



Multidisciplinary Approaches Accelerating Developments in Archeogenetics & Paleontology

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Quality research & technologies in the service of Cultural Heritage

- **Institute of Molecular Biology & Biotechnology**
Genomics, Archeogenetics,
Bioinformatics
- **Institute of Electronic Structure & Lasers**
Spectral imaging, Chemical analysis
Structural diagnostics, Restoration
- **Institute of Computer Science**
Cultural informatics
Ambient Intelligence applications
- **Institute of Applied & Computational Mathematics**
GIS, Spatial statistical modeling
Remote Sensing
- **Institute of Mediterranean Studies**
Geophysical mapping, Virtual reality,
Ancient environment reconstruction

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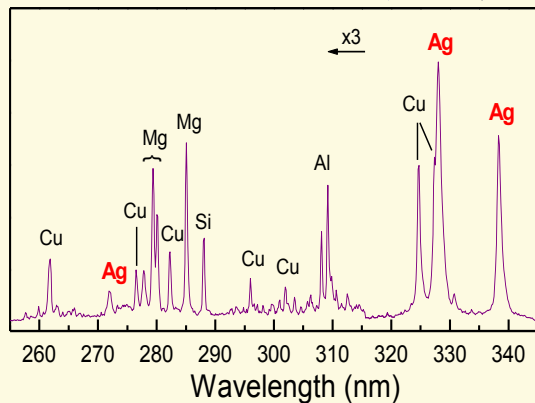
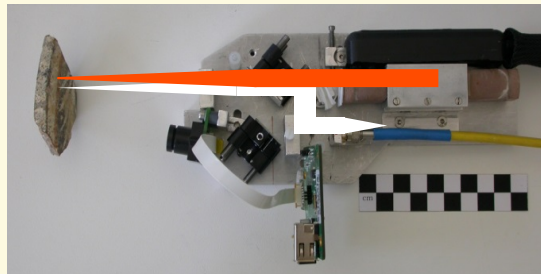
- DNA free building
- Isolated laboratory rooms
- HEPA filtered ventilation
- Positively pressurized chambers
- Waste and drill dust collectors
- UV and bleach decontamination
- Monitor view-supervision
- Controlled limited access
- Standard operating procedures
- Dedicated equipment
- Pre- and post- handling protocol keeping



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- Institute of Electronic Structure & Lasers**

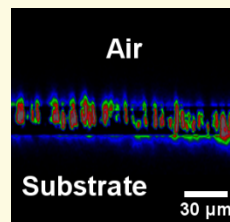
Mobile LIBS



Spectral imaging, Chemical analysis Structural diagnostics, Restoration



Interferometric techniques



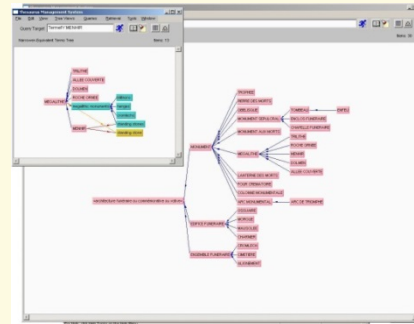
THG imaging

Laser Cleaning of the Caryatids



- **Institute of Computer Science**

*semantic interoperability, information integration and integrated access
new computer uses and concepts*



Multimedia trips

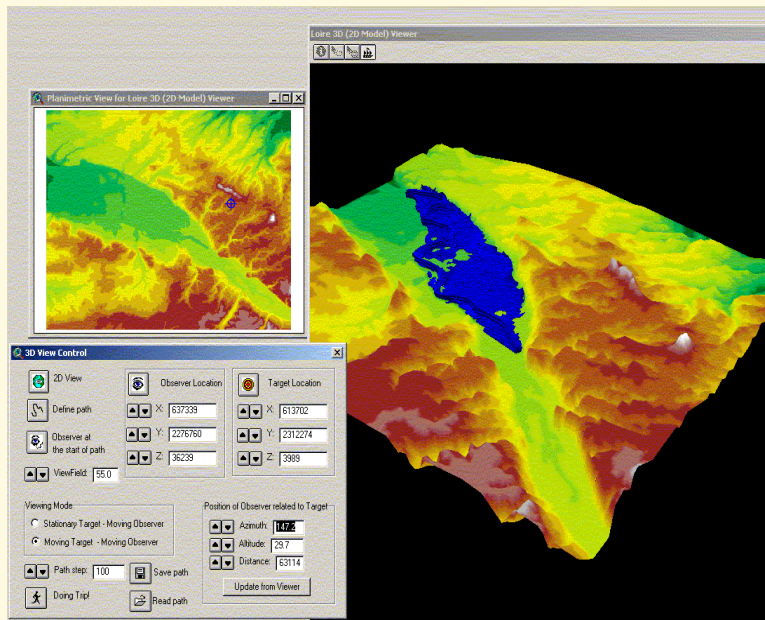


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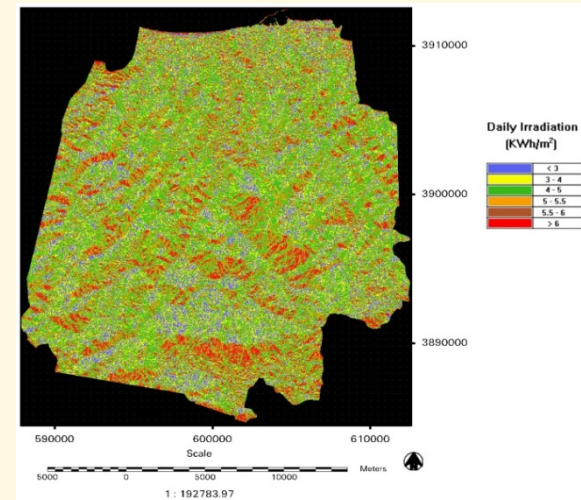
- Institute of Applied & Computational Mathematics

Geographical Information Systems
Spatial statistical modeling
Remote Sensing

SPATIAL DECISION SUPPORT SYSTEMS



REMOTE SENSING APPLICATIONS:

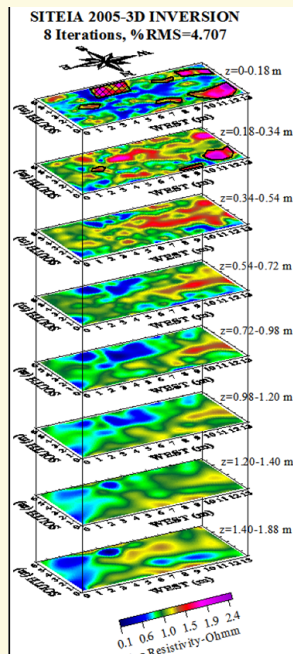




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- Institute of Mediterranean Studies

Geophysical mapping, Virtual reality, Ancient environment reconstruction



Deinotherium fossil mapping Electric tomography & Geo-radar

Κρητικός... ελέφαντας 7 εκατ.

Ο σκελετός ενός δεινοθηρίου εντοπίστηκε με ραντάρ κοντά στη Σητεία

Με ένα ραντάρ σαν και εκείνα που χρησιμοποιούν στην Αμερική και στη Σιχέρια για να «ξεθάβουν» δεινοσαύρους, Έλληνες επιστήμονες στην Κρήτη προσοδεύουν τον τελευταίο καιρό να ανακαλύψουν ολόκληρο τον απολιθωμένο σκελετό ενός από τα μεγαλύτερα θηλαστικά που έζησαν ποτέ στη χώρα μας...

ΡΕΠΟΡΤΑΖ:
Στέφανος Κρίκελης

Το ταξίδι στην ιστορία του Μουσείου Φυσικής Ιστορίας της Κρήτης έγινε το 2002. Ο δρ. Χαράλαμπος Φουκάκης, που είναι επιμελητής του Γεωλογικού και Παλαιοντολογικού Τμήματος, κατάφερε το αδιεύκυν και τώρα από λίγη ώρα έφτασε με το αυτοκίνητό του στη θέση, στην Αγία Φωτιά της Σητείας, σπουδαίοντες από την ανεύρεση του Γ. Υπόμνημα.

Ο άνθρωπος που είχε καλέσει το Μουσείο στην «έκτακτη» ενός ε-λάνου. Την ώρα που οι τρεις άντρες

μεταπορεύονταν βασικά ανάμεσα στα λόγια, ο δεινοθηρικός ελέφαντας διήλθε πάνω στο χώρο κατά περιρρέουσες συμπεριφορές που έμοιαζαν με σπουδαία.

Μία λεπτή αντήρα, ο κ. Χ. Φου-

Βρήκαν με ραντάρ τον γιγάντιο ελέφαντα

Με τη βοήθεια τεχνολογίας που χρησιμοποιείται για πρώτη φορά παγκοσμίως σε παλαιοντολογική ανασκαφή, επιστήμονες από την Κρήτη επικεντρώουν να εντοπίσουν ολόκληρο τον απολιθωμένο σκελετό ενός δεινοθηρίου που έζησε στη Σητεία πριν από 7 έως 9 εκατομμύρια χρόνια.



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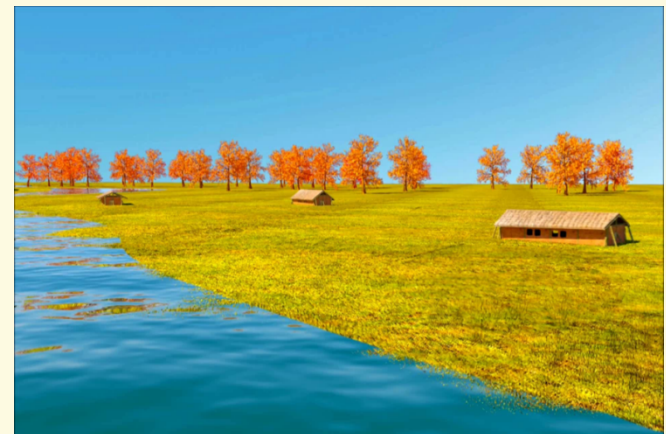
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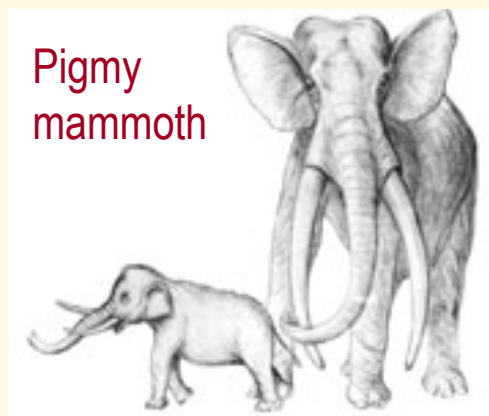
Environment reconstruction
of a Neolithic settlement



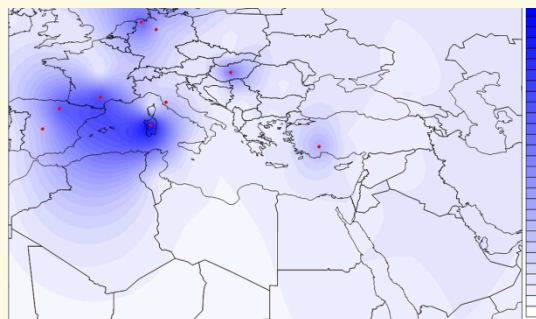
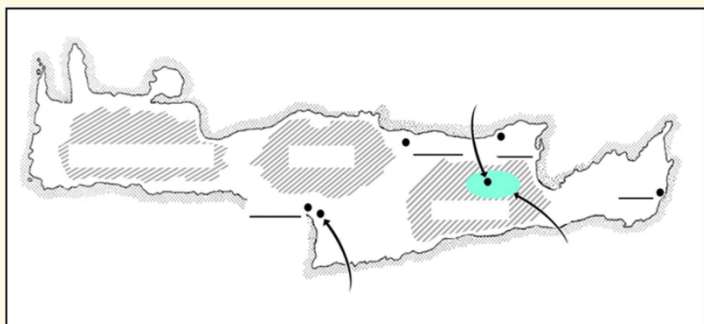
University of Crete

Natural History Museum

Molecular Systematics lab



Forensic Medicine Dept.



Origin of the Minoans





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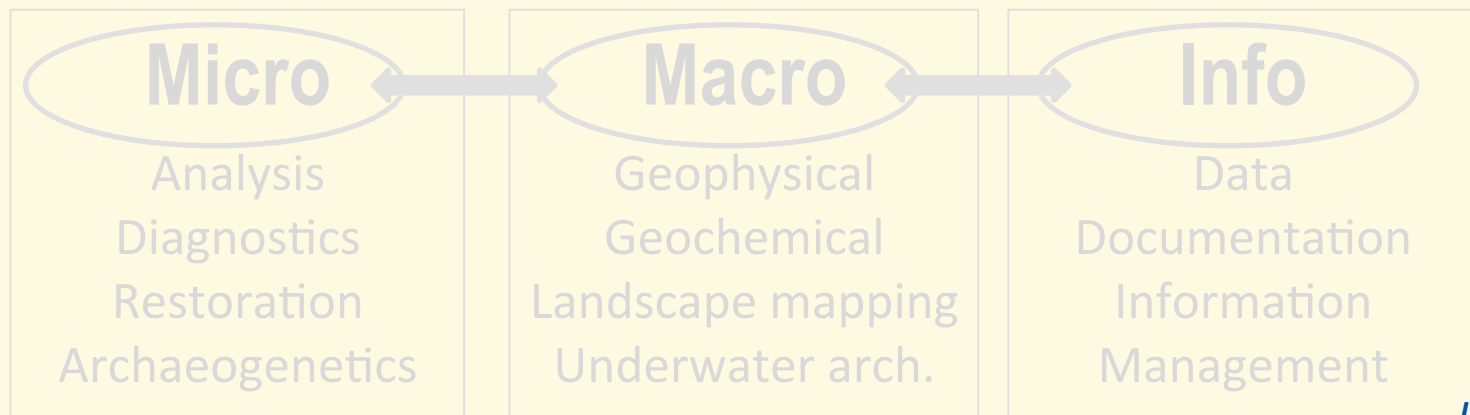
Our vision:

Expertise + know-how + infrastructure



Innovative, reliable and efficient tools for addressing demanding challenges in cultural heritage research

Our concepts:





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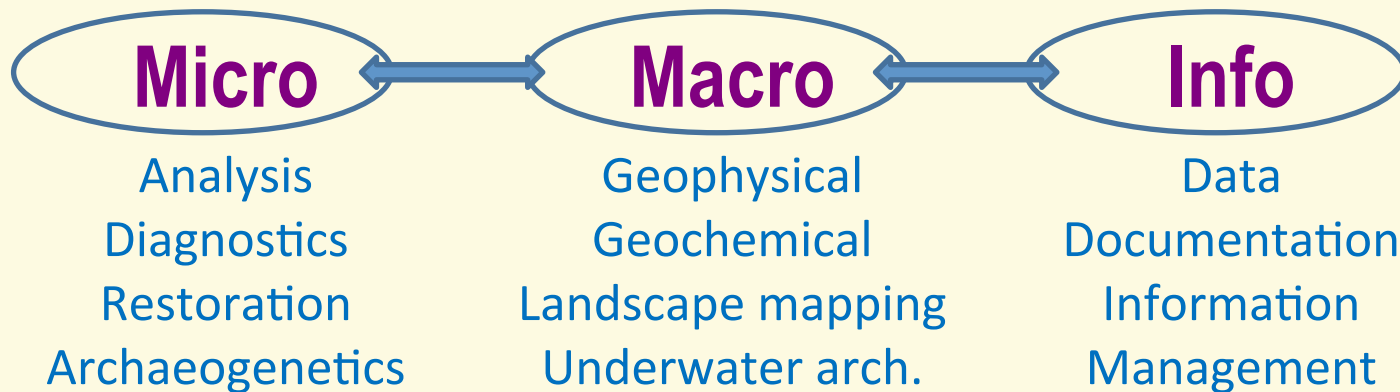
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Quality research & technologies in the service of Cultural Heritage

Message 1:

Multidisciplinary, Quality Research Environments, Innovative, Enabling Technologies and Data Integrative Approaches, Accelerate Developments in the Field of Paleontology and Cultural Heritage



Common needs & challenges

Specimen handling: Natural history findings and cultural heritage objects are **unique** and in most cases **complex**. Extensive research, accurate modeling and non-intrusive methodologies are needed before any intervention. **Mistakes are not allowed!**

Developing special methods & equipment: Cultural heritage objects are **diverse**, spatially **distributed** and – in some cases – **difficult to access**. Mobile instrumentation, special analytical methods and remote technologies are needed

Crossing barriers: Different research communities speak their own **scientific and technological “dialects”** making difficult to address issues requiring multidisciplinary approaches

Process information : The overwhelming **volume of heterogeneous data** from a multitude of sources and different domains makes management, interpretation and integration of information critical for new knowledge discovery

Sharing mentality: Even within one research community it is difficult to **share** information, **federate** data, and build **common** infrastructure and provide **access** to facilities



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Message 2:

Transfer of expertise, adoption of best practices and standards from similar multidisciplinary domains and activities (i.e. Biomedical Informatics, Clinical Biobanking, Art Restoration etc.) can facilitate the technological developments and provide with solutions in the emerging field of Archeogenetics, Paleontology and Cultural Heritage infrastructures.

Message 3:

Promoting **access** to well structured, functional, central facilities (ex. via competitive calls for users) may be more efficient than investing heavily on fancy equipment for the few or distributing recourses with limited use to the many,
and

Avoid **duplication** of effort

Maximize the **benefit** from scarce resources

Foster quality **research** (JRA) & advanced **training**

Promote **innovation** via multidisciplinary

Operate as dual **Physical & Virtual organization**

Employ **Micro, Macro & Info** approaches

Develop **sensitive or non-destructive** methodologies

Bridge **Physical** and **Classical** Sciences

Involve the “**right staff**” ...



**...and but most important,
address one of the most primordial concerns
of human beings:**

Who we are & where do we come from?!



Thank you

