

# PERCEIVE

Perceptive Enhanced Realities of Colored collections  
through ai and Virtual Experiences



SOFIA PESCARIN, CNR ISPC (IT)

PERCEIVE

**PROTECT  
YOUR HERITAGE**





# RISE EUROPA

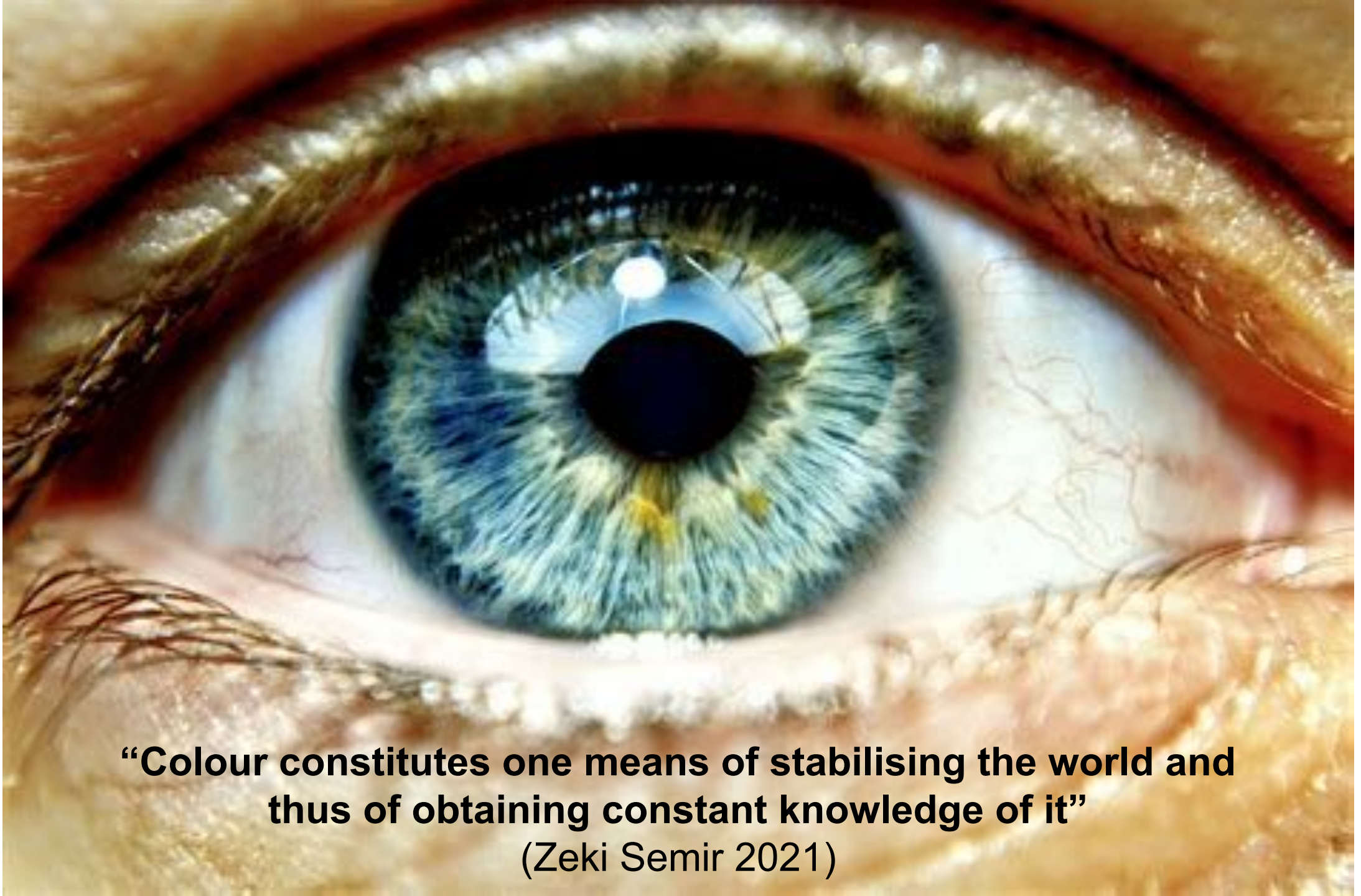
TITOLO DELLA PRESENTAZIONE

**DEFEND YOUR HERITAGE,  
CULTURE, AND IDENTITY**

**Ethnic-European Survival Kit**

(Renegade Tribune, source: <http://www.renegadetribune.com/ethnic-european-survival-kit/>)





**“Colour constitutes one means of stabilising the world and  
thus of obtaining constant knowledge of it”  
(Zeki Semir 2021)**

PERCEIVE



The Art Institute of Chicago  
collection without colors

**The Munch Museum, Oslo  
a Scream without colors**





PERCEIVE



The Victoria and Albert Museum  
in London dress collection





**AR Digital Art installation «Ecce Homo» by Virtuale Switzerland for the artist Ingo Lie**



**Kouros of Tenea – Greek  
Color physical reconstruction  
(Glyptothek, Munich)**



**Venus in Bikini (MANN museum)**  
**Roman**



152798

PERCEIVE (LOVE AND PAIN)



(1895) Edvard Munch (Munch



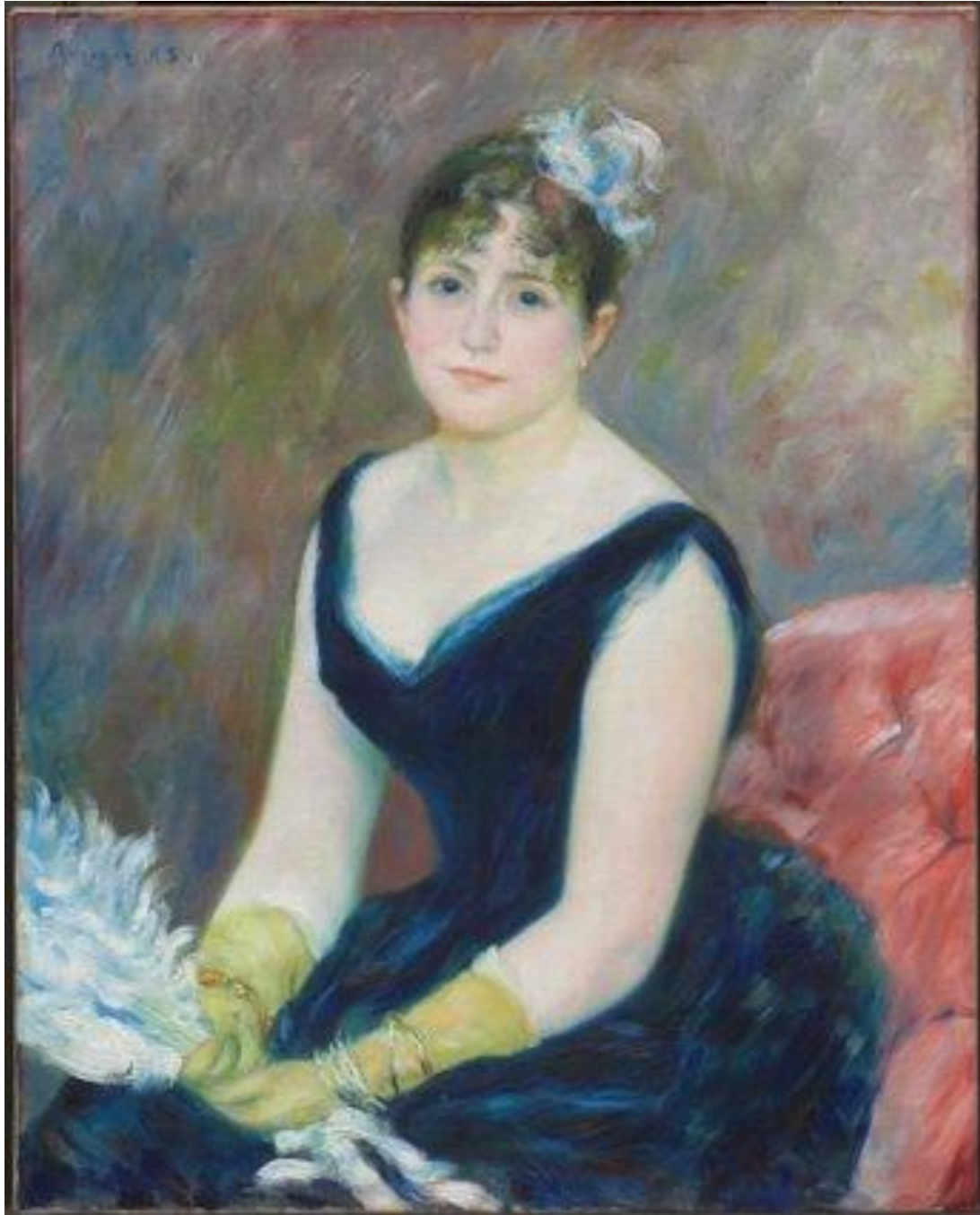
(1894) Anxiety (Munch Museum)



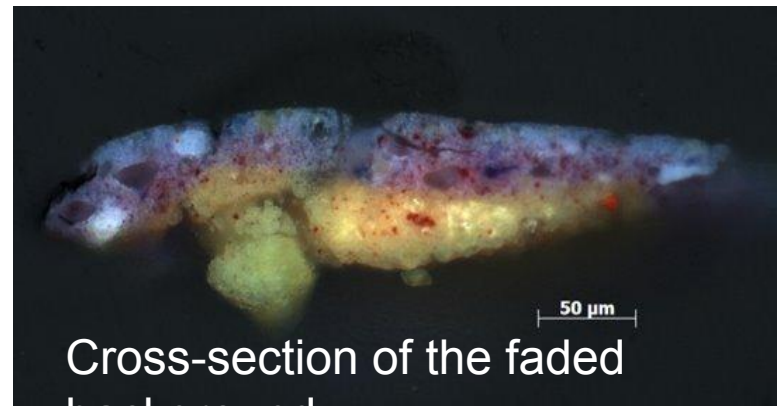
**Faded Kimono (V&A museum FE.422-1992)**



**Faded Victorian dress (V&A museum T.7-1926)**



Art Institute Chicago: Renoir, Madame Léon







'Treu Head' (British Museum). Color Reconstruction (Verri (AIC))



Capturing scientific images of a polychrome Etruscan terracotta at the Art Institute of Chicago



Capturing of the Scream at the Munch Museum with ERIHS Molab / CNR ISPC



A night in the forum Videogame for PS VR (CNR)



# PERCEIVE

Timing:	1st February 2023 - 31st January 2026
Call:	HORIZON-CL2-2021-HERITAGE-01
Grant Agreement Nr:	101061157
Total Budget:	3.785.358,75 Euro

11 PARTNERS, supported by 6 experts

8 COUNTRIES (ITALY, GREECE, FRANCE, GERMANY, NORWAY, UK, SWITZERLAND, USA)

More than 40 RESEARCHERS and PROFESSIONALS around the globe

6 SCENARIOS

FROM HIGH-TECH TO LOW-TECH

PERCEIVE

AI

IB

M

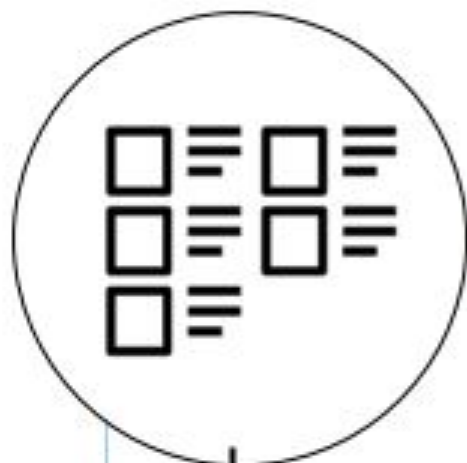
02.2023

2024

2025

01.2026

Colored Collections:  
Needs & Requirements



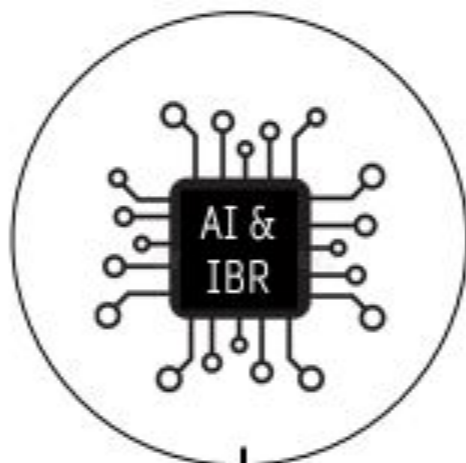
Scenarios:  
1-Polychromy  
2-Paintings  
3-Textiles  
4-Photos  
5-Digital Art

Data and Material  
Modelling



Similar  
examples  
+ Better  
conserved  
samples  
+Environment  
al parameters

AI & IBR core



Reconstruction  
Rendering  
Prediction  
Simulation  
of Perceived  
Colors

PERCEIVE Platform  
Services & Tools



PERCEIVE  
Experiences

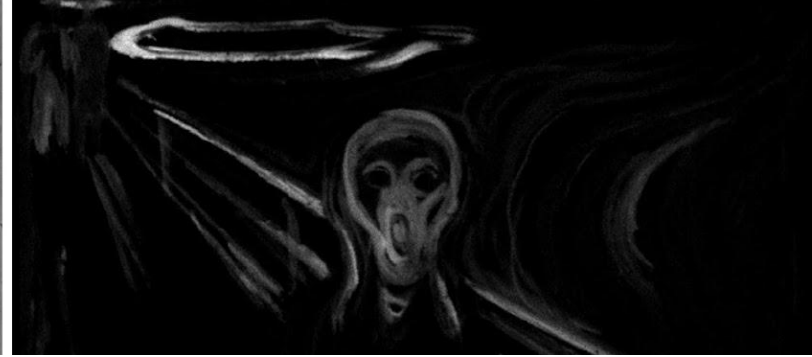
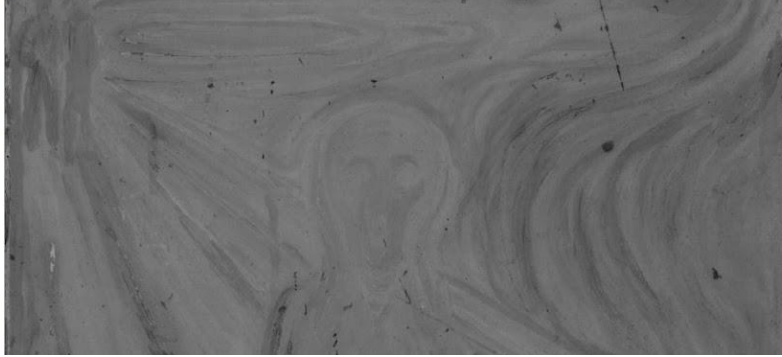


Assessment



Hybrid XR exhibition





2023

SCENARIOS-BASED  
REQUIREMENTS

THEORETICAL  
FRAMEWORK

DATA MODELLING  
AND ACQUISITION

2024

ARTIFICIAL  
INTELLIGENCE  
and  
IMAGE BASE  
RENDERING  
CORE

2025

PLATFORM,  
TOOLS and  
SERVICES

PERCEIVE XR  
AND HYBRID  
EXPERIENCES  
Care  
Authenticity  
Open Space

2026

ASSESSMENT

HYBRID  
EXHIBITION AND  
DEMONSTRATORS

DESIGN TOOLKIT

# TIMELINE

## Beneficiaries

1. CNR (IT)
2. FORTH (GR)
3. ANAMNESIA and IMKI (FR)
4. NTNU (NO)
5. FRAUNHOFER IGD (DE)
6. MIC - MANN (IT)
7. OSLO - MUNCH MUSEUM (NO)

## Associated Partners:

8. Art Institute Chicago (USA)
9. HOVERLAY LTD (USA)
10. HSLU (CH)
11. Victoria & Albert MUSEUM (UK)

# PARTNERS

# OUR TEAM



**SOFIA  
PESCARIN**  
Coordinator  
CNR ISPC



**CRISTIANA  
BARANDONI**  
Needs and Requirements  
MANN MUSEUM



**SOPHIA  
SOTIROPULOS**  
Data Modelling  
FORTH IESL



**HOLGER GRAF**  
Ai and IBR core  
FRAUNHOFER



**PANOS  
TRAINAS**  
Platform Tools & Services  
FORTH ICS



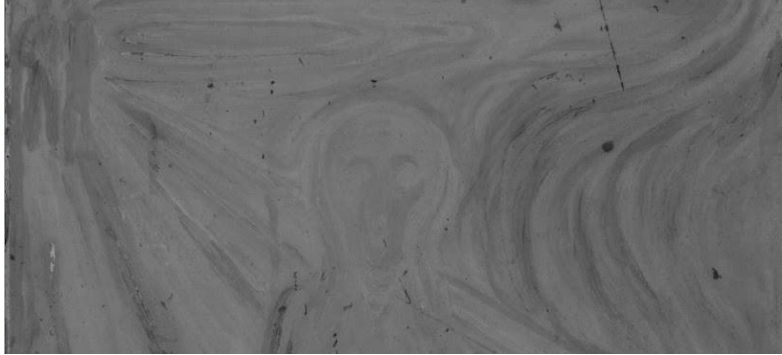
**MARCO ALVAREZ**  
Assessment  
NTNU COLORLAB



**SIMON SAPPA**  
Innovation  
ANAMNESIA/IMKI



**DANIELE  
FERDANI**  
PERCEIVE Experiences  
CNR ISPC



PERCEIVE workS on 5 key scenarios:

---

- 1- Lost colors of Polychromy Classical Sculptures**
- 2- Fading colors in Paintings**
- 3- Fading colors in Textiles**
- 4- Historical Photos**
- 5- Digital Art**

# SCENARIOS

# SCENARIOS

1- **Lost colors of Polychromy Classical Sculptures**

2- Fading colors in Paintings

3- Fading colors in Textiles

4- Historical Photos

5- Digital Art

1- Archaeological museums own collections of classical statues and architectures originally colored **BUT** only tiny traces of these colors are still visible and for the majority of public are **considered uncoloured**



# SCENARIOS

1- Lost colors of Polychromy Classical Sculptures

**2- Fading colors in Paintings**

3- Fading colors in Textiles

4- Historical Photos

5- Digital Art

2- Darkening, fading and yellowing often accompanied by flaking, crumbling and chalking of the paint, affect paintings and works on paper with dramatic threats for their **understanding, preservation, and management**



Van Gogh, *The bedroom*, (1889), AIC and tentative color reconstruction



# SCENARIOS

1- Lost colors of Polychromy Classical Sculptures

2- Fading colors in Paintings

**3- Fading colors in Textiles**

4- Historical Photos

5- Digital Art

3- Textiles colored with natural dyes are very fragile and suffer from a rapid degradation over time particularly true for textiles made of precious metal fibers



# SCENARIOS

1- Lost colors of Polychromy Classical Sculptures

2- Fading colors in Paintings

3- Fading colors in Textiles

**4- Historical Photos**

5- Digital Art

4- Old photos have deteriorated colors, which leads to different or erroneous interpretation. Particularly fragile are the **autochromes**, transparent images on glass, the first colour photographs, made by a patented process (1904)





# SCENARIOS

1- Lost colors of Polychromy Classical Sculptures

2- Fading colors in Paintings

3- Fading colors in Textiles

4- Historical Photos

5- Digital Art

5- Today artworks are created by artists also directly in digital form, conceived to be perceived by the public "virtually" (i.e. in AR from 2007-2018) sometimes in determined context (day-night...). Fragile those artworks are disappearing when offline.



## CONCEPT-LED DESIGN

How to correctly communicate the «Authenticity» of such reconstructions and predictions?

How to strengthen the perception of «Authenticity» in XR experiences [beyond the visual realism]?

How can a wider number of citizens perceive that colored collections are fragile and need to be «cared» about?

How can we strengthen «participation», in a way that we could consider this patrimony as our own, part of our life?



# Exploring Authenticity through Cultural Probe Kit approaches

- A diary
- A pencil
- Stickers



This Cultural Probe Kit Book is mine

my mail: .....@.....

Dear Friends this little book will be with you for the next 15 days. Please take care of it, as it will help us in shaping the design of the future interactive technologies.

We are a team of researchers of the National Research Council in the Institute of Heritage Science (CNR ISPC), and a group of and students of the master DHDK at the University of Bologna.

It is a "cultural probe kit" It is used by designers to explore behaviors, expectations, needs of their audience. It will be a way also for you to reflect on your life and on concepts such as "social cohesion", "caring" and "authenticity" and on the role of interactive technologies.

Your contribution will be absolutely anonymous.

This activity is meant to make you reflect on **authenticity perception in your experiences.** [If you have visited the **Museum of Palazzo Poggi**, please consider it, otherwise visit **another museum and proceed**] **During the visit: Take an "authentic" photo (1) and a "non-authentic" (2) photo or video.** When back, frame this **QRCode** with your phone and follow the link to **upload** them and reply to the questions:



Now it's time to think about **Authenticity in your life.**

Please, frame this QRCode with your phone and follow the link for your next task on **AUTHENTICITY**



### Instructions

This book is composed by 3 parts: 1-In the first section there are tasks you are going to fulfill. 2-In the second part there's a diary that you're going to do for 8 days and it's going to help you in focusing and reflecting during your day. 3-In the third part there's a section dedicated to more advanced tasks connected to the role of technology. In some cases you're going to write or draw directly in the book. In other cases you're going to use a QR code to find the on-line resource or to reply using an on line form.

**You have 15 days to finish the activities.** When you have finished, you can take it back to the students or professor who gave it to you. You can also keep it, if you like. In this case we ask you to take pictures of every page and send them to this e-mail: sofia.pescarin@unibo.it

### Who am I?

Frame this QRcode with your phone and follow the link to answer to a few questions about you.



Date: [ ] **DAY 1**  
Hours spent today at my phone: [ ] Nr. of screen taps: [ ]

Today I cared for SOMEONE or SOMETHING: YES / NO  
I cared for: *someone*  *something* . It/he/she was: [ ]  
I knew him/her/it before: yes  no   
It happened when: [ ]

He/she/it made me feel: [ ]  
I thought I should care because: [ ]  
I thought I should act/react to help/contribute, by doing: [ ]

Or did I feel I was not able to act/react today, despite the sensation I should do something? : yes  no   
Did I expect something in return?: yes  no   
What? [ ]  
Today, I heard about someone else who did something to take care and this made me feel: [ ]

### DAY 1

Today I lived an experience I could define **Authentic:** YES/NO  
This is what happened [ ]  
I thought it was authentic because [ ]  
What made really authentic this experience was: [ ]  
I could rate its authenticity: 1  2  3  4  5  6  7  8  9  10   
It made me feel: [ ]

Did I ask for help today? yes  no   
To Whom? [ ]  
Did him/her actually give me support? yes  no   
Did I help someone today? yes  no   
Who did I help? [ ]



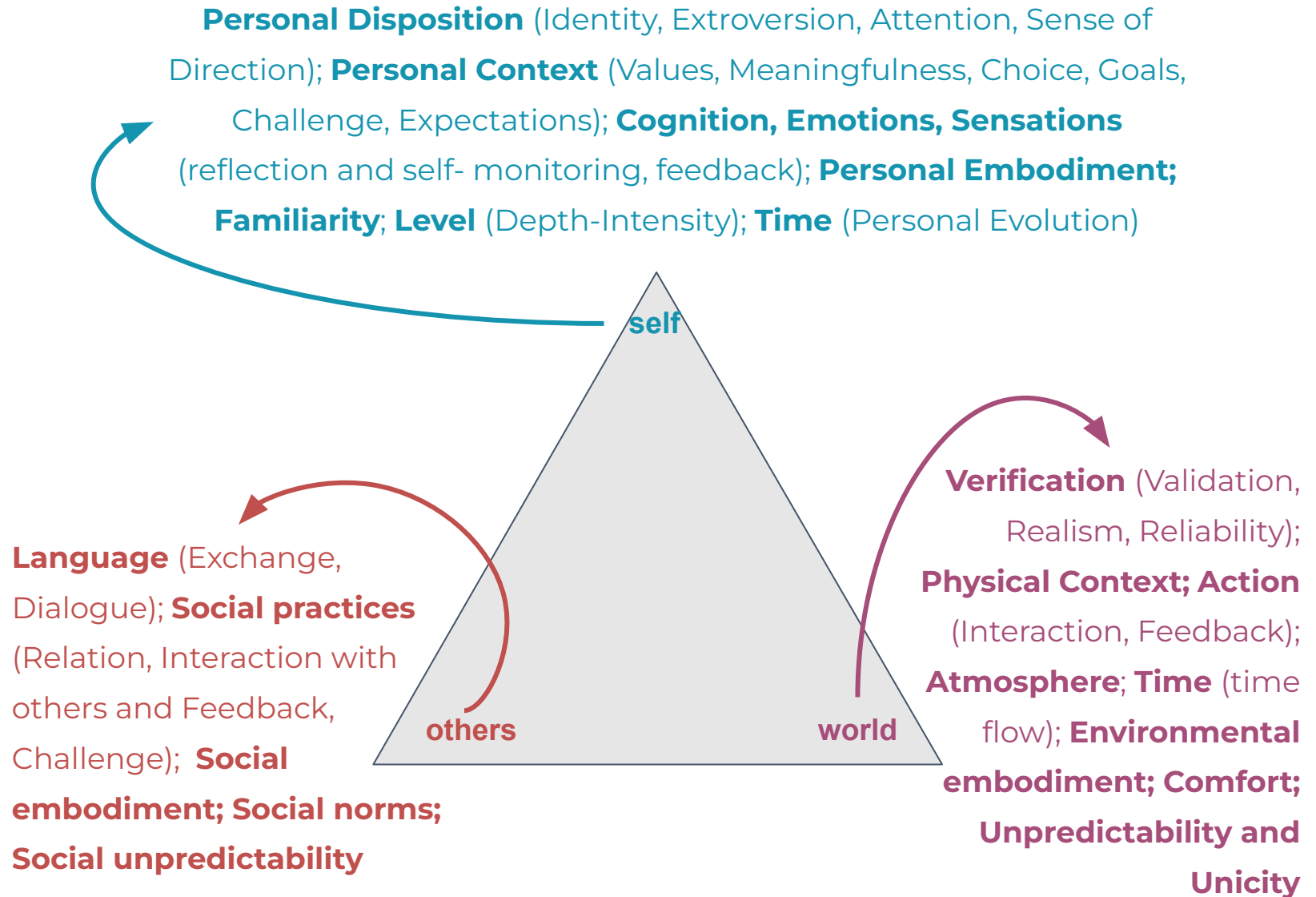
# Cultural Probe Kit conclusions



**Figure 1:** 3 photos of the CPK with comments: (left) drawing: “it’s the perception of something profound [...] and therefore authentic”; (middle) globe: “an experience that we actually lived [...] real people doing something not because I was taking a photo”; (right) ceiling: “Looking at the roof, I felt like entering somebody’s house”

1. **three dimensions** (self, others, world) emerged clearly from activities, stories and comments;
2. **emotions** have a key role in the perception of authenticity;
3. **social component of the experience** (being together and exchanging thoughts through dialogues) is relevant;
4. **validation process and identification of truth and reliability**;
5. a **sense of familiarity** is an effect of authenticity;
6. the “**atmosphere**” of the environment was also identified as impacting the perception of authenticity (illumination, sounds, etc.).

**Authenticity** is a **multi-dimensional** concept, made of **3 interconnected domains** (self, others, world) and of **components**; it works touching the **deeper self**, through **performative actions** that **transform** the **unfamiliar (distant) into familiar (close)**.



Pescarin S., Spotti S., Città G.. **Authenticity in VR and XR experiences: a conceptual framework for Digital Heritage**, in EUROGRAPHICS Workshop on Graphics and Cultural Heritage (2023), A. Bucciero, H. Graf, S. Pescarin, and S. Rizvic (Editors)

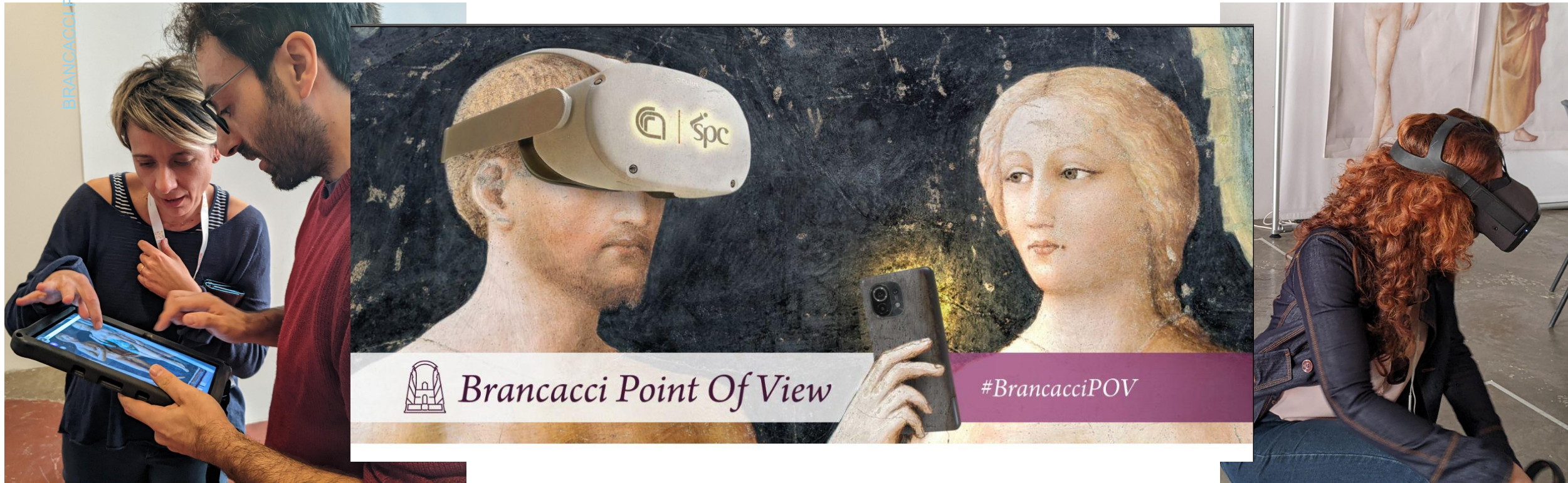
# CARING



*Caring is the active process of protecting someone or something; it is an interactional process that starts when there is **relation** and **knowledge**. It is activated by biological needs, or the sense of justice (ethic), or the perception of urgency towards something belonging strictly to us*

# Pre-prototypes

BRANCACCIPOV





# visitors

# guide

START @date

selection of personal element/role s1

exchange among visitors o1 o5

task development o3

exchange among visitors o1 o5

tasks completed

conclusion / reward w1

introduction s5

ice breaking invitation o2

task description s3

POV sharing w2

provocative question w7 s2

narrative - explanation s4

END



# PERCEIVE

Perceptive Enhanced Realities of Colored collections  
through AI and Virtual Experiences



Visit us:

[www.perceive-horizon.eu](http://www.perceive-horizon.eu)

[info@perceive-horizon.eu](mailto:info@perceive-horizon.eu)

#perceive

#perceivehorizon

#perceiveproject

[https://www.instagram.com/perceive\\_horizon/](https://www.instagram.com/perceive_horizon/)

