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# Multi-Layered Research on Ancient Inscriptions

*The Eulalios  
inscription example*

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Spyros Armostis



**Sorin Hermon**

Elena Christophorou

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# Research Aims

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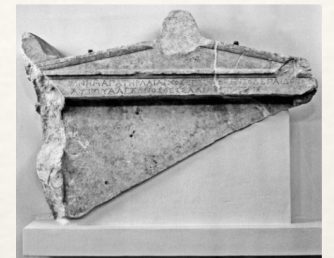
- ❖ Reveal the multi-layered knowledge embedded in ancient inscriptions.
- ❖ Develop a multi-disciplinary research environment based on digital libraries.
- ❖ Share knowledge through digital networks.



# Description of the case-study

- ❖ Identifier - The Eulalios epigram (E40)
- ❖ Period - 2<sup>nd</sup> to 3<sup>rd</sup> centuries C.E. (*uncertain*)
- ❖ Discovery locality - Lefkosia, Cyprus
- ❖ Archaeological Context - unknown
- ❖ Actual locality - unknown (*probably the archaeological museum in Istanbul*)
- ❖ Type of inscription - cenotaph
- ❖ Inscription career: sarcophagus
- ❖ Position of inscription: engraving on the upper part of a marble *larnax* (ca. 2 m. length, 1 m. deep, 10 cm thick and ca. 2 tons in weight).
- ❖ History of epigraphic research - mostly secondary sources (first publications in mid. XIX century).
- ❖ Description of inscription - the sarcophagus' cover depicts the image of the dead Eulalios, together with an epigram of eight lines dedicated to him. The first two lines of the text have larger letters than the other six, and a horizontal gap exists between the first two lines and the remainder of the text. The epigram is engraved within a frame of 68 × 4 cm, with two triangles near the vertical sides of the frame.
- ❖ note: xxxxx = metadata; yyyyyy = annotation on metadata

Κι ἂν προχωρεῖς τροχάδην, φίλε διαβάτη, λίγο στάσου.  
Μὲ ἄρπαξε χορὸς τῶν ἀθανάτων· τὸ σῶμα μου καλύπτει  
ἡ γῆ, ὥς γέρας παίρνοντας ὅ,τι παλιὰ ἔχει δώσει·  
γιατὶ ἡ ψυχὴ μου στὸν αἰθέρα καὶ στοῦ Δία τὶς αὐλές,  
μὰ τὰ ὅσα στὸν Ἄδη ἄτρεπτος ἐπῆρε νόμος.  
Τοῦτο μεγάλο δῶρο ἀπ' τοὺς Οὐράνιους τοὺς ἴδιους κέρδισα  
ὁ Εὐλάλιος, σὲ γάμου ἡλικία μοναδικὸς μέσ' στοὺς νεκρούς.




# Layer I - epigraphic study: E40 in AKG

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ΨΗΦΙΑΚΗ ΑΡΧΑΙΑ ΚΥΠΡΙΑΚΗ ΓΡΑΜΜΑΤΕΙΑ

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Image-Search 

Search

Ancient Greek Search

Search

E40

T= Testimonium F= Fragmentum E= Επιγραφή / Inscription

<sup>1</sup>Kān τροχάδην βαίνης<sup>2</sup>, φίλε ὦ παροδεῖτα<sup>3</sup>, βαιὼν ἐπίσχε<sup>4</sup> ↓.  
ἤρῃσεν ἀθανάτων με χορός<sup>5</sup> ↓, τὸ δὲ σῶμα καλύπτει  
<sup>6</sup> γαῖα ↓ λαβοῦσα γέρας τοῦθ' ὃ δέδωκε πάλαι<sup>7</sup> ↓.  
ἢ<sup>8</sup> γὰρ μοι ψυχὴ μὲν ἐς αἰθέρα καὶ Διὸς αὐλὰς ↓, ↓,  
ὅστέα δ' εἰς Αἴδην ↓ ἄτροπος εἶλε νόμος ↓.  
τοῦτ' ἔλαχον<sup>9</sup> μέγα δῶρον ↓ ὑπ' αὐτῶν Οὐρανιῶνων<sup>10</sup> ↓  
Εὐάλιος<sup>11</sup> ↓, γαμικὸς μοῦνος ἐνὶ φθιμένοις.

Κι ἂν προχωρεῖς τροχάδην, φίλε διαβάτη, λίγο στάσου.  
Μὲ ἄρπαξε χορὸς τῶν ἀθανάτων· τὸ σῶμα μου καλύπτει  
ἡ γῆ, ὡς γέρας παίρνοντας ὃ,τι παλιὰ ἔχει δώσει·  
γιατὶ ἡ ψυχὴ μου στὸν αἰθέρα καὶ στοῦ Δία τὶς αὐλές,  
μὰ τὰ ὅστ'α στὸν Ἄδη ἄτρεπτος ἐπῆρε νόμος.  
Τοῦτο μεγάλο δῶρο ἀπ' τοὺς Οὐράνιους τοὺς ἴδιους κέρδισα  
ὁ Εὐάλιος, σὲ γάμου ἡλικία μοναδικὸς μέσ' στοὺς νεκροὺς.

1 (Il. 1-2) Kān τροχάδην βαίνης φίλε, | ὦ παροδεῖτα, βαιὼν ἐπίσχε (= vv. 1-2) Perist.; unum versum put. cett. (vid. infra adnot. ad tit.); [φίλε, ὦ] Sakell., Hadj. I† βαίνης scripsimus (-HC in lap.); βαίνης vulgo I† παροδεῖτα Kaib. Peek Hadj.; -εῖτα multi: παροδεῖτα Welcker I φίλ' ὀδεῖτα Cougny I† ἐπίσχε (-ες) Perist., Cougny (ἐπίσχ[ες]); ἐπίσχε Peek: ἐπίσχ[ου] plerique (ἐπίσχου Welck. Sakell. Hadj.)† 2 ἤρῃσεν ἀθανάτων με χορός Perist. (: ἤρῃσεν), Peek, Hadj. (: [ἤρῃσεν]); ἤ[ρῃσεν] ἀθ[ανάτων] με χορός LBW, cf. Sakell. (ἤ[ρῃσεν] ἀθ[ανάτων] με χορός); ἤ[ρ]ε μ[ε]ν ἀθανάτων με χορός Oberh.: ἤβῃς εν[θ]ανα...χορος Welck.; ἤβῃσεν·ανα...χορός Vidua Boeckh; alii alia† 3 interp. alii aliter (vid. infra adnot. ad loc.) I† πάλαι plerique: πάλ[ιν] Boeckh (adnot.); πάλιν Cougny† 4 ἢ plerique: [B]ῆ Boeckh Cougny† 6 ἔλαχον vulgo: ἔλαχον (: EΛΑΧΟΝ leg.) Peek I† Οὐρανιῶνων vel οὐρανιῶνων edd. (vid. infra s.v.)† 7 Εὐάλιος, γ. Welcker Kaibel Peek Hadj.; Εὐάλιος γ. Oberh.: Εὐάλιος γαμικός, Boeckh LBW Cougny; Εὐάλιος Γαμικός, Sakell. Perist.†

**Σχόλια:**  
Επίγραμμα χαραγμένο σὲ ὀκτὼ σειρὲς στὴ βόρεια πλευρὰ μιᾶς τεράστιας μαρμάρινης λάρνακας (βλ. Περισιάνη<sup>1</sup>) συναποτελοῦν στίχο σὲ δακτυλικὸ ἐξάμετρο (καὶ ἔτσι ἐκδίδονται ἀπὸ τοὺς προηγούμενους ἐκδότες, μὲ ἐξάφραση τὸν Περισιάνη<sup>2</sup>)· ἡ ἐπιλογὴ εἶναι δύσκολη, καθὼς δὲν ἀποκλείεται ὄντως τὸ βαιὼν νὰ προσετέθη ἀπὸ τὸν ποιητὴ ἢ τὸν χαρακτὴ (κατὰ ἀνάλογες ἐκφράσεις: βλ. π.χ. ἀνωτ. E24.1-2) σὲ στίχο ἐξάμετρο, καὶ νὰ ἔχουμε ἐδῶ δύο συνεχόμενους ἐξάμετρους στίχους (πβ. κατωτ. E44.6-8 καὶ E49, πβ. ἐπίσης E8, E17, E43), ὅπως δὲν ἀποκλείεται νὰ ἔχουμε ἓνα κείμενο προλογικὸ στὶς σειρὲς 1-2 (πβ. π.χ. ἀνωτ. E6 κ.ά., πβ. ἐπίσης E37 κ.τ.τ.). Τὸ ἐπίγραμμα χρονολογεῖται στὸν 2/3 αἰ. μ.Χ. (βλ. Peek <sup>3</sup>καὶ Χατζηγιάννου<sup>4</sup>) καὶ ἐμφανίζει ἰδιαίτερο ἐνδιαφέρον καὶ γιὰ τὴν ἐκτεταμένη ἀναφορά στὴ μοῖρα τοῦ σώματος καὶ τῆς ψυχῆς τοῦ νεκροῦ (στ. 2-5, πβ. ἀνωτ. E33.5 καὶ βλ. κατωτ. σχόλ. σ.στ. καὶ EΚυΕ<sup>5</sup> 5.2ε'), ἀλλὰ καὶ γιὰ τὸν τρόπο ἀντιμετώπισης τοῦ θανάτου



# Layer II - The embedded music

- ❖ Metre of inscription - elegiac
- ❖ Anomalies - some metrical anomalies (conflicting reports on the number of lines / letters)
- ❖ Solution - merge two lines and add orchestra (M. Georgiou). Elegiac couplet added at the beginning of composition.
- ❖ Rhythm - short syllables: one beat; long syllables: two beats (sometimes with two musical notes).

1-2	Κἄν τροχάδην βαίνης, φίλε ὦ παροδεῖτα, βαιὸν ἐπίσχες.
3	Ἦρπασεν ἀθανάτων με χορός, τὸ δὲ σῶμα καλύπτει
4	γαῖα λαβοῦσα γέρας τοῦθ' ὃ δέδωκε πάλαι·
5	ἦ γάρ μοι ψυχὴ μὲν ἐς αἰθέρα καὶ Διὸς αὐλὰς,
6	ὅστέα δ' εἰς Αἴδην ἄτροπος εἶλε νόμος.
7	Τοῦτ' ἔλαχον μέγα δῶρον ὑπ' αὐτῶν Οὐρανιῶνων
8	Εὐλάλιος, γαμικὸς μοῦνος ἐνὶ φθιμένοις.

# Layer III - Language, pronunciation, character and musicality

- ❖ Language - Ancient Greek with epic elements (e.g. μούνος, ὅστέα, Αἴδην, ἐνί.).
- ❖ Pronunciation - Greek of the time of the inscription.
- ❖ Character - Dorian mode in two *genera*, the diatonic and the chromatic.
- ❖ Genus - a particular structure of a tetrachord.
- ❖ Tonal pitch - according to the range of the singer (in this case: Lydian *Tónos* ).

Intro

1 2 3 4 5 6 7 8 9 10 11 12

13 14 15 16 17 18 19

instrumental

20 21 22 23 24 25

CANTO 2

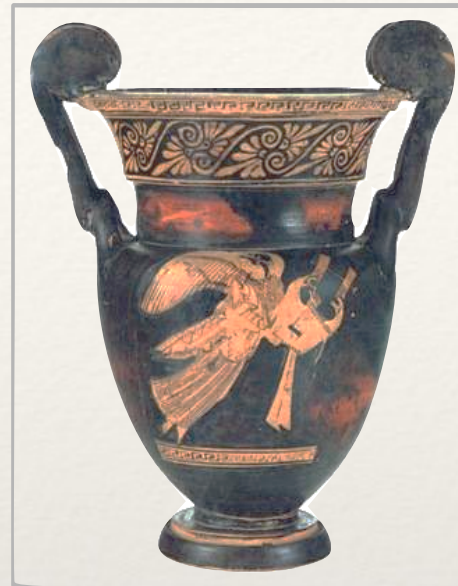
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61

rit.



# Layer IV - reviving an ancient musical instrument

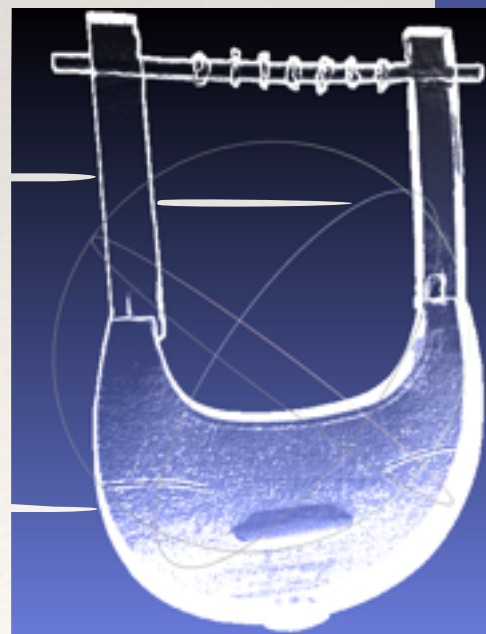
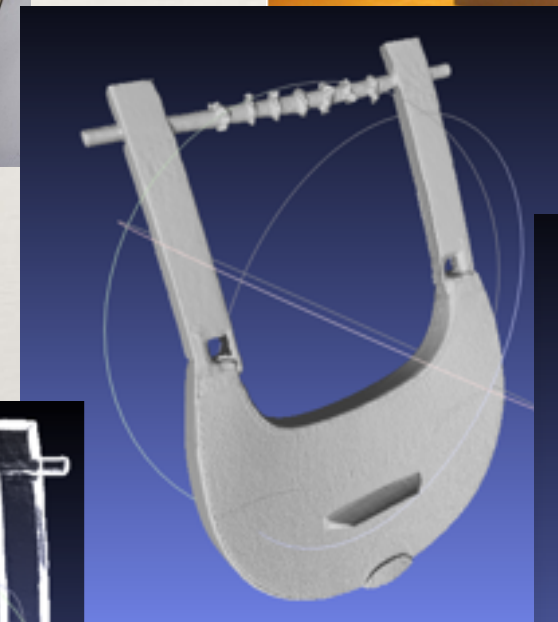
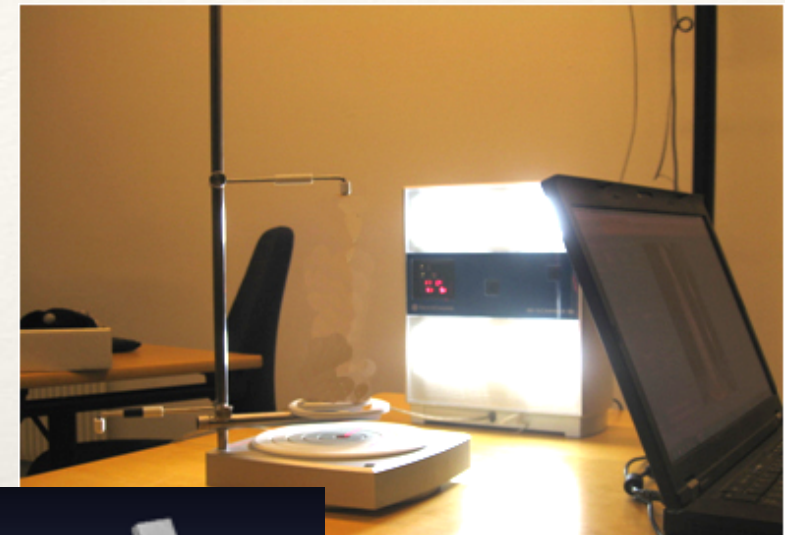
- ❖ Type of instrument - *phorminx* (κιθάρα or φόρμιγξ)
- ❖ Reconstruction sources -
  - ❖ texts analysis
  - ❖ graphic representations (on ancient objects)
  - ❖ historical research
- ❖ Manufacture technique - traditional tools.
- ❖ Material - wood, horn, intestines, etc.





# Layer V - 3D documentation

- ❖ No. of scans - 99
- ❖ Scanner Type - Next Engine
- ❖ No. of digital images : 48  
(*diffused light*)
- ❖ Time of scanning - 180 min
- ❖ Distance mode - wide
- ❖ No of Vertices - 2060294
- ❖ Nr. of Faces - 4120483





# (digitally) Hosting a multi-layered knowledge repository

## Ontology Base



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Clusters

1 ΕΠΙΓΡΑΜΜΑ

2 ΕΠΙΓΡΑΜΜΑ

3 ΠΡΟΛΟΓΟΣ

4 ΠΡΟΛΟΓΟΜΕΝΑ

5 ΕΙΣΑΓΩΓΗ

6 ΚΕΙΜΕΝΟ-ΜΕΤΑΦΡΑΣΗ-ΣΧΟΛΙΑ

7 a. ΑΝΤΙΣΤΕΘΕΝΣ Ο ΠΑΦΙΟΣ

8 b. ΑΝΩΝΥΜΟΙ ΕΠΙΓΡΑΜΜΑΤΟΠΟΙΟΙ

9 TA KYPIAKA EΠΙΓΡΑΜΜΑΤΑ

10 E3

11 E4

12 E5

13 E6

14 E7

15 E8

16 E9

17 E10

18 E11

19 E12

20 E13

Home

2 ΕΠΙΓΡΑΜΜΑ

ΚΕΙΜΕΝΟ-ΜΕΤΑΦΡΑΣΗ-ΣΧΟΛΙΑ

b. ΑΝΩΝΥΜΟΙ ΕΠΙΓΡΑΜΜΑΤΟΠΟΙΟΙ

E21

View

Edit

Outline

Revisions

Translate

Μόθε περισσότερο

Μικρά Τύχη<sup>1</sup> Μυρτώ<sup>2</sup>, ξένε, μένεται, ἢν ἀν' Ἐλαίης<sup>3</sup>

2 Αἰολίδος ἱ τηλοῦ Κύπρος ἔδεκτο τάφωι.

1 Τύχη<sup>1</sup> Hans.; dubit. iterativus (num Τύχη<sup>1</sup>); Τύχη<sup>1</sup> Mitf. Michael.<sup>2</sup>; Τύχη<sup>1</sup> Michael.<sup>3</sup> SEG Mass. Hadj. (vid. infra s.v.) ἢ Μυρτώ Michael.<sup>3</sup> Mitf. SEG Hans.: Μυρτώ cett. ἢ ἢν ἀν' Ἐλαίης Michael.<sup>2</sup>; ἢν ἀν' Ἐλαίης<sup>1</sup> Hadj.; ἢν ἀν' Ἐλαίης Michael.<sup>3</sup> (def. Rob.); it. Mass.; ἢν ἀν' Ἐλαίης Hans. (fort. recte); ἢν ἀν' Ἀπέλλης scr. Mitf. (ἢν ἀν' Ἀπέλλης vel ἢν ἀν' Ἀπέλλης Rose), acc. Rob. γ

Σχόλια:

Ἐπιγράμμα ἐπιτύμβιο ἀποτελούμενο ἀπὸ ἑνα ἐλεγειακὸ διστίχο χαρακτηζόμενο ἀπὸ ἐξ μικρὰς σειρὰς, ἀπὸ ἀλφαριθμητικὴ γραφὴ καὶ χωρὶς ἰδιαίτερη φροντίδα, πᾶν ἀπὸ ἀκλινὴ κερπινωτὴ πλάκα ἀκανόνιστη (μετρίστη ὕψ. 46.5 ἐκ., πλάτ. 38 καὶ πῶρος 5.5 κατὰ τὸν Mitford<sup>1</sup>, π8. Μικραλίδου). Ανακαλύφθηκε στὴν περὶ τὴν ἄσπασα Ταυρασσοῦ, στὸ χωριὸ

STARC

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ABOUT

You are not logged in.

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E21

Inscription »

Title: E21

Inventory number: 1959/VII-23/1, IG 208

Period Name: Cypro-Classical / Hellenistic

Terminus ante quem: end of 4th century BC

Terminus post quem: early 3d century BC

Description: It is addressed to the passer by, telling him that young(?) Myrto blames Fortune for having met her death in Cyprus, far away from her birthplace, the Aeolian Elaia.

Main References: Ino Michaelidou in V. Karageorghis, "Chronique des fouilles et découvertes archéologiques à Chypre en 1959", BCH 84 (1960) 261 and photo 262 ἀρ. 32 (= Michael.1 in the crit. appar.), καὶ Ino Nicolaou, CIS (1971) pl. XXIV (= Michael.2), cf. Nicolaou EHCy I (1967) 24 ἀρ. 22: Mitford, FCECy (1961) 138-39 no. 37, with photos 49.37- SEG 18 (1962) 198 ἀρ. 595- O. Masson, "Kypriaka, I. Recherches sur les antiquités de Tamassos", BCH 88 (1964) 238 no. 9- Χατζηιωάννου, ΑΚΕΠ Δα' ἀρ. 88 (1980) 88- Hansen, CEG2 (1989) 713. See also: J. et L. Robert, BullÉ 74 (1961) 258 no. 827 (text. Michael.1) and BullÉ 75 (1962) 212 ἀρ. 342 (text and critical apparatus, Mitf.).

Purpose: Funerary

Genre: Funerary epigram

Metre: Elegiac couplet

Honorand: young(?) Myrto

Event: Myrto's death

Locations: Cyprus: Aeolian Elaia

Conditions: semi-destroyed

Language: Ancient Greek

Scripture: alphabetic

Writing direction: left to right

Style: uneven capital letters

Letters size: various

Number of lines: 6 lines

Language: Ancient Greek

Spelling errors: μένεται instead of μέμφεται (line 3)

Additional information: Below the lettering of lines 1 and 4 may be seen the graffiti which formed the rough draft of the inscription. These were faithfully followed in the rest of the lines.

Support »

Type: Plaque

Material: Limestone

Condition: Good

Height: 46.5 cm

Length: 38 cm

Thickness: 5 cm

Conservation Status: Relatively good

Place of conservation: The Cyprus Museum

Country of conservation: Cyprus

Place of discovery: Politiko / Ancient Tamassos

District: Nicosia

Project Information

Name: EAGLE

Principal investigator: S. Hermon

Collaborators: V. Vassallo, E. Christophorou

Collection Information

Name: Archaia Kyriaki Grammateia

country: Cyprus

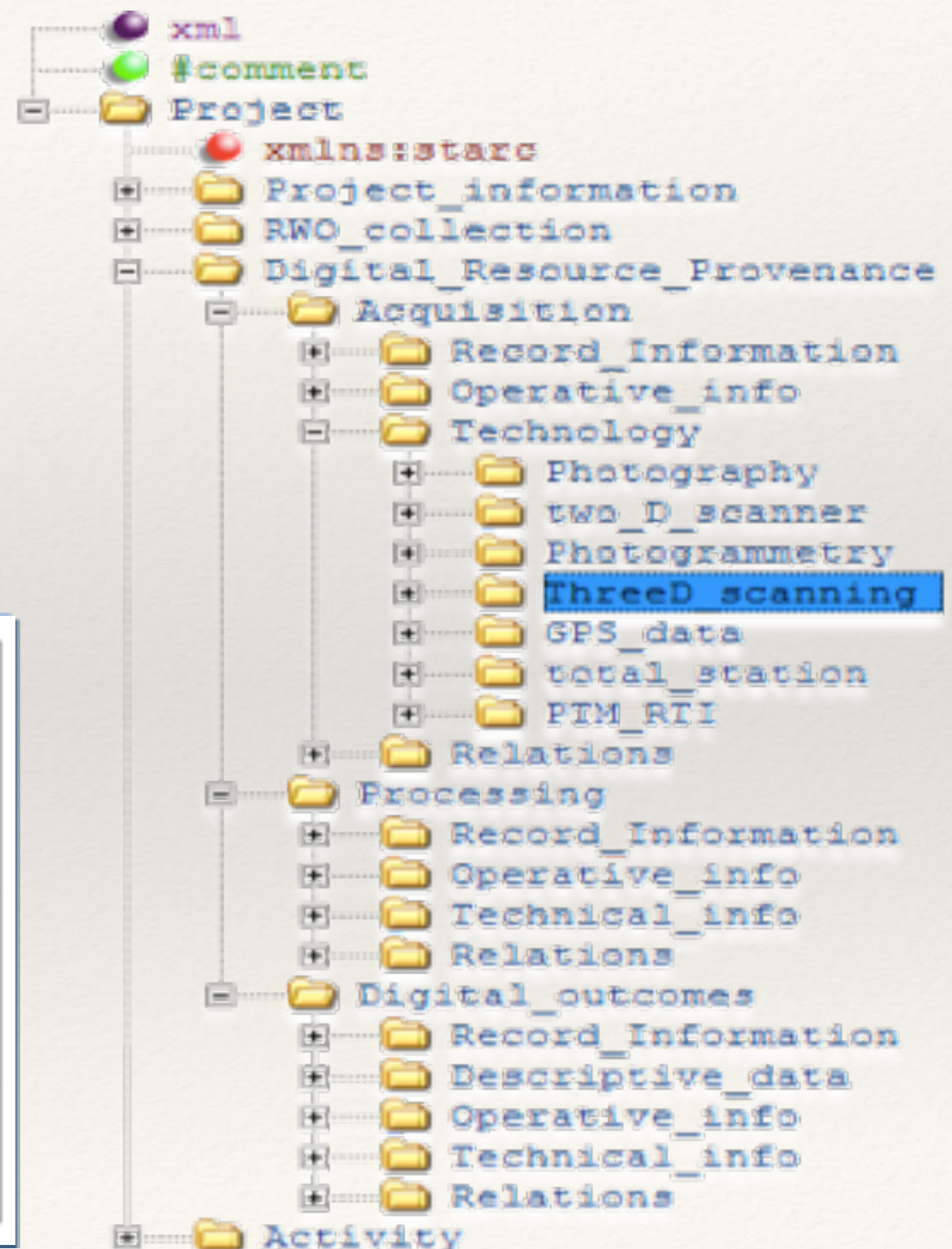
Object	Format
<p>ὣς Τύχη<sup>1</sup> Μυρτώ, ξένε, μένεται, ἢν ἀν' Ἐλαίης<sup>3</sup> Αἰολίδος τηλοῦ Κύπρος ἔδεκτο τάφωι.</p>	<p>Text</p>
	<p>Image</p>
	<p>3D</p>
	<p>Audio</p>



# A cross-disciplinary metadata model

- ❖ grouped “thematically”
  - ❖ technical
  - ❖ descriptive
  - ❖ conceptual

‘Archaeo’	Place of discovery, Ancient name, Region / District, Regio antique, Country of discovery, Date of discovery, Discoverer, Condition of discovery, Event of discovery [...]
‘Phil’	Genre, Metre, Scripture, Writing direction, Number of signs, Style of writing, Spelling mistakes [...]
‘Geol’	Material of the support, Geographical provenance of the material [...]





# Implementation

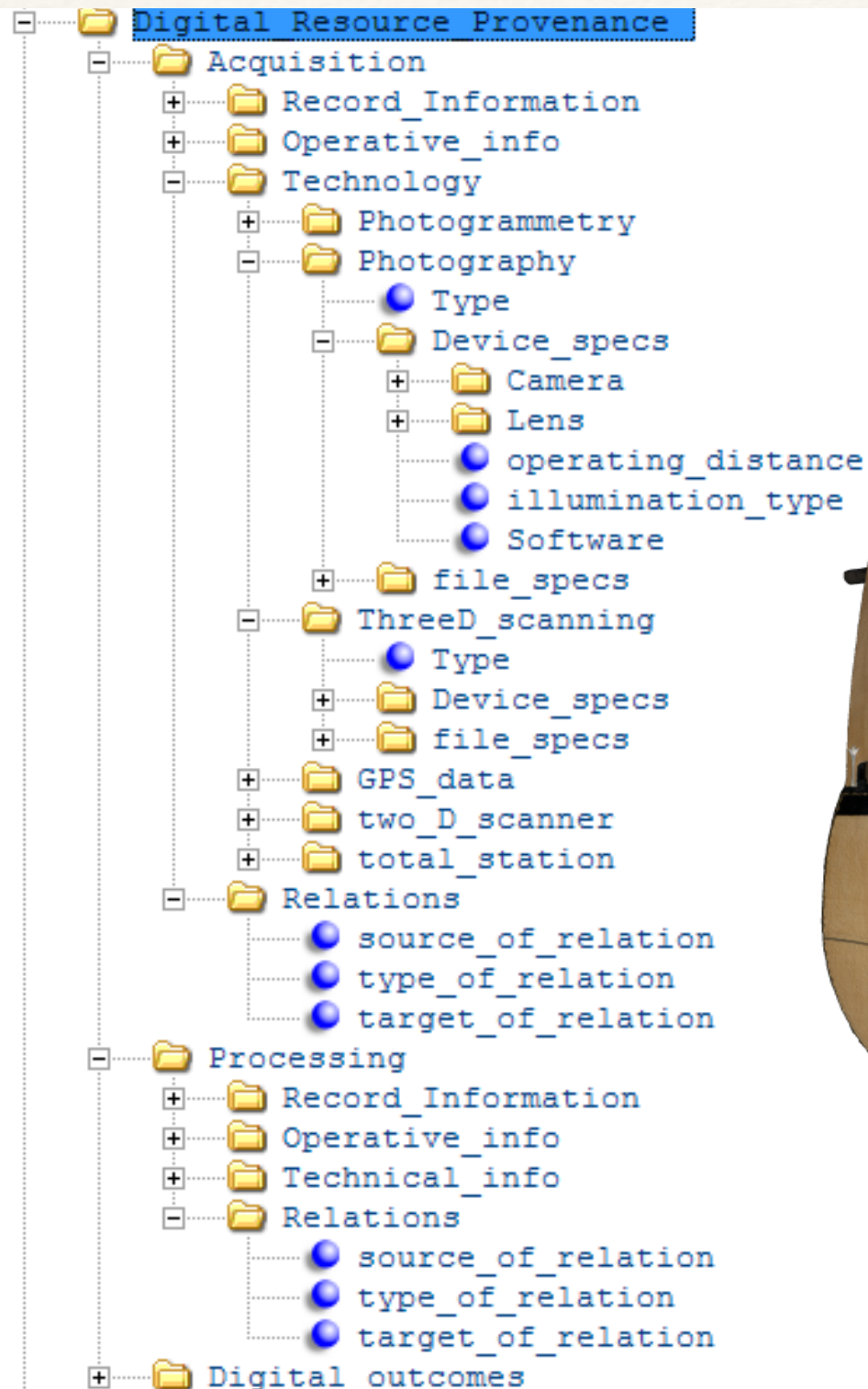
Inscription	
Record_Information	
Bibliography	
Commentary	
Descriptive_data	
Title	E21
Inventory_number	1959/VII-23/1, IG 208
Chronology	
Date	
Period_name	Cypro-Classical / Hellenistic
time_span	
terminus_ante_quem	end of 4th century BC
terminus_post_quem	early 3d century BC
Description	It is addressed to the passer by, telling...
Main_references	
Support	
Conservation	
Discovery	
Purpose_of_inscription	Funerary
Genre	Funerary epigram
Metre	Elegiac couplet
Author_of_inscription	
Honorand	young(?) Myrto
Political_social_status	
AwardedBy_dedicator	unknown
Other_names	
Event_of_inscription	Myrto's death
Locations_mentioned	Cyprus, Aeolian Elaia
Condition_of_inscription	semi destroyed
Restoration	
Language	Ancient Greek
double_side	
Scripture	alphabetic
writing_direction	left to right
number_of_signs	
style_of_writing	uneven capital letters

Κι ἂν προχωρεῖς τροχάδην, φίλε διαβάτη, λίγο στάσου.  
Μὲ ἄρπαξε χορὸς τῶν ἀθανάτων· τὸ σῶμα μου καλύπτει  
ἡ γῆ, ὥς γέρας παίρνοντας ὅ,τι παλιὰ ἔχει δώσει·  
γιατὶ ἡ ψυχὴ μου στὸν αἰθέρα καὶ στοῦ Δία τὶς αὐλές,  
μὰ τὰ ὁστὰ στὸν Ἕαδ' ἄτρεπτος ἐπῆρε νόμος.  
Τοῦτο μεγάλο δῶρο ἀπ' τοὺς Οὐράνιους τοὺς ἴδιους κέρδισα  
ὁ Εὐλάλιος, σὲ γάμου ἡλικία μοναδικὸς μέσ' στοὺς νεκρούς.

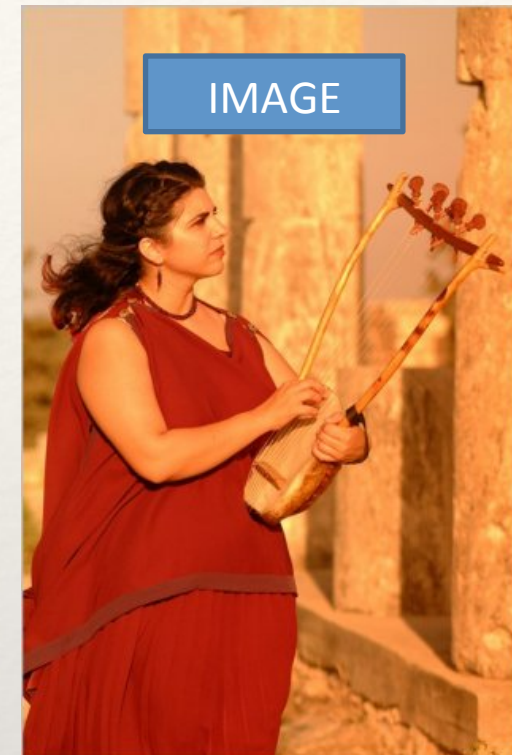
INSCRIPTION	
Title	The title of inscription that names the inscription, e.g. in AKG, E1, E72 or in other corpora: The Inscription of Gaius Maximus etc. - <b>E21</b>
Inventory number	The ID number of the real object - <b>1959/VII-23/1, IG 208</b>
Date	Exact date of the inscription
Time span/	The period in which the inscription is dated (e.g.

- ❖ MySQL - database
- ❖ XML files - metadata
- ❖ RDF files; name graph - CIDOC CRM

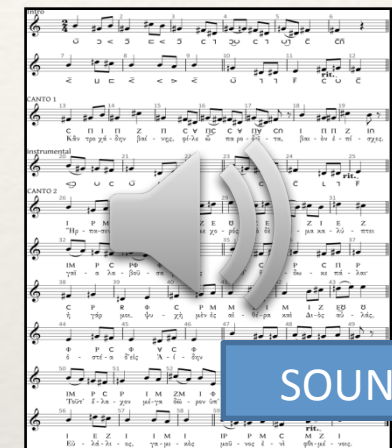
# Implementation



3D



IMAGE



SOUND

## DIGITAL RESOURCE PROVENANCE

### Acquisition

3D scanning	Type; Device specifications (Model, Software, Points_second, Time acquisition, Number of scans, Acquisition range, Accuracy, Target model, Number of targets); File specification (Number of points max, Data input format, Data output format, Data decimation, Data weight, Data compression)
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### Processing

3D modelling	Operative Info (Operator, Collaborators, Paradata, Date); Technical info (Software); File specifications (Geometry type, Data of points max, Data input format, Data output format, Number of vertices, Number of faces, Data
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# Digital Libraries as Research Environments

## Conclusions

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- ❖ Reveal the multi-layered knowledge embedded in ancient inscriptions.
  - ❖ the research presented above has shown how much valuable knowledge can be extracted from an inscription.
- ❖ Develop a multi-disciplinary research environment based on digital libraries.
  - ❖ the solution presented above integrates multi-disciplinary information formally expressed in a metadata model based on CIDOC-CRM.
  - ❖ Search / Browse options, advanced search (geographic, with logical constraints, timeline, etc.) and clustering of results
  - ❖ Digital tools for online analysis of 3D objects (measurement, different rendering, etc.)
- ❖ Share knowledge through digital networks.
  - ❖ AKG - STARC - Eagle - Europeana - Education Platforms
  - ❖ multiple users, multiple uses, one digital library

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# Thank you for the audience

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## email contacts

- ❖ [terpandros@cytanet.com.cy](mailto:terpandros@cytanet.com.cy)
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- ❖ [e.christophorou@cyi.ac.cy](mailto:e.christophorou@cyi.ac.cy)
- ❖ [v.vassallo@cyi.ac.cy](mailto:v.vassallo@cyi.ac.cy)

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eagle project

