



## CophiEditor

A collaborative web platform for the creation of scholarly digital editions

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*To present the preliminary work on **CophiEditor**: a **collaborative** computational environment for the creation of **digital scholarly editions**.*

- ERC Advanced Grant 885222-GreekSchools
- Towards a new pioneering **critical edition of Philodemus' Arrangement of the Philosophers**
  - read the text hidden in the papyri belonging to Philodemus' Syntaxis with non invasive techniques
  - combine state-of-the-art methods with new, sounder philological approaches to **produce an improved critical text**
  - produce an open-access **electronic edition** through a pioneering open-source **scholarly web platform**, engaging the scientific community in an **on-going and on-line collaborative review** of our critical edition

## How to approach digital text

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# What kind of digital text?

- Word processor (e.g. Microsoft Word)
- Structured text (e.g. XML)
- GUI-centric editor
- Domain Specific Language (DSL)

## Pros

- No technical training needed
- Text compactness
- Habitual working paradigm

## Cons

- Data incompleteness
- Limited support to data elaboration
- Page layout tied to paper paradigm

## Pros

- Data completeness
- Strong support to data elaboration

## Cons

- Technical training needed
- Unusual working paradigm
- The text is often “polluted” by its description
- Underspecified semantic information

## Pros

- No technical training needed
- Strong support to data elaboration

## Cons

- Strong constraints of the input forms
- Unusual working paradigm



# Domain Specific Language

## Pros

- Habitual working paradigm
- Text compactness
- Data completeness

## Cons

- DSL definition needs preliminary work
- Concepts must be specified in an unambiguous manner

# Approaches comparison

	Word Processor	Structured Text	GUI-centric	DSL
Familiarity	✓			✓
Transparency	✓		✓	✓
Completeness		✓	✓	✓
Compactness	✓			✓
Consistency			✓	✓
Actionability		✓	✓	✓

# An example with DSLs

Col. 64 *desunt versus fere 19*  
 .....(.)]. [.....(.)  
 .]. η[.]. ιτα τῶν κατὰ  
 δ)όξαν ἀληθῆ φαίνε-  
 τ' εἶναι προσῆκον ἀντι-  
 5 θεῖναι τὰ κατὰ ματαίαν δόξαν,  
 7 τὰ γε μὴ τὴν ἀναφ[ο-  
 ρὰν ἐπὶ τὰς ἐναφ[γεί-  
 ας λαμβάνοντα, καὶ [μη-  
 10 δὲ τούτων τελέως ἐπι-  
 κ{α}ρῶξεῖν τοὺς ῥήτορα[c.  
 ἄλλὰ μὴν ἐν τῷ κατ[α-  
 >κευάζειν τὸ προκ[εῖ]μ[ε-  
 νον πρὸς οὐθὲν ἔοικεν  
 15 ἀπὸ τῆς μουσικῆς ἐ-  
 πάγειν· οὐ γὰρ ἦν φαγ[ε-  
 ρώτερα τὰ κατ' αὐτὰ λε[ί-  
 πων, ὑπὲρ ὧν ἐποίη-  
 το]ῦς λόγου· ἀλλὰ ταῦτα  
 20 μὲ]ν εὐπαρακολούθη-  
 τα π[α]ρὰ τὴν ὄντα πέφ[υκε,  
 πρὸς] δ[ε] βίον ἐκε[.]...[.  
 23 .....ε[.]. [.....(.)

(c. 20 linee e 2-3 parole mancanti) alle cose secondo opinione vera sembra essere opportuno paragonare ciò che è secondo vana opinione, ossia ciò che non ha relazione con le evidenze, e (sembra) che i retori non padroneggino assolutamente nemmeno queste cose. Cionondimeno, nel trattare la materia, invano sembra addurre [analogie prese in prestito] dall'arte musicale; le cose, infatti, non sarebbero state più chiare lasciando così come sono (?) quelle intorno alle quali faceva i [suoi] ragionamenti; ma, [da una parte], queste cose [sono per natura] facilmente comprensibili a tutti, [dall'altra, rispetto] alla vita (c. 1-2 parole e 1 linea mancanti)

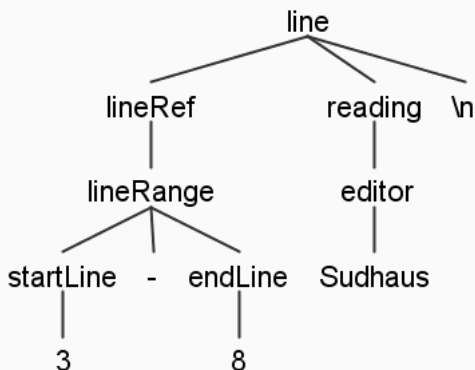
Col. 64 3-8 Sudhaus 6 [ὑπόκωφον ἦν οὐτ' η] del. librarius 7 τὰ γε Fiorillo: τὰ γε Armstrong 9-10 [μη]δέ Sudhaus: [οὐ]δέ Blank 10-11 ἐ[πι]κ{α}ρῶξεῖν \*: ἐ[αῖ] | κάπτειν Henry: ἐ[αῖ] | κρατεῖν Blank, cetera Cirillo 12-16 Cirillo 17-18 λε[ί]πων \*: λε[ί]πων Sudhaus 18 ἐποίη \*: ἐποιε[ί]τ' Sudhaus 19 Cirillo<sup>Cp</sup> 20 Sudhaus 21 πέφ[υκε] Sudhaus: πέφ[υ]κε Janko, cetera Sudhaus 23 πρὸς] δ[ε] \*: cetera Sudhaus

## An example with DSLs (2)

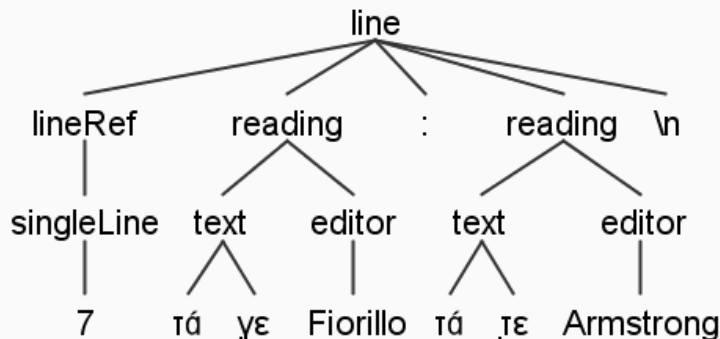
Col. 64 3-8 Sudhaus 6 [[ύπόκωφον ἦν οὐτ' η]] del. librarius 7 τά γε Fiorillo: τά τε Armstrong 9-10  
[μη]|δέ Sudhaus: [οὐ]|δέ Blank 10-11 ἐ[πι]|κ{α}ρῶτεϊν \*: ἐ[ᾱι] | κάπτειν Henry: ἐ[ᾱι] | κρατεῖν Blank, cete-  
ra Cirillo 12-16 Cirillo 17-18 λε[ί]|πων \*: λέ|[γ]ων Sudhaus 18 ἐποίει \*: ἐποιε[ί]τ' Sudhaus) 19  
Cirillo<sup>Cpc</sup> 20 Sudhaus 21 πέφ[υκε Sudhaus: πέφ[ηνε Janko, cetera Sudhaus 23 πρὸ]ς δ[έ] \*, cetera  
Sudhaus

```
1 Col. 64
2 3-8 Sudhaus
3 6 [[ύπόκωφον ἦν οὐτ' η]] del. librarius
4 7 τά γε Fiorillo: τά τε Armstrong
5 9-10 [μη]|δέ Sudhaus: [οὐ]|δέ Blank
6 10-11 ἐ[πι]|κ{α}ρῶτεϊν *: ἐ[ᾱι] | κάπτειν Henry: ἐ[ᾱι] | κρατεῖν Blank, cetera Cirillo
7 12-16 Cirillo
8 17-18 λε[ί]|πων *: λέ|[γ]ων Sudhaus
9 18 ἐποίει *: ἐποιε[ί]τ' Sudhaus)
10 19 Cirillo_Cpc
11 20 Sudhaus
12 21 πέφ[υκε Sudhaus: πέφ[ηνε Janko, cetera Sudhaus
13 23 πρὸ]ς δ[έ] *, cetera Sudhaus
```

### 3-8 Sudhaus

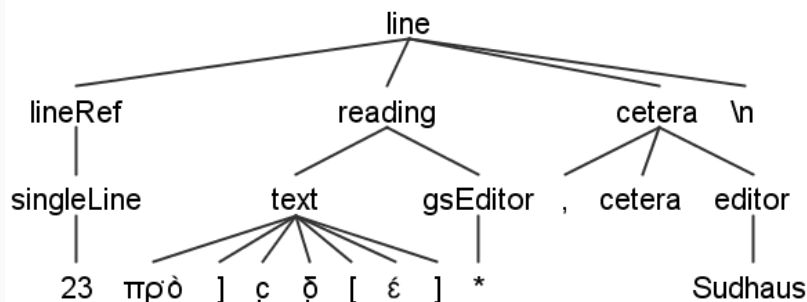


7 τά γε Fiorillo: τά τε Armstrong



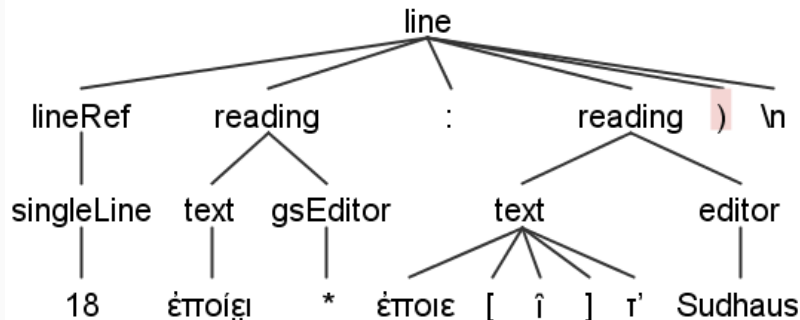
## An example with DSLs (5)

23 πρὸ]ϙ δ[έ] \*, cetera Sudhaus



## An example with DSLs (5)

18 ἐποίει \*: ἐποιε[ῖ]τ' Sudhaus)





## Studying the scholarly text

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# Desirable features

- **Focus on the text** via DSL (keeping the interface minimal)
- Centralised **access** to sources
- Data **elaboration** support
- **Simplified** text editing
- **Citability** (Canonical Text Services)
- Statistics
- Multiple exporting file formats (e.g. DOCX for the publisher, XML/TEI for interchange and preservation)

Access to the sources becomes **unified** and **integrated** in the platform to ease to be used as references:

- Neapolitan apographs
- Oxonian apographs
- Transcriptions of the 'interpreti'
- Hyperspectral images
- TeraHertz images
- Copper engravings for the Herculansium Voluminum quae supersunt
- Print proofs for the Herculansium Voluminum quae supersunt
- ...



Fonti ▼

Trascrizione Diplomatica

α [αδν] [αδν] [αδν] α δ >= τ

desunt versus fere 19

1 .....(.)] [...(.)

2 ..]η[.]ι|τατ|ωνκατε

3 ..]ξαναληθησ[α]ινε

4 τειναιπροσηκονα|ν|τι

5 ...ιναι|τακατα|ματριαι|ν|'δα.α.

6 [υποκωφορηνου|τ|η]

7 τα.εμητηνασ[.

8 ρ[α]νεπιτασεν[.]`α'|η[.]...)

9 .σλαμ|βανον|τα|α[.]...)

10 βετουωντελεως[.

11 |α...ειντουσρητορ[.

>=

12 ραλλαμηνεντωικα[.

13 .κευαζειντοη|ρο|κ[.]...)

14 νονπρο.ουθ[εν|σοι.εν

15 .ποτησμουσικης[ε]

16 παγεινου.αρηνησ[.

17 .ωτερατα|κ|σταυτ..λε[[]

18 .ωνυπερω.νεροι..

19 ..]υ.σλ.α..[σα]λλατ[αυ.τα.]

20 ..(.)]ευταρκολο.θη

21 ..[.]ξινονταπε[.]...)

22 ...[.]βιονεκε[.]...)

23 .....ε[.]...[.....(.)

Annotation

Annotation

17

- **Error prevention** and **correction** (e.g. when a reading is accepted in the literary transcription and, as a consequence, a change to the diplomatic transcription is required)
- **Consistency** check of the editorial choices
- **Support** for scholars to the evaluation of their conjectures by **context sensitive** lexical, syntactic, and semantic **suggestions**
- **Orthographic variants** and **canonical form** (count, density and distribution) management
- **Named entities** management

- Search for **philological phenomena**, for example:
  - Word followed by gap
  - Conjecture
  - Conjecture in context
  - Readings
  - Multiple conjectures
- **Full-text** search
  - Exact match
  - Proximity
  - Regexp
  - Exact sentence
- **Multi-context** search on:
  - Edited text
  - Comments
  - Metadata
  - Other textual sources

# Textual editing workflow management

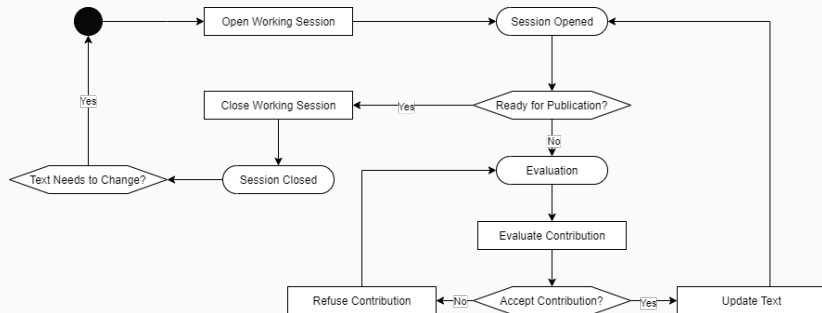
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## Project progress at a glance


- The **state of advancement** of the project will be shown succinctly
- It will be possible to **get back to the previous work**
- A well established **validation process** for the proposal of readings will be implemented
- Users will be assigned specific **roles** in order to separate responsibilities



# Validation process of proposals




# Flexible working area

 **GreekSchools** > Col64

- Col 64
  - Trascrizione diplomatica
  - Apparato paleografico
  - Trascrizione Letteraria
  - Apparato critico
  - Traduzione

Diagnostica



Trascrizione Diplomatica

```

1 ----- {} {} {} {}
2 {} {} {} {} {} {} {} {}
3 {} {} {} {} {} {} {} {}
4 {} {} {} {} {} {} {} {}
5 ... {} {} {} {} {} {} {} {}
6 {} {} {} {} {} {} {} {}
7 {} {} {} {} {} {} {} {}
8 {} {} {} {} {} {} {} {}
9 {} {} {} {} {} {} {} {}
10 {} {} {} {} {} {} {} {}
11 {} {} {} {} {} {} {} {}

12 {} {} {} {} {} {} {} {}
13 {} {} {} {} {} {} {} {}
14 {} {} {} {} {} {} {} {}
15 {} {} {} {} {} {} {} {}
16 {} {} {} {} {} {} {} {}
17 {} {} {} {} {} {} {} {}
18 {} {} {} {} {} {} {} {}
19 {} {} {} {} {} {} {} {}
20 {} {} {} {} {} {} {} {}
21 {} {} {} {} {} {} {} {}
22 {} {} {} {} {} {} {} {}
23 {} {} {} {} {} {} {} {}
            
```

Apparato paleografico

```

1 {} {} {} {} {} {} {} {}
2 {} {} {} {} {} {} {} {}
3 {} {} {} {} {} {} {} {}
            
```

Trascrizione Letteraria

```

1 ----- {} {} {} {}
2 {} {} {} {} {} {} {} {}
3 {} {} {} {} {} {} {} {}
4 {} {} {} {} {} {} {} {}
5 ... {} {} {} {} {} {} {} {}
6 {} {} {} {} {} {} {} {}
7 {} {} {} {} {} {} {} {}
8 {} {} {} {} {} {} {} {}
9 {} {} {} {} {} {} {} {}
10 {} {} {} {} {} {} {} {}
11 {} {} {} {} {} {} {} {}

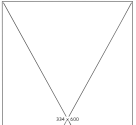
12 {} {} {} {} {} {} {} {}
13 {} {} {} {} {} {} {} {}
14 {} {} {} {} {} {} {} {}
15 {} {} {} {} {} {} {} {}
16 {} {} {} {} {} {} {} {}
17 {} {} {} {} {} {} {} {}
18 {} {} {} {} {} {} {} {}
19 {} {} {} {} {} {} {} {}
20 {} {} {} {} {} {} {} {}
21 {} {} {} {} {} {} {} {}
22 {} {} {} {} {} {} {} {}
23 {} {} {} {} {} {} {} {}
            
```

Apparato paleografico

```

1 {} {} {} {} {} {} {} {}
2 {} {} {} {} {} {} {} {}
3 {} {} {} {} {} {} {} {}
            
```

Diagnostica



## Flexible working area (2)



[GreekSchools](#) > [Col64](#) > Trascrizione Diplomatica

Trascrizione diplomatica  
Apparto paleografico

[illegible]

# Collaborative editing of the text

- Text will be edited in a **full fledged** collaborative environment, this will allow **concurrent changes** of texts and apparatuses
- **History of changes** will allow to read or go back to a previous state of the text, and to assess the responsibility for a change in the text
- **Comments** will be allowed everywhere in the text, at any level of granularity
- Comments will be also used as **discussion threads**

The platform will conform to the third objective of the GreekSchools project allowing for **on-going and on-line collaborative review of the critical edition.**

“produce an open-access electronic edition through a pioneering open-source scholarly web platform, engaging the scientific community in an on-going and on-line collaborative review of our critical edition”

## State of the art

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Why should we develop a **new platform** if there is already Papyri.info?

- Text editor
- Editorial process
- Data persistence
- Search engine
- Access/changes tracking



# Differences with Papyri.info

- Papyri.info lacks **data elaboration** capabilities
  - readings proposal
  - autocompletion on proposal acceptance
  - ...
- fully fledged **collaborative editing**
- editing is not bound to Leiden+ only
- editing includes the apparatuses (with the DSL)
- primary sources **facsimiles and images are integrated** into the platform
- tool to tune contrast/brightness of the images
- better **usability**

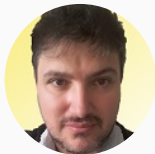
## Team

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# Team



Simone  
Zenzaro



Federico  
Boschetti



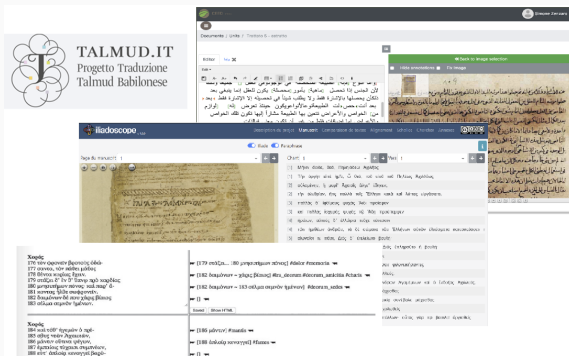
Angelo Mario  
Del Grosso



Alessandro  
Enea

# Past projects

- Clavius Web
- Talmud Project
- Omega Project
- Greek into Arabic
- Euporia
- CEED
- Iliadoscope
- ...



We propose CophiEditor as a tool able to:

- Exceed the state of the art in the context of papyrological digital editions
- Keep the work paradigm familiar
- Make the edition creation process more effective
- Extend the research possibilities of scholars