



# *Augmented reality-based cultural heritage on-site guide*



information society  
technologies programme

Key Action III

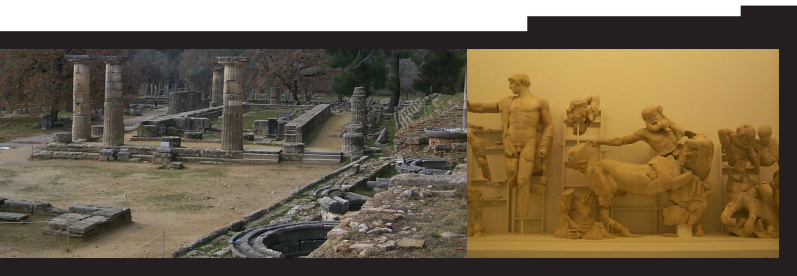
Action Line III.2.3:  
access to scientific & cultural heritage

reality



**Archeoguide** project will provide access to information in cultural heritage sites in a compelling, user-friendly way through the development of a system based on advanced IT techniques including augmented reality, 3D- visualization, mobile computing, and multi-modal interaction. Visitors will be provided with a see-through Head-Mounted Display (HMD), earphone, and mobile computing equipment. A tracking system will determine the location of visitors within the site and audio-visual information will be presented to her/him in context with her exploration, allowing him/her to gain more insight into relevant

aspects of the site. The system will be tried out in ancient Olympia in Greece. Particular emphasis will be given to virtual reconstruction of the remains while insight will be provided about the changes that the site has undergone over the years.



## Key issues

- ▶ The project aims at the exploitation of new technologies such as Augmented Reality, Virtual Environments and 3D-Visualisation, and new user interaction modes for accessing and presenting information and navigation in a user-friendly, intuitive and compelling way.
- ▶ It addresses the themes of the valorization and exploitation of Europe's cultural heritage by the creation of digital representations of Archeoguide's trial site.
- ▶ Archeoguide will exploit the digital representation of cultural heritage information. The tools that will be developed for organizing cultural heritage information, will enable scientific researchers to better search, access, and store cultural heritage information. It will also allow people from remote locations to experience a "virtual tour" of the site through the Internet.
- ▶ Linguistic and cultural diversity is an essential aspect to be addressed by the system as is personalised thematic navigation aid in physical and information space:  
the selection of information and the way it is presented to visitors will take into account a visitor profile and visit profile.



# Technical Approach

Several new techniques will be used, and existing techniques will be combined in innovative hybrid systems:

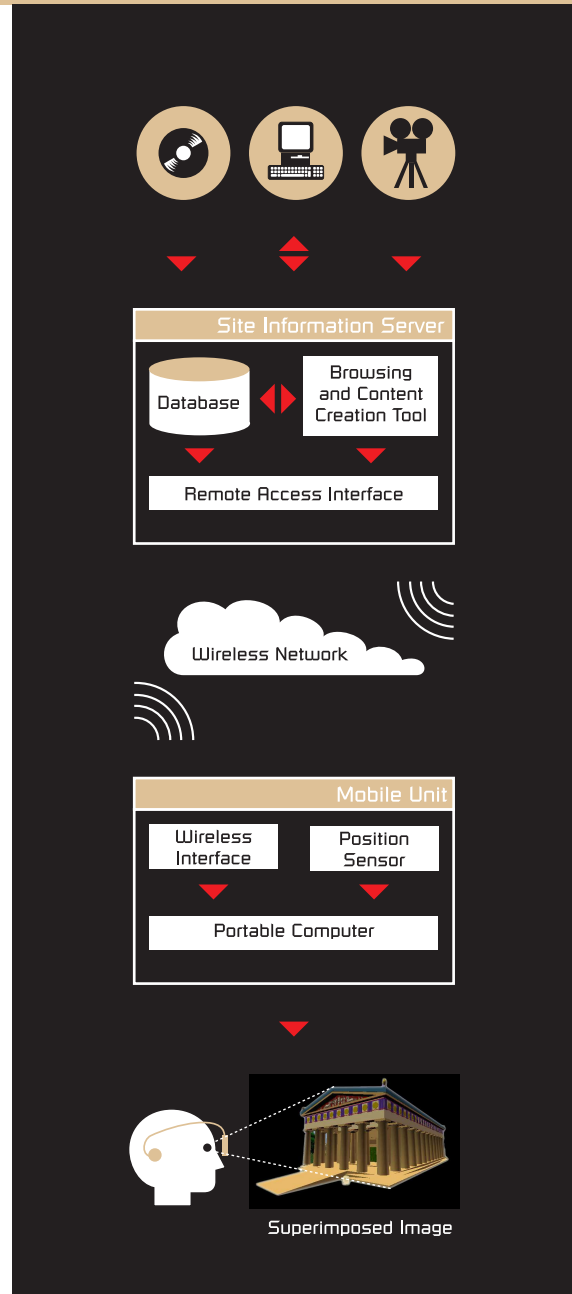
- ▶ Position tracking based on combination of GPS and image based recognition of landmarks.
- ▶ Virtual reality techniques for rendering the virtual objects fast enough.
- ▶ Exploration of synthetic multi-modal user interfaces (e.g. Gesture recognition, speech processing).
- ▶ Wireless LAN technology for transmitting information between visitor's computers and site server.
- ▶ Development and integration will use the standards of Object Oriented analysis, design (UML) and programming (C++, JAVA, CORBA), and of transmission of virtual objects (MPEG-4, XML).

# Expected Achievements

The system should stir a renewed interest to the visitors of a cultural heritage site; its deployment to many other sites is also a major goal of the project.

The system should also serve as a proof of concept for a new approach to personalized navigation and guidance in information and physical space which can later be exploited in other new products.

Archeoguide should have a major impact in fostering interoperability of different systems, and thus allow a worldwide access to European cultural heritage. In particular, it should assist in establishing a common approach to the possibilities offered by the new technologies in appreciating the vast European archaeological heritage.



*ARCHEOGUIDE  
augmented reality-based  
cultural heritage  
on-site guide*

Contract number  
IST – 1999 – 11306  
Total Cost  
€ 4 851 991  
Commission Funding  
€ 2 600 000





# List of Participants



▶ INTRACOM SA - [Greece](#)



**Fraunhofer** Institut  
Graphische  
Datenverarbeitung

▶ Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e. V. – [Germany](#)



Zentrum für Graphische  
Datenverarbeitung e.V.

▶ Zentrum für Graphische Datenverarbeitung e. V. – [Germany](#)



Centro de Computação Gráfica

▶ Associação CCG<sub>zgbv</sub> – Centro de Computação Gráfica – [Portugal](#)



▶ A&C2000 s.r.l. – [Italy](#)



▶ POST REALITY – [Greece](#)



▶ Hellenic Ministry of Culture,  
Directorate for the Restoration of Ancient Monuments – [Greece](#)

## Contact:

Mr. Nikolaos Ioannidis  
INTRACOM S.A.  
Development Programmes Department  
PO Box 68  
19,5 Km Markopoulou Avenue  
19002 Peania  
Greece

Tel.: (30-1) 6860349

Fax.: (30-1) 6860312

Email: [nioa@intranet.gr](mailto:nioa@intranet.gr)