



# Action Colour and Space in Cultural Heritage (COSCH)

TD 1201

Start date: 07/11/2012

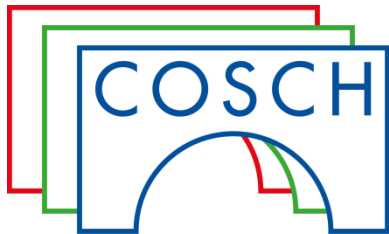
End date: 06/11/2016

Year: 1

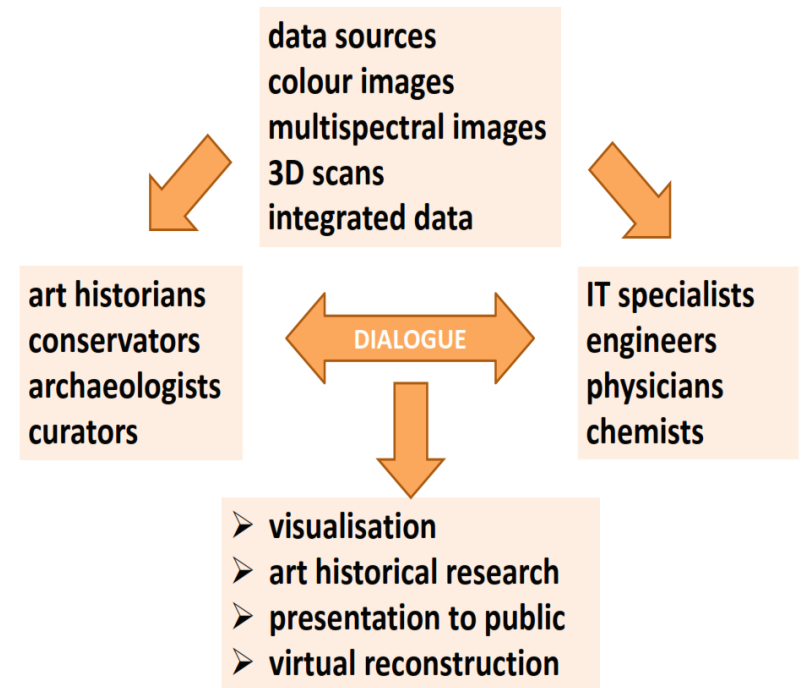
**Prof. Frank Boochs**

Action Chair

FH-Mainz (University of Applied Sciences) / Germany



COLOUR & SPACE IN  
CULTURAL HERITAGE

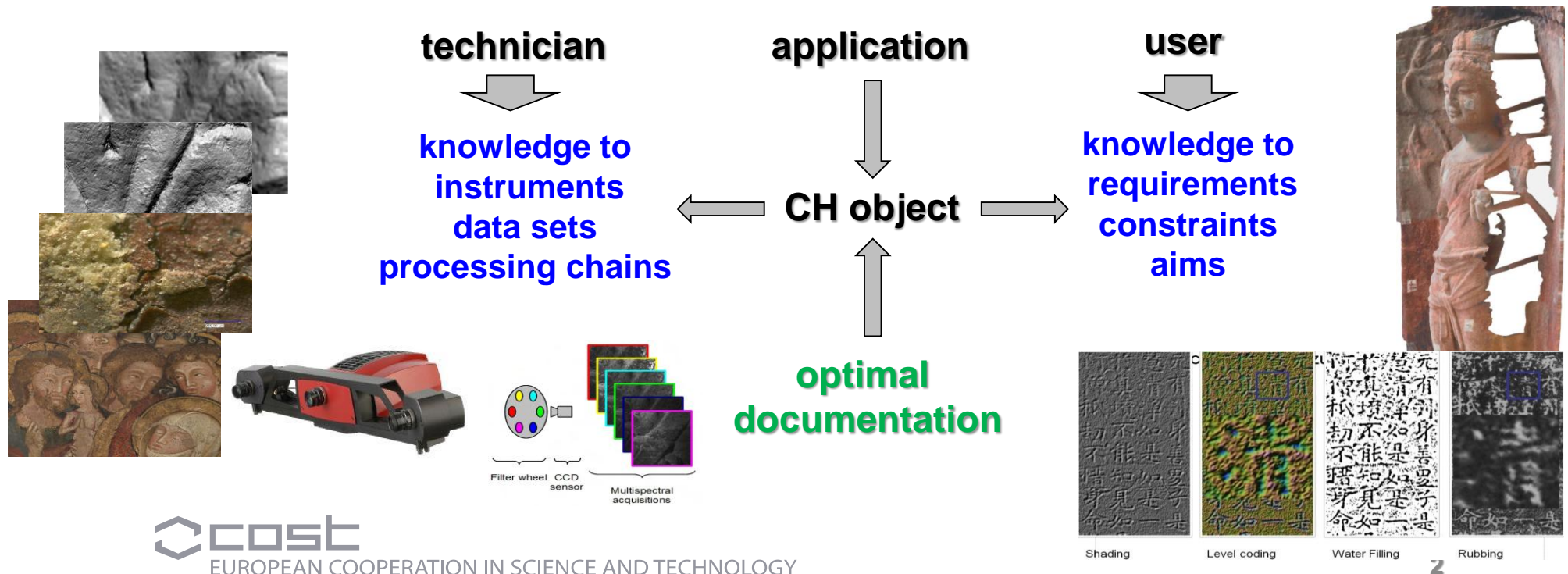


# Scientific context and objectives

(1/2)

## Background / Problem statement:

- True, precise and complete documentation of artefacts is essential for conservation and preservation of our cultural heritage (CH).
- this Action is contributing to the enhanced understanding of material CH and helps its long-term preservation.



# Scientific context and objectives

(2/2)

## MoU objectives:

- to **promote research**, development and application of **optical measurement techniques** - adapted to the needs of **heritage documentation** - based on an **interdisciplinary** cooperation
- to offer a novel and reliable, independent and global **knowledge base** facilitating the use of today's and future optical measuring techniques
- to **support** the documentation of European heritage.
- to **deepen knowledge** of the potential, output, constraints, preconditions and practical aspects of precise spectral and spatial **instruments**;
- to research and publish **case-studies** in the application of the newest spectral and spatial technologies;
- to lay a foundation for an **optimised** and **adapted use** of spectral and spatial techniques **by cultural heritage professionals** and authorities.



# Working groups

- 1. Working group:**  
Spectral object documentation
- 2. Working group:**  
Spatial object documentation
- 3. Working group:**  
Algorithms and procedures
- 4. Working group:**  
Analysis and restoration of CH surfaces and objects
- 5. Working group:**  
Visualisation of CH objects and its dissemination



# Results vs. Objectives

Results from Round Table Discussions, Mainz Meeting:

- Need for a better **integration** of the **acquisition methodologies** defined for the different multi- and hyper-spectral imaging systems used in the laboratories
  - > calibration of the imaging systems for spectroscopic measurements will require more attention and further discussion
- The **3D scanning** technology has to be **properly adopted** to CH surfaces
  - > it should allow to accurately record artifacts with required technical parameters
  - > it should allow to easy integration with multispectral and BRDF (bi-directional reflectance distribution function) measurement
- **Calibration transfer** between different instruments is critical
  - > analysis and analytical models cannot be transferred between instruments
- Using **open data standards** shall be also supported from producers of instruments and software.

# Significant Highlights in Science and Networking (1/3)

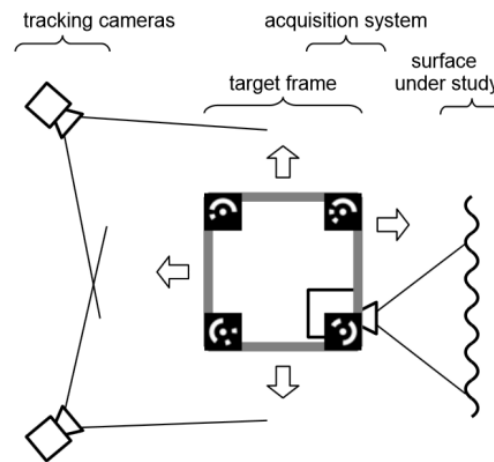
Presentation of a new method for multisensory data acquisition  
(result of a joint PhD)

## Tracking for the Registration of 3D and Multispectral Datasets

Calibration

Tracking

Simultaneous acquisitions



# Significant Highlights in Science and Networking (2/3)

Organization of the first Action workshop in Mainz, March 2013

5 WG sessions with 25 presentations

Round table discussion

Plenary meeting

Co-Organization of Denkmaeler 3D  
a user symposium in Dortmund,  
October 2013



Denkmäler3.de

Interdisciplinary conference with topics in  
Archeology, Preservation of Monuments,  
Surveying and Geoinformatics.



# Significant Highlights in Science and Networking (3/3)

Themes	WG1	WG2	WG3	WG4	WG5
<u>Acquisition</u>	Calibration issues  features of instruments features of surface features of illumination critical impact factors	Calibration issues  features of instruments features of surface features of illumination critical impact factors resolution / uncertainty	typical output of instruments impact on following processing improvement of data quality	Reproducible processes resolution vs. use shape and multispectral data	object features and their impact (visualization / analysis)  techniques and methods used

## Processing in general

### Analysis

### Standardized characterisation

### Definition of knowledge base related to object characterisation

### Visualisation and reproduction

### Data content

### Data storage, transmission and retrieval

### Quality evaluation

### Dissemination

Generation of systematical overview has started

Mutual understanding increases

Interest to work on micro-scale level





# Future Plans

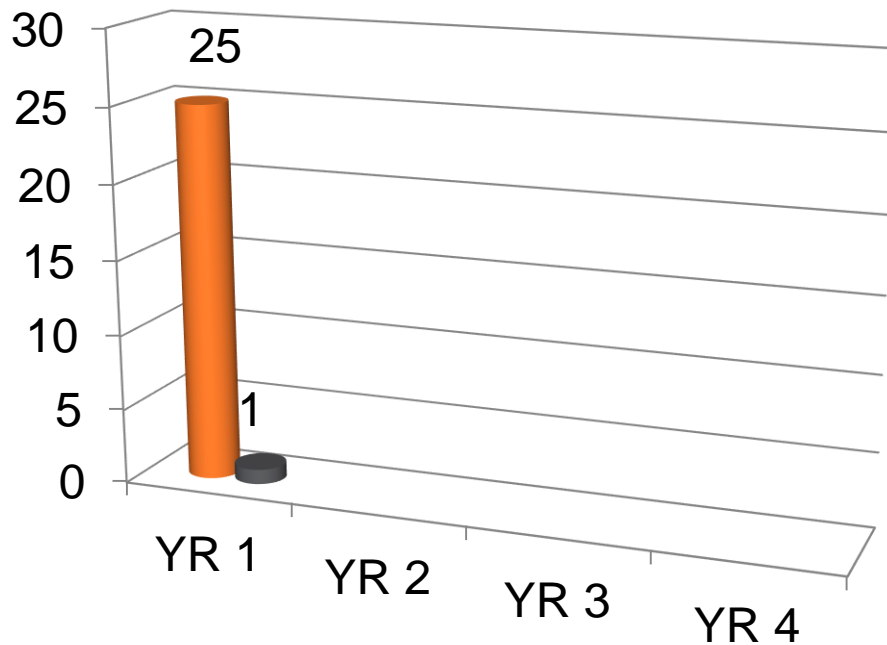
- Identification and practical exploration of important characteristics of instruments and their potential impact on data quality, usability and information content with respect to typical surfaces.
- Development of recommendations for solution providers as well as end users: to try to find other frameworks for possible research projects and cooperations.
- Identification and definition of typical application/object requirements and their impact on the characteristics of data to be able to support these applications: to choose a small number of objects to compare (dis)advantages of 3D techniques, including costs, accuracy and complexity.



# *Appendix*

- The following three slides should be prepared for information only in case of questions from the DC but should NOT be presented

# Action Parties



- Parties
- Participants from non-COST Countries

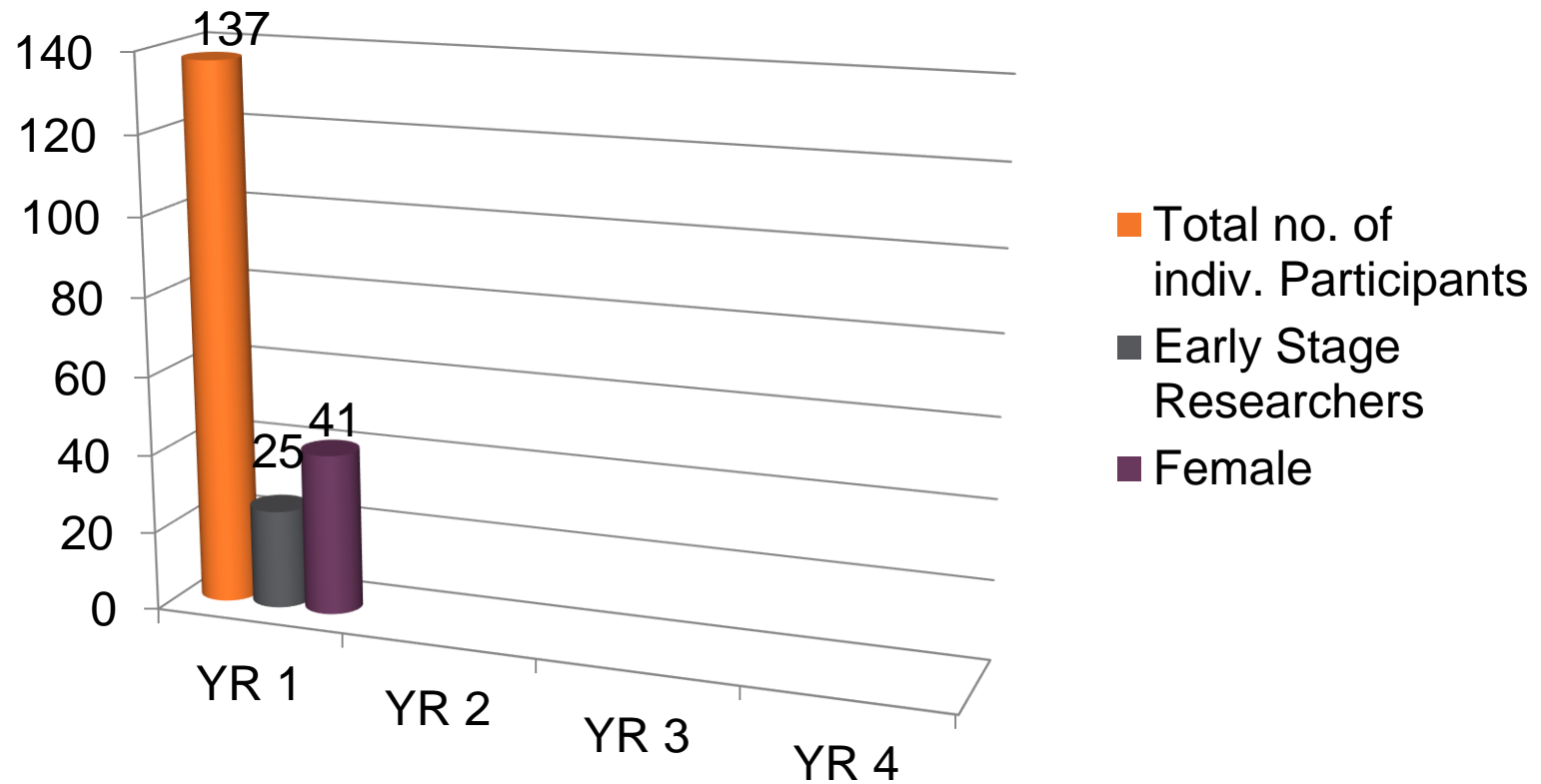
## Grant Holder :

FH-Mainz

Prof. Frank Boochs

Germany

# Action participants



# Use of COST Instruments

Activity (No.)	Year 1	Year 2	Year 3	Year 4
MC/WG Meetings	2MC 2WG			
STSMs	10			
Training Schools	1			
Workshops or Conferences	2			
Joint Publications	1			
Web Site <i>cosch.info</i>	x			
ISSN registered <i>COSCH e-Bulletin</i>	x			