Co-funded by the European Union

Erasmus+

Virtual Reality Engineering and Game Design for Architecture and Cultural Heritage

EU H2020 - RISE - MSCA - GA N° 821870
ROMETHEUS
This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement N° 821870

PAVIADIGIWEEK

DIGITAL ARCHITECTURE WEEK IN PAVIA

Virtual environments and digital simulations for development of cultural identity in the Digital Age

19.9.2022 - 23.9.2022

SUSTAINABLE CITIES

DIGITAL TWINS

GAME DESIGN

D&D
Digital & Documentation
V International Conference

Interviews and Book Presentations

Reliable GIS for Urban Planning modeling
International Seminar

Virtual Architecture Design studio
International Seminar

H-BIM for Architectural Management
International Seminar

3D DATABASES

Exhibition Museum

Concert & social events

Meetings with citizens

QUALITY EDUCATION

VREA
Design Meeting
Joint Master's Course
Design Measures meetings

Students meetings

Digital Landscape and Cultural Heritage Routes
International Conference
PROMETHEUS H2020

DIGITAL HUMANITIES FOR ARCHITECTURE

COMMUNITIES

For informations:
dadalab@unipv.it
vrea@unipv.it

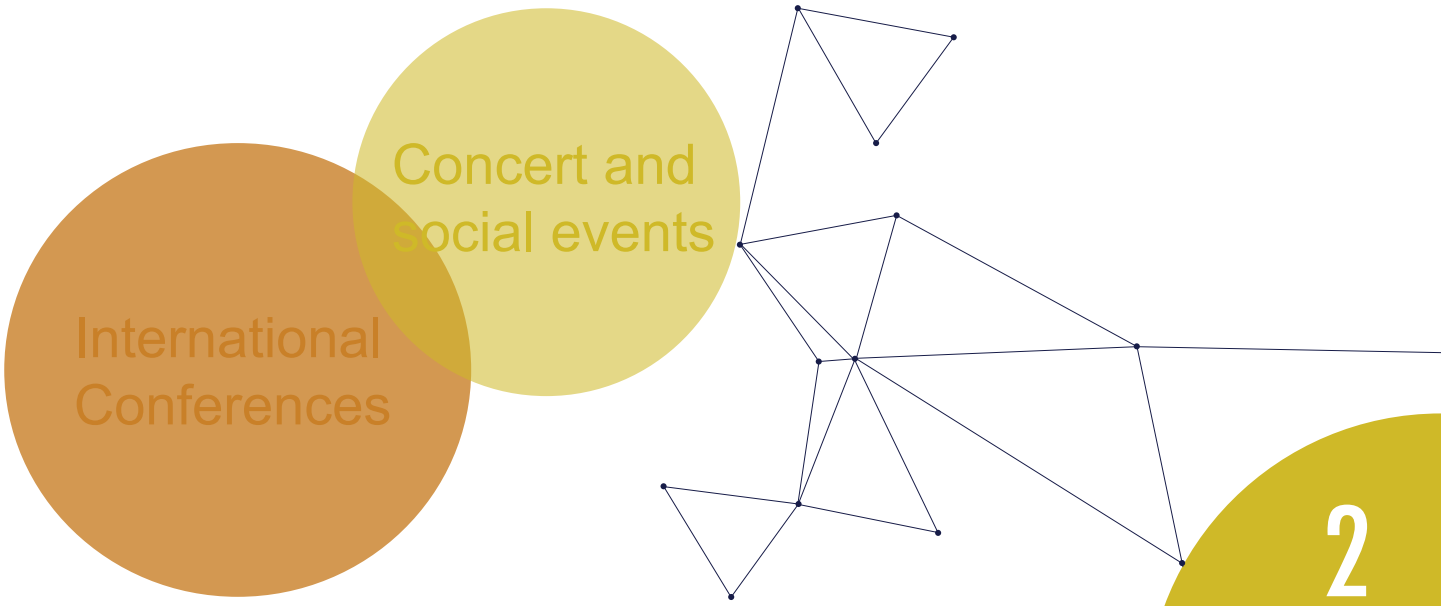
WHAT IS THE DIGIWEEK

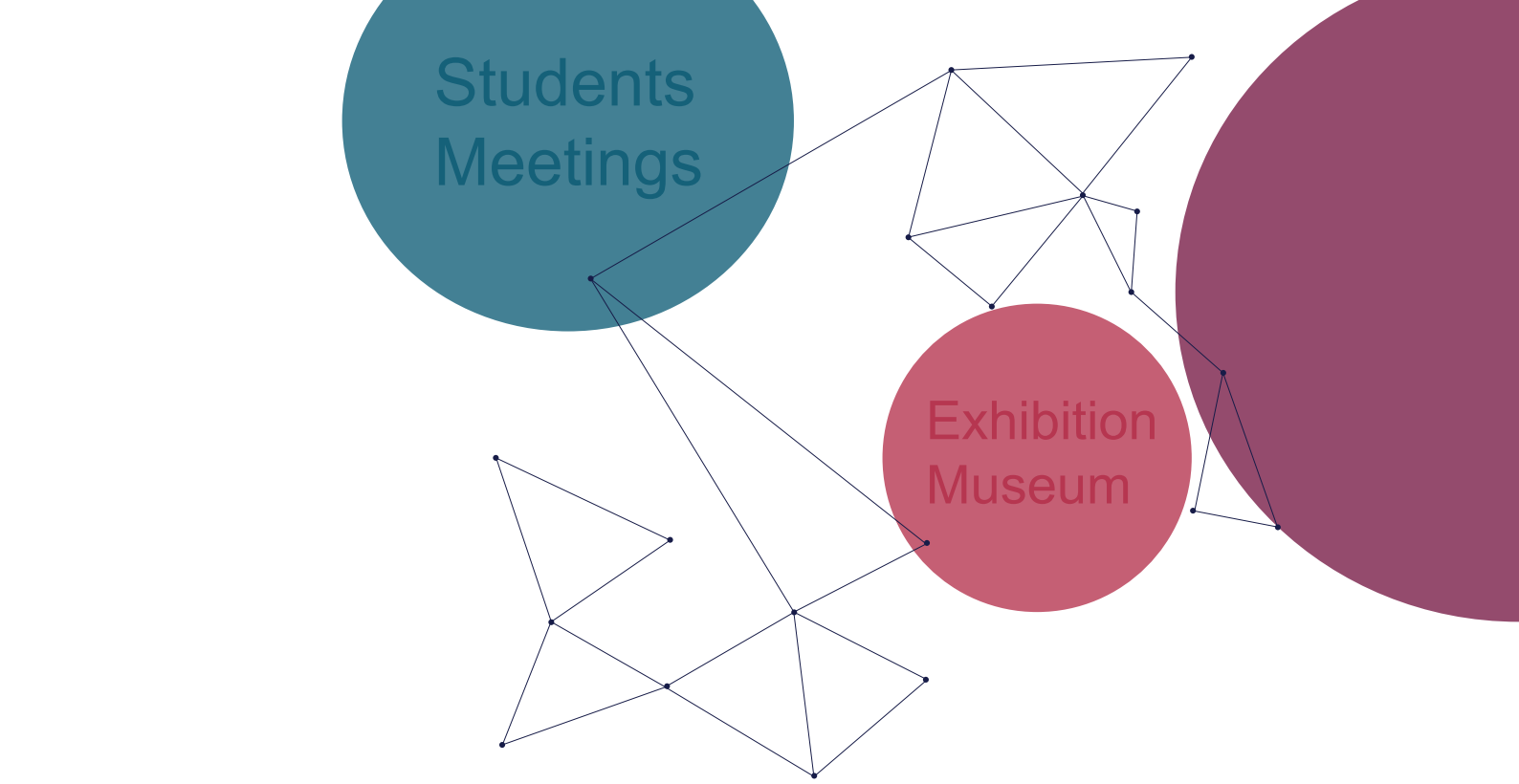
VIRTUAL ENVIRONMENTS AND DIGITAL SIMULATIONS FOR DEVELOPMENT OF CULTURAL IDENTITY IN THE DIGITAL AGE

PaviaDigiWeek aims to offer an advanced educational experience on the opportunities of applying Digital Skills in the field of Architecture and Engineering, triggering interdisciplinary experiences on the implementation of Digital Content and Virtual Reality for Cultural Heritage management.

The European digital transformation approach, recommended for the sustainability of Cultural Heritage, inevitably reflects the scientific contribution that universities can provide in the field of digital strategies for Heritage knowledge, design, and communication. The challenge is to consolidate a background of knowledge and research for young students, citizens and professionals to interact and collaborate with the world of creative industries and virtual products, applying languages and practices of digitisation and contents enrichment.

The field of Architecture and Engineering has been pursuing, for many years, the cross-fertilisation of different disciplines, considering the joint contribution of knowledge in the field of surveying, restoration, architectural history, building technologies, Cultural Heritage policies and territorial planning, as a necessary education for smart users to learn how to interact and contribute to the sustainability of global Heritage. Digital environments and virtual spaces are developed and continuously enriched to support and fulfil the demands of society, with an increasingly realistic and multidimensional reproduction of contents, from the architectural artefact to the urban and territorial scale. In the last two years, the pandemic crisis has boosted the application and sharing of cultural and creative contents, from Digital Twins to Digital Humanities, museums, architecture, and the building industry. The opportunity related to the development of digital technologies and contents in professional and social sectors can be increased and enriched, to extend an educational ecosystem that enhances international excellence in Digital Cultural Heritage technologies.

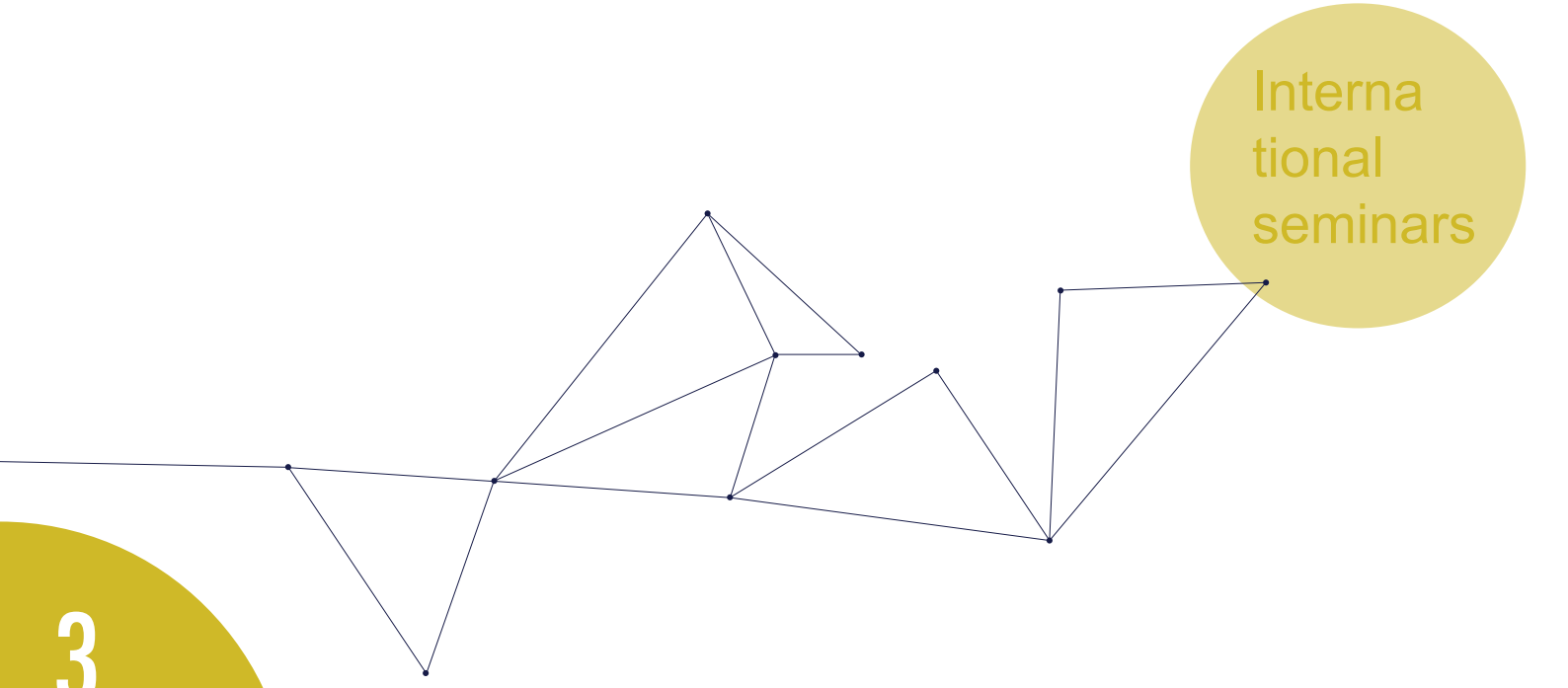




The workshop, organised by the Department of Civil Engineering and Architecture of the University of Pavia, includes an extensive programme of lectures, events, exhibitions, and social meetings, aimed at bringing the public closer to the dimension of Digital Practices and their advanced potential, in the opening and sharing of cultural and creative content related to the Digital Twins and Digital Humanities for Cultural Heritage. The event is organised in presence at campuses, university colleges and cultural venues in the **city of Pavia** from **September 19th to 23rd, 2022**. The programme includes appointments among researchers, students, and citizens, and it is aimed at the dissemination of knowledge on Digital Management and Virtual Representation for Architecture and Cultural Heritage products.

International conferences on Digital Documentation, Digital Landscapes, and developable connections at the scale of **Cultural Heritage Routes** will define the cultural structure of the workshop, with the participation of national and international speakers, and **keynotes** from ERC case studies in research of excellence. The program will be complemented by international seminars on the sharing of **digital practices** and the development of **virtual products** related to the 3D modelling for urban planning, architectural management and virtual design.

During the week, meetings between students, citizens and researchers from the **H2020 European projects PROMETHEUS** and **Erasmus+ VREA** will alternate with exhibitions, interviews, publication presentations, musical performances, and social meeting events.



WHO WE ARE

COMMITTEES

ORGANIZING COMMITTEE

Carlo Berizzi
Daniela Besana
Vittorio Casella
Tiziano Cattaneo
Roberto De Lotto
Iaonni Delsante
Marica Franzini
Alessandro Greco
Marco Morandotti
Olimpia Niglio
Sandro Parrinello, Chair
Francesca Picchio
Massimiliano Savorra
Elisabetta Maria Venco

ORGANIZING SECRETARIAT

Anna Dell'Amico
Silvia La Placa
Francesca Picchio
Giulia Porcheddu
Chiara Rivellino
Anna Sanseverino

SCIENTIFIC COMMITTEE

Andrea Arrighetti, SISMA, University of Florence, Italy (PROMETHEUS)
Joanna Badach, Politechnika Gdańska, Poland (VREA)
Salvatore Barba, University of Salerno, Italy (D&D)
Martina Altea Bellinzona, GLOBEC, University of Pavia, Italy (VREA)
Stefano Bertocci, University of Florence, Italy (D&D)
Alessandro Luigini, Free University of Bolzano, Italy (D&D)
Cecilia Maria Bolognesi, Polytechnic of Milan, Italy (D&D)
Santiago Becerra, Universidad Nacional de Córdoba, Argentina (VREA)
Davide Benvenuti, Nanyang Technological University, Singapore (VREA)
Justyna Borucka, Politechnika Gdańska, Poland (VREA)
Stefano Brusaporci, University of L'Aquila, Italy (D&D)
Katarzyna Choroś, Lublin University of Technology, Poland (VREA)
Alessio Cardaci, University of Bergamo, Italy (D&D)
Antonio Conte, University of Basilicata, Italy (D&D)
Luis Cortés Meseguer, Universitat Politècnica de València, Spain (PROMETHEUS)
Fernando Cos-Gayón López, Universitat Politècnica de València, Spain (PROMETHEUS)
Raffaella De Marco, University of Pavia, Italy (PROMETHEUS)
Anna Dell'Amico, University of Pavia, Italy (PROMETHEUS)
Francesca Fatta, "Mediterranea" University of Reggio Calabria, Italy (D&D)
Victoria Ferraris, Universidad Nacional de Córdoba, Argentina (VREA)
Riccardo Florio, University of Naples Federico II, Italy (D&D)
Alberto Forte, GLOBEC, University of Pavia, Italy (VREA)
Mariateresa Galizia, Universitu of Catania, Italy (VREA)
María-Isabel Giner-García, Universitat Politècnica de València, Spain (PROMETHEUS)
Emanuele Giorgi, Tecnologico de Monterrey, Messico
Magdalena Goździk, Lublin University of Technology, Poland (VREA)
Pablo Hernández Quiñones, Tecnologico de Monterrey, Messico
Gray Hodgkinson, Nanyang Technological University, Singapore (VREA)
Chia Hsiao Ching, Nanyang Technological University, Singapore (VREA)
Laura Inzerillo, University of Palermo, Italy (D&D)
Elena Ippoliti, La "Sapienza" University of Rome, Italy (D&D)
Szymon Kowalski, Politechnika Gdańska, Poland (VREA)
Silvia La Placa, University of Pavia, Italy (VREA)
Massimiliano Lo Turco, Polytechnic of Turin, Italy (D&D)
Lalo Magni, University of Pavia, Italy (VREA)
Michał Malewczyk, Politechnika Gdańska, Poland (VREA)
Mariela Marchisio, Universidad Nacional de Córdoba, Argentina (VREA)
Giovanni Minutoli, SISMA, University of Florence, Italy (PROMETHEUS)
Jacek Lebiedź, Gdansk University of Technology (VREA)
Silvina Leonor Mocci, Universidad Nacional de Córdoba, Argentina (VREA)
Marco Morandotti, University of Pavia, Italy (VREA)
Andrea Nanetti, Nanyang Technological University, Singapore (VREA)
Caterina Palestini, "G. D'Annunzio" University of Chieti-Pescara, Italy (D&D)
Luis Palmero Iglesias, Universitat Politècnica de València, Spain (PROMETHEUS)
Sandro Parrinello, University of Pavia, Italy
Bernardo Pérgamo, Universidad Nacional de Córdoba, Argentina (VREA)
Francesca Picchio, University of Pavia, Italy (D&D)
Andrea Pichelli, GLOBEC, University of Pavia, Italy (VREA)
Alena Poilova, GLOBEC, University of Pavia, Italy (VREA)
Nicolas José Ruscelli, Universidad Nacional de Córdoba, Argentina (VREA)
Cettina Santagati, University of Catania, Italy (D&D)
Cristina Salvadelli, UOC, University of Pavia, Italy (VREA)
Massimiliano Savorra, University of Pavia, Italy (VREA)
Claudia Scannapieco, University of Pavia, Italy (VREA)
Mariana Scully, Universidad Nacional de Córdoba, Argentina (VREA)
Roberta Spallone, Polytechnic of Turin, Italy (D&D)
Jolanta Sroczynska, Cracow University of Technology, Poland
Bogusław Szmygin, Lublin University of Technology, Poland (VREA)
Marek Trojanowic, CTA.AI, Poland (PROMETHEUS)
Graziano Mario Valenti, La Sapienza University of Rome, Italy (D&D)
Anna Wancław, Politechnika Gdańska, Poland (VREA)
Aleksandra Wojciechowska, CTA.AI, Poland (PROMETHEUS)
Karolina Zyczkowska, Politechnika Gdańska, Poland (VREA)

PROGRAMME

19

DIGIWEEK OPENINGS 9:00 -19:00

D&D DIGITAL & DOCUMENTATION

V International Conference on Digital in Architecture.
Auditorium Chiesa Santi Giacomo e Filippo, Pavia.

20

INTERNATIONAL SEMINARS 9:30 -17:00

International Seminars on HBIM for Architectural Management, Reliable GIS for Urban Planning Modelling, Virtual Architecture Design Studio.
Cravino University Campus, Faculty of Engineering, Pavia.

1ST VREA DESIGN MEETING 14:00 -17:00

Joint Master's Course Design Measures meetings.
Central Palace of University of Pavia, Pavia.

21

INTERNATIONAL SEMINARS 9:30 -17:00

International Seminars on HBIM for Architectural Management, Reliable GIS for Urban Planning Modelling, Virtual Architecture Design Studio.
Cravino University Campus, Faculty of Engineering, Pavia.

22

2ND VREA DESIGN MEETING 9:30 -13:00

Joint Master's Course Design Measures meetings.
Cravino University Campus, Faculty of Engineering, Pavia.

INTERNATIONAL SEMINARS 9:30 -17:00

International Seminars on HBIM for Architectural Management, Reliable GIS for Urban Planning Modelling, Virtual Architecture Design Studio.
Cravino University Campus, Faculty of Engineering, Pavia.

ACADEMIC TALKS 14:00 -17:00

Cultural exchanges in mini-interviews between international researchers.
Cravino University Campus, Faculty of Engineering, Pavia.

23

DIGITAL LANDSCAPE AND CULTURAL HERITAGE ROUTES 9:00 -15:00

International Conference on Digital for Cultural Routes.
Aula Magna of the Collegio Cairoli, Pavia.

SEMINARS PRESENTATION 15:00 -18:00

CONCERT PARTY from 19:00


Canteen 1
Cravino University campus
PAVIA
30 m
Train station
Collegio Cairoli
Central Palace of the University of Pavia
3 m
15 m
Santi Giacomo e Filippo Church
7 m

WHERE

Santi Giacomo e Filippo Church

Via Luigi Porta, Pavia

D&D DIGITAL & DOCUMENTATION
AUDITORIUM

Central Palace of the University of Pavia

Corso Strada Nuova 65, Pavia

1ST VREA DESIGN MEETING
"SENATE HALL"

Cravino University Campus Faculty of Engineering

Via Ferrata 3, Pavia

INTERNATIONAL SEMINARS _ ROOMS H2, H3, G3

2ND VREA DESIGN MEETING _ ROOM E6

ACADEMIC TALKS _ ROOM E7

Collegio Cairoli

Piazza Collegio Cairoli 1, Pavia

DIGITAL LANDSCAPE AND CULTURAL HERITAGE ROUTES
AULA MAGNA

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19 SEPTEMBER

D&D

DIGITAL AND DOCUMENTATION

V INTERNATIONAL CONFERENCE ON DIGITAL IN ARCHITECTURE

DIGIWEEK OPENINGS

9:00 **Registration**

9:30 **Openings**

Ass. Prof. Francesca Picchio, Event Coordinator of D&D 2022 Pavia
Prof. Axel Berkofsky, Delegate for Internationalisation
Prof. Alessandro Reali, Director of the Department of Civil Engineering and Architectue
Prof. Francesca Fatta, President of UID - Unione Italiana Disegno
Prof. Sandro Parrinello, Scientific Responsible of Pavia DigiWeek 2022

THEMATIC LECTURES

Session 1 **Perception: Virtual spaces, simulations and interactions**

Chair: Prof. Sandro Parrinello, University of Pavia
Prof. Cettina Santagati, University of Catania

Keynote Speakers

10:00 **Prof. Jacek Lebiedź,** Gdansk University of Technology
Virtual reality as a tool for development and simulation.
Research projects and experience of the Gdańsk University of Technology.

10:30 **Ass. Prof. Davide Benvenuti,** Nanyang Technological University
From drawing to animation. The creation of virtual places and the development of storytelling for the construction of narrative paths through drawing.

11:00 *Coffee break*

Panel Presentation

11:20 **Flavia Camagni,** La Sapienza University of Rome
Exploration of illusory spaces: use of AR and VR for the analysis of Architectural Perspectives.

11:40 **Francesca Galasso,** University of Pavia
Revealing the invisible: digital simulacra and virtual use of lost archaeological heritage.

12:00 **Andrea Lumini, Federico Cioli,** University of Florence
Project AURA: Acoustic simulation of theatre halls - from digital survey to virtual reconstruction.

12:20 **Marianna Calia, Margherita Tricarico,** University of Basilicata
From survey to simulation of a virtual space: UNESCO World Heritage sites in South East China and Archaeological Heritage in Basilicata.

Sofia Menconero, Roma Tre University — 12:40
Simulation of space in the Piranesi Prisons between architecture, perspective and perception.

Elisabetta Caterina Giovannini, Polythecnic of Turin — 13:00
Digital ecosystems for the virtual analysis of Porta Aurea in Ravenna.

Lunch — 13:30

Session 2 Information Databases and Information Systems for Architecture

Chair: Prof. Massimiliano Lo Turco, Polythecnic of Turin
Ass. Prof. Francesca Picchio, University of Pavia

Keynote Speakers

Prof. Marco Morandotti, University of Pavia — 14:30
Cultural Heritage digital asset management: a forthcoming revolution.

Prof. Boguslaw Szmygin, Lublin University of Technology — 15:00
Heritage BIM - tool and methodology.

Panel Presentation

Fabiana Raco, University of Ferrara — 15:30
Digital documentation for the enhancement of Brazilian Cultural Heritage; Museo Do Ipiranga, Parque da Independência and Monumento à Independência.

Fausta Fiorillo, Polytechnic of Milan — 15:50
Data management, efficient use and engaging fruition of reality-based models via web platforms.

Raffaele Catuogno, University of Naples Federico II — 16:10
Digitalization for Heritage: a cognitive platform for smart communication.

Coffee break — 16:30

Pamela Maiezza, University of L'Aquila — 16:50
3D Models for Architectural Heritage Documentation: Transparency and Reliability Issues.

Elisabetta Doria, University of Pavia — 17:10
Databases and drawings to support the development of the documentation project. The case study of 'Le Torricelle' wall in Verona.

Andrea di Filippo, University of Salerno — 17:30
Traceability of geometric attributes in BIM models for the heritage documentation.

Proceedings Presentation

Prof. Graziano Mario Valenti, La Sapienza University of Rome — 18:00
Presentation Proceedings of D&D 2020 Rome.

Prof. Laura Inzerillo, University of Palermo — 18:15
Presentation Proceedings of D&D 2021 Palermo.

D&D 2022 Closing Event - Rount Table

Chair: Prof. Alessandro Luigini, Free University of Bozen-Bolzano — 18:30
Prof. Cecilia Maria Bolognesi, Polytechnic of Milan

DIS
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20 SEPTEMBER
MEETINGS
1ST VREA DESIGN MEETING

VREA/MAD4CANCER JOINT SESSION EMDM BEST PRACTICES

Concept

VREA (Virtual Reality Engineering and Game Design for Architecture and Cultural Heritage) and **MAD4CANCER** (Towards an International Master Degree in Cancer Biology) are both University of Pavia's **Erasmus Mundus Design Measures projects** that involve potential partners from France, Canada, Cyprus, Singapore, Argentina, and Poland. Both international consortia are facing challenges in designing new, innovative, and highly integrated master programs. This session aims to **exchange ideas and best practices** that would lead partners to a successful launch of new international master's programmes in the context of the Erasmus Mundus Joint Masters Degree European Commission's funding.

Central Palace of University of Pavia, Pavia.

Programme

14:00 **Brief introduction** - GLOBEC
Martina Altea Bellinzona, University of Pavia, Italy
Alberto Forte, University of Pavia, Italy
Alena Poilova, University of Pavia, Italy
Andrea Pichelli, University of Pavia, Italy

15:00 **Open discussion** (best practices, lessons learnt) on the following points:
- accreditation process
- admission procedures and joint selection
- visa and permit of stay
- joint evaluation of academic performance/common criteria
- common services for students (accomodation, language course, etc..)

20-23 SEPTEMBER

SEMINARS

WORK SHOP

VIRTUAL ARCHITECTURE DESIGN STUDIO

HBIM FOR ARCHITECTURAL MANAGEMENT

RELIABLE GIS FOR URBAN PLANNING MODELLING

VIRTUAL ARCHITECTURE DESIGN STUDIO

The workshop “Virtual Architecture Design Studio” proposes to address issues related to the use and virtual narration of digital spaces, starting from a oneiric reading of the theatrical and cinematographic space of some movies in which the theme of space, although not predominant, assumes a primary role in the narration of the events of the story.
Based on the principle that sensory reality is to all intents and purposes a virtual experience, the course topic will focus on the spatial analysis of the screenplays of the film Prospero’s Book, produced by Peter Greenaway in 1991. Starting from the reinterpretation of the spaces of the film and their three-dimensional reconstruction, the student will produce a virtual experience of the digital scene, using tools for the digital animation of the spaces and constructing a storytelling for their narration. The spaces of the film scene will be expressed as a virtual representation of events, in a succession of scenes and animations that unfold before the viewer.
The seminar will consist of frontal lectures alternating with practical exercises and laboratory activities, during which students will have the opportunity to apply the notions acquired, confronting themselves with lecturers and tutors in a concrete and practical way, consolidating their own critical awareness of the topics covered in the course.

TEACHING STAFF

Prof. Ass. Davide Benvenuti, Nanyang Technological University, Singapore
Prof. Carlo Berizzi, University of Pavia, Italy
Prof. Tiziano Cattaneo, University of Pavia, Italy
Prof. Ioanni Delsante, University of Pavia, Italy
Ph.D. candidate Francesca Galasso, University of Pavia, Italy
Prof. Gray Hodgkinson, Nanyang Technological University, Singapore
Ph.D. candidate Szymon Kowalski, Politechnika Gdańska, Poland

TO KNOW BEF ORE

STUDENTS’ REQUIRED SKILLS

Students participating in the seminar are required to have previous knowledge in the field of drawing and digital modelling, i.e. theoretical knowledge of architectural representation, critical analysis skills and expressive synthesis of architecture and its context.

SOFTWARE SUGGESTED

Rhinoceros, Blender, Autodesk Maya, Unreal Engine 4.26 or Unreal Engine 5.

PRO GRAM ME

DRAFT PROGRAMME

20/09/2022	
9:00-10:00	**Carlo Berizzi -** Workshop Introduction // From the movie to space design in architecture. Prospero's book: reinterpreting literary space in digital
10:00-11:00	**Davide Benvenuti** - From idea to storytelling, drawing as support for time management
11:00-12:00	**Laboratory Activities** - Prospero's Book - Analysis and comments* // Space analysis and Project concept.
12:00-13:00	**Laboratory Activities** - Prospero's Book - Analysis and comments* // Space analysis and Project concept.
13:00-14:00	Lunch
14:00-15:00	**Lab. Activities** - Translating Prospero's Books into a three-dimensional environment.
15:00-16:00	**Lab.Activities** - Translating Prospero's Books into a three-dimensional environment.
16:00-17:00	**Lab. Activities** - Translating Prospero's Books into a three-dimensional environment.

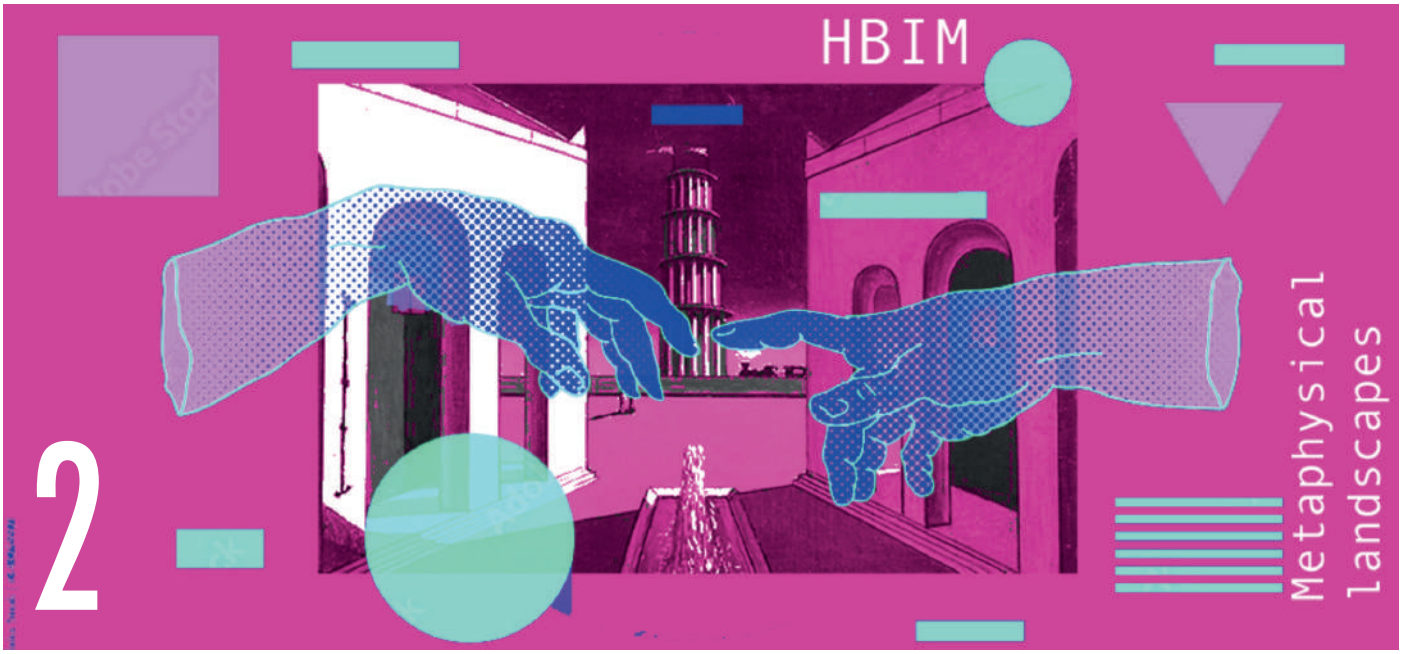
21/09/2022	
9:00-10:00	**Gray Hodgkinson -** Using VR in a game engine to generate engagment, immersion and presence
10:00-11:00	**Gray Hodgkinson & Francesca Galasso** - How to prepare the simulation project: external contents.
11:00-12:00	**Gray Hodgkinson & Francesca Galasso** - How to prepare the simulation project: external contents.
12:00-13:00	**Gray Hodgkinson & Francesca Galasso** - How to prepare the simulation project: external contents.
13:00-14:00	Lunch
14:00-15:00	**Gray Hodgkinson & Francesca Galasso** - Introduction to Unreal Engine 5
15:00-16:00	**Laboratory Activities**- Unreal Engine 5
16:00-17:00	**Laboratory Activities** - Unreal Engine 5

22/09/2022	
9:00-10:00	**Gray Hodgkinson_** The project: what makes a good VR environment?
10:00-11:00	**Gray Hodgkinson & Francesca Galasso** - Movement, Interaction and sorytelling in Unreal Engine 5
11:00-12:00	**Gray Hodgkinson & Francesca Galasso** - Movement, Interaction and sorytelling in Unreal Engine 5
12:00-13:00	**Gray Hodgkinson & Francesca Galasso** - Movement, Interaction and sorytelling in Unreal Engine 5
13:00-14:00	Lunch
14:00-15:00	**Laboratory Activities** - Movement, Interaction and sorytelling in Unreal Engine 5.
15:00-16:00	**Laboratory Activities** - Movement, Interaction and sorytelling in Unreal Engine 5.
16:00-17:00	**Laboratory Activities** - Movement, Interaction and sorytelling in Unreal Engine 5.

ACQU IRED SKIL LS

WORKSHOP EXPECTED OUTCOMES

By the end of the course, the student will consolidate cultural competences in order to express the design of students own virtual space, also combine learning about the subjects of 3D digital work production with a process of building knowledge related to the development of media languages for the virtual narration of architecture and space.



HBIM FOR ARCHITECTURAL MANAGEMENT

METAPHYSICAL HBIM LANDSCAPES

The workshop addresses the issues of **BIM modeling** applied to **Cultural Heritage**, for heritage digitization, management and assisted design. The course aims to provide the tools and methodologies for the management of parametric models and modeling environments and their implementation within the framework of the HBIM modeling procedures. The theme of the course will be the generation of **parametric digital spaces** starting from the analysis of some of **Giorgio De Chirico's works**. Through perspective techniques, De Chirico is capable of framing fragments of the past and visions of the future in a unified space. Two parallel horizons that, in an eternal circle, compose transcendent archetypal spaces that become theatrical backdrops where to dissonantly stage architectural and geometric constructions. Therefore, the student will have to reinterpret these spaces by designing a digital interpretation of De Chirico's vision.
The training methodology will include **frontal lectures** that will take place during the hours scheduled for the morning alternated with practical exercises and **laboratory activities**, in the afternoon, when the student will have the opportunity to apply the recently acquired notions while also confronting teachers and tutors in a concrete and practical way.

TEACHING STAFF

Prof. Luis Cortés Meseguer, Universitat Politècnica de València, Spain
Ph.D. Anna Dell'Amico, University of Pavia, Italy
Prof. Michał Malewczyk, Politechnika Gdańska, Poland
Prof. Nicolas José Ruscelli, Universidad Nacional de Córdoba, Argentina
Ph.D. candidate Anna Sanseverino, University of Pavia, Italy

TO KNOW BEF ORE

STUDENTS' REQUIRED SKILLS

For the course, the students are required to have prior knowledge in the field of digital drawing and modeling, i.e., theoretical knowledge of architectural representation, critical analysis and expressive synthesis skill regarding architecture and its context, fundamentals of architectural survey and the existing relationship between form and measurement, basic knowledge of Autodesk AutoCAD software.

SOFTWARE SUGGESTED

Autodesk Revit 2022, Blender, Autodesk Recap 2022, Autodesk AutoCAD, Office package (Word, Excel, PowerPoint), Enscape, Twinmotion, Adobe Photoshop.
HD or a Pen drive of minimum 32 GB.

PRO GRAM ME

DRAFT PROGRAMME

20/09/2022	
9:00-10:00	**Workshop Introduction** - Participant Welcoming, Explanation of the 3-day program.
10:00-11:00	**Anna Dell'Amico** - HBIM and Cultural Heritage: fundamentals, methods and development of digital databases.
11:00-12:00	**Nicolas José Ruscelli** - PointClouds for Heritage – Management and use. An experience from the physical to the virtual.
12:00-13:00	**Michał Malewczyk** - Usage of Blender and Blender BIM in terms of openBIM standard
13:00-14:00	Lunch
14:00-15:00	Groups Assigments and Introduction to the Case Study. De Chirico - Le piazze d'Italia.
15:00-16:00	**Michał Malewczyk** - Picture analysis, definition of perspective and space, box-modeling in Blender.
16:00-17:00	**Laboratory Activities** - Project file setup (reference layers and shared coordinates setting, system families modeling).

21/09/2022	
9:00-10:00	**Update Checking** - Day 1 Workshop Activities.
10:00-11:00	**Nicolas José Ruscelli** - Masses and In-Place elements – Revit tools for flexible modeling
11:00-12:00	**Anna Dell'Amico** - Typological classifications for three-dimensional information representation and shared parameters: parametric model information categories for Cultural Heritage, parametric families from depcted.
12:00-13:00	**Laboratory Activities** - Cataloging and design of parametric families.
13:00-14:00	Lunch
14:00-15:00	**Michał Malewczyk** - Image processing, modeling reliefs and details in Blender.
15:00-16:00	**Laboratory Activities** - Parametric family modeling and generation of shared parameters (1/2 per student, to be understood depending on choice of case study).
16:00-17:00	**Laboratory Activities** - Parametric family modeling and generation of shared parameters (1/2 per student, to be understood depending on choice of case study).

22/09/2022	
9:00-10:00	**Update Checking** - Day 2 Workshop Activities.
10:00-11:00	**Nicolas José Ruscelli** - Lights and shadows, backgrounds and figures. Some settings to show our model.
11:00-12:00	**Anna Dell'Amico** - Abacuses, templates, visual filters, real time rendering applications.
12:00-13:00	**Laboratory Activities** - Informative population of shared parameters.
13:00-14:00	Lunch
14:00-15:00	**Laboratory Activities** - Scheduling and Visual editing of the HBIM model.
15:00-16:00	**Laboratory Activities** - Model check and validation.
16:00-17:00	**Laboratory Activities** - Model check and validation.

WORKSHOP EXPECTED OUTCOMES

By the end of the course, the student will know the difference between the various types of communication on parametric modeling platforms. The student will learn how to manage shared modeling techniques, together with the digital files produced. The students will know how to correlate the geometric forms of architecture with parametric modeling techniques, by understanding the approximation hierarchies and subsequently defining the appropriate levels of detail for the development of a BIM model. Expected outputs: HBIM model of the assigned case study, rendering of some views and a power point presentation of the achieved results.

ACQU IRED SKIL LS

RELIABLE GIS FOR URBAN PLANNING MODELLING

GIS SYSTEMS AND TOOLS TO DOCUMENT HERITAGE SITES

The seminar aims to provide a panorama of digital learning for spatial planning and urban design with respect to Cultural Heritage (considering the single object and its surrounding area) and its promotion, as a regeneration key for services, flows, communities, tourism development, and generally the development of territorial areas and their value.
Starting from the modalities of reliable representation of Architectural Heritage, the student will learn technical notions to manage data compatibility for the insertion of 3D models and spatial data in G.I.S. databases. On this basis, the student will be guided in the practices of data visualisation in the information system, becoming able to extract critical maps and query the database, using it as a design and development tool to simulate the effectiveness in the conservation and enhancement of Cultural Heritage through spatial planning.
The seminar will be structured on a 3-days program, including theoretical lessons and practical laboratory activities, to guide the student in developing a personal creative production on Cultural Heritage planning through Digital practices. The key issues of Reality-based 3D modelling, multi-level data integration data analysis according to the 3D modeling and the web-based visualisation and dissemination of the integrated GIS contents will be considered and improved in an overall strategic path.

TEACHING STAFF

Ph.D. Joanna Badach, Politechnika Gdańska, Poland
Ph.D. Raffaella De Marco, University of Pavia, Italy
Ph.D.candidate Nastaran Esmaeilpour Zanjani, University of Pavia, Italy
Prof. Elisabetta Maria Venco, University of Pavia, Italy

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STUDENTS' REQUIRED SKILLS

The seminar will focus on digital tasks and tools for 3D virtual visualisation, planning and communication of contents from the application of a G.I.S. database. In this way, it is suggested to the participants to provide:
- Basic knowledge of G.I.S. environments, shape layers and general GIS tools
- Basic knowledge of 3D modelling concepts
- Basic knowledge of Urban Cultural issues

SOFTWARES SUGGESTED

Softwares or tools used during the seminar will be: Rhinoceros, 3DReshaper, Veesus Point Cloud for Rhino, ArcGIS Pro and ArcSCENE, ArcGIS Urban and ArcGIS Story Maps. Trial versions of the software (and installation instructions) will be provided within a week before the start of the seminar.

PRO GRAM ME

DRAFT PROGRAMME

20/09/2022	
9:00-10:00	**Raffaella De Marco -** Digital survey issues on Cultural Heritage at the Urban Scale
10:00-11:00	**Raffaella De Marco** - Urban modelling approach from 3D point clouds
11:00-12:00	**Laboratory Activities** - Macro - Modelling of a 3D urban aggregate.
12:00-13:00	**Laboratory Activities** - Micro - Modelling of a 3D urban aggregate.
13:00-14:00	Lunch
14:00-15:00	**Theoretical Lectures** - The certification of reliability from 3D data to 3D models.
15:00-16:00	**Laboratory Activities** - Visualization and validation of the 3D model.
16:00-17:00	**Laboratory Activities** - Visualization and validation of the 3D model.

21/09/2022	
9:00-10:00	**Nastaran Esmaeilpour Zanjani -** From planning to design: methods, analysis and tools
10:00-11:00	**Nastaran Esmaeilpour Zanjani** - Urban Tourism and Cultural Heritage for urban development and the enhancement of territorial resilience
11:00-12:00	**Theoretical Lecture** - Decision Making models by introducing expert choice.
12:00-13:00	**Laboratory Activities** - Data collection, integration and analysis by using 3D models
13:00-14:00	Lunch
14:00-15:00	**Laboratory Activities -** Data collection, integration and analysis by using 3D models
15:00-16:00	**Laboratory Activities** - Definition of urban planning strategies and design of project maps
16:00-17:00	**Laboratory Activities** - Definition of urban planning strategies and design of project maps

22/09/2022	
9:00-10:00	**Joanna Badach** - An introduction to GIS model and data sharing, visualisation and digital storytelling.
10:00-11:00	**Laboratory Activities -** Publishing 3D GIS digital content: creating a web scene
11:00-12:00	**Lab. Activities** - Adding a scenario design visualisation based on the published web scene
12:00-13:00	**Laboratory Activities** - Creating a digital storytelling experience.
13:00-14:00	Lunch
14:00-15:00	**Laboratory Activities** - Enhancing the digital storytelling with different type of multi-media content.
15:00-16:00	**Laboratory Activities** - Embedding the 3D GIS digital content in the digital storytelling.
16:00-17:00	**Laboratory Activities** - Exploration and presentation of the published workshop content.

WORKSHOP EXPECTED OUTCOMES

Within the 3-days seminar, including theoretical lessons and laboratory activities, it is expected to provide students with an overview on tools and digital strategies of creative communication and enhancement of Cultural Heritage planning. In particular, students will acquire practices on:

- Management of 3D point clouds from 3D scanning and UAVs for urban modelling.
- Development and management of hybrid Mesh-NURBS components in 3D modelling for GIS.
- Collection and integration of multi-source and web-based contents on the GIS platform.
- Application of queries and dynamic maps for urban and territorial planning with respect to Heritage sites.
- Improvement of urban planning skills.
- The workflow for publishing GIS-based urban models and sharing them as online 3D scenes
- Development of online stories with interactive GIS data and other multimedia content through dedicated web-based platforms.

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22 SEPTEMBER
MEETINGS
2ND VREA DESIGN MEETING

VREA MASTER DEGREE COURSE STRUCTURE

Concept

Meeting between the **VREA project partners** to define the course structure, define lesson plans and the mechanics of student exchange.
Cravino University Campus, Pavia.

Programme

9:30 **Brief introduction**
Sandro Parrinello, VREA Coordinator

9:50 **Update on the accreditation process**
Lalo Magni, Dean of Faculty of Engineering, University of Pavia

10:20 **Illustration of the Master's project**
Marco Morandotti, VREA Coordinator

10:50 **Illustration of the course syllabus**
Massimiliano Savorra, VREA Coordinator

11:30 Coffe Break

12:00 **Round Table on the mechanics of student interchange**

12:40 **VREA Website presentation**

ACADEMIC TALKS

Concept

The **Academic talks** is an event designed as a meeting between international researchers, where, through short presentations and open debates, aspects of digital applied to cultural heritage in Europe are discussed and developed.

Cravino University Campus, Pavia.

Programme

Discussants
Sandro Parrinello, University of Pavia, Italy
Massimiliano Savorra, University of Pavia, Italy
Marco Morandotti, University of Pavia, Italy

14:00 **Open discussion**

Szymon Kowalski - Faculty of Architecture of Gdańsk University of Technology
"Virtual Reality for intangible reconstruction of gothic sacristy in Gdańsk".

Justyna Borucka - Faculty of Architecture of Gdańsk University of Technology
"Presentation of the Build Digi Craft Project idea and result"

Karolina Życzkowska - Faculty of Architecture of Gdańsk University of Technology
"Virtual layer of architecture in a city space - media architecture as a city landmark."

Assistant prof. Bartosz Szostak, Michal Wac - Lublin University of Technology
Creation of point cloud using various measurement techniques.

Karol Krupa, Piotr Glen - Lublin University of Technology
Point cloud as a tool and a form of historic monument protection - case study Klodzko fortress.

Daniele Bursich - University of Salerno
Analysis and documentation of an ancient greek city landscape: multi-sensorial remote sensing of Selinus (Trapani - Italy)

Tiziano Cattaneo, Emanuele Giorgi, Pablo Hernández Quiñones, Edgar Paul Martínez, Mauricio Flores Herrera - University of Pavia, Tecnologico de Monterrey
Digital Participation for inclusive Growth in Vulnerable Communities.

VREA NATIONAL MEETING WITH THE THIRD PARTIES

17:00 Meeting to present the design actions of the new degree course **VREA** - Virtual Reality Engineering and Game Design for Architecture and Cultural Heritage - with the territory (local authorities, professional orders, companies).

Cravino University Campus, Pavia.

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23 SEPTEMBER

DIGITAL LANDSCAPE AND CULTURAL HERITAGE ROUTES

INTERNATIONAL CONFERENCE

9:30

THEMATIC LECTURES ABOUT H2020 PROMETHEUS PROJECT

09:40

Sandro Parrinello, University of Pavia
Documenting Cultural Heritage Routes. Some study cases between east and weast European cultural heritage sites.

10:00

Jakub Szczepański, Gdańsk University of Technology
The fortification system of the Gdańsk Bay from the Middle Ages to the 20th century. Virtual reality tools and historical heritage.

10:20

Luis Palmero Iglesias, Luis Cortés Meseguer, Universitat Politècnica de València
Defining digital archives for monuments along the Jaime I route. A firts step of research project along Valencia historical heritage.

10:40

Coffee break

DIGITAL HUMANITIES AND CULTURAL LANDSCAPE

Chair: Massimiliano Savorra, University of Pavia

11:00

Keynote Speaker

Andrea Pinotti, University of Milan, ERC
At the threshold of the image. From Narcissus to Virtual Reality.

Panel Presentation

11:40

Elena Svalduz, University of Padua
Urban Heritage, Inclusion and Research: the History of Architecture in the Era of Digital Humanities.

12:00

Ludovica Galeazzo, University of Padua, I Tatti, ERC
The ERC Project "Venice's Nissology. Reframing the Lagoon City as an Archipelago".

Manuel Sánchez García, Dumbarton Oaks Research Institute (Harvard University) 12:20
Architectural histories through the game studies field.
(On-line)

Francesco Benelli, University of Bologna 12:40
Digital Serlio Project.
(On-line)

Dissussion 13:00

Lunch 13:30

DIGIWEEK SEMINARS PRESENTATIONS

Each student who partecipated in the digital week will present his work developed during the days of the seminar.

Seminar 1_ *Virtual Architecture Design Studio.* 15:00

Seminar 2_ *HBIM for architectural management.* 15:30

Seminar 3_ *Reliable GIS for urban planning modelling.* 16:00

Delivery of certificates of participation 16:30

Concert Party! 19:00