

## THE PLATFORM

CVRL/FORTH (Greece), IMKI (France)

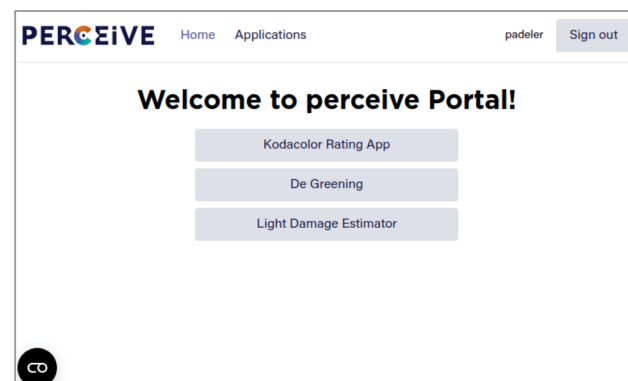
The PERCEIVE Platform is a **cloud software service (SaaS)** that **connects all Perceive Tools** in a scalable system.

Designed with cultural heritage professionals, curators, educators, and enthusiasts in mind, it brings groundbreaking technologies within easy reach to transform how we engage with historical collections.

It has three components:

- the Backend (called **PerceiveAPI**),
- the **Worker**
- the Frontend (called **Perceive Portal**).

Behind the scenes, it seamlessly manages **complex computational tasks**, intelligently distributing work across its infrastructure, ensuring quick turnaround and smooth performance.



PERCEIVE aims to enhance the digital capabilities of scientists and cultural institutions through a service-based AI toolkit and new design theories for VR/AR/MR experiences, focusing on “Care,” “Accessibility,” and “Authenticity.”

Access the PERCEIVE Platform!



Funded by  
the European Union

Funded by the European Union's under grant agreement Nr. 101061157. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.



# PERCEIVE

## THE PLATFORM

The tools available:

- **MULAX**

MuLaX is a **Web3D tool** that lets users explore cultural heritage artefacts interactively. It visualises 3D models enriched with analytical data (e.g. XRF, VIL, UVL), enabling **layered views** and **semantic annotations**. MuLaX also supports collaborative research, remote processing, and immersive exploration of ancient polychromy on marble.



- **STYLESHADE3D**

The tool utilizes a hybrid approach that enhances and stylizes 3D models using deep learning techniques along with high-quality mesh and material generation. It creates a **segmentation atlas** (2D parameterized segmentation map over the 3D surface generated using AI) to apply different styles and shading to various parts of the 3D model.

- **doLCE 2.0**

doLCE 2.0 is a digital tool that reconstructs the original colours from **early Kodacolor films**—black-and-white reels that used lenticular technology to capture colour information.



- **SIMTEXT**

This tool uses digital technologies to **simulate restoration** and **colour changes** in textiles using **data from mockups**, reference images and fading data. It segments **fugitive colours** with a **2D parameterized color-cue-based map over a 3D surface**, followed by appearance transfer from mockups that mimic the material composition. The fading of textiles is simulated using **texture images** from various sources to depict the object's colour at specific times.

- **COLOUR KNOWLEDGE REPOSITORY**

CKR is an **open data management system for collecting and sharing colour-related resources** in cultural heritage. It includes documentation, simulations, protocols, and workflows addressing colour change and preservation.

- **TEXT2AUTOCHROME**

Our new approach uses **advanced generative AI** to create images from textual data that capture the style of digitized autochromes. It also **simulates common defects** like greening and orangin to generate synthetic data for machine learning.

- **DEGREENING**

We use AI to demonstrate **potential restorations of greening defects** in digitised autochromes. First, we remove greenish areas using a specially **trained AI model** based on synthetically generated defects. Next, we apply a specialized AI inpainting model to suggest possible restorations of the original colors.

- **LIGHT DAMAGE ESTIMATOR**

LDE is a smart, user-friendly tool developed for researchers and museum professionals working with **light-sensitive artworks**. It helps estimate, predict, and simulate how objects might **change over time** when exposed to specific lighting conditions.

