COLOURS TOOL

Negative to Positive (neg2pos)

Calibrated digital conversion of colour photography negatives.

Colour Negative Digitisation | Photographic Heritage Restoration | Colorimetric Transformation | Reproducible Imaging Workflow

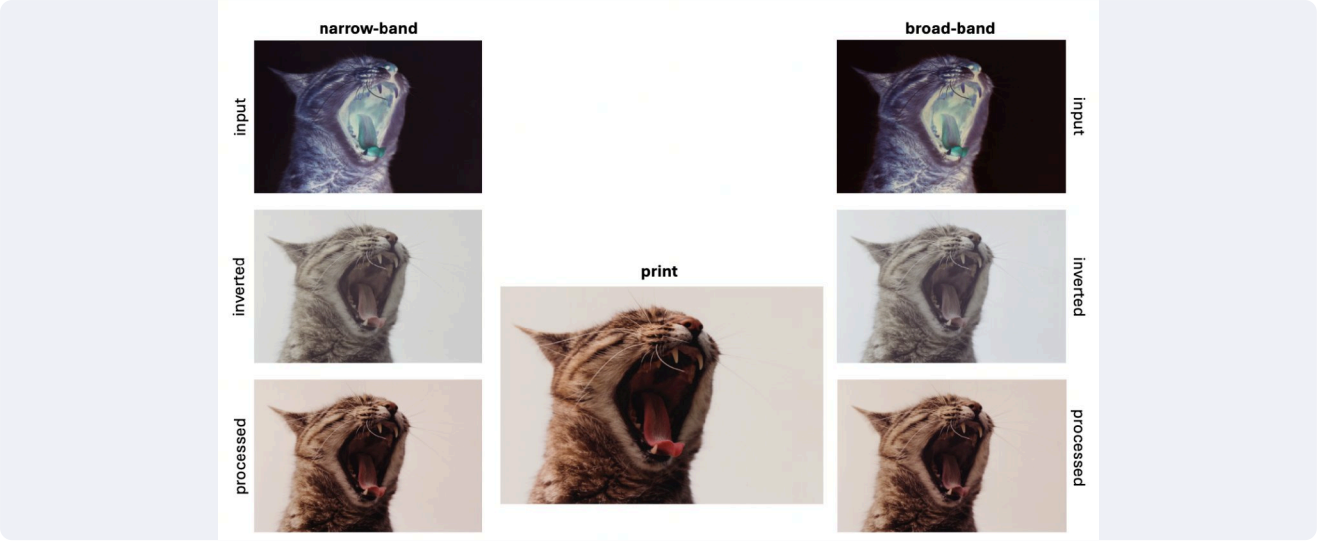


Fig. 1: Narrow-band and broad-band capture of the same negative: input, inverted and processed images, compared with the original print.

OVERVIEW

The widespread success of color photography is largely attributed to the negative-positive process. In fact, the vast majority of photographs were historically captured on color negatives. Positive prints from these negatives were traditionally produced using enlargers. Today, billions of color negatives are held in archives and private collections worldwide, often without corresponding prints. A common preservation approach is to digitize the negatives and use image processing techniques to invert them into positive images. While tools like Negative Lab Pro and FilmLab facilitate this process, research into optimizing both the image capture and processing workflows remains limited. neg2pos addresses this gap by introducing a calibrated transformation framework designed to minimize aesthetic deviation from chromogenic C-prints while producing accurate and reproducible positive renderings. Collaboration with peers is essential to accurately determine the parameters of this transformation. By consulting diverse negative/print pairs preserved in photographic archives, the process can be systematically evaluated and calibrated to ensure consistency, historical fidelity, and aesthetic accuracy.

KEY FEATURES

- Calibrated negative-to-positive transformation pipeline
- Minimization of aesthetic deviation from chromogenic C-prints
- Workflow optimization for both image capture and digital processing
- Colorimetric reproducibility across institutions
- Comparative evaluation using archival negative/print pairs
- Parameter tuning for historical fidelity
- Archive-scale applicability
- Cloud-ready processing architecture

IN PRACTICE: A USER STORY

Thomas works in a national photographic archive holding thousands of mid-20th-century colour negatives. Many of the original chromogenic C-prints have been lost, leaving only the negatives as historical records.

After digitizing a batch of negatives using a calibrated scanning setup, Thomas uploads the RAW files into the Cultural Heritage Cloud and launches neg2pos. Instead of applying a generic inversion, the system guides him through a calibrated workflow. He selects the film type and scanning conditions, and the framework applies transformation

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parameters designed to approximate the tonal and chromatic qualities of traditional C-prints.

A comparison interface allows Thomas to review the digital positive against a reference print from the archive. The system highlights colorimetric deviations and suggests parameter adjustments. Through iterative calibration—based on known negative/print pairs—the transformation becomes more precise.

Once satisfied, Thomas processes the entire batch with standardized parameters, ensuring reproducibility. Each transformation profile is stored with metadata, allowing future researchers to understand exactly how the positive rendering was generated.

The resulting images are not merely inverted negatives; they are calibrated digital surrogates that respect the historical aesthetic and material logic of chromogenic printing. neg2pos thus supports both preservation and scholarly interpretation of photographic heritage.

WHY ON THE CULTURAL HERITAGE CLOUD?

Within the COLOURS framework, interoperable and cloud-based services are central objectives. neg2pos benefits significantly from deployment within the ECCCH. Calibration requires comparison across diverse archival collections. ECCCH enables shared access to digitized negative/print pairs, standardized metadata, and distributed processing capabilities. The cloud environment ensures reproducibility by storing transformation parameters alongside digital assets.

WHO CAN USE IT

neg2pos primarily serves photographic archives, museums, libraries, and audiovisual heritage institutions managing large collections of colour negatives. Conservation scientists and imaging specialists benefit from standardized, reproducible transformation workflows.

Photographic historians and curators gain access to digitally reconstructed positives that more faithfully reflect historical print aesthetics. Research infrastructures and universities can use the framework to study chromogenic processes and historical colour reproduction.

EXPECTED TIMELINE

Alpha 2026
Calibrated inversion, reference tests

Beta 2027
Pilots with partner institutions

Release 2028
Production-ready on the ECCCH

An initial research prototype will focus on defining calibration parameters and evaluating negative/print pairs within partner archives.

Alpha (2026): Core calibrated inversion framework and controlled testing on reference collections.

Beta (2027): Pilot deployment within partner institutions, integration with ECCCH storage and metadata services.

2028: Production-ready cloud-integrated service aligned with COLOURS deliverables.

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All COLOURS tools:
colours-eccch.eu/tools

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