



MEDIA TECHNOLOGIES FOR CULTURE & EDUCATION

DEPARTMENT OF MULTIMEDIA

MEDIALAB OF CETI/ATHENA

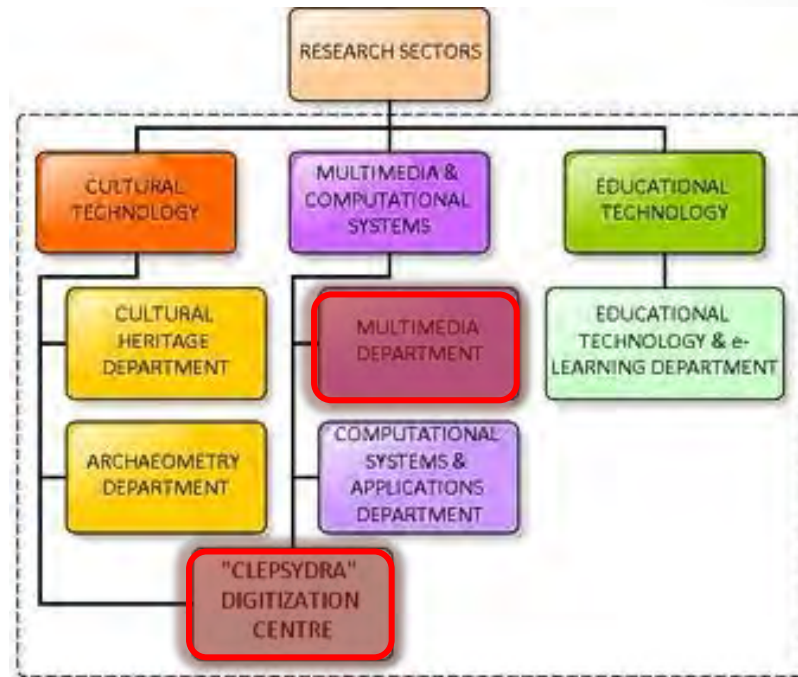
<http://www.ipet.gr/multimedia>



ABOUT

- One of the oldest **Departments** of CETI
- Focuses its R&D efforts in **innovative ICTs in Culture and Education**
- **Based upon**
 - specialized scientific **personnel**
 - computing **facilities**
 - special **infrastructures**
 - complete photographic studio
 - various 2D/3D projection units
 - video and sound editing systems
 - advanced, high quality imaging systems
 - high resolution scanners
 - specialized microfiche, film and slide scanners
 - book scanners
 - high resolution 3D scanners
 - 3D cameras
 - multi-spectral cameras

ABOUT



ABOUT

- **Long experience in R&D projects targeting innovative ICTs and especially multimedia solutions for educational and cultural applications, involving:**
 - multimedia applications, multimedia databases, multimedia processing, multimedia indexing, metadata and content-based retrieval
- **Personnel**
 - consists mainly of two researchers
 - aided by personnel of other Departments and external researchers
- **Research focuses on the development of methods and tools for**
 - 3D representations of actual and virtual worlds
 - 3D representation of multi-dimensional data
 - content-based analysis and organization of multimedia collections
 - human-computer interactions
 - intelligent user interfaces and ambient intelligence

ABOUT

- **Accomplishments so far**
 - **Content-based analysis:** algorithms and techniques for 3D data indexing, annotation and content-based retrieval
 - Strong background in techniques for **3D digitization** and virtual reconstructions of small-to-large scale objects and open spaces
 - Strong background in environments for **virtual exhibitions** and **museums**, and **intelligent virtual walkthroughs**
 - Algorithms and techniques for **interactive multi-dimensional data visualization**
 - Strong background in **multimedia database development** in relational and hierarchical forms
 - Strong background in **media processing** and **multimedia development** for desktop and web-based applications
 - Algorithms and techniques **digital imaging**

ABOUT

- **Current research directions**
 - Innovative content-based virtual walkthroughs
 - 3D content-based retrieval and shape matching
 - 3D model analysis and annotation
 - Real-time 3D graphics and virtual reality technologies
 - Serious games (game-based learning) using 3D game engines
 - Innovative human-computer interactions and intelligent user interfaces
 - Ambient intelligent applications
 - Innovative tools for cultural heritage and education

PEOPLE



Department of Multimedia / Cultural and Educational Technology Institute / 'Athena' Research Center

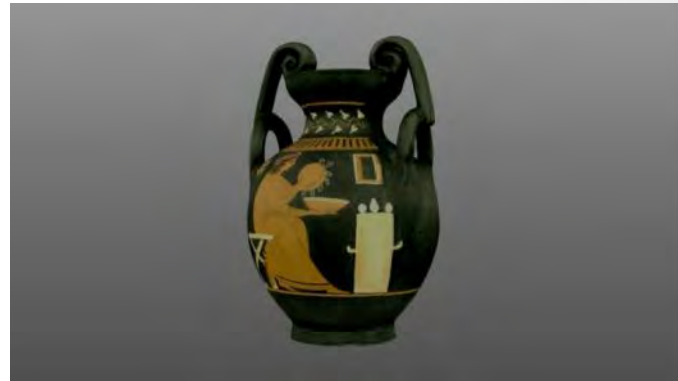
1st Scientific Workshop of the 'Athena' Research Center, 27-28 July, 2011

RESEARCH

- **Innovative cultural (& educational) applications**
 - 3D imaging – Digitization/visualization/modeling
 - Content-based analysis and annotation
 - Virtual reality, virtual museums, walkthroughs
 - 2D imaging – multimedia apps
 - Intelligent/ambient interfaces
- **Innovative educational applications**
 - Automated tutoring systems
 - Game-based learning
 - Intelligent/ambient interfaces

RESEARCH

- 3D digitization & reconstruction of movable objects



RESEARCH

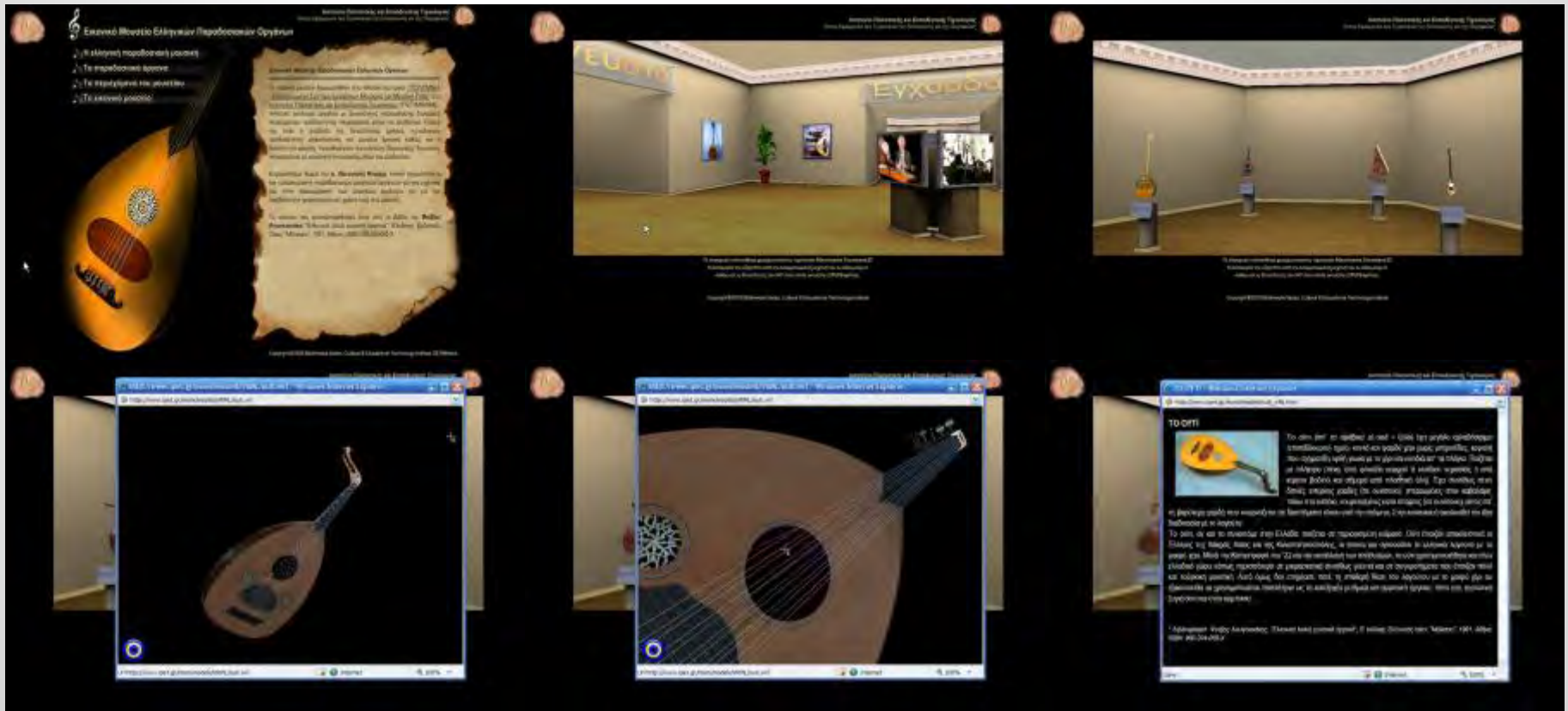
- 3D digitization of monuments & urban areas
- 3D reconstructions and virtual walkthroughs





RESEARCH

- Virtual museums - Dynamic web-based exhibition systems

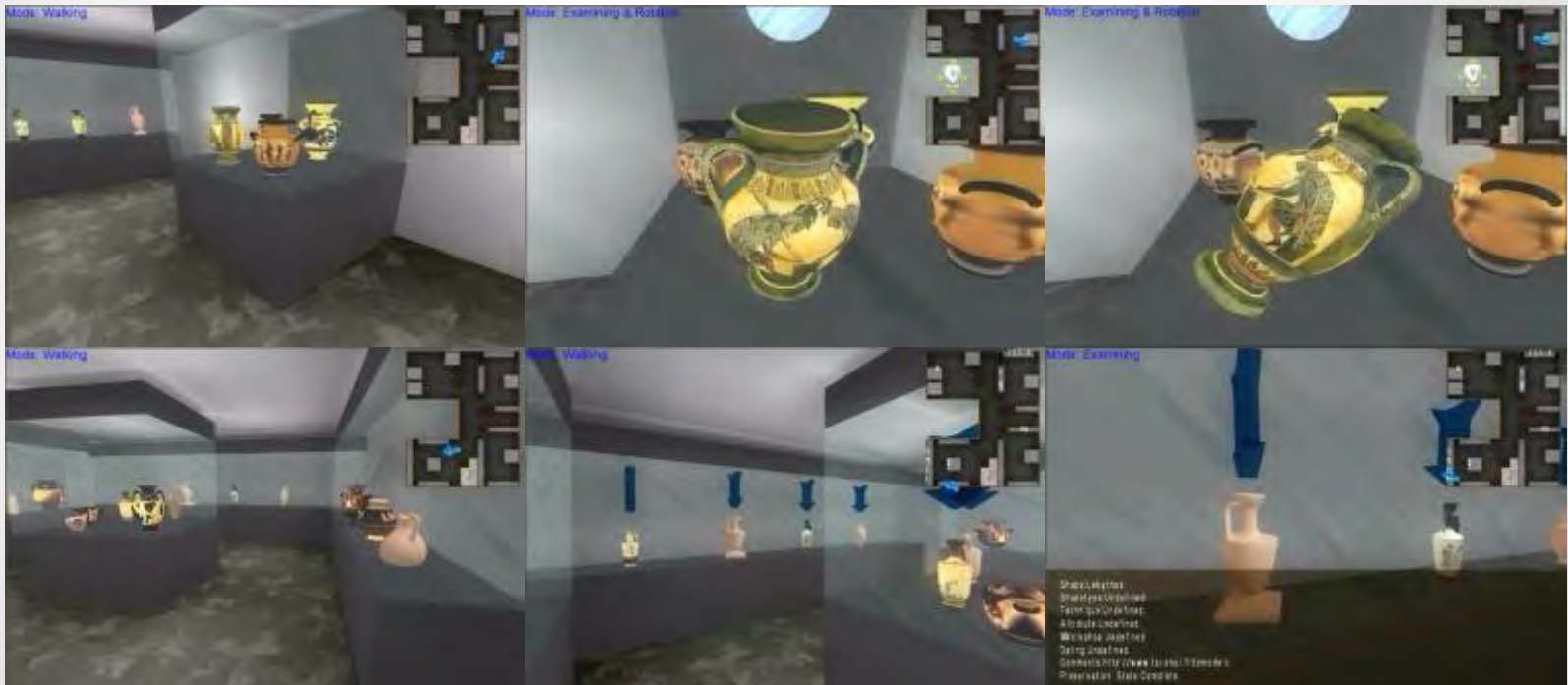


RESEARCH

- Virtual museums - Fully featured interactive 3D environments

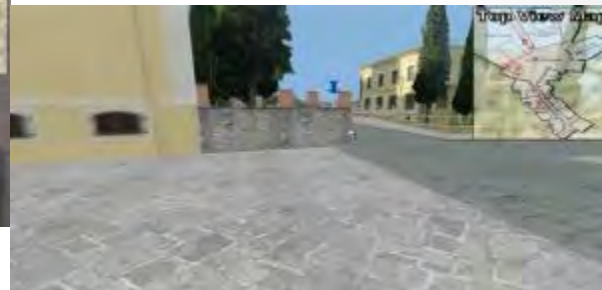


- **Intelligent, content-based walkthroughs – in museums**



RESEARCH

- Intelligent, content-based walkthroughs – in urban areas

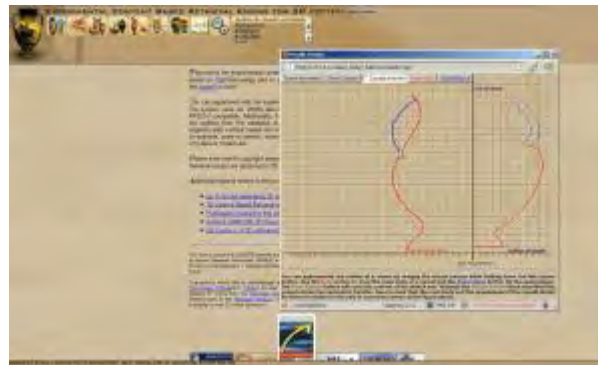


RESEARCH

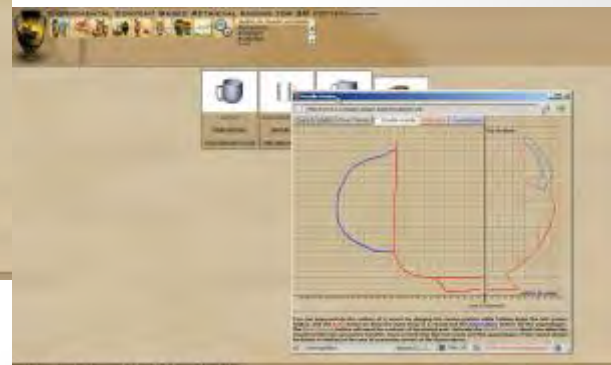
- Content-based analysis, search and retrieval on 3D objects



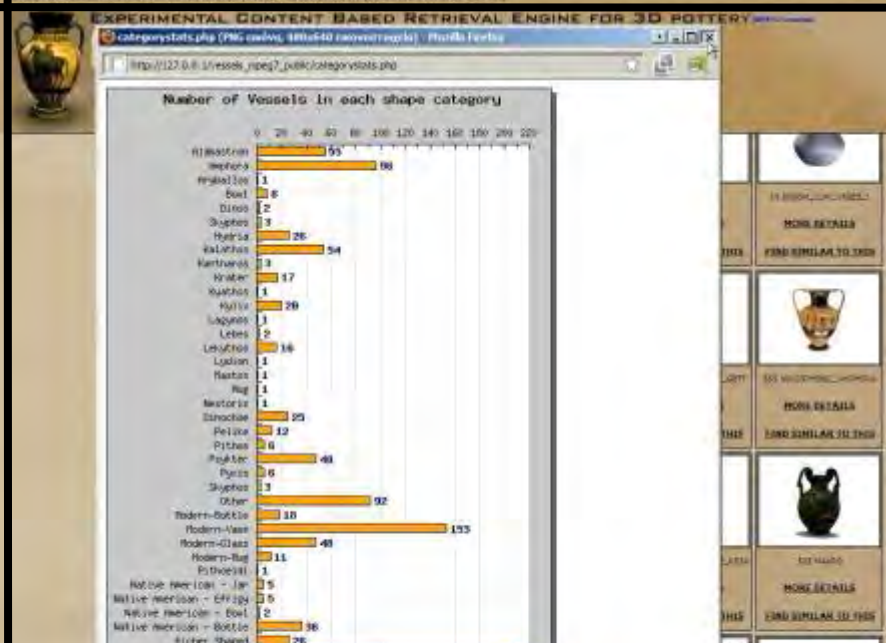
Pose normalization



Query-by-sketch

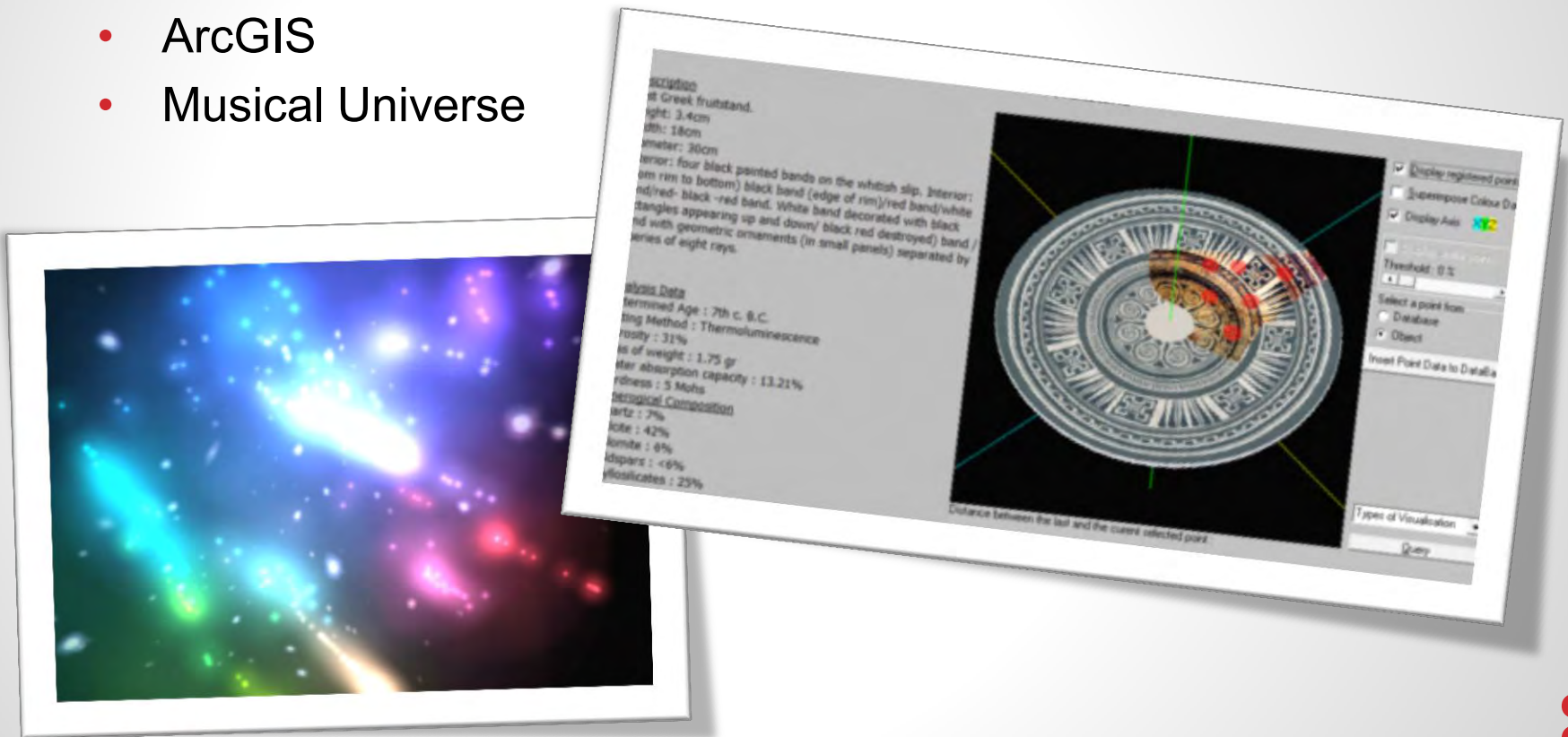


3D objects content-based search and retrieval



RESEARCH

- Interactive multi-dimensional data visualization
 - ArcGIS
 - Musical Universe



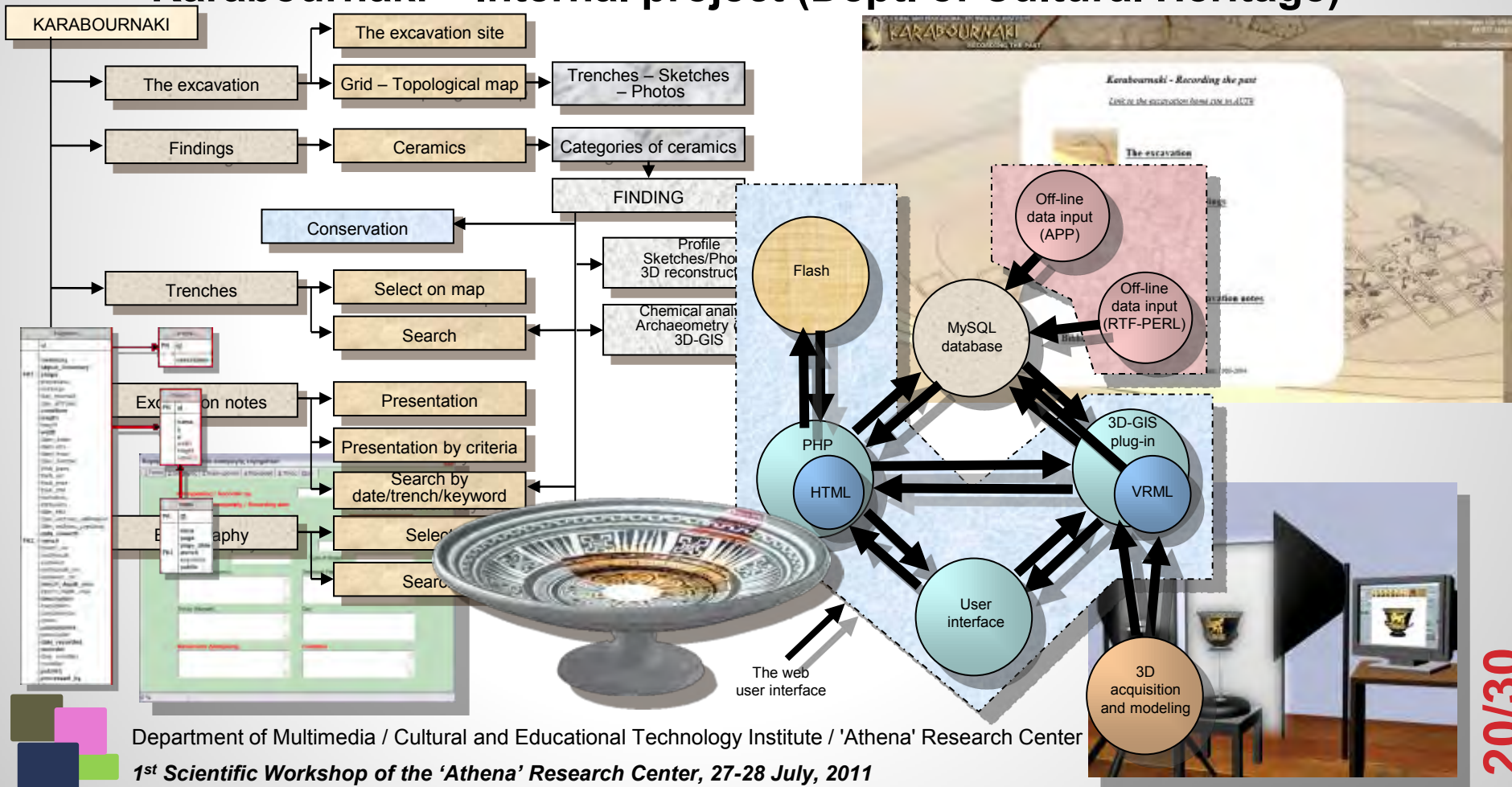
RESEARCH

- Huge 3D point-clouds (from 3D digitization) visualization



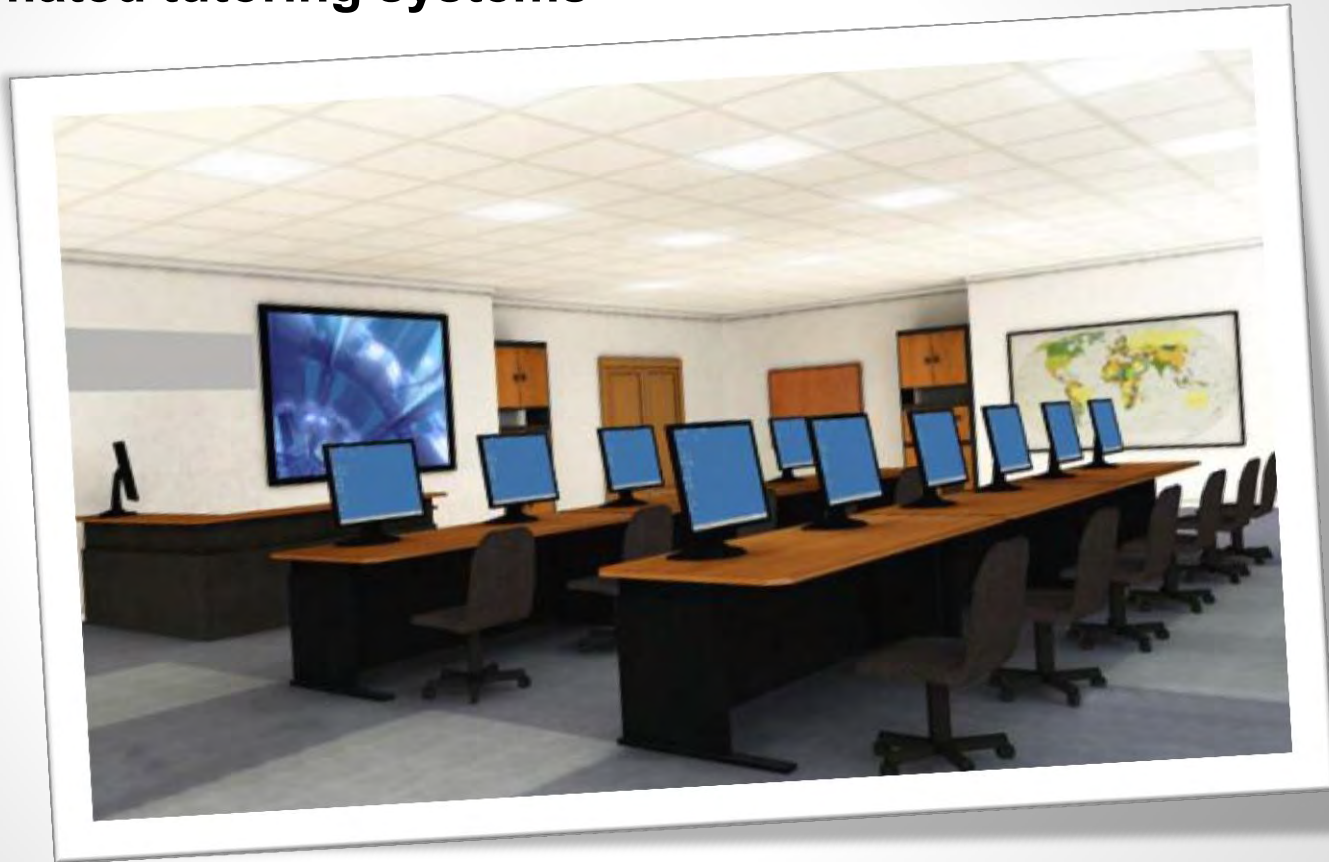
RESEARCH

- Karabournaki – Internal project (Dept. of Cultural Heritage)



RESEARCH

- Automated tutoring systems



RESEARCH

- **Today and tomorrow**
 - Ambient user interfaces (KINECT, CETI-DUTH)
 - Human-machine interaction (vision-based, CETI-DUTH)
 - 3D cinema, multi-touch interaction (CETI-ILSP)
 - Museum guides & innovative multimedia (CETI-ILSP)
 - Game-based learning (Cooperation, CETI-ILSP)
 - Human Mood Detection (Excellence, CETI-ILSP-DUTH)
 - Multilingual semantics of 3D digital culture (Excellence, Culture, CETI-ILSP)
 - A-MAV (quadrotors vision & control) (Excellence, CETI-DUTH)
 - Standards and certification (CETI-DUTH)

PROJECTS

- **Facts and figures (last 5 years)**
 - **Proposals**
 - Participation in **4 international** projects
 - 1 ICT PSP 2011, 2 eContentPlus, 1 FP6-IST
 - Participation in **20 national** projects & tenders
 - 2 Convergence, 4 Cooperation I, 2 Cooperation II, 1 SMEs, 3 Thalys, 4 Regional, 1 InfoSoc, 1 Spin-off, 1 Infrastructures, 3 Tenders
 - **Projects & Tenders**
 - **Participation** in 8 projects
 - Scientific **coordination** & technical supervision in 8 projects



COOPERATION

- **Academic Institutions**

- Democritus University of Thrace
- Institute of Language and Speech Processing
- Academy of Athens / Hellenic Folklore Research Center
- National Technical University of Athens
- University of Athens
- Aristotle University of Thessaloniki
- University of the Aegean
- University of Crete
- University of Western Macedonia
- Technological Educational Institution of Serres

COOPERATION

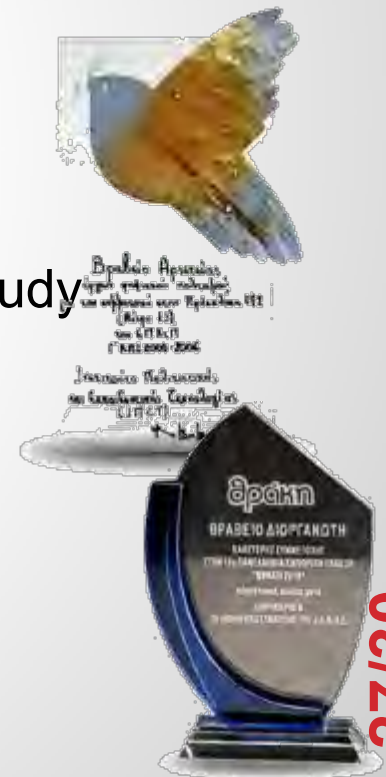
- **Cultural & Government Institutions**
 - National Archaeological Museum
 - Foundation of Thracian Art and Tradition
 - National Gallery and Al. Soutsos Museum
 - National Youth Foundation
 - Archaeological Institute of Aegean Studies
 - Peloponnesian Folklore Foundation
 - National Bank of Greece
 - Local Authorities Union of Xanthi District
 - Municipal Company of Development of Xanthi
 - Municipality of Xanthi
 - Municipality of Sitia
 - Prefectural self-government of Rodopi-Evros

COOPERATION

- **Private organizations and research institutes**
 - Corgialenos Foundation and Cephalonia Library
 - Ormilía Foundation – Art Diagnosis Centre
- **Private companies**
 - Singular Logic Integrator SA
 - Panou SA
 - Viewmax Presentations
 - EXODUS SA
 - AMBIENCE – Intelligent Engineering
 - INFODIM
 - Prisma Electronics SA
 - Systema Technologies SA

PUBLICITY / RECOGNITION

- **Scientific Journals / Conferences (last 5 years)**
 - 14 scientific conferences (total of 34 since 2001)
 - 7 scientific journal publications (total of 13 since 2003)
 - More than 40 citations
- **Awards (last 5 years)**
 - Award of Excellence, project “DIGITECH-III: Study of three-dimensional digitization technologies”, InfoSoc (<http://www.ipet.gr/~gpavlid/?p=239>)
 - 2010 - “Best participation and organization of exhibition pavilion” (<http://www.ipet.gr/~gpavlid/?p=124>)



PUBLICITY / RECOGNITION

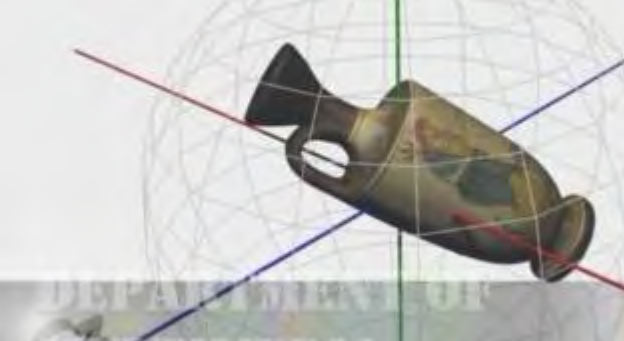
- Exhibitions (last 5 years)
 - 19th National Trade Fair “Thrace 2010”
 - Xanthi’s Youth Festival 2009
 - HELEXPO 2007, 2008
 - Days of Research and Technology, 2007
 - “Digital Innovation and the Society of Knowledge”, 2008
 - Round table on 3D technologies for culture



PUBLICITY / RECOGNITION

- **Institute Evaluations**
 - Support of CETI in multimedia/demo/posters/leaflets production for **an Institute Evaluation**
- **Media**
 - Multimedia/video production for the media (ET1, ET3, 6)
- **Logos/Leaflets/Posters**
 - CETI logos, CETI and Departments Leaflets





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