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Implementing Digital Technology Adoption by Cultural Heritage Professionals

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Vision for Digital Cultural Heritage



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Wouldn't it be great if...

Cultural heritage material and sites all over the planet had digital imaging records that were:

- High quality – capturing all relevant information
- Organized to be searchable and accessible to everyone everywhere

Need



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The need for this work is acute and global in scope

- Most current documentation and presentation methods are outdated and incomplete
- Cultural Heritage material, even from the same site or culture, is dispersed throughout the world
- Physical access is limited – material may be in storerooms, institutional basements, under people's beds

Advantages



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- New dimensions – can contain more information than a drawing or photograph
- Interactive – interactivity aides adoption by cultural heritage professionals and the public
- Preservation – know what material exists, where it resides, and who is responsible for it
- Access – greater availability through internet, CD/DVD, other means

Adaptation and Adoption of Technology



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Computer imaging technology must be both adapted to and adopted by the cultural heritage community



Plan de Jupiter, Grand St. Bernard Pass, Italian/Swiss Border

Adaptation



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An account of the process used, the ‘empirical provenance’, is required

- A researcher must know whether a feature on the digital record is on the original and vice versa
- These requirements will drive the selection of imaging processes towards the most accountable methods

Adaptation



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Issues of empirical provenance in textured 3D models:

- Placement relationship of geometry and textures
- Alignment and merging of separate scans
- Effects of data compression

Adoption



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Adoption of computer graphics methods in cultural heritage requires:

- Overcoming skepticism regarding the necessity, viability, and economic practicality of adoption
- Proof of concept projects demonstrating improved acquisition of useful information and greater accessibility

Adoption



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For cultural heritage workers to adopt digital imaging techniques they need:

- Recognition that different jobs call for different imaging approaches
- Acquisition plans for equipment, software, and skills

Adoption



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Example: technology adoption plan, staged to meet skills and budgets

- Digital Photography and Image Processing
- Panoramas
- Object Movies
- Polynomial Texture Maps (PTMs)
- Photogrammetry
- 3D Structured Light Scanning



3D PTMs

- Integrated capture of PTMs and 3D structured light information
- Inherently registered range data and texture reflectance data
- Experimental documentary method under development by CHI in collaboration with HP labs' Tom Malzbender and Dan Gelb with the assistance of Marc Proesmans of Eyetronics NV

What is Cultural Heritage Imaging (CHI)?



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CHI provides documentation services, consulting, and training in a variety of digital imaging techniques to cultural communities, archaeologists, cultural heritage institutions, and others who record and preserve our collective past

CHI is a California based 501(c)(3) non-profit corporation

Contact



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