

Infrastructures for cultural heritage

Importance of cultural heritage

Foundation of European identity
Economic factor



Contribution of CH to Lisbon objectives

CH related income **335,000 M€** per year



Borgund stave church (12 c.)
4.8 M€ per year



Castles and abbeys in France
15,100 M€ per year (15% of foreign income from tourism in France)



Duerer, The Large Turf
exhibition in Albertina: **430.000 visitors** in 3 months

Endangered heritage

The loss due to decay estimated at **14,000 M€** per year.
Age, use, pollution and environmental changes.
Public investment in preservation of sites and buildings is **7,000 M€**



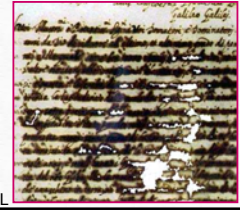
Rembrandt, Collection Teylers Museum, NL

Why dedicated RI for cultural heritage?

Gaps on national level:

- policy
- expertise in the widely interdisciplinary field of CH
- infrastructure
- training

Structured European approach needed

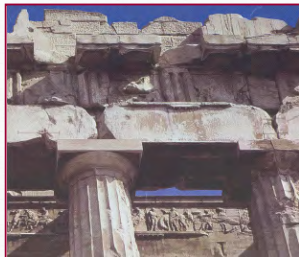


Galilei, Collection Nationaal Archief, NL

Infrastructures for cultural heritage

Targets a range of activities:

- Documentation
- Characterisation
- Conservation
- Preservation
- Interpretation and validation



Parthenon

Specific requirements of RI for CH

Analytical instrumentation

- Non-destructive or micro-destructive
- High sensitive
- Low detection limit
- Imaging
- Portable



Michelangelo, Sistine chapel

RI for CH: Transnational access

Synchrotron

X-ray radiation showed that sulfide oxidises into acidic sulphate which degrades the wood.



Vasa ship (Sweden)

RI for CH: Transnational access

Neutron and X-ray imaging

150 Roman bronze statues will be investigated (Swiss national funding)



Roman bronze statue

photo

neutron

X-ray

Lehmann *et al*, NIM A542, 2005, 68-75

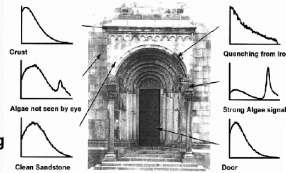
RI for CH: Portable instrumentation

Requirements

- Non-destructive
- High sensitive
- Low detection limit
- Imaging

Portable infrastructure for CH

- High quality and rarity
- Too expensive for a single group
- Provide high level service
- Strong centre for training and networking



Multispectral fluorescence imaging

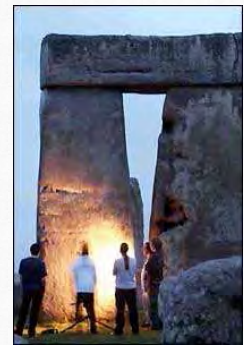
Lund cathedral

P. Weibring *et al* Applied Optics 40, 6111 (2001)

RI for CH: Portable instrumentation

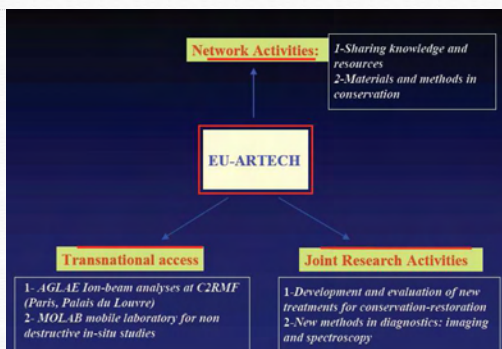
3D laser imaging

Carvings, invisible to naked eye were revealed



Stonehenge

I3 EU Artech



Sgamelotti, RICH study meeting, Rome 2005

RI for CH: e-infrastructure

Communication and collaboration infrastructure

Digital libraries and GRID systems:

Fortify research, interpretation, validation and authentication of CH.



photo

neutron

X-ray

Lehmann *et al*, NIM A542, 2005, 68-75

Infrastructures for cultural heritage

In order to optimize resources and their impact and able excellence, structured European approach to infrastructures is needed:

- Transnational access to large facilities
- Portable infrastructure
- e-infrastructure



Gallei, Collection Nationaal Archief, NL

Thanks

Colleagues, in particular to Costas Fotakis and RICH initiative
Audience