

# Reading the past with AI: eScriptorium and Transkribus

## ATR and Research Infrastructures: the case of eScriptorium and H2IOSC

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<https://diptext-kc.clarin-it.it/helpdesk>

Pisa, 30 May 2026

# Introduction

# 1.1 Automated Text Recognition

- Many projects in Digital Humanities or in Computational Linguistics require text acquisition
- Text acquisition is often one of the main bottlenecks in the whole process of digitization, analysis, and use

# 1.2 Printed text recognition

Printed text recognition now achieves excellent results even on historical documents

Line #65

Si nega una adeguata mercede al lavoro onesto,  
continuo santo Orbanel Gli è allora che uno sti

Si nega una adeguata mercede al lavoro onesto,

by tna115001 (kraken:catmus-print-fondue-large) on Wed Mar 26 2025 16:19:19 GMT+0100

4 -  
5 Lettrici! — Nemo — il Mentore della  
Farfalla  
6 — garbato e gentile sempre — sempre  
generoso —  
7 ha sciorinato al pubblico i miei cenci,  
nasconden-  
8 done — con grazia particolare — gli  
strappi troppo  
9 visibili, e tessendo con fina verve il  
bozzetto del  
10 mio povero io!..  
11 Troppi elogi — troppa generosità — troppa  
re-  
12 clame per un miserabile Bruco! Più che  
l'amico io  
13 credo abbia parlato in Lui l'animo  
altamente nobile

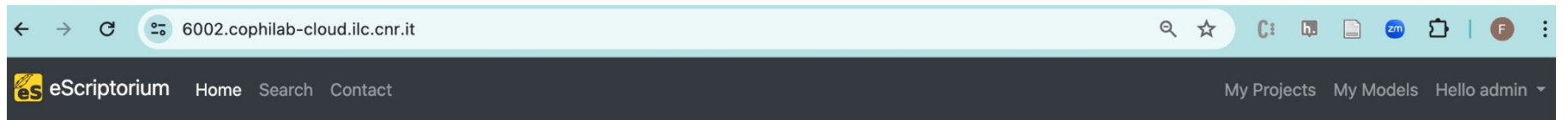
CoVerLeSS ( PRIN  
PNRR 2022 ),  
coordinated by  
Antonio Di  
Silvestro, UniCT

What is eScriptorium?

## 2.1 eScriptorium

- eScriptorium is an open-source web platform for the automatic or semi-automatic transcription of handwritten and printed texts, based on Layout Analysis (LA) and Handwritten Text Recognition (HTR) models
- It allows users to upload manuscript images, segment them into text regions and lines, train recognition models, recognize text, and produce transcriptions in XML-PAGE or XML-ALTO format

# 2.2 eScriptorium



## eScriptorium

eScriptorium: A Digital Text Production Pipeline for Print and Handwritten Texts using machine learning techniques.



### Automatic Transcription

Apply OCR/HTR to images of printed and handwritten documents using shared open models.



### Manual transcription

Make use of an ergonomic user interface leveraging modern browser technology to edit segmentations and transcriptions.



### Train Models

Create new models or finetune existing ones to improve automatic recognition.



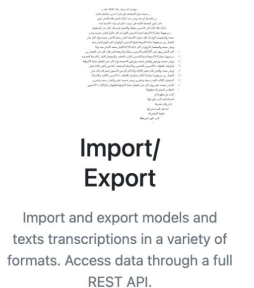
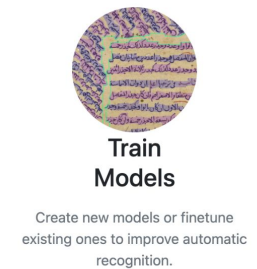
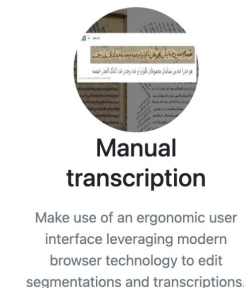
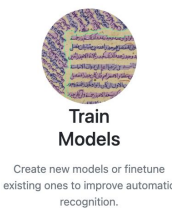
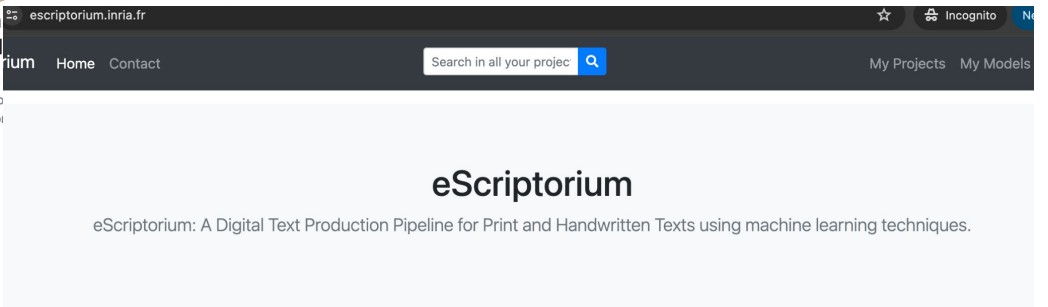
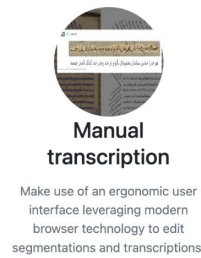
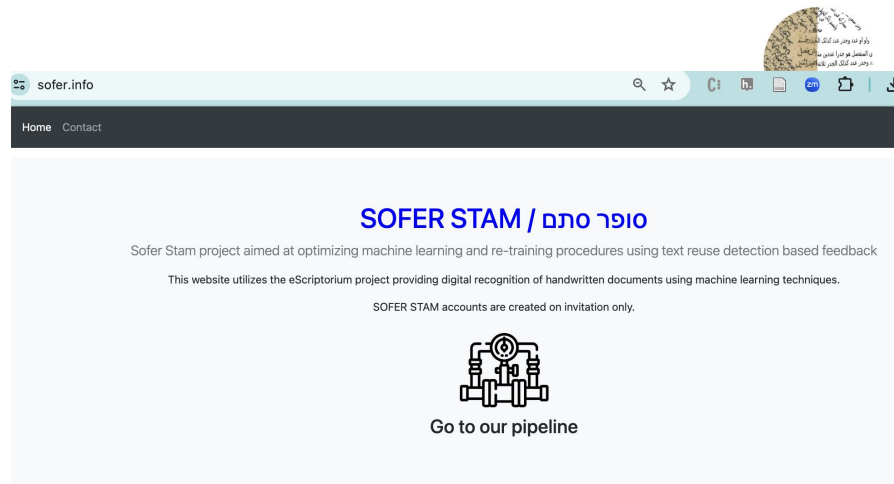
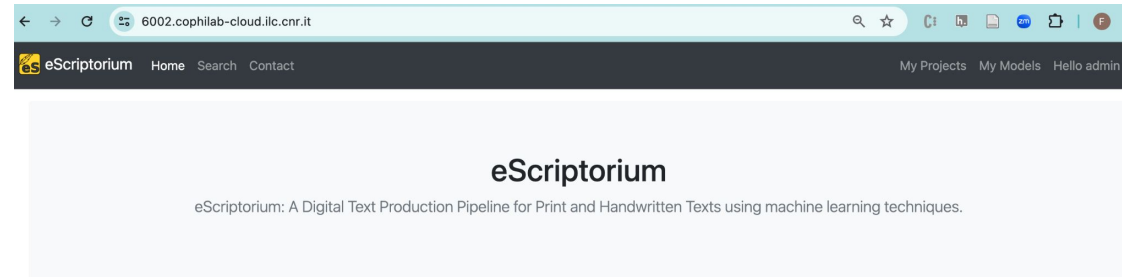
### Import/Export

Import and export models and texts transcriptions in a variety of formats. Access data through a full REST API.

<https://gitlab.com/scriptalescriptorium>



# 2.3 Many instances of eScriptorium



## 2.4 Comparison between eScriptorium and Transkribus

| Product                     | eScriptorium                                                             | Transkribus                                                                                         |
|-----------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Software license            | Open source (MIT License)                                                | <i>Open core</i> : Transkribus Core open source (GPL-3.0); proprietary cloud platform (READ-COOP)   |
| Environment                 | Installable locally on your own servers                                  | Access via a cloud platform (with a web-based graphical interface)                                  |
| OCR/HTR engine              | Kraken, with Ketos for model training                                    | PyLaia / Transkribus eXpert, open source; orchestration and model management on the READ-COOP cloud |
| Export formats              | PAGE-XML, ALTO (external conversion)                                     | PAGE-XML, ALTO, TXT, PDF                                                                            |
| Data management             | Fully local and under user control                                       | Data and models managed on READ-COOP servers, with controlled sharing options                       |
| Governance                  | Public research institutions (École des Chartes, Inria, EPHE, PSL, CNRS) | European cooperative with mixed participation (READ-COOP SCE)                                       |
| Alignment with Open Science | Full: transparent code, models, and workflows; total reproducibility     | Partial: open core, but closed service infrastructure and service policies                          |

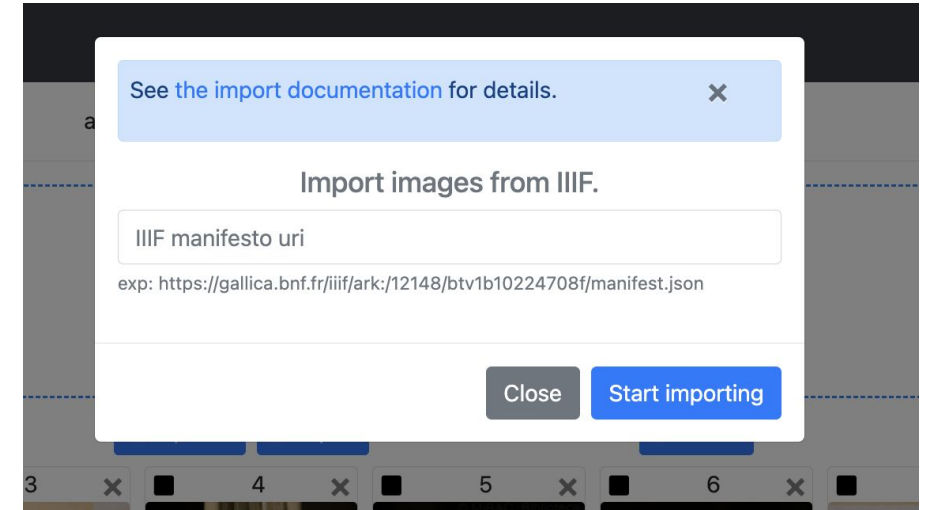
How does it work?

## 3.1 Import images

eScriptorium is able to import images from **IIIF manifests**

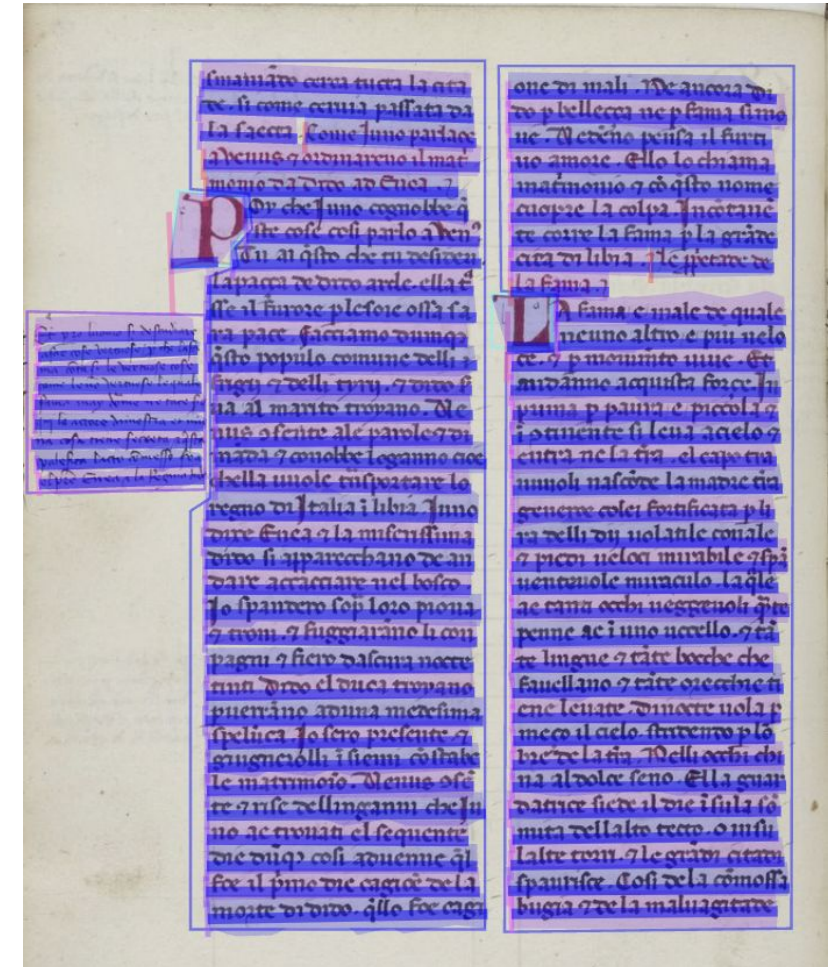
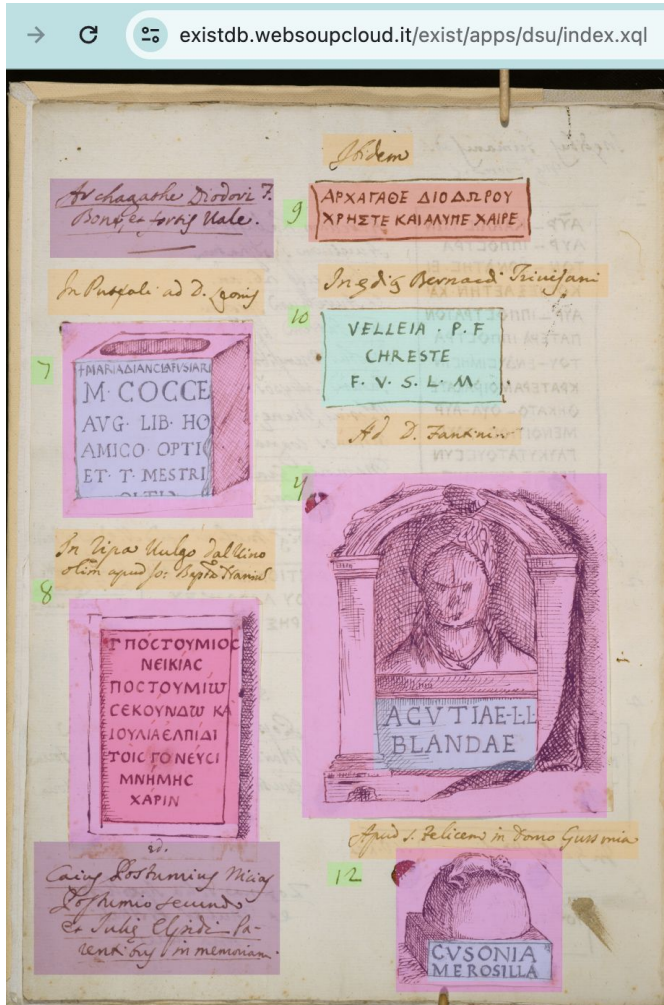


IIIF Manifest



```
{
  "@id" : "https://gallica.bnf.fr/iiif/ark:/12148/btv1b10224708f/manifest.json",
  "label" : "Bibliothèque nationale et universitaire de Strasbourg. Ms.0.033",
  "attribution" : "Bibliothèque nationale de France",
  "license" : "https://gallica.bnf.fr/html/und/conditions-dutilisation-des-contenus-de-gallica",
  "logo" : "https://gallica.bnf.fr/mbImage/logos/logo-bnf.png",
  "related" : "https://gallica.bnf.fr/ark:/12148/btv1b10224708f",
  "seeAlso" : [ "http://oai.bnf.fr/oai2/OAIHandler?verb=GetRecord&metadataPrefix=oai_dc&identifiant=oai:bnf.fr:gallica/ark:/12148/btv1b10224708f" ],
  "description" : "Manuscrits de la Bibliothèque nationale et universitaire de Strasbourg. Manuscrits latins. Socci sermones de sanctis",
  "metadata" : [ {
    "label" : "Repository",
    "value" : ""
  } ]. {
}
```

# 3.2 Zone and Line Segmentation



# 3.3 Text Recognition

1 image(s) selected. ?

Make sure that the segmentation is good before going forward because resegmenting will delete all bound transcriptions. X

Select a model

Model  
catmus-medieval-100

Close Transcribe

Imaniãdo cerca tucta la cita  
de fi come ceruia paffata da  
la faecta. Come Juno parlae  
a Venus 7 ordinareno il mat  
monio da Dido ad Enea.  
Oy che Juno cegnobbe q̃  
Pfte cofe cofi parlo a Ven.  
Tu ai q̃fto che tu defideri  
la pacça de dido arde ella t̃  
ffe il fuore p le foie offa sa  
ra pace. Facciamo dunque  
q̃fto populo comune delli i  
frigij 7 delli tyrij 7 dido fer  
ua al marito troyano. Ue  
nus gfente ale parole 7 di  
mãda 7 conobbe loganno cioe  
chella uole tafportare lo  
regno di Jtalia t̃ libia. Juno  
dive Enea e la p̃fentat̃

one di mali. Ne ancora Di  
do p belleçça ne p fama fimo  
ue. Uedẽno penfa il furti  
uo amore. Ello lo chiama  
matmonio 7 cõ q̃fto nome  
cuopre la colpa. Jncõtanẽ  
te corre la fama p la grãde  
cita di libia. Le p̃p̃etade de  
la fama.  
A fama e male de quale  
Lneuno altro e piu uelo  
ce 7 p mouim̃to uiue. Et  
andanno acquifta forçe. Jn  
prima p paura e piccola 7  
t̃gtinente fi leua acielo 7  
entra ne sa t̃ra el capo tra  
nuuoli nafcõde la madre t̃ra  
generoe colei fortificata p li  
ra delli di uelente con ale

# 3.4 Manual corrections

## Proof-reading

Line #5

grate solliatudie la  
piaga damore lũaga  
manta 7 e p̄sa di acco

piaga damore lũaga

eneide Manage keyboards 30:26 GMT+0100

+Toc

18 fchiacta deli dij la paura



CATMuS Medieval: A multilingual large-scale cross-century dataset in Latin script for handwritten text recognition and beyond  
Thibault Clérice, Ariane Pinche, Malamatenia Vlachou-Efstathiou, Alix Chagué, Jean-Baptiste Camps, Matthias Gille-Levenson, Olivier Brisville-Fertin, Franz Fischer, Michaels Gervers, Agnès Boutreux, et al.

<https://inria.hal.science/hal-04453952>

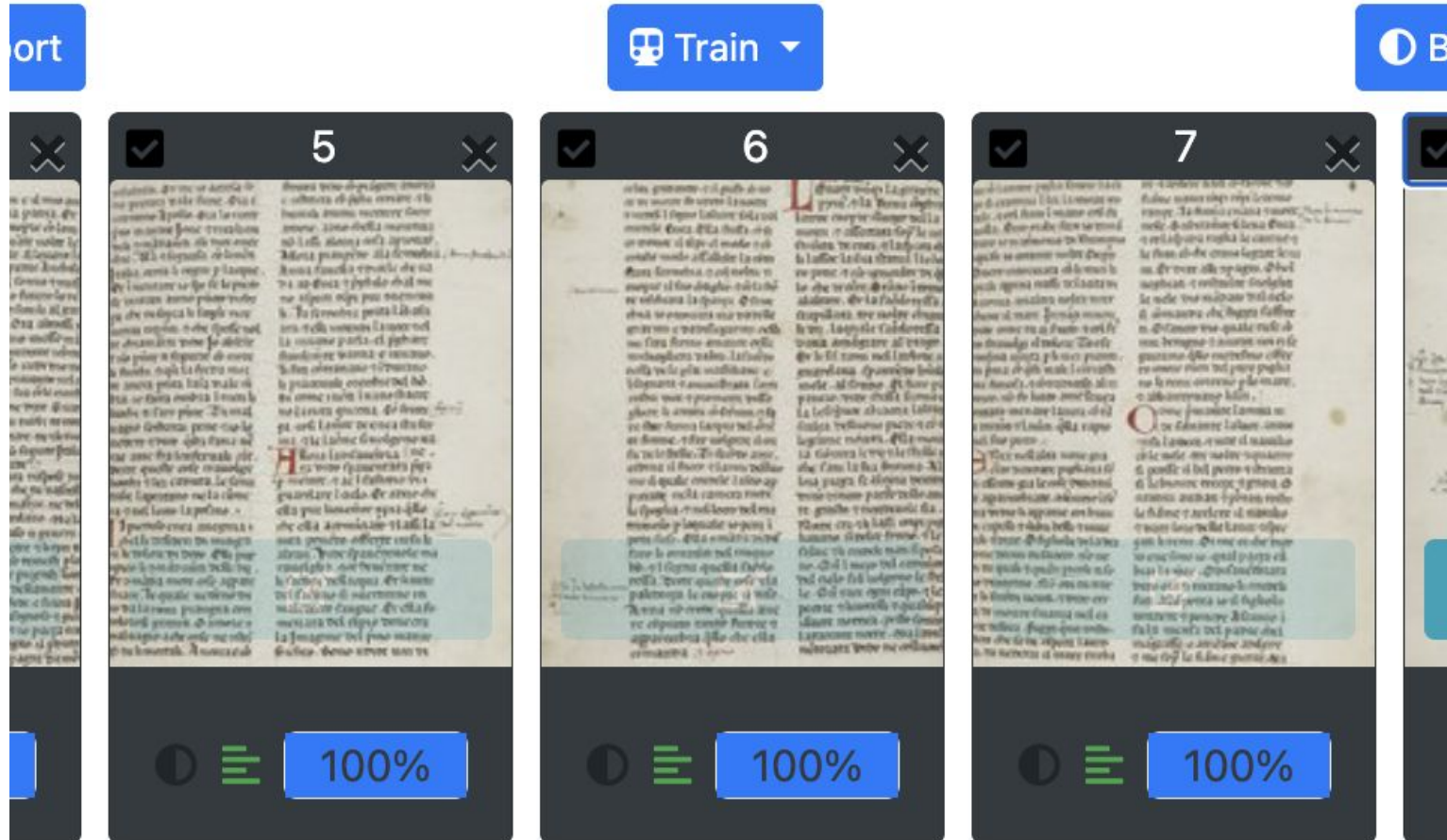
## Training

ort Train

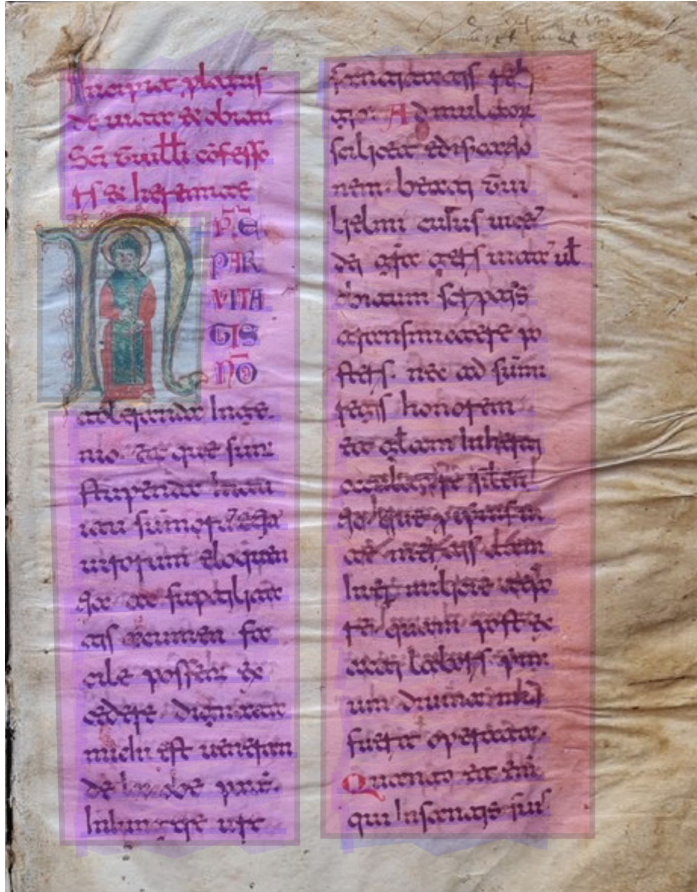
5 6 7

100% 100% 100%

# 3.5 Training from scratch



# 3.6 Fine tuning



itu sūmorū etiā

manual  
correction



nolj neglegere.

## My Models

Upload a model

|                                               | Role      | Script | Size    | Trained from | Training Status | Accuracy | Right |
|-----------------------------------------------|-----------|--------|---------|--------------|-----------------|----------|-------|
| beneventana01                                 | Recognize |        | 15.7 MB |              | ✓               | 92.8%    | Owner |
| <p>new model(fine tuning based on CATMuS)</p> |           |        |         |              |                 |          |       |

# 3.7 eScriptorium APIs

6002.cophilab-cloud.ilc.cnr.it/api/documents/4/metadata/

Django REST framework admin

Api Root / Document List / Document Instance / Document Metadata List

## Document Metadata List

OPTIONS GET

GET /api/documents/4/metadata/

HTTP 200 OK  
Allow: GET, POST, HEAD, OPTIONS  
Content-Type: application/json  
Vary: Accept

```
{
  "count": 5,
  "next": null,
  "previous": null,
  "results": [
    {
      "pk": 110,
      "key": {
        "name": "editor",
        "cidoc_id": null
      },
      "value": "Tommasi, Tatiana"
    },
    {
      "pk": 109,
      "key": {
        "name": "shelfmark",
        "cidoc_id": null
      },
      "value": "Marc. Lat. XIV, 200 (4336)"
    },
    {
      "pk": 108,
      "key": {
```

eScriptorium data and metadata can be selected and filtered via APIs

## 3.8 Export in many formats

6 image(s) selected. [?](#)

(PLACEHOLDER) [×](#)

Transcription

kraken:cremmamedievalBicerin\_1.1.0 [▾](#)

File format

Text  
 PAGE  
 ALTO

Will significantly increase the time to produce and download the export.

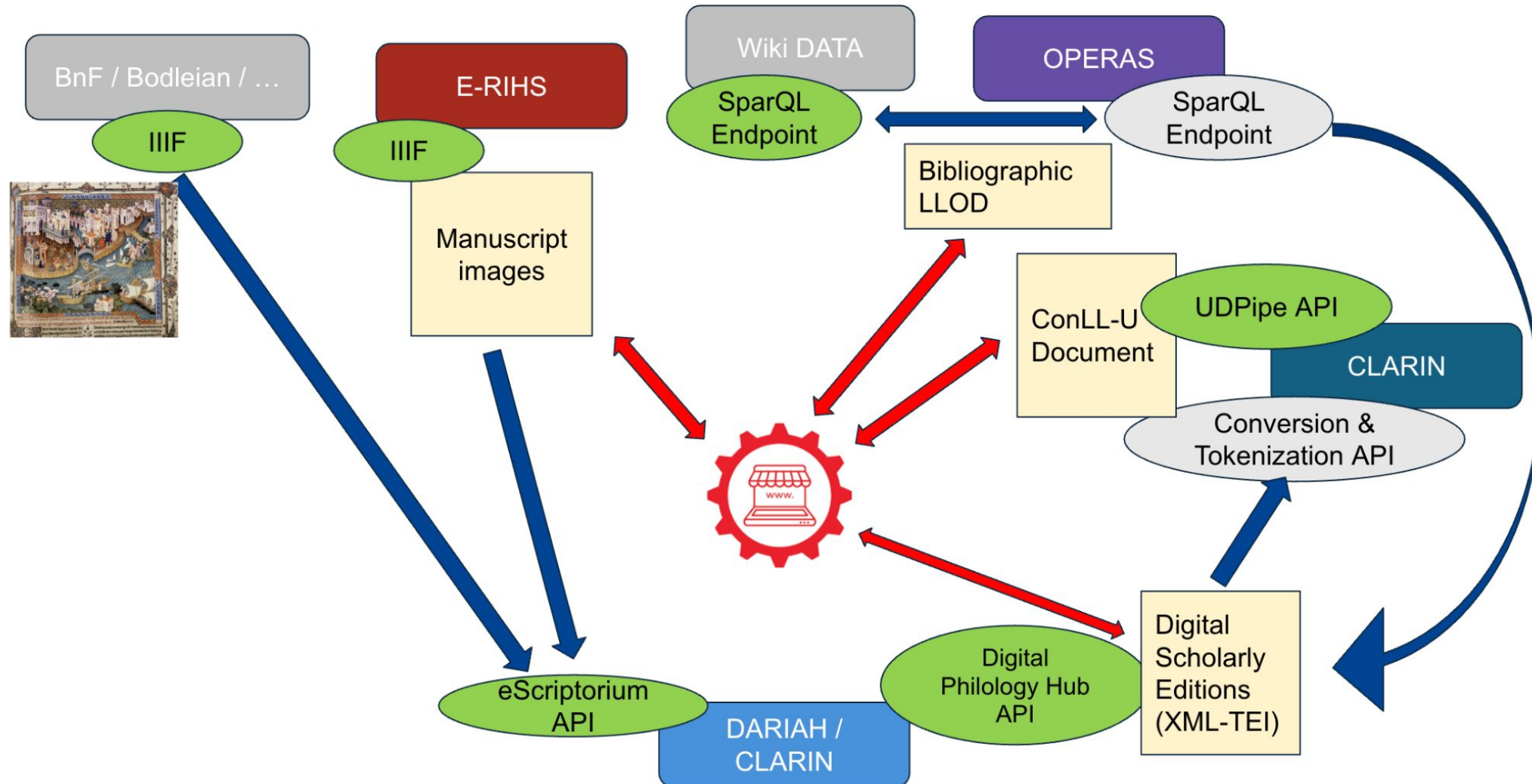
Region types

Title  Illustration  MainZone#column  
 NumberingZone:page  MarginTextZone:commentary  
 DropCapitalZone  NE\_person  NE\_place  
 (Undefined region type)  (Orphan lines)

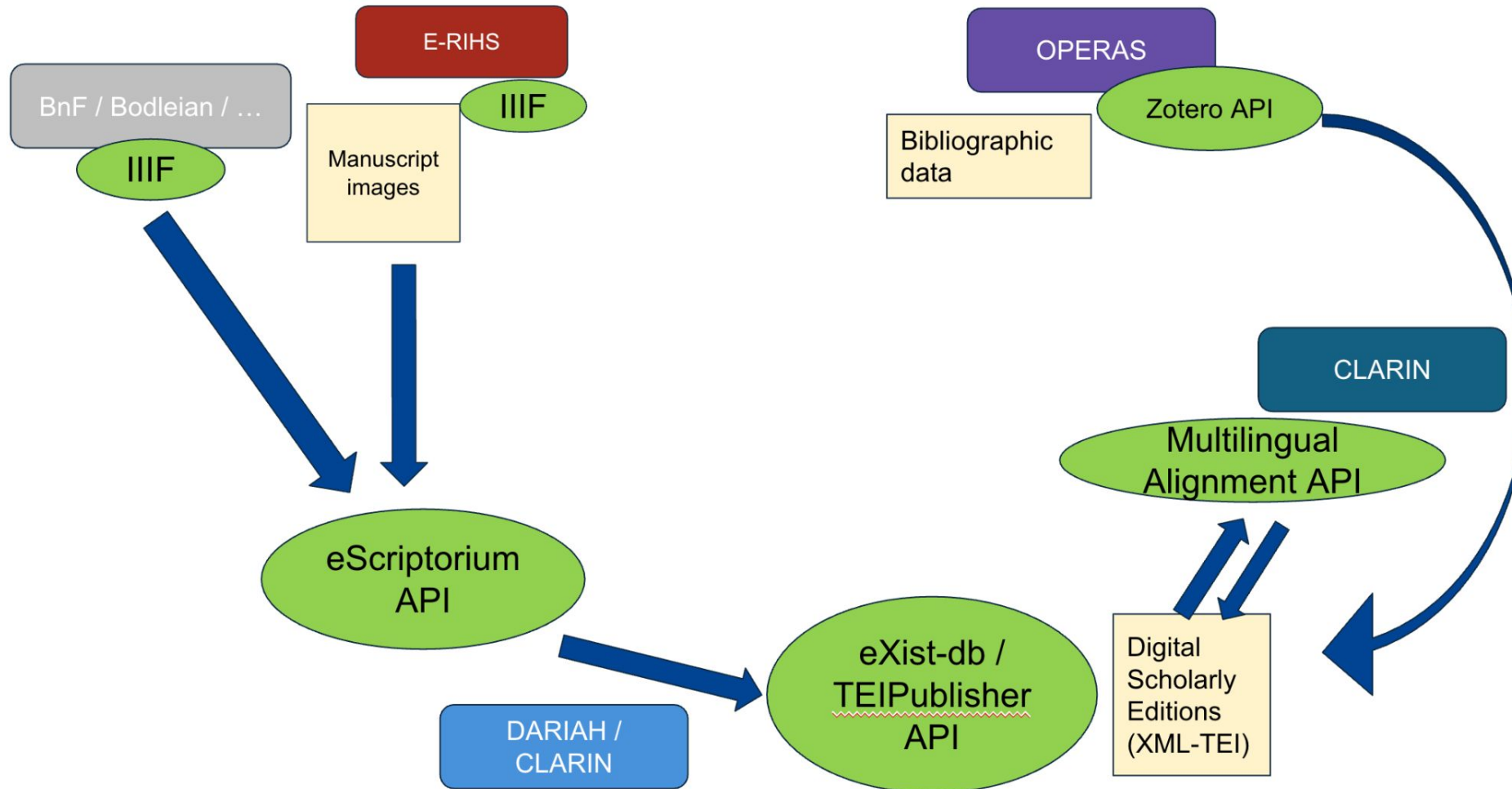
[Close](#) [Export](#)

# Scaling

# 4.1 Digitization workflow



## 4.2 Digitization in DiScEPT



# Guidelines for Segmentation

# 5.1 SegmOnto

## SegmOnto: A Controlled Vocabulary to Describe the Layout of Pages

SegmOnto offers a controlled vocabulary to describe the content of books or manuscripts pages, in order to homogenise the data required by layout analysers. This project follows a double objective:



- Mutualise data to train stronger models on various layouts.
- Design a standardised pipeline for text extraction, from page scans to structured documents

SegmOnto is thought as a generalist description scheme, covering written documents produced since the apparition of the codex, but it has been designed using mainly western and middle eastern documents.

### How to cite

Simon Gabay, Ariane Pinche, Kelly Christensen, Jean-Baptiste Camps, Nicola Carboni, *SegmOnto, A Controlled Vocabulary to Describe the Layout of Pages*, version 0.9, Genève/Lyon/Paris, 2023, <https://segmonto.github.io/>.

# 5.2 Zone Segmentation

| Zones                    | Type                                                      | Exemple                                                                              |
|--------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CustomZone               | GraphicZone:illustration<br>(or GraphicZone:illumination) |   |
| DamageZone               |                                                           |                                                                                      |
| DigitizationArtefactZone |                                                           |                                                                                      |
| DropCapitalZone          |                                                           |                                                                                      |
| GraphicZone              | GraphicZone:illustration<br>(or GraphicZone:engraving)    |  |
| MainZone                 |                                                           |                                                                                      |
| MarginTextZone           |                                                           |                                                                                      |
| MusicZone                |                                                           |                                                                                      |
| NumberingZone            |                                                           |                                                                                      |
| QuireMarksZone           |                                                           |                                                                                      |
| RunningTitleZone         |                                                           |                                                                                      |
| SealZone                 |                                                           |                                                                                      |

## 5.3 Line segmentation

### Lines

CustomLine

DefaultLine

DropCapitalLine

HeadingLine

InterlinearLine

MusicLine

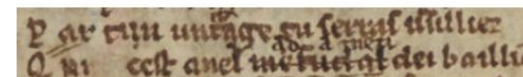
Suggested values include:

- `InterlinearLine:addition`
- `InterlinearLine:correction`
- `InterlinearLine:gloss`

Type

Exemple

`InterlinearLine:correction`



# Guidelines for Transcription

## 6.1 Types of transcription

- transcription:
  - **allographétique**
  - **graphématique**
- for HTR purposes, a graphemic transcription may be sufficient

<https://hal.science/hal-03697382>

### Guide de transcription pour les manuscrits du Xe au XVIe siècle

Ariane Pinche (1)

Show details

1 CJM - Centre Jean Mabillon

Abstract **fr**

Ce guide est le fruit d'une réflexion menée au cours des années 2021 et 2022 dans la cadre du projet CREMMALab et du séminaire de recherche « Création de modèle(s) HTR pour les documents médiévaux en ancien français et moyen français entre le Xe et le XVIe siècle ». Nos préconisations ont pour but d'accompagner la création des données d'entraînement afin d'optimiser l'apprentissage machine des modèles d'HTR. Produire des données d'entraînement demande de modéliser une représentation la matière textuelle afin de créer des données homogènes qui assureront la qualité des prédictions HTR. Ce guide ne prétend pas répondre à toutes les problématiques de transcriptions présentes dans les manuscrits médiévaux, mais nous espérons qu'il permettra aux transcripateurs de répondre aux interrogations les plus courantes et d'harmoniser les pratiques.

Domains

Literature Linguistics

Humanities and Social Sciences

Complete list of metadata

## 6.2 Allographic transcription

- It faithfully represents the actual graphic form of the signs in the document
- **Object of analysis**: allographs, i.e., the concrete variants of the same grapheme (such as long **f** and round **s**)
- **Level**: material / documentary
- **Goal**: to preserve the graphical and palaeographical features of the text
- **Examples**: **falute, crocififfione**

## 6.3 Graphemic transcription

**Object of analysis:** the writing system as a representation of language, not the ductus or letterforms

**Level:** textual / linguistic

**Goal:** to make the text readable and linguistically analyzable

**Examples:** **salute**, **crocifissione** (long **f** is converted to **s**, because at the graphemic level both represent the same grapheme)

## 6.4 Interpretive transcription

- **Object of analysis:** the text as a linguistic and cultural act to be understood and rendered in terms of its meaning, not only in its written form
- **Level:** philological / exegetical
- **Goal:** to offer a reconstruction of the most plausible meaning of the text, resolving ambiguities, expanding abbreviations based on context, and adding punctuation
- **Example:** Dom(inus)

Sharing


## 7.1 Ground truth sharing

The ground truth is provided with metadata via HTR-United



HTR-United is a catalog that lists highly documented training datasets used for automatic transcription or segmentation models. HTR-United standardizes dataset descriptions using a schema, offers guidelines for organizing data repositories, and provides tools for quality control and continuous documentation. It's an open and transparent ecosystem hosted on GitHub, designed for easy maintenance. HTR-United was created to help projects quickly access diverse ground truth data for training models on smaller collections.

<https://htr-United.github.io/>

 Browse the catalog

 Record a dataset

# 7.2 Model sharing

<https://zenodo.org/records/15030337>

zenodo

Q
Communities
My dashboard
Log in
Sign up

OCR/HTR model repository

Published March 15, 2025 | Version 1.6.0

Model
Open

## CATMuS Medieval

Pinche, Ariane (Supervisor)<sup>1</sup> ; Clérice, Thibault (Project manager)<sup>2</sup> ;  
 Vlachou-Efstathiou, Malamatenia (Data collector)<sup>3</sup> ; Chagué, Alix (Project manager)<sup>2</sup> ;  
 Camps, Jean-Baptiste (Supervisor)<sup>4</sup> ; Gille Levenson, Matthias (Supervisor)<sup>1.5</sup> ;  
 Brisville-Fertin, Olivier (Supervisor)<sup>1.6</sup> ; Boschetti, Federico (Supervisor)<sup>7</sup> ;  
 Fischer, Franz (Supervisor)<sup>8</sup> ; Gervers, Michael (Supervisor)<sup>9</sup> ;  
 Boutreux, Agnès (Data collector)<sup>9</sup> ; Manton, Avery (Supervisor)<sup>9</sup> ;  
 Gabay, Simon (Supervisor)<sup>10</sup> ; Ferrante, Genaro (Project member)<sup>11</sup>

**Contributors**

**Data collectors:**  
 Bordier, Julie ; Glaise, Anthony ; Alba, Rachele<sup>1</sup> ; Rubin, Giorgia<sup>1</sup> ; White, Nick<sup>2</sup> ;  
 Karaisl, Antonia<sup>2</sup> ; Leroy, Noé<sup>3</sup> ; Maulu, Marco<sup>4</sup> ; Biay, Sébastien ; Cappe, Zoé<sup>5</sup> ;  
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 Meylan, Aminoel<sup>11</sup> ; Ventura, Simone<sup>12</sup> ; Dugaz, Lucien<sup>5</sup>

**Researchers:**  
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Show affiliations
Show affiliations

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4K

DOWNLOADS

▶ Show more details

**Versions**

|                         |              |
|-------------------------|--------------|
| Version 1.6.0           | Mar 15, 2025 |
| 10.5281/zenodo.15030337 |              |
| Version 1.5.0           | Jul 1, 2024  |
| 10.5281/zenodo.12743230 |              |
| Version 1.0.0           | Nov 2, 2023  |
| 10.5281/zenodo.10066219 |              |

[View all 3 versions](#)

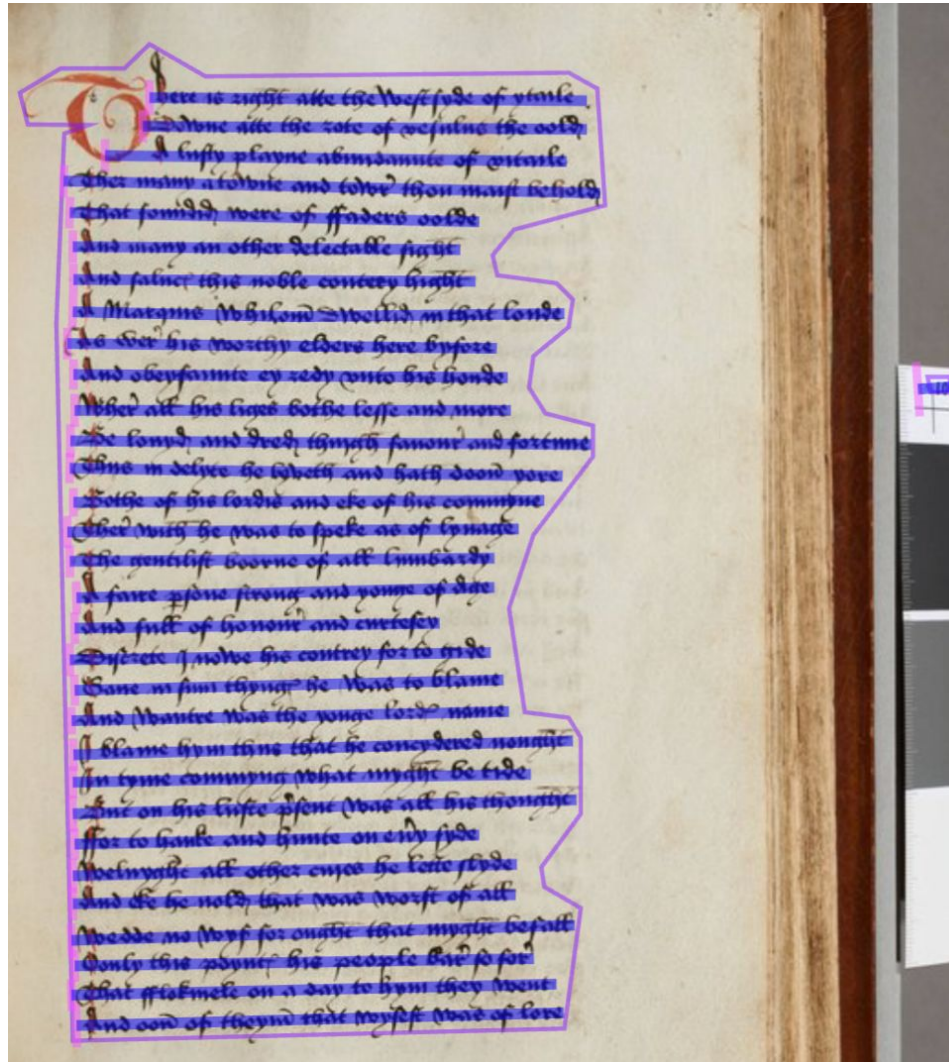
**Cite all versions?** You can cite all versions by using the DOI [10.5281/zenodo.10066218](https://doi.org/10.5281/zenodo.10066218). This DOI represents all versions, and will always resolve to the latest one. [Read more.](#)

**External resources**

# Projects

# 8.1 Canterbury tales

courtesy of  
Peter  
Robinson



here is right alte the west syde of ytaile  
Downe acte the rote of uesulus the oold  
A lusty playne abimdamnite of oitaile  
Ther many a towone aud towor<sup>n</sup> thon maist behold  
That foundid were of ffaders oolde  
Aud many an other delectable sight  
Aud saluc<sup>f</sup> this noble conteey hight  
A marquis whilom<sup>r</sup> dwrellid in that londe  
As wer his morthy elders here byfore  
And obeyfaunte ey redy pnto his honde  
Rher alt his liges bothe lesse aud more  
De louyd aud dred thuih fauour aud fortune  
Thus in delyte he byueth aud hath doof<sup>r</sup> yore  
Bothe of his lordis aud ele of his commine  
Ther<sup>r</sup> with<sup>r</sup> he was to speke as of lynage  
The gentilist boorne os all lumbardy  
A faire psone strong and yonge of dige  
Aud full of honou<sup>e</sup> aud curtesey  
Discrete i noure his contrey for to gide  
Bane in sum thyng he was to blame  
And uantre was che yonge lord<sup>f</sup> name  
I blame hyin thus that he concydered nonght  
Iu tyme conuuyng rohat miyght be tide  
But on his luste psent was all his thought  
ffor to haule aud hunte on eny syde  
Weluyghe all other cuies he lette slyde  
And eke he nold<sup>r</sup> that was worst of all  
Wedde no uy<sup>f</sup> for onght that myght befall  
Couly this pdynt his people bat<sup>r</sup> so for<sup>r</sup>  
That ffolmele on a day to hym they uent  
And oon of theym<sup>r</sup> that mysest uras of lore

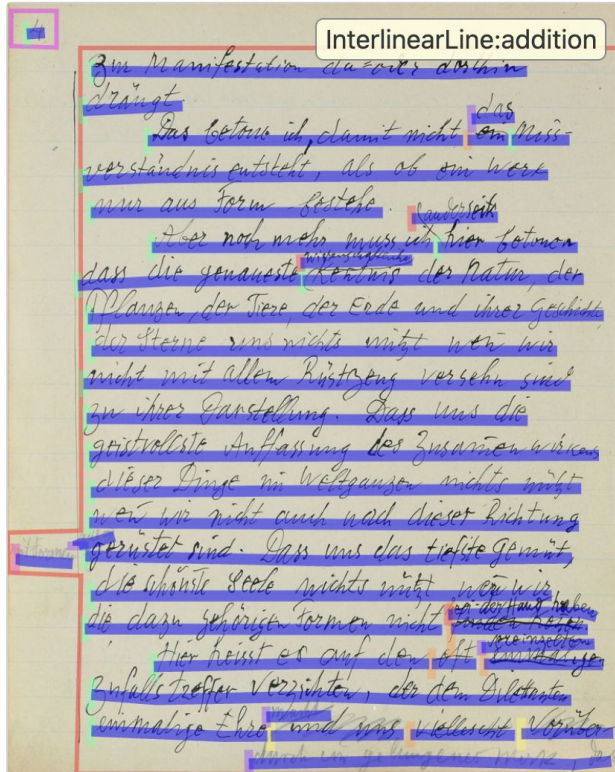
# 8.2 Paul Klee's notebook

courtesy of H.M.  
Hoenneger

eScriptorium Home Contact

← Description Ontology Images Edit Models Reports Klee  
Element 7 - 83047.jpg - (1936x2436) - 4.3 MB

InterlinearLine:addition



4|

zur Panifestation da- oder dorthin|  
drängt. |  
Das betone ich, damit nicht <sup>das</sup> ein Miss-|  
verständnis entsteht, als ob ein Werk|  
nur aus Form bestehe. | andererseits  
Aber mehr noch muss ich hier betonen|  
dass die genaueste <sup>wissenschaftliche</sup> Kenntnis der Natur, der|  
Pflanzen, der Tiere, der Erde und ihrer Geschichte|  
der Sterne uns nichts nützt wenn wir|  
nicht mit allem Rüstzeug versehen sind|  
zu ihrer Darstellung. Dass uns die|  
geistvollste Auffassung des Zusammenwirkens|  
dieser Dinge im Weltganzen nichts nützt|  
wenn wir nicht auch nach dieser Richtung|  
ausgerüstet sind. Dass uns das tiefste Gemüt, |  
die schönste Seele nichts nützt wenn wir |  
die dazu gehörigen Formen nicht <sup>finden können</sup> |  
Hier heisst es auf den <sup>vereinzelt</sup> oft einmaligen |  
Zufallstreffer verzichten, der dem Dilettanten |  
einmalige Ehre <sup>macht</sup> und uns vielleicht Vorüber|  
durch ein gelungenes Werk, das |

# 8.3 Panoplia Panopliarum

courtesy of  
Alessandra  
Bucossi

Line #4

ὄμοφροσύνη, τὴν ἑαυτοῦ οἰκοδομήσεις ἐκκλησίαν· καὶ δια

by admin (eScriptorium) on Fri Mar 28 2025 16:24:10 GMT+0100

+Toggle history

5 τῆς σῆς βαθείας φρενός, τὸ τοῦ Θεοῦ  
μεγαλυνθήσεται ὄνομα· ἴν' εἶ  
6 παληθεύσῃ τῷ κράτει τῷ σῷ, τὸ τοῦ  
προφήτου Δαυὶδ· προσε  
7 λεύσεται ἄνθρωπος καὶ καρδία βαθεῖα, καὶ  
ὑψωθήσεται ὁ Θεός·  
8 καὶ οὕτως πεσοῦνται ὑπὸ τοὺς ποδὰς σου  
βασιλεῖς, καὶ λείξου  
9 σι τὸν χοῦν τῶν ἰχνῶν σου· καὶ γνώσεται  
πᾶς, ὅτι Κύριος μετὰ σοῦ·  
10 πρό γὰρ τοῦ ἐξελεθῆναι σε ἐκ μητρός,  
ἠγίακέ σε· καὶ τοὺς λόγους  
11 αὐτοῦ δέδωκεν εἰς τὸ στόμα σου· καὶ  
κατέστησέ σε σήμερον ἐπὶ εἶ

# 8.4 Anthropology of Ancient World

## 8.4 Anthropology of Ancient World

courtesy of  
 Andrea  
 Taddei

**thème de l'enfant**  
 Iphigenie sacrifiée - la hase \*pleine\*  
 thème des enfantmts successifs et irrémédiables; le  
 crime enfantant le crime; et chaque generation  
 faisant expier les fautes des précédentes <sup>Ruine, fille des audaces 376</sup>  
 385 peitho = enfant d'até proboulos, non d'Aphrodite  
 cf. La prospérité ne meurt p sterile: enfante le malheur (  
 753); hubris enfante \*nouvelle\* hubris (765), Até  
 semblable à ceux qui l'ont engendré (771) Erinye (749)  
 Helene = Peitho = Eros = Erinye = Até = Menis  
 Elle est comme \*inis\* jeune lion, un nouveu-ne (724)  
 qui se revele prétre d'Até, nourri, élevé ds la maison  
 et renversement final  
**autre thème du pais** avec les Nuktos paides apades  
 Le pais, enfant, nepios qui poursuit ds chimères,  
 crédule et vain, jouet d ses desirs inconsistants, et  
 enfante la ruine. Tel est Paris --> courant après l'  
 oiseau ailé, tel Menelas courant sur la trace evanouie  
 d'Helene, et \*dt\* la vision fuit sur les chemins allés du  
 sommeils. la trace evanouie (technos aphanton) rappelle  
 eis aphaeian de 384, la disparition \*de\* qui a frappé du pied  
 l'autel de Dikè (Paris, ms aussi les autres)  
 Cette ligne des Hs- enfants, déjà \*\*\* d celle  
 de la faute ou de la richesse trop haute enfantant ss fin le  
 malheur, d'Helene, enfant nourrie ds le palais dt elle  
 va provoquer la ruine, est liee aussi à la credulité enfantine  
 des Fs, comme Clytemnestre. L'enfant (Paris, Menelas)  
 court après l'apparence que Peitho ou Pothos lui imposent  
 comme une réalité à retenir, ms qui \*jamais\* s'échappe  
 L'irréalité de ce qui vale, de ce qui parait, s'exprime  
 ds l'attitude sceptique du choeur à l'égard d propos de  
 Clytemnestre. L'ironie est ici à son \*compte\*. Les vieill  
 lards du choeur attribuent à la reine, cette femme mas  
 culine, cette course après l'oiseau ailé, qui est le propre  
 des 2 Hs-d'Helene, les Hs-Fs, Paris et Menelas  
 cf. la 1e apparition de Clytemnestre