Tecnologie informatiche per il restauro

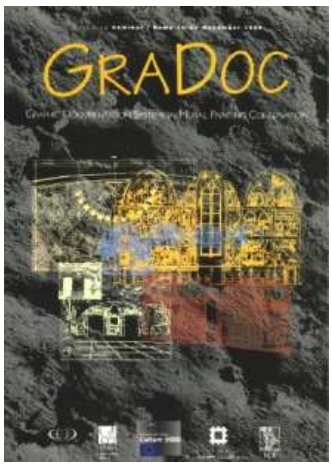
ABAQ

Giancarlo Buzzanca

anno accademico 2024 / 2025

Graphic Documentation Systems in Mural Painting Conservation

(GraDoc)



...DIGITAL GRAPHIC DOCUMENTATION AND DATABASES: CRITICAL EVALUATION AND COMPARISON WITH CONVENTIONAL METHODS

Giancarlo Buzzanca

Working Group 3 DIGITAL GRAPHIC DOCUMENTATION AND DATABASES: CRITICAL EVALUATION AND COMPARISON WITH CONVENTIONAL METHODS

Group moderators:

Robin LETELLIER
Gaetano PALUMBO

Group members:

Giancarlo BUZZANCA
Elke BEHRENS
Stefano CASCIU
Heinz LEITNER
Florian PETRESCU
Filippo PETRIGNANI
Rafal SZAMBELAN
Lorinda WONG

Giancarlo Buzzanca

Working Group 3 DIGITAL GRAPHIC DOCUMENTATION AND DATABASES: CRITICAL EVALUATION AND COMPARISON WITH CONVENTIONAL METHODS

GraDoc's Working Group 3 was composed of **10 conservation specialists** with considerable knowledge and experience in using computer technology for the *'heritage recording and documentation* of wall paintings and other decorated surfaces.
Towards the end of the seminar, it was recommended by many GraDoc participants that, due to the limited time available, the output of group sessions could only provide a preliminary discussion document.
With this in mind, Working Group 3 addressed the issues provided by restructuring some of the headings, and by expanding each heading with a list of possible answers that should be developed further, at a later date, into a Framework Document.
The following text is then an accurate representation of the themes discussed during the meetings, with, in addition, an expanded section of topics requiring more detailed explanations.

Note: Additional information to the following summarized results of this working group are given in the attached WG3 annex; all points for which such information exists are referenced with a number in brackets.
For technical terms we also refer the reader to Chapter 28 Glossary of Terms used for GraDoc.

Giancarlo Buzzanca

1. What are the pros of using computer-aided graphic documentation?

- ***Pros:***
  - Data is flexible
  - Possibility of using layer system and overlay
  - Creation of image mosaics and collages
  - Zooming to different levels of detail
  - Easy to output in different scales
  - Can more easily correlate (…) various categories of data
  - Data can be easily reproduced
  - Facilitates data sharing
  - Distributed database, mirroring, easy to insure most secure storage procedures
  - Facilitates creation and dissemination of standards
  - Wide range of software available in the market (…)
  - Matured GIS can be base of multimedia information system

Giancarlo Buzzanca

1.What are the cons of using computer-aided graphic documentation?

- ***Cons:***
  - Cost of equipment
  - Training is required, as the process becomes more complex
  - Plug and "pray"
  - Possibility of data loss by lack of sometimes expensive secure data storage procedures
  - Long term data update
  - Lack of friendliness in some software
  - Difficult to select the graphic software required (…)
  - Incompatibility between hardware and software components
  - Encourages non-selection of data
  - Raises expectations of data collection and presentation (…)
  - May convey an unjustifiable sense of accuracy and completeness

Giancarlo Buzzanca

2. What are the pros and cons of in-situ computer-aided recording?

- ***Pros***
  - Direct data input by conservator, with the possibility of quality control of immediate results
  - Saves the step of data transfer/copy to digital format
- ***Cons:***
  - Site constraints: adverse environmental conditions (dust, heat, sun, humidity, rain, etc.), lack of power or power failure, scaffolding vibration
  - Portability
  - Transport, security and insurance
  - Enhances requirements for verification procedure

Giancarlo Buzzanca

3. Other applications that use computer Technology?

- Thermography
- Multispectral imaging
- 3-D laser scanning
- Photogrammetry
- Digital imaging
- Laser surveying
- Environmental condition recording
- Radar
- Holography
- Ultrasound

This list could be much longer. The idea is that there are many other computerized tools that enhance the potential for electronic data integration.

Giancarlo Buzzanca

4. What are the criteria for choosing software and corresponding hardware?

- Adequacy to the purpose
- Knowledge to operate
- Availability of technical support
- Standardized/sustained software
- Cost
- User - friendliness
- Interoperability between software systems / platforms
- GIS functionality criteria

Giancarlo Buzzanca

5. What are the pros/cons of currently used software?

A complete answer to this question is beyond the purpose of this document.

There are mainly 2 types of software systems that can currently provide useful functionality for achieving digital graphic documentation: raster oriented software systems and vector oriented software systems. While the first type focuses on raster data processing, the second focuses on vector data processing. (…) Raster oriented software is useful when creating image basemaps (e.g. by image rectification), or when achieving final presentation that should include high quality output.

Vector oriented software is needed during graphic recording of deteriorated areas; also it allows the creation and manipulation of layers and overlays.

Giancarlo Buzzanca

6. What are the recent **advancements** and future trends?

- ***Advancements:***
  - Increased compatibility between software systems
  - Friendliness, through intuitive Graphic User Interface (GUI)
  - Raster-Vector integration
  - Digital capture of documentation basemaps
  - Inclusion of spatial information
  - Faster computers
  - Reduced storage costs
  - Compression algorithms
  - Flat screens

Giancarlo Buzzanca

6. What are the recent advancements and **future trends**?

- ***Trends:***
  - Open systems
  - Standardization of components
  - 3D imaging and Virtual Reality (VR)
  - 4D
  - Multimedia
  - Wearable computers
  - Voice recognition
  - Affordable photogrammetry
  - 3D copying
  - Stereo 3D vision on PC
  - Total mobility/portability (data broadcasting)
  - Increased secure data transfer

Giancarlo Buzzanca

7. Is the use of computers cost effective? (pros/cons)

- ***Pros:***
  - Speeds up operations, saves time
  - Data accessibility
  - Digital data representation may be of higher value (in storage) than the corresponding hard copy presentation
  - Reproducibility
  - Long term cost effectiveness
- ***Cons:***
  - Loses time
  - Output (hardcopy, i.e. special paper) is more expensive
  - Investment risk

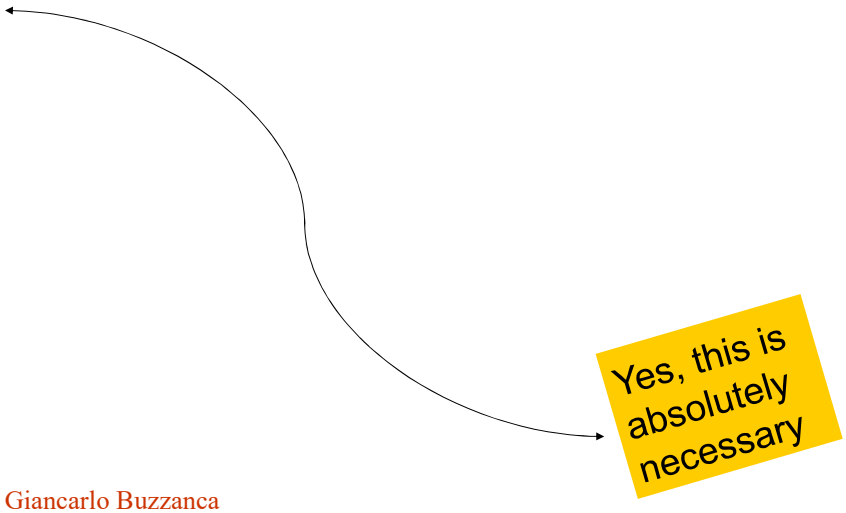
Giancarlo Buzzanca

8. What levels of digital documentation can be used together with manual methods?

- A digital system can be used to store, retrieve, manipulate and present manually recorded data by means of scaling, scanning, spatial referencing, rectification, and insertion / incorporation / combining.
- Generally, there is no restriction concerning the levels of digital documentation that can be used with manual methods.

Giancarlo Buzzanca

9. Should we create a new type of expert, a documentation specialist? (in an ideal situation)



Giancarlo Buzzanca

10. What is the **role** of the documentation specialist (and what knowledge and skills does he/she require?)

- ***Role:***
  - Assist conservation specialist and heritage managers
  - Make systems effective
  - Data exchange
  - Make the data accessible, available
  - Participate in application development
  - Divert conservation specialist from the computer back to the object

Note:
young conservation specialist will be computer literate

Giancarlo Buzzanca

10. What is the role of the documentation specialist (and what **knowledge** and **skills** does he/she require?)

- ***Knowledge or Qualifications:***
  - Computer literate (equipment)
  - Software/customization
  - Conservation understanding
- ***Skills***
  - Communication ability
  - Attitude/flexibility in the job
  - Solve technical problems (troubleshooter)
  - Communicate/interface with programmers

Giancarlo Buzzanca

11. What is the role of the conservation specialist?

- Should be the manager/ coordinator
- Have a general understanding of the possibilities of the digital method
- Responsible for defining objectives, scope and methods.
- Ensure resources for equipment upgrade and replacement of hardware and software (...)
- Should cooperate with the documentation specialist
- Responsible for coordinating / linking documentation to interdisciplinary conservation activities

Giancarlo Buzzanca

12. How can we ensure (…) accessibility of information and take into consideration long term compatibility of hardware and software?

- by On-going maintenance of data
- by On-going hardware and software upgrades and maintenance
- by Choosing standard (documented, fully described) formats
- Verifying with national archives (hoping they would take on this task)
- Access to data recovery' services (i.e. a service specialized in translating 'old data formats' to work with 'current data formats')

Giancarlo Buzzanca

13. What are the different types of digital data?

The main four types of digital data used for digital graphic documentation are:

- Vector data
- Raster data
- 3 dimensional data
- Textual data

Giancarlo Buzzanca

14. How data should be **captured**, **structured**, archived and accessed?

- ***Captured***, by using:
- *Rasters:*
  - Scanners (flat bed and/or film)
  - Digital cameras, Digital video cameras, Video camera (...)
  - Infrared cameras, radar, multispectral sensors, etc.
  - Corresponding software technologies
- *Vectors:*
  - Total station, laser theodolite
  - Digital tablet/mouse
- *Text/input devices:*
  - Keyboard
  - Scanning/OCR

Structured:

- By developing a logical file naming and directory structure
- By accompanying data with metadata (description of your data, or data about data)
- By developing network (Intranet) standards
- With relational databases
- By developing and applying guidelines

Giancarlo Buzzanca

14. How data should be captured, structured, **archived** and **accessed**?

- ***Archived by***:
  - avoiding duplicate information (redundancy)
  - backing up your data
  - using a dispersed system of data storage
  - storing original files in ASCII format
  - avoiding formats that induce loss of information
  - promoting the use of Postscript files for publishing
  - accompanying data with metadata
  - including software that allows graphic data preview

- ***Accesed by:***
  - ensuring that the organization has a data manager
  - making data easily accessible
  - safeguarding data

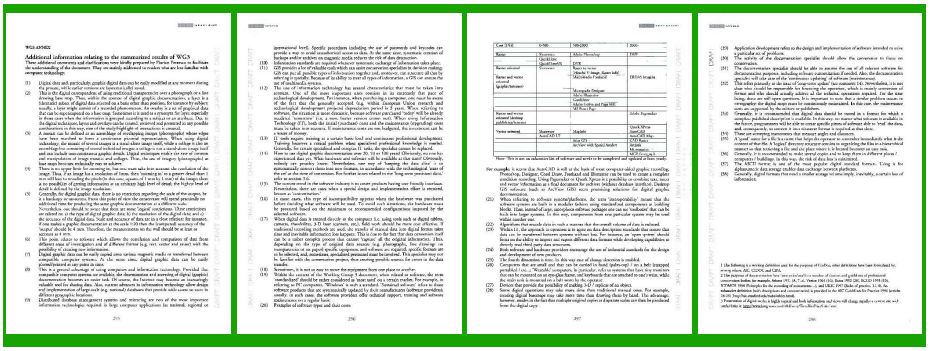
15. How can curved surfaces be represented in 2-D output?

- By defined planar projection
- By simulation/ Quick time "virtual reality"
- By unfolding

Giancarlo Buzzanca

WG3 15. Additional information relating to the summarized results of WG3

These additional comments and clarifications were kindly prepared by Florian Petrescu to facilitate the understanding of the document. They are mainly addressed to readers who are less familiar with computer technology.



Giancarlo Buzzanca