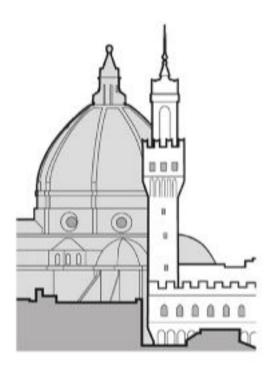# Electronic Imaging & the Visual Arts

EVA 2018 Florence

PROCEEDINGS
Editor: Vito Cappellini

Proceedings e report

118

Electronic Imaging & the Visual Arts

EVA 2018 Florence

9-10 May 2018

edited by
Vito Cappellini

PROGRAM

Electronic Imaging & the Visual Arts

'The Foremost European Electronic Imaging Events in the Visual Arts'

Forum for Users, Suppliers & Researchers

The key aim of this Event is to provide a forum for the user, supplier and scientific research communities to meet and exchange experiences, ideas and plans in the wide area of Culture & Technology. Participants receive up to date news on new EC and international arts computing & telecommunications initiatives as well as on Projects in the Visual Arts field, in archaeology and history. Working Groups and new Projects are promoted. Scientific and technical demonstrations are presented. Technology and Art Exhibitions are promoted.

Main Topics

- ❖ 2D – 3D Digital Image Acquisition
- ❖ Leading Edge Applications: Galleries, Libraries, Archaeological Sites, Museums & Historical Tours
- ❖ Mediterranean Initiatives in Technology for Cultural Heritage:
  Synergy with European & International Programmes
- ❖ Integrated Digital Archives for Cultural Heritage and Contemporary Art
- ❖ Management of Museums by using ICT Technology: Documentation, Access, Guides & Other Services
- ❖ The Impact of New Mobile Communications on Cultural Heritage and Modern Arts Area
- ❖ Cloud Networks
- ❖ Semantic Webs
- ❖ Ontology Systems
- ❖ Human - Computer Interaction for Cultural Heritage Applications
- ❖ Copyright Protection (Watermarking & Electronic Commerce)
- ❖ Cybersecurity
- ❖ Culture and *e-government*
- ❖ Activities and Programmes for *e-learning*
- ❖ Digital TV and films
- ❖ 3D Developments and Applications in the Cultural Heritage Area
- ❖ Virtual Galleries and Exhibitions
- ❖ Digital Music
- ❖ Digital Theatre
- ❖ Cultural Tourism & Travel Applications
- ❖ Impact of Culture in the Smart City
- ❖ Art and Medicine

WHO SHOULD ATTEND

THE CULTURAL SECTOR: The Visual Arts Community including Museums, Libraries, Archaeological Sites, Educational Institutions, Commercial Galleries and Dealers, Auction Houses, Artists & Collectors

THE HI-TECH INDUSTRY SECTOR: Multimedia Systems, Image Acquisition & Analysis, Databases, Display & Printing, ICT Industry, Telematics & Systems Manufacturing, On-line Information Services

MEDIA & RELATED SECTORS: Publishing, Press, Film, Television, Photography, Printing, Advertising, Graphics Design, Consumer Media

IMAGING SYSTEMS RESEARCHERS: Imaging Systems, 3-D Acquisition, Reconstruction & Representation Systems, Information Sciences

TOURISM & TRAVEL SECTOR: Tourism Agencies & Operators, Travel Agencies

THE GOVERNMENT SECTOR: Ministries of Culture and other Institutions involved in Cultural Heritage, Ministries of Industry, Education, Research and Science, Regional Governments

Co-Chairmen: Vito Cappellini, Enrico del Re – Florence University
vito.cappellini@unifi.it   enrico.delre@unifi.it

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jrhemsley6@gmail.com

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Gianpiero Alfarano, Laboratory Design Model, Design Campus, University of Florence, Italy
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For information on the Exhibitions:
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PROGRAM - PLANNING

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Venue: **Hotel Pierre**
Via De' Lamberti, 5 - 50123 Firenze
Tel. +39 055 216218   Fax +39 055 2396573
E-mail: pierre@remarhotel.com
http://www.hotel-pierre-florence.com/

Special reservations for rooms are provided (please use code EVA18)

WORKSHOP

WORKSHOP   INNOVATION AND ENTERPRISE – INNOVAZIONE E IMPRESA
(Italian Language)

9,30 – 13,00
Chairman: Enrico Bocci, Vice-Presidente Confindustria Firenze, Firenze

Technological requirements in the Cultural Heritage field are outlined and opportunities for Italian Enterprises and SME's working in the field, using new technologies, are presented.

Regional and National Applied Research Programs in Italy are described.

Activities by National Organizations and Firms working in the area of Telecommunications, Informatics, Environment and Infomobility are presented.

Funding by European Commission is considered, with particular reference to multimedia and telematics for Cultural Heritage. Special consideration is given to the EC Plan HORIZON 2020.

Initiatives regarding the "know-how" transfer from Research Organizations to the Industrial Sector are described, in particular to create Start-Ups and new Enterprises.

Organizations and Companies present their activities and experiences.

Invited Speakers: - Andrea Arnone, Pro-Rettore al Trasferimento Tecnologico e
*   Presidente di CsaVRI, Università degli Studi di Firenze*
*   - Laura Castellani, Responsabile del Settore Infrastrutture e*
*   Tecnologie per lo Sviluppo della Società dell'Informazione,*
*   Regione Toscana*
*   - Paola Castellacci, VAR GROUP*

Speakers include: - Stefano Cinquini, TELECOM ITALIA
*   - Renzo Zampini, INFOCAMERE*
*   - Andrea Calistri, SAPAF Srl, Firenze*
*   - Riccardo Bruschi and Luca Bencini, T.T. TECNOSISTEMI, Prato*
*   - Andrea Sbandati, CISPEL, Confservizi TOSCANA, Firenze*
*   - Gianluca Vannuccini, Servizio Sviluppo Infrastrutture Tecnologiche,*
*   Comune di Firenze, Firenze*
*   - Francesco Mati, Piante MATI, Pistoia*
*   - Claudio Tasselli, Qu.In. Srl, Calenzano, Firenze*
*   - Franco Guidi, NEUMUS, Firenze*
*   - Massimo Canalicchio, Mentor Incubatore di Firenze, Firenze*
*   - Marco Cappellini, CENTRICA Srl, Firenze*

Closing: - Cecilia Del Re, Assessore Sviluppo Economico,
*   Comune di Firenze, Firenze*

13,00   Lunch Break

CONFERENCE

Wednesday, 9 May

Chairmen: *Vito Cappellini, University of Florence*
                        Enrico Del Re, University of Florence

14,15 *Opening:*   *James Hemsley,*
                             EVA Conferences International
                          Enrico Vicario,
                             Director of Department of Information Engineering –
                             University of Florence
                          Gabriele Gori,
                             General Director Fondazione Cassa di Risparmio di Firenze
                          Paolo Castellacci,
                             President GRUPPO SESA

15,30   Coffee Break

ROOM A

15,45   **SESSION 1 – STRATEGIC ISSUES**
Chairman: *Paolo Blasi, University of Florence, Florence, Italy*

"Interactive Image Reconstruction from its   Bahar Taşkesen[1],
Incomplete, Irregular and Imprecise   A G Constantinides[2]
Fragments"   [1]Middle East Technical University, Turkey
                                                     [2] Imperial College London, U.K.

"At the Intersection of Art, Architecture   Herbert D. G. Maschner[1],
and Archaeology: 3D Virtualization and   Victor Manuel Lòpez-Menchero Bendicho[1],
Contemporary Heritage"   Miguel Ángel Hervás Herrera[2], Jeffrey Du
                                                     Vernay[1], Aurelia Lureau[1,3], James Bart McLeod[1]
                                                     [1] Global Digital Heritage, St Petersburg,
                                                     Florida, U.S.A.
                                                     [2] Baraka Arqueólogos SL, Ciudad Real, Spain
                                                     [3]Université Paris – Panthéon-Sorbonne, France

"Is three better than two?   Claudio Lucchiari,
A study on EEG activity and imagination   Maria Elide Vanutelli,
abilities in 2D vs 3D stimuli"   Raffaella Folgieri
                                                     Department of Philosophy,
                                                     Università degli Studi di Milano,
                                                     Milan, Italy

"A Scientific Method for the Attribution of Paintings with application to Leonardo's Mona Lisa twins"	J. F. Asmus[1], Vadim Parfenov[2] [1]Department of Physics & Center for Advanced Nanotechnology, University of California, CA, U.S.A. [2]Department of Quantum Electronics and Opto-Electronic Devices, Saint Petersburg Electrotechnical University Saint Petersburg, Russia
"Use of Multimedia and Virtual Reality Technologies to Represent Russian Cultural Heritage"	Nikolay Borisov[1,2], Artem Smolin[2,1], Vera Slobodyanuk[1,2] [1]Dept. of Information Systems for Arts and Humanities, Saint Petersburg State University [2]Dept. of Graphic Technologies, Center for Design and Multimedia, ITMO University Saint Petersburg, Russia

ROOM A

17,15   SESSION 2 – NEW SCIENCE AND CULTURE DEVELOPMENTS & APPLICATIONS

Chairman: Edoardo Calia, Istituto Superiore Mario Boella (ISMB), Torino, Italy

"*Homo Technologicus* comes of Age: An Ongoing Evolution"	Giuseppe O. Longo University of Trieste Trieste, Italy
"Cognitive stages in rational thinking - toward human technology"	Mika Laakkonen Faculty of Social Science, University of Lapland Lapland, Finland
"A new Compact VNIR Hyperspectral Imaging System for Non-Invasive Analysis in the FineArt and Architecture Fields"	M. Picollo[1], A. Casini[1], C. Cucci[1], J. Jussila[2], M. Poggesi[1], L. Stefani[1] [1] Nello Carrara Institute for Applied Physics of the Italian National Research Council (IFAC-CNR) Florence, Italy [2] SPECIM, Spectral Imaging Ltd. Oulu, Finland

"The place of inspiration of the Flemish Triptych by Rogier van der Weyden. A contribution of the *landscape busting* to one of the *vexata quaestio* of the Sicilian history"

R. Franco
Società Italiana di Geologia Ambientale
Gangi, Italy

"The Cultural Heritage of tomorrow: should we put a limit to the influence that new technologies have on culture and design?"

Gianpiero Alfarano, Erika Lascialfari
DESIGN CAMPUS,
University of Florence
Calenzano - Florence, Italy

"The use of the intelligent cutting guide PERSEUS during Total Knee Replacement"

Lawrence Camarda[1],
Antonio D'Arienzo[1],
Michele D'Arienzo[1]
[1]Orthopaedic and Traumatology Department,
University of Palermo
Palermo, Italy

Thursday, 10 May

ROOM A

9,30   **INTERNATIONAL FORUM ON "CULTURE & TECHNOLOGY**
            Chairman: Vito Cappellini, University of Florence, Florence, Italy

The structure of the FORUM is presented.
Actual developments and perspectives are outlined, regarding *Culture* and *Technology.*

- Cooperation Groups
- Proposed Projects
- Funding Opportunities
- European Commission Plans

Opening: *- Eugenio Giani, President Consiglio*
                                              Regionale, Regione Toscana, Italy

Speakers Include:

                                              - Cristina Acidini, President Accademia delle
                                              Arti del Disegno, Florence, Italy
                                              - Edoardo Calia, Research Director, Istituto
                                              Superiore Mario Boella, Turin, Italy
                                              - Alberto Del Bimbo, Director Centro per la
                                              Comunicazione e l'Integrazione dei Media,
                                              University of Florence, Florence, Italy
                                              - Veronica Elena Bocci,
                                              Coordinator DITECFER, Pistoia, Italy
                                              - David Feldman, Vice President,
                                              THE MONA LISA FOUNDATION, Zurich,
                                              Switzerland
                                              - Monica Carfagni, Full Professor of Industrial
                                              Engineering, University of Florence, Florence,
                                              Italy
                                              - Carlo Francini, Florence Municipality,
                                              Florence, Italy
                                              - Paolo Zampini, Director of Conservatorio di
                                              Musica Luigi Cherubini, Florence, Italy
                                              - Emiliano Degl'Innocenti, DARIAH-IT National
                                              Coordinator, Consiglio Nazionale delle
                                              Ricerche, Italy
                                              - Francesco Bellini, University of Rome "La
                                              Sapienza" and Research Director of
                                              EUROKLEIS, Rome, Italy
                                              - Francesca Gemma, Aracne editrice int.le,
                                              Rome, Italy
                                              - Giovanni Gasbarrone, CIU Confederazione
                                              Unione delle Professioni Intellettuali,
                                              Responsabile Lazio, Italy

11,45   Coffee Break

12,00	**SESSION 3 – NEW TECHNICAL DEVELOPMENTS & APPLICATIONS**
Chairman:	*Andrea De Polo Saibanti, Fratelli Alinari IDEA Spa, Florence, Italy*

"Latest Innovation on Capturing Historical Photographic Ethereogenous Material: The Alinari Experience"

Andrea De Polo Saibanti
Fratelli Alinari IDEA SpA
Florence, Italy

"International Standardization of FTV"

Masayuki Tanimoto
Nagoya University and Nagoya Industrial Science Research Institute
Nagoya, Japan

"4D Ray-Space and Ultra-Wide Area FTV"

Masayuki Tanimoto[1], Hirokuni Kurokawa[2]
[1]Nagoya Industrial Science Research Institute, Nagoya, Japan
[2]University of Aizu
Aizu Wakamatsu, Japan

"Digital innovation & Technological explosion *The New Challenges of the Security Management*"

Franco Guidi, Giancarlo Caroti
Neumus SrL
Florence, Italy

"New Trends of 3D Technologies and Copyright Protection"

Vito Cappellini[1], Francesca Uccheddu[2]
[1]University of Florence and INN-3D
Italy
[2]INN-3D and Department of Industrial Engineering-University of Florence and INN-3D Srl
Italy

13,15   Lunch Break

ROOM A

14,40	**SESSION 4 – CULTURAL ACTIVITIES – REAL AND VIRTUAL GALLERIES AND RELATED INITIATIVES**
Chairman:	*Jeanette Zwingenberger, Université Paris 1 Panthéon-Sorbonne, Paris, France*

"Museo Nazionale del Bargello"

Ilaria Ciseri
Museo Nazionale del Bargello
Florence, Italy

"Resisting a Total Loss of Digital Heritage Web 2.0 – Archiving & Bridging Thesaurus for Media Art Histories"	Oliver Grau Department for Image Science, Danube University Krems, Austria
"The extraordinary role of the imaging techniques in the conservation and valorization of Cultural Heritage"	Mauro Matteini ICVBC – C.N.R. Florence, Italy
"Technology and theatrical tradition in art exhibitions: "Earlier Mona Lisa" in Shanghai"	Jean Paul Carradori, Qing Li Shanghai International Interior Design Festival Europe area
"Renaissance Experience: Florence and Uffizi"	Marco Cappellini, Paolo De Rocco, Paolo Romoli Centrica Srl, Murate Idea Park Florence, Italy
"Smarticon: A Digital Eco-System for Cultural Heritage. Iconographic Convergences in Art and in World Religious"	Sara Penco Start up "Sapere Project" Rome, Italy
"Some Reflections & Questions on Emerging Forms of Digital Photo-Libraries"	James R. Hemsley Birkbeck College London, U.K.
"Contemporary Art Creation and Exhibitions"	Paola Imposimato Studio Creazioni di Design e Arti Grafiche e Pittoriche, Florence, Italy

16,40   Coffee Break

ROOM A

16,55   **SESSION 5 – ACCESS TO THE CULTURE INFORMATION**
Chairman: James Hemsley, EVA Conferences International, U.K .

"Creative perception, decoding of hidden images, contextualisation and interactive learning process"	Jeanette Zwingenberger Université Paris 1 Panthéon-Sorbonne Paris, France
"Instant Architecture: Hosted Access to the Archivision Research Library with Built-In Image Management & Presentation Tools"	Maureen Burns[1], Andreas Knab[2] [1]Archivision Associate & IMAGinED Consulting Los Angeles, U.S.A. [2]Owner vrcHost LLC Miami, Florida, U.S.A.

"Maximizing Metadata: Embedded Metadata Tools"	Marcia Focht Department of Art History, Binghamton University Binghamton, New York, U.S.A
"Il Piccolo Masaccio e le Terre Nuove. Creativity and Computer Graphics for Museum Edutainment"	Valentina Zucchi[1], Antonella Guidazzoli[2], Giovanni Bellavia[2], Daniele De Luca[2], Maria Chiara Liguori[2], Francesca Delli Ponti[2], Federica Farroni[2], Beatrice Chiavarini[2] [1]Museo Terre Nuove San Giovanni Valdarno, Italy [2]Cineca Bologna, Italy
"Canals, Cities, Museums, Libraries & Photography: A Reconnaissance Study of Regent's Canal, London"	Graham Diprose[1], Christina Hemsley[2], James R. Hemsley[3] [1]Photographer, Author & Lecturer London, U.K [2]Digital Consultant & Photographer London, U.K [3]Birkbeck College London, U.K.
"3D Visualization: Revealing Imagery Space by Technological Parameter"	Nina Sosna Department of Visual Anthropology, Institute of Philosophy Moscow, Russia
"A Techno Social Collaborative Platform to Manage Optimize and Crowdfund Cultural Heritage Initiatives"	F. Spadoni[1], F. Tariffi[2], R. Rossi[1], S. Lusso[2] [1]Rigel Engineering S.r.l. Livorno, Italy [2]Space S.p.A. Prato, Italy

SPECIAL EVENT

Wednesday, 9 May: 19,00 - 22,00

Visit to *Art Collection* of FONDAZIONE CR FIRENZE

EXHIBITION

ROOM B

Wednesday 9 May: 11,00 - 18,00

TECHNICAL EXHIBITION

Augmented Virtual Reality Projects-Realizations and 3D Digital Technologies will be presented with Technical Demonstrations.

Documentation on TECHNICAL EXHIBITION will be available.

Thursday 10 May: 10,00 – 18,00

ART EXHIBITION

Organizer and Coordinator: Riccardo Saldarelli, Presidente della Sezione Artisti della ANTICA COMPAGNIA DEL PAIOLO (Presidente Anna Bini)

Riccardo Saldarelli has given very important Contributions to "Digital Art", since 1970. He will present many of his Paintings, regarding in particular "Digital Art" Creations, by using large Digital Displays. Also Giusy Celeste and Jannette Rutsche will present their "Digital Art" Works.

Paintings of other Artists will be also shown.

At 16,30 Franco Samoggia (Sezione Scienze), introduced by Riccardo Saldarelli, will present his Book "IL VIZIO DI LAVORARE", making also reference to a special Medal - created by Riccardo Saldarelli – which has travelled on a "Spacecraft".

Documentation on ART EXHIBITION will be available.

For information on the EXHIBITION:
CENTRICA S.r.l.
Piazza della Madonna della Neve, 5 - 50122 Firenze - Italy
Tel.: (+39) 055 24 66 802 – Fax: (+39) 055 20 09 785
E-mail: info@evaflorence.it   Web pages ~ http://www.evaflorence.it/home.php

Events Organization: INN-3D Srl, Empoli (FI)

Official Television TVL Spa Pistoia

NEXT EVA EVENT

9-12 July 2018   **EVA London 2018**

Web Site: http://www.eva-london.org

PROCEEDINGS

The cultural heritage of tomorrow: should we put a limit to the influence that new technologies have on culture and design?

Gianpiero Alfarano, Erika Lascialfari

DESIGN CAMPUS

University of Florence

Calenzano, Florence, Italy

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Technological and digital innovation is becoming more and more rapid and pervasive in its use and diffusion by tapping an ever-wider spectrum of processes.

These new generation technologies are increasingly integrating themselves and integrating various *cultural heritage* areas, such as the conservation, enhancement, and enjoyment of cultural heritage, and find applications in various projects such as increased reality, the *Internet of Things* and digital manufacturing.

This leads to new forms of musealization, fruition and dissemination of artistic and cultural heritage, in which the technological components make the difference and give the cognitive and emotional experiences a very important role; consequentially it is characterized a guest who is increasingly expected to be the protagonist of this cultural experience and not a passive spectator.

First of all, we are faced with an enhanced web, capable of modifying cultural aspects thanks to its content and the power of the media, from which we get a continuous exchange of information.

This ongoing flow leads the user to address the digital culture on three levels of time:

- BEFORE: "*before fruition*" the user is informed, having access to a news archive of any kind, ranging from those directly provided for example by the museum, to those of other users who evaluate their experience, comment and express opinions.

For example, if we decide to visit a museum, we can get information from two macrochannels: directly from the official website, where we will find detailed information on

timetables, fares and collections details, or from reviews and opinions channels such as Trip Advisor or channel company.

In this case we will have other information that we would not find on "classic" channels, such as what works deserve absolutely to be seen, as they liked most to users who have already gone to the same museum.

- DURING: "*during enjoyment*", that is, all that digital set of actions that the user performs directly when they receive the information. The use of interactive maps, smartphone apps, audio guides, increased reality, Li-Fi systems; all times when the user feels involved in the path and experience he is facing.

When we are in the museum or sometimes on the internet site we can immerse ourselves in virtual and interactive experiences that help us understand the work better and more deeply while guiding us along the way.

- AFTER: "*after fruition*", the user re-submits contents, comments, reviews and experiences to the web, as if he was still enjoying the work, giving new imput to users who are still beginning to enjoy.

Concluded the cultural experience we are now accustomed to "sharing", making public what we did, what we saw and how we felt to see it. By emulation or passion for the protagonist, nowadays most people use social, and even those who do not, by social status will be brought to tell their own experience that will be heard and shared with many.

So doing is fueling an acceleration of the irreversible phenomenon that culture produces; that is, a spiral loop that is self-feeding and pushes itself further: thanks to culture and with culture, another culture is created.

If the phenomenon exists for so long, today there is an implementation of speed.

A way to produce culture different from the one practiced until recently, driven by new technologies and users that can not be controlled. This results in the creation of a spontaneous communication in which the originality and truthfulness of the information is not known. Just refer to the scandalous expansion of *Fake News*. In addition to veracity, the manipulation of information has largely focused on attention for speculative purposes. The case of the scandal that invested TripAdvisor on "bought" reviews is a significant indicator.

The risk is to get to a point where only the "macro elements" of our cultural heritage will be known or those who will have a "sponsor" with greater influence. In the field of fashion, for example, this trend has already come into play with the entry of *Fashion bloggers*, *Ambassadors* and *Influencers*, so we could easily suppose, without even a great effort, that this could happen in other cultural areas.

As is well known, virtual and multimedia languages can thus have a revolutionary impact. Thanks to the unlimited ability to tell stories, the ability to rebuild the worlds and objects lost today is becoming available, plus the ability to enjoy it enthusiastically and emotionally. They can also support the documentation by creating digital, 2D and 3D archives that are useful to the entity that manages them, as well as stimulating new stimuli of interest and public affection for cultural goods. Digital archiving guarantees the indelible preservation of the work spontaneously triggering actions of care and safeguarding, knowledge and enhancement.

This abundance of digital data, as it creates new scenarios of new perceptual knowledge, crumbles the expectations that we have been accustomed to having in the near to the not yet known. Everything happens before it is lived.
Until recently, to see a work of art we had to go to a certain city, in a particular museum, and we did not know what was waiting for us, as it would have been to see it close, while now we can see it on the screen of our pc in very high resolution to the slightest detail, so in that sense you lose the surprise in having it really in front because somehow we have already seen, already experienced, we have already created an opinion about it.

The new opportunities that cultural institutions now have, increasingly require more information technology to better exploit cultural heritage.
Digital manufacturing can in fact be used in integrative restoration, digital reconstructions and the creation of high-definition models, in tactile alternatives for disabled and children, and also in museum merchandising. Through the 3D survey, it is possible to create digital archives in three dimensions of artefacts, artefacts and artworks for use both for dissemination purposes, such as the development of 3D online museums, as well as tourist applications and integration to cultural enjoyment. The use of this type of technology was initially limited in the useby high-cost and low-performing devices for the scholars,

while the general public has had a difficult approach due to the low availability of intuitive tools that they stopped using ease of use and immediate accessibility to real-time navigation.

However, the evolutionary acceleration of these technologies has allowed a widespread ramification of the success of these IT tools, making it easier to access and approach any level of use whether it is for researchers and operators in the industry, whether they are users concerned. An evolution that allows an ever-expanding dissemination of cultural heritage.

In this new perspective, Design plays a significant role. The 3D digital medium holds sensitive potential in terms of beneficial or disadvantageous relaunches for the dissemination of cultural heritage.
If digitization allows conservation and facilitation in propagating the value of the artwork, at the same time the problem of ease of counterfeiting is evident.
The copyright protection is, in fact, one of the most delicate issues for the 3D printing industry especially with the advent of mass 3D.
We could make a comparison with what happened a few years ago in the music world.
After all, a .stl file is a kind of .mp3 of the objects. With the advent of this type of file, the music industry has been invested by a real tsunami that has left behind its pros and cons.
Looking at the positive, we've come to an extreme usability of music content, but have also had negative consequences, such as ever-expanding digital piracy.
Such a scenario is reappearing with the advent of massive 3D printing, and it will not be enough to hide behind the idea that engraving a CD is much easier than printing objects in 3D because at the time, even for CD playback, we did not even take this easy access to music content for granted.

A very important and relevant issue is that of digital file protection, especially in the field of *cultural herritage* or design.
An increasingly emerging need to avoid counterfeiting of works and models, which will be increasingly subject to faithful reproduction of the original. As is known about this trend, highly innovative solutions have been developed and are still being studied but not yet

sufficient to contain or avoid counterparts which are acceptable to support the contribution of technological emancipation to knowledge and protection of cultural goods.

The contradiction between preserving, protecting, guarding and counterfeiting demands also implicitly impacts the use of digital technologies in designing new objects.

3D modeling assists each design phase up to the real simulation with the three-dimensional automated printing of the object itself. This allows you to have enormous possibilities of formal expression through digital tools that accelerate the process of visualization of an idea and make it even easier for the isometric control already visible in the virtual field before it materializes. That's the role of digital modeling assumes a value that asks distinction of identity as it happens in the authenticity of a work of art.

Both a monument and a design object need to be protected. The artwork and design object that can be circulated on the web, available to anyone, need more protection.

It follows that in order to benefit from digital technologies, it is necessary to increase the awareness of the type of use of computer tools and how to preserve their autoriality in every step of the dissemination.

Particularly with regard to Design, we can notice the deficiencies of this awareness caused by two major factors.

The first as a result of the diffusion of IT technologies in the project culture that enable 3D modeling a more direct and facilitated approach to the preview of the product to be achieved. The second factor, however, concerns the subconscious subjection that computer tools allow those who, enticed by their performance, do not absorb their potential but undergo such process facilitation.

The problem is that the tool is also predominant on the vision of the shape of things. These are the features, commands and tools of the program that dictate the form, not the design idea of the designer. In the academic sphere, this trend is very rampant, especially in those who, aspiring to the profession of designer, still do not know how to fully use these tools, which should remain the same, without becoming overwhelming on the final aspect of the product.

To illustrate this trend we could make a comparison between these new tools and the classic designer tool, pencil. If we take a pencil and try to draw circles, we will certainly find more difficulty than drawing simple curved lines, but that does not mean that we will exclude circles from our projects; we will only have to refine the technique.

Today, however, we see many young designers approaching these new technologies with a "surrender" attitude: they do not even try to draw shapes that they know they do not know how to model. As a result, everything flattens into definable shapes with very few simple commands, such as extrusion, creating products that do not represent the research for a formal idea of the designer, but the degree of software usage skill with which they were generated.

Gaining ingenuity, subtlety, or simple adaptability to the facilitating potential of the instruments, however, gives a fundamental consideration of how to deal with a future strategy.
Technological innovation opens up and raises new perspectives, but at the same time only a very strong sensitivity to awareness of what we have and what we can do to facilitate the exchange between ways of acting and ways of thinking.
A new focus that will distinguish between what we identify as a cultural heritage and what, through technology, makes us cultured with new skills with which we use computer resources.

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