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."

Scanario 3
FADING COLOURS IN TEXTILES

This scenario addresses colour fading in textiles, such as **dresses** and **metal embroideries.** PERCEIVE seeks to digitally reconstruct their original appearance, aiding preservation and inspiring creative industries. Fragile textiles, like those with metal fibres, degrade quickly, making it essential to communicate these changes through **authentic digital reconstructions.**

Scan the QR Code and learn more!

PERCEIVE
TOOLS & SERVICES
SCENARIO 3 / FADING COLOURS IN TEXTILES

COLOUR KNOWLEDGE REPOSITORY

Marios Pitikakis, Sophia Sotiropoulou (FORTH)

The PERCEIVE Colour Knowledge Repository is an **open data managment system for collecting and sharing colour-related resources** in cultural heritage. It includes documentation, simulations, protocols, and workflows addressing colour change and preservation.

Designed for **collaborative research**, it connects experts, curators, and conservators working across physical and digital collections.

MULAX

Bruno Fanini, Marcello Massidda, Daniele Ferdani, Federica Bonifazi, Donata Magrini, Roberta Iannaccone, Cristiana Barandoni (CNR ISPC)

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.**

Built on ATON and linked to the PERCEIVE cloud, MuLaX supports **collaborative research** and remote processing. WebXR features also allow **immersive exploration** of ancient polychromy on marble.

SIMTEXT

Saptarshi Neil Sinha (Fraunhofer IGD), Irina-Mihaela Ciortan (NTNU), Brenda Doherty , Lucia Burgio (V&A)

Simulating discoloration in cultural heritage garments provides insights into their history and aids preservation. 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. The tool was used to visualise a **20th-century kimono** and a **19th-century Victorian dress** from the Victoria and Albert Museum collection, which has the potential to assist specialists and lay audiences in restoration decisions.
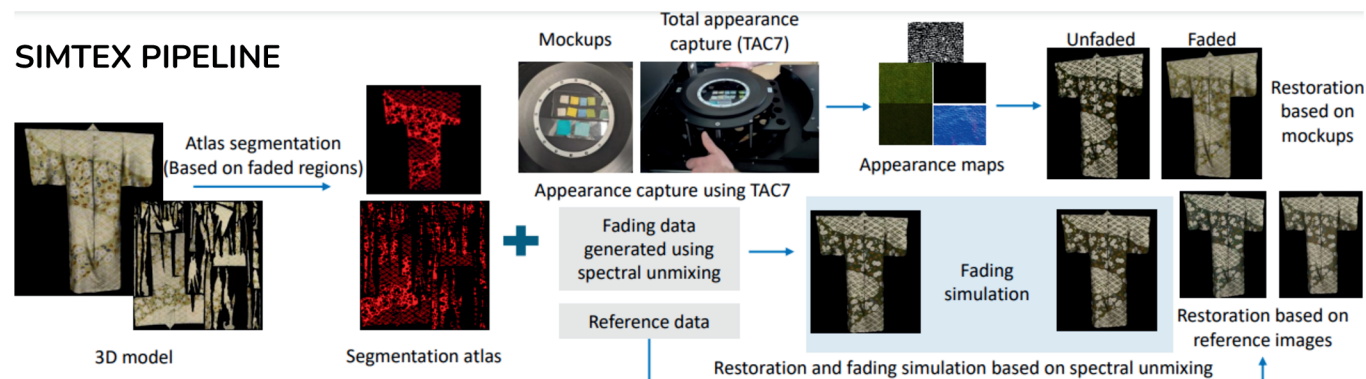
LIGHT DAMAGE ESTIMATOR

Panayiotis Siozos, Petros Stavroulakis, Sophia Sotiropoulou (FORTH); Irina-Mihaela Ciortan, Giorgio Trumpy (NTNU); Gautier Rollin (IMKI); Letizia Monico, Brenda Doherty, Catarina Monteiro Pinto (CNR-SCITEC); David Buti (CNR-ISPC); Irina Sandu (MUNCH Museum); Lucia Burgio (V&A)

The 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. By combining the spectral profile of a light source with known fading behaviours of pigments and materials, the LDE offers risk assessments tailored to each object. Whether paintings, textiles, or other coloured materials, the tool supports **informed decision-making** by helping define safe exposure limits and simulate visual outcomes. Its goal is to **balance preservation and presentation**, protecting cultural heritage while still enabling its public display under optimal light.

SIMTEX PIPELINE