Recent developments of the Heritage and archaeology liaison office at the SOLEIL synchrotron

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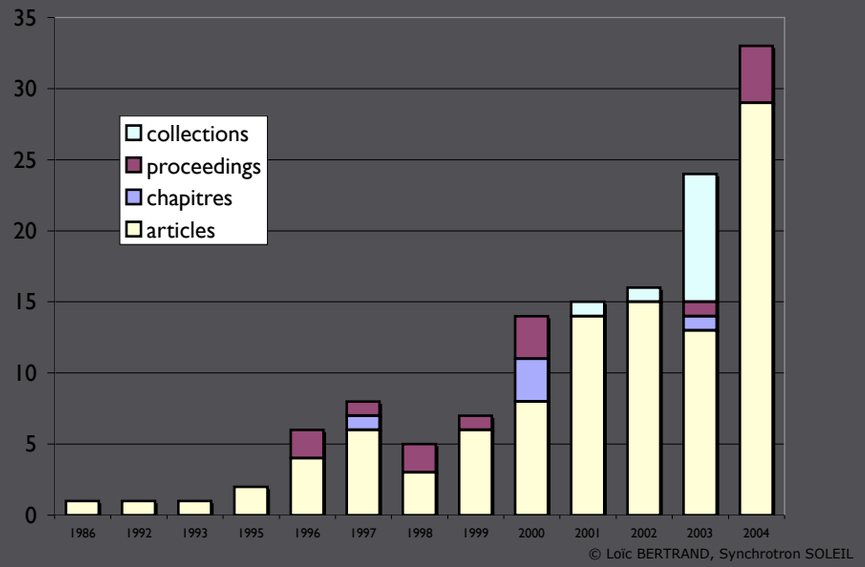
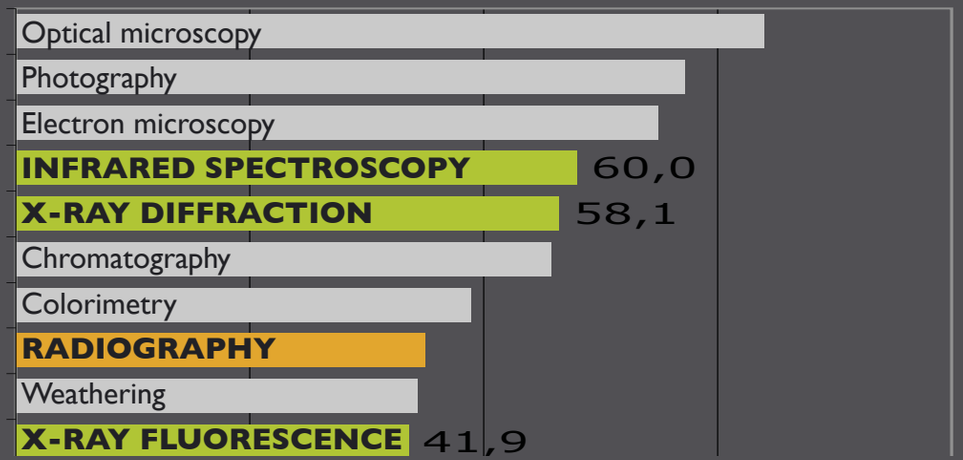
SOLEIL
SYNCHROTRON

users' demand
LURE (SOLEIL)
SRS, Daresbury



step 1: before the start of operations
contact teams
assessment
define an organisation mode

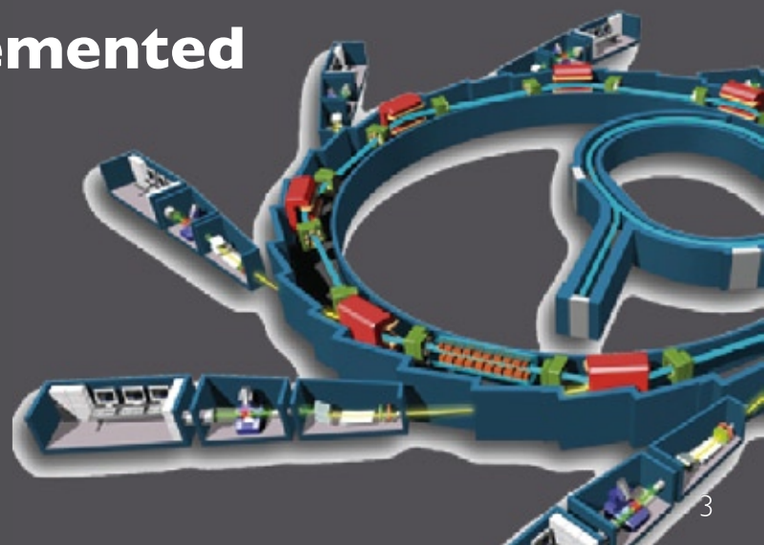
infrared spectrometry, X-ray fluorescence and X-ray diffraction are in the top ten of the methods used to study heritage artefacts



Labs-TECH / L. Bertrand, 2003

all these photon-based methods implemented at the new synchrotron source with:

- fast imaging
- chemical selectivity
- high sensitivity to traces



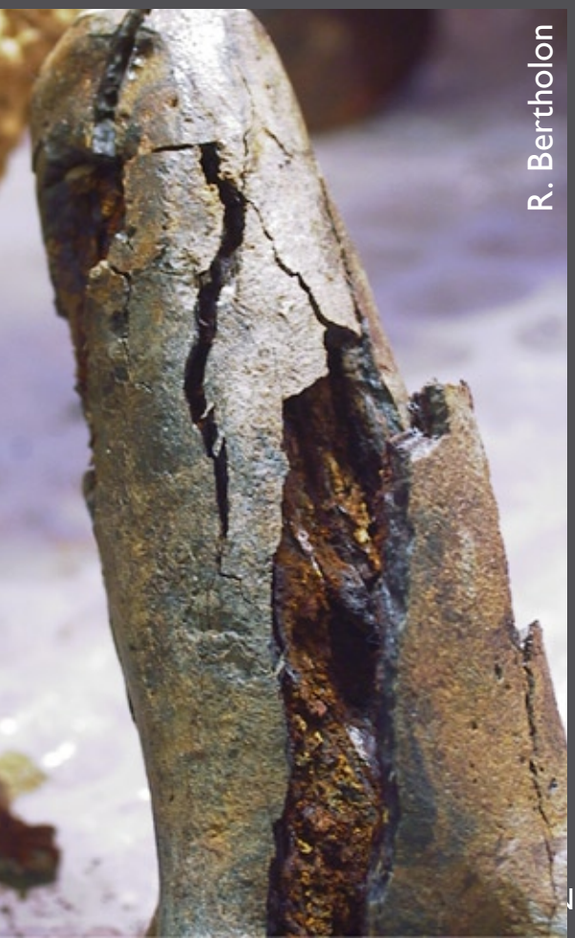
ancient materials are heterogenous

elemental

chemical

structural - ultrastructural

topographic



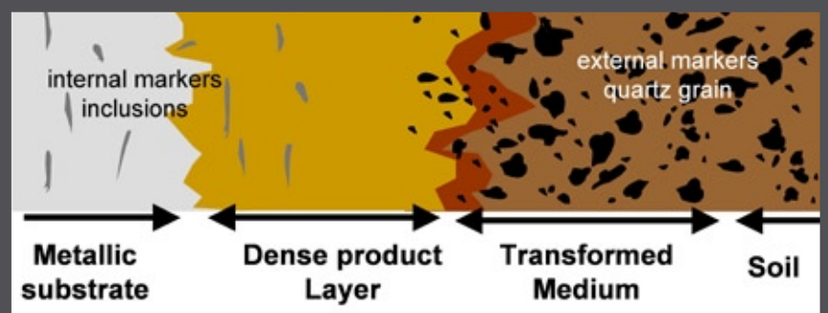
R. Bertholon

example: understanding of corrosion mechanisms

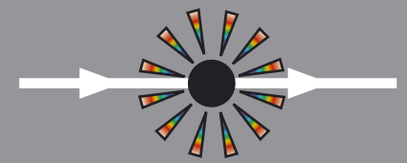
history: ancient metallurgy of iron

conservation: stabilisation treatments

restoration: limit of the “original surface”

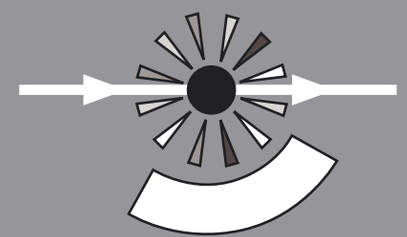


D. Neff, Ph. Dillmann, L. Bellot-Gurlet and G. Béranger. *Corrosion Sci.*, **47**(2):515-535,2005.



X-ray µ-fluorescence

X-ray µ-absorption



X-ray µ-diffraction

\+ laboratory methods…

minute samples
heterogeneity at the micron level

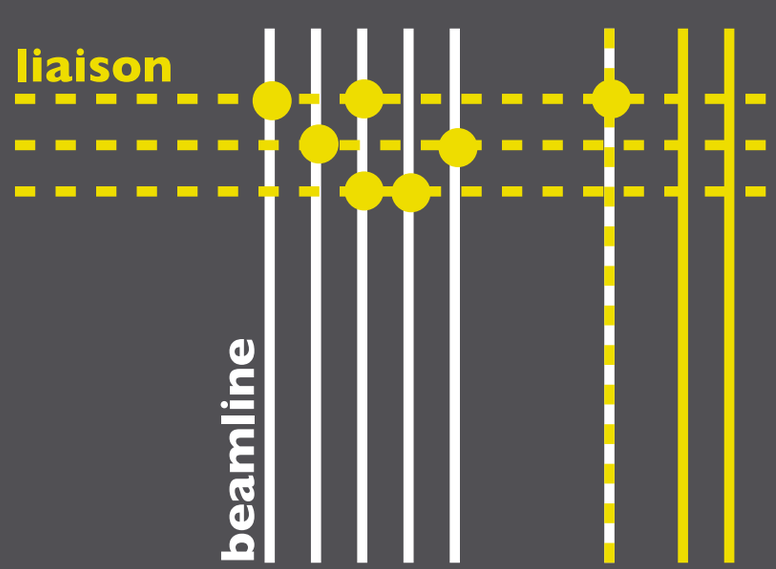
statistics

surface analyses
and beyond

preservation of sample/object integrity
non-destructive

dissatisfaction
case studies
lack of support for non-experts
selection of the topics…

step 2: liaison office
... a pre-requisite
first ever
not a dedicated beamline
access to 6-8 beamlines



HALO
HERITAGE AND ARCHAEOLOGY

open to **the entire community**
go beyond **case studies**
develop **new experiments**
contribute to the **animation** of the community

history of art and techniques

conservation - restoration

archaeology and archaeometry

… palaeo-anthropology

liaison group

1 officer

1 PhD (CNRS Humanities Dept): internal research

1 post-doc: coordination with beamline staff

day-to-day work at SOLEIL

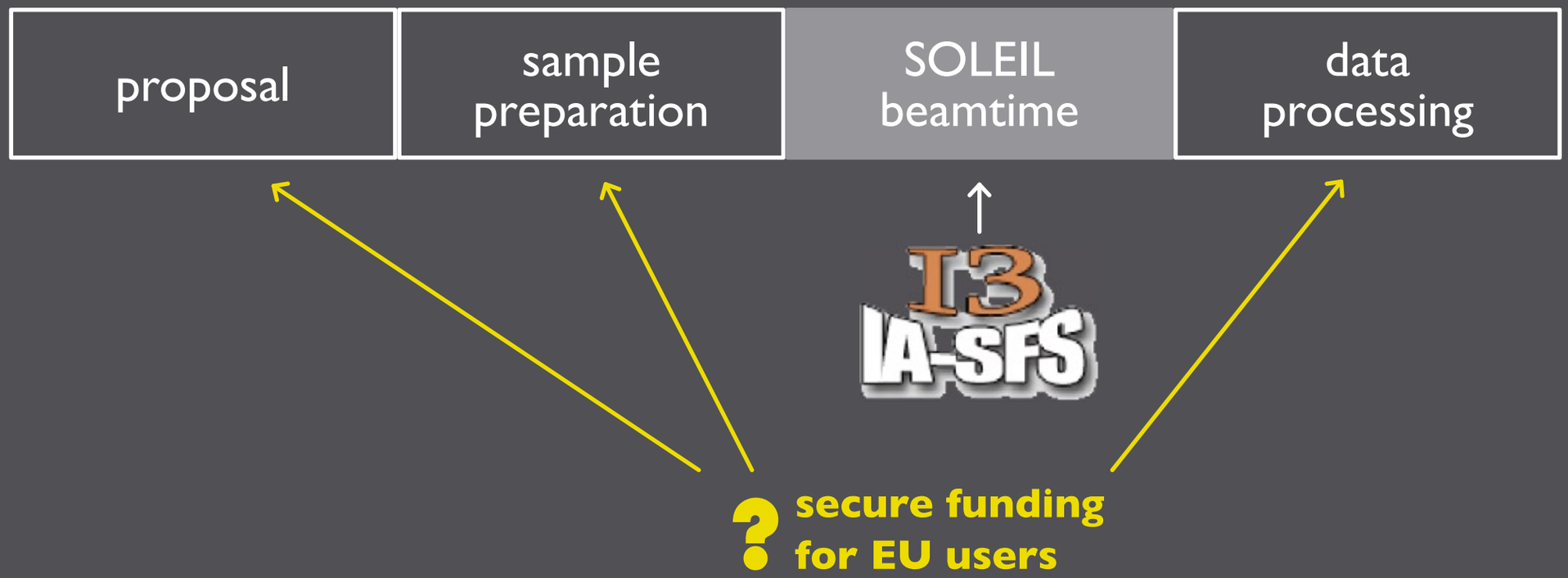
a specific review committee

environment, earth sciences, heritage and archaeology

heritage experts

- conservation scientist
- curator / art historian
- archaeologist
- palaeontologist

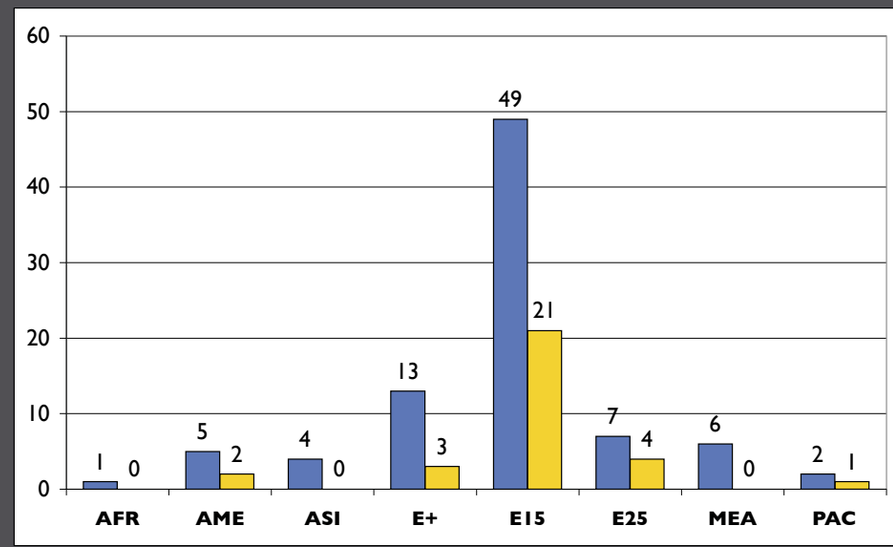
an internal support laboratory



New lights on ancient materials 2007
ageing, alteration and conservation
12-17 March 2007, synchrotron SOLEIL

ageing, alteration, corrosion
conservation and restoration
synchrotron methods

New lights on ancient materials 2004
synchrotron analysis of museum objects
12-17 Dec 2004, synchrotron SOLEIL



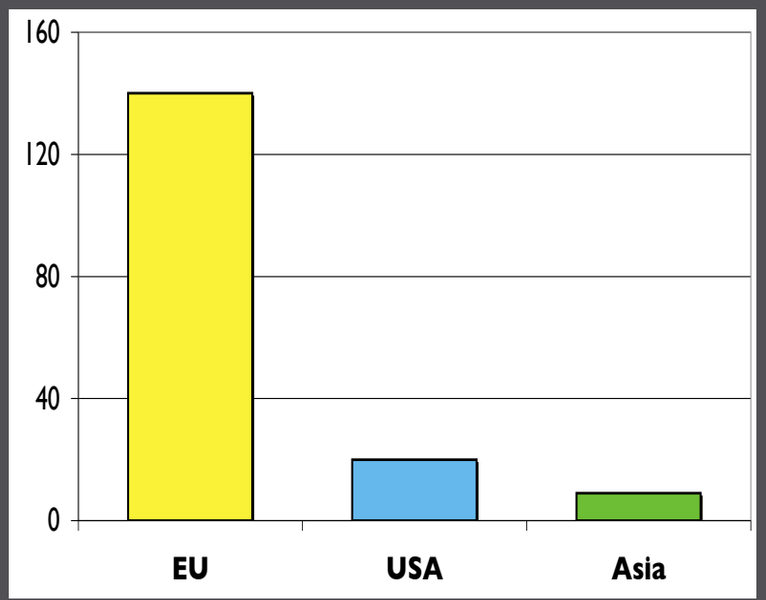
step 3: future

develop activities of the liaison office

take advantage of the critical size

Europe at the forefront

EU: 100 labs studying museum artefacts



synchrotron / heritage publications, 1986-2005

requirements

address real needs in conservation, archaeometry, art history
accept to adapt facility organisation and access modes
be truly multinational

? joining forces at a European level

moderate size projects

fund adaptations to existing facility
in cooperation with all actors

acknowledgements

SOLEIL teams

Dr Manolis PANTOS, SRS synchrotron, UK

Pr Annemie ADRIAENS, Ghent University, B

Dr Christian DEGRIGNY, ICOM-CC metal

… many visited European colleagues

FP5: LabsTech

FP6: IA-SFS

COST action G8

CNRS Humanities Dept

Ministère des affaires étrangères

Région Île-de-France

local authorities

http://www.synchrotron-soleil.fr/heritage

thank you for your attention