete](#)

Image Gandhara

Ian David McCrabb 15/01/2024

☰ ☐



Schist Buddha Triad (year 5)

Ian David McCrabb - 15/01/2024

⋮



Schist Lintel, Buddha and Attendants

Ian David McCrabb - 15/01/2024

⋮



Schist Bodhisattva Head

Ian David McCrabb - 15/01/2024

⋮



4

PLATFORM WORKFLOWS

FOUNDATIONAL WORKFLOWS

- COLLECTION
- IMAGE SET
- ANNOTATION
- COLLABORATION
- PUBLISHING

COLLECTIONS

- Demo Ian
- Image Gandhara
- + Add Collection

COLLECTIONS > VIEW COLLECTION

[Edit](#)
[+ Add Image Set](#)
[Import from Institution](#)
[Share](#)

[Delete](#)

Image Gandhara

Ian David McCrabb 15/01/2024

☰ ☐



Schist Buddha Triad (year 5)

Ian David McCrabb - 15/01/2024

⋮



Schist Lintel, Buddha and Attendants

Ian David McCrabb - 15/01/2024

⋮



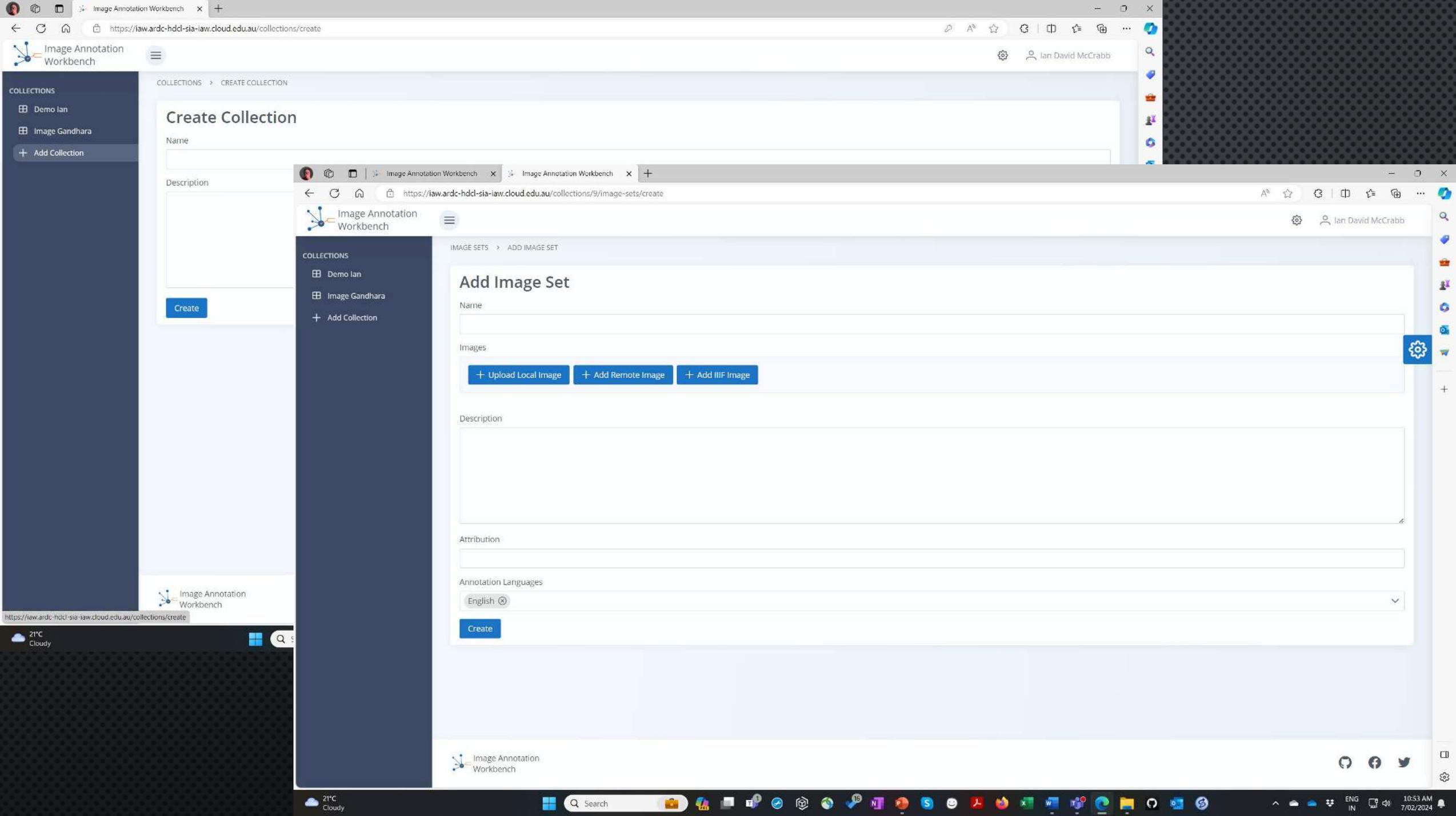
Schist Bodhisattva Head

Ian David McCrabb - 15/01/2024

⋮



4



- COLLECTIONS
- Demo Ian
- Image Gandhara
- + Add Collection

COLLECTIONS > CREATE COLLECTION

Create Collection

Name

Description

Create

- COLLECTIONS
- Demo Ian
- Image Gandhara
- + Add Collection

IMAGE SETS > ADD IMAGE SET

Add Image Set

Name

Images

- + Upload Local Image
- + Add Remote Image
- + Add IIIF Image

Description

Attribution

Annotation Languages

English

Create

21°C Cloudy

Windows taskbar with search bar and system tray icons.

Windows taskbar with search bar and system tray icons.

21°C Cloudy

10:53 AM 7/02/2024

Image Annotation Workbench

https://law.ardc-hdcl-sia-law.cloud.edu.au/collections/9/image-sets/23/annotation-sets

Image Annotation Workbench

lan David McCrabb

COLLECTIONS

- Demo Ian
- Image Gandhara
- + Add Collection

IMAGE SETS > ANNOTATION SETS

+ Add Annotation Set

Annotate "Schist Buddha Triad (year 5)"

Name	Owner	Created At	Published At	
Annotations	Ian David McCrabb	19/01/2024 10:40 am	22/01/2024 4:57 am	   

Image Annotation Workbench

https://law.ardc-hdcl-sia-law.cloud.edu.au/collections/9/image-sets/19/annotation-sets/13/annotate

Image Annotation Workbench

lan David McCrabb

COLLECTIONS

- Demo Ian
- Image Gandhara
- + Add Collection

IMAGE SETS > ANNOTATE



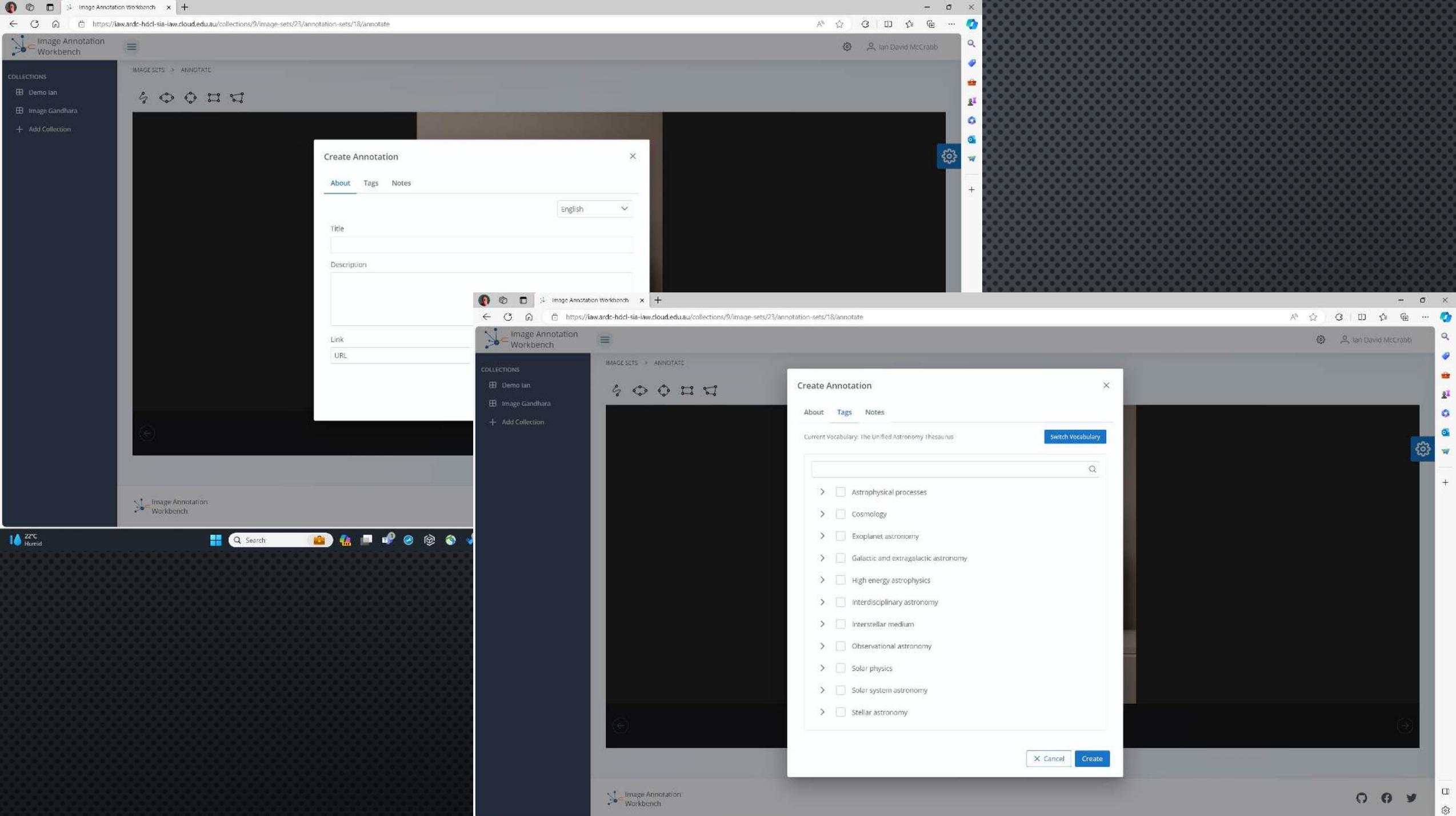
Image Annotation Workbench

21°C Cloudy

Search

Image Annotation Workbench

Image Annotation Workbench



Create Annotation [X]

About | **Tags** | Notes

English [v]

Title

Description

Link

URL

Create Annotation [X]

About | **Tags** | Notes

Current Vocabulary: The Unified Astronomy Thesaurus [Switch Vocabulary]

[Search]

- > Astrophysical processes
- > Cosmology
- > Exoplanet astronomy
- > Galactic and extragalactic astronomy
- > High energy astrophysics
- > Interdisciplinary astronomy
- > Interstellar medium
- > Observational astronomy
- > Solar physics
- > Solar system astronomy
- > Stellar astronomy

[X] Cancel [Create]

Image Annotation Workbench x +
https://iaw.ardc-hdcl-sia-iaw.cloud.edu.au/collections/8/share

Image Annotation Workbench

COLLECTIONS > SHARE COLLECTION

Share Collection

Type the user's email [Share](#)

Users

Name	Email	
Isobel Andrews	isobelandrews@systemiksolutions.com	✕

Image Annotation Workbench x +
https://iaw.ardc-hdcl-sia-iaw.cloud.edu.au/collections/9

Image Annotation Workbench

COLLECTIONS > VIEW COLLECTION

[Edit](#) [+ Add Image Set](#) [Import from Institution](#) [Share](#) [Delete](#)

Demo Ian

Ian David McCrabb · 19/01/2024

Public URL

<https://w3id.org/iaw/publications/image-sets/01hmqreweakhsngzjklot> [Copy](#) [Open](#)

Embed Code

```
<div style="border-bottom: 1px solid #ccc; padding-bottom: 10px; position: relative; display: block; width: 100%;>  
<iframe width="100%" height="100%"  
src="https://w3id.org/iaw/publications/image-sets/01hmqreweakhsngzjklot" frameborder="0" style="position: absolute; top: 0; left: 0;"></iframe>  
</div>
```

[Copy](#)

IIIF Manifest

<https://w3id.org/iaw/data/publications/image-sets/01hmqreweakhsngzjklot> [Copy](#) [Open](#)

[Close](#)



Schist Buddha Triad (y...)
Ian David McCrabb · 19/01/2024



Schist Bodhisattva Head
Ian David McCrabb · 19/01/2024

API ACCESS



law-notebooks / annotation-table.ipynb

Generating the annotation table from IAW

In this notebook, we will showcase how to create a table that displays annotation data from the IAW API.

To get started, we need to import a few dependencies. We will use OpenCV to process

```
In [ ]: import cv2
import numpy as np
import requests
import base64
from IPython.display import display, HTML
import pandas as pd
import json
```

In the upcoming sections of the code, we will be defining some functions that will

```
In [ ]: def load_image_from_url(url):
    """
    Load an image from a URL into OpenCV.

    Parameters
    -----
    url : str
        The URL of the image to load.

    Returns
    -----
    image : numpy.ndarray
        The image loaded into OpenCV.
    """
    response = requests.get(url)
    image = cv2.imdecode(np.frombuffer(response.content, np.uint8), cv2.IMREAD_COLOR)
    return image
```

Keyword search in annotations

In this notebook, we will demonstrate how to search annotations from a collection by keywords. In the end, we will generate a table listing all annotations related to "robe" from the collection "Image Gandhara".

To get started, we need to import a few dependencies. We will use OpenCV to process images and crop the annotated areas from the original images.

```
import cv2
import numpy as np
import requests
import base64
from IPython.display import display, HTML
import pandas as pd
import json
```

In the upcoming sections of the code, we will be defining some functions that will come in handy later on.

```
def load_image_from_url(url):
    """
    Load an image from a URL into OpenCV.

    Parameters
    -----
    url : str
        The URL of the image to load.

    Returns
    -----
    image : numpy.ndarray
        The image loaded into OpenCV.
    """
```

```
table_data["Notes"].append("")
# Line color
if 'line_color' in fields:
    table_data["Line Color"].append(' '.join(fields['line_color']['en']['values']))
else:
    table_data["Line Color"].append("")
```

```
# Create a DataFrame from the dictionary
df = pd.DataFrame(table_data)
```

```
# Convert the DataFrame to a HTML table
html = df.to_html(escape=False, index=False)
```

```
# Set content alignment to left
html = html.replace('<th>', '<th style="text-align: left;">')
html = html.replace('<td>', '<td style="text-align: left;">')
```

```
# Display the HTML table
display(HTML(html))
```

Image	Title	Tags	Notes	Line Color
	Rubes		(Myer 1966, 397) "The irregularly symmetrical folds of the Buddha's robe were apparently cast as ridges and later accentuated by deepening the furrows between them and adding shallower intermediate incisions, especially on the cool-lie folds around the neck and the partition across the legs." (Kreitman 1992, 194) "The Master wears a thick robe which hangs in symmetrical folds from his upper body, arranging itself in horizontal pleats at the knees and vertical ones on a laplet that conceals the feet as it descends over the edge of the seat."	Medium
	Rubes		(Myer 1966, 399) "The costumes of the attendant deities, like those of other princely or divine figures, are made of two broad strips of cloth. One is wrapped around the legs like the modern Indian dhoti, with a mass of loose pleats falling down the front or over the left thigh, and the other is worn as a sort of shawl, passing under the right arm and up again over the left shoulder... the falling pleats of their dhosis and the ends of their shawls do not dangle in irregular points but are cut off abruptly on a horizontal line (again perhaps a concession to the technical problems involved in working on this small scale), and their shawls are spread out in heavy folds, covering the entire body from armpit to thigh."	Medium

Would you like to receive our newsletter? Please read the privacy policy.

Open

IAW FEATURES

- STANDARDS BASED
- WIDE RESEARCH APPLICATION
- LOW SKILL THRESHOLD
- RESEARCH COLLABORATION
- VOCABULARY INTEGRATION
- REPOSITORY INTEGRATION
- NTRO PUBLISHING
- MULTIPLE VOICES
- SUSTAINABILITY

RESEARCH APPLICATION

- 36 - CREATIVE ARTS AND WRITING
- 43 - HISTORY, HERITAGE AND ARCHAEOLOGY
- 44 – HUMAN SOCIETY
- 45 – INDIGENOUS STUDIES
- 47 - LANGUAGE, COMMUNICATION AND CULTURE
- 50 - PHILOSOPHY AND RELIGIOUS STUDIES

RESEARCH SPECIFIC ANNOTATION

- MANUSCRIPTS AND INSCRIPTIONS PLUGIN
- MULTIMEDIA PLUGIN

AUDIENCE SPECIFIC PUBLISHING

- PUBLICATION THEMING
- SELECTIVE DISCLOSURE

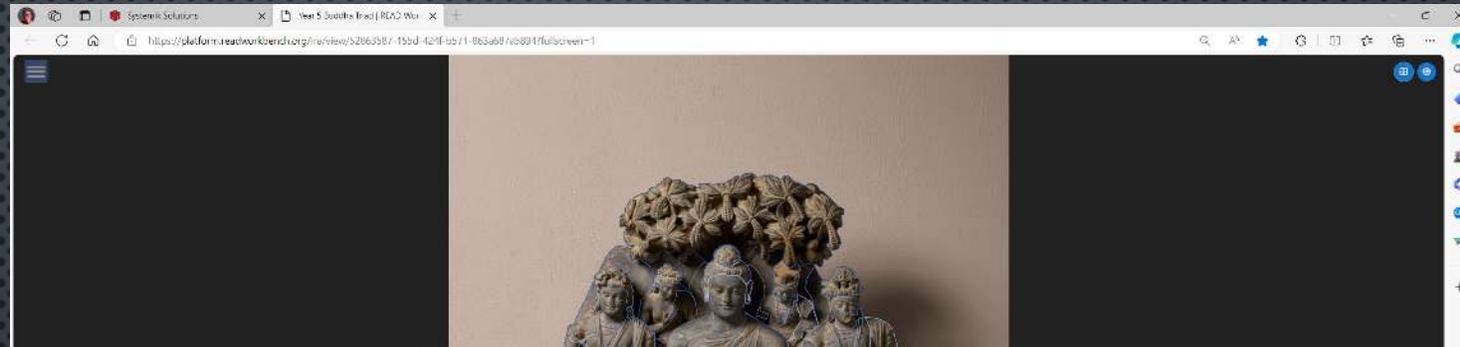
A screenshot of a web browser window displaying a table of Buddha features. The table has columns for 'Image', 'Title', 'Links', 'Tags', and 'Notes'. Each row contains a small image of a specific feature, a title, and a list of links and tags. The notes column contains detailed descriptions and references to academic sources.

Image	Title	Links	Tags	Notes
	Bun	hair parted in middle with wave of curls on either side		[Hale 1974: 132] 'wavy, rolling up and inwards from the hairline on either side of a central line almost shaped elliptical point' [Mittermaier 1987: 217] 'fringed in a systematized manner in the form of semi-circles, bound by a band' [Guy 2022: 57] 'The crown hair is drawn back in profuse waves and hair, so to form a large dignified oblong'
	Eye line	long at base of nose		
	Bead	robc with arm, right shoulder and foot crossed, and scotton of the lower carmen of 1/2 to 1/4		[Hale 1974: 132] 'shown in passing (not) under the right shoulder' [Mittermaier 1987: 217] 'right shoulder and opposite feet uncovered by upper garment, serves as a point of evidence that his crossing robes had been folded back'
	Unthebe	dharmacharitramudra		[Hale 1974: 132] 'hands are portrayed in dharmachara pose, denoting preaching and, as is most always the case with this hand position, the right shoulder and arm are uncovered' [Hale 1974: 131] 'The gesture he makes with his hands held against his chest is generally interpreted as symbolic of teaching, although it seems to be depicted rather tentatively here when compared to the more articulated representations observed in later sculptures' [Mittermaier 1987: 218] 'shown preaching with both hands raised in front of his breast, the right hand with the palm turned towards the breast and the left placed below the right hand... rendered in such a way that only those of the fingers of the left hand, thumb, index and middle, fingers are in contact with the right hand, touching its first finger' [Guy 2022: 57] 'his hands are posed before his chest in the teaching gesture known as Turning-the-Wheel (dharma-cara-pravartana-mudra)'
	Ears	buddha Gris		[Hale 1974: 130] 'very small and set low, practically on top of the nose' [Mittermaier 1987: 218] 'small raised disc between his eyebrows' [Guy 2022: 57] 'a small forehead mark (Ujma) at the meeting of his eyebrows serves as one of his many auspicious signs (lakhana)'
	Long earlobe	buddha long earlobe		[Hale 1974: 130] 'only moderately extended'
	Unthebe	earlobe hole		

https://systemiksolutions.com/

Systemik Solutions

HOME RESEARCH TECHNOLOGY CONSULTING CLIENTS ABOUT US CONTACT US

Systemik Solutions is an innovative platform development and content consulting group.

We build 'big content' platforms for the public sector and open-source digital humanities platforms with academia.
Our forte is the realisation of immersive, engaging research and consulting experiences.

University Home Library Current Students Staff Intranet

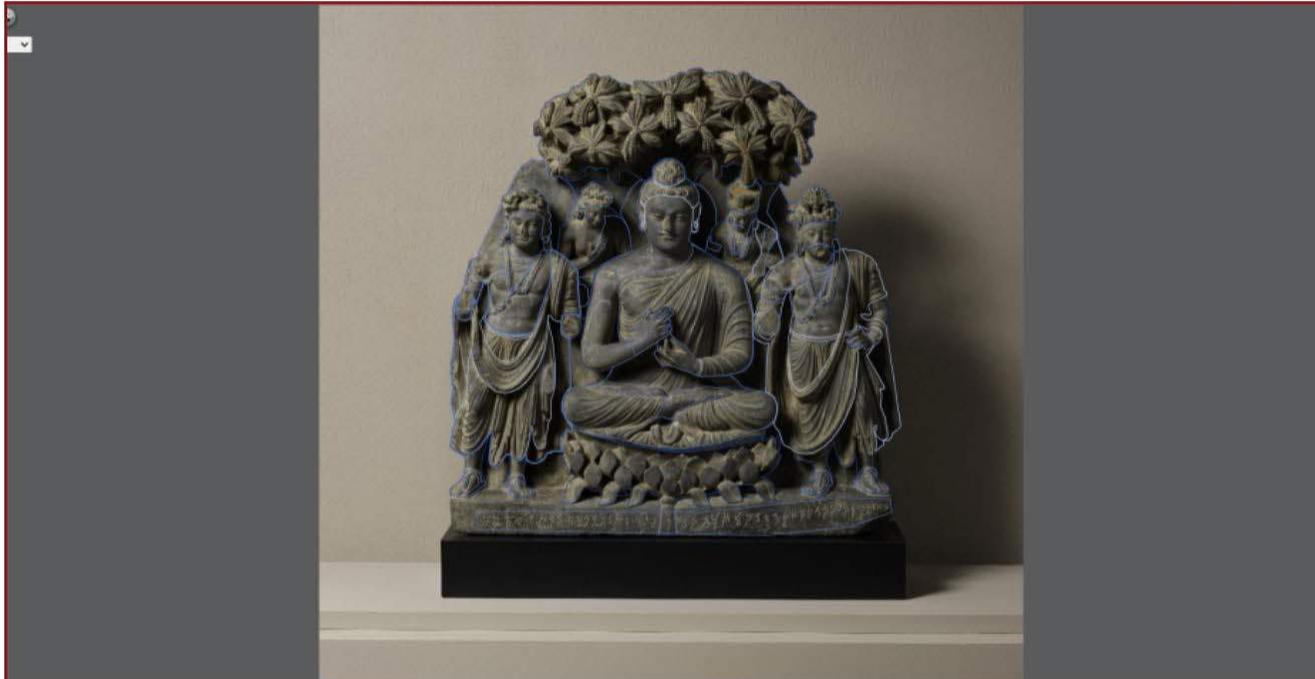
THE UNIVERSITY OF SYDNEY

Gandhāran Buddhist Texts

Customize Edit Stats

7:57 AM 21/01/2024

We build 'big content' platforms for the public sector and open-source digital humanities platforms with academia.
Our forte is the realisation of immersive, engaging research and consulting experiences.



Annotated Image



