

PROCEEDINGS OF THE 1ST CONFERENCE

ROME 30 SEPTEMBER 2019

Camilla Arcangioli - Maria Sabrina Sarto (Editors)

DTC LAZIO
DISTRETTO TECNOLOGICO
BENI E ATTIVITÀ CULTURALI
CENTRO DI ECCELLENZA



«L'ERMA» di BRETSCHNEIDER

STUDIA
ARCHAEOLOGICA
236

continued to pag. 144

PROCEEDINGS OF THE 1ST CONFERENCE
ROME 30 SEPTEMBER 2019



CAMILLA ARCANGIOLI - MARIA SABRINA SARTO
editors

«L'ERMA» di BRETSCHNEIDER
Roma - Bristol

Proceedings of the 1st Conference
Rome 30 September 2019
Technological District of Cultural Heritage Lazio
Centre of Excellence

editors

CAMILLA ARCANGIOLI - MARIA SABRINA SARTO

© Copyright 2020 «L'ERMA» di BRETSCHNEIDER

Via Marianna Dionigi, 57
00193, Roma - Italia
www.lerma.it

70 Enterprise Drive, Suite 2
Bristol, CT 06010 - USA

Lay out

«L'ERMA» di BRETSCHNEIDER

No part of this book may be reproduced or utilised in any form or by any means, electronic, mechanical or otherwise without the written permission of the Publisher.

Sistemi di garanzia della qualità
UNI EN ISO 9001:2015

Sistemi di gestione ambientale
ISO 14001:2015

Cover Image:

“Il Pugile a riposo”

courtesy of The Roman National Museum (MIBACT).

Photo in collaboration with LANDAC, University of Rome Tor Vergata.

Proceedings of the 1st Conference - «L'ERMA» di BRETSCHNEIDER,
2020 - 152 p. ; ill. col.; (Studia Archaeologica ; 236)

ISSN 0081-6299

ISBN 978-88-913-1970-8 (Paperback)

ISBN 978-88-913-1973-9 (PDF)

CDD 060

1. Lazio

The Publication of this Book was kindly supported by



Centre of Excellence
Technological District of Cultural Heritage
Rectorate Building
Sapienza University of Rome
Piazzale Aldo Moro, n. 5
00185 Rome Italy
www.dtclazio.it

COORDINATOR OF THE CENTRE OF EXCELLENCE DTC LAZIO

Prof. MARIA SABRINA SARTO
Deputy Rector of Research Infrastructures and Tools
Sapienza Università di Roma - Email: mariasabrina.sarto@uniroma1.it

SUPPORT UNITS COORDINATOR

Dr. CIRO FRANCO
Sapienza Università di Roma
Email: ciro.franco@uniroma1.it

COORDINATOR OF ADVANCED TRAINING ACTIVITIES

Prof. GIOVANNI RAGONE
Sapienza Università di Roma
Email: giovanni.ragone@uniroma1.it

RESEARCH INFRASTRUCTURE COORDINATOR

Prof. GIUSEPPE DI BATTISTA
Università degli studi Roma Tre
Email: gdb@ing.uniroma3.it

TUTOR OF THE CENTRE OF EXCELLENCE DTC LAZIO

Dr. EDOARDO LAMPIS
Lazio Innova
Email: e.lampis@lazioinnova.it

PROJECT MANAGER AND ADMINISTRATIVE SECRETARIAT

Dr. DANIELE BRUSCHI
Sapienza Università di Roma
Email: daniele.bruschi@uniroma1.it

COMMUNICATION MANAGER

Dr. CAMILLA ARCANGIOLI
Sapienza Università di Roma
Email: camilla.arcangioli@uniroma1.it

CONTACT POINT FOR THE ADMINISTRATIVE AND ACCOUNTING UNITS SUPPORT

Dr. IMMA PROVVISIER
Sapienza Università di Roma
Email: immacolata.provvisier@uniroma1.it

CONTENTS

INTRODUCTION

PAOLO ORNELI, The DTC Centre of Excellence for the Cultural Assets and Activities: a Model for Innovation and Growth of the Lazio System	p.	13
MARIA SABRINA SARTO, Activities, Projects and new Challenges for the Centre of Excellence DTC Lazio, the Largest Technological District for Heritage and Cultural Activities in Europe	»	15
GIUSEPPE DI BATTISTA, The Lazio DTC Centre of Excellence and the Stakeholders	»	17

SECTION I - DIGITAL TECHNOLOGIES AND DIGITALIZATION

ANTONIO LAMPIS, Innovation and Digitization of Museum Environments	»	21
ANNARITA ORSINI, Three-Year Digitization Plan for Museums	»	23
PAOLO CARAFA, Technology, Culture and Knowledge	»	27
GIOVANNI FIORENTINO, The DTC and digital artisans	»	29
LUISA CARBONE, The Digital Storytelling for the Training of Experts in Cultural Assets and Systems	»	31
MARCO CANCIANI, MAURO SACCONI, Project ECODIGIT: Use of GIS and 3D Data in the Field of Cultural Heritage	»	33
MARILENA MANIACI, NICOLA TANGARI, The Digital Cataloguing of Medieval Manuscript Fragments in Beneventan Minuscule	»	37
CARLO BIANCHINI, High-end Technologies for Built Heritage: towards Democratization	»	39

SECTION II - TECHNOLOGIES FOR PLANNING AND RESOURCE MANAGEMENT

HELENI PORFYRIOU, Small Historic Towns Networks. Italy and China: Bridging Cultures	»	45
MARIA PREZIOSO, Planning Regional Growth through Cultural Heritage	»	47
GIOVANNI RAGONE, Cultural Heritage, Territory and Tourism: New Challenges		51

FLORIANA MULAZZI <i>et al.</i> , Cultural Heritage Sustainability Operationalization in European Funding Programmes: a Benchmarking Analysis.....	»	53
ANGELO LALLI, ELENA TASSI SCANDONE, Protection and Enhancement Models for Cultural Heritage	»	57
MARIA PREZIOSO, SANDRA LEONARDI <i>et al.</i> , ADAMO: Diagnosis of a Territory between Active Conservation and Applications	»	61

SECTION III - TECHNOLOGIES FOR DIAGNOSTICS, RESTORATION, CONSERVATION: STRUCTURAL MONITORING OF HISTORICAL BUILDINGS

LUCINA CARAVAGGI, SISMI: from Fragility to Relaunch.....	»	65
GIANMARCO DE FELICE, Safety and Preservation: <i>to Do or Not to Do?</i>	»	67
MICHELE ARTURO CAPONERO <i>et al.</i> , Technologies for the Structural Monitoring of Ninfeo Ponari.....	»	69
JACOPO CIAMBELLA <i>et al.</i> , Structural Health Monitoring and Maintenance Sustainability	»	73
FRANCO BONTEMPI <i>et al.</i> , Activities and Achievements of the Higher Education Course: Testing and Structural Assessment of Historical and Monumental Constructions “Marcello Ciampoli”	»	77
BARBARA DE FILIPPO <i>et. al.</i> , Shape Memory Alloy Applications in seismic field	»	79

SECTION IV - TECHNOLOGIES FOR DIAGNOSTICS, RESTORATION, CONSERVATION: DIAGNOSTICS OF CULTURAL HERITAGE

ROBERTA FANTONI, Technologies for Diagnostics, Conservation, Restoration: Diagnostic on Cultural Heritage	»	85
MARIANGELA CESTELLI GUIDI, Large Scale Facilities as an Opportunity for Technological Innovation in the ADAMO Project	»	89
LUCA LANTERI <i>et al.</i> , Low Cost System for a Multispectral 3D Models, to Document the Conservation Status and the Restoration Materials of the Polychrome Sculptures	»	91
FULVIO MERCURI, SOFIA CECCARELLI <i>et al.</i> , The Virgin and the Child of Santa Maria in Cosmedin: Mid-Infrared Imaging	»	95
ALESSANDRO CICCOLA <i>et al.</i> , Surface Enhanced Raman Scattering Spectroscopy for Analysis of Ancient Dyes: a Case Study and New Protocols	»	97
MARCO SBROSCIA, Investigations on the Painted Frescoes from “Villa della Piscina” (Centocelle-Rome): a Multi-Analytical non-Destructive Approach	»	99

VALERIO GRAZIANI <i>et al.</i> , Multianalytical Approach to the Study of Degradation Phenomena in a Gilded Copper Artifact from XVI-XVII Century Found in River Tiber ..	» 103
CRISTINA CICERO, Effects of the X-Rays Irradiation on Collagen of Artistic Artefacts by means of Microscopic Techniques	» 107
MARTINA ROMANI <i>et al.</i> , The Restoration of the Basilica of S. Nicola in Carcere, in Rome: A non-Invasive Diagnostic Analysis of the Fresco of Vincenzo Pasqualoni and a Detailed Characterization of the Biotic agents Responsible of the Biodegradation	» 111
MARIA FEDERICA CASO <i>et al.</i> , Diagnostic Analyses of Paintings and Ancient Marble Busts of Palazzo Chigi at Ariccia (Rome)	» 115

SECTION V - TECHNOLOGIES FOR DIAGNOSTICS, CONSERVATION AND RESTORATION

NICOLETTA CARDANO, The Capitoline Superintendence for Cultural Heritage: the Case Study of the Esquiline Hill	» 121
LAURA SADORI, Archaeobotany, a discipline for Cultural Heritage	» 123
MARIA LAURA SANTARELLI, Innovation as a Support for Scientific Experience in the Technological District of Cultural Heritage of Lazio, Italy	» 125
ALESSIA MASI, MARY ANNE TAFURI <i>et al.</i> , Humans and Environments as Cultural Heritage. Bioarchaeological Case-Studies from Latium	» 127
CRISTINA MARTINEZ-LABARGA <i>et al.</i> , Biological Research Applied to Cultural Heritage	» 129
GABRIELLA BRETTI <i>et al.</i> , How to Explain Experimental Data with Mathematical Models: Forecasting the Effects of Crystallization Inhibitors	» 133
MARIA PAOLA BRACCIALE <i>et al.</i> , The new Materials for the Recovery of Artistic Artefacts Damaged by Natural Events	» 137
CLAUDIA PELOSI <i>et al.</i> , Study of the Stability of an Innovative System for Pictorial Reintegration and for the Potential Reconstruction of Wall Paintings, Called Tattoo Wall® or Digital Fresco	» 139
MORENA IORIO <i>et al.</i> , Study of Gilded and Painted Leather Artifacts from Palazzo Chigi in Ariccia	» 143
MANUELA ROMAGNOLI <i>et al.</i> , WoodINCULT: the State of Art of Dendrochronological Wood Dating, Conservation and Restoration in Cultural Heritage	» 147
PAOLA CALICCHIA <i>et al.</i> , Reliefs of Moisture Infiltration in the Apse of the Church of San Nicola in Carcere during the Restoration Work	» 149

PLANNING REGIONAL GROWTH THROUGH CULTURAL HERITAGE

THE IMPACT OF THE TERRITORIAL OBSERVATORY ON SUSTAINABLE DEVELOPMENT AND SOCIOECONOMIC WELL-BEING

MARIA PREZIOSO*

The Territorial Observatory is a permanent structure of the Excellence Centre within the Technological District of Cultural Heritage of Latium region. It offers and develops services by general and sectoral studies, scientific analyses, ex ante and ex post evaluations, proving policy and territorial planning to institutional bodies, businesses and citizens of Latium region in the framework of sustainable, cohesive and competitive development. Observatory services are intended to highlight geographical diversity and territorial capital in relation to the conservation, exploitation, valorisation and active management of Cultural Heritage, by adopting integrated strategies in the context of a circular and low-carbon economy, technological and instrumental innovation, tourism, employment, and investment in social welfare and well-being.

To this scope, the Observatory contributes to the interpretation of the European policy guidelines on Cultural Heritage by suggesting post-2020 strategies and programmes at regional and local level by directing the participation of researchers, institutions, stakeholders and enterprises to EU-funded projects and the use of European Strategic Integrated Funds (ESIF). More details can be found on the dedicated web page (<https://dtclazio.it/observatorio-beni-culturali-della-regione-lazio>).

The Observatory makes available information, data, mapping and tools regarding to: the elaboration of integrated strategic plans and sustainable choices by the STeMA -TIA and SEA technology in the framework of Industry 4.0 and Smart Specialisation Strategy; benchmarking and enhancement/positioning of territories and business systems; networking of operators holding/using technologies dedicated to CH; governance models, monitoring through BigData, analysis of the distribution and behaviour of firms and stakeholders, etc. The Observatory also promotes and participates in projects funded under EU 2020 strategic programmes (H2020, ESPON, URBACT III, Med, etc.).

The Observatory, acting on demand of enterprises, associations, national, regional and local authorities of Lazio, stands as a hub/centre of sustainable and advanced services of EC-CHTD of Latium Region. Some products are currently available:

- the mapping and monitoring over time of technologies and business models, with reference to cultural assets and sites and their exploitation, management and enjoyment.

* Full Professor of Economic Geography and Economics and Territorial Planning Italy ESPON Contact Point Dept. Management and Law University of Rome “Tor Vergata”.

Pianificare la crescita regionale attraverso il patrimonio culturale. L'impatto dell'Osservatorio territoriale sullo sviluppo sostenibile e il benessere socioeconomico

Autori:
 Alessandro Fessina, Sandra Leonardi, Michele Pigliucci, Maria Prezioso (Università di Roma "Tor Vergata" – RM2);
 Michela Addis, Floriana Mulazzi, Riccardo Torlone, Alessio Zoccoli (Università di Roma Tre – RM3);
 Francesco Bolici, Gabriele Diana (Università di Cassino e Lazio meridionale – UNICASS).

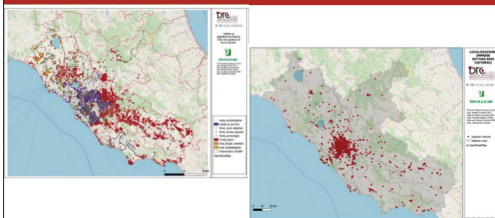
Relatore: Maria Prezioso (Responsabile Osservatorio)
maria.prezioso@uniroma2.it



WWW.DTCLAZIO.IT

Fig. 1.

una piattaforma della ricerca per conoscere, pianificare e progettare strategicamente con istituzioni e imprese



WWW.DTCLAZIO.IT

Fig. 4.

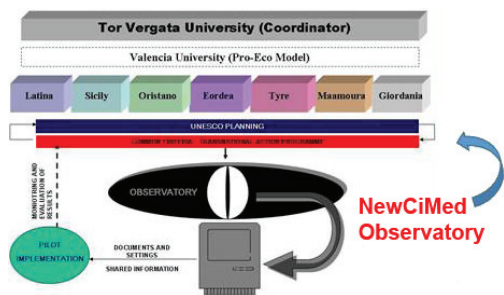
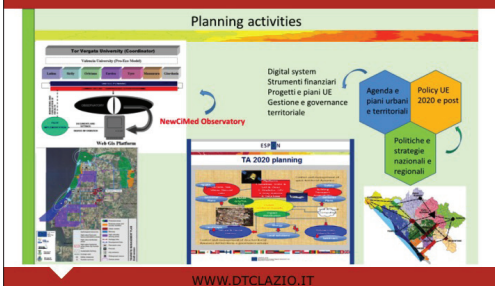


Fig. 2.

Monitorando al Tempo dei Big data e dei modelli di governance multilevel complessi la domanda/offerta di valorizzazione e investimento e equity PPP



WWW.DTCLAZIO.IT

Fig. 5.

DataBase complete e valutazione

Consiste nella valutazione ambientale ex ante, che definisce il grado complessivo di sensibilità del territorio, calcolate su undici componenti, individuate come ambiti scientifici fondamentali per la misura dell'ammissibilità dei progetti relativi alle tecnologie e BC

- | | | |
|--|--|--|
| 1. Sistema IDROLOGICO | } STUDI AGGIUNTIVI SONO STATI ELABORATI PER: | - Distribuzione imprese techBC nel Lazio
- Climate change |
| 2. Sistema GEOMORFOLOGICO | | |
| 3. Sistema DEL PAESAGGIO NATURALE | | |
| 4. Sistema DEL PAESAGGIO STORICO | } STUDI AGGIUNTIVI SONO STATI ELABORATI PER: | - Distribuzione imprese techBC nel Lazio
- Climate change |
| 5. Sistema NATURALISTICO E DELLE AREE PROTETTE | | |
| 6. Sistema FAUNISTICO | } STUDI AGGIUNTIVI SONO STATI ELABORATI PER: | - Distribuzione imprese techBC nel Lazio
- Climate change |
| 7. Sistema INSEDIATIVO URBANO | | |
| 8. Sistema INSEDIATIVO AGRICOLO | } STUDI AGGIUNTIVI SONO STATI ELABORATI PER: | - Distribuzione imprese techBC nel Lazio
- Climate change |
| 9. Sistema ATMOSFERA | | |
| 10. Sistema RUMORE | } STUDI AGGIUNTIVI SONO STATI ELABORATI PER: | - Distribuzione imprese techBC nel Lazio
- Climate change |
| 11. Sistema SALUTE PUBBLICA | | |
| 12. Climate Change | } STUDI AGGIUNTIVI SONO STATI ELABORATI PER: | - Distribuzione imprese techBC nel Lazio
- Climate change |
| 13. Imprese | | |

WWW.DTCLAZIO.IT

Fig. 3.

- the mapping and monitoring over time of Big Data, consistent with the Strategic Plan of Tourism of the MiBACT, with the National and Regional Digital Agenda.
- Models for developing and monitoring of sustainable tourism development management plans (UNESCO and EU Cultural Agenda).

It will soon be available the mapping of the structural response of the historical buildings of the Latium hamlets (small towns) which have been the subject of consolidation, in order to collect and study data aiming at the improvement and seismic adaptation of buildings.

All services and functionalities under the Observatory are useful to the internationalization and are closely related with all the activities of the Excellence Centre.

The Observatory offers the access to financial instruments which can be used in the proposed management plans (e.g. CLLD, ITI, financial equity solutions, etc.)

The projects already carried out by the Observatory under the Tor Vergata University laboratory are also inherent in the plans of tourism management under UNESCO, cultural tourism and the use of minor assets in a smart key.

The Observatory developed several contacts within the framework of the EU cooperation programmes on tourism and CH, within the framework of the European Commission (EC) proposal 2018 of a New European Agenda for Culture, supporting the creation of the sense of community between researchers and citizens, in the evolutive framework of the post-2020 Cohesion policy. It is developing strategies to enhance tourism and its impact) on the local socioeconomic system and well-being, using comparative models at national and international level, The Observatory analysed their flexibility and adaptability (replicability) to the regional sector scenario: network of museums, network of tourist supply, etc.

Particular attention is given to potential governance solutions (EU EGTC models) that allow a wider impact of long-term benefits on the territory. A further area of activity concerns the analysis and definition of operational solutions as suitable interaction between different actors involved in the development projects.

Observatory acts as a contact and reference point (transnational, national and regional) for the widespread museums, tourism development strategies and for monitoring information strategies, communication and visibility of the Technological District. It carries out decentralised activities “on-line” towards and with all partners and project activities and territories, supporting the monitoring, processing and insertion of data on the regional cultural heritage and valorisation projects by advanced methodologies and techniques.

Maria Prezioso (Responsible of Observatory) maria.prezioso@uniroma2.it, *Alessandro Fessina, Sandra Leonardi, Michele Pigliucci, Maria Prezioso* (University of Rome “Tor Vergata” – RM2); *Michela Addis, Floriana Mulazzi, Riccardo Torlone, Alessio Zoccoli* (University of Rome “Roma Tre” – RM3); *Francesco Bolici, Gabriele Diana* University of Cassino and Southern Lazio – UNICASS).

