

ACCELERATING 3D IN THE COMMON EUROPEAN DATA SPACE FOR CULTURAL HERITAGE

WHY 3D MATTERS

18 APRIL 2023 | HYBRID



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the European Union

Programme 18 April

'Accelerating 3D in the common European data space for cultural heritage: Why 3D matters'

Moderator: Jolan Wuyts

- Part 1 - Welcome & Keynotes
- Part 2 - Setting the context in more depth: Why 3D matters and what it consists of
- Part 3 - 3D in Practice
- Part 4 - Plenary: Building capacity, sharing, training, learning
- Part 5 - Conclusions and closing



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Welcome

Jolan Wuyts

Europeana Foundation



Keynote

Sophia Laurin

Swedish Ministry of Culture



Keynote

Rehana Schwinniger-Ladak

DG CONNECT, European Commission



Welcome

Joakim Malmström

National Antiquarian and Director General,
Swedish National Heritage Board



Welcome

Ann Follin

Etnografiska Museet



Setting the scene: The leading visions and introduction to the programme

Eva Stengård and Harry Verwayen

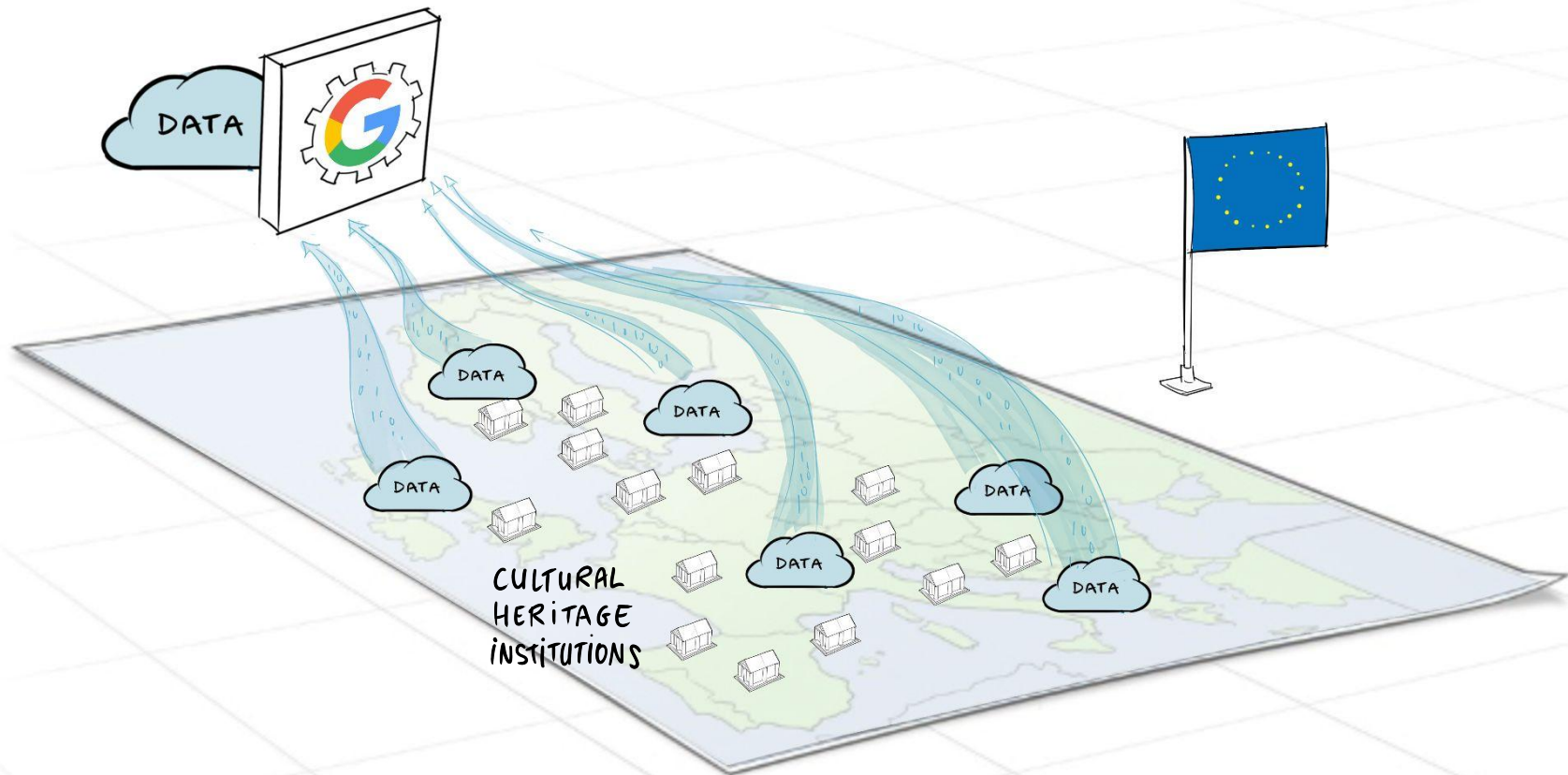
Ministry of Culture, Government Offices of
Sweden

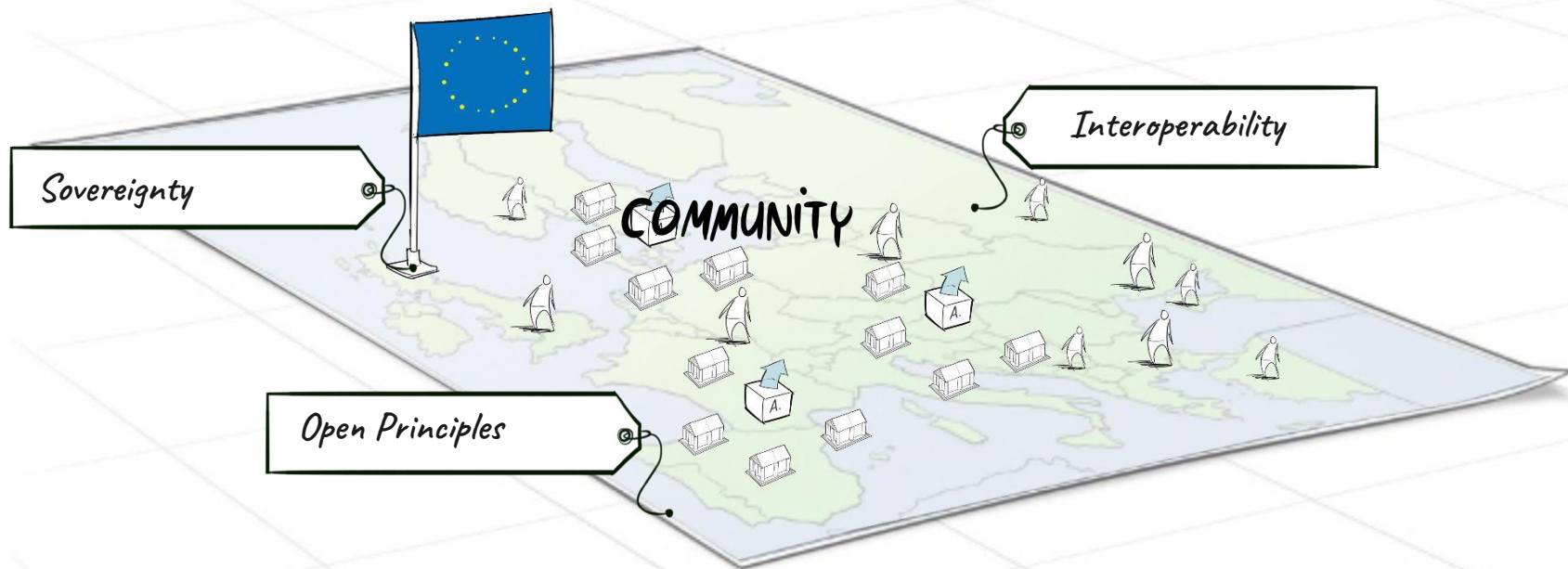
Europeana Foundation



Välkommen!

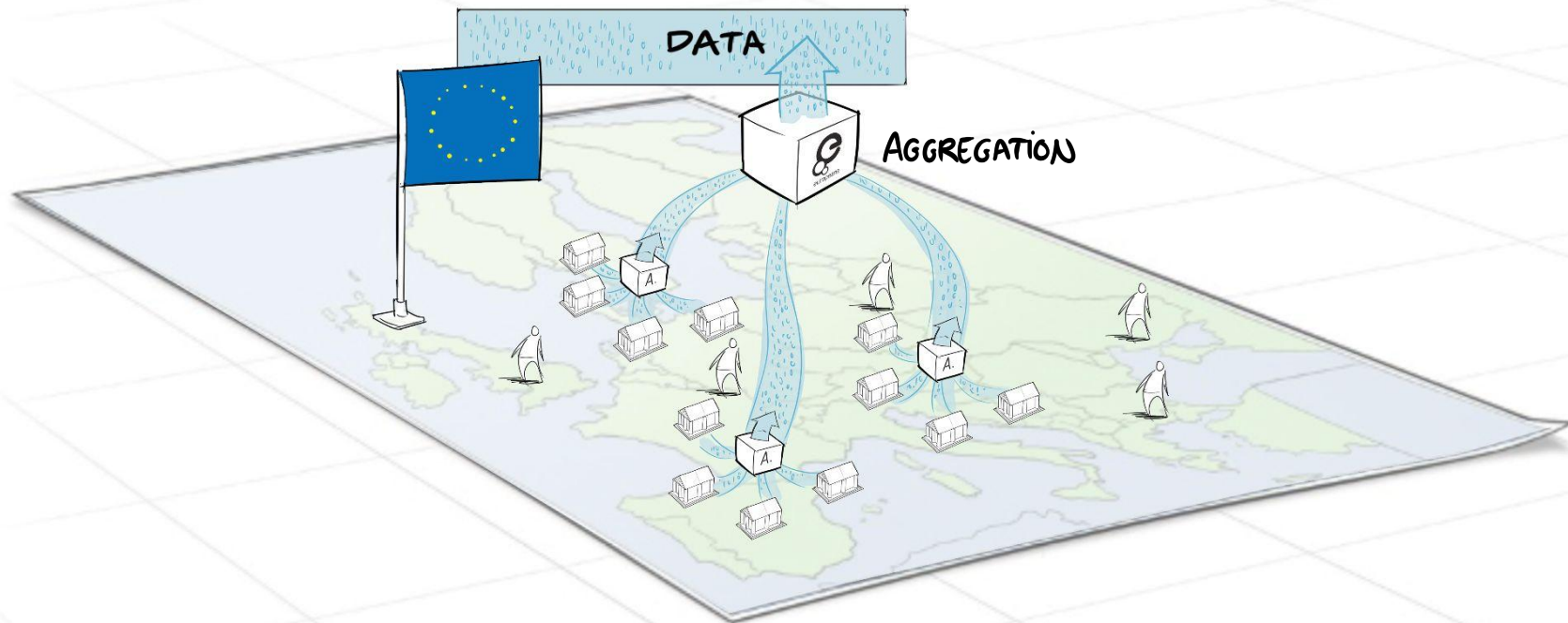
2005

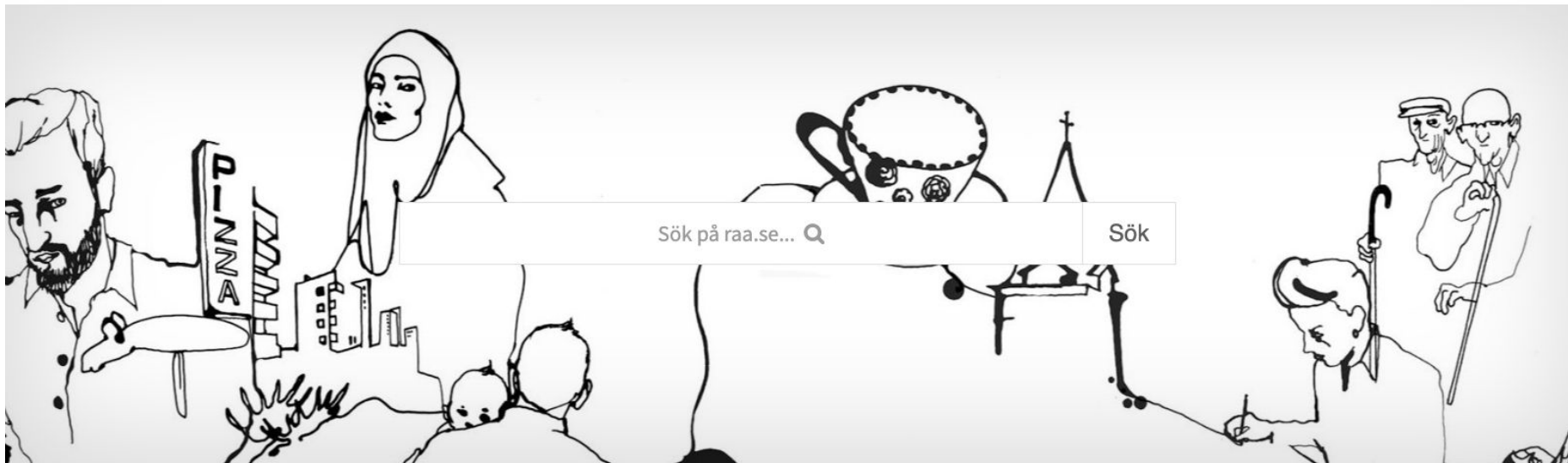




2008-2022

56,947,052 records





Kulturarv

Kulturarv utgörs av historiska spår som tillkommit genom mänsklig aktivitet i olika tider: objekt eller företeelser, men också idéer och perspektiv. Kulturmiljö avser hela den av människor ...

Lagar, bidrag och stöd

Kulturarvet och kulturmiljön skyddas av ett flertal olika regelverk, lagar och föreskrifter. De har betydelse för Riksantikvarieämbetets verksamhet och för kulturarvsarbetet såväl inom som utom ...

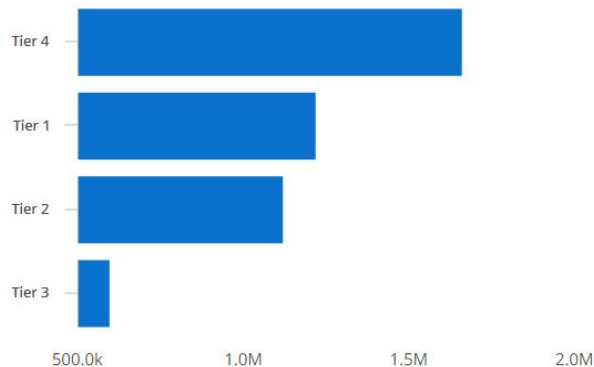
Sök- och registreringstjänster

I Riksantikvarieämbetets uppdrag ingår att tillgängliggöra kulturarvet. Det gör vi bland annat genom att göra informationen om kulturarv tillgänglig i våra digitala tjänster. Här är genvägar ...

SWEDEN IN EUROPEANA.EU

Sweden's content in Europeana

| | |
|--------|-----------|
| Tier 4 | 1,659,827 |
| Tier 1 | 1,217,716 |
| Tier 2 | 1,119,005 |
| Tier 3 | 595,033 |
| Total | 4,591,581 |



Top Tier

4

Top Tier percentage

36.15%

Top Tier records count

1,659,827

Total Tiers

4

Total records in Tiers

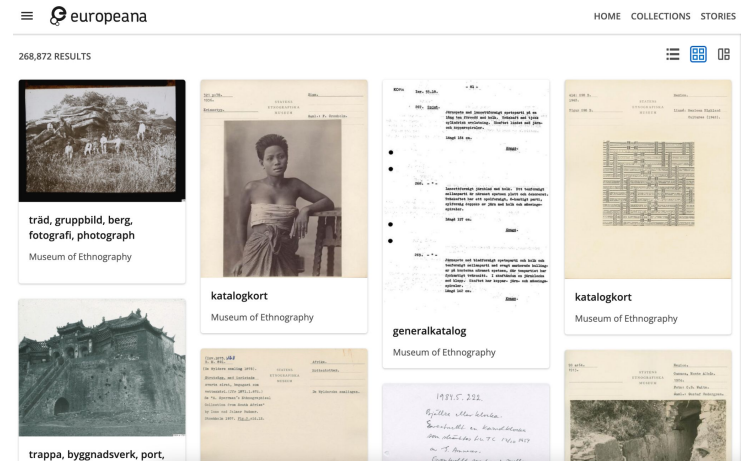
4,591,581

SWEDEN IN EUROPEANA.EU

Rights

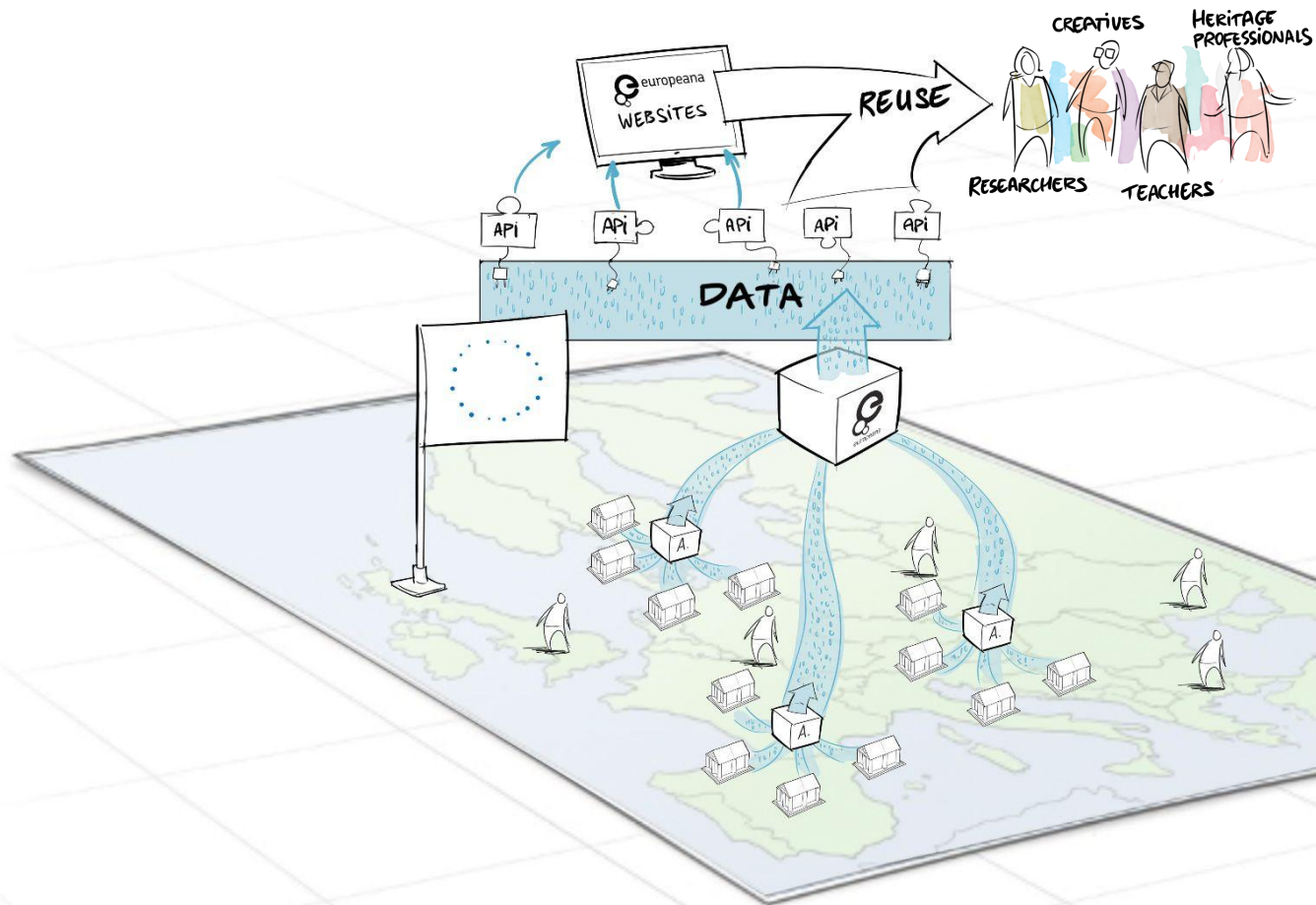
71% of content from Sweden is openly licenced, of which,

- Public Domain 34.6%
- CC BY-SA 7.1%
- CC BY 9.9%
- CC0 19.5%

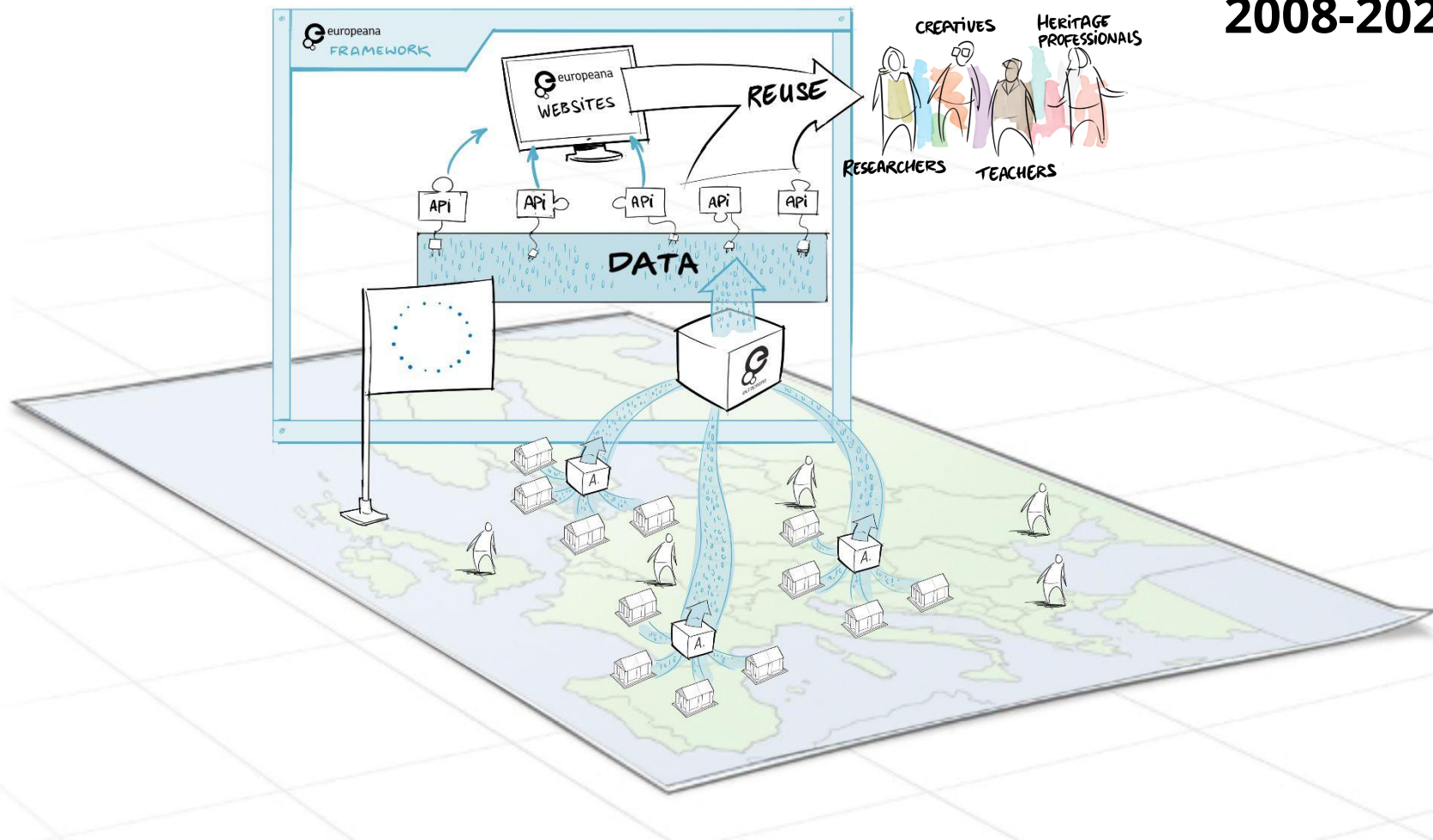


Museum of Ethnography

2008-2022



2008-2022



Discover Europe's digital cultural heritage

Search, save and share art, books, films and music
from thousands of cultural institutions

🔍 Search 50+ million items



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🗨 Feedback



europeana_eu



europeana_eu Gustaf Brandelius
was a Swedish artist know... more



artcomesout · Follow



artcomesout Proud to have my great-grandfather highlighted by @europeana_eu ! Follow them to learn about historical European art.
#SwedishArtist #SwedishPainter #artrunsinthefamily

#gustafbrandelius
#carlbrandelius
#pierrebrandelius
#stephaniebrandelius

Me #CollageArt #CollageArtist
#QueerArtist #WomanArtist
#ADHDArtist #IntuitiveArt #ScrapArt
#SnarkArt #AnalogArt
#AnalogCollage #MessyArtist
#VintageEphemera #VintageFabric
#EcoDye #JunkJournal
#AlteredBooks
#ReduceReuseRecycle
#EssentialToys #LandscapeNods






14 likes
3 DAYS AGO

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That's my
great-grandfather



Petra Zehner, 2022, CC-BY-SA, based on A Bouquet, 1820, Rijksmuseum, Netherlands, Public Domain.

'Collage artists are perpetually looking for copyright-free, high quality images to work with, and Europeana is an excellent source. I use their images for personal work and the weekly creative challenges of Paris Collage Collective. Placing old images into new contexts teaches us more about who we are than any history book.'

Petra Zehner

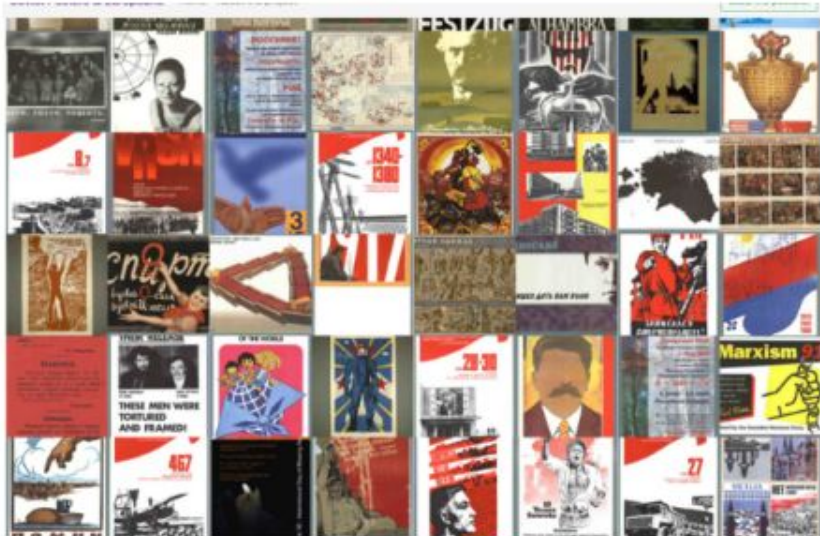
Graphic artist and founder of Paris Collage Collective,
France



'Felt monsters', Augmented Age of Inventions and Discoveries, Oulunkylän yhteiskoulu, Finland, 2019, CC BY-SA

'Our pupils used Europeana's collections to inspire the design of some robotic sea monsters, as part of an Erasmus+ project for secondary schools called Augmented Age of Inventions. The results are truly original - far from the mainstream manga style that normally influences their art.'

Annamaria Pérez-Moral
Art teacher, Catalonia

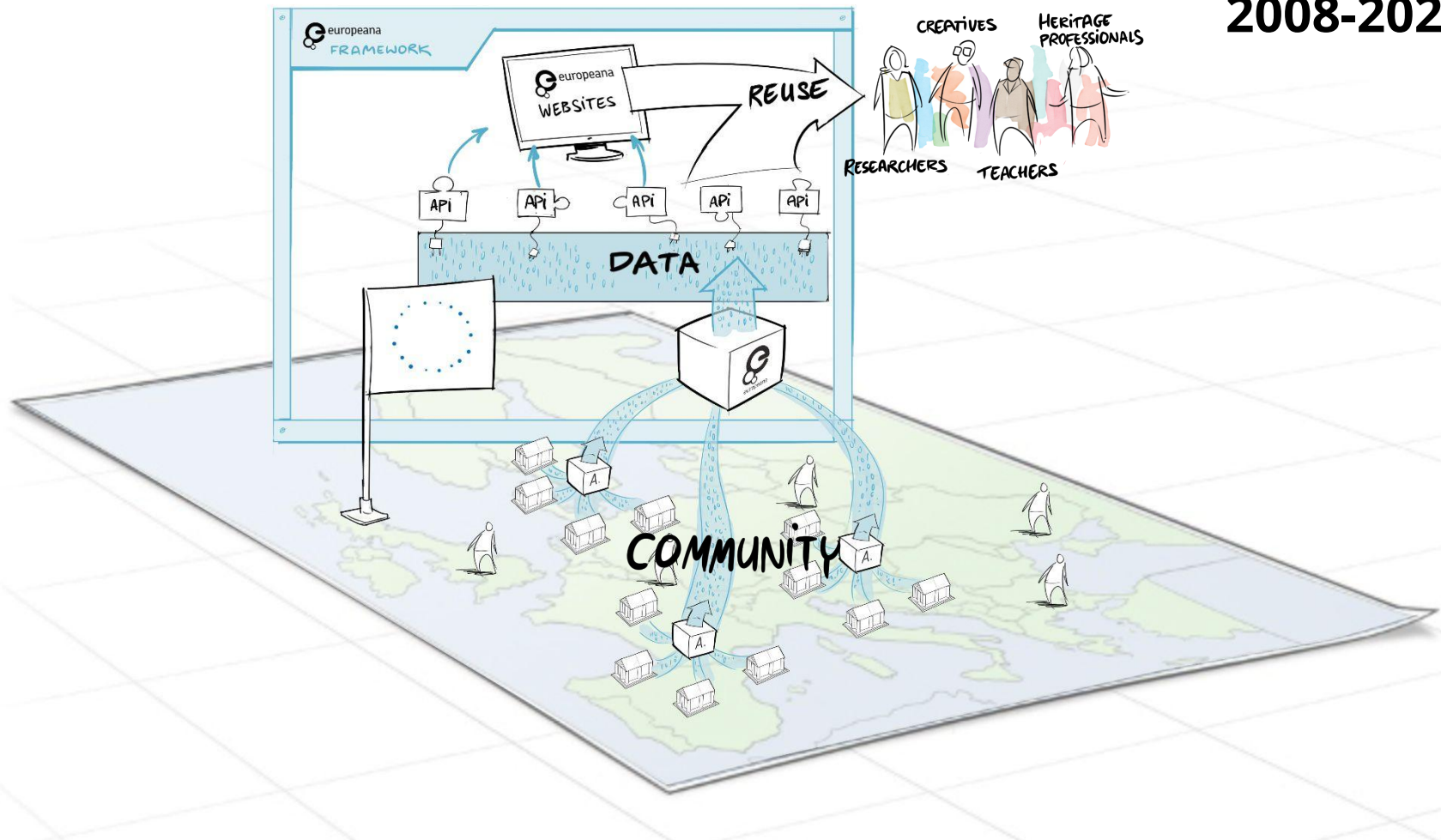


Russian and Soviet posters visualisation, Elizaveta Berquin, 2020, In copyright.

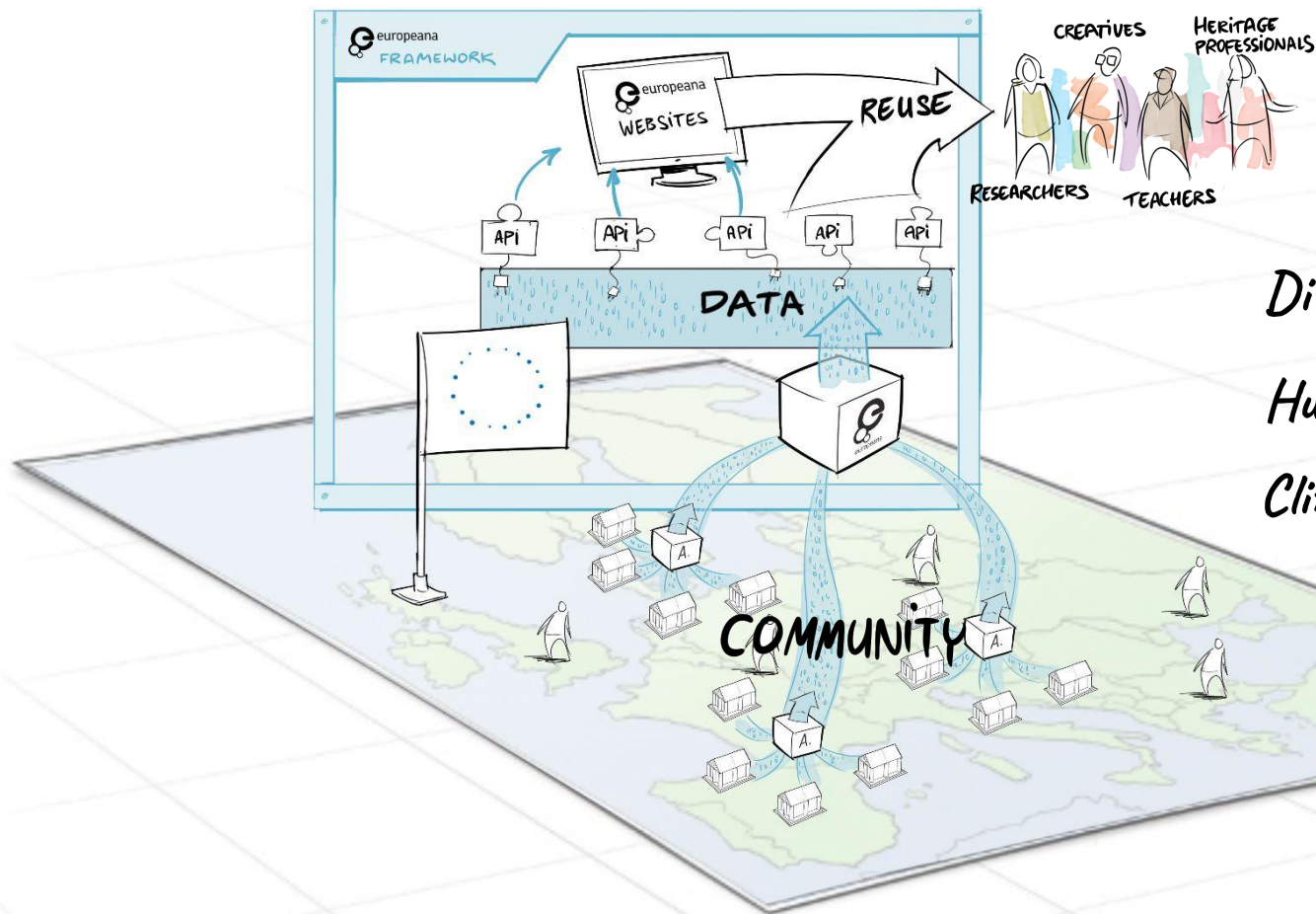
'I used the data extracted from the Europeana APIs to develop a web application to visualise Soviet posters for my master's thesis in Digital Humanities. Europeana is a powerful resource that gives access to a rich collection of digitised cultural heritage across Europe and can be used in many creative ways to explore almost any topic.'

Elizaveta Berquin
Researcher, Belgium

2008-2022



2008-2022



Diversity & Inclusion

Human AI

Climate Action

2022-2026 →

**DATASPACE
FRAMEWORK**

europa
FRAMEWORK

europa
WEBSITES

REUSE

CREATIVES

HERITAGE
PROFESSIONALS

RESEARCHERS

TEACHERS

API

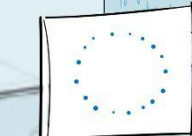
API

API

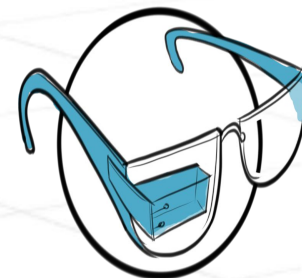
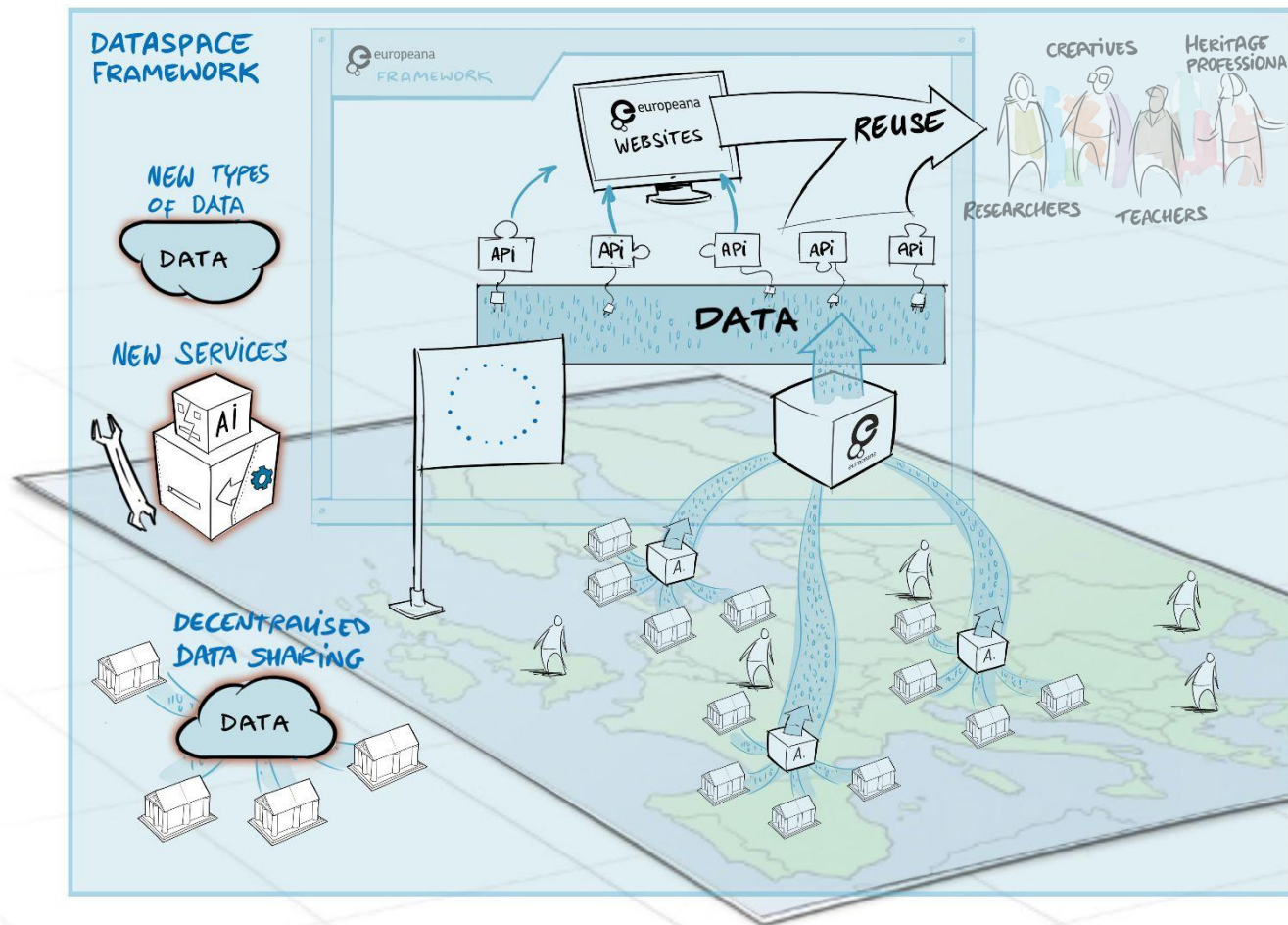
API

API

DATA



2022-2026 →





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BREAK



3D



Europa [Material cartográfico] : Nach den vorzüglichsten Hülfsmitteln, Götze, Johann August Ferdinand, 1773-1819 Biblioteca Digital de Madrid Spain, Public domain



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BREAK



Setting the context in more depth: Why 3D matters and what it consists of



Why 3D matters

Valentine Charles

Europeana Foundation



ACCESS

3D applications offer unprecedented opportunities for heritage institutions to reach wider audiences with more immersive experiences, providing virtual access to inaccessible places, or reaching persons with visual impairments by offering, for example, accessible tactile experiences.

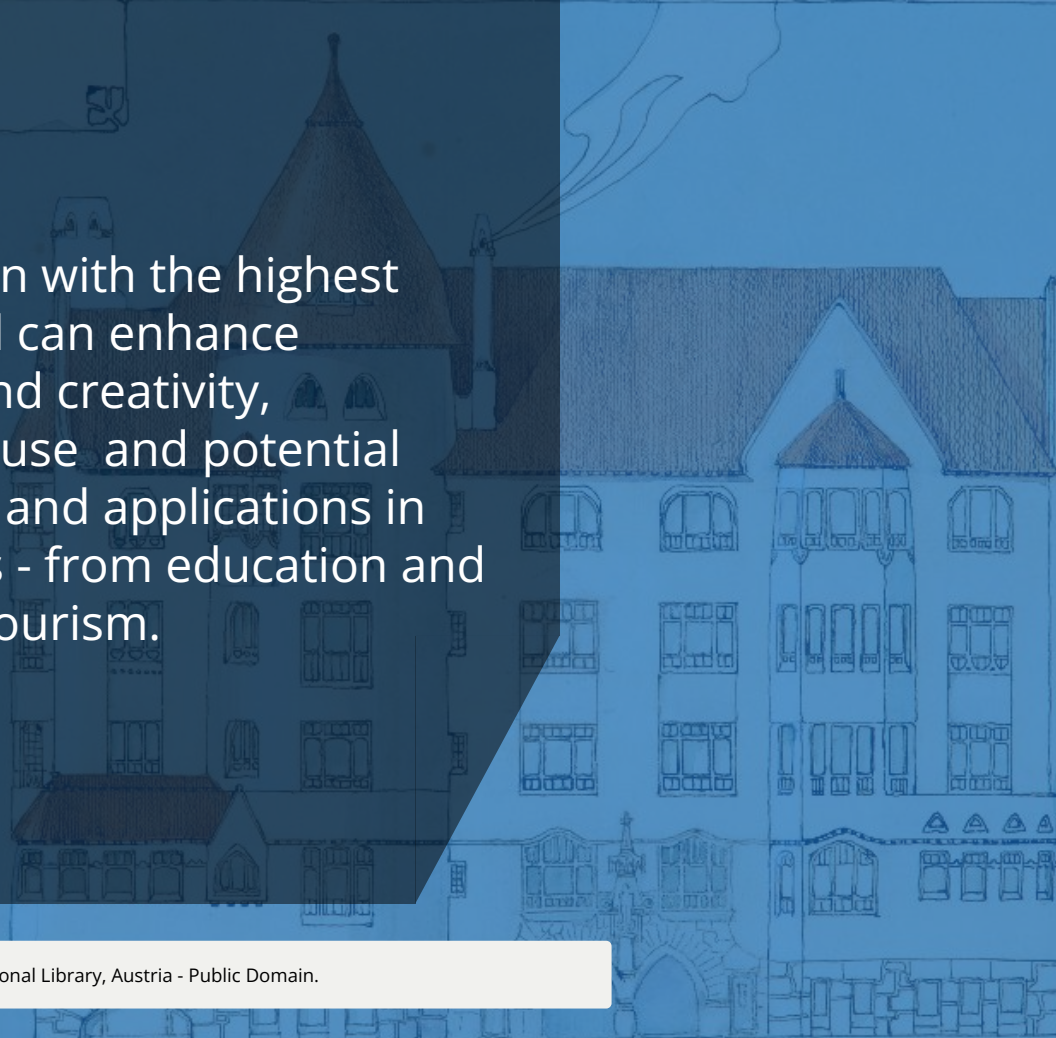
Die Bibliothek, zugleich Büro der Beamten der Ambraser Sammlung (Porträtsammlung) by Carl Goebel d. J. (Künstler/in) - 1889 - Austrian Gallery Belvedere, Austria - CC BY-SA.

PRESERVATION

3D allows for non-destructive analysis and visualisation of heritage assets, offering crucial information for restoration and conservation of monuments and sites under human and natural threats.

REUSE

3D digitisation with the highest level of detail can enhance innovation and creativity, enhancing reuse and potential new services and applications in other sectors - from education and research to tourism.





Iberian Archeology - 3D for visually impaired

Alberto Sánchez Vizcaino

University of Jaén

Among students and the people with impairments, two groups are of special interest to facilitate their inclusion in the field of Archaeological Heritage:

- People with visual impairments
- Young children (students between 6 and 8 years old)

In both cases we have prepared a proposal that we hope to develop, improve or modify throughout the development of the project 5DCulture

Final step: educational events where the value of the 3D model can be put into practice.





The 4CH project and the SUM initiative

Franco Niccolucci

4CH – Competence Centre for the
Conservation of Cultural Heritage

The 4CH project and the SUM initiative

Franco Niccolucci

PIN

4CH Chief Technology Officer



4CH is a Horizon 2020 project funded by the European Commission under Grant Agreement 10104468 – 4CH. The views and opinions are the sole responsibility of the author and do not necessarily represent the views of the European Commission.



4CH – Competence Centre for the Conservation of Cultural Heritage

- EU-funded project to design a European Competence Centre in charge of developing digital tools for the preservation of monuments and sites in Europe
- Setting up a digital system to document cultural heritage
 - 3D models
 - Documentation on conservation of monuments
 - Evaluating threats and forecasting hazards
- Developing training and upskilling activities
- Creating a network of national nodes
- <https://www.4ch-project.eu/>

24/2/2022: Invasion of Ukraine

- War in Europe was not in our threat list (probably, it was in no one's threat list)
- No time to take preventive actions to safeguard heritage
- Documentation is of paramount importance for restoration and reconstruction and, in the worst case, to witness lost assets
- No (or very little) way of intervening on site to produce new documentation

Only possible action

- Save digital heritage documentation stored locally from destruction, especially images and 3D models
- Involve other institutions (Polish Academy of Sciences, Visual Dimension, CARARE, U. of Vilnius, and more)



The Mariupol theatre before the war and after the bombing of 16/3/2022

How it worked

- Users from Ukraine contacting us by email and receiving a username and password to enter the system
- Datasets uploaded (very slowly!) to the Florence INFN server, using a web user interface, or a desktop tool to directly join our cloud, or a command line interface. Every six hours, uploads transferred to the INFN central server at CNAF. Checks regularly made on content
- Online user manuals available in English and Ukrainian
- Files kept ready to return them to the owner



SUM-4CH

Документація серверу CHNet owncloud

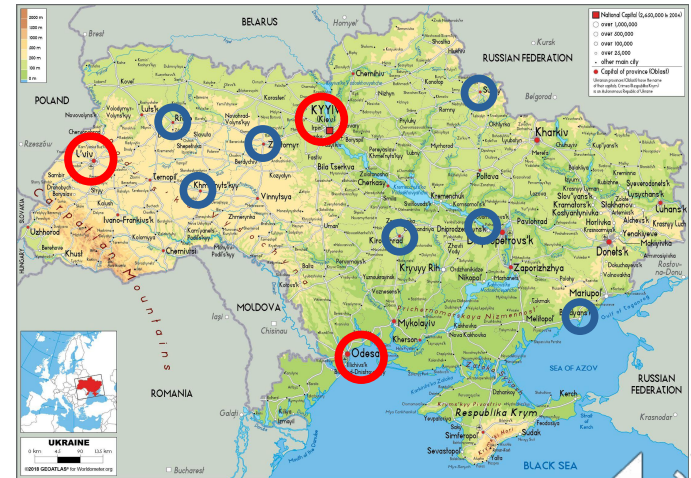
Alessandro Bombini, INFN-CHNet

1. Вступ
2. Інтерфейс користувача веб-додатка
- 2.1. Сторінка входу

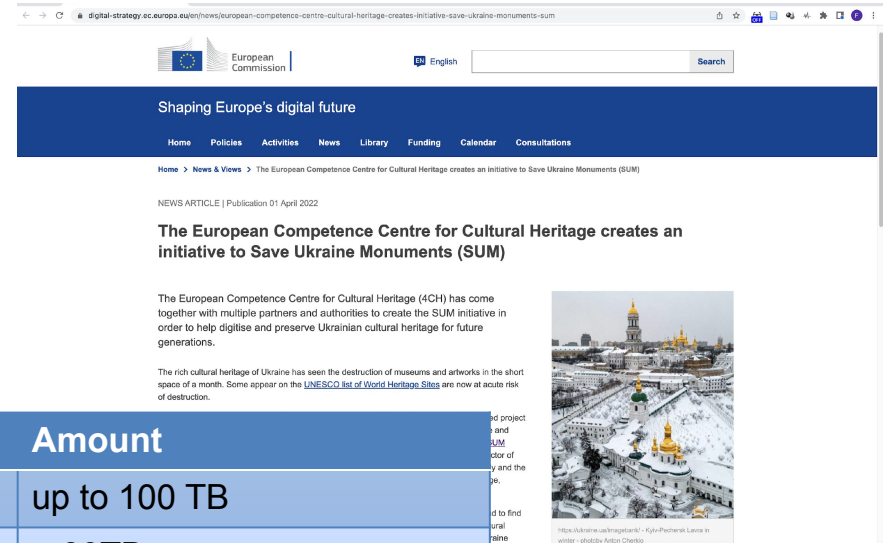
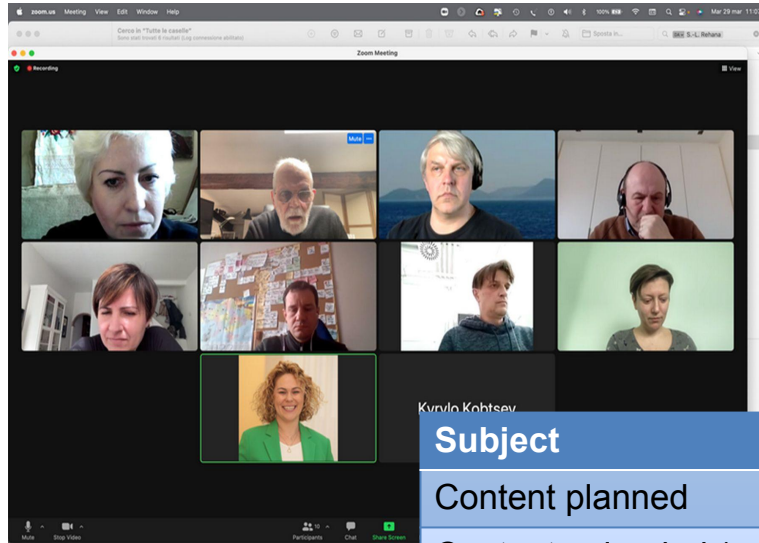


Europeana Conference – Stockholm 18 April 2023
Franco Niccolucci, PIN

Data provenance: main cities (red) and small ones (blue)



Meeting with Ukrainian authorities and endorsement by the EU Commission



| Subject | Amount |
|----------------------------|--------------|
| Content planned | up to 100 TB |
| Content uploaded (ongoing) | > 80TB |
| Files uploaded | > 260 000 |
| Institutions involved | 18 |

On the 4CH project web site: home page and SUM page in ENG and UKR Videos on VIMEO



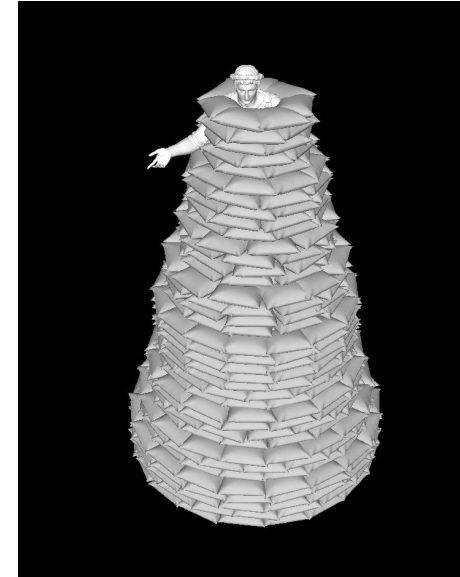
The SUM initiative
<https://vimeo.com/701197687>



SUM: interview with 4CH
<https://vimeo.com/705378244>

What next

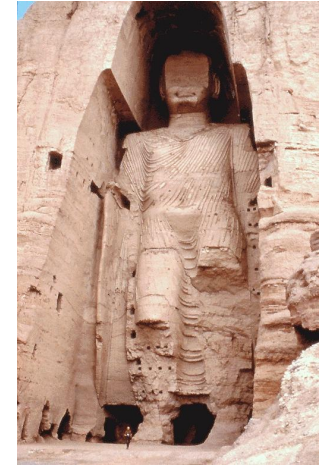
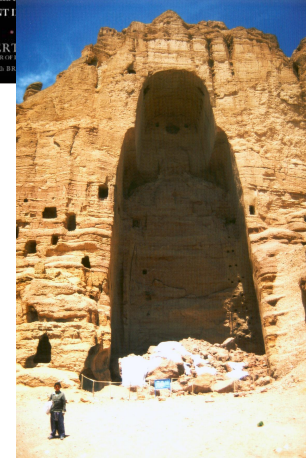
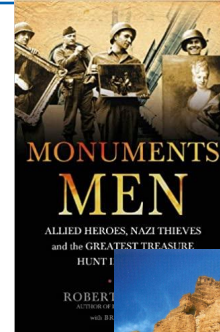
- Files kept ready to be returned to the owner
- Plans to train Ukrainian professionals in
 - Making 3D models of cultural heritage (monuments and objects) with different techniques e.g. 3D scanning and photogrammetry
 - Storing the digital documentation in a findable and accessible way
 - Using 3D models to plan and implement restoration and/or reconstruction
 - Using 3D for communication and education



Odessa: the Duke of Richelieu statue as it was and a 3D model of it as is now, with protective sandbags
Photo by Natanaval, Haidamac, Posterr, Brizhnichenko, J budissin, Alex Levitsky & Dmitry Shamatazhi (wikimedia)

Lesson learned

- Documenting heritage in 3D is an important way of preserving it
- Disasters come always unexpected, as the war in Ukraine has shown, but also the war and terrorism in Syria and the earthquake in Turkey and Syria
- Create a task force to assist in saving the digital documentation, or to create it from scratch when it does not exist: the **Digital Monuments Team**, remembering the **Monuments Men** who in WW2 saved European heritage from Nazi looting and war destruction
- Technology assists in such a task even when 3D models are unavailable. A notable recent example is **Palmyra**, but a similar work was done 20 years ago by Prof. Grün and his team at ETH Zurich to digitally reconstruct the **Great Buddha of Bamiyan** destroyed by Talibans.



The Bamiyan Buddha as it was before 2001 (photo Fars Media Corporation, CC BY 4.0) and how it is now (photo Alessandro Balsamo, CC BY)

Thank you!



4CH is a Horizon 2020 project funded by the European Commission under Grant Agreement n.101004468 – 4CH.

The views and opinions expressed in this presentation are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

franco.niccolucci@gmail.com

www.4ch-project.eu





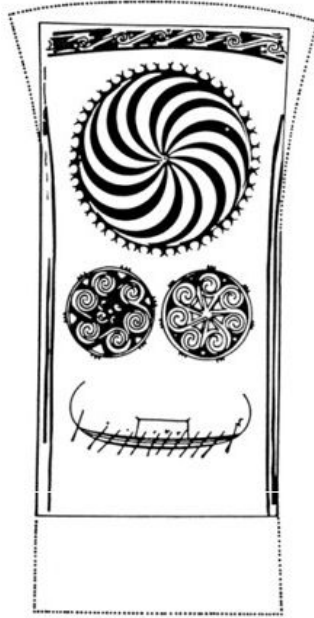
Revealing the past with photogrammetry

Mike Fergusson

Viospatia AB



BILDSTEN TYPOLOGY



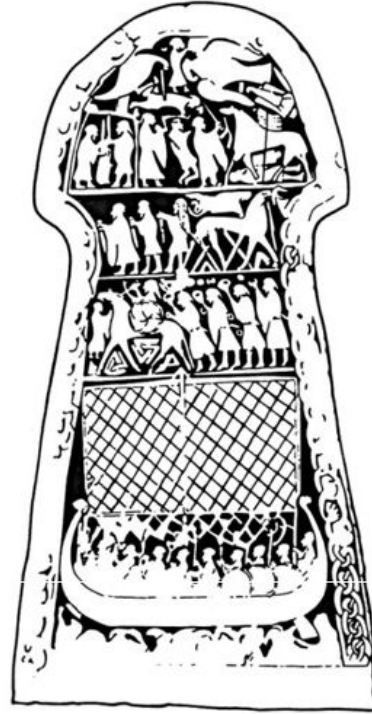
Type A (400-600)

Migration Period



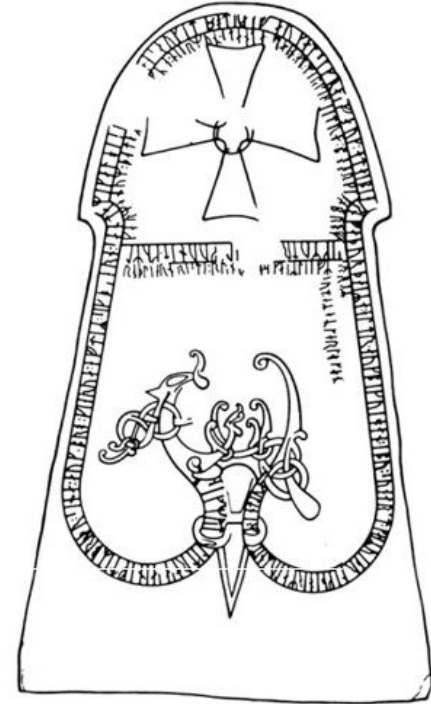
Type B (500-700)

Vendel Period



Type C/D (700-1000)

Viking Period



Type E (1000-1100)

Late Viking Period

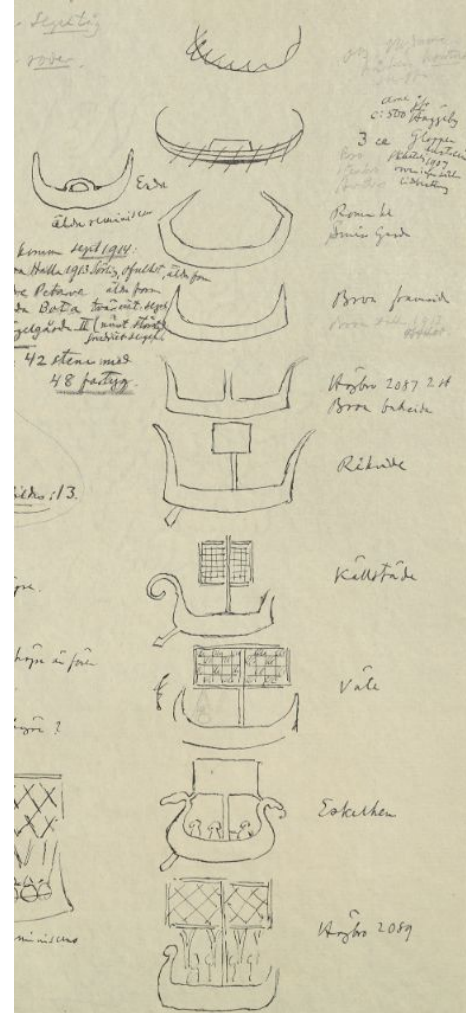
HISTORIC DOCUMENTATION

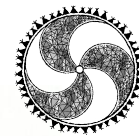


Fredrik Nordin at
GP 61 Buttle Änge I, 1911



GP 5 Alskog Tjängvide I drawing by Säve





GP 397 Stenkyrka Smiss I – tracing by Sune Lindqvist

PHOTOGRAMMETRIC RECORDING

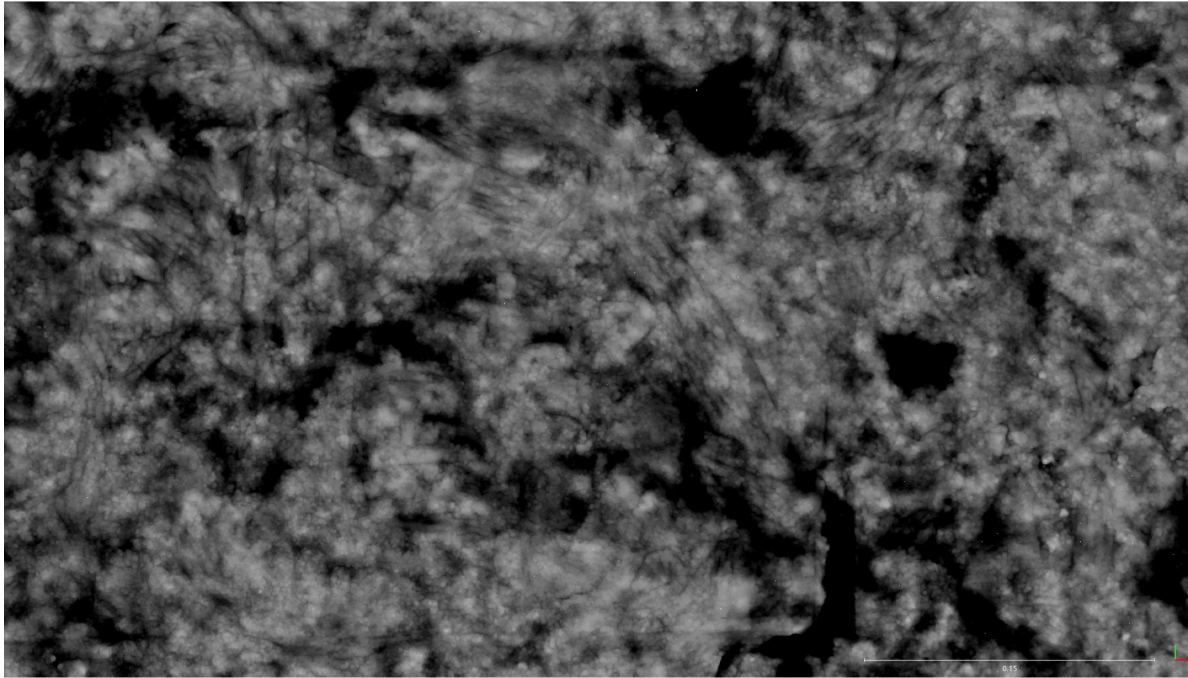


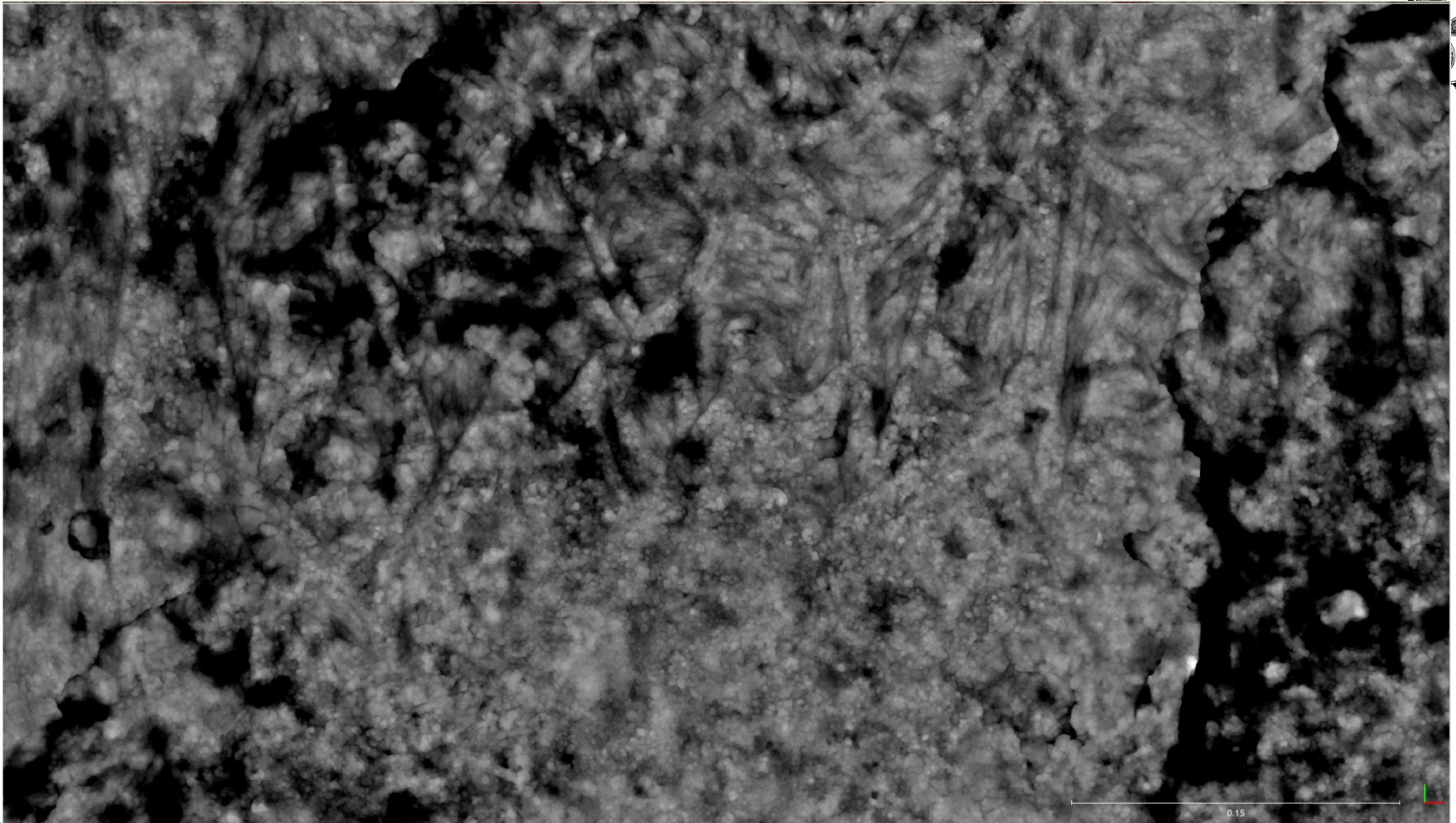
Ancient Images 2.0 team at
GP 61 Buttle Änge I, 2022



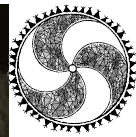
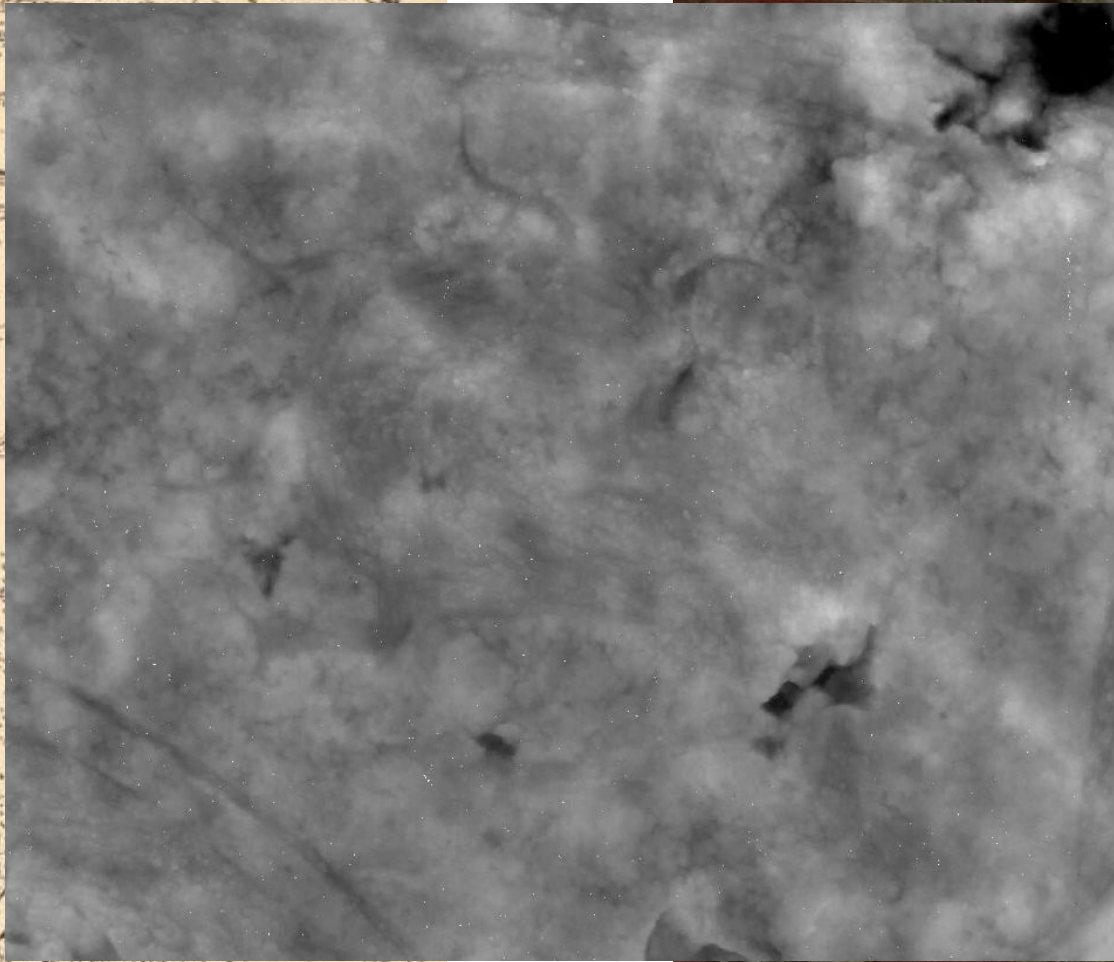
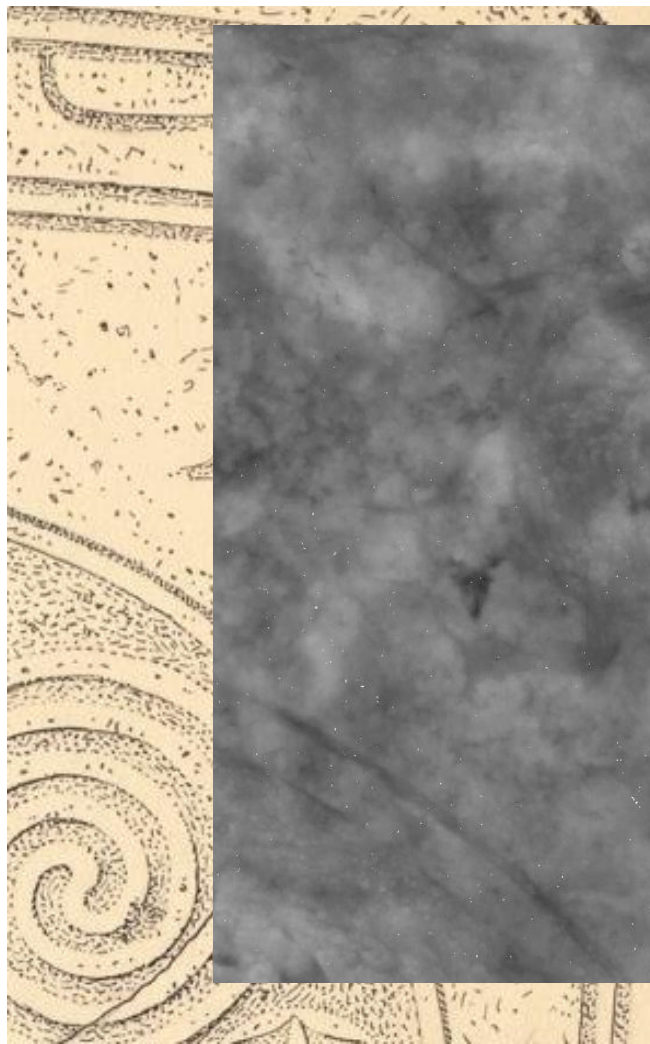


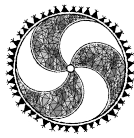
GP0253 – Lärbro Stora Hammars I





GP0253 – Lärbro Stora Hammars I

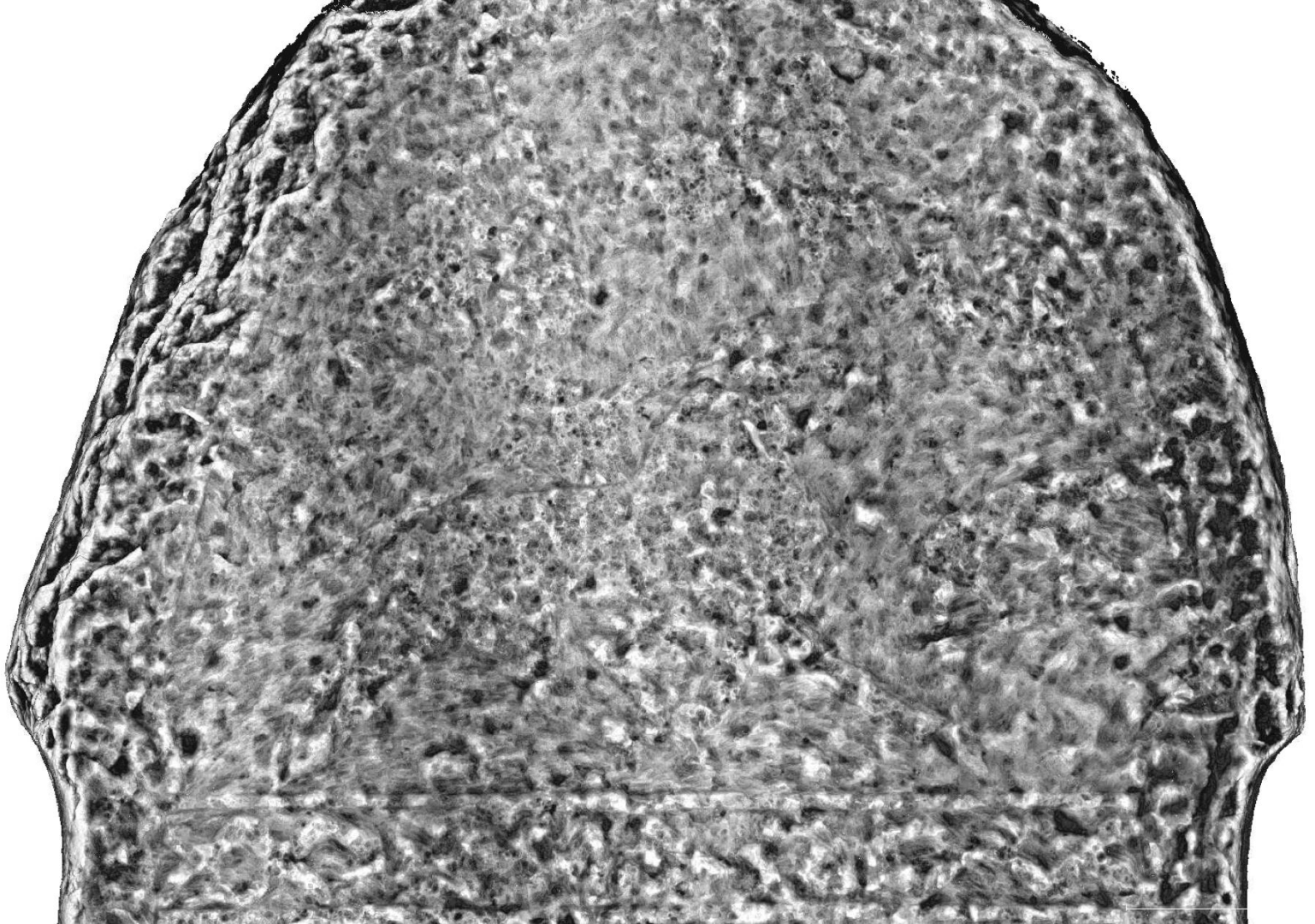




Klinte Hunninge I, Olof Sörling's drawing 1911

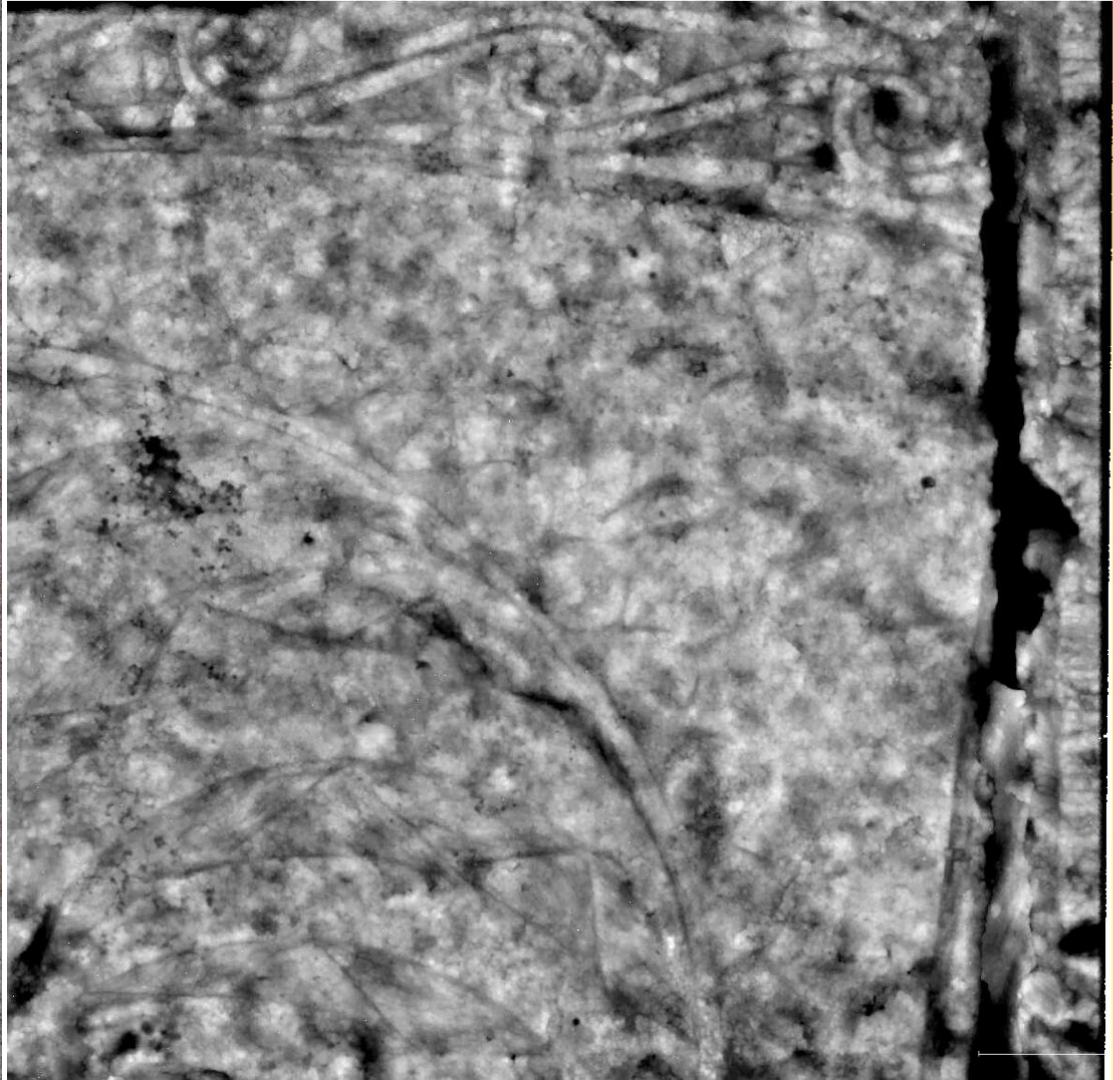


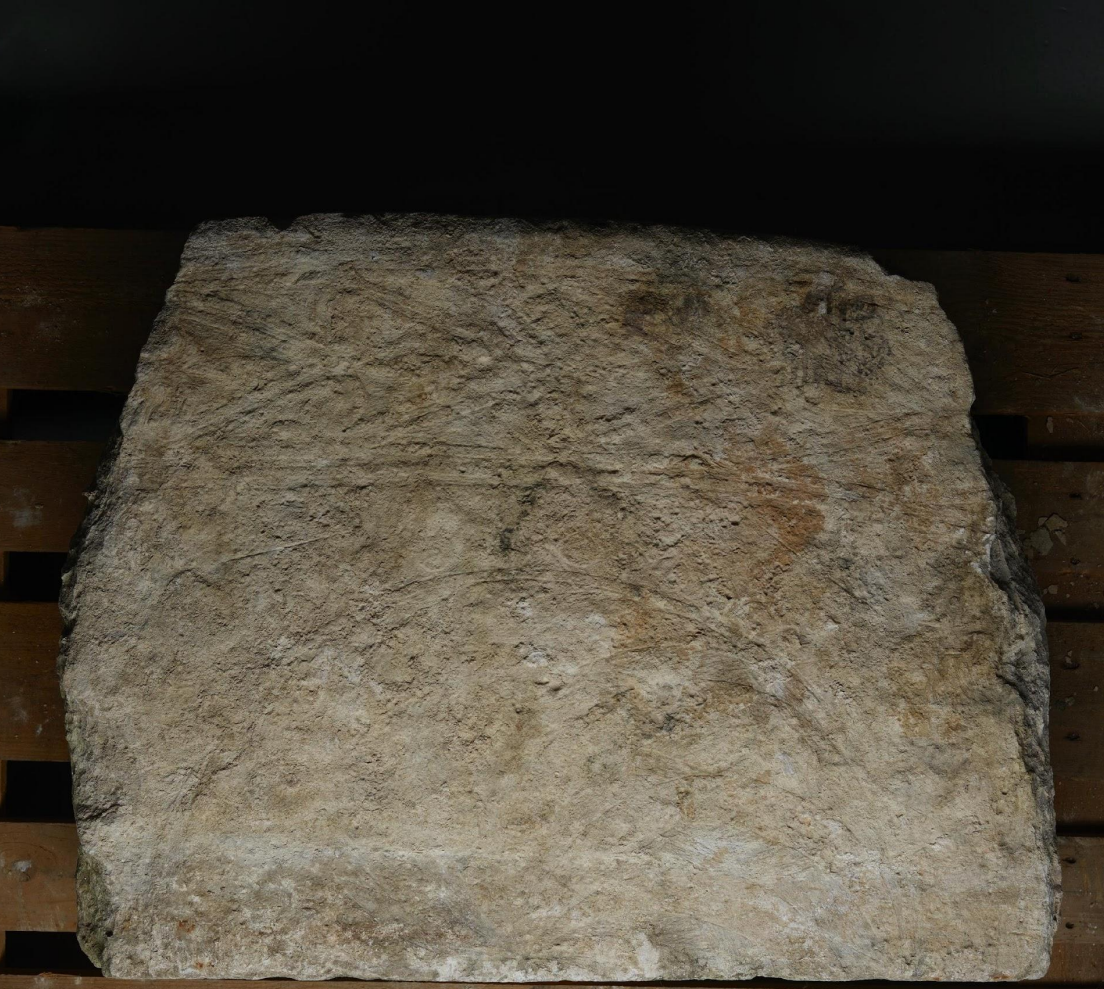
Klinte Hunninge I, Lindqvist's painting 1941





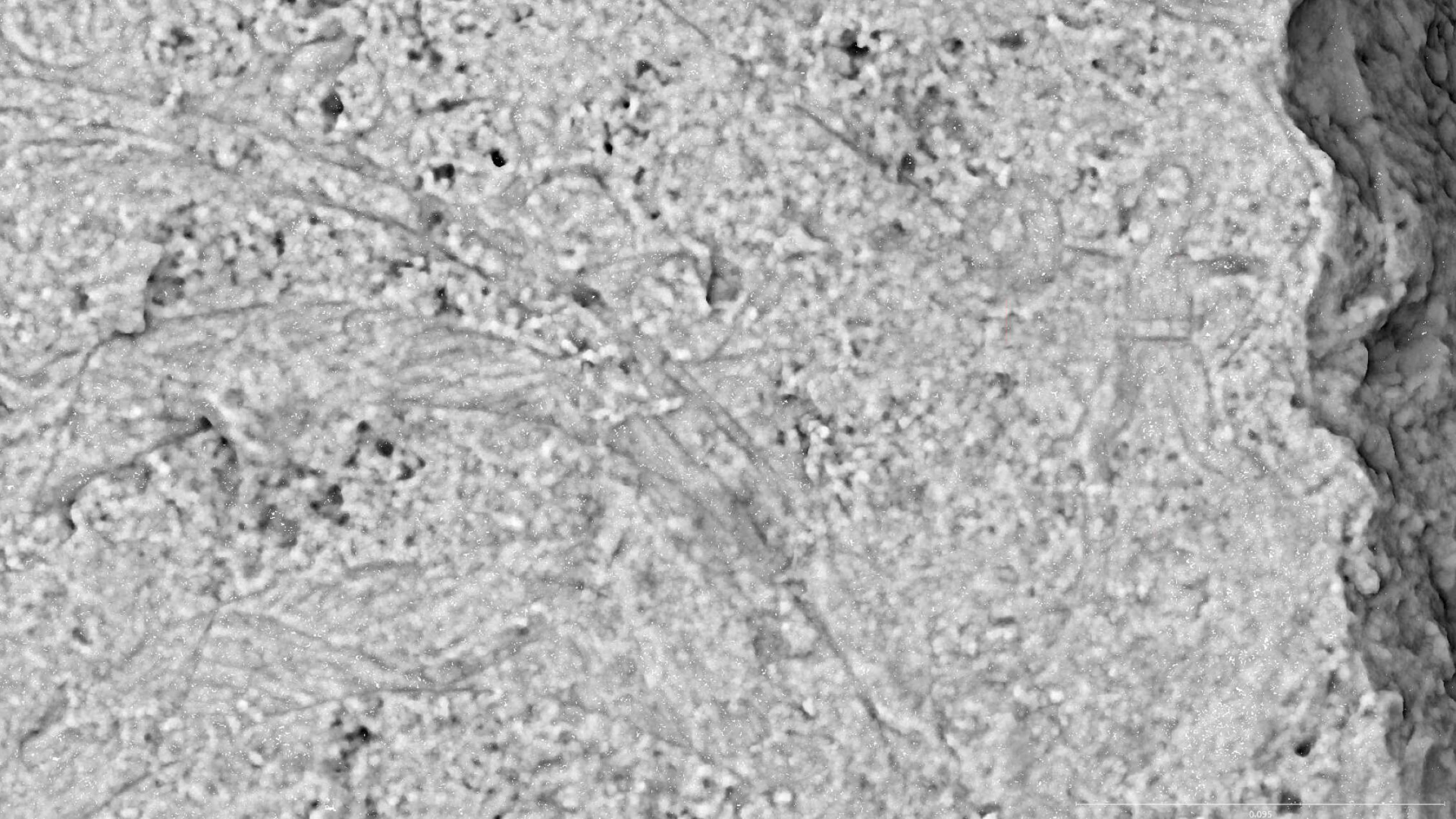
GP0043 – Bro Kyrka

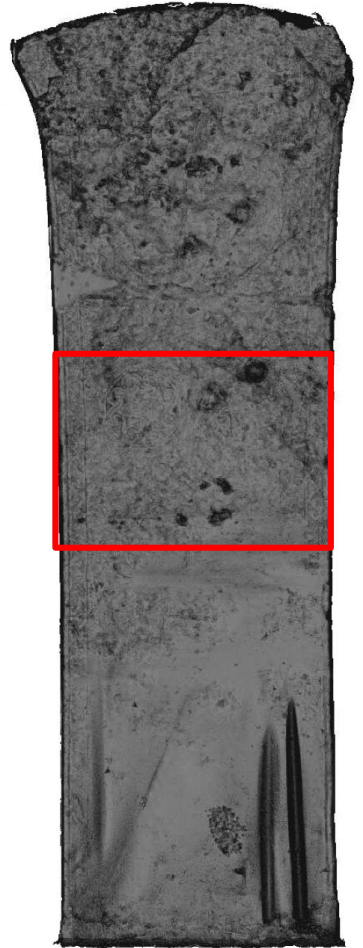
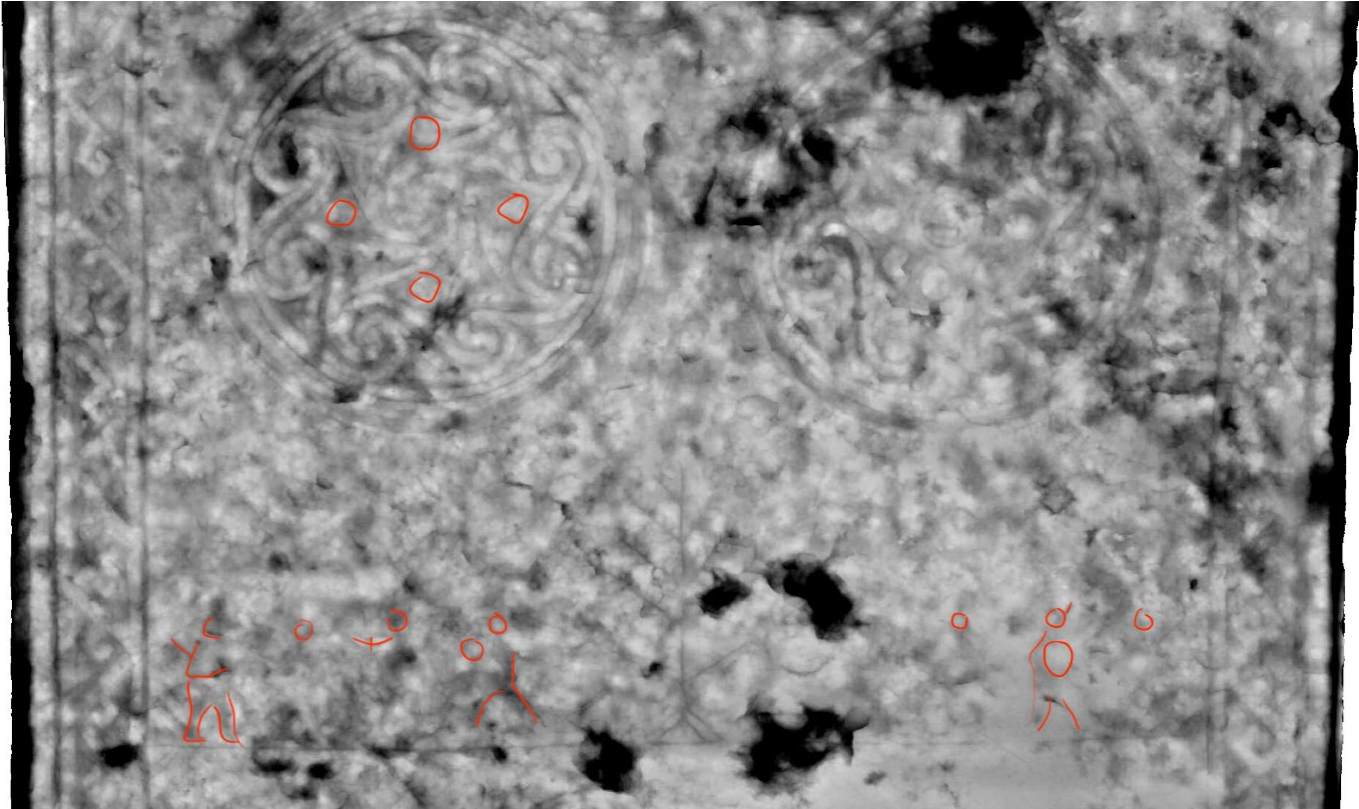




GP0555 – Väskinde Kyrka







GP0350 – Sanda Kyrka 4

Financed by:



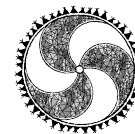
Vetenskapsrådet



Riksbankens
Jubileumsfond



ZBSA



Institutions
involved:



Institutionen för
arkeologi och antikens kultur



Gotlands
Museum



SWEDISH NATIONAL HERITAGE BOARD
RIKSANTIKVARIÉÄMBETET

ARKEOLOGISK
MUSEUM

Universitetet i Stavanger

Further
collaboration
partners:



Kiel University
Christian-Albrechts-Universität zu Kiel



Team:

Sigmund Oehrl, PI (Arkeologisk Museum Stavanger/Stockholms universitet)

Anders Andrén (Stockholms universitet)

Laila Kitzler Åhfeldt (RAÄ Stockholm)

Mike Fergusson (VIOSPATIA/Gotlands Museum Visby)

Per Widerström (Gotlands Museum Visby)

Henrik Jansson (Gotlands Museum Visby)

Reference Group:

Sally Foster (University of Stirling)

Lisbeth Imer (National Museum København)

Magnus Källström (RAÄ, Stockholm)

Alexandra Pesch (ZBSA Schleswig/University of Kiel)

Peter Skoglund (Linnaeus University)

Charlotte Hedenstierna-Jonsson (Uppsala University)

www.ancientimages.se

www.digarv.se

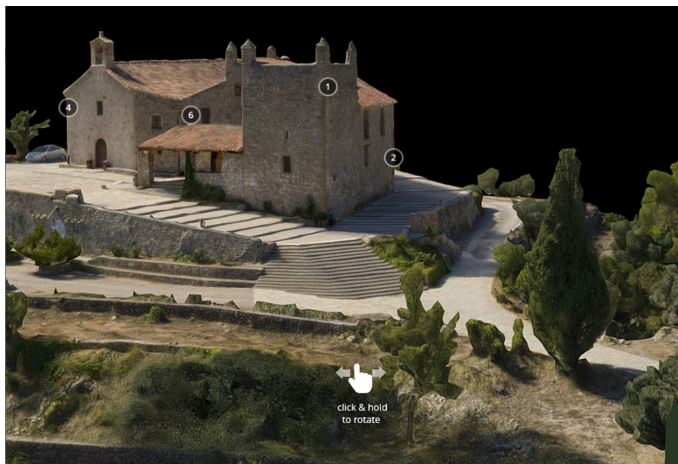


The recommendations on 3D

Katerina Moutogianni

European Commission

Commission Recommendation on a common European data space for cultural heritage (2021/7953/EU)



Castell de Atzeneta, Castellón, España by ADD4D.o- CC BY-NC https://www.europeana.eu/en/item/181/share3d_831

Objectives:

- help Member States accelerate digitisation and preservation efforts
- seize the opportunities of digital transformation for cultural heritage institutions
- pave the way for a common European data space for cultural heritage

<https://digital-strategy.ec.europa.eu/en/news/commission-proposes-common-european-data-space-cultural-heritage>

Chapter II Advanced digitisation and digital preservation



Santa Lucía, Alcalá - Alcossebre, Castellón by Muñoz, Robert and Llácer García, César, ADD 4D - Public Domain. Source: [Europeana](#)

- Comprehensive, forward looking digital strategies
- Uptake of advanced technologies – 3D, XR, AI, data
- Digitisation and digital preservation goals - criteria, including:
 - (a) cultural heritage at risk,
 - (b) the most physically visited cultural and heritage monuments, buildings and sites, and
 - (c) the low level of digitisation for specific categories of cultural heritage assets.
- Digital skills - upskilling/reskilling CH professionals by 2030
- Use of funding possibilities at EU and national level

By 2030: digitising in 3D all monuments and sites falling under (a) and 50 % of those falling under (b).

By 2025: digitising 40 % of the overall 2030 targets.

Digitally preserving all assets under (a), (b), and (c)

Chapter III Common European Data Space for cultural heritage



3D model of Etruscan Oinochoe with small wheel-shaped handle, Source: [Europeana](https://europeana.eu)

- Focus on interoperability
- Contribution of digitised assets to the data space and Europeana
 - Higher quality contributions (Tier 2+, Tier A)
 - Public funding conditional upon making available
 - Indicative targets for Member States (Annexes I and II)
- 3D for showcasing European cultural heritage and for reuse

Indicative targets for 3D

By 2030: 16m 3D digital assets

By 2025: 2.4m 3D digital assets (15% of 2030 target)



3D in the data space for cultural heritage

Valentine Charles

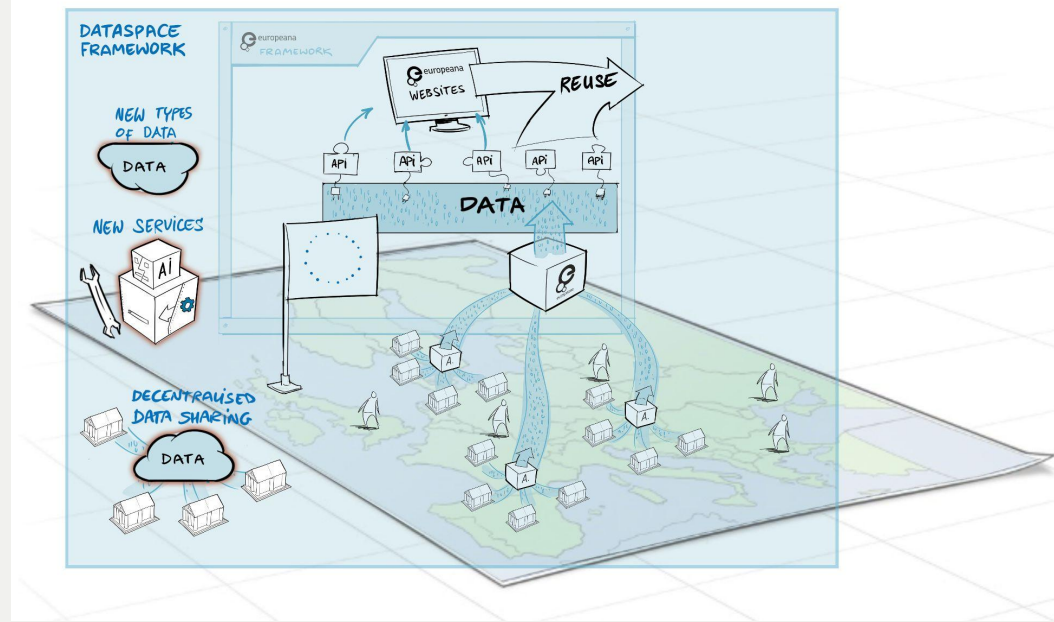
Europeana Foundation

3D IN THE DATA SPACE

Review, refinement and extension of the Europeana Data Model (EDM)

Review and extension of the Europeana Publishing Framework (EPF)

Capacity Building activities





The Asinou Church

Marinos Ioannides

Cyprus University of Technology

THE ASINOU CHURCH, CYPRUS

Marinos Ioannides

UNESCO Chair on Digital Cultural Heritage

18th of April 2023



STUDY ON QUALITY IN 3D
DIGITISATION OF TANGIBLE
CULTURAL HERITAGE



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MNEMOSYNE

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The DAY when ASINOU monument celebrates



EASTER Tuesday

18th April 2023

#18April #ICOMOS #HeritageChanges #Heritage4Climate #IDMS2023 - #IcomosIDMS2023



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University of
Technology

MNEMOSYNE

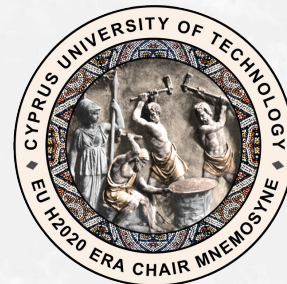
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Digital Cultural Heritage

#UNESCO_DCH_ERA



unesco

Chair



CALLIOPE.



CLIO.



ERATO.



EUTERPE.



MELPOMENE.



POLYHYMНИЯ.



TERPSICHORE.



THALIA.



URANIA.



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Behind us is the memory of our parents,



in front of us are the eyes of our children!



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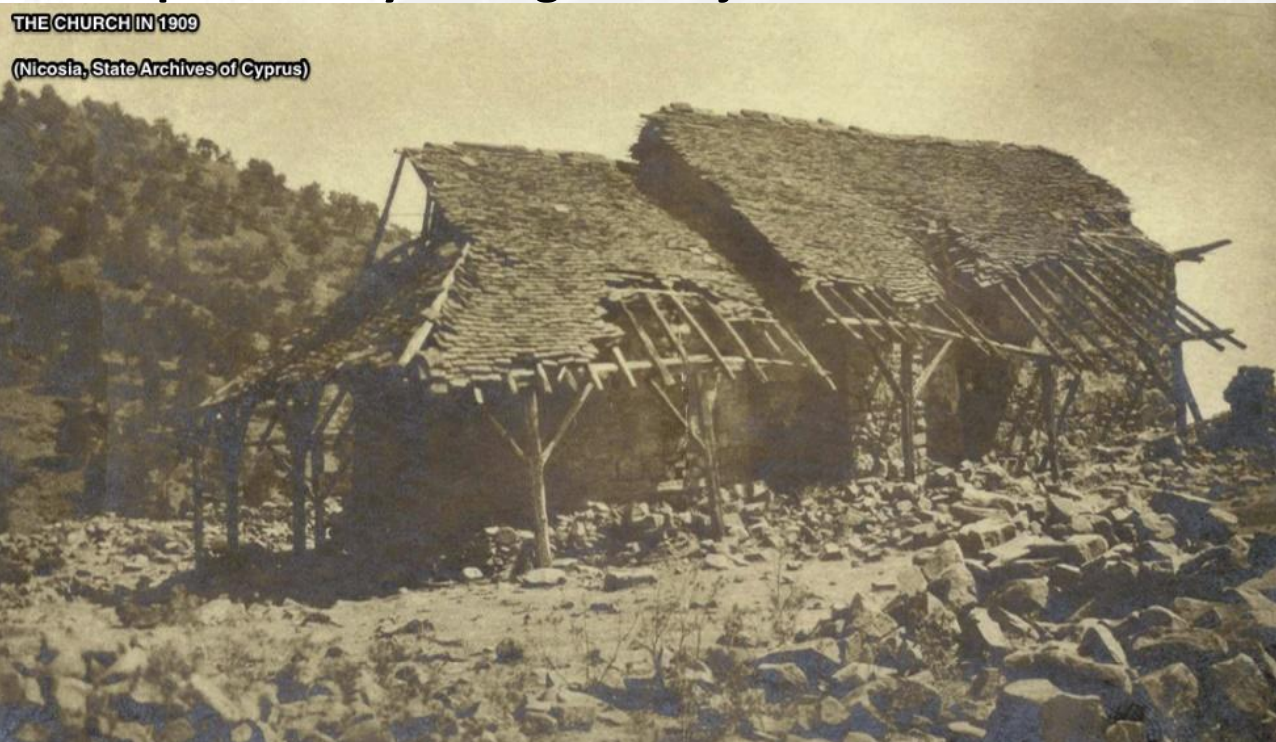
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THE KNOWLEDGE, MEMORY & STORY

Expressed by a tangible object

A building



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The building in 1909



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The building in 1957



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The building in 1958



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The building in 1958



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The building in 1959



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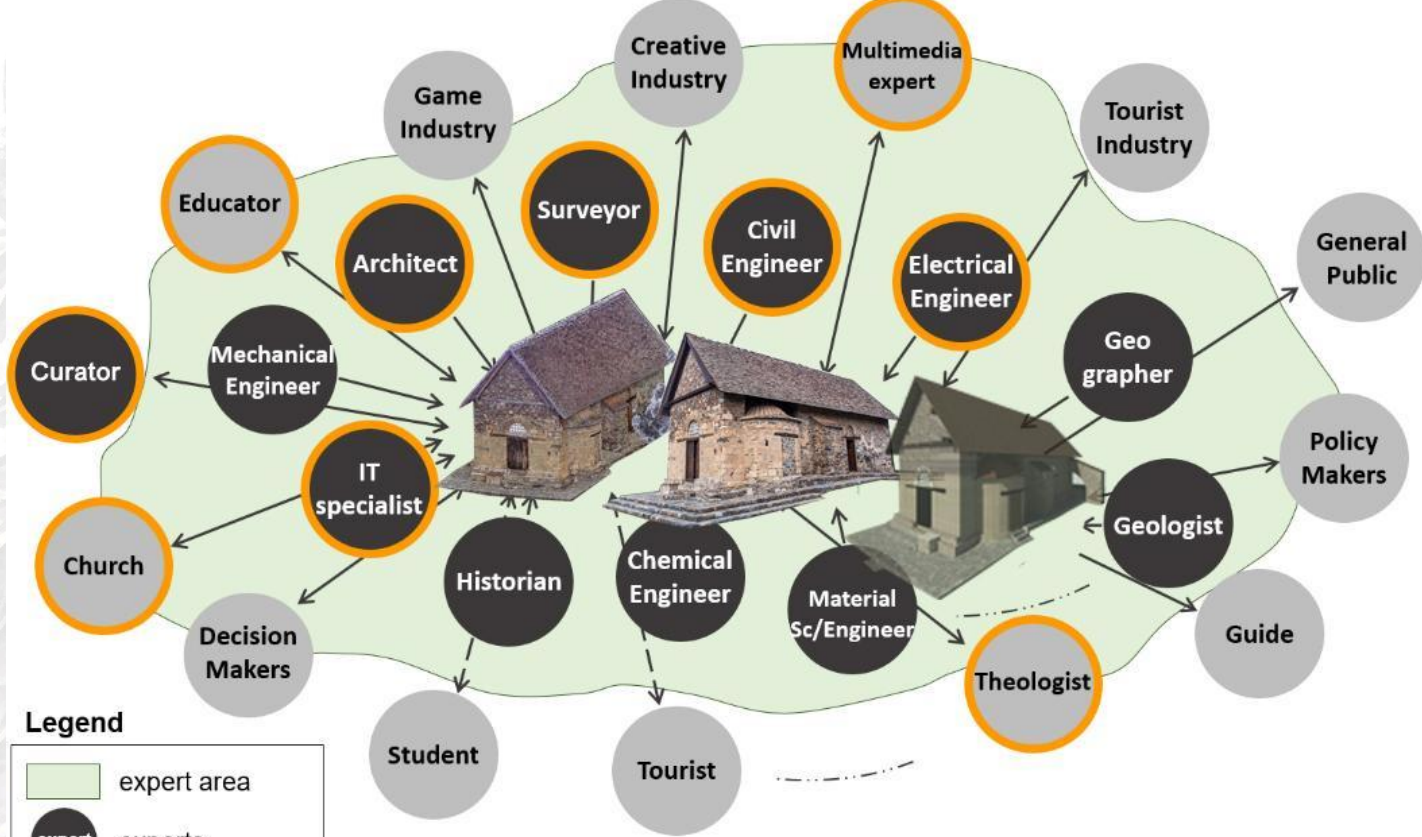
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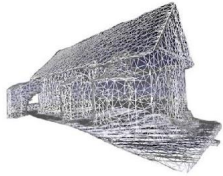
Legend

- expert area
- expert
- non expert
- case study's involved users

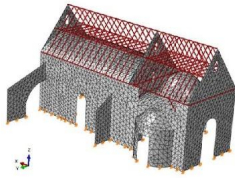
MULTIMODAL DATA



POINT CLOUD MESH



TRIANGULATED MESH



STRUCTURAL ANALYSIS MODEL



WIREFRAME MESH



SHADED MESH



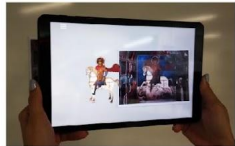
VR APPLICATION



FRESCOS 3D MODEL



H-BIM MODEL



AR APPLICATION



3D PRINTED MODEL



INTANGIBLE STORY



IMMERSIVE HYBRID BOOK

GROUP OF RELEVANT EXPERTS

ARCHAEOLOGIST

ARCHITECT

CHEMICAL ENGINEER

CIVIL ENGINEER

CREATIVE INDUSTRY

CURATOR

DECISION MAKERS

EDUCATOR

ELECTRICAL ENGINEER

FIRE FIGHTER

GAME INDUSTRY

GENERAL PUBLIC

GEOGRAPHER

GEOLOGIST

GUIDE

HISTORIAN

ICT SPECIALIST

MATERIAL ENGINEER

MECHANICAL ENGINEER

MULTIMEDIA EXPERT

OWNER/CHURCH

POLICY MAKERS

STUDENT

SURVEYOR

SECURITY SPECIALIST

THEOLOGIST

TOURIST

TOURIST INDUSTRY

The 1st 3D digitisation of a monument in Cyprus

The first 3D object harvested in Europeana

CY Presidency of the EU Council in 2012



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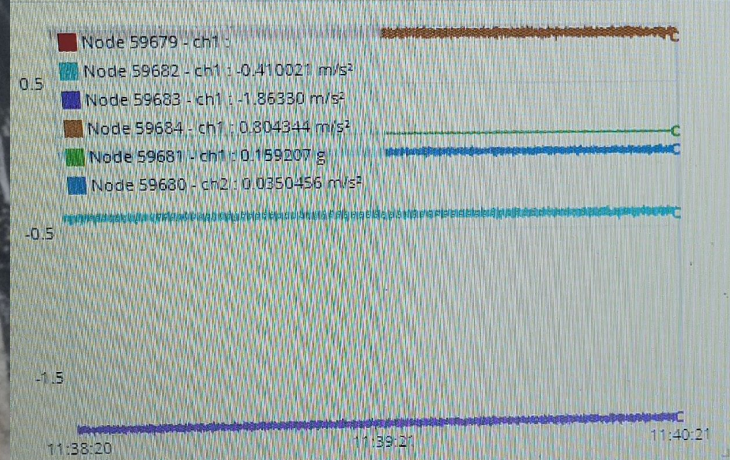




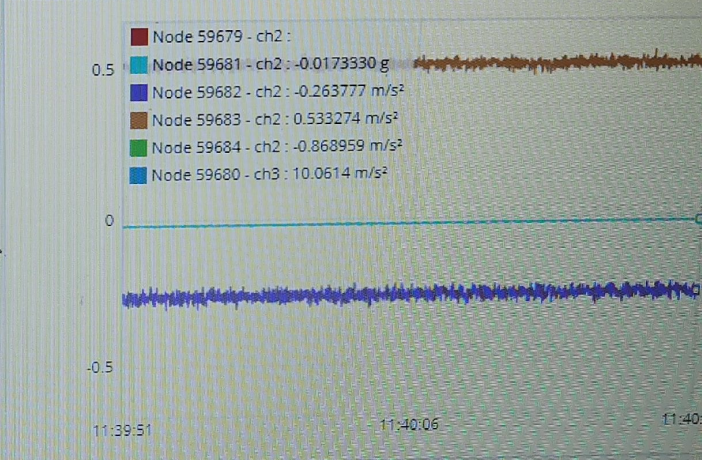
Widget

Dashboard 2 ▾

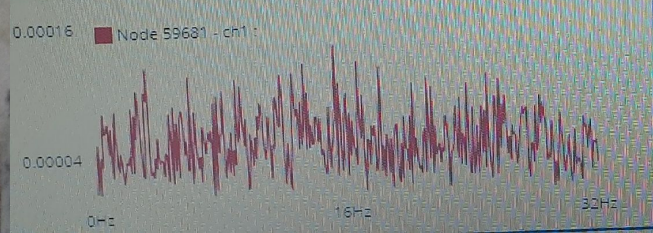
Series Graph



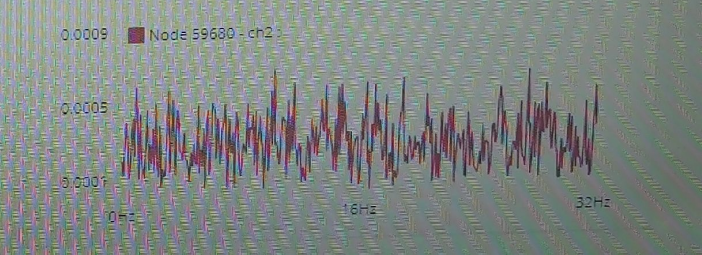
Time Series Graph



Gauge



FFT Gauge





STUDY ON QUALITY IN 3D DIGITISATION OF TANGIBLE CULTURAL HERITAGE



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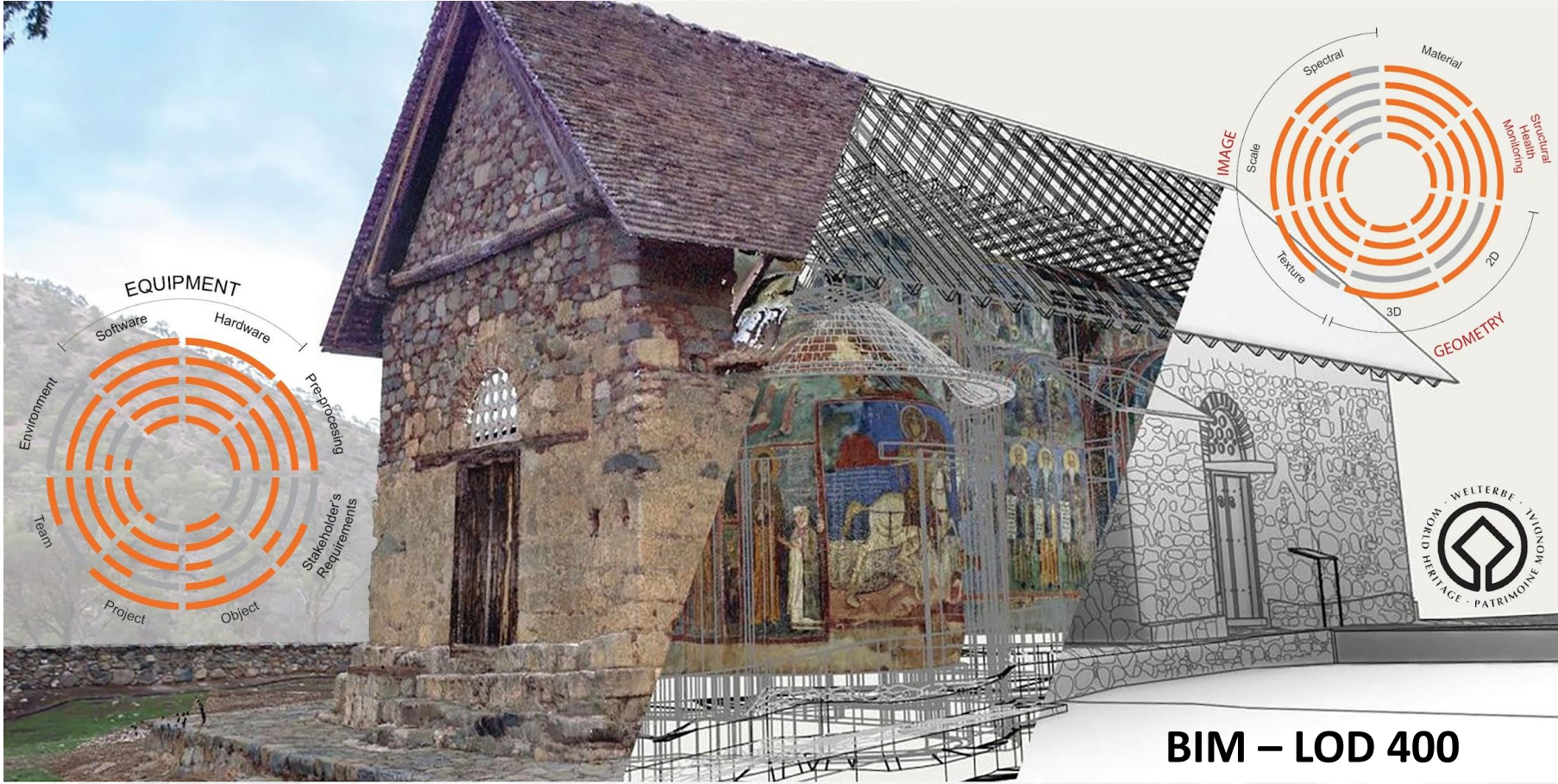


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BIM – LOD 400



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STUDY ON QUALITY IN 3D DIGITISATION OF TANGIBLE CULTURAL HERITAGE

- Four EU Projects (#Eureka3D, #ENIGMA,...),
- Twenty-four Universities,
- Eighteen Stakeholders,
- Six Research Centers and
- Two Industrial entities.



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HOW COMPLEX IS 3D DIGITISATION IN CULTURAL HERITAGE

What is the reason for digitizing tangible objects?

- Protection (Identity),
- Memory twin
- Long-term Preservation (Knowledge and Memory),
- Use and Re-Use (of the 3D structure, lesson learned from the past, etc)
 - User needs



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THANK YOU



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Interregional Partnership
Virtual and Smart
Cultural Tourism



@EU.Mnemosyne



@Digital Heritage Research Lab



@UNESCO_DCH_ERA



www.digitalheritagelab.eu

#ERA_CHAIR_Mnemosyne
#UNESCO_DCH
#Unite4Heritage
#EuropeForCulture
#CulturalHeritage
#DigitalHeritage
#SharedCultures
#CyUniTech
#DHRLabCut



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3D digitisation of museum objects

Jill Cousins

The Hunt Museum

Increasing the accessibility of our collections





The importance of 2D objects to conceptualise 3D

Marco Medici

Inception

The importance of 2D objects to conceptualise 3D

Marco Medici

Assistant Professor
Department of Architecture
University of Ferrara

CTO - INCEPTION s.r.l.
Spin-off of the University of Ferrara

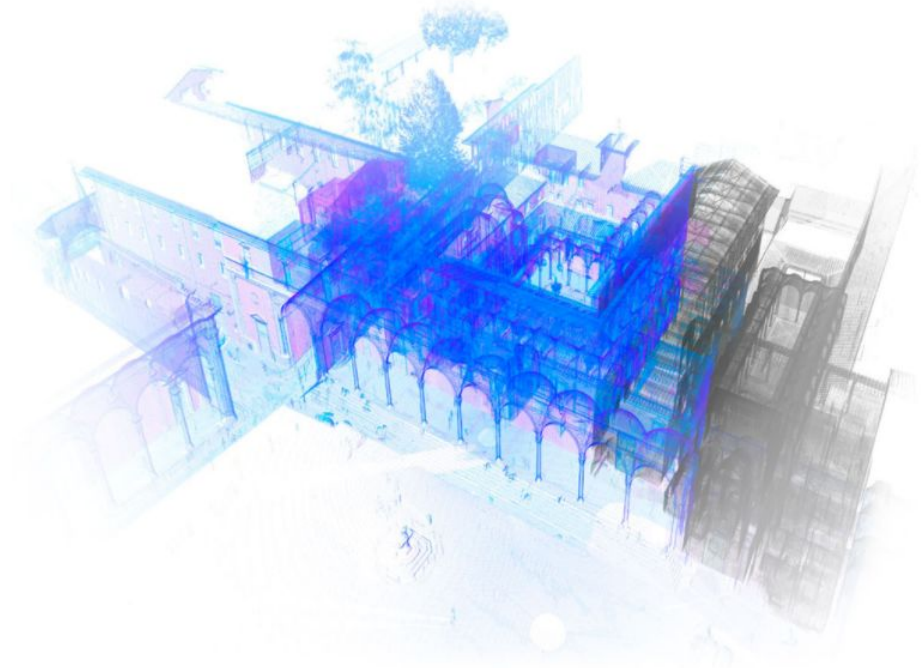
TOPICS

1. When 3D models can tell you more than they show: **navigating a 3D Information Model**
2. When each element of a building tells you a story: **querying a 3D Information Model** and its linked data
3. Exploiting Europeana Collections for **enriching a 3D model** and widen our knowledge

The INCEPTION Technologies

INCEPTION s.r.l. is an **innovative start-up** company incubated as a **spin-off** at the **University of Ferrara**, aimed at **developing and marketing the outcomes of the project** “INCEPTION – Inclusive Cultural Heritage in Europe through 3D semantic modeling”, funded with four million euros by the European Commission within the Horizon 2020 Framework Programme - Europe in a changing world.

The **project was developed between June 1st, 2015 and May 31st, 2019** with the contribution of **14 partners** from 10 different European countries, and coordinated by the Department of Architecture of the University of Ferrara and the TekneHub Laboratory, Ferrara Technopole, Construction Platform, Emilia-Romagna High Technology Network.





The 4CH project for a Competence Centre

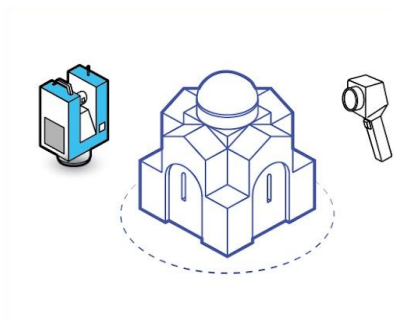
The 4CH project is designing and preparing for a **European Competence Centre (CC)** on the **Conservation of Cultural Heritage** which will work proactively for the preservation and conservation of cultural heritage (**CH**). The project aims to start implementing the structure, organization and services of the CC which will operate as a **virtual infrastructure providing expertise, advice and services using state-of-the-art ICT with a special focus on 3D technology**. A **Strategic Advisory Board**, including representatives of major national and international CH bodies, has been established to advise on cultural, scientific, technological, financial, strategy and policy areas.

The 4CH project will adopt **INCEPTION technologies** in its Cloud Platform infrastructure as the main service **for managing 3D models**.

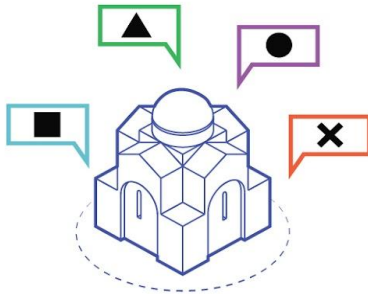
Grant agreement ID: 101004468 | Overall budget € 2 998 208,75

Start date: January 2021 | End date: 31 December 2023

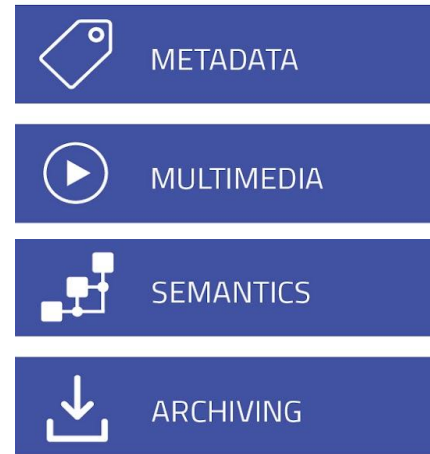
www.4ch-project.eu



**Data
capturing**



Information modelling



**3D model
enrichment**

Navigating a model:

the INCEPTION 3D H-BIM model viewer with textures integration

SMV Chiesa di Santa Maria delle Vergini

Find an attachment



Filters



3D BIM Model (General)
Nov 15, 2021

+ Image Files

+ Document Files

inception ✓

INCEPTION Core Team



Search in the model



Download

Attachments

SMV Chiesa di Santa Maria delle Vergini

[SMV Chiesa di Santa Maria delle Vergini](#) [Models](#) [Categories](#) [Home](#) [About](#) [Contact](#) [Privacy Policy](#) [Terms of Service](#)

Querying a model:

when each element of a building tells you a story



Istituto degli Innocenti

Find an attachment

Filters

3D BIM Model (General)
Jul 04, 2019

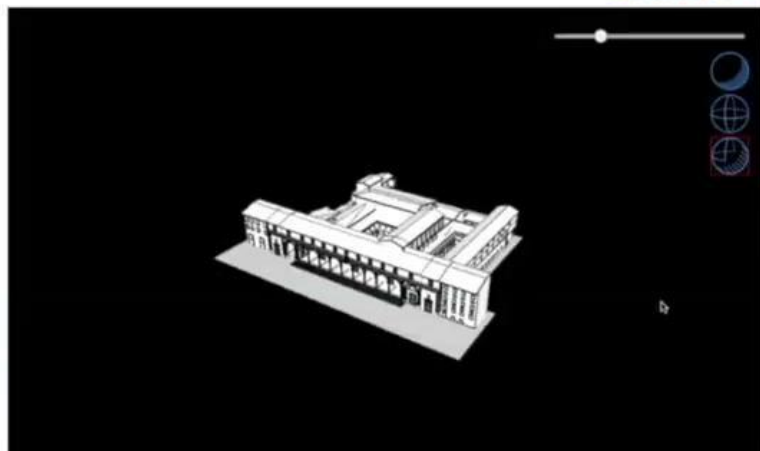
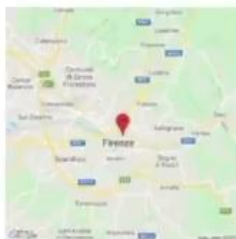
+ Video Files

+ Document Files

+ Image Files

inception

INCEPTION Core Team

Search in the model 

Download

Attachments

Istituto degli Innocenti

The Istituto degli Innocenti is a XV century Renaissance building built by Brunelleschi. It was originally a children's orphanage and during the first half of the fifteenth century, it was the first institution in the known world devoted exclusively to child care. Considered over the centuries as a universal model for the reception and care of children, the Institute has now become a public company providing services for people (law n. 43/2004, Region of Tuscany) which continues its historical mission without interruption. Today the Institute's activities include establishing and testing educational and social services, studying the condition of children and promoting children's rights and culture. The facade is made up of nine semicircular arches springing from columns of the Composite order; in the spandrels of the arches there are glazed blue terracotta roundels with reliefs of babies designed by Andrea della Robbia suggesting the function of the building.



Enriching a model:

widen our knowledge thanks to Europeana Collections

Edit Model

Upload new attachments to an existing project



| | | |
|---------------------------------------|--------------------------|---|
| Models | Istituto-degli-Innocenti | ⌵ |
| Scopes | General | ⌵ |
| Updates | Jul 04, 2019 | ⌵ |
| <input type="button" value="Select"/> | | |

Thanks for your attention

If you have any questions,
please do contact me

MARCO MEDICI

+39 0532 293677

marco.medici@unife.it

marco.medici@inceptionspinoff.com





If you'd like to tweet about the symposium, please use the hashtag:

#EU2023SE

You can also tag us!

@EuropeanaEU

LUNCH BREAK



3D in practice



Slovenia's Tourism 3D campaign

Matevž Straus and Urška Starc-Peceny

Arctur



Slovenia's Tourism 3D campaign

Urška Starc-Peceny
Tourism 4.0 Lead, Arctur d.o.o.

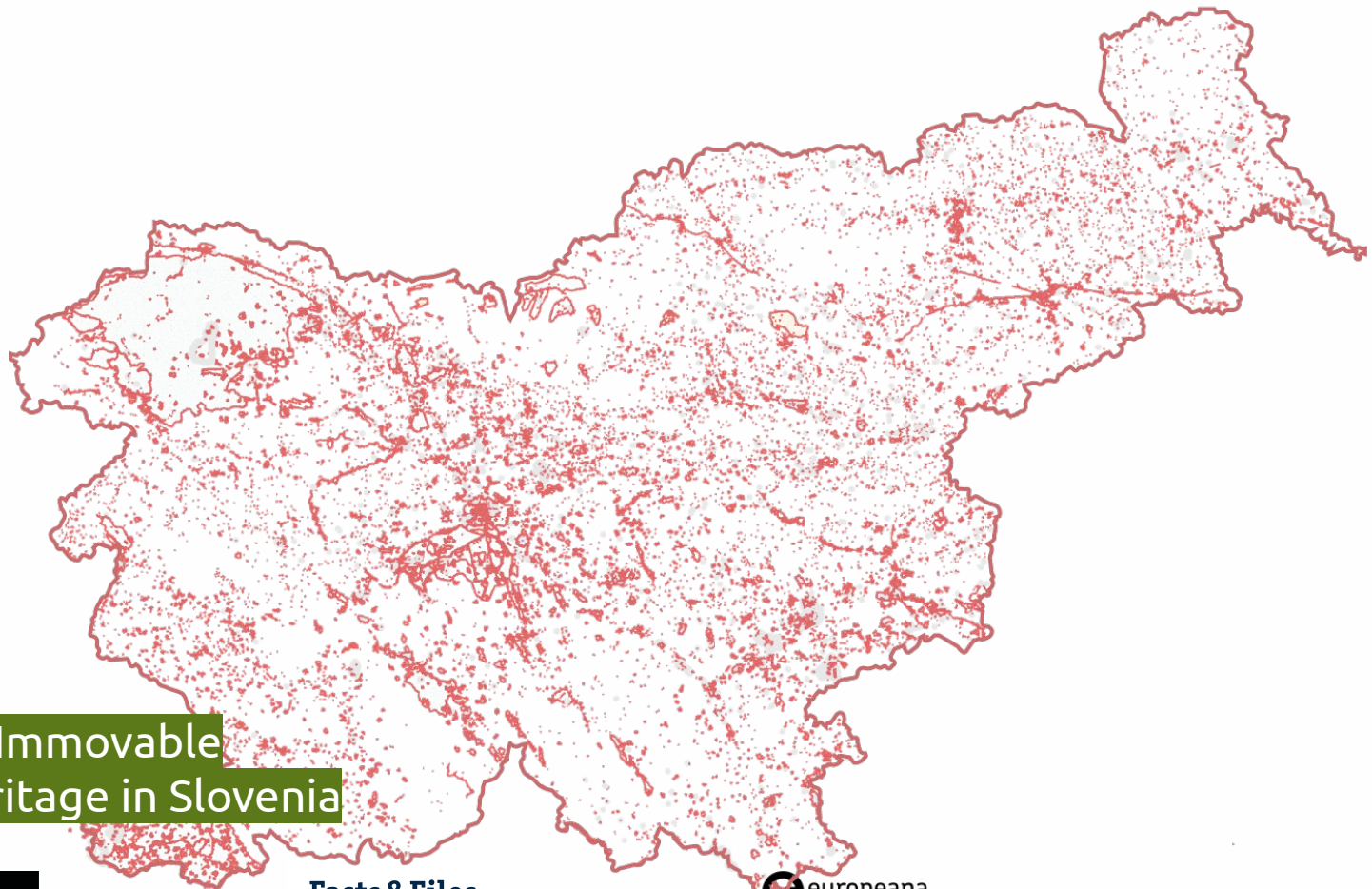
Matevž Straus
Heritage+ Lead, Arctur d.o.o.

HERITAGE+

by
ARCTUR



In 2019, Slovenia set a mission to become one of the leading countries with the most digitally enriched tourist experiences of cultural heritage.




Register of Immovable Cultural Heritage in Slovenia

TRANSCRIBATHON.EU

Facts & Files
Think History!

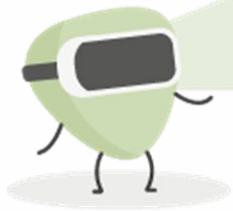
 **Europeana**
transcribe

 Co-financed by the Connecting Europe Facility of the European Union

AR©TURnitiator of Tourism 4.0 Partnership

Digital technologies can be of help

Digital layer of audio-visual information can narrate an engaging and interactive story



TRANSCRIBATHON.EU

Facts & Files
Think History!

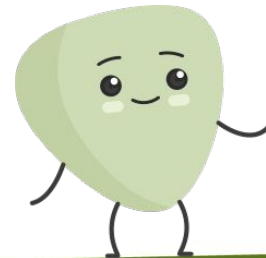
 **Europeana**
transcribe

 Co-financed by the Connecting Europe
Facility of the European Union

AR©TURnitiator of Tourism 4.0 Partnership

A call from Ministry of Economic Development and Technology

- **Purpose:** create new digitally enriched tourist experiences, develop skills and anti-COVID19 measures
- **Eligible applicants:** Tourist destination management organisations
- **Total budget:** 5.480.000 EUR
- **Required actions:** at least 3x 3D digitized immovable cultural heritage + 1 tourist experience (“Unique Slovenia Experiences” label)
- **Duration:** in 1.5 year





PRESKAR HUT

CULTURAL HERITAGE FOR FUTURE GENERATIONS

Slovenia is one of the leading countries in Europe in digital innovation of cultural heritage into enriched tourist experiences.

Between 2019 and 2022, 31 leading tourist destinations digitized at least three examples of registered cultural heritage and developed at least one new tourist experience.

We are proudly presenting the results!



KULTURNA DEDIŠČINA ZA PRIHODNJE RODOVE

Slovenija postaja ena od vodilnih držav v Evropi pri vključevanju inovativnih rešitev na področju digitalizacije kulturne dediščine v obogatene turistične izkušnje.

Med letoma 2019 in 2022 je 31 vodilnih turističnih destinacij digitiziralo vsaj tri primere registrirane kulturne dediščine in iz njih razvilo vsaj eno novo turistično doživetje.

S ponosom predstavljamo rezultate!

CERKEV MARIJE SEDEM ŽALOSTI



Awards



Digital Innovation of Cultural Heritage in Slovenia (Ministry of Economic Development and Technology) – 2021 (2nd place)



Digital Innovation of Plečnik Heritage (Tourism Ljubljana) – 2022 (3rd heritage)



Fly into the tannery of Europe (Šalek Valley Tourist Board)



Mysteries of submerged villages (Šalek Valley Tourist Board)



Master Plečnik (Tourism Ljubljana)



Fly into the tannery of Europe (Šalek Valley Tourist Board)



Mysteries of submerged villages (Šalek Valley Tourist Board)



Digital innovation of Plečnik's heritage project (Tourism Ljubljana)

More than visible

114+ 3D models of Slovenian cultural heritage (+ 360° photos and videos, photos, videos, animations ...)

31+ new tourist products

200+ new digital contents about Slovenian cultural heritage

31+ re-discovered stories and legends

Presentation at conferences and fairs (EXPO 2020 Dubaj, WTM London, Conventa, Alpe-Adria Fair, ...)

70+ representatives of destinations and museums for the first time involved in digital innovation

50+ SME involved in implementation of the projects

30+ creative and cultural industries involved in implementation, cooperation and consulting

New collaborations and partnerships

Bridging the divide between culture and tourism

What will you do for your country to increase the number of **digitally enriched tourist experiences of cultural heritage?**



A guided 3D experience

Matevž Straus and Urška Starc-Peceny

Arctur



A Guided 3D Experience

Urška Starc-Peceny

Tourism 4.0 Lead, Arctur d.o.o.

Matevž Straus

Heritage+ Lead, Arctur d.o.o.

HERITAGE+

by
ARCTUR



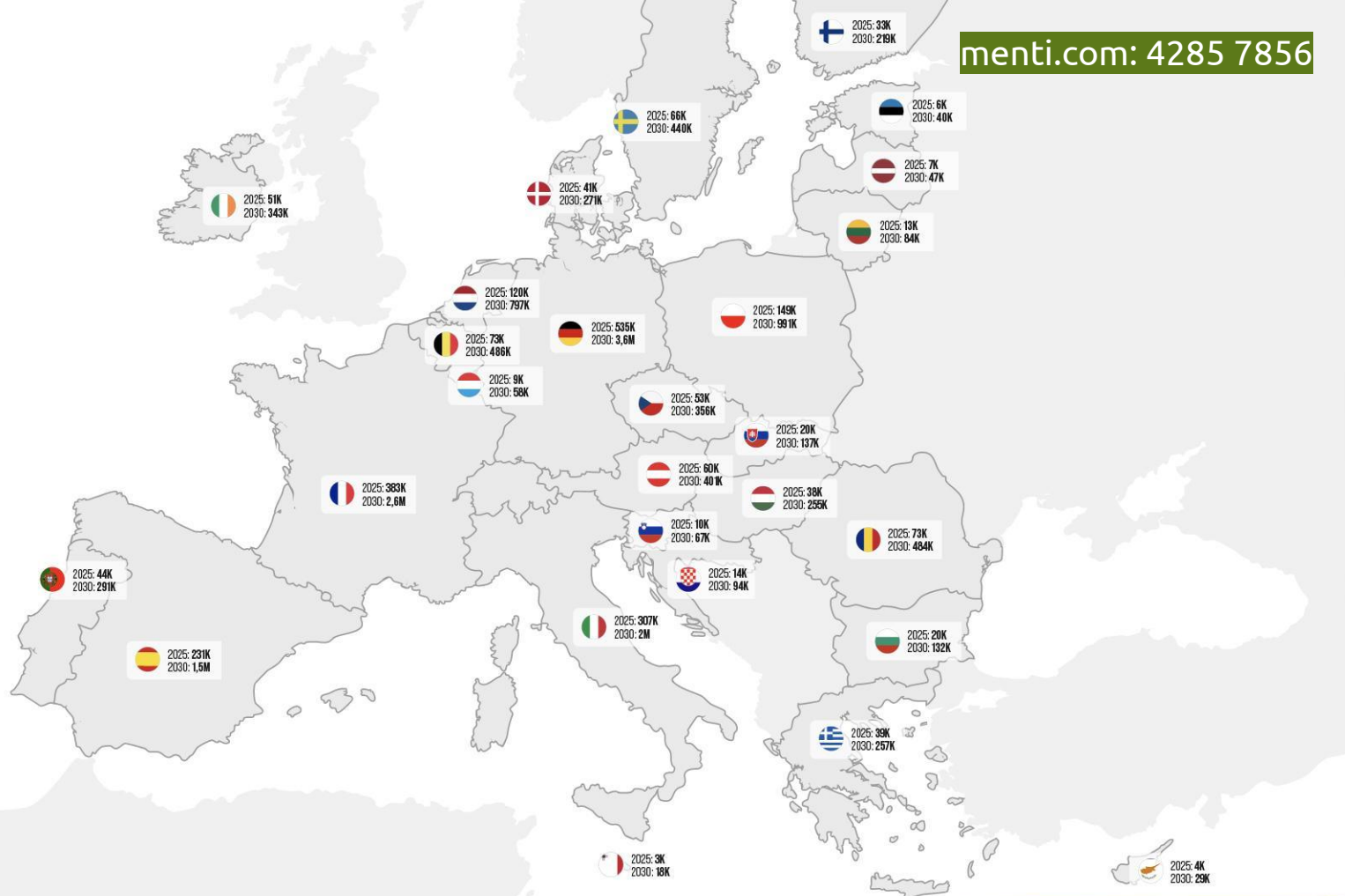
COMMISSION RECOMMENDATION of 10.11.2021 on a common European data space for cultural heritage

“...a **comprehensive and forward-looking digital strategy** for cultural heritage at the relevant national or regional level to accelerate the sector’s digital transformation...”

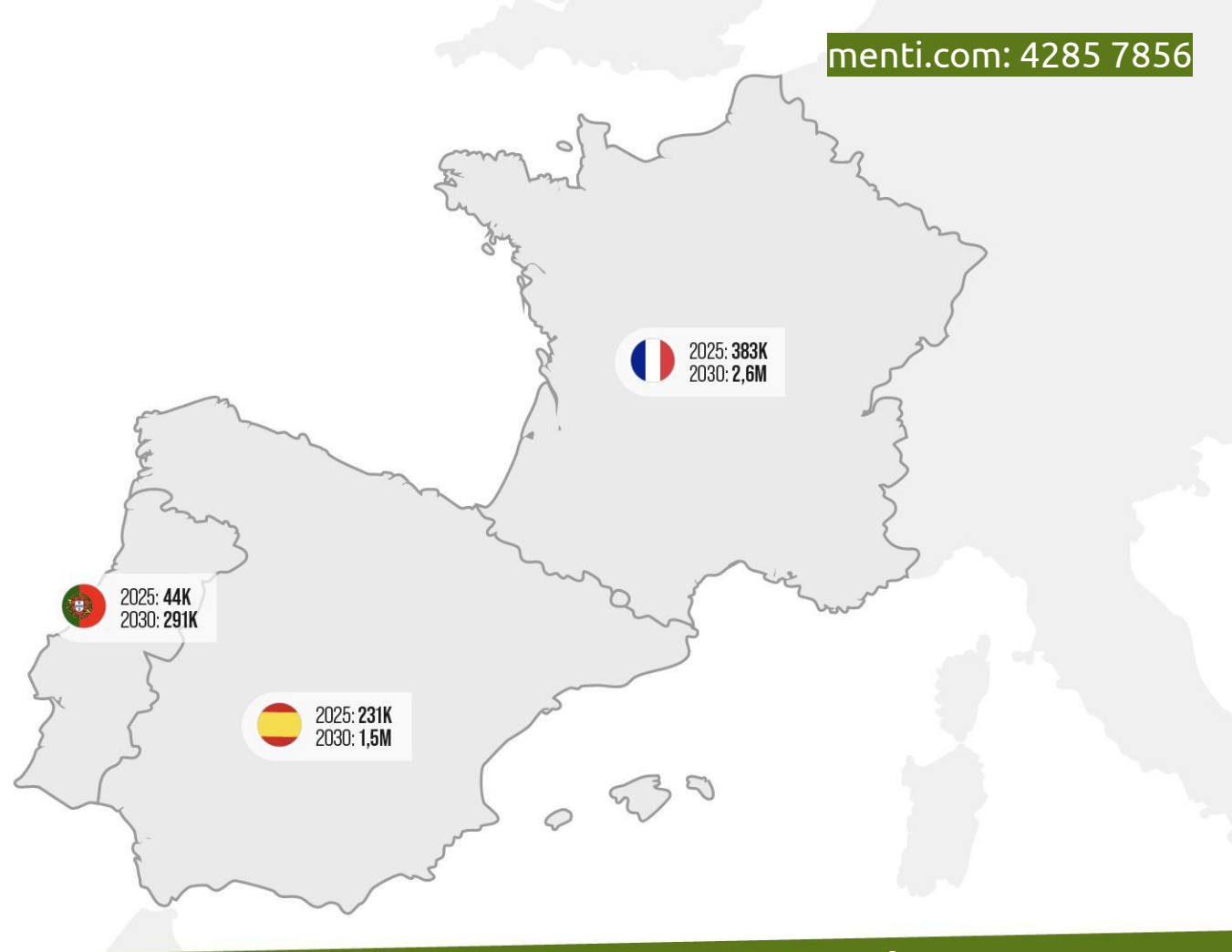
“...cultural heritage institutions should take **a holistic approach...**”

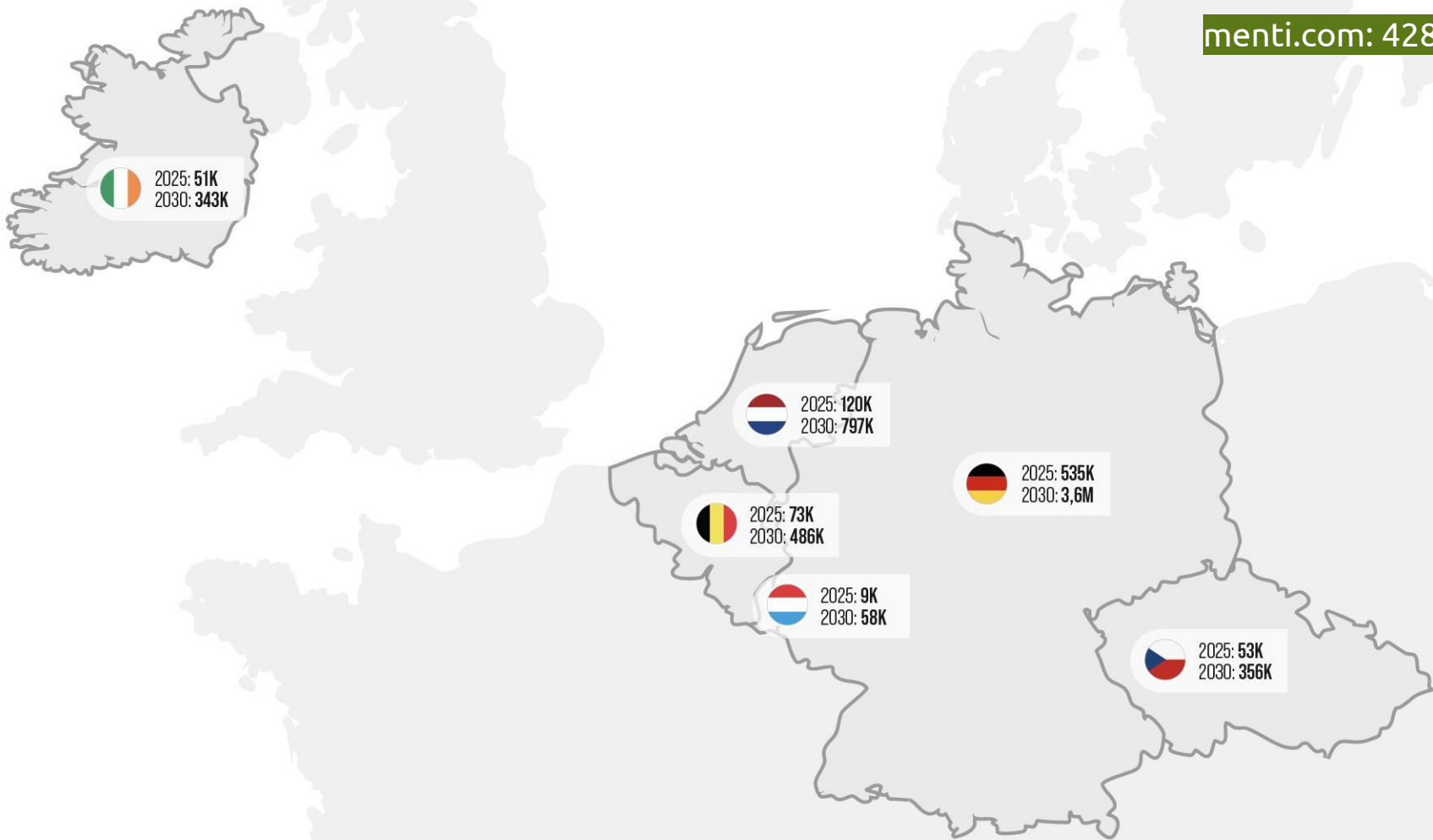
“...support **partnerships between the cultural heritage sector and other sectors,** such as higher education and vocational education and training, creative industries and sustainable cultural tourism...”

“...taking up advanced technologies, such as **3D, artificial intelligence, extended reality, cloud computing, data technologies and blockchain...**”














How to **reach** these goals?

My 3D digitization Journey worksheet

My 3D Digitization Journey


Worksheet | A guided 3D experience, April 18th 2023, Stockholm
 @ tourism4-0.org/heritage/3djourney

In 2021, European Commission has published COMMISSION RECOMMENDATION of 10.11.2021 on a common European data space for cultural heritage. Member States should provide for national digital strategies that contain measures to support the cultural heritage institutions in taking up advanced technologies, such as 3D, artificial intelligence, extended reality, cloud computing, data technologies and blockchain, to ensure a more efficient process of digitisation and digital preservation and a higher quality content for a wider access, use and reuse.

1. My country  _____

2. My goals 


3D digitised units **by 2025** _____ 3D digitised units **by 2030** _____
 Other _____

3. My checklist 

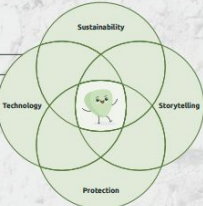
| | | | |
|--|---|---|---|
| • Definition of purposes | + | - | o |
| • Definition of use and re-use scenarios | + | - | o |
| • Capacity-building | + | - | o |
| • Identification of target group(s) | + | - | o |
| • Selection of units | + | - | o |
| • Definition of standards and protocols | + | - | o |
| • Planning of storage capacities, maintenance and support | + | - | o |
| • 3D digitisation - planning | + | - | o |
| • 3D digitisation - implementation | + | - | o |
| • 3D digitisation - storage | + | - | o |
| • Licensing and IPR | + | - | o |
| • Promotion and dissemination | + | - | o |
| • Ensuring access to wider audiences | + | - | o |


Re-use (e.g. tourism experiences, education materials, creative industries ...)

| | | | |
|---|---|---|---|
| • Key message of experience | + | - | o |
| • Creation of a user journey | + | - | o |
| • Preparation of storyboards | + | - | o |
| • Graphic concept | + | - | o |
| • Definition and acquisition of software and hardware and its requirements | + | - | o |
| • Content development | + | - | o |
| • Testing | + | - | o |
| • Launch | + | - | o |

4. My task force 


Sustainability _____
 Storytelling _____
 Protection _____
 Technology _____



5. My next 3 steps 

What are the three steps you can immediately take after returning from the conference?


- _____
- _____
- _____

6. Contacts 


Dr. Urška Štaro-Peceny, Tourism 4.0 Lead, Arctur
 uraska@arctur.si

Matevž Straus, Heritage+ Lead, Arctur
 matevz.straus@arctur.si


HERITAGE+
 by ARCTUR



Watch a summary video of digital innovation of CA in Slovenia



Sign up to Tourism 4.0 and Heritage+ meetings and stay in touch

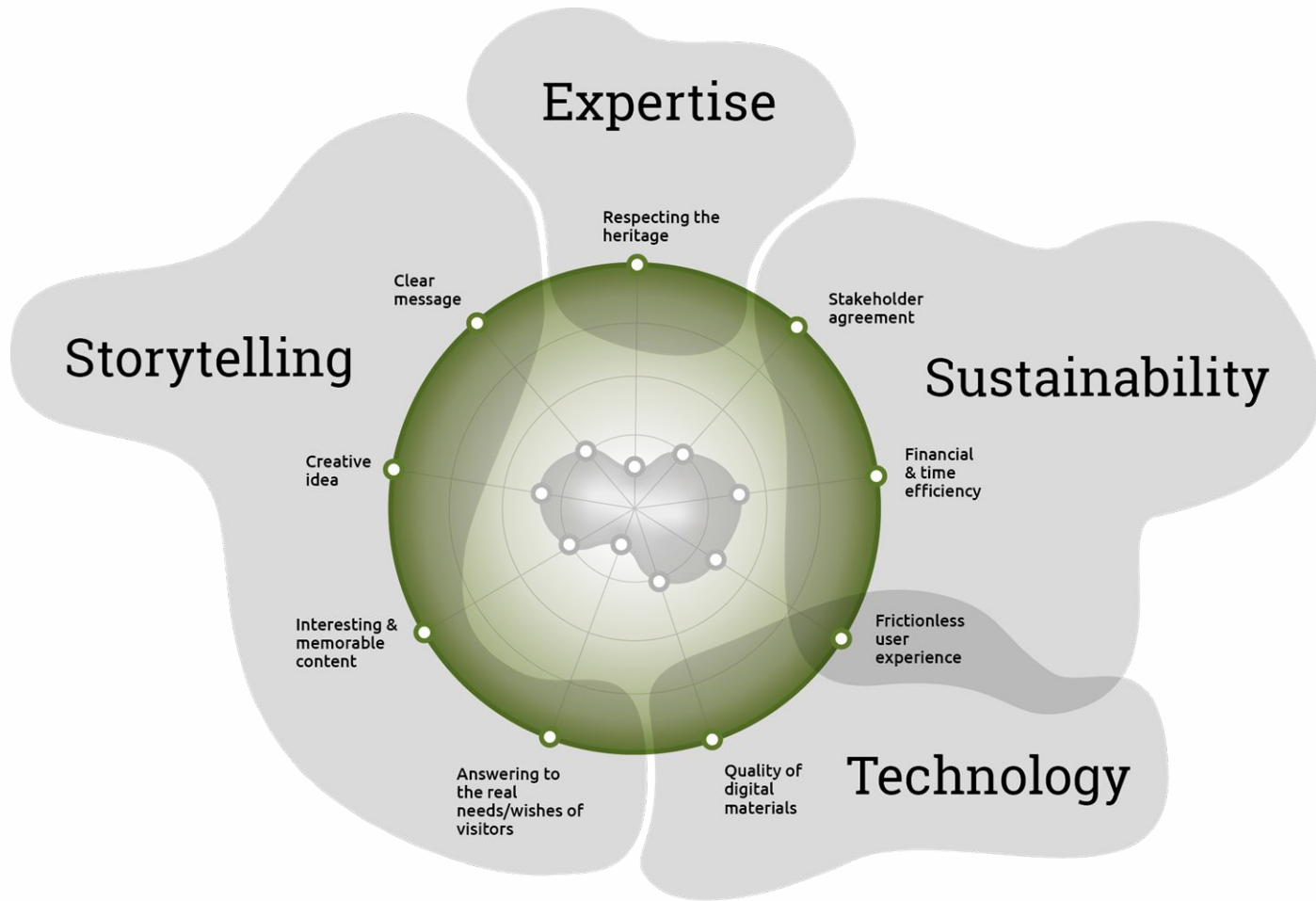


More learning materials from the Slovenian journey

Online version:
tourism4-0.org/heritage/3djourney

Doing things that matter, not out of necessity

- Having a **long-term vision in mind**
- Doing things that will generate **multiplicative impact** (in education, tourism, creative industries ...)
- Think and act **cross-sectoral**
- **Decentralize efforts,** yet ensure **common standards and protocols**
- Make **a balanced mix** of large and small objects, complex and simple

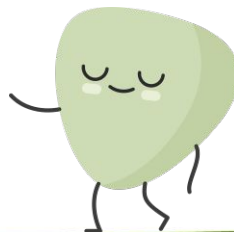




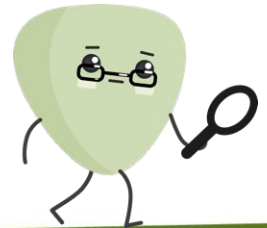
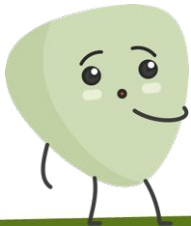
Digital Innovation Of Cultural Heritage

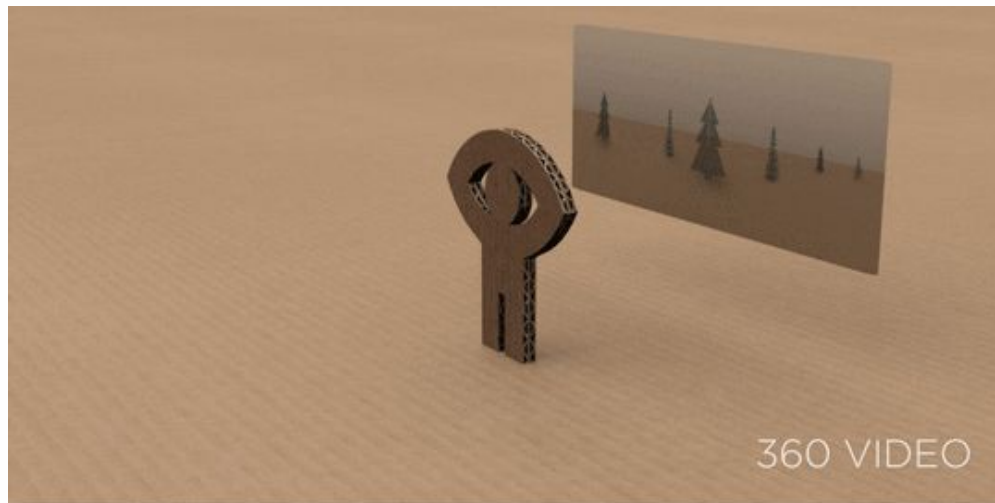
Toolkit for tourist destinations

In Slovenian and in English

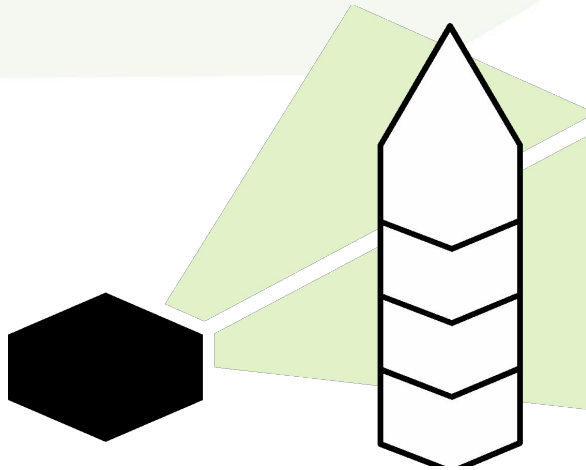


How a **3D model** is made?

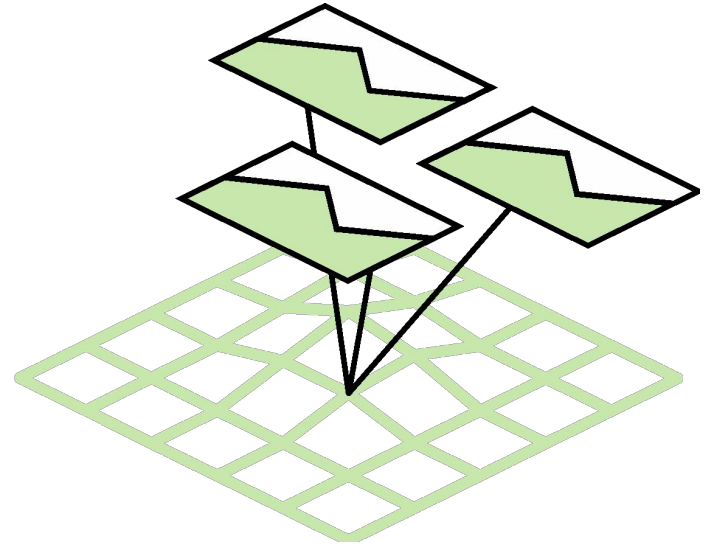




A 360° image is not
a 3D model



Laser scanning



Photogrammetry





HERITAGE+

by
AROTUR



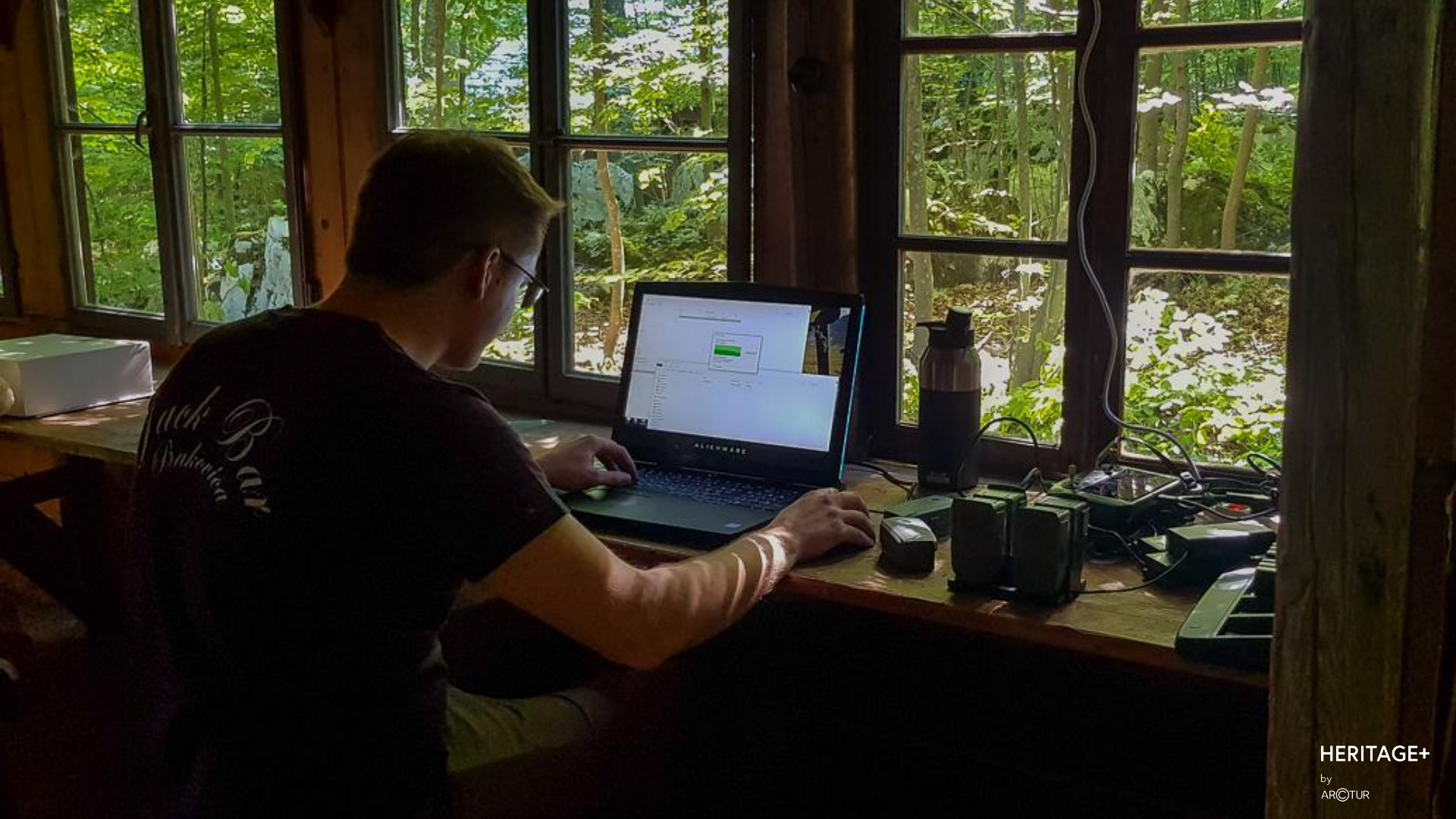








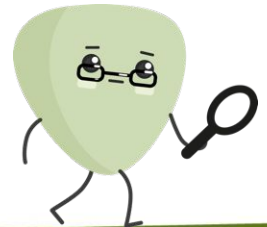
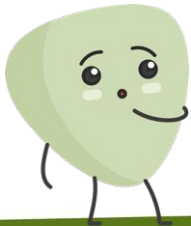
101





Let's **try and make** a simple 3D model!

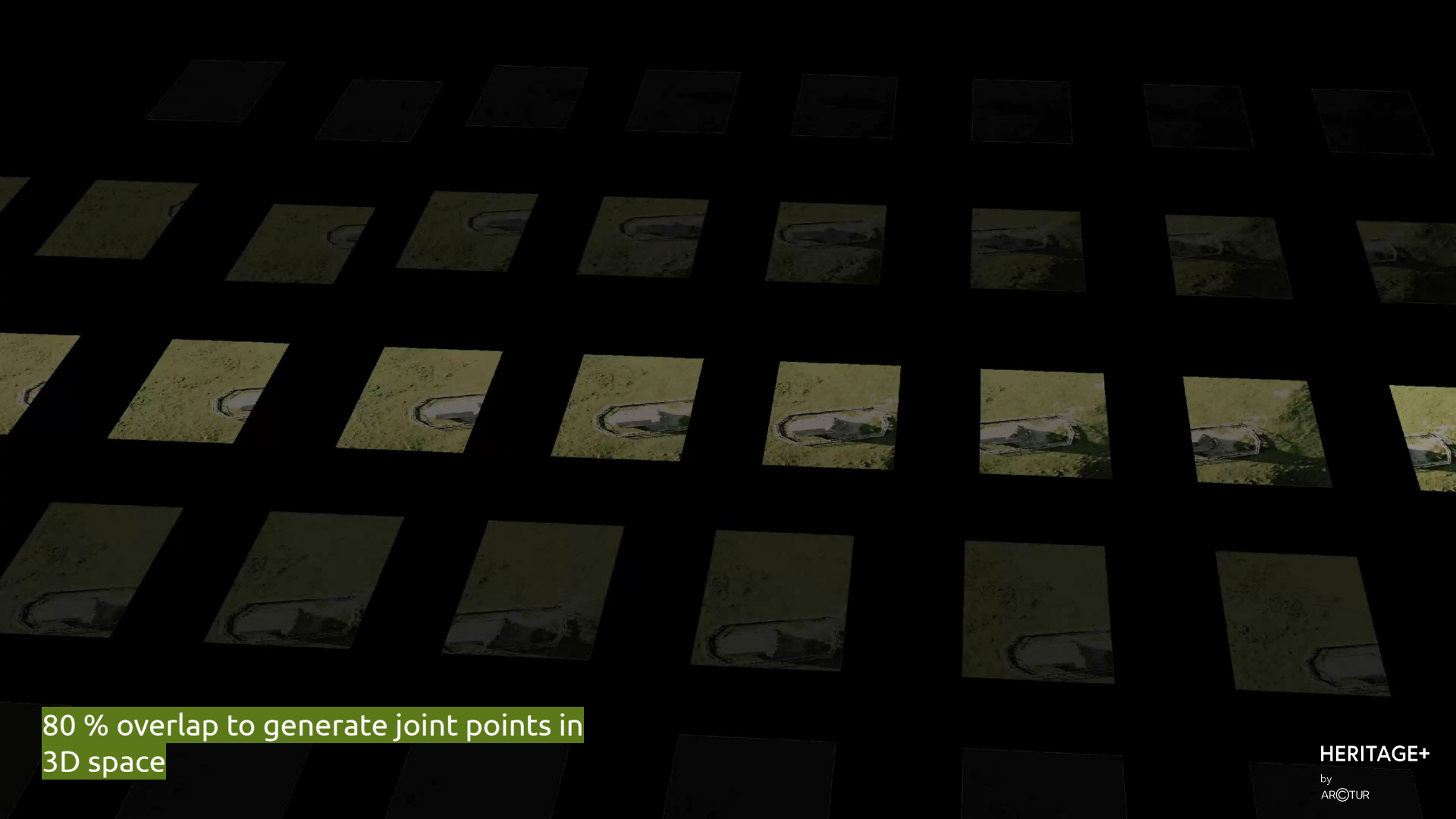
Part 1 – Digital Capture



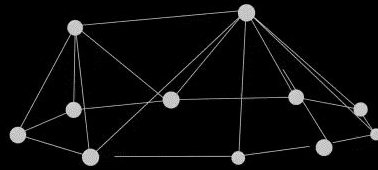
AS SHOT



Colour editing to reduce shadows



80 % overlap to generate joint points in 3D space



From few points to millions of points



PointCloud with 23.165.012 points

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Z

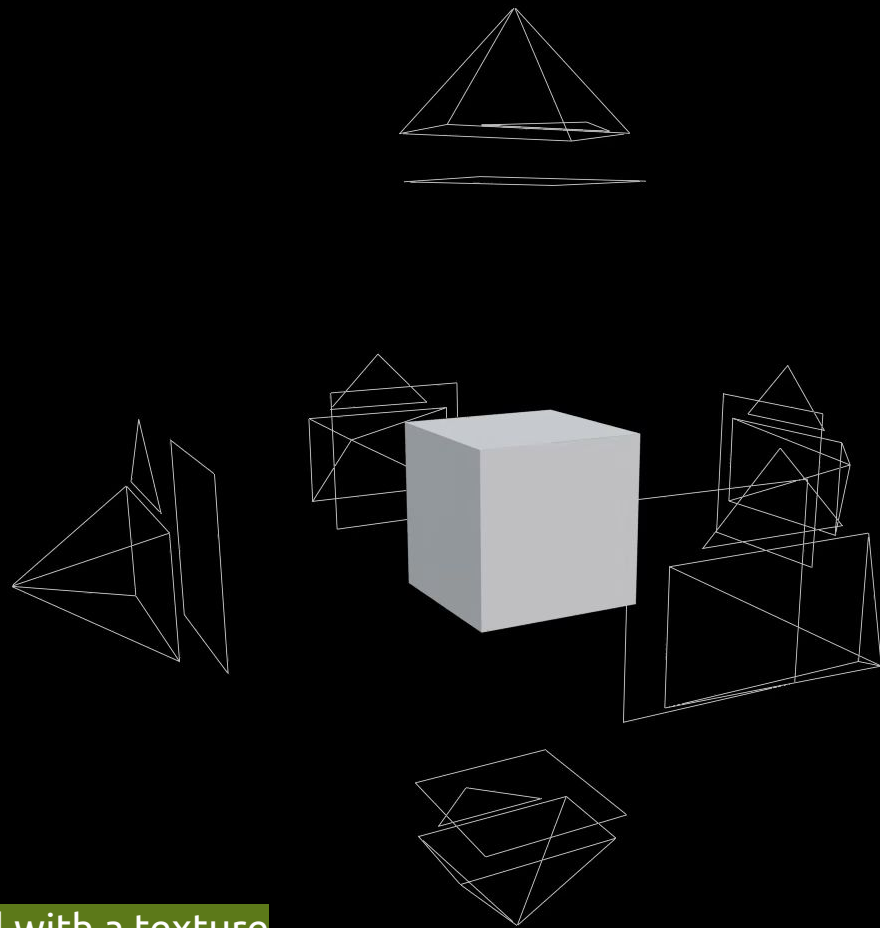
X



PointCloud with 18.050 000 points




Connecting points to create a mesh and
a solid model



Wrapping a 3D model with a texture

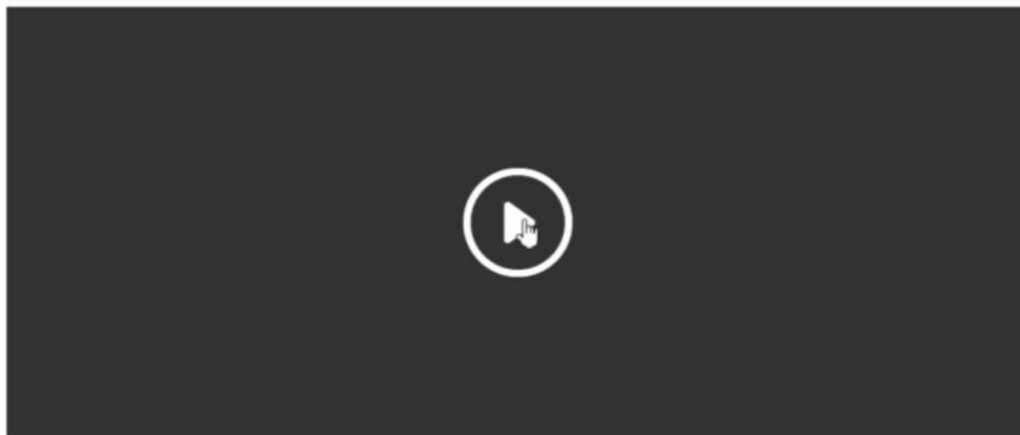
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A surveyor in a light blue shirt and dark trousers is seen from behind, standing on a stone staircase. He is holding a yellow tripod with a surveying instrument (likely a total station or level) mounted on it. The staircase is built into a hillside, and a metal railing runs along the edge. To the left is a large, rugged rock face. The sky is blue with some clouds.

Ensuring accuracy

Reference points between reality and digital model

[← Back](#)[Publish to europeana](#)

Idrija – Kamšt water wheel with a water canal and a dam

Slovenia / [Industry and mining](#)

Early New Age (16-18 Century)

Kamšt is a device for pumping water from the Idrija Mercury Mine built in 1790 and operational for 158 years. Water from the Idrija River arrived at the 13.6-metre wooden power wheel along water canals (raka) and powered the pump, which drained water from the mine via a pumping mechanism. The mercury heritage of Idrija and that of the Spanish Almadén is on the UNESCO World Heritage List.

Online viewing of a 3D model [15758 / Longitude: 14.0325371268532 /](#)

FILTER AND DISPLAY UNITS 



PRESKAR HUT

CULTURAL HERITAGE FOR FUTURE GENERATIONS

Slovenia is one of the leading countries in Europe in digital innovation of cultural heritage into enriched tourist experiences.

Between 2019 and 2022, 31 leading tourist destinations digitized at least three examples of registered cultural heritage and developed at least one new tourist experience.

We are proudly presenting the results!



KULTURNA DEDIŠČINA ZA PRIHODNJE RODOVE

Slovenija postaja ena od vodilnih držav v Evropi pri vključevanju inovativnih rešitev na področju digitalizacije kulturne dediščine v obogatene turistične izkušnje.

Med letoma 2019 in 2022 je 31 vodilnih turističnih destinacij digitiziralo vsaj tri primere registrirane kulturne dediščine in iz njih razvilo vsaj eno novo turistično doživetje.

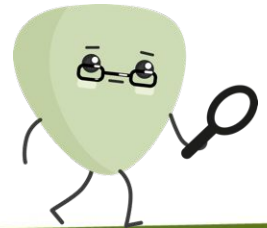
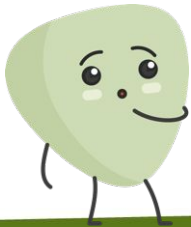
S ponosom predstavljamo rezultate!

CERKEV MARIJE SEDEM ŽALOSTI



Let's **try and make**
a simple 3D model!

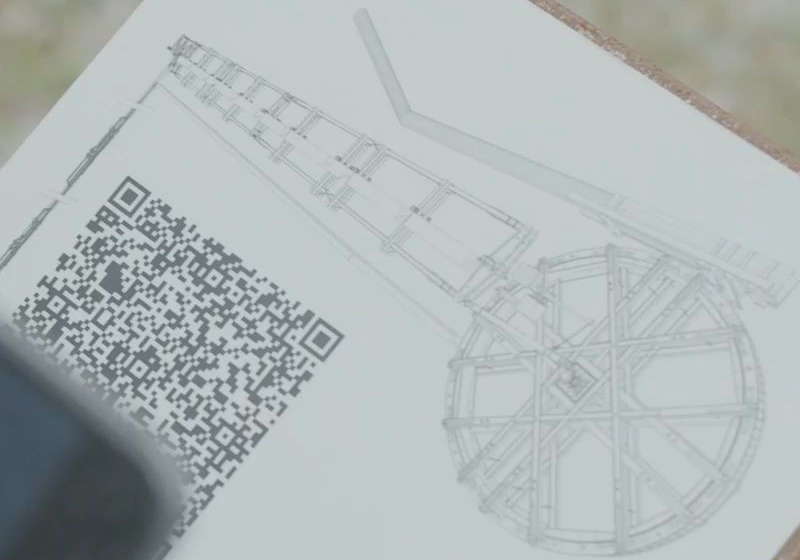
Part 2 – 3D model





Re-use: 3D model as a Virtual Reality environment

Re-use: 3D model in Augmented Reality application



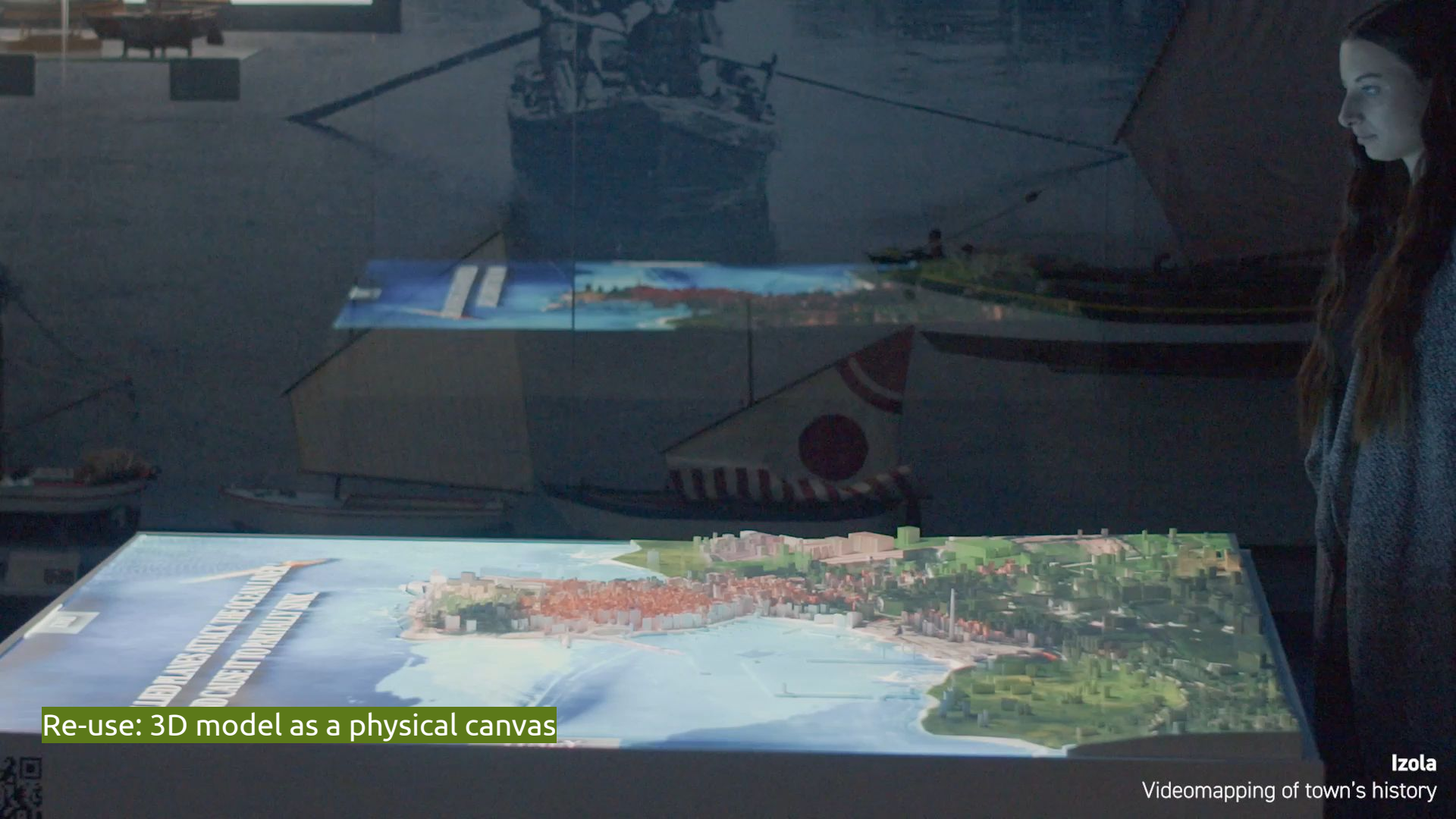
Discover Idrija kamšt
You can download the "Mysterious Kamšt"
for free of charge in Google Play or App Store.
Enter the AR view code on the app
to see the 3D model of the structure.

Re-use: 3D models in digital interpretation rooms



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by
AROTUR



Re-use: 3D model as a physical canvas

Izola

Videomapping of town's history

Many challenges – many **opportunities.**

Doing things that matter, not out of necessity


- Having a **long-term vision in mind**
- Doing things that will generate **multiplicative impact** (in education, tourism, creative industries ...)
- Think and act **cross-sectoral**
- **Decentralize efforts,** yet ensure **common standards and protocols**
- Make **a balanced mix** of large and small objects, complex and simple


My 3D digitization Journey worksheet

My 3D Digitization Journey


Worksheet | A guided 3D experience, April 18th 2023, Stockholm
 @ tourism4-0.org/heritage/3djourney

In 2021, European Commission has published COMMISSION RECOMMENDATION of 10.11.2021 on a common European data space for cultural heritage. Member States should provide for national digital strategies that contain measures to support the cultural heritage institutions in taking up advanced technologies, such as 3D, artificial intelligence, extended reality, cloud computing, data technologies and blockchain, to ensure a more efficient process of digitisation and digital preservation and a higher quality content for a wider access, use and reuse.

1. My country  _____

2. My goals 


3D digitised units **by 2025** _____ 3D digitised units **by 2030** _____
 Other _____

3. My checklist 

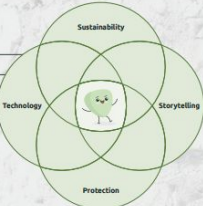
| | | | |
|--|---|---|---|
| • Definition of purposes | + | - | o |
| • Definition of use and re-use scenarios | + | - | o |
| • Capacity-building | + | - | o |
| • Identification of target group(s) | + | - | o |
| • Selection of units | + | - | o |
| • Definition of standards and protocols | + | - | o |
| • Planning of storage capacities, maintenance and support | + | - | o |
| • 3D digitisation - planning | + | - | o |
| • 3D digitisation - implementation | + | - | o |
| • 3D digitisation - storage | + | - | o |
| • Licensing and IPR | + | - | o |
| • Promotion and dissemination | + | - | o |
| • Ensuring access to wider audiences | + | - | o |


Re-use (e.g. tourism experiences, education materials, creative industries ...)

| | | | |
|---|---|---|---|
| • Key message of experience | + | - | o |
| • Creation of a user journey | + | - | o |
| • Preparation of storyboards | + | - | o |
| • Graphic concept | + | - | o |
| • Definition and acquisition of software and hardware and its requirements | + | - | o |
| • Content development | + | - | o |
| • Testing | + | - | o |
| • Launch | + | - | o |

4. My task force 


Sustainability _____
 Storytelling _____
 Protection _____
 Technology _____



5. My next 3 steps 

What are the three steps you can immediately take after returning from the conference?


- _____
- _____
- _____

6. Contacts 


Dr. Urška Štaro-Peceny, Tourism 4.0 Lead, Arctur
 uraska@arctur.si

Matevž Straus, Heritage+ Lead, Arctur
 matevz.straus@arctur.si


HERITAGE+
 by ARCTUR



Watch a summary video of digital innovation of CA in Slovenia

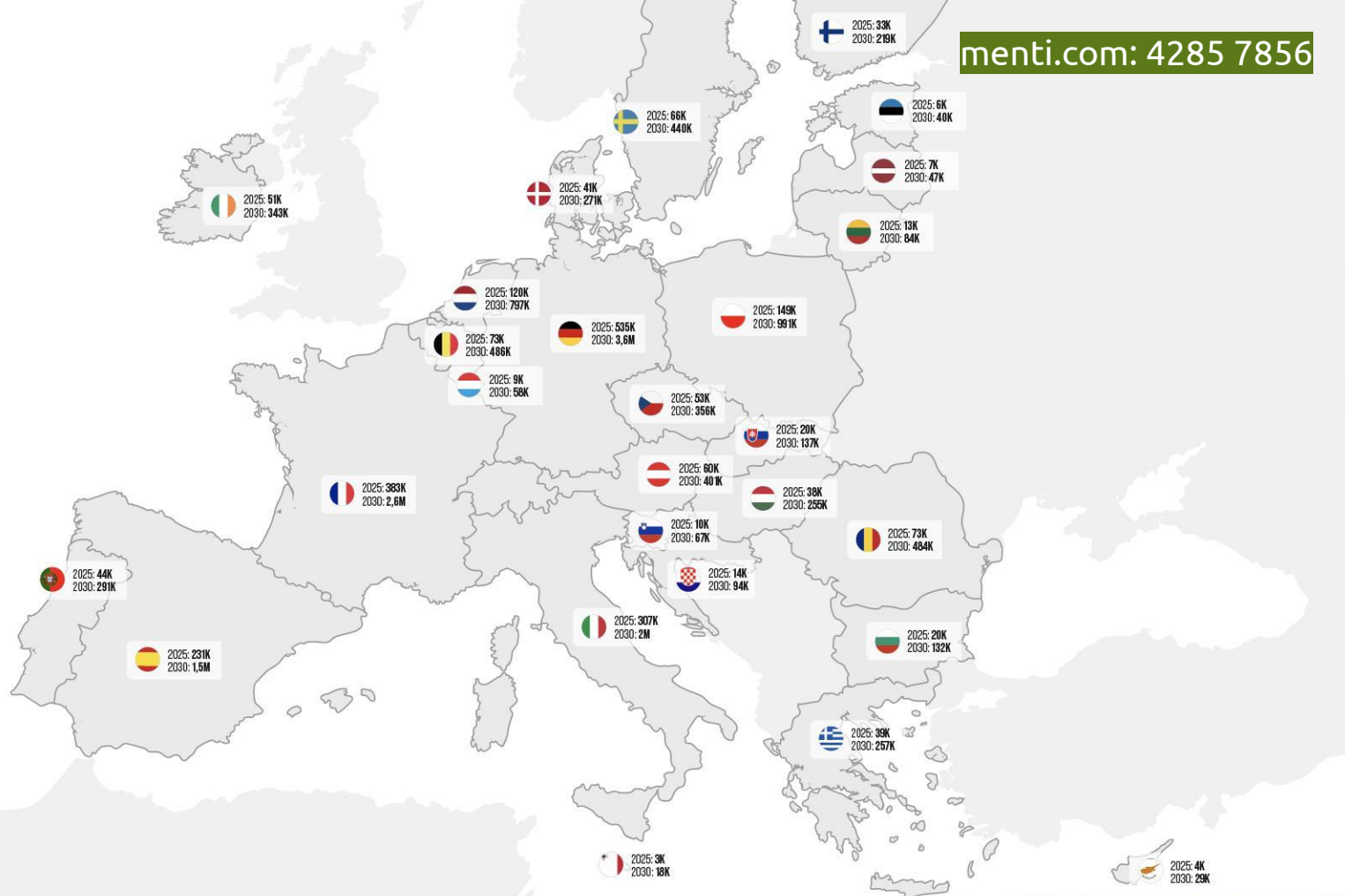


Sign up to Tourism 4.0 and Heritage+ meetings and stay in touch



More learning materials from the Slovenian journey

Online version:
 tourism4-0.org/heritage/3djourney



Your next 3 steps

1. _____

2. _____

3. _____

Don't hesitate to **get in touch.**

Dr. Urška Starc-Peceny, urska@arctur.si

Matevž Straus, matevz.straus@arctur.si

We want you!

Become a member of
Tourism 4.0 Partnership

Sign up:
joinus.tourism4-0.org



200⁺

members of
tourism 4.0
PARTNERSHIP

Research, business and public sector



www.tourism4-0.org



info@tourism4-0.org



www.facebook.com/tourism4.0



twitter.com/Tourism4_0



www.linkedin.com/company/tourism4-0



Building capacity, sharing, training, learning



3D in archaeology practice

Kate Fernie

CARARE

3D in archaeology practice



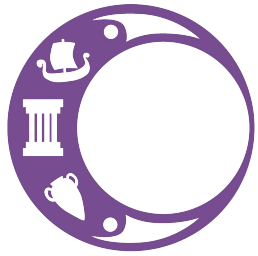
Kate Fernie

The documentation of archaeology and historic buildings increasingly involves of 3D scanning and digital technologies, which produces digital replicas in an accurate and fast way and to a very high resolution for conservation and management, and for re-use in research, tourism and education.

Accelerating 3D in the Common European Data Space for Cultural Heritage, 18 April 2023



Recording the chambered tomb of Knowth using the Faro 3D terrestrial laser scanner, Discovery Programme, CC-BY-NC



carare

<https://www.carare.eu>

Contact: info@carare.eu

Twitter:
[@projectCARARE](https://twitter.com/projectCARARE)

Training hub:
<https://pro.carare.eu/en/training-hub/>

Webinars on Vimeo:
<https://vimeo.com/user124611809>

CARARE has been working with heritage organisations and archaeologists across Europe since 2010 offering support and practical assistance in sharing datasets with Europeana

- We are a non-profit membership association
- Our mission is advancing professional practice and fostering appreciation of the digital archaeological and architectural heritage through the promotion for public benefit of digitisation, connection, enhancement, and use of digital content.



Capacity building



CARARE is partner in several projects working with 3D and capacity building – European Common Data Space, 4CH, 5DCulture and T4H projects which together will deliver:

- Workshops on 3D digital curation and VR
- Training school on archaeological heritage
- Educational workshops for primary and secondary school students
- Webinar #ConnectingArchaeology series
- Guidelines, video tutorials, etc.



Tech4Heritage training workshop in Iraq

Looking forwards to discussing the next steps for capacity building

kate@carare.eu

Accelerating 3D in the Common European Data Space for Cultural Heritage,
18 April 2023



3D data re-use and deep interaction to support archaeological practice

Nicolò Dell'Unto

Lund University Digital Archaeology
Laboratory-DARK Lab

Laboratoriet för Digital Arkeologi DARK Lab

THE JOINT FACULTIES OF HUMANITIES AND THEOLOGY



About Projects Publications Education Digital Collections People



The Department

[Read more >](#)

Curious about courses?

[Read more >](#)

Our Digital Resources

[Read more >](#)



Want to know more? >



@DARKLab_LU

Search Facebook

Lund University Digital Archaeology Society
Public group · 805 members

+ Invite

Education



Courses ↻



MA Theses ↻



Lund University Digital
Archaeology Society ↻

Advanced courses in Digital
Archaeology and 3D Visualization



SHARE seminars ↻



Dynamic collections ↻

Seminars and workshops

3D collections

Digital Collections

Here you can access our collection of digital works!

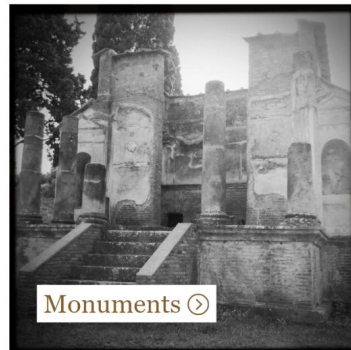
Part of the Swedish National
Infrastructure for Digital
Archaeology SweDigArch



Artefacts ↻

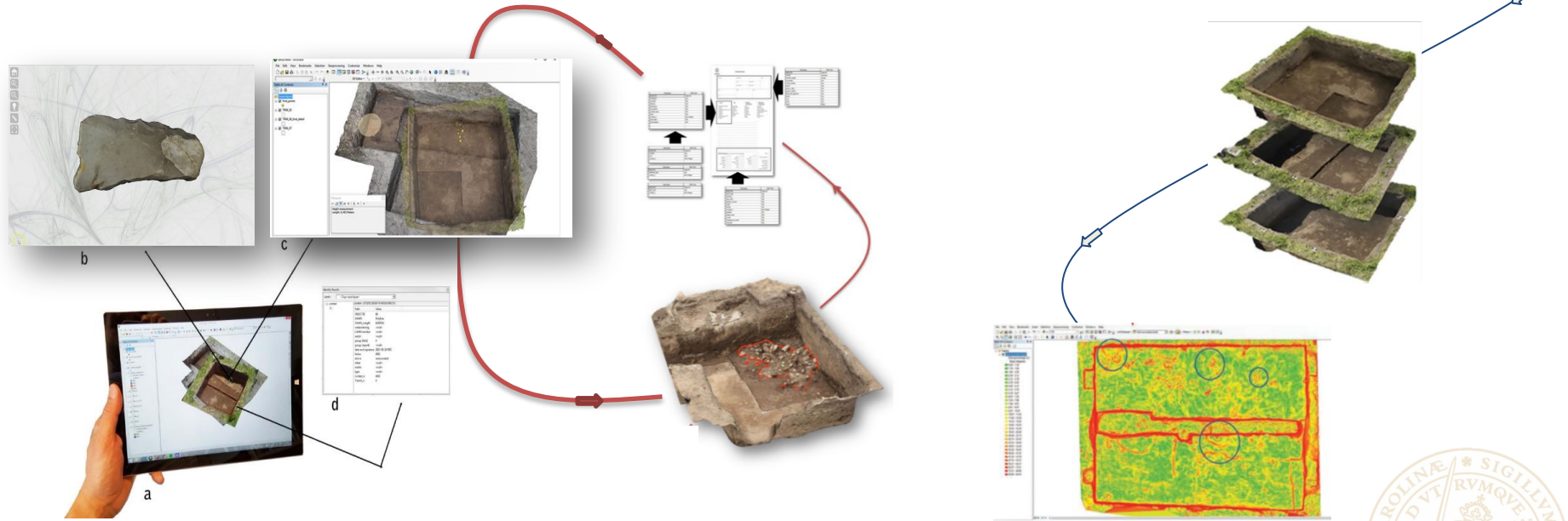
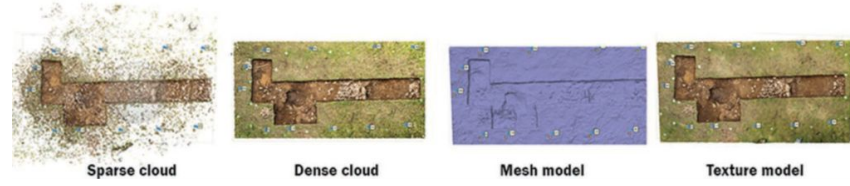


Excavations ↻



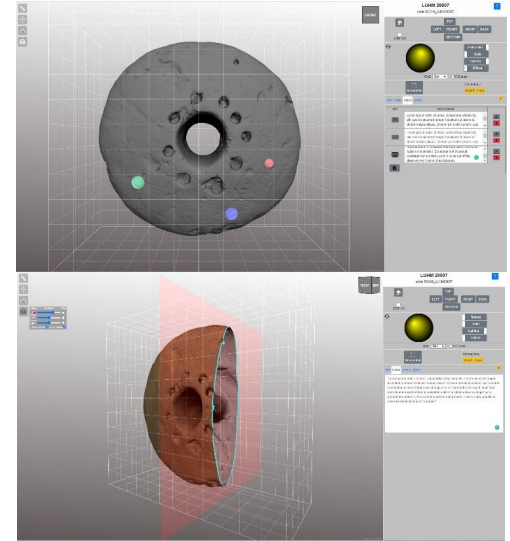
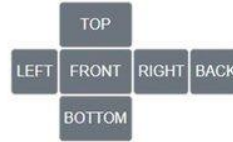
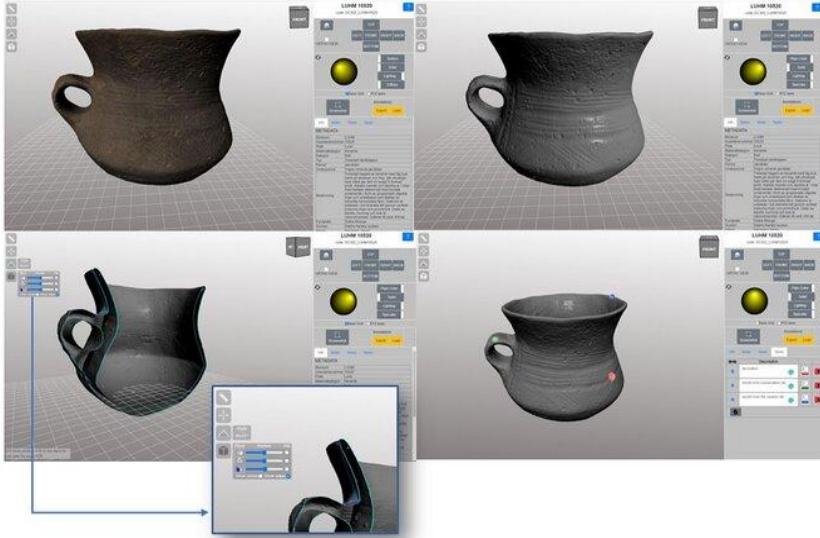
Monuments ↻



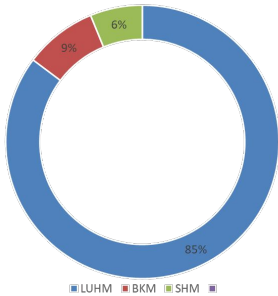




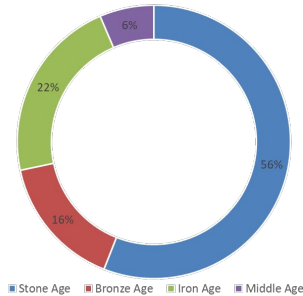
Dynamic Collections



MUSEUMS



ARTEFACTS DISTRIBUTION PER PERIOD



Total Records **421**
 Filtered Records **420**
 Collected Records **0**





E-infrastructures supporting the implementation of 3D in the context on the EUreka3D

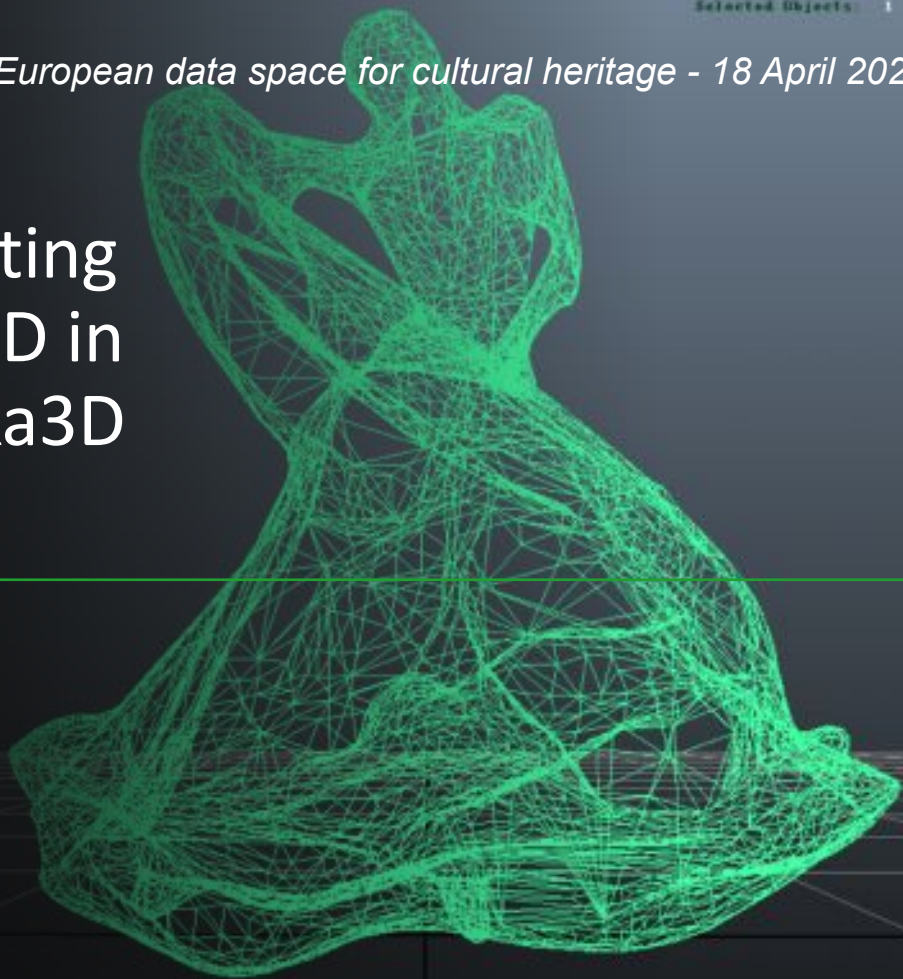
Antonella Fresa

Photoconsortium

e-infrastructures supporting the implementation of 3D in the context of the EUreka3D project

Antonella Fresa
PHOTOCONSORTIUM

Antonella.fresa@photoconsortium.net
info@photoconsortium.net



Challenges for Cultural Heritage Institutions

The EC Recommendation demands CHIs for a **bigger effort in 3D digitization**, focusing on quantity but not giving clear parameters on quality. Also:

- **Not all CHIs have in-house expertise**, skills, nor capacity for identifying a quality service and for recognizing high quality 3D digitization that is compliant to the VIGIE study recommendations
- **Not all CHIs have access to proprietary infrastructures** that allow to host, manipulate and visualize high quality, large scale, 3D models □ **need to buy e-infrastructure services**
 - Service provided by whom? Data from European CHIs should better stay in Europe
 - Long-term cost of service? Investment sustainability?
- **Variety of content and variety and complexity of information** makes 3D digitization and its online sharing (also in Europeana and with EDM) challenging



More 3D content!
 - All sites at risk
 - 50% of other heritage

Quality of 3D models!
 Metadata and paradata!
 Formats, standards,
 methodologies!

Virtual Machines!
 Storage capacity!
 Preservation!
 Interoperability!

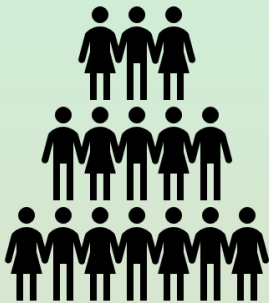
HELP!



Content tiers!
 Metadata tiers!
 Europeana Data Model!
 Open access!
 Data Space!



Digital skills!
 Knowledge!
 Workflows!



Europeana

Eureka3D project 01/01/2023 – 31/12/2024

Strand 2 project of the Data Space to support the digital transformation of the cultural heritage sector.

The project aims to offer a **capacity building and knowledge programme**, next to **services and resources** developed in a piloting action based on smart technical infrastructures and tools, also registered on the European Open Science Cloud (EOSC). The data hub and the e-services should allow cultural heritage institutions to **safely authenticate** and **use storage and computing resources in Europe** to manage their 3D assets. Aggregation of new collections and Europeana editorials and communication complement the work of the project.

Website: <https://eureka3d.eu>

Blog: <https://www.digitalmeetsculture.net/projects/eureka3d-blog/>

Core activities in 24 Months

e-infrastructure services development:

- Access to computing and storage resources managed in Europe
- Methods on authorization and authentication with different levels of interaction with users and with Europeana services
- Publication of services on EOSC

Capacity building action on:

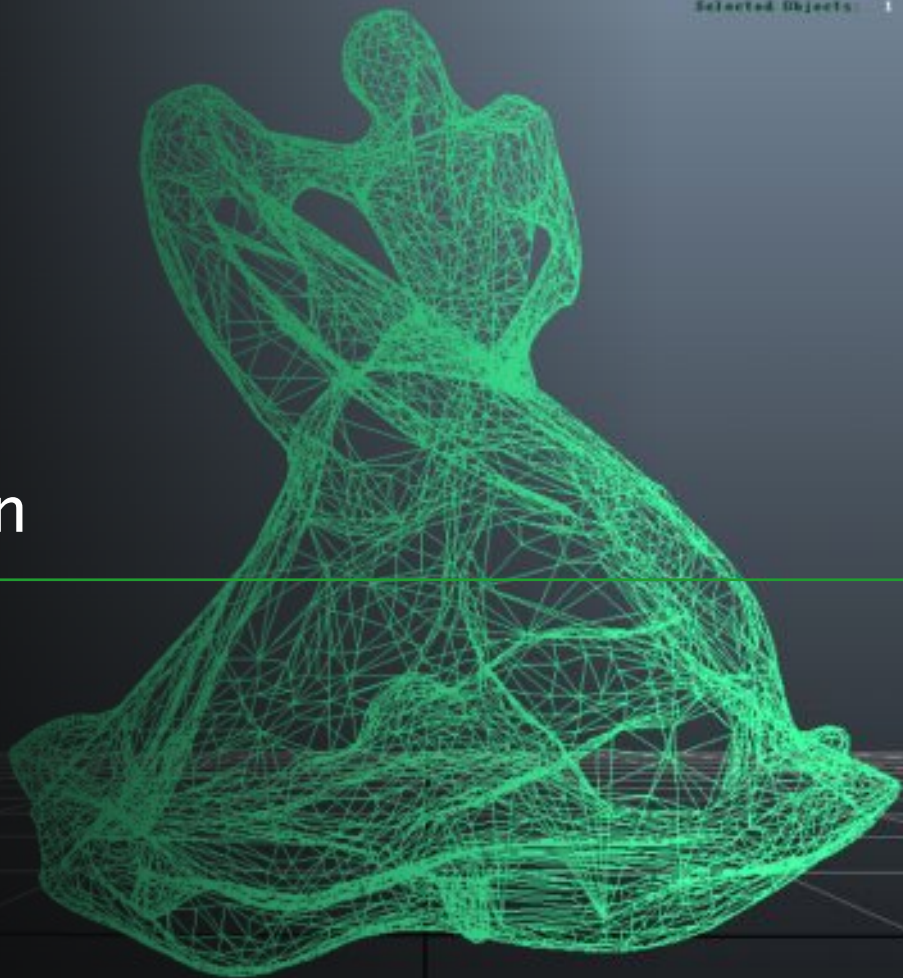
- Implementing digitization of objects ex-novo and assessing quality of existing 3D collections against the VIGIE Study recommendations
- Providing holistic documentation of the 3D objects
- Impact assessment of high-quality 3D digitization workflows on CHIs
- Integrating data, metadata and paradata in EDM
- Events in presence and online for the community at large (next event in

Rome, 6th June 2023)

Thanks for your attention

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info@photoconsortium.net





4D Research Lab

Boudewijn Koopmans

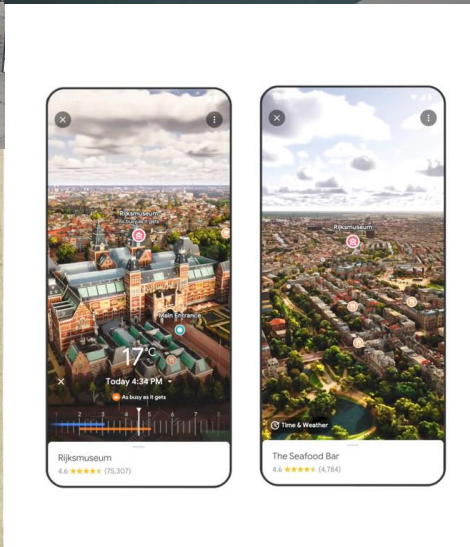
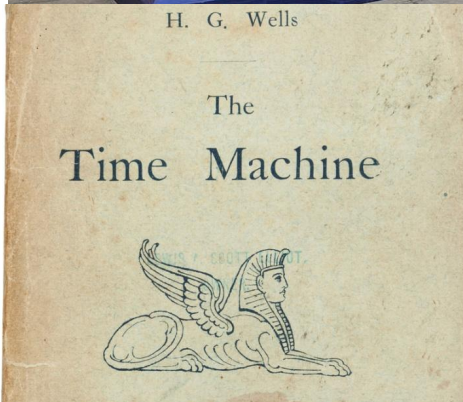
University of Amsterdam



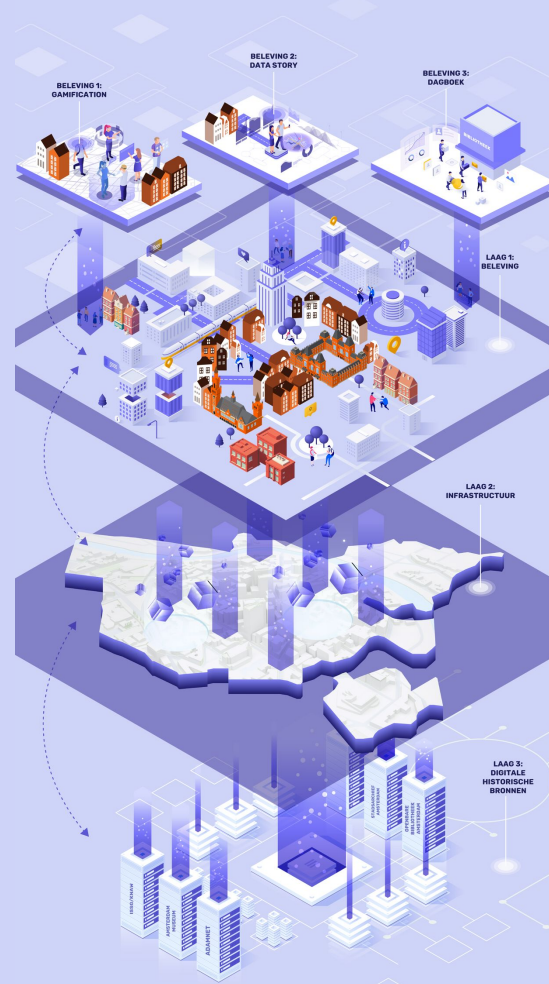
Why 3D matters?

Amsterdam Time Machine

Stockholm, 18 April 2023



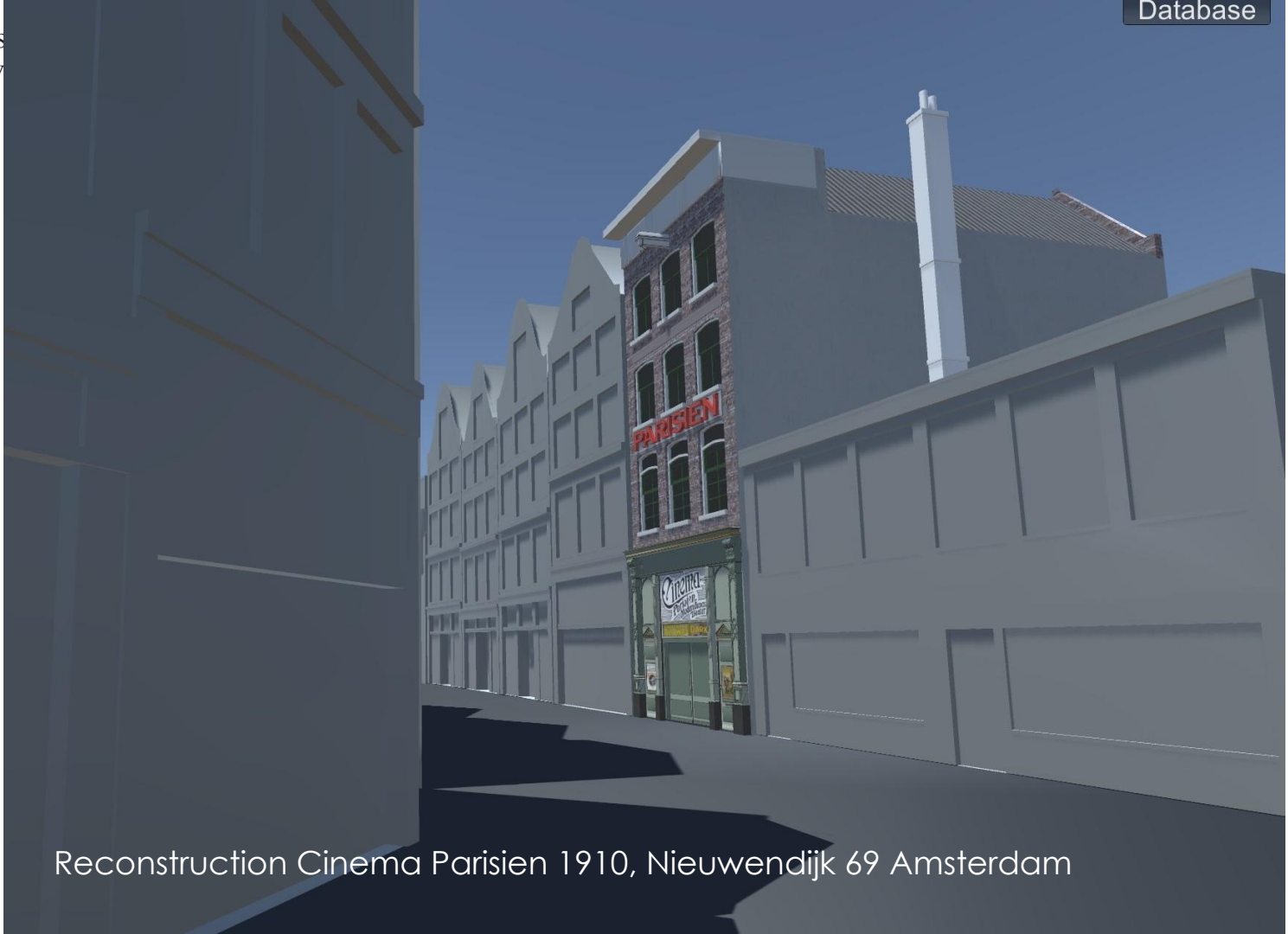
AMSTERDAM TIMEMACHINE



Time Machine & 3D

1. Visualisations as the outcome of research programmes (produce & re-use)
2. Student projects in digital humanities
3. Crowdsourcing & citizen science
4. 4D Research Lab & 3D GIS





Reconstruction Cinema Parisien 1910, Nieuwendijk 69 Amsterdam





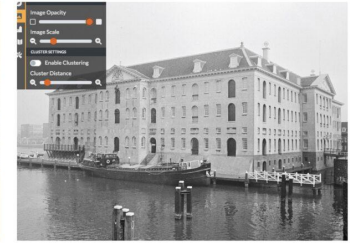
Students using Blender



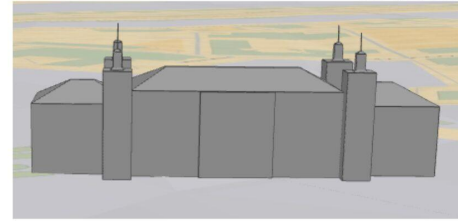
Blender + VRCity



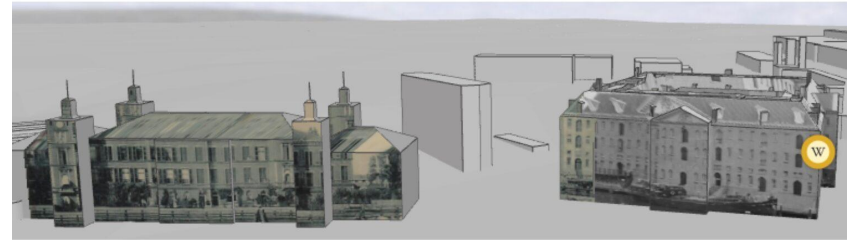
Pictures



+
3D models



=



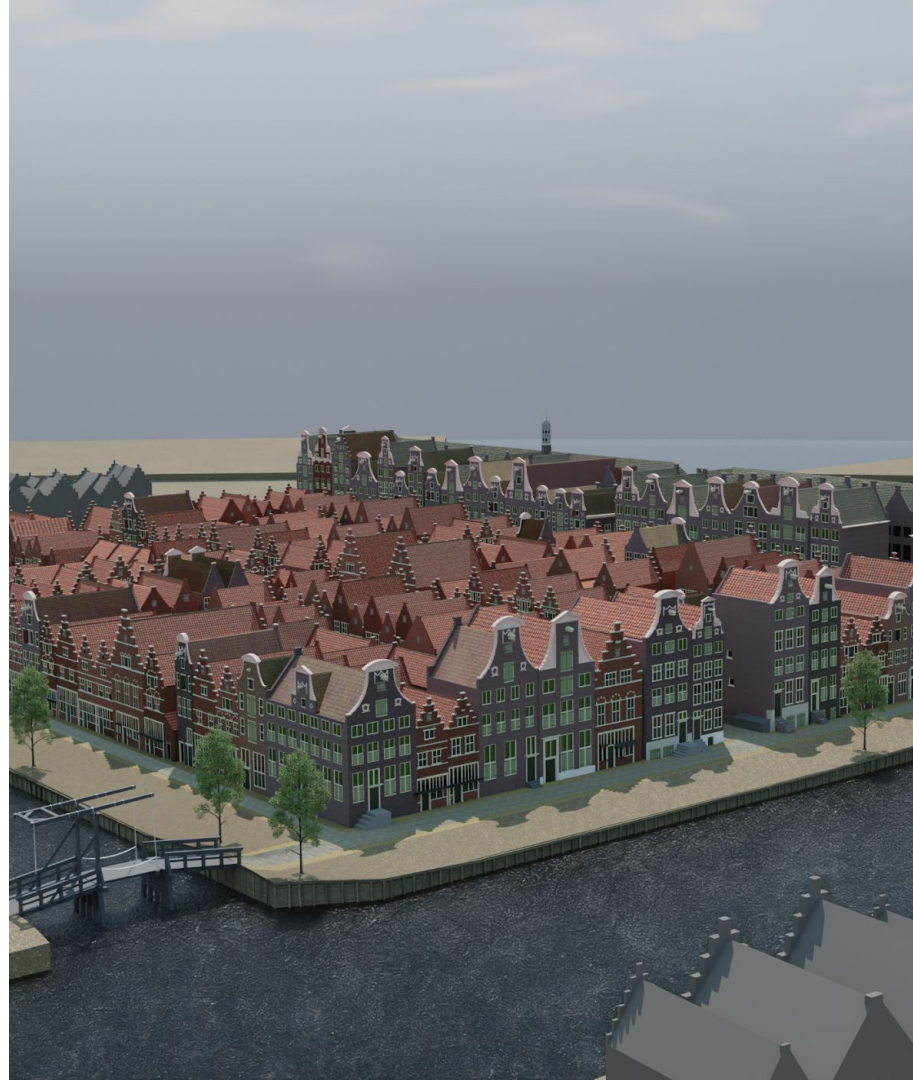
With the cooperation of the Friedrich-Schiller Universität Jena

The crowd



Case Jewish quarter

- Bring to life 5 centuries of Jewish presence in Amsterdam
- Linking data sources City Archive, IISH, Jewish Museum and NIOD
- Testing our vision on a linked open data infrastructure
- Integrating 3D visualisations by the 4D Research Lab

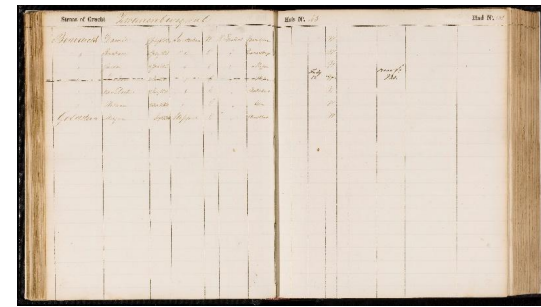
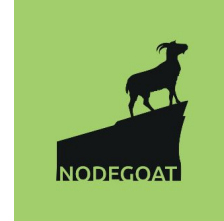




14/11/1880
Goudsbloemstraat

| Geboortenummer van het proces | Geboortenummer en familienaam (Eerste voornamen voluit) | Geboortedatum | Verwantschap | Bezittingen | Datum van afschrijving en nieuwe woonplaats |
|-------------------------------|---|---------------|--------------|------------------------------|---|
| 1 | Abraham van der Meer | 1841 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 2 | Abraham van der Meer | 1843 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 3 | Abraham van der Meer | 1845 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 4 | Abraham van der Meer | 1847 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 5 | Abraham van der Meer | 1849 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 6 | Abraham van der Meer | 1851 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 7 | Abraham van der Meer | 1853 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 8 | Abraham van der Meer | 1855 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 9 | Abraham van der Meer | 1857 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 10 | Abraham van der Meer | 1859 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 11 | Abraham van der Meer | 1861 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |
| 12 | Abraham van der Meer | 1863 | zoon | 1/2 a.s. v. Bloemvrijg 10/10 | |

Onbetrokken 5-8-37



Herr. '52 acc 27-10-'53 24. AUG. 1940

Lukacs, Endre

Naam Lukacs Geboorteplaats Budapest

AANGEVR. Nr. 5380/60 Voornamen Endre

BUITENLAND Nummer 903.051

Geboortedatum Datum van afgifte

No. 47 DIENST MARKTWEZEN.

Naam Abraham van der Meer

Voornamen Abraham

Geboortedatum 1841

Adres 1/2 a.s. v. Bloemvrijg 10/10

Artikel 1/2 a.s. v. Bloemvrijg 10/10

Staatplaats Amsterdam

Geboortedag Donderdag 7e Januarij

Datum uitreiking legitimatiebewijs 8 Oct. 1928

BIJZONDERHEIDEN:

4-4-29 gew. pl. beta. te betalen

5-9-29 als van

11-12-30 als van l.w.

11-12-30 gew. pl. beta. vord. teg. haat van de betrouw.

5-10-31 gew. pl. beta. te betalen

10-1-32 als van (l.w.)

Z. O. Z.

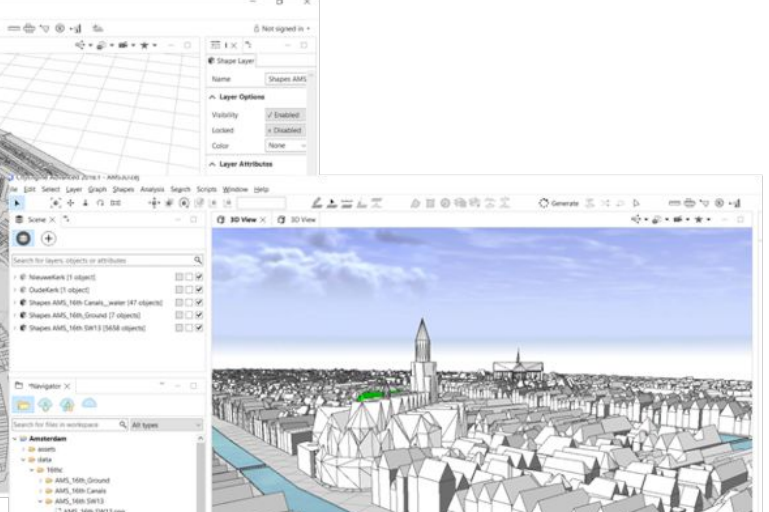
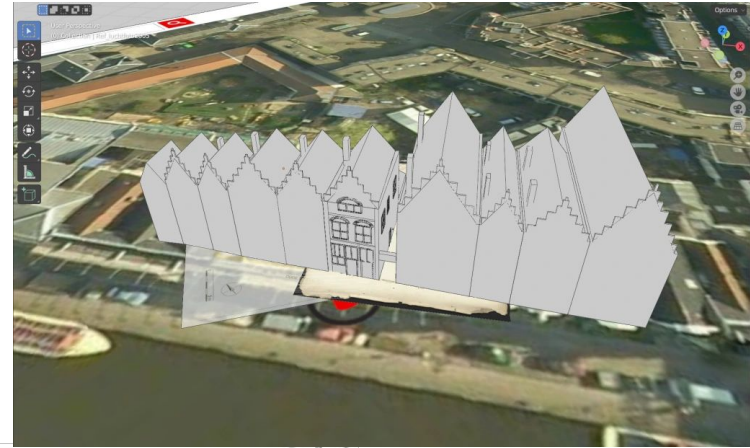
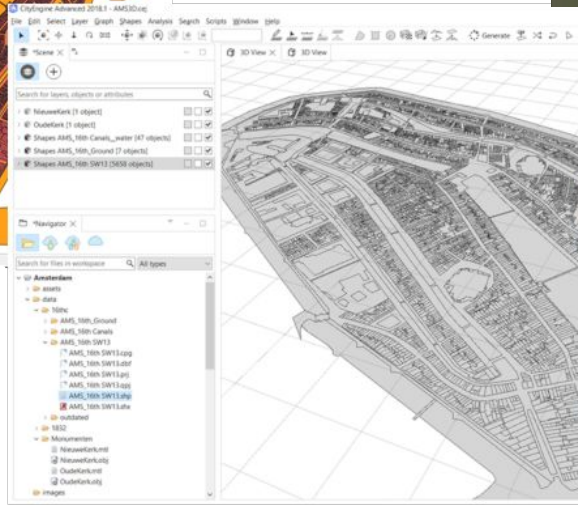
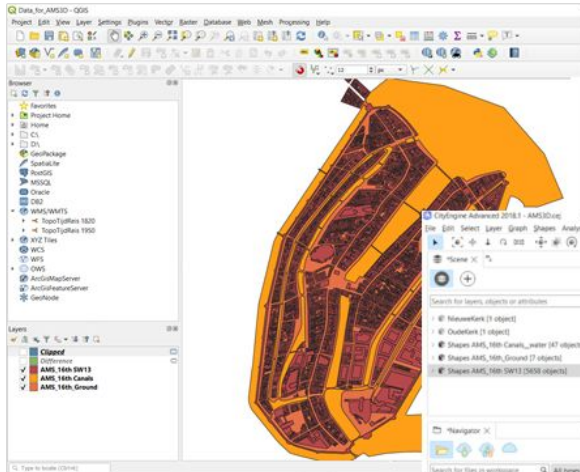


4D Research Lab Vlooienburg





ArcGIS City Engine





Time Machine roadmap

- 1) Stable and sustainable technical infrastructure to unlock sources & datasets
- 2) Development of interfaces that provide access to the stories of the city
- 3) Enabling participation, making the Time Machine a dynamic platform fueled by new stories to be told by all citizens
- 4) Scale-up 3D Modeling



Panel discussion

- Kate Fernie, CARARE
- Nicolò Dell'Unto, DARK Lab
- Antonella Fresa, EUreka3D
- Boudewijn Koopmans, University of Amsterdam

Moderated by Valentine Charles, Europeana Foundation



Wrap up

Jolan Wuyts and Valentine Charles

Europeana Foundation



Conclusions and closing

Eva Stengård and Harry Verwayen

Ministry of Culture, Government Offices of
Sweden

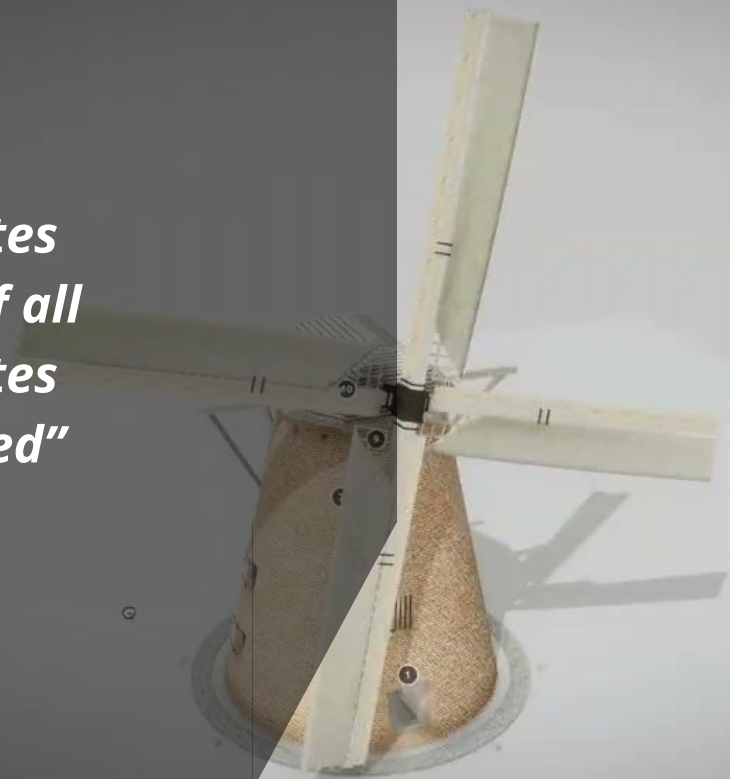
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JUNE 2023

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Introduction to the Spanish Presidency in 2023

Laura Guindal

Ministry of Culture and Sports Spain




Laura Guindal - Ministerio

Thank you!



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