ICC 2021

Florence, ITALY

14 • 18 DECEMBER 2021

30th
International
Cartographic
Conference

Florence, Italy

PROGRAMME

CONTENT

UNDER THE AUSPICES OF

WITH THANKS:

Pierluigi Cantini, ASD Firenze Orienteering

Roberto Ferrari, Galileo Museum Director

Eike Schmidt, Uffizi Gallery Direcor
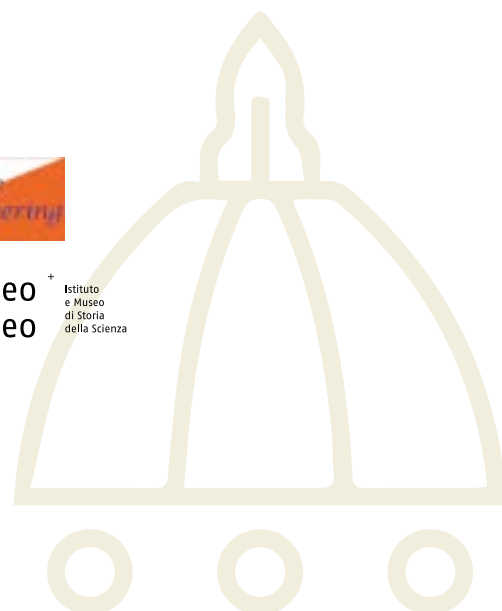
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Teresa Amodio, University of Salerno
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Andrea Cantile, Italian Geographic Military Institute (IGM) and University of Florence
Elena Dai Prà, University of Trento
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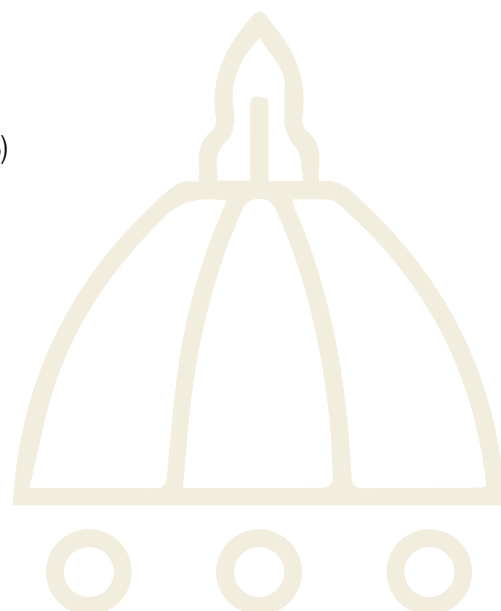**Massimo De Marchi**, University of Padova
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Serena Coetzee, Commission on SDI and Standards
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Amy Griffin, Commission on Cognitive Issues in Geographic Information Visualization
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Lynn Usery, Commission on Map Projections
Dalia Varanka, Commission on Geospatial Semantics
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Yoshiki Wakabayashi, Commission on Ubiquitous Mapping
Tao Wang, Commission on Education and Training
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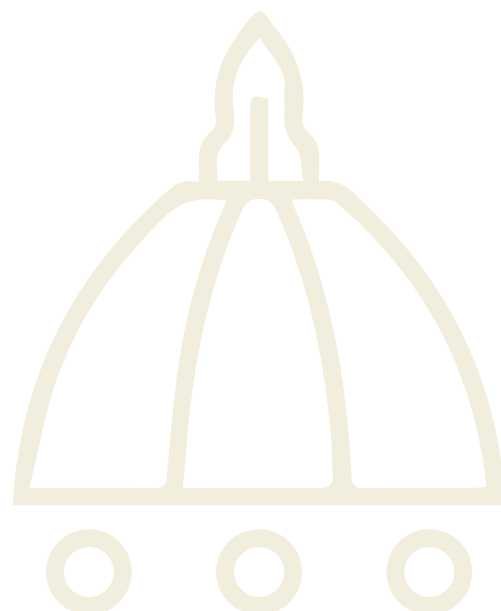
HYBRID KEYNOTE PRESENTATIONS

Cartography in an Age of Digital Transformation
Date and Location
December 15, 2021, Aula Magna of the School of Humanities, via Laura 48
10:15 - 11:15 AM (CET)

Greg Scott
Following a 25-year journey in Geoscience Australia in several key geospatial roles, Greg Scott is now based in the United Nations Statistics Division in New York. In his role as Secretariat of UN-GGIM, Greg has provided strategic policy advice and leadership, and guided the development, coordination and implementation of the substantive global geospatial program and content for UN-GGIM since 2012. Greg possesses formal qualifications in Cartography and Survey Mapping from New Zealand, a Graduate Diploma in Geography from the Australian National University, and a PhD in Geomatics Engineering from the University of Melbourne.

Open Map Knowledge - ICA's contribution to the SDGs
Date and Location
December 17, 2021, Aula Magna of the School of Humanities, via Laura 48
10:15 - 11:15 AM (CET)

Prof. Menno-Jan Kraak
This contribution will inform about ICA's efforts in contributing to the SDGs by making cartographic knowledge available to a wider community. This is best represented by the joint ICA-United Nation publication 'Mapping for a sustainable world'. A presentation of this work is followed by an outlook to the future. How can this work be expanded both in creating awareness about the SDGs and to scale the SDGs from global to local. The notion of 'Open Map Knowledge' is discussed, with a focus on how the book and its derived (interactive) products can play a role in open education. This not without a critical note about strength and weaknesses of our cartographic products.

Menno-Jan Kraak is professor of Geovisual Analytics and Cartography at the University of Twente / ITC, the Netherlands. Currently he is ITC's vice-dean of capacity development. He was President of the International Cartographic Association (ICA) for the period 2015-2019. He (co)authored many publications, among them the books 'Cartography, visualization of geospatial' (4th edition 2020 - CRC Press) and 'Mapping time' (2014 - ESRI Press) and 'Mapping for a sustainable world' (2020 - United Nations).
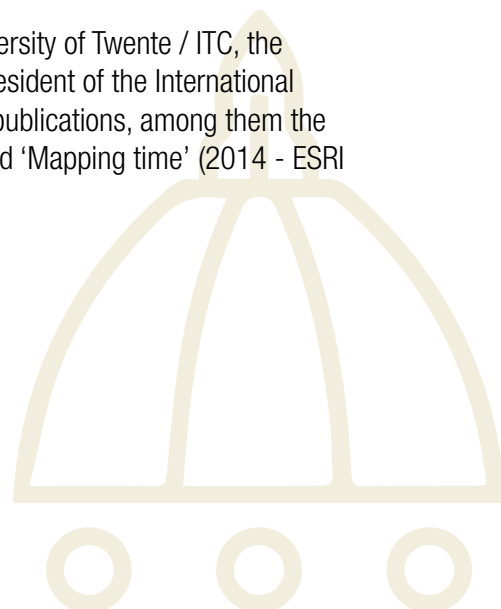
HYBRID PANEL SESSIONS

Urban Data Analytics platform based on Earth Observation and Artificial Intelligence: Latitudo 40, Geospacial Data and Business Innovation

Date and Location
December 15, 2021 in the Aula Magna of the School of Humanities, via Laura 48
3:00 - 4:30 PM (CET)

Supported by INTESA SANPAOLO INNOVATION CENTER

Panelists

Mauro Manente

Mauro Manente is CTO and co-founder of Latitudo 40 where with all his passion and curiosity he is driving the development of the fastest and easiest cloud platform to access data extracted from satellite images using AI. During the last 20 years, after his computer engineering graduation at University of Naples "Federico II", he had the chance to work with several space/telco companies in Italy as a software developer first and then as team leader, project manager and CTO. He founded his first IT consultancy company in 2010 and then has been co-founder and member of board of directors of Remocean and Latitudo 40, two startups based in Italy in the field of remote sensing, and co-founder of Sentimetrix, a United States based company specialized in sentiment analysis.

Luigi Ruggerone

After completing his postgraduate studies in Economics in the UK, Luigi joined Banca Commerciale Italiana in 1996, working in Milan for the Research Department and then the Risk Management Department. In 2013, with his wife Alessandra and his kids Luca and Sara, Luigi moved to Washington DC to join the International Monetary Fund, where he contributed to writing several issues of the Global Financial Stability Report until 2015. In October 2015 he joined Intesa Sanpaolo Group to open and manage its new Representative Office in Washington DC. On October 1st 2018 he was appointed Head of Innovation Business Development with Intesa Sanpaolo Innovation Center, a new company of Intesa Sanpaolo Group based in Turin and entirely dedicated to scout, analyze accelerate and support innovative technologies. Since July 1st 2019 Luigi is the Director of Applied Research with Intesa Sanpaolo Innovation Center.
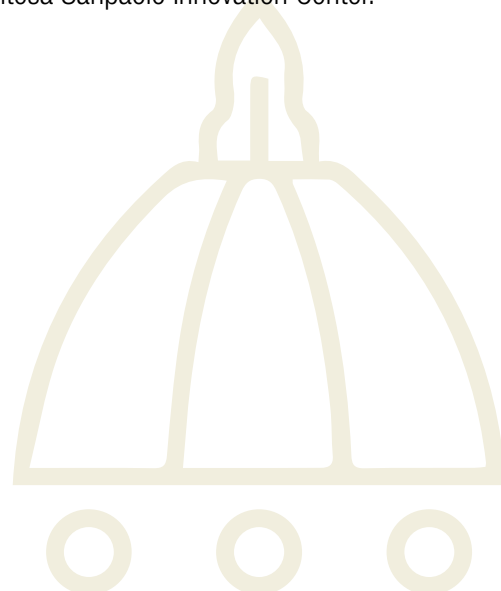
Geospatial Data, Dashboards, Analytics and Scientific Communication – Lessons Learned from the COVID-19 Pandemic

Date and Location

December 15, 2021 in the Aula Magna of the School of Humanities, via Laura 48

5:00 - 7:00 PM (CET)

Organized by **Paola Zamperlin** - University of Pisa (in person) and **Aileen Buckley** - Esri, Redlands (in person)

Moderated by **Aileen Buckley** - Esri, Redlands (in person)

Discussant: **Tim Trainor** - ICA (in person)

Panelists

Este Geraghty, Esri Chief Medical Officer (virtual)

Dr. Geraghty is the Chief Medical Officer at Esri, developer of the world's most powerful mapping and analytics platform. She leads strategy and messaging in Health and Human Services and is passionate about delivering value thru a geographic approach. Formerly a Deputy Director with the California Department of Public Health, she led the state's open data initiative. She also served as Associate Professor at the University of California Davis, conducting research on geographic approaches to health policy and community development. In addition to degrees in Medicine, Medical Informatics and Public Health, Dr. Geraghty is also a Geographic Information Systems Professional (GISP).

Frank Dong, Johns Hopkins University (virtual)

Ensheng Dong, who goes by Frank, is a Ph.D. Candidate and a Louis M. Brown Engineering Fellow at Johns Hopkins University in Baltimore, Maryland. He is an experienced researcher with a demonstrated history of working in transmission and telecommunication industries and higher education. He is skilled in data science, spatial analysis, R, Python and ArcGIS. Frank is a strong research professional focused on system engineering and public health.

Jim Herries, Esri, Redlands - ArcGIS Living Atlas (virtual)

Jim Herries is a geographer with Esri in Redlands, California. He serves as a principal product engineer on the team responsible for ArcGIS Living Atlas of the World. Jim is particularly engaged in thematic mapping and map visualizations, reflecting a drive to help GIS users bring their data to life on the map and to stimulate insights. He constantly looks for ways to create clear, focused map information products that incorporate meaningful spatial analysis and evocative visualizations.
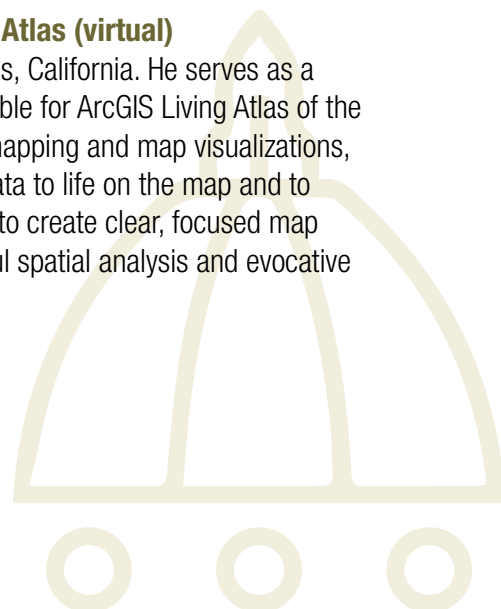
Gianni Campanile, Project Manager - Esri Italia (in person):
Gianni Campanile, an expert on GIS standards, is project manager at Esri Italia, the Italian official distributor for Esri Inc. He graduated in mathematics in 1985 and has worked in IT fields since then. He started working with Geographical Information Systems on 1995 and joined in Esri in 2004 in a variety of roles, including software developer, technical leader, project manager, and solution architect. He is currently project manager for all Italian local and central administration projects.
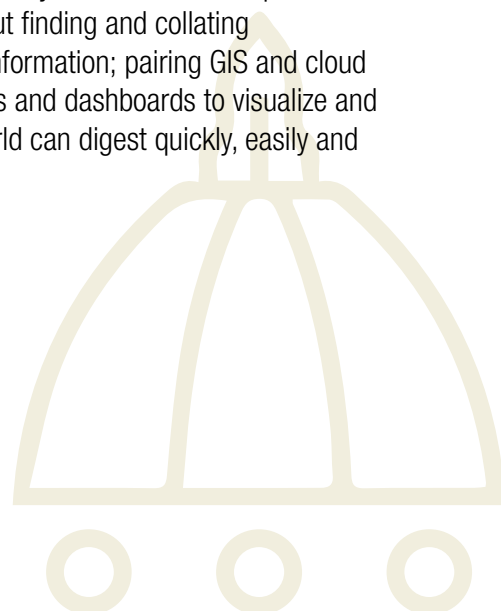
Discussant

Tim Trainor (in person)
Tim has been involved in cartography his entire professional life. He had a long career at the U.S. Census Bureau, culminating in the position of Chief Geospatial Scientist. He continues to work with the United Nations in advancing global geospatial information. He attended his first ICC in 1987 in Morelia, Mexico, and has participated in every ICC since then. In Morelia, he joined the Commission on Atlases, became Commission Chair in 1995, and remained active until he was elected as a Vice President of ICA from 2007-2015. He is now the President of the ICA, for the 2019-2023 term.

Session Description

The nature of a crisis is that it both magnifies our systemic shortcomings while also inspiring innovation. COVID-19, as a long-term global crisis has followed suit, exposing inadequate data systems, lack of interoperability, and delayed and rather terse communication systems. At the same time, needs such as pattern prediction, trend analysis and real-time reporting inspired innovation.

Geospatial tools provide unparalleled opportunities to solve pandemic challenges. Early in the pandemic, the dashboard that Johns Hopkins University stood up served as the only global resource for real-time situational awareness. It has since received trillions of hits and inspired similar dashboards for other geographies, including countries, states, and provinces, cities, and more.

In this session, we review the innovations fueled by modern geographic information systems and their implications for a more resilient future. Panelists will speak from a variety of perspectives about finding and collating COVID-19 data; performing analysis of the data to reveal salient and actionable information; pairing GIS and cloud technology as the foundation for collaboration and interactivity; and creating maps and dashboards to visualize and communicate the scientific information in a form that people from all over the world can digest quickly, easily and accurately.

				Monday, December 13			
CET	Aula Magna	Room A101	Room A103	Room A105	Room A106	Room A209	Room A210
9:00 12:30		*Pre-Conference Workshop* Visualization of Dynamic Phenomenons and Processes on Web Maps	*Pre-Conference Workshop* Mapping the Ottoman Realm: Travelers, Cartographers and Archaeologists	*Pre-Conference Workshop* Geospatial approaches to combating Covid-19	*Pre-Conference Workshop* 24th ICA Workshop on Map Generalisation and Multiple Representation	*Pre-Conference Workshop* Sharing cartographic knowledge	*Pre-Conference Workshop* Disaster risk reduction (DRR) progress for cartography in Big Data era
14:00 18:45			*Pre-Conference Workshop* Map Design for Atlases			*Pre-Conference Workshop* Immersive Cartography / Cartography for Immersive Environments	*Pre-Conference Workshop* Geospatial Semantics

	Tuesday, December 14
CET	Salone dei Cinquecento
15:00-18:45	Opening Ceremony

				Wednesday, December 15			
CET	Aula Magna	Room A101	Room A103	Room A105	Room A106	Room A209	Room A210
8:45 10:15		T01-1. Art in Cartography	T02-1. Atlases	T03-1. Cartographic Heritage Into the Digital Domain	T05-1. Cartography for Early Warning and Crisis Management	T06-1. Cognition in Geovisualization	T07-1. Education and Continuous Learning in Cartography
10:15 11:15	Keynote Session: Cartography In An Age Of Digital Transformation						
11:15 11:45	Coffee Break						
11:45 13:15		T01-2. Art in Cartography	T02-2. Atlases	T03-2. Cartographic Heritage Into the Digital Domain	T04-1. Cartography and Children	T06-2. Cognition in Geovisualization	T07-2. Education and Continuous Learning in Cartography
14:45 16:30	Urban Data Analytics platform based on Earth Observation and Artificial Intelligence: Latitudo 40, Geospacial Data and Business Innovation	T08-1. Generalization and Multiple Representation	T09-1. Artificial Intelligence in Mapping	T03-3. Cartographic Heritage Into the Digital Domain	T04-2. Cartography and Children	T06-3. Cognition in Geovisualization	T07-3. Education and Continuous Learning in Cartography
16:30 17:00	Coffee Break						
17:00 18:45	Panel Session: Geospatial Data, Dashboards, Analytics and Scientific Communication – Lessons Learned from the COVID-19 Pandemic	T08-2. Generalization and Multiple Representation	T09-2. Artificial Intelligence in Mapping	T03-4. Cartographic Heritage Into the Digital Domain	T05-2. Cartography for Early Warning and Crisis Management	T6-4. Cognition in Geovisualization	T07-4. Education and Continuous Learning in Cartography

Thursday, December 16

CET	Aula Magna	Room A101	Room A103	Room A105	Room A106	Room A209	Room A210
9:00 10:45	National Mapping, National Geospatial and National Statistical Agencies Day of Collaboration and Information Sharing	T11-1. History of Cartography	T07-5. Education and Continuous Learning in Cartography	T13-1. Map Design	T15-1. Maps and Accessibility	T14-1. Map Production and Geoinformation Management	T10-2. Social Sensing and Visual Analytics
11:15 13:00		T11-2. History of Cartography	T02-3. Atlases	T13-2. Map Design	T15-2. Maps and Accessibility	T14-2. Map Production and Geoinformation Management	T10-3. Social Sensing and Visual Analytics
14:45 16:30		T11-3. History of Cartography	T12-1. Location Based Services and Ubiquitous Mapping	T13-3. Map Design	T17-1. Marine Cartography	T14-3. Map Production and Geoinformation Management	T16-1. Participatory Mapping
17:00 18:45		T11-4. History of Cartography	T12-2. Location Based Services and Ubiquitous Mapping	T13-4. Map Design	T20-1. Planetary Cartography	T14-4. Map Production and Geoinformation Management	T16-2. Participatory Mapping

Friday, December 17

CET	Aula Magna	Room A101	Room A103	Room A105	Room A106	Room A209	Room A210
8:45 10:15		T18-1. Mountain Cartography	T23-1. Toponymy in Cartography	T25-1. Cartography and Sustainable Development	T21-1. Spatial Data Infrastructure and Standards	T34-1. Use, User, and Usability	T22-1. Sensor-Driven Mapping
10:15 11:15	Keynote Session: Open Map Knowledge – ICA's Contribution To The SDGs						
11:15 11:45	Coffee Break						
11:45 13:15		T18-2. Mountain Cartography	T23-2. Toponymy in Cartography	T25-2. Cartography and Sustainable Development	T19-1. Open Geospatial Data and Technologies	T34-2. Use, User, and Usability	T29-1. Mapping Urban Environments
14:45 16:30	14:00-19:00 Panel session (in Italian) Spatial information at the heart of the Country's recovery, the renewed role of the Italian Regions	T33-1. Augmented and Virtual Realities in Cartography	T24-1. Cartography and Public Health	T25-3. Cartography and Sustainable Development	T21-2. Spatial Data Infrastructure and Standards	T34-3. Use, User, and Usability	T22-2. Sensor-Driven Mapping
16:30 17:00		Coffee Break					
17:00 18:45		T33-2. Augmented and Virtual Realities in Cartography	T24-2. Cartography and Public Health	T25-4. Cartography and Sustainable Development	T19-2. Open Geospatial Data and Technologies	T34-4. Use, User, and Usability	T29-2. Mapping Urban Environments

Saturday, December 18

CET	Aula Magna	Room A101	Room A103	Room A105	Room A106	Room A209	Room A210
8:45 10:15		T32-1. Military Mapping	T28-1. Cartography in Digital Humanities	T17-2. Marine Cartography	T33-3. Augmented and Virtual Realities in Cartography		
11:45 13:15		T26-T36. Cartography, Privacy, Ethics, and Perspectives	T28-2. Cartography in Digital Humanities	T30-1. Theoretical Cartography	T35-1. Map Projections		
14:30 16:00	Sala Pegaso in Palazzo Guadagni Strozzi Sacrati Closing Ceremony						

Tuesday, December 14
The Salone Dei Cinquecento In Palazzo Vecchio

• 15:00 - 18:45 •

Salone Dei Cinquecento, Palazzo Vecchio
Opening Ceremony
Chair: Margherita Azzari

15:00 Welcome remarks
15:30 Remarks by invited Authorities
16:30 Remarks by the President of International Cartographic Association
17:00 Keynote speech of Dr. Simonetta Cheli – ESA
18:15 The President of Italian Association of Cartography closes the ceremony
18:45 Closing party - Cortile del Michelozzo

Wednesday, December 15
The School Of Humanities, University Of Florence

• 8:45 - 10:15 •

RoomA101
T01-1. Art in Cartography
Chair: Sandra Ignagni

The Atlas as (Exhibition) Space. Herbert Bayer: World Geographic Atlas, 1953
Magdalena Becker

Across Edges: Art to Cartography; One Landscape to the Next
Darren Sears

Direct Manipulations of Cartographic Space for Expressive Cartographies
Nick Lally

Mapping the Skin and the Guts of Stories: a Dialog Between Conventional and Alternative Cartographies
Sébastien Caquard, Élise Olmedo

Mapping Tokyo Olympics 3.0: Archaeologies of the Future
Sharon Hayashi, Elina Lex

An individual journey within platial environments of flows
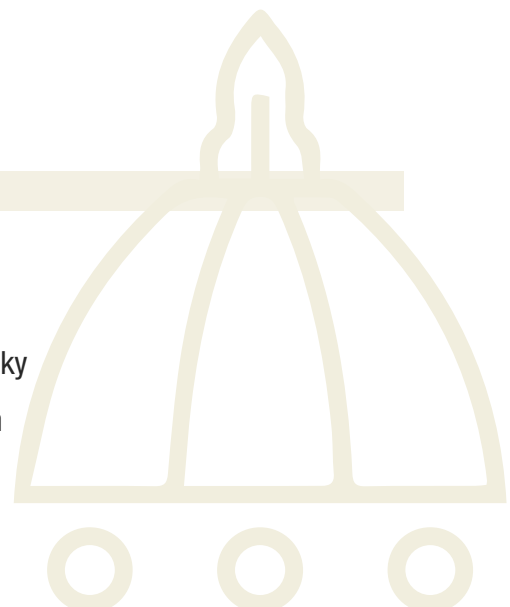Aleksandra Stanczak, Antoni Moore

RoomA103
T02-1. Atlases
Chair: Edoardo Boria

Cartography in the Social Media Era: a New Balance and Synthesis
Fraser, D R Taylor, Romola Thumbadoo, Alexander Wolodtschenko, Ilya Zaslavsky

Storytelling in Interactive Atlases - Following the Intrinsic Map-Centered Approach
René Sieber

Wednesday, December 15 • 8:45 - 10:15 •

Creating an Atlas of the Anthropocene
Benjamin David Hennig

Climate and Vine - Representation and Communication of Spatio-Temporal Relationships in the Web Application Austrianvineyards.Com
Dominik Wieser, Karel Kriz

Mapping Narrative Content and Structure in Online Atlases
Gareth Baldrica-Franklin

Erwin Raisz' Atlases - Multi-Method Storytelling-Approaches for Cartographic Communication
Losang Eric

Web Atlas that Recreates the Historical Memory of the Colombian Conflict from the Classrooms Based in History and Geography Concepts Using Geo-Technological Tools
Angélica María Peña Zambrano, Rafael Enrique González Castillo, Luz Ángela Rocha Salamanca

RoomA105

T03-1. Cartographic Heritage Into the Digital Domain
Chair: Mátyás Gede

supported by REGIONE TOSCANA

"Hack the Map", a Digital Educational Program Inspired by Rigas Velestinlis' Charta of Greece (1796-7)
Maria Pazarli, Kostas Diamantis, Vasiliki Gerontopoulou

The Perczel Project (2007–2019)
László Zentai, Mátyás Márton, Gábor Gercsák

The Historical Geological Cartography: From Digital Archive to Webgis Environment
Marco Pantaloni, Fabiana Console, Maria Pia Congi, Renato Ventura

Paper and Pixels: Historic Maps as a Multifaceted Resource
Cameron Petrie, Rebecca Roberts, Junaid Jabbar, Hector Orengo, Marco Madella

The Cartographic Heritage of the University of Florence. Historical Maps of the Geography Library
Margherita Azzari, Camillo Berti

RoomA106

T05-1. Cartography for Early Warning and Crisis Management
Chair: Christophe Lienert

Mixed Reality Maps to Help Convey Disaster Information
Kevin Patrick Helzel, Alexander Klaus, Mathias Jahnke

Geo-Online Explanatory Data Visualization Tools as Crisis Management and Communication Instruments
Silvia Grandi, Anna Bernasconi

Hurricane and Waste Collection Simulations on Qgis for Improving Post-Hurricane Waste Collection
Anne Ruas, Quy Thy Truong, Serge Lhomme

Application of Insar Satellite Method for Mapping of Active Landslides in Bulgaria - Opportunities and Perspectives
Mila Atanasova-Zlatareva, Hristo Nikolov, Lyubka Pashova

Risk Information Management in Support of UN Humanitarian Missions
Horst Kremers

Wednesday, December 15 • 8:45 - 10:15 •

RoomA209
T06-1. Cognition in Geovisualization
Chair: Serena Coetzee

Effect of Geospatial Uncertainty Borderization on Users' Heuristic Reasoning
Lorenzo Libertini, Ekaterina Chuprikova, Liqiu Meng

An Advanced Dynamic Visualization Method of Global Ocean Tide With Multi-Core Processor Based on Opengl
Hao Meng, Wei Ming Xu, Tian Yang Liu, Zhi Yuan Shi, Zhou Yang Dong

Visual Complexity and Memorability of Maps
Arzu Coltekin, Dario Oertle, Alzbeta Brychtova

Revealing Map Reading Strategies of Physical Geographic Maps
Marketa Beitlova, Stanislav Popelka

Thematic Mapping of Covid-19 Spread in Nigeria: a Tool for Pandemic Rapid Containment Measures
Oluwasegun Adebayo

Spatio-Temporal Assessment of Surface Water Quality in an Agrarian Community, Sw Nigeria Using Globe Protocol
Akinola Shola Akinwumiju, Olawale Oluwafemi, Seyi Ogundeji, Ifedotun Abimbola

RoomA210
T07-1. Education and Continuous Learning in Cartography
Chair: Tao Wang

Educational Uses of Cartography. An Example on the Use of GIS to Deal With Depopulation by Skill Processes
Javier Velilla Gil, Carlos Guallart Moreno, María Laguna Marín-Yaseli

Analysis of Historical Cartography and Data Presentation for an Educational Purpose: the Case of the Historical Centre of Vimercate
Dina Jovanovic, Daniela Oreni, Stefano Della Torre, Rossella Moioli

Extending the Cartographic Capabilities of Desktop GIS - Implementing Less Common Statistical Mapping Methods as Web Services Together With Students
Gertrud Schaab, Christian Stern

Cartographic Education at the University of Glasgow: Past, Present and Future
David Forrest

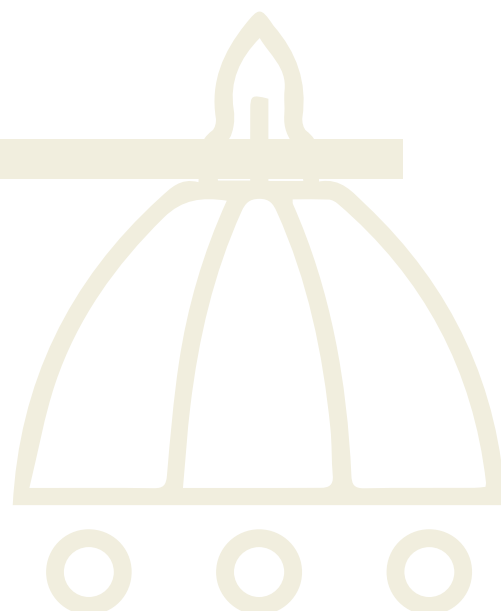How to Help the Statisticians Correctly Prepare Maps
Maciej Zych

• 10:15 - 11:15 •

Aula Magna
Keynote Presentation:
Cartography In An Age Of Digital Transformation
Greg Scott

Wednesday, December 15 • 11:45 - 13:15 •

• 11:45 - 13:15 •

RoomA101

T01-2. Art in Cartography
Chair: Giuseppe Borruso

Ancient Thoughts and Electric Buildings
Michael Trommer Trommer

A Sound-Strata Map of Port Hope
Taien Ng-Chan

Towards a Cartographic Renaissance: Leonardo'S Maps and Their Approaches to Art and Science
Alexander Kent

Aesthetics in Cartographic Epistemology
Chelsea Nestel Nestel

Thematic Mapping With a Twist
Kenneth Field

Design and Implementation of Narrative Map Based on Hand Scroll - an Example of Zheng He'S Voyage to the West
Jie Shen, Lufei Zhao, Nina Sun, Tengfei Chai

Data Visualization Design for Nsfc Join Fund Management
Zhao Jin, Tao Wang, Peng Huang

RoomA103

T02-2. Atlases
Chair: René Sieber

Serbian Atlases in the 19Th and Early 20Th Century
Jelena Glišović, Žarko Ilić

Mapping, Synthesis and Visualization of Czech Dialects
Vit Vozenilek, Martina Ireinova, Alena Vondrakova, Jakub Konicek

Bilingual Statistical Historical Atlas of Israel
Oren Raz

Historical Atlas of Poland 2.0 - Over 140 Years of Joint Work of Historians and Cartographers
Katarzyna Słomska-Przech, Dawid Maciuszek, Aniela Rząsa, Tomasz Panecki

Czech Historical Atlas: Creation of a Web Map Portal
Petra Jílková, Jiri Krejci

Austrianvineyards.com - the World's First Nationwide Information and Presentation System of all Wine Estates
Karel Kriz, Alexander Pucher

Wednesday, December 15 • 11:45 - 13:15 •

RoomA105

T03-2. Cartographic Heritage Into the Digital Domain
Chair: Milena Bertacchini

A Never-Born Russian-Language Earth Globe in the Virtual Globes Museum
Dávid Gerzsenyi, Gábor Gercsák, Mátyás Márton

A New Interactive Gazetteer of Perczel'S Globe
László Zentai, Zsuzsanna Ungvári, Gábor Gercsák, Márton Mátyás

Charles Perthées Maps of Palatinates: a Project of Digital Edition
Tomasz Panecki, Tomasz Królik

A New Tool to Follow the Changes of Geographic Names on Globes
Zoltán Kuris, Klaudia Rapcsán, Zsuzsanna Ungvári, Mátyás Gede

Construction of an Old-Map Framework for Promoting Historical GIS Research and Education
Keiji Yano, Satoshi Imamura, Ryo Kamata, Muneyuki Natsume, Benjamin Lewis

New Approaches to Communicate and Educate Through Historical Maps
Milena Bertacchini, Laura Turchi, Patrizia Cremonini, Lorenza Iannacci, Annalisa Sabatini

RoomA106

T04-1. Cartography and Children
Chair: Carla Cristina Reinaldo Gimenes de Sena

Spatial Thinking in Cartography Teaching for Schoolchildren
Barbara Jordão, Sônia Castellar

A Generations View on SDG - Using the Central Role of Maps
Markus Jobst, Georg Gartner

Geoliteracy, Cartology, and Active Mobile Mapping at School
Yaïves Ferland, Margot Kaszap

Children's Cartography: What Is a Map According to Children?
Heather Swienton, Alberto Giordano, Ronald Hagelman, Shadi MalekiHeather Swienton, Alberto Giordano, Ronald Hagelman, Shadi Maleki

Limits of Gis Implementation in Secondary Education
Veronika Bernhäuserová, Lenka Havelková, Martin HanusVeronika Bernhäuserová, Lenka Havelková, Martin Hanus

Cartography as a Tool to Assess Spatial Skills in Children Aged 3-5 Years
Paola Zamperlin, Guenda Mangoni
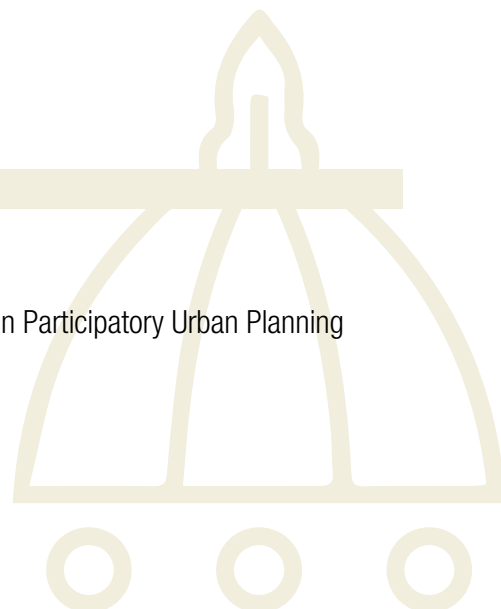
RoomA209

T06-2. Cognition in Geovisualization
Chair: Amy Griffin

How Do Users Interact With 3D Virtual Environments? Users' Behavior Evaluation in Participatory Urban Planning
Thibaud Chassin, Jens Ingensand, Guillaume Touya, Sidonie Christophe

Students' Strategies for Thematic Map Analysis
Lenka Havelková, Martin Hanus

Wednesday, December 15 • 11:45 - 13:15 •

Semantic Correlation Between Emojis and Feelings' Descriptions for Mapping Emotions Into the Urban Mobility Context
Gabriele Silveira Camara, Silvana Philippi Camboim, João Vitor Meza Bravo

Take That Flood: Does Your Perspective Matter?
Fabian Kuster, Ian T. Ruginski, Sara Irina Fabrikant

Evaluation of Geovisualization Designs for the Cognition of Movement in Space and Time
Crystal Bae, Somayeh Dodge

Mapping Autistic Wayfinding in Urban Environments
Irma Castellanos, Florian Hruby

RoomA210
T07-2. Education and Continuous Learning in Cartography
Chair: Terje Midtbø

Novel Cartographical Designs for Blind and Partially Impaired Students in Kurdistan
Ashna Abdulrahman Kareem Zada

Visualisations of Lidar Data in an Educational Setting
Jana Ameye, Luc Zwartjes, Philippe De Maeyer, Mario Hernandez

International Cartographic Education Progress: a Bibliometric Analysis of Iccs Literature
Tao Wang, Minghui Sun

Didactic Atlas of the National Geographic Institute of Spain
Ana Velasco Tirado, Celia Sevilla Sánchez, Noelia Esther Aguiar Rivero

How Are Maps Used in Research? an Exploratory Review of Phd Dissertations
Serena Coetzee, Sanet Carow, Lourens Snyman

• 14:45 - 16:30 •

Aula Magna
Panel Session
Urban Data Analytics platform based on Earth Observation and Artificial Intelligence: Latitudo 40, Geospacial Data and Business Innovation
Panelists: Mauro Manente

supported by INTESA SANPAOLO INNOVATION CENTER LATITUDO 40

RoomA101
T08-1. Generalization and Multiple Representation
Chair: Guillaume Touya

supported by REGIONE TOSCANA

Rebanker: Displacing Embankment Lines From Roads and Rivers With a Least Squares Adjustment
Guillaume Touya, Imran Lokhat

Supervised Learning for Automated Feature Selection in Road Network Generalization
Izabela Karsznia, Albert Adolf, Stefan Leyk

Wednesday, December 15 • 14:45 - 16:30 •

Horizontal Accuracy Assessment of a Recent Algorithm for Approximate a Surface to a Dem
Juan Francisco Reinoso-Gordo, Domingo Barrera, María Ibáñez, Eddargani Salah, Rocío Romero, Francisco Ariza-López

Theoretical and Practical Application of Wang-Müller Line Generalisation Algorithm
Tomas Straupis, Motiejus Jakstys

The Change and the Challenge of a National Geographic Database
Carlo Perugi

RoomA103
T09-1. Artificial Intelligence in Mapping
Chair: Paolo Nesi

Automatic Vectorization of Point Symbols on Archive Maps Using Deep Convolutional Neural Network
Gergely Vassányi, Mátyás Gede

Neural Map Style Transfer Exploration with Gans
Christophe Sidonie, Samuel Mermet, Morgan Laurent, Guillaume Touya

Combing Machine Learning Image Segmentation and Mixed Reality Design to Improve Users´ Navigation Experience
Christian E Murphy, Guillermo Fernan Esquivel Tabares

Map as a Knowledge Base (Mapkb), a Free and Open Source Geospatial Semantic Technology System Prototype
Dalia Varanka

Improving Map Text Detection and Recognition Through Data Synthesis
Samantha T Arundel, Trenton Morgan, Dennis Powon

Geoai for Topographic Mapping and the Intelligent National Map
E Lynn Usery

RoomA105
T03-3. Cartographic Heritage Into the Digital Domain
Chair: Stefania Palmentieri

Analysis of Urban Elements Orientations to Characterize the Spatial Extension of the Foundation of the Roman City of Amida
Jean-François Girres, Martine Assenat, Veysel Malit

Study of Old City Plan With Help of Historical Ontology of Urban Spaces - Legend Reconstruction
Katarzyna Slomska-Przech

Automatic Georeferencing of Topographic Map Sheets Using Opencv and Tesseract
Mátyás Gede, Lola Varga

Story From Realm of Maps in Regensburg
Beata Medynska-Gulij, Tillmann Tegeler, Hans Brauer, Krzysztof Zagata, Lukasz Wielebski, Ulf Brunnbauer

Using Cartographic and Archival Material to Approach Local History: an Educational Workshop About Lambrakis Case in Thessaloniki City of the '60S
Nopi Ploutoglou, Sofia Pavlidou, Maria Pazarli, Elpis Daniil

Developing 3D Models of Pre-War Warsaw Buildings With Spatial Data Integration
Beata Calka, Justyna Bak

Wednesday, December 15 • 14:45 - 16:30 •

RoomA106

T04-2. Cartography and Children
Chair: Luisa Spagnoli

Mapping the Surrounding Environment by Pupils. Case Study: Primary School "Ismail Qemali" in Chair - Skopje
Bashkim Idrizi, Neriman Selimi

Presence of the School Cartography in Erwin Raisz'S Lifework
José Jesús Reyes Nunez

Challenges in the Teaching of Cartography During the Covid-19 Pandemic: Use of Minecraft in the Remote Classroom Setting
Carla Sena, Barbara Jordão

Children's Graphic Representation as a Language and Its Role in Preschool Education Under a Whole-Child Approach
Paula Cristiane Strina Juliasz

The Treasure Map of the Citizen Childhood
Jasmine Desclaux-Salachas

RoomA209

T06-3. Cognition in Geovisualization
Chair: Liqiu Meng

Map Evaluation Under Covid-19 Restrictions: a New Visual Approach Based on Think Aloud Interviews
Martin Knura, Jochen Schiewe

The Impact of Landmark Visualization Style on Expert Wayfinders' Cognitive Load During Navigation
Armand Kapaj, Sara Lanini-Maggi, Sara Fabrikant

The Influence of Socio-Cultural Factors on Perception & Cognition of Map Symbols
Bradley Denney, Amy Griffin, Zdenek Stachon

Do Authors Look at Their Maps in Different Way Than Common Readers? an Eye-Tracking Study
Marketa Beitlova, Stanislav Popelka, Karel Macku, Martin Konopka

Nudging Travelers to Favorable Routes: the Impact of Visual Communication and Emotional Responses on Decision Making
Stefan Fuest, Monika Sester, Amy Griffin

The Role of Emotions in Mental Maps
Mariam Gambashidze, Juliane Cron

The Sense of North
Veronika Flóra Kiss, Zoltán Farkas-Németh, Zsolt Gyozo Török
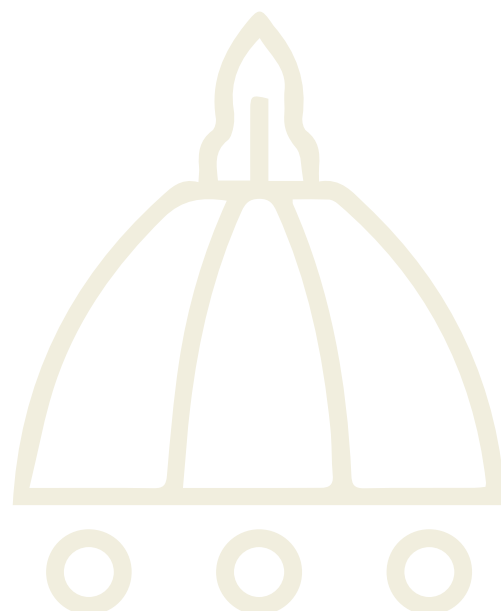
Wednesday, December 15 • 14:45 - 16:30 •

RoomA210

T07-3. Education and Continuous Learning in Cartography
Chair: Alexander Kent

Establishing a Cartographic Body of Knowledge
Terje Midtbø, Temenoujka Bandrova, Georg Gartner, Miljenko Lapaine, Jie Shen, Vít Vozenílek, Tao Wang

The System of Cartographic Didactic Aids for the Czech Lower Secondary Education and Its Implementation Into Geographical Teaching
Jan D Bláha, Petr Trahorsch

Introducing Web Mapping: a Workbook for Interactive Cartography and Visualization on the Open Web
Robert Roth, Carl Sack, Gareth Baldrica-Franklin, Yuying Chen, Richard Donohue, Lily Houtman, Tim Prestby, Robin Tolochko, Nick Underwood

The Adaptive Erasmus Mundus Cartography M.Sc. Program in the Covid-19 Pandemic From a Student's Perspective
Xiyu Wang, Jonathan Clark King

The Use of Virtual Environments in Geoscience Education
Hana Svedova, Petr Kubicek

Bottom-Up Approach for Cartography Body of Knowledge Design
Vit Vozenilek, Vaclav Talhofer

• 17:00 - 19:00 •

Aula Magna

Geospatial Data, Dashboards, Analytics and Scientific Communication - Lessons Learned from the COVID-19 Pandemic

esri | THE SCIENCE OF WHERE

Organized by:
Paola Zamperlin - *University of Pisa*
Aileen Buckley - *Esri, Redlands*

Moderated by:
Aileen Buckley - *Esri, Redlands*

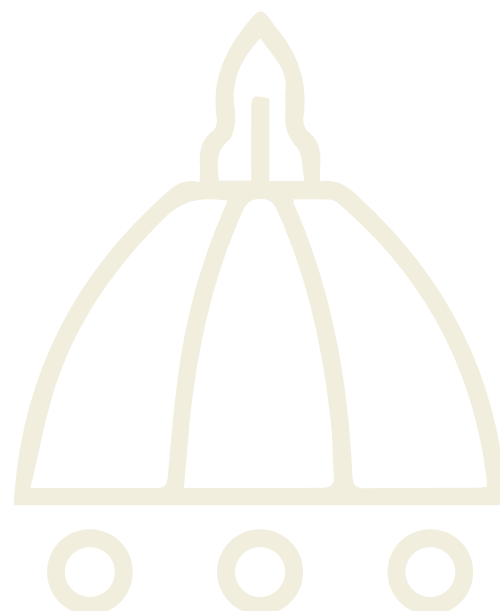**Discussant:**
Tim Trainor - *ICA*

Panelists:
Este Geraghty - *Esri Chief Medical Officer*
Frank Dong - *Johns Hopkins University*
Jim Herries - *Redlands - ArcGIS Living Atlas*
Gianni Campanile - *Project Manager - Esri Italia*

Wednesday, December 15 • 17:00 - 18:45 •

• 17:00 - 18:45 •

RoomA101

T08-2. Generalization and Multiple Representation
Chair: Luca Tavasci

Please, Help Me! I Am Lost in Zoom
Guillaume Touya, Maria-Jesus Lobo, William Mackaness, Ian Muehlenhaus

Data Classification Methods for Preserving Spatial Patterns
Jochen Schiewe

Modelling and Building of a Graph Database of Multi-Source Landmarks to Help Emergency Mountain Rescuers
Véronique Gendner, Marie-Dominique Van Damme, Ana-Maria Olteanu-Raimond

Deep Learning for Map Generalization: Towards a New Approach Using Vector Data
Martin Knura

Can Graph Convolution Networks Learn Spatial Relations?
Azelle Courtial, Guillaume Touya, Xiang Zhang

RoomA103

T09-2. Artificial Intelligence in Mapping
Chair: Dalia Varanka

Automatic Vectorization of Rectangular Manmade Objects: a Case Study Applying OpenCV and GDAL on UAV Imagery
Márton Pál, Fanni Vörös, Béla Kovács

Computationally-Efficient Sequential Feature Extraction for Single Hyperspectral Remote-Sensing Image Classification
Andong Ma, Anthony Filippi

Inferring Implicit 3D Representations From Human Figures on Pictorial Maps
Raimund Schnürer, A Cengiz Öztireli, Magnus Heitzler, René Sieber, Lorenz Hurni

Personalized Landmark Sequence Recommendation Method Using Lstm-Based Network for Navigating in Large Hospitals
Litao Zhu, Shen Jie, Gartner Georg, Yingxu Hou

Quantitative Content Analysis of Maps on Twitter Using Network Visualization and Pre-Trained Machine Learning Models
Edyta Bogucka, Liqiu Meng

Piloting the Use of Machine Learning Methods for Automatic Mapping of Streams and Ditches in Finland
Christian Koski, Pyry Kettunen, Justus Poutanen, Lingli Zhu, Juha Oksanen

RoomA105
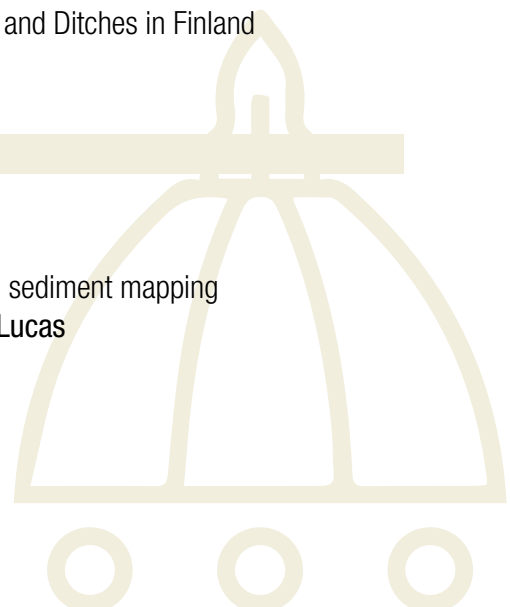
T03-4. Cartographic Heritage Into the Digital Domain
Chair: László Zentai

Data heterogeneity and oldness, two difficulties to overcome for the world seabed sediment mapping
Thierry Garlan, Isabelle Gabelotaud, Elodie Marchès, Edith Le Borgne, Sylvain Lucas

Mask-Rcnn Generalisation to Vectorise Surface-Type Objects of Old Maps
Valentin Árvai, Mátyás Gede

Wednesday, December 15 • 17:00 - 18:45 •

Utilizing Convolutional Neural Networks to Extract Road Features From Swiss Historical Maps
Chenjing Jiao, Magnus Heitzler, Lorenz Hurni

Modelling and Repeating Early Photographic Positions With Aerial Drones
Michael Hodgson, Silvia Elena Piovan

Towards the Large-Scale Extraction of Historical Land Cover Information From Historical Maps
Johannes Uhl, Stefan Leyk, Weiwei Duan, Zekun Li, Basel Shbita, Yao-Yi Chiang, Craig Knoblock

The Digital Cartographic Reconstruction of the 1897 'Mátra Guide' (Hungary)
Edina Hajdú, Márton Pál

RoomA106

T05-2. Cartography for Early Warning and Crisis Management
Chair: Milan Konečný

The Public Swiss Natural Hazard Portal for Warnings and Recommended Behaviour
Christophe Lienert, Franziska Angly Bieri, Barbora Neversil, Daniel Meier

A Combined Flood Risk Assessment With Swmm Hydrological Modelling and Ahp Based on Multi-Criteria Decision-Making
Yanping Li

Preliminary Study on Knowledge Graph Construction Based on the Coupling Mechanism of Urban Disaster and Emergency Response
Jie Shen, Jingyi Zhou, Jijun Yang

Landslide Susceptibility Evaluation Based on Optimized Support Vector Machine
Jiping Liu, Rongfu Lin, Shenghua Xu, Yong Wang, Xianghong Che, Jie Chen

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RoomA209

T06-4. Cognition in Geovisualization
Chair: Arzu Coltekin

Designing AI-Assisted Interactive Map Displays to Explore Spatial Information
Merve Keskin, Pyry Kettunen

Suitability of Colour Hue, Value, and Transparency for Geographic Relevance Encoding on Mobile Maps
Reichenbacher Tumasch, Marco Oliveri

Investigating the Effect of Display Pixel Density on the Minimal Legible Size of Cartographic Symbols
Florian Ledermann

Empirical Study on Recognition of Spatial Patterns in Choropleth Maps Using Hexagonal Shaped Units
Izabela Karsznia, Izabela Golebiowska, Jolanta Korycka-Skorupa, Tomasz Nowacki

The Proposition of Parameters to Define the Smoothness and Continuity of Spatial Distributions of Phenomena
Raphael Gonçalves De Campos, Caio Paiva, Silvana Philippi Camboim

Eye-Tracking Comparison of Two Road Atlases
Stanislav Popelka, Vondrakova, Alena, Beitlova, Marketa, Drahosova, Stanislava

Unlocking Cartography in the United Nations in the Era of Data for Action
Ayako Kagawa, Gakumin Kato, Mina Lee, Guillaume Le Sourd, Marco Lucafò, Oliva Martín Sánchez, Michael Montani
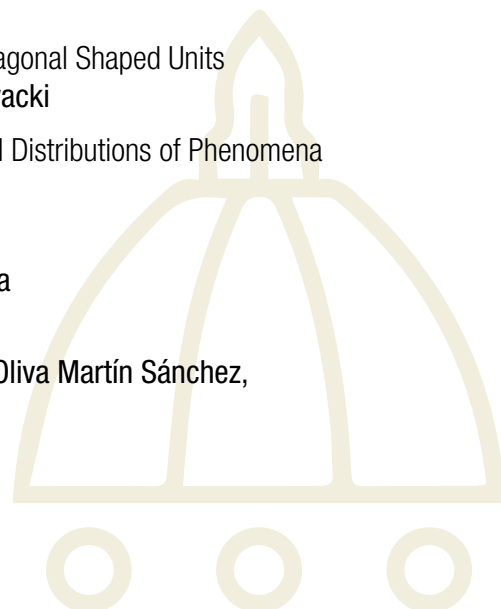
Wednesday, December 15 • 17:00 - 18:45 •

RoomA210

T07-4. Education and Continuous Learning in Cartography
Chair: Horst Kremers

A Collection of Student Maps for Teaching Multivariate Thematic Map Making - the Maps' Origin and Purpose
Gertrud Schaab, Sybil Adam, Serena Coetzee

Teaching on Natural Risks by Simulation in Minetest and Augmented Reality
François Lecordix, Kumarasamy Sivakavi

Education 4.0 in Cartography: an Integrated E-Learning Materials Portal for Cartography and Digital Mapping Course
Abdul Rauf Abdul Abdul Rasam

Making History Accessible to People With Visual Impairments Through Interactive Tangible 3D Models
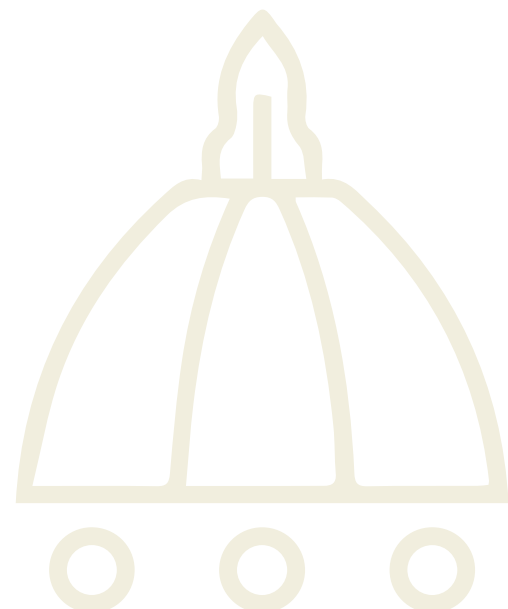Jan Brus, Richard Lazna, Radek Barvir, Alena Vondrakova

A Survey of Criteria for Accredited Publications
Antony Cooper

Approaches for infographics evaluation in maps
Jakub Koní_ek

ICC 2021
Florence, ITALY
14 • 18 DECEMBER 2021

30th International
Cartographic
Conference

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Thursday, December 16
The School Of Humanities, University Of Florence

Aula Magna

SPECIAL SESSION: National Mapping, National Geospatial and National Statistical Agencies Day of Collaboration and Information Sharing

supported by

• 8:30 am - 10:00 am •

NMA day - Transformation of National Organizations in the Digital Age
Opening session - **Chair: Tim Trainor,** *President of the ICA*
Contributors: **ICA Commissions & Working Groups; United Nations; International Map Industry Association; Ordnance Survey, NMAs & NGAs**

- Introductions of NMAs, NGAs, and NSOs and other international organizations
- Our desired future and the transformation we need
- Problem statement: the need to transition to meet demands and expectations considering the current landscape
- The Ordnance Survey in Zambia - **Clare Hadley**
- Identifying the gaps for transforming national organizations.
- Open discussion: inhibitors to transforming organizations in meeting the current and future demands.

• 10:30 am - 12:00 pm •

NMA day - the transition of NSDI to IGIF
Part 1 - improving on past achievements while acknowledging transformational requirements
- The value of past NSDI efforts
- Challenges in realizing NSDI for organizations in responding to current needs
- Open discussion: the current state of national organizations (mapping, geospatial and statistical) in supporting national priorities and national circumstances

• 1:30 pm - 3:30 pm •

NMA day - the transition of NSDI to IGIF
Part 2 - the UN IGIF - a new framework supporting organizational transformation
- The IGIF - Nine pathways for leadership to take positive steps - **Dr. Greg Scott**
- Experiences in applying the IGIF in six developing countries
- Open discussion: how the IGIF offers opportunities for addressing national priorities according to national circumstances

• 4:00 pm - 5:00 pm •

NMA day - ICA's role in supporting national organizations to realize organizational transformation
- Example of a successful collaboration - *Mapping for a Sustainable World* - **Professor Menno-Jan Kraak**
- How does the ICA support future efforts in transforming organizations?
- The role of ICA within the UN-GGIM - future opportunities to realize organizational transformation

Thursday, December 16 • 9:00 - 10:45 •

• 9:00 - 10:45 •

Room A101

T11-1. History of Cartography
Chair: Imre Demhardt

Cartography Between Reality and Fiction: the Maps by Albert Herrmann (1886-1945) of Chott El-Djerid
Petra Svatek

Jissoku-Yochizu (1821) the Small Scale Map of Japan Surveyed by Inoh Tadataka
Hiroshi Ota

Places of Misery: Mapping Slavery of the Dutch East India Company (Voc), 1602-1799
Jeroen Bos

Mediators of the Territory. Professional Profiles and Productions of the Regi Compassatori Della Dogana Di Foggia During the 18Th Century
Marco Petrella

Decoding Spatial Formatting: the Analysis of the World Order Through Educational Atlases
Sofia Gavrilova, Jana Moser, Philipp Meyer, Sebastian Lentz

Room A103

T07-5. Education and Continuous Learning in Cartography
Chair: Cinzia Podda

Mapwork.Education: Online Adaptive System for Cartographic Education
Martin Hanus, Lenka Havelkova, Veronika Bernhauserova, Kristyna Stolcova

Student Generated Digital Media and Community-Based Learning Within a Covid-19 Induced Landscape: Lessons From the Field
Nerhene Davis, Victoria Rautenbach

Map Use in Lessons: a Videostudy Findings
Kristyna Stolcova, Martin Hanus

On Developing Cartographic Terminology in African Languages
Cooper Antony, Serena Cotzee

SDGS and Cartography, a Conceptual Connection
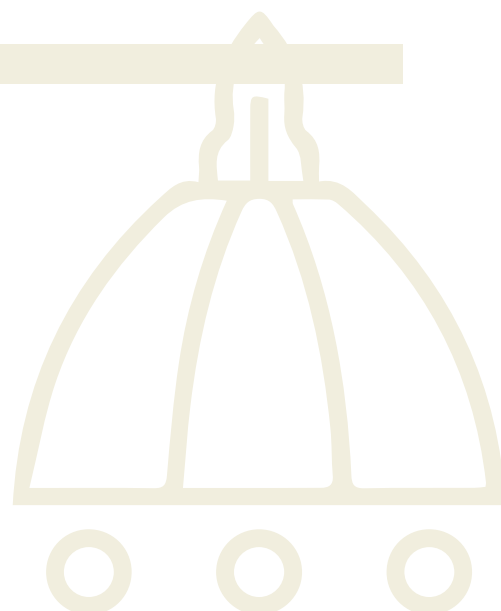Rob Lemmens, Menno-Jan Kraak

Room A105

T13-1. Map Design
Chair: Salvatore Pappalardo

What Do the General Public Think About Maps as Art?
William Cartwright

Balancing Shape Distortions and Contiguity in Cartograms
Michael T Gastner, Simon Perrault, Chen-Chieh Feng

Scalebrewer: a Visual Design Tool for Graphical Customization of Map Scale
Meilin Liu, Xi Tang

Thursday, December 16 • 9:00 - 10:45 •

Cartographic Styles Used in Spatial Planning Maps to Visualise Uncertain, Unfinished and Imagined Content
Katharina Henggeler

Graphic Map Load Measuring Tool – Development and Verification
Radek Barvir, Vit Vozenilek

Characterizing Storytelling in Covid-19 Cartographic Journalism
Timothy Prestby

Room A106

T15-1. Maps and Accessibility
Chair: Waldirene Ribeiro do Carmo

Perspectives About Implementation of Colour Codes on Maps Accessible to Blind People
Niédja Sodré De Araújo, Luciene Stamato Delazari, Amanda Pereira Antunes, Andrea Faria Andrade

Concept and Formalisation of Tactile Cartographic Variables
Yi-Rong Chen, Stephan Van Gasselt

Thematic Tactile Cartography: Evaluating Tactile Mapping Techniques for Novel Applications
Harrison Cole

Mapping Road Crossings for Visually Impaired People
Yuhao Jiang, María-Jesús Lobo, Sidonie Christophe, Christophe Jouffrais

Room A209

T14-1. Map Production and Geoinformation Management
Chair: Marco Scaioni

The Automated Map Public. Innovation for the Generation of the National Topographic Map of Spain
Adolfo Perez, Felisa Quesada, Alicia Gonzalez, Alfonso Boluda, Ana Maldonado, Alfonso De Tomas, Paz Navas, Santiago Prieto

Accessing Spatial Knowledge Networks With Maps
Markus Jobst, Georg Gartner

A Pragmatical Algorithm to Compute the Convex Envelope of Bathymetric Surveys at Variable Resolutions
Julian Le Deunf, Thierry Schmitt, Yann Keramoal

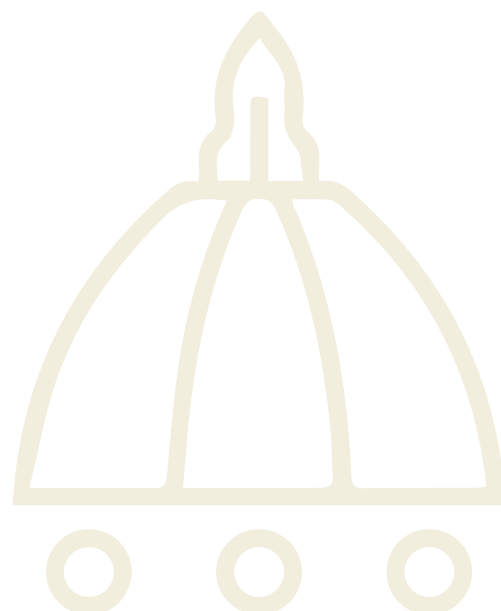Towards a Smart Campus: From Basemaps to Sensors
Jan Wilkening, Rainer Schäffner

Multiple Layer Symbol Design for Use With Internet Maps
Rex Cammack, Paul Hunt

Mix Your Own Data Cocktail Served With a Slice of Adobe
Mark Wigley

Thursday, December 16 • 9:00 - 10:45 •

Room A210

T10-2. Social Sensing and Visual Analytics
Chair: Petr Kubíček

Gaining Overview With Transient Focus+Context Maps
Daria Hollenstein, Susanne Bleisch

Covid-19 Geoviz for Spatio-Temporal Structures Detection
Jacques Gautier, Maria Jesus Lobo, Benjamin Fau, Armand Drugeon, Sidonie Christophe, Guillaume Touya

Approaches for Visualizing the Presence of Absence in Cartography
Anthony Robinson

Visualizing and Evaluating the Geocoding Uncertainty in Social Sensing for Disaster Management
Debayan Mandal Mandal, Binbin Lin, Bing Zhou, Mingzheng Yang

• 11:15 - 13:00 •

Room A101

T11-2. History of Cartography
Chair: Filippo Camerota

Were Portolan Charts and Portolani Made Upon Authentic Late Medieval Maritime Measurements? Example for the Adriatic Sea Basin Area
Tome Marelic

Advertising in Mapping Products in Russia (1860-1930S)
Mikhail Orlov

Renderings of the Adriatic Sea Coastline on Early Modern Age Nautical Charts in the Context of Their Navigational Applicability
Josip Faricic, Tome Marelic

Russian Topographic Mapping in Finland 1870-1917
Antti Jakobsson

A Geological Hiking Map Curiosity From 1939
Gáspár Albert, Ábel Hegedüs

Room A103

T02-3. Atlases
Chair: Eric Losang

The New National Atlas of Hungary – Volume Society
László Zentai, Gábor Gercsák, Károly Kocsis, Zsombor Nemerkényi

The Atlas as Gazetteer - Facilitating Historical Research by Enriching Digital Place Names Databases With Digitized Atlas Indexes.
Eric Losang

Monograph – the Covid-19 Pandemic in Spain
Andrés Arístegui, Francisco Sánchez

Virus Atlas Austria - Covid-19, Labour Market and Demography at a Glance
Florian Korn, Karel Kriz, Alexander Pucher

Thursday, December 16 • 11:15 - 13:00 •

Cartographic Storytelling: 150 Years of Swiss Official Statistics
Olaf König

The East Indian Water World 1709-1760: a Comparison of Two Dutch Manuscript Atlases
Ferjan Ormeling

Historical Statistical Atlases
Thomas Schulz

Room A105

T13-2. Map Design
Chair: William Cartwright

Design of an Atlas of Significant Natural Disasters
Denitsa Siteva, Silvia Marinova

The Carta Della Natura Project: the Case Study of Molise Region
Dora Ceralli, Lucilla Laureti, Chiara D'Angeli

Tectonics of Cartography
Jasmine Desclaux-Salachas, Lucile Bataille

Natural Disasters in Europe Within Years 2011 - 2020
Marek Hoffmann

Cross-Cultural Differences in Map Design Perception
Bibigul Zhunis, Georg Gartner, Silvia Klettner

Make Maps Great Again
Alejandro Guinea

Room A106

T15-2. Maps and Accessibility
Chair: Chiara Garau

Mapping of Accessibility I Norway
Sven Michaelis, Kathrin Böckelsack

Evaluation of Large Scale Online Maps
Michael P Peterson

Tactile Cartography in Latin America: Experience With Workshops
Carla Sena, Waldirene Carmo

Measuring Physical Assess to Primary Health Care Facilities in Gambella Region (West Ethiopia)
Pier Lorenzo Fantozzi, Fabio Manenti, Giovanni Putoto, Giuseppe Baracca

3D-Printed Models of Czech Architectural Monuments for People With Severe Visual Impairment
Radek Barvir, Jan Brus, Alena Vondrakova
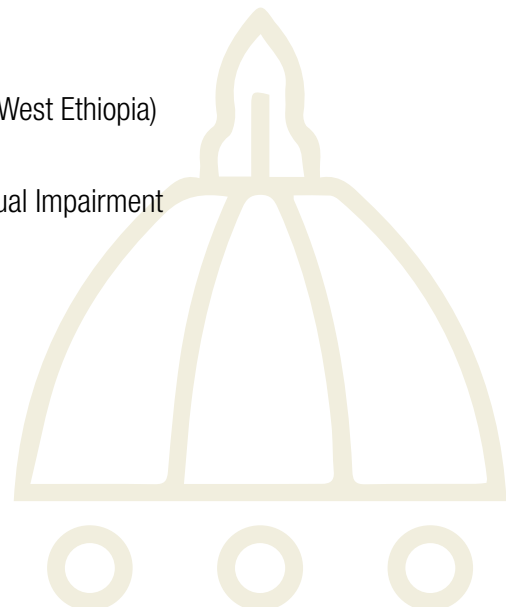
Thursday, December 16 • 11:15 - 13:00 •

Room A209

T14-2. Map Production and Geoinformation Management
Chair: Peter Schmitz

Digital Transformation in Topographic Databases
Gonzalo Moreno Vergara, Gema Martin-Asin Lopez, Lorenzo Camon Soteres

National High Resolution Land Cover and Land Use Information System
Julián Delgado Hernández, Nuria Valcárcel Sanz

Automation of Quality Control of Digital Topographic Maps at the Scale 1:50 000 of the Main State Topographic Map in Ukraine
Nadiia Lazorenko-Hevel, Danylo Kin, Olexander Lets, Yurii Karpinskyi

Change Only Updating the 1:25 000 Swiss National Map
Dominik Käuferle , Mark Wigley

The Project for Completing the Regional Geodatabase in Lombardia, Italy
Piera Belotti, Fabio Conzi, Chiara Dell'Orto, Maurizio Federici, Luigi Fregonese, Gabriele Garnero, Emilio Guastamacchia, Franco Guzzetti, Livio Pinto, Marco Scaioni

Vector Large-Scale Overview Plan in a Swiss Cantonal Administration
Cristina M Iosifescu Enescu, Andreas Gantner, Simone Würsch

Room A210

T10-3. Social Sensing and Visual Analytics
Chair: Anthony C. Robinson

The Representation of Spatial Context by Emojis Within Location-Based Social Media
Eva Hauthal, Alexander Dunkel, Dirk Burghardt

The Impact of Scale on Spatial Connections: an Exploratory Analysis
Yihong Yuan

Harvesting Social Media With Artificial Intelligence for Medical Threats Mapping and Analytics
Walter David, Michelle King-Okoye, Alessandro Capone, Silvia Piovan

Cluttering Reduction for Interactive Navigation and Visualization of Historical Images
Evelyn Paiz, Mathieu Brédif, Sidonie Christophe

• 14:45 - 16:30 •

Room A101

T11-3. History of Cartography
Chair: Angelo Cattaneo

Accuracy, Veracity, and Theological Truth in the 16Th Century Atlas Theatrum Terrae Sanctae
Ioana Zamfir

A Last Map of Yet Many Firsts: Der Brandberg, 1:200,000
Imre Demhardt

The Florentine Art of Cartography: Rosselli'S 'Fiorenza' and Early Map Printing in the Italian Renaissance
Zsolt Gyözö Török

Thursday, December 16 • 14:45 - 16:30 •

Mapping the Missionary World: 19Th Century Missionary Atlases With Special Regard to Justus Perthes' Production
Mirela Altic

Intellectual Property and Maps: Legal Protections for Cartographic Works From the Nineteenth to the Twenty-First Century
John Swab

Room A103

T12-1. Location Based Services and Ubiquitous Mapping
Chair: Haosheng Huang

Determining Traffic Congestion Utilizing a Fuzzy Logic Model and Floating Car Data (Fcd)
Maja Kalinic, Jukka Krisp

Driving and Navigation Habits of Austrian Drivers
Fanni Vörös, Georg Gartner, Béla Kovács

Pseudo Occlusion-Based 3D Trajectory Visualization for Indoor AR Navigation Services
Xiangling Peng, Hayato Aoyagi, Arikawa Masatoshi, Ryo Sato, Akinori Takahashi

Can Indoor Navigation Service Incorporating Signs Support Spatial Learning?
Wangshu Wang, Haosheng Huang, Georg Gartner

A Social Media-Based Framework for Tourist Behaviour Analysis and Characterization in Urban Environments
Francisco Porras Bernardez, Georg Gartner

Room A105

T13-3. Map Design
Chair: Gianluca Casagrande

The Promise of Dasymetric Maps for Monitoring Progress Towards the United Nations Sustainable Development Goals
Britta Ricker, Menno-Jan Kraak, Robert Roth

Evaluating the Information Value of Tactile Maps
Jakub Wabinski, Albina Moscicka, Marta Kuzma

Concept for the Historic Parks' Tactile Maps Development
Albina Moscicka, Jakub Wabinski, Andrzej Araszkiewicz, Marta Kuzma, Damian Kiliszek

An Attempt to Define Perceptive and Sensitive Mapping Through Lived Space Experiments
Catherine Dominguès, Laurence Jolivet, Eric Mermet, Sevil Seten

Base Maps of National Geoportals of Europe: Pragmatic and Stylistic Aspects
Rita Viliuviene, Giedre Beconyte

Which Mapping Technique for Population Density is Effective, Attractive, and Suggestive?
David Forrest, Beata Medyńska-Gulij

Thursday, December 16 • 14:45 - 16:30 •

Room A106

T17-1. Marine Cartography
Chair: Lysandros Tsoulos

Automatic Cleaning of Outliers in Multibeam Bathymetric Data With Clustering Algorithm
Yuan Wei, Shunjun Li, Shaohua Jin, Hongchao Ji

Overview of the Charts Representing Eastern Coast of the Adriatic Sea Through Centuries and a Comparison of Piri Reis Portolans With a Contemporary Chart Content
Ivana Racetin, Majda Ivic, Jelena Kilic, Katarina Rogulj

Geographic Factors for Managing Cruise Ship Destination Port to Attraction Passenger Transfer in the Caribbean Region
John Nyberg, Shachak Pe'Eri, Susan Slocum, Matthew Rice

Emodnet Geology: Digital Geological Maps of European Seas
Andrea Fiorentino, Loredana Battaglini, Matteo Conti, Silvana D'Angelo, Carlo Innocenti

Dynamics and Trends in Content System Formation of Nautical Charts
Anastasia Gorevalova, Tamara Vereshchaka

Reliability of Bathymetric Data in Italian Nautical Charts and Encs.
Manuela Milli, Cristina Tirone

A Step Toward a Standardized Guide in Sailing the Sea: the Pilot's Book Digital Upgrade
Roberto Manuzzo, Sonja Grosso, Riccardo Ansaldi, Ludovico Sturla, Marta Pratellesi

Room A209

T14-3. Map Production and Geoinformation Management
Chair: Marco Pantaloni

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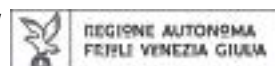
Mapping the Avalanche Risk: From Survey to Cartographic Production. the Avalanche Bulletin of the Meteomont Service of the Alpine Troops Command
Aurora Alfina Agata Rapisarda, Andrea Marco Raf Pranzo

Mapping Mt. Ushba: Preparation for a New Alpine Club Map
Gröbe Mathias, Nikolas Prechtel, Benjamin Schröter, Dirk Burghardt

Testing Approaches to Visualize Land Cover/Land Use Changes in Time Series With Cloud-Based Microservice Tools
Jesse Friend, Mathias Jahnke

Dem'S Elevation Comparison by Surface Buffering
Francisco Javier Ariza-López, José Rodríguez-Avi, Juan Francisco Reinoso-Gordo

GIS-Mapping ADCP Backscatter Data to Support Environmental Studies
Paola Picco, Roberto Nardini, Maurizio Demarte

The new geospatial data of the Friuli Venezia Giulia Region (Italy): a geomatic challenge
Alberto Beinat, Massimiliano Basso, Elena Viero
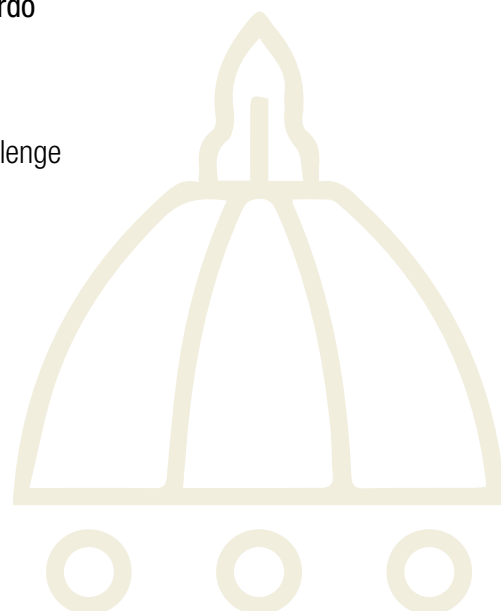
Thursday, December 16 • 14:45 - 16:30 •

Room A210
T16-1. Participatory Mapping
Chair: Temenoujka Bandrova

A Multicity Investigation on Fear of Crime
<u>László Zentai</u>, Andrea Pödör, Zalán Hum

Enabling Citizens to Refine the Location Accuracy of Cadastre Boundary Markers by Gamified Vgi
<u>Mikko Rönneberg</u>, Pyry Kettunen

A Climate Event Portal Co-Created by Citizen Scientists
<u>Andreas Divanis</u>, Liqiu Meng

Citizen Contribution to Lake Water Quality Observation: Simile Project Mobile and Web Applications
<u>Daniela Carrion</u>, Carlo Andrea Biraghi, Alberto Vavassori, Edoardo Pessina, Giorgio Zamboni, Gorica Bratic, Maria Antonia Brovelli

Participatory Mapping and Swot in the Context of the Water-Food-Energy Nexus for Attaining Sdgs in Eastern Amazonia
<u>Adryane Gorayeb</u>, Gislleidy Tavares, Regina Da Silva, Thomaz Xavier, Christian Brannstrom

Cultural Heritage and Awareness: Differences Between Volunteered Geographic Information of Openstreetmap and an Official Cartography the Case of Caserta in South-Italy
<u>Giovanni Mauro</u>, Maria Ronza

• 17:00 - 18:45 •

Room A101
T11-4. History of Cartography
Chair: Andrea Cantile

Using a Map to Reconstruct the Szekler Atlantis
<u>János Jeney</u>

Translating the Earth: Practices, Tools, and Credibility in Eighteenth Century Cave Surveys
<u>Johannes Mattes</u>

Maps Hiding in Plain Sight
<u>Bruce Jones</u>, Anthony Cavell, Michael Clarke, Robert Pratt

The Lack of Topographic Mapping and the Historical Problem of Land Demarcation in Brazil
<u>Claudia Robbi Sluter</u>, Andrea Lopes Iescheck, Andrea Flávia Te Carneiro, Daniela Regina Pontes, José Antônio Per Gediel

Room A103
### T12-2. Location Based Services and Ubiquitous Mapping
Chair: Angela Yao

Comparative Study of Foreign Visitors' Perceptions of Places by Analyzing Visual Content of Photographs
<u>Bochra Bettaieb</u>, Yoshiki Wakabayashi

A Novel Mobile User Interface to Support Pedestrian Navigation Without Restricting the User to a Predefined Route
<u>Haosheng Huang</u>, Thomas Mathis, Robert Weibel
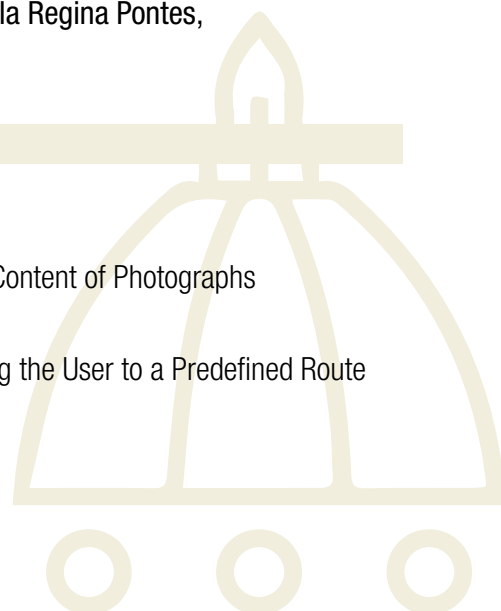
Thursday, December 16 • 17:00 - 18:45 •

Sensor Based Extended Floating Bicycle Data (Xfbd) Analysis
Jukka Krisp, Maja Kalinic, Christian Röger, Andreas Keler

Movement Patterns of Electric Cargo Bike Commuters - First Insights From Field Experiments and Trajectory Analyses
Andreas Keler, Lisa Kessler, Fabian Fehn, Klaus Bogenberger

Room A105

T13-4. Map Design
Chair: Michael Hodgson

Perspectives on Making Cartographic Knowledge Accessible to Software Developers
Amy Griffin, Serena Coetzee, Petr Kubicek, Silvana Camboim, Dalia Varanka, Francis Harvey, Franz-Josef Behr, Jan Brus

Implementing Airline Route Map De-Cluttering Strategies
Paulo Raposo, Menno-Jan Kraak

Automating Strip Mapping
Aileen Buckley

Symbolising Spatially Coincident Temporal Data
Kenneth Field

The Making of Mapping for a Sustainable World
Tanya Buckingham Andersen, Robert Roth, Gareth Baldrica-Franklin, Alicia Iverson, Chris Archuleta, Megan Roessler

Principles for Cartogram Design, Elicited From Manual Construction of Cartograms for the 50 U.S. States
Barry Kronenfeld

Room A106

T20-1. Planetary Cartography
Chairs: Alessandro Frigeri, Andrea Naß

50 Years of Sensor-Based Planetary Cartography: Review and Perspectives
Andrea Nass, Stephan Van Gasselt, Trent Hare, Henrik Hargitai

Preliminary Geomorphometric Analysis of Selected Martian Scoria Cone-Like Features Using High-Resolution Dtms
Fanni Vörös, Balázs Székely

International Coordination of Planetary Coordinate System Recommendations and the Iau Working Group on Cartographic Coordinates and Rotational Elements
Brent Archinal, Wg On Cart Crd&Rot El

User Needs and Identification of Upcoming Challenges for the Application of Planetary Information Systems
Stephan Van Gasselt, Andrea Nass

Standards Proposal for 2021 to Support Planetary Coordinate Reference Systems
Trent Hare, Jean-Christophe Malapert

Topographic Mapping of the Mars Mc Quadrangles Using Hrsc Data
Elke Kersten, Klaus Gwinner, Gregory Michael, Alexander Dumke, Ralf Jaumann

A Mapping Symbols Library and Development Environment for Earth and Planetary Geologic Mapping
Alessandro Frigeri
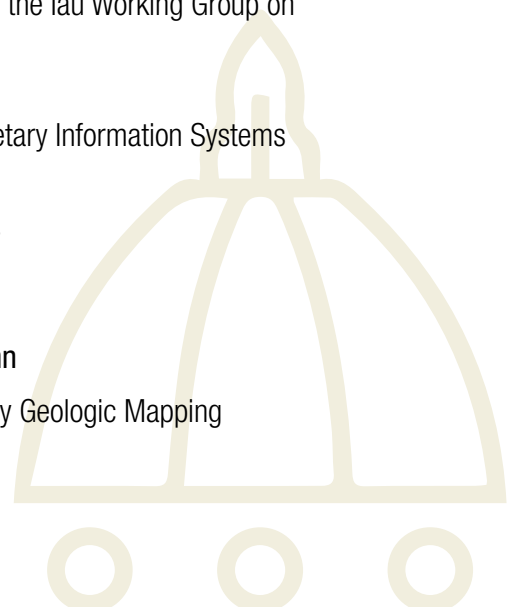
Thursday, December 16 • 17:00 - 18:45 •

Room A209

T14-4. Map Production and Geoinformation Management
Chair: Leonardo Disperati

Using Thematic Mapping and United Nations Sustainable Development Goals Indicator Data to Investigate Environmental Factors Related to the Spread of Covid -19
Jennifer Anderson, Britta Ricker

Vector Tile Table Join Service (Vtjs) - Cartographic Support for the Communication of Ai Results
Markus Jobst, Sharon Chawanji, Georg Gartner

Abstraction and Reality Dealing with...
Jana Moser, Christian Hanewinkel

Online Collections of Vietnam War-Era U.S. Topographic Maps
Aileen Buckley

Leveraging High-Performance Computing to Visualize Big Data on the Web – an Illustrative Case Study
Shane Loeffler

Room A210

T16-2. Participatory Mapping
Chair: Otakar Čerba

Integration of Quantitative Analysis and Local Community Involvement for Wildfire Risk Mapping: a Case Study From an Alpine Valley
Ingrid Vigna, Angelo Besana, Elena Comino, Alessandro Pezzoli, Davide Ascoli

Georeferencing Skills and Student Profile Results from a Multivariate Regression Model
Gian Pietro Zaccomer, Maurizia Sigura

Lessons Learned from a VGI Initiative for Land Use Monitoring
Ana-Maria Raimon Olteanu-Raimond, Marie-Dominique Van Damme, Laurence Jolivet

Covid-19 Lockdown and Students' Changing Perception of Place: a Participatory Mapping Study in South Africa
Nerhene Davis, Kgothatso Langa, Coetzee Serena

Discovering Spatiotemporal Patterns on Data Quality Assessment in Collaborative Mapping: a Preliminary Study in an Area of Brazil
Elias Elias, Fabricio Amorim, Marcio Schmidt, Silvana Camboim

Enhancing Participatory Development in Morocco: Analyzing the Sketch Mapping Behavior of Men and Women and Integrating Paper and Digital Participatory Mapping Environments
Cora Stern, Matthew Rice
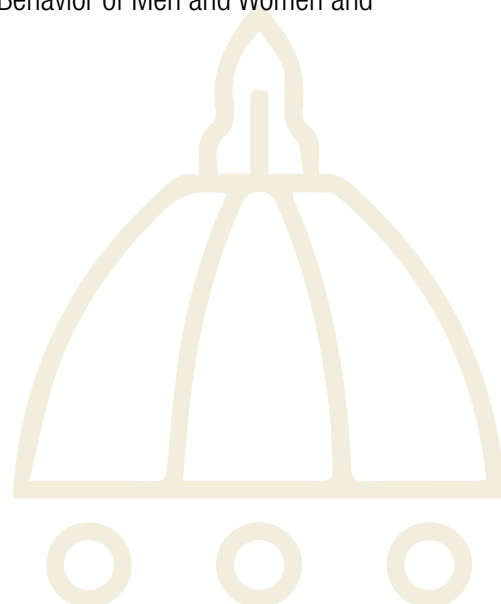
Friday, December 17
The School Of Humanities, University Of Florence

• 8:45 - 10:15 •

Room A101

T18-1. Mountain Cartography
Chair: Pierlorenzo Fantozzi

Mapant Spain: an Automatically Generated Orienteering Map for Spain
Jesús María Garrido Sáenz De Tejada, Manuel Jurado Alonso, Agustín Caballero Belda, Javier Arufe Varela, Jesús Moreno Jabato

Geomorphological Innovation Through Advances in Geovisualisation
Antoni Moore, Mike Smith

Route Planning on Orienteering Maps With Least-Cost Path Analysis
Albert Gáspár, Zsófia Sárközy

Maps of First Orienteering Events
László Zentai

Presenting Multilevel Environment on Orienteering Maps
Dušan Petrovič

Focus on Orientation to Represent Terrain
Gene Trantham, Patrick Kennelly

Large-Scaled Topographic Mapping Issues in Vgi and Open Geospatial Data
Benedikt Hajek, Karel Kriz

Room A103

T23-1. Toponymy in Cartography
Chair: Peter Jordan

Representation of Minority Names on Maps: the Case of the Polish Minority in the Tesin Region, Czechia
Premysl Macha

Dual Naming as a Mechanism to Recognize Multiple Identities; Casablanca Or Ad-Dar Al-Bayda
Malak Alasli, Gábor Gercsák

Let's Name It Together: Vgi, Social Media and Local Heritage in Traditional Toponyms Research
Kamil Niescioruk

Indigenous Place Names in Toponymical Strata on the Turtle Island
Yaïves Ferland

The Importance of Contemporary and Historical Indigenous Cartography and Toponymy with Indigenous Contributions to Euro/American/Canadian Cartography
Daniel G Cole, E Richard Hart

Friday, December 17 • 8:45 - 10:15 •

Room A105

T25-1. Cartography and Sustainable Development
Chair: Teresa Amodio

Toward a New Ica Research Agenda
Liqiu Meng

Improving Land Loss Modelling Through Incorporating Neighborhood Scale Effects
Heng Cai

Mapping the Disparities of Community Resilience to Natural Hazards in the United States
Lei Zou

Urban Policy Observatory Programme for Sustainable Cities and Communities Mapping in Poland
Dariusz Dukaczewski

The Sustainable Tourism Organization of Rural Spaces. the Island of Sardinia in the Era Of
Silvia Battino Battino, Brunella Brundu

Mapping and Characterizing Animals' Places of Interest in Forest Environment
Laurence Jolivet, Florian Masson, Sonia Saïd

Room A106

T21-1. Spatial Data Infrastructure and Standards
Chair: Sandro Savino

OGC API Features HTML-Output as a Feature Dashboard
Lassi Lehto, Jaakko Kähkönen

Analysis of Infrastructural Forest Data With Gis-Tools
Ekaterina Podolskaia

Implementing Base Data Set Custodianship - South Africa
Maroale Chauke Chauke, Nicolene Fourie, Vutomi Ndlovu, Yvonne Moema

Interoperability at the Core Strategic in the Spatial Data Infraestructure of the Service Aerophotogrametric, Chilean Air Force
Joselyn Robledo

The Inspire Harmonisation: the Geological Map of Italy at 1:100,000 Scale
Marco Pantaloni, Valentina Campo, Maria Pia Congi, Gennaro Maria Monti, Paolo Primerano, Renato Ventura

Room A209

T34-1. Use, User, and Usability
Chair: Robert Roth

Evaluating a Location-Based Game to Support Citizens' Situated Reflection on History: a Mixed Method Approach
Catherine Jones

Selection of Usability Heuristics to Evaluate Digital Maps Accessed on Different Devices
Vinicius Emmel Martins, Marcio Augusto Reolon Schmidt, Luciene Stamato Delazari

A Set of Criteria for Evaluating Map Application Design in a Mobile Environment
Marc Schulz, Julian Huiber, Temenoujka Bandrova

Friday, December 17 • 8:45 - 10:15 •

Identifying Map-Reading, Map-Using, and Map-Generating Tasks in a Crowdsourcing Context
Claudia Robbi Sluter, João Vitor Meza Bravo

Towards Reproducible User Studies and Behavioral Experiments for Cartography With the Stimsrv Framework
Florian Ledermann, Georg Gartner

How Do People Make Decisions With/Without Smartphones While Walking in the City?
Kaori Ito, Asahi Maeda, Kota Katsumata, Seiya Takayanagi

Room A210

T22-1. Sensor-Driven Mapping
Chair: Stefano De Falco

Application of Uas for the Purposes of Landslide Mapping in Bulgaria - a Case Study of the Thracian Cliff Landslide, Northern Bulgarian Coastal Zone
Lyubka Pashova, Mila Atanasova-Zlatareva, Hristo Nikolov, Grigor Nikolov

Automatic Mapping of Traffic Signs
Bence Dusek, Mátyás Gede

Abandoned Landscapes - Possibilities of Their Identification by Application of Map Data and Aerial Images in Conditions of Slovakia
Daniel Szatmári, Monika Kopecká, Ján Feranec, Tomás Goga

Satellite Mapping of Urban Expansion and Landscape Changes in Beijing, China: a Longitudinal Study
Xiaojun Yang, Ting Liu

• 11:45 - 13:15 •

Aula Magna

Keynote Presentation:
Open Map Knowledge - ICA's Contribution To The SDGs
Menno-Jan Kraak

Room A101

T18-2. Mountain Cartography
Chair: Dušan Petrovič

The Effect of the Cold War Era on Maps for Public Use in the Eastern Bloc Countries: Tourist Maps
László Zentai, Gábor Gercsák

Combining Multiple Shaded Reliefs with Hypsometric Colouring and Digital Orthophotos Using Free and Open-Source Software
Adam Vinkovic, Robert Zupan, Stanislav Franges, Damir Medak
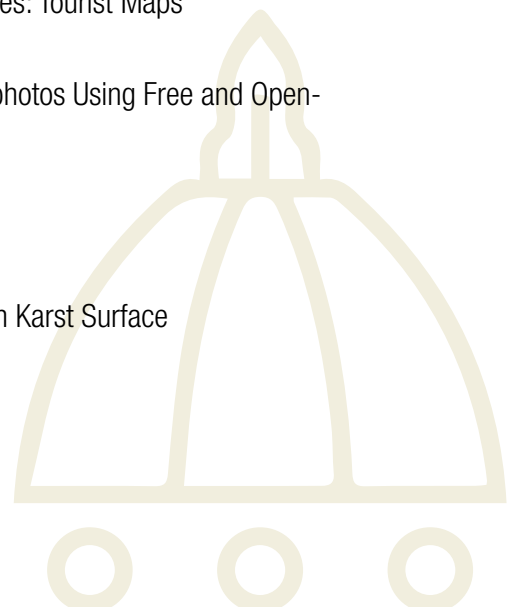
Shadows Eclipse Relief Shading
Patrick Kennelly, Gene Trantham

Upgrade of Existing Algorithms for Creating Contour Lines on Topographic Maps in Karst Surface
Neza Ema Komel, Dusan Petrovic

Mountain Faces
Stephan Wondrak

Friday, December 17 • 11:45 - 13:15 •

Optimal Generalization of Digital Elevation Model Constrained by Granularity Measure
Timofey Samsonov

Room A103

T23-2. Toponymy in Cartography
Chair: Andrés Aristegui

Spatio-Temporal Analysis of Place-Naming Dynamics in Former West Prussia From 1772 to 2020
Ihor Doroshenko, Francis Harvey

Place Names in Spanish Republican Life Stories: Spatial Patterns in Locations and Perceptions
Laurence Jolivet, Carmen Brando, Catherine Dominguès

Hungarian Place Names From a Moroccan Perspective
Malak Alasli

Russian School of Toponymical Cartography
Andrey Herzen, Olga Herzen, Yuliana Gordova

The Place Names of the Aragonese Maps. Interpretative Hypotheses, Landscape Readings and Methodological Proposals
Silvia Siniscalchi, Fernando La Greca, Pierluigi De Felice

Room A105

T25-2. Cartography and Sustainable Development
Chair: Giovanni Mauro

Georeferenced Cartography and Landscape: the Protection of the Monumental Olive Heritage
Teresa Amodio

Geodesign as a Support for Proposing Actions to Fulfil the Sustainable Development Goals
Ana Clara Moura, Fabiana Vieira, Camila Morais

Geodiversity Mapping of the Bakony–Balaton Unesco Global Geopark, Hungary
Márton Pál, Gáspár Albert

Historical Cartography and Sustainable Tourism Development. Reconnecting Trento and the Fersina Stream Through the Retrieval of Environmental and Cultural Heritage
Aurora Alfina Rapisarda, Carolien Fornasari

Development of a Specialized Topographic Map of Environmental Protection Using the Example of Bog Massifs
Tamara Vereshchaka, Irina Kurbatova, Anna Ivanova, Alexei Stepanchenko

Cartography and Pilgrimage Trails. Tradition, Modernity, and Tourism
Cinzia Podda, Paolo Secchi, Milena Bertacchini

Room A106

T19-1. Open Geospatial Data and Technologies
Chair: Paolo Dabove

Soviet City Plans and Openstreetmap: a Comparative Analysis
Martin Davis, Alexander Kent

Web Maps of Regional Attractiveness
Otakar Cerba, Jan Macura, Karel Charvát, Viktorie Sloupová

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Web Technologies in Cartographic Support for Geological Exploration
Dmitriy Loginov

Development of Open Geoinformation Resources in Russia
Elena Martynova

Frmod, a Python Tool for Statistical Landslide Susceptibility Assessment
Dávid Gerzsenyi

Room A209

T34-2. Use, User, and Usability
Chair: Georg Gartner

Finite Mixtures of Normal Distributions in the Study of the Error in Altimetry
José Rodríguez-Avi, Francisco Javier Ariza-López

Assessing Legend Designs for Coordinated and Multiple Views Geovisualizations
Izabela Golebiowska, Tomasz Opach, Arzu Çoltekin

Ucd Techniques Applied to the Design of Interfaces for Integration Between Expert System and Gis to Define the Directive of Transmission Lines
Renan Daros, Luciene Delazari, Daniel Dos Santos, Ana Carolina Lopes

Interactive Cartographic Visualization of Real-time Satellite Data and Their Orbits
Shlesha Acharya

Empirical Evaluation of Four-Variate Thematic Maps for Expert Users
Jolanta Korycka-Skorupa, Izabela Golebiowska

How do Decision Makers Interact With Geospatial Data? an Eye Tracking Study
Jessica Hepburn, David Fairbairn, Philip James, Alistair Ford

Room A210

T29-1. Mapping Urban Environments
Chair: Daniela La Foresta

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Mapping the Impact of Urban Proximity on Population Dynamics: a Study of 615 Peri-Urban Villages of India
Ankit Sikarwar, Aparajita Chattopadhyay, Ritu Rani

Upgrading Spatiotemporal Demographic Data by the Integration of Detailed Population Attributes
Toshihiro Osaragi, Ryo Kudo

Exploring the Differences Between Tourists and Locals in Urban Settings Through Multi-Labeled Geotagged Photos: the Case of Tokyo
Ahmed Derdouri, Toshihiro Osaragi

Quantifying the Complexity of Road Intersections Using Open Data of Traffic Accidents - Insights From a Case Study in Munich
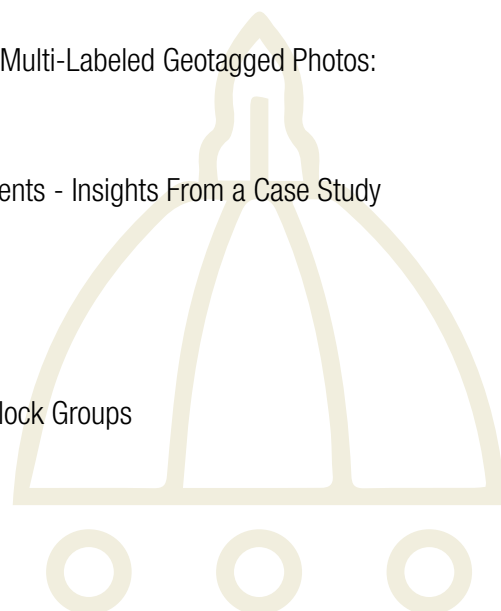Andreas Keler, Jukka Krisp

Quantitative, Orderly and Qualitative Visualisation of Urban Environment
Medynska-Gulij Beata, Elzbieta Bielecka

A Spatial Analysis of Crime and Neighborhood Characteristics in Detroit Census Block Groups
Esther Akoto Amoako

Friday, December 17 • 11:45 - 13:15 •

Location of Art Gallery in Urban Areas: a Gis Based Analysis in Shinagawa Ward, Tokyo
Yuta Tsuneizumi, Kaori Ito, Seiya Takayanagi

• 14:00 - 19:00 •

Aula Magna

Panel session (in Italian)
Spatial information at the heart of the Country's recovery, the renewed role of the Italian Regions
L'informazione territoriale al centro della ripresa del Paese, il rinnovato ruolo delle Regioni italiane

14:00 • Saluti di benvenuto
Stefano Baccelli, *Assessore alle infrastrutture, mobilità e governo del territorio, Regione Toscana*
Giuseppe Scanu, *Presidente dell'Associazione Italiana di Cartografia*

14:30 • Prima sessione
Le attività interregionali per l'informazione geografica
Modera: Gianni Siletto, *CISIS*

L'informazione geografica motore di innovazione
Umberto Trivelloni, *CISIS*

Le attività di coordinamento e i progetti interregionali, risultati e prospettive
Claudio Mazzi e Gianni Siletto, *CISIS*

Progetto PIGReCo: Piattaforma per l'informazione Geografica Regionale e di Comunità
Enrico d'Alessio, *CISIS*

Strumenti per una Governance Condivisa dei Processi Gestionali e Applicativi delle Basi di Dati di Copertura e Uso del Suolo Regionali
Pierpaolo Milan, *Regione del Veneto*

Dalla conferenza nazionale sulla cartografia del 1979 all'ecosistema informativo integrato
Ilaria Tabarrani, *Regione Toscana*

16:00 • Coffee break

16:30 • Seconda sessione.
Le Regioni e le Province Autonome raccontano: i dati geografici per la formazione e la valutazione delle politiche pubbliche
Modera: Marco Carletti, *Regione Toscana*

L'ecosistema informativo regionale integrato per il Governo del Territorio
Daniele Mazzotta, *Regione Toscana*

La geolocalizzazione dei dati infrastrutturali della Regione Sardegna nella logica degli Open Data
Riccardo Porcu, *Regione Autonoma della Sardegna*

I nuovi dati ed i servizi geospaziali a disposizione della regione FVG all'alba del PNRR, casi di successo per il rilancio del territorio
Marco Lunardis, *Servizio SIDEG - Regione autonoma FVG*
Roberto Piuzzo, *Servizio Clienti - Insiel SpA*

Friday, December 17 • 14:00 - 19:00 •

17:30 • Tavola rotonda
Il valore aggiunto della dimensione regionale
Modera: Leonardo Benuzzi, *Innovation manager*

Partecipano:

Agenzia per l'Italia Digitale, Agenzia Spaziale Italiana, CISIS, Dipartimento Protezione Civile, IGM, ISPRA, Foss4G

18:30 • Conclusione dei lavori
Giuseppe Scanu e Paola Zamperlin, *Associazione Italiana di Cartografia*

• 14:45 - 16:30 •

Room A101

T33-1. Augmented and Virtual Realities in Cartography
Chair: Zdeněk Stachoň

Implementing Augmented Reality (Ar) in Tourism
Iva Cibilic, Vesna Posloncec-Petric, Kristina Tominic

Classification of Dynamic Cartographic Symbols Applied to Augmented Reality (Ar) Systems
Fabricio Rosa Amorim, Marcio Augusto Reolon Schmidt

Exploring and Transforming Spaces Through High-Dimensional Gestural Interactions
Markus Berger

The Platform Edive: a Solution for the Geography Education in Collaborative Immersive Virtual Environment
Sasinka Cenek, Chmelik Jiri, Sasinkova Alzbeta, Stachon Zdenek

Re-Building a Historical Cityscape With Virtual Reality
Robert Schmidt, Stefan Sauer, Jan Wilkening

Building a Virtual Cartographic Museum
Pavel Ugwitz, Zdenek Stachon, Petr Kubicek

Room A103

T24-1. Cartography and Public Health
Chair: Davide Pavia

Spatial Distribution Shift of Creative Industries During Covid 19 Pandemic
Netek Rostislav, Jakub Konicek

Unequal Geographies of the Italian Tertiary Education System. Mapping the Disparities at Regional Scale
Giorgia Iovino

Bivariate representation of population density using public and private drinking and wastewater infrastructure
Georgianna Strode, Victor Mesev

Where and Why There: Location Analytics of Routine Occurrences (Laro) With a Case Study on Traffic Accidents
Yanan Wu, May Yuan

Visualizing Spatiotemporal Epidemic Clusters on a Map-Based Dashboard: a Case Study of Early Covid-19 Cases in Singapore
Hui Zhang, Chenyu Zuo, Linfang Ding
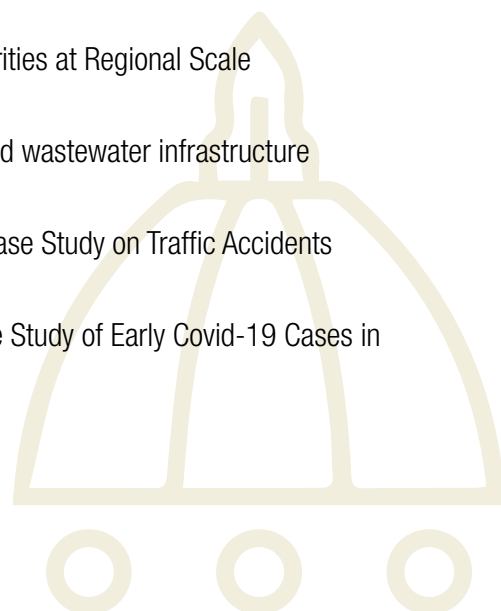
Friday, December 17 • 14:45 - 16:30 •

Modelling and Visually Analyzing the Spatio-Temporally Dynamic Transmissibility of Covid-19
Angela Yao, Xuebin Wei, Hao Yang

Interactive Map of Coronavirus Spread in Croatia
Robert Župan, Stanislav Frangeš, Adam Vinković, Lovre Rupić

Room A105

T25-3. Cartography and Sustainable Development
Chair: Vít Voženílek

Routing on Geospatial Reference Information for Transport Networks of Spain
Cristina Calvo, Alicia Gonzalez, Angel Exposito

Synthesis of Geospatial Database and Interdisciplinary to Achieve NSDS for Downtown Alexandria, Egypt Vision 2030
Mohamed Soliman, Tomoyuki Usami, Satoshi Imamura, Keiji Yano, Hrishikesh Ballal, Abbas Mohamed Abbas, Tharwat Abdel Fattah, Sameh El-Kafrawy, Hossam El-Sayed, Amr El-Shafie

Forest in Military Through Cartography: the Case of the Mccrady Training Base
Silvia Elena Piovan, Michael Edward Hodgson, Marco Filippini, Ludovico Maurina

Measuring Closest Water, Sanitation, and Hygiene Facilities in Unhoused Communities of Los Angeles, Usa
Lourdes Johanna Avelar Portillo

Mapping the Balance Between Grain Supply and Demand Globally - Gis -Based Transport Accessibility
Ossi Kotavaara, Terhi Ala-Hulkko, Maija Toivanen, Anita Poturalska, Marton Magyar, Pekka Kinnunen

Definition of Headwater Catchment Boundaries
Petr Kavka, Ludek Strouhal, Jiri Cajthalm

Room A106

T21-2. Spatial Data Infrastructure and Standards
Chair: Eufemia Tarantino

Updating of Digital Topographic Maps in the New National Spatial Coordinate System: Case Fergana Valley in Uzbekistan
Dilbarkhon Fazilova, Hasan Magdiev

Making Progress in Determining Quality: Positional Accuracy of the New 1:25,000 Scale Digital Cartography
Barbara Cubillos, Ángela Ortíz, Germán Aguilera, Sergio Rozas, Claudio Reyes, Ignacio Parada, Carlos Arriaza, Wilfredo Rubio, Patricio Gallardo, Héctor Ñuñez

Investigations Towards Enabling a Web-Based Environmental Geospatial Information System (Web-Egis) in Envidat
Ionut Iosifescu Enescu, David Hanimann, Dominik Haas-Artho, Marius Rüetschi, Dirk Karger, Gian-Kasper Plattner, Martin Hägeli, Rebecca Buchholz, Lucia De Espona, Niklaus Zimmermann, Loïc Pellissier

Mapping in Words: Standardizing Cartographic Terminology
Serena Coetzee, Amy Griffin, Barend Köbben, Petr Kubicek, Francis Harvey, Dalia Veranka, Silvana Camboim, Franz-Josef Behr, Reese Plews, Harold Moellering, Terje Midtbo

CARG Geological Database: New Layers, New Data
Loredana Battaglini, Roberta Carta

Friday, December 17 • 14:45 - 16:30 •

Room A209

T34-3. Use, User, and Usability
Chair: Philippe De Maeyer

Forensic Mapping in a Civil Proceeding in South Africa
Peter Schmitz, Kelcey Inglis, Patrick Holloway

Lived and perceived space during lock-down in a sensitive map approach
Laurence Jolivet, Catherine Dominguès, Éric Mermet, Sevil Seten

Interactive Web Maps: Usability Heuristics Proposal
Juliana Orro Mar Marquez, Tiago Silva, Paulo Meirelles

Making Sense of Coronavirus News Map: a Multiple Sorting Approach
Johanna Meyer, Danae Stanton Fraser, Julie Barnett

Adaptation of Maps to Pupils With Severe Visual Impairments
Alena Vondrakova, Katerina Becicova, Radek Barvir, Jan Brus

An Analyze of Spatial Newspapers in a Certain Period
Pinar Sarin, Necla Ulugtekin

An exploratory digital environment for learning about southern African pre-colonial urbanism - a usability study
Brenda Maina, Serena Coetzee, Stefania Merlo, Victoria Rautenbach

Room A210

T22-2. Sensor-Driven Mapping
Chair: Enrico Borgogno Mondino

Remote Sensing Based on Time Variance Control in Configurable Area Partitioning
Stefano De Falco, Giulia Fiorentino

Spatial and Temporal Evaluation of Perennial Vegetation Distribution in the Arid Areas Surrounding North Horr City
Velia Bigi, Ingrid Vigna, Elena Comino

Waterloo Building Dataset: a Large-Scale Very-High-Spatial-Resolution Image Dataset for Building Rooftop Extraction
Hongjie He, Zijian Jiang, Weikai Tan, Yuwei Cai, Sarah Narges Fatholahi, Kyle Gao, Hongzhang Xu, Bingxu Hu, Liyuan Qing, Jonathan Li

Impact of Neighbourhood Selection Methods on Mobile Lidar Data Classification Using Machine Learning Algorithms
Salem Wagih Sale Morsy, Mahmoud Mohamed, Adel El-Shazly

Precision Mapping of Apple Proliferation Using Multi- and Hyperspectral Data
Ben Mcleod, Ekaterina Chuprikova, Abraham Mejia-Aguilar, Dana Barthel, Katrin Janik, Roberto Monsorno, Liqiu Meng

Friday, December 17 • 17:00 - 18:45 •

• 17:00 - 18:45 •

Room A101

T33-2. Augmented and Virtual Realities in Cartography
Chair: Monica Sebillo

Changes of Locomotion Speed Affect Distance Estimations in Virtual Reality
Julian Keil, Annika Korte, Dennis Edler, Denise O'Meara, Frank Dickmann

Spatio-Temporal Comparison of Agent Trajectory With Evacuation Routes in Real and Virtual Environments
Dajana Snopková, Ondrej Uhlík, Ondrej Kvarda, Zdenek Stachon, Petr Kubícek

Designing Maps for Bicycling Simulator Studies - Three Practical Approaches
Andreas Keler, Patrick Malcolm, Georgios Grigoropoulos, Klaus Bogenberger

Evaluating Distances Using Pictorial Symbols in Augmented Reality Systems for Indoor Environments
Luciene Delazari, João Victor Gomes, Marcio Schmidt

Usability of Building Information Modeling (BIM) For Generating Virtual Geographic Environments (Vges)
Ondrej Kvarda

Room A103

T24-2. Cartography and Public Health
Chair: Nicola Gabellieri

Modeling Severe Acute Respiratory Syndrome Coronavirus 2019 (Sars-Cov-19) Incidence Across Conterminous Us Counties: a Spatial Perspective
Olawale Oluwafemi, Oluseyi Oladepo

Will Cognitive Mapping Be Beneficial to Alzheimer'S Disease?
May Yuan

Bridging Research and Dissemination in the Covid-19 Era: a Webgis Dashboard for the Autonomous Province of Trento (Italy)
Nicola Gabellieri, Francesco Geri, Andrea Marco Raffaele Pranzo, Paolo Zatelli

The Importance of Cartography in Covid-19 Pandemic Mapping
Hatice Atalay, Necla Ulugtekin

Creating a Dynamic Map Template for National Scale Malaria Treatment Planning in Zambia
Matthew Heaton

Inland Water Hydrographic Survey for Mapping and Scientific Research
Enrico Zanone, Erik Biscotti, Aldo Monaca, Marco Pucci

Room A105

T25-4. Cartography and Sustainable Development
Chair: Menno-Jan Kraak

Unlocking the Challenges and Achievements of the World Towards the Sustainable Development Goals Using Cartography
Ayako Kagawa, Gakumin Kato, Mina Lee, Guillaume Le Sourd, Marco Lucafò, Oliva Martín Sánchez, Michael Montani

Friday, December 17 • 17:00 - 18:45 •

The Role of Topographic Maps in River Hydromorphology
Batuhan Kilic, Fatih Gulgen, Meltem Celen, Mehmet Salim Oncel, Halil Nurullah Oruc, Sinem Vural

Introducing a Qgis Technical Supplement for Mapping for a Sustainable World
Lily Houtman, Robert Roth

The New Engineering Geological Map (Carta Litotecnica) of Tuscany (Italy)
Leonardo Disperati, Enrico D'Addario, Lorenzo Bottai, Riccardo Giusti, Guido Lavorini, Gianni Lombardi, Elisa Mammoliti, Francesco Manetti, Lorenzo Marzini, Michele Papasidero, Michele Amaddii

Mapping Global Accessibility of Food Grains - Transport Accessibility by Gis
Ossi Kotavaara, Terhi Ala-Hulkko, Maija Toivanen, Anita Poturalska, Marton Magyar, Pekka Kinnunen

GIS-Based Expeditious Assessments in the Field of Water Protection
Francesco Mundo, Massimo Peleggi, Silvana Salvati

Room A106

T19-2. Open Geospatial Data and Technologies
Chair: Silvana Philippi Camboim

Content-Based Image Retrieval for Map Georeferencing
Jonas Luft, Jochen Schiewe

Enhancing Kepler.Gl for Processing Google Maps Timeline Data
Tianqi Xia, Hiroshi Kanasugi, Zipei Fan, Ruochen Si, Chuyao Feng, Hiroshi Takayasu, Ryosuke Shibasaki

Open Data - Open Software: Implementing Geospatial Requirements in Envidat With an Open-Source Stack
Ionut Iosifescu Enescu, David Hanimann, Dominik Haas-Artho, Marius Rüetschi, Dirk Karger, Gian-Kasper Plattner, Martin Hägeli, Rebecca Buchholz, Lucia De Espona, Niklaus Zimmermann, Loïc Pellissier

An Innovative Global Cloudless Satellite Map
Martin Kostal, Petr Pridal, Nicolas Bozon

High Resolution Land Use Map for Eco-Hydrological Modelling From Iacs/Lpis Geodata Conflation
Flavio Lupia, Davide Rizzi, Diego Gallinelli, Pietro Macedoni, Fabio Pierangeli, Salvatore Carfi, Giuseppe Pulighe

Room A209

T34-4. Use, User, and Usability
Chair: Silvia Elena Piovan

User Study on Informationally Equivalent Thematic Maps for Map Use Tasks
Katarzyna Slomska-Przech, Izabela Golebiowska

An End-User Evaluation to Explore the Effectiveness of Cartograms for Mapping Spatial Accessibility
Aldo Arranz-López, Julio A Soria-Lara, Amor Ariza-Álvarez

Personalisation of Data-Driven Storytelling
Sebastian Meier, Fabian Dinklage, Katrin Glinka

Spatial Searches for Journal Articles
Sanet Carow Carow, Curtis Mashimbye, Peter Schmitz, Ruan Schoeman

The Reading Strategies of a Map-Based Dashboard - Acquisition and Assessment
Chenyu Zuo, Linfang Ding, Liqiu Meng

Friday, December 17 • 17:00 - 18:45 •

The Usability of the Idrogeo Web Platform for the Dissemination of Information on Landslides and Floods in Italy
Carla Iadanza, Alessandro Trigila, Paolo Starace, Alessio Dragoni, Tommaso Biondo, Marco Roccisano

Room A210

T29-2. Mapping Urban Environments
Chair: Francesco Pirotti

Assessment of Gold Mining Impact on the Vegetation of Itagunmodi-Igun Drainage Basin, Southwestern Nigeria From 1972-2010: a Gis and Remote Sensing Approach
Olawale Oluwafemi, Akinola Akinwumiju, Oluseyi Oladepo

Using Interactive Storymaps for Presenting the Work of an 18Th Century Architect
Elena Pfister, Stefan Sauer, Daniela Wenzel, Jan Wilkening

Local Climate Zone Mapping of Tirana, Albania
Anja Cenameri, Gáspár Albert

Obstacles Risk Modeling in Aerodromes Protection Zones
Andrea Lopes Iescheck, Gabriela Falavigna, Sergio Souza

Diagnosis of the Current Situation of the Cadastre and Its Relationship With Systematic Topographic Mapping
Andrea Lopes Iescheck, Claudia Robbi Sluter, Andrea Flavia Carneiro, Daniela Regina Pontes, José Antonio Gediel

Classifying Tourists' Photos and Exploring Tourism Destination Image Using a Deep Learning Model
Nahye Cho, Youngok Kang, Soyeon Park, Jiyeon Kim

Ruis - a Web Based Urban Information System for Rishikesh Area, India
Mohammed Surabud Mondal, Rabira Becho, E M Gutema, Merga Teshale Teshale, R D Garg

Saturday, December 18
The School Of Humanities, University Of Florence

• 8:45 - 10:15 •

RoomA101

T32-1. Military Mapping
Chair: Cosimo Palagiano

New Topographic Maps for the Czech Armed Forces
Václav Talhofer, Lubos Belka, Filip Dohnal

The New Italian Map at 1:50.000 Scale: M793 Map Series
Giuseppe Giustolisi

Forests as Protagonists on Battlefields: the Case Studies of Rivers Bridge and Honey Hill Through the Lens of a Hgis
Ludovico Maurina, Silvia Elena Piovan, Michael Edward Hodgson, Marco Filippini

Soviet Military City Plans Analysed: a Case Study From Israel and Denmark
Gad Schaffer, Stig Roar Svenningsen

The Soviet Military City Plan of Florence (1986)
Alexander Kent

Field Sketching - Today and at the Beginning of Professional Military Mapping
Beata Medyńska-Gulij

RoomA103

T28-1. Cartography in Digital Humanities
Chair: Maria Paradiso

A Survey on the Evolution of the Chinese Cadastral System
Chenjing Jiao, Lorenz Hurni

Understanding Election Results With Different Types of Maps
Kristina Spörl, Jan Wilkening, Sabine Kirschenbauer(F)

A Gis Database Documenting the Historical Geography of South-Central Transylvania in the Modern Age (1699-1867)
Andrei Nacu

The Heian-Kyo Site'S Database and Platform: Their Construction and Utilization
Mikiharu Takeuchi, Keiji Yano

Mapping Geohistorical Narratives: the Grand Duchy of Lithuania Borderlands Infrastructures Project, 18Th Century
Alberto Giordano, Jurgita Verbickiene, Martynas Jalkulis, Andrej Ryckov, Aivaras Poska, Tim Cole

Cartographic Sources For the Reconstruction of the Syro-Palestinian Landscape in the Late Antiquity
Margherita Azzari, Carmelo Pappalardo, Anna Lena

Beyond East and West - Geocommunicating Historical Sacred Landscapes
Markus Breier, Karel Kriz, Alexander Pucher
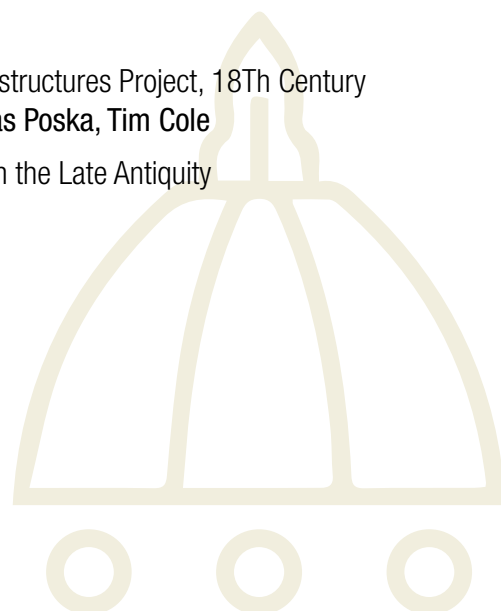
Saturday, December 18 • 8:45 - 10:15 •

RoomA105

T17-2. Marine Cartography
Chair: Marco Pierozzi

Toward a Marine Road Network for Ship Passage Planning and Monitoring
Sean Kohlbrenner, Matthew Eager, Nilan Phommachanh, Amith Kashyap, Christos Kastrisios, Val Schmidt

The Lebanese Nautical Cartographic Plan Development
Marta Pratellesi, Manuela Milli, Afif Ghaith, Christian Fahed

Development of Electronic Nautical Charts For Pleasure Boating Market With High-Density Data
Cristina Tirone, Manuela Milli

The Influence of the Electronic Navigational Charts Over Maritime Services
Valentino Palma

Nautical Charts Generalization: a Pragmatic Approach
Andriani Skopeliti, Lysandros Tsoulos, Leda Stamou, Shachak Pe Eri

RoomA106

T33-3. Augmented and Virtual Realities in Cartography
Chair: Grazia Tucci

Immersive Deep Maps for Inaccessible Heritage Sites
Alisa Pettitt

Spatial Knowledge Acquisition During Mr-Based Navigation in Complicated Environments
Bing Liu, Shengkai Wang

Usability of Building Information Modeling (BIM) for Generating Virtual Geographic Environments (VGEs)
Ondrej Kvarda

Research on Neural Style Transfer Method for the Expression of Historical and Cultural Characteristics of 3D Virtual Scenario
Shuai Hong, Jie Shen, Menghe Wang, Nina Sun

3D Printed Mountain Area With Augmented Reality for Education Purposes
Dobrin Petkov

Physical-Informational Space Visualization Based on Mixed Reality
Shengkai Wang, Bing Liu

• 11:45 - 13:15 •

RoomA101
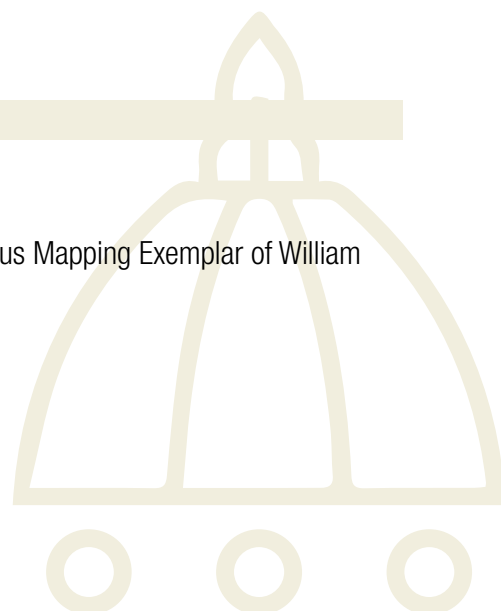
T26-T36. Cartography, Privacy, Ethics, and Perspectives
Chair: Paola Zamperlin

Integrating Cybercartography and Cybernetics in the Circle of All Nations Indigenous Mapping Exemplar of William Commanda
Romola V Thumbadoo, Fraser Taylor

Cybercartography Revisited
Fraser, D R Taylor

Saturday, December 18 • 11:45 - 13:15 •

Accessibility and Connection: the Challenges of the Reconstruction and the Promotion of Cultural Heritage
Luisa Carbone, Miriam Noto, Luca Lucchetti

LBS as Vectors of Influence
Maximilian Gartner

RoomA103
T28-2. Cartography in Digital Humanities
Chair: Maria Ronza

Mapping Academic Migration of German-Affiliated Researchers Across Countries Using 8 Million Scopus Publications From 1996 to 2020
Xinyi Zhao, Samin Aref, Emilio Zagheni, Guy Stecklov

Historical Cartography Analysis for a Design of Cultural Itineraries in the Lower Guadalquivir
Rebeca Merino Del Río

Tianjin Time Machine
Aurélia Desplain, Davide Gherdevich

Virtual Reconstruction of Historical Landscapes: a 3D Environment to Contextualise Data in Space and Time
Margherita Azzari, Vincenzo Bologna, Pauline Deguy

Mapping Geohistorical Narratives: the Grand Duchy of Lithuania Borderlands Infrastructures Project, 18Th Century
Alberto Giordano, Jurgita Verbickiene, Martynas Jalkulis, Andrej Ryckov, Aivaras Poska, Tim Cole

RoomA105
T30-1. Theoretical Cartography
Chair: Margherita Azzari

Definition of the Map
Miljenko Lapaine, Terje Midtbø, Georg Gartner, Temenoujka Bandrova, Tao Wang, Jie Shen

Epistemological Thoughts on the Success of Maps and the Role of Cartography
David Fairbairn Fairbairn, Georg Gartner, Michael Peterson

A Framework of Pan-Maps: Facilitating a Unification of Maps and Map-Likes
Yebin Chen, Shen Ying, Ding Ma, Renzhong Guo, Zhigang Zhao, Zhilin Li

Putting Mapper on a Map: Cartographic Visualizations of Topological Data Analysis
Jim Thatcher, David Retchless, Courtney Thatcher, Kristine Jones

A Spatial Second-Order Non-Stationary Interpolation Method for Large Area Mapping
Peng Luo, Yongze Song

Visual Search Performance in Maps by Brazilian Population
Ítalo De Sena, Zdenek Stachon, Cenek Sasinka, Petr Kubícek
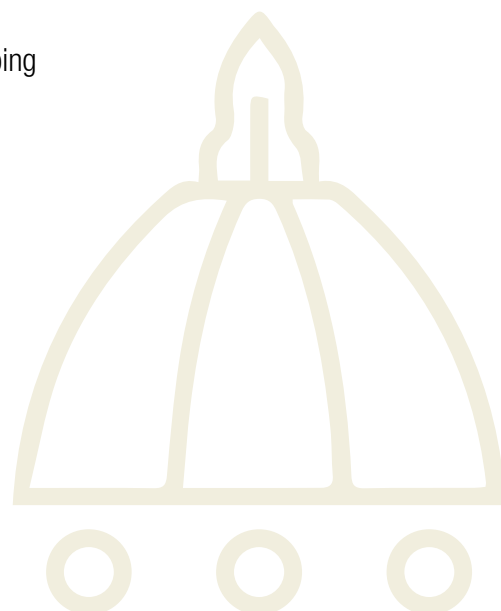
Saturday, December 18 • 11:45 - 13:15 •

RoomA106

T35-1. Map Projections
Chair: Lynn Usery

Best Cylindrical Map Projections According to the Undesirability of Angular and Areal Distortions
Krisztián Kerkovits

Conic Projections With Three or More Standard Parallels
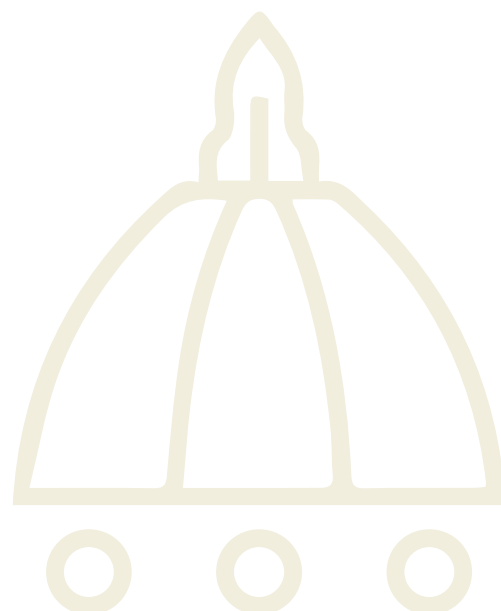Miljenko Lapaine

Redefining of "EPSG" and "Proj4" for Current State Coordinate Reference System of the Republic of North Macedonia
Bashkim Idrizi

• 14:30-16:00 •

Sala Pegaso - Palazzo Guadagni Strozzi Sacrati
Closing Ceremony

COMMISSION BUSINESS MEETING

Conference Venue

The School of Humanities, University of Florence
Via Laura 48, Florence (IT)

Room: "Altana", third floor

Commission	Date	Time
Atlases	December 15	11:45-13:15
Cartgraphic Heritage into the Digital	December 16	14:45-16:15
Education and Training	December 17	11:45-13:15
Location Based Services	December 16	11:45-13:15
Marine Cartography	December 16	17:00-18:30
SDI and Standards	December 16	8:45-10:15
User Experience	December 15	17:00-18:30
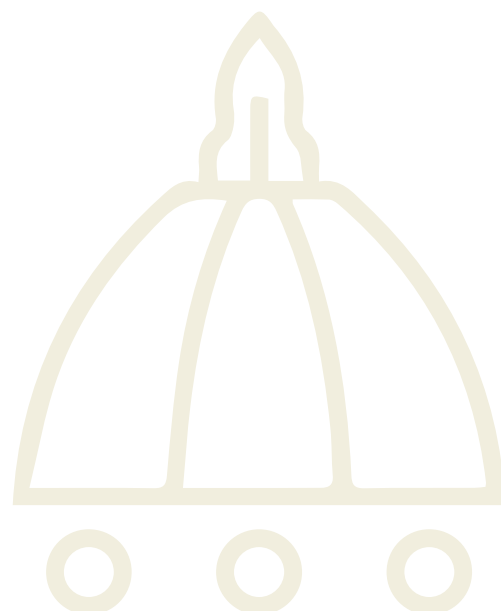
POSTER PRESENTATIONS

A CHANGING CITY IN A CHANGING CLIMATE - MAPPING LOCAL CLIMATE ZONES IN TIRANA IN 2007 AND 2018
DRISELA KRAJA, ANJA CENAMERI, ENKELEIDA BEQIRAJ, GÁSPÁR ALBERT

A CRITICAL STUDY ON MEDITERRANEAN CARTOGRAPHY
DESIREE DI MARCO

A NON-NAVIGATIONAL TIN-DDM AUTOMATIC SYNTHESIS ALGORITHM THAT TAKES INTO ACCOUNT THE ACCURATE DETERMINATION OF TERRAIN FEATURES AND FULL EXPRESSION OF TOPOGRAPHY
HONGCHAO JI, SHUJUN LI, JIAN DONG, YUAN WEI

A SPATIAL ANALYSIS OF ROBBERY RATE IN THE CITY OF DETROIT USING EXPLORATORY DATA ANALYSIS APPROACH
ESTHER AMOAKO AMOAKO

ARNO PETERS AND "HIS" EQUAL AREA PROJECTION. A PRACTICAL APPROACH IN A GIS ENVIRONMENT
ANDREA FAVRETTO

AUTOMATIC CLEANING OF OUTLIERS IN MULTIBEAM BATHYMETRIC DATA WITH CLUSTERING ALGORITHM
YUAN WEI, SHUNJUN LI, SHAOHUA JIN, HONGCHAO JI

CARING THROUGH SCIENCE - VISUALIZING GEOGRAPHIC ACCESSIBILITY OF HEALTH CARE FACILITIES IN AREAS WITH HIGH PREVALENCE OF COMORBIDITIES
LOURENS SNYMAN, SERENA COETZEE, INGER FABRIS-ROTELLI, DEBASHIS BASU

CARTOGRAPHIC BLOCKCHAIN PLATFORM SOLUTION FOR SUSTAINABLE ENVIRONMENTAL MANAGEMENT ON THE LANDS OF INDIGENOUS PEOPLES IN THE RUSSIAN ARCTIC
OLGA CHERESHNIA, ALEXANDER EVSEEV, TATIANA KRASOVSKAYA, VLADIMIR TIKUNOV

CARTOGRAPHIC UNCERTAINTY DEPICTION IN THE ARCTIC IN HISTORICAL MAPS
DANAI-MARIA KONTOU

CZECH HISTORICAL ATLAS: A WEB MAP PORTAL ON THE CZECH HISTORY
JIRI KREJCI, PETRA JILKOVA

ENHANCEMENT AND HYDROTHERMAL ALTERATION ZONES MAPPING USING ASTER DATA IN EXPLORATION MARBIN AREA, NORTH OF ZEFREH
HOORIYEH BORHANI, SHADIYEH MIRZAEE, AZAM SOEIFIJANI

HOW ILLITERATE INKA MAPPED THEIR EMPIRE
BRUCE JONES

HOW TO DESIGN A MINI-MAP FOR A VIRTUAL ISLAND?
KRZYSZTOF ZAGATA, BEATA MEDYŃSKA-GULIJ

HYDROLOGICAL FLOW TRENDING USING ARTIFICIAL INTELLIGENCE MODELS
ARMAN ROSTAMI, SEYEDKARVAN MIRANI
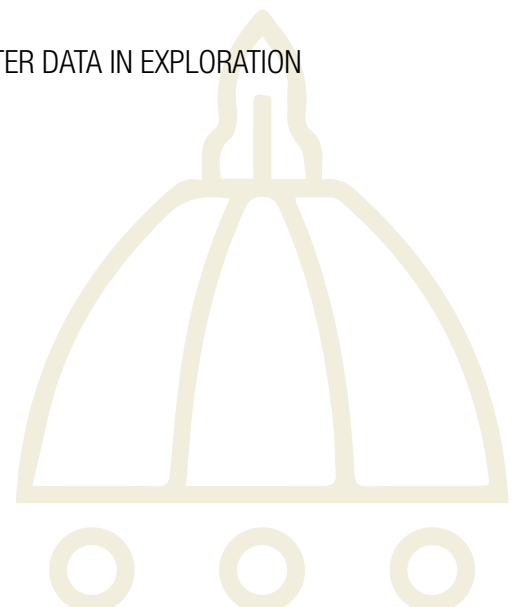
IMPROVING URBAN LANDSCAPE MAPPING IN KUNMING, CHINA WITH MULTISOURCE SATELLITE IMAGERY
TING LIU, XIAOJUN YANG

INTERACTIVE MAPS OF TRAFFIC MODELLING RESULTS
KAREL JEDLICKA, DANIEL BERAN

LANDSCAPE AND HISTORICAL MAPPING OF NATURAL AND CULTURAL COMPLEXES OF CENTRAL RUSSIA
VIACHESLAV NIZOVTSEV, NATALIA ERMAN

MAPPING GEO-SPATIAL EXAMINATION OF PRE-AND POST-QUARANTINE NOCTURNAL ILLUMINATION AMIDST THE COVID 19 IN THE UNITED ARAB EMIRATES
NAEEMA ALHOSANI

MAPPING WAYFINDING BEHAVIOUR IN A TOPOGRAPHIC IMMERSIVE VIRTUAL ENVIRONMENT (TOPOIVE)
ALEXANDER KENT, LUKASZ HALIK

MULTI-YEAR SPATIAL VARIABILITY OF THE IMPACT OF SOCIODEMOGRAPHIC, BEHAVIOURAL, AND HEALTH FACTORS ON DEPRESSION OF OLDER ADULTS
TIAN TIAN, EUN-KYEONG KIM

OLD MANUSCRIPT MAPS OF THE VLTAVA RIVER
JANATA TOMAS

POLISH GEOLOGICAL CARTOGRAPHY PLATFORM: ONE ACCESS POINT TO ALL GEOLOGICAL MAPS
KATARZYNA JOZWIK, ANITA STARZYCKA, PIOTR GALKOWSKI, JOZEF MIKOLAJKOW

POLISH GEOLOGICAL SURVEY ON THE NEVER-ENDING GEOLOGY QUEST - CONTRIBUTION TO THE ONEGEOLOGY INITIATIVE AS AN EXAMPLE OF CHALLENGES EMERGING FROM TECHNOLOGICAL CHANGES
KATARZYNA JOZWIK, URSZULA STEPIEN, MARCIN SLODKOWSKI

REIMAGINING MEASURES OF SPATIAL ACCESS TO HEALTH CARE IN LOW- AND MIDDLE-INCOME COUNTRIES: USING ROAD NETWORK ANALYSIS TO VALIDATE SELF-REPORTED PERCEPTIONS OF GEOSPATIAL BARRIERS
LOIS PARK

REPRESENTING THE WAR. EARLY TWENTIETH CENTURY MAPS AND SCALE MODELS IN THE ARCHIVAL FONDS OF THE ITALIAN WAR HISTORY MUSEUM OF ROVERETO
DAI PRÀ ELENA, DE SANTI VALENTINA, SCAGLIONE GIANNANTONIO

ROLE OF MAPS AND PUBLIC STREET SIGNS IN WAYFINDING BEHAVIOUR OF FOREIGN VISITORS
YOSHIKI WAKABAYASHI, BOCHRA BETTAIEB

SOCIO-ECONOMIC MAP OF AFRICA
FRANISEK MUZIK

ST GALLEN GLOBE ONLINE
JOST SCHMID, JOSHUA BINSWANGER

THE 1968 ANTARCTIC ITALIAN CAI-CNR MISSION: A STORY MAP TO REDISCOVER AN ALMOST UNKNOWN GEOGRAPHICAL EXPLORATION
GIOVANNI MAURO, ALESSIA GLIELMI

THE EMPEROR'S LAND GRANT MAPS: DECODING CHINA'S BRONZE RITUAL VESSEL DECORATIONS
BRUCE JONES

THE EPIC OF SAN BENEDETTO DEL TRONTO (I) OCEAN FISHING
SERAFINO ANGELINI, MICHELE DEL ZOMPO

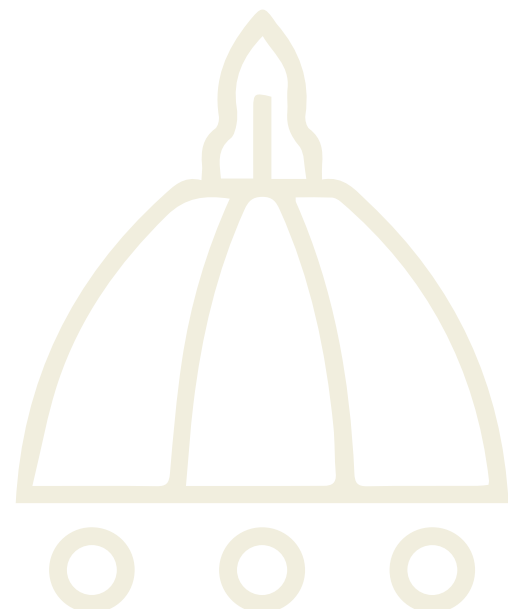USING OLD MAPS TO ANALYSE LAND USE/COVER CHANGE IN WATER RESERVOIR AREA
DARINA KRATOCHVILOVA, JIRI CAJTHAML

VALHEIM - A SURVEY ON CARTOGRAPHIC SYMBOLS ON A MAP IN A COMPUTER GAME
TYMOTEUSZ HORBIŃSKI, KRZYSZTOF ZAGATA

WHERE TO HIKE? – MOBILE APPLICATION FOR GUIDING TOURISTS IN THE BÜKKALJA REGION, HUNGARY
MÁRTON PÁL, ZOLTÁN TÚRI, MARCELL LAVAJ

SOCIAL AND TECHNICAL TOURS

The tours will be activated only with a minimum number of 5 participants.
According to the current rules for Covid-19 prevention, EU Digital Covid Certification ((Green Pass or equivalent certificate of vaccination) is required.

Italian Military Geographic Institute

Historical Museum of Italian Cartography
Via Cesare Battisti, 10-12, 50129, Firenze
https://www.igmi.org/

Guided tour of the Historical Museum of Italian Cartography (at the Italian national mapping agency), with a visit of the library, the collection of instruments and the cartography production department.
The Historical Museum of Italian Cartography, hosts a valuable collection of maps dating from XVI century and instruments used to carry out works of astronomy, geodesy, topography, photogrammetry and calculations.
The instruments are more than 400, the ancient ones were part of the collection existing before 1861 and belonged to the dissolved topographic offices of the pre-existing Italian States. When Italian Geographic Military Institute (IGMI) was established, the collection was expanded to include instruments designed and built by the internal staff.
Even today, all the instruments used for carrying out IGMI activities are part of the museum when obsolete.

Photo: CC-BY-SA-3.0 (Sailko)
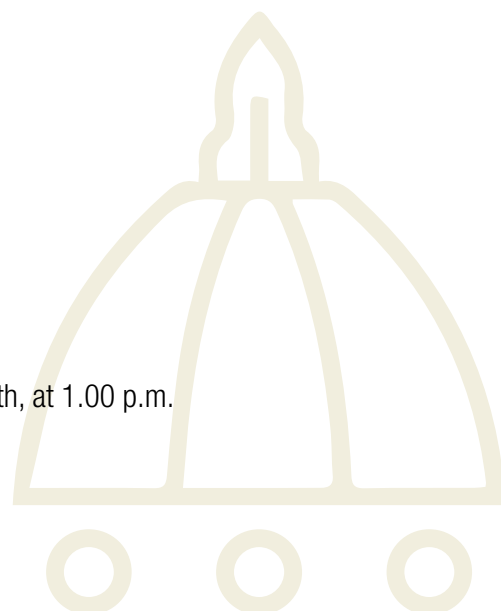
Date: **December 14th, 15th, 16th, 17th**
Duration of the visit: **about 1 hour**
Tour start time: **9:00; 10:00; 11:00; 14:30; 15:30**
Fee: **free**

Reservation is mandatory. It will be possible to book until Thursday, December 16th, at 1.00 p.m.
Reservation form: **https://igmi.org/visiteguidate_icc2021/index.php**

Museum Galileo

Institute and Museum of the History of Science
Piazza dei Giudici, 1, 50122 Firenze
https://www.museogalileo.it/en/

Photo: Museo Galileo

A) Guided tour of the collections of scientific instruments from Medici period to XX century.

Dates: **December 15th 10:00-11:00 a.m. and 16th, 14.00-15.00**
Fee: **7 euros** (tickets can be purchased directly at the museum ticket office before the start of the visit)
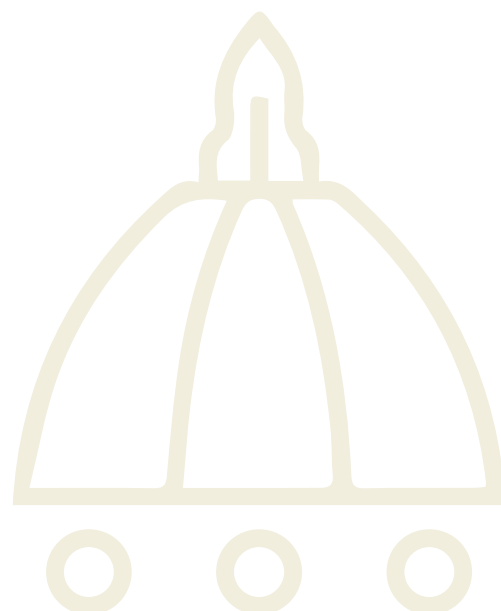Maximum number of participants for group: **25**
Deadline for registration: **December 13th**
Registration: **https://forms.gle/KqjKPC3B4gXitfKQ9**
Contact: **aiig.toscana@gmail.com**

B) For those not wishing to participate in the guided tour, the Museum Galileo offers all ICC 2021 attendees the opportunity to visit it at a reduced cost of 7 euros. For the reduction it is sufficient to present the congress badge at the ticket desk.

Exhibition Natura Collecta, Natura Exhibita

Salone Donatello, San Lorenzo Church (access from the left portal of the church)
Piazza San Lorenzo, 50123, Firenze
https://www.naturacollecta.unifi.it/index.html?newlang=eng
https://www.operamedicealaurenziana.org/en/home-2/

Guided visit of the temporary exhibition of the scientific collections of the University of Florence (Natural History Museum "La Specola"), with some of its masterpieces, including part of the-famous anatomical waxes, zoological and mineralogical collections.
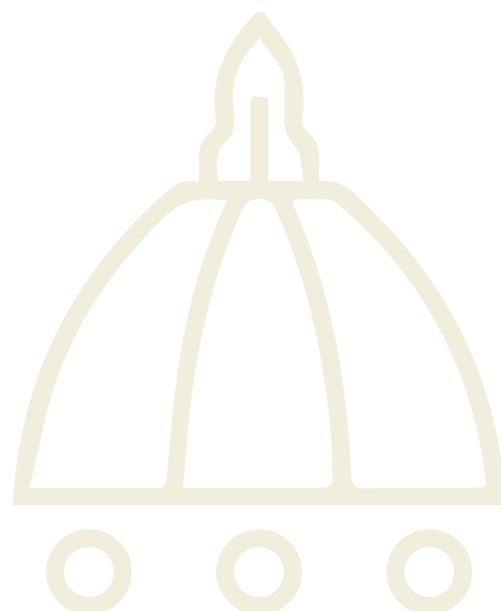
Photo: Università di Firenze

Date: **December 16th, 11:00-12:00 a.m.**
Fee: **free**
Maximum number of participants: **15**
Deadline for registration: **December 13th**
Registration: **https://forms.gle/agUvUmJxkeYdUaLDA**

Dante's Cosmography at Pitti Palace

Piazza de' Pitti, 1, 50125 Firenze
https://www.uffizi.it/en/pitti-palace

Guided visit to the exhibition on Dante's cosmography (Dall'Inferno all'Empireo. Il mondo di Dante tra scienza e poesia [From Hell to Heaven. Dante's world between science and poetry]) inside the Court of the Tuscan dynasties of Medici and Habsburg-Lorraine.

Photo: CC-BY-SA-3.0 (Yair Haklai)

Date: **December 17th, 10:00-11:00 a.m.**
Fee: **11,50 euros** (tickets can be purchased directly at the museum ticket office before the start of the visit)
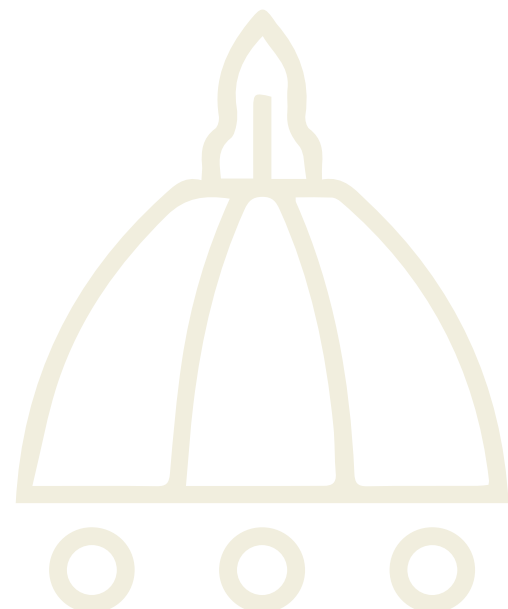Maximum number of participants: **25**
Deadline for registration: **December 14th**
Registration: **https://forms.gle/2FiN9kUYS5Hz9obT7**
For information: **aiig.toscana@gmail.com**

The ticket also allows the visitors to see the palace and the art collections without a guide.

ICC 2021
Florence, ITALY
14 • 18 DECEMBER 2021

30th International
Cartographic
Conference

WWW.**ICC2021**.NET

Orienteering @ ICC 2021
December 18th (Saturday morning)

Meeting point: **9.30 am, Piazzale delle Cascine (ex Piazzale del Re), Firenze** (in front of the School of Agriculture)
First departure: **10.30 am. 3 minutes from the meeting point.**
Race map: **Map CO 0644 - updated 2017**
Categories: **Beginner (B) and Advanced (A)**
Course length: **2,5 km (B) 3,6 km (A)**

Staff
Pierluigi Cantini (ASD Firenze Orienteering), Andrea Favretto (University of Trieste),
Giovanni Mauro (Vanvitelli University), Camillo Berti (University of Florence)

Contact
For information please send e-mail to Pierluigi Cantini (email: **orifirenze@gmail.com**)

Info
https://www.icc2021.net/orienteering/

The "Parco delle Cascine" is a monumental and historical park in the city of Florence. It covers more than 130 hectares of land and has a total length of about 3.5 km (from the Victory bridge to the Indian bridge). It is a long and narrow strip, a real green island within the town, surrounded by water. In fact, it is delimited by the river Arno, the torrent Ombrone and an artificial canal locally called "the ditch grinding", useful in the past to run the ancient meals. Originally, the park was an agricultural estate owned by Cosimo I de' Medici: it was a hunting estate and a farm for cattle breeding and the production of dairy products. At the beginning of the XIX century, it was converted into an urban park as a place of leisure, open to the public on special events too.
A rich and complex biodiversity characterizes this park: we can in fact count over 19,000 of vegetable species, but also a rather heterogeneous presence of animal species.
In addition to the landscape elements, the historical aspect is of great importance: in the park there are evidences of several original structures, such as an icehouse (used to store ice during the summer), two racetracks and some historic buildings (which today house the Faculty of Agriculture).
Given the complexity of the park landscape, it is an ideal location for Orienteering. In fact, it is possible to exploit the extensive network of pedestrian paths currently existing, being able to easily change the difficulty of the path through an accurate positioning of the control points.
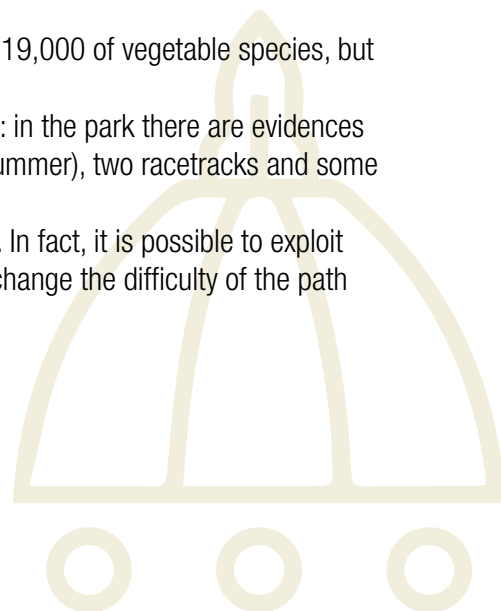
GENERAL INFORMATION

CONGRESS VENUES
• Opening Ceremony
The Salone Dei Cinquecento in Palazzo Vecchio
Piazza della Signoria, Florence (IT)

• Conference Venue
The School of Humanities, University of Florence
Via Laura 48, Florence (IT)

• Closing Ceremony
The Sala Pegaso in Palazzo Guadagni Strozzi Sacrati
Piazza Duomo 10, Florence (IT)

• International Cartographic Exhibition
The Italian Geographic Military Institute
Via Cesare Battisti 10, Florence (IT)

• Children's Map Exhibition
Ex-Circolo in Palazzo Medici Riccardi
Via De' Ginori 14, Florence (IT)

WEBSITE
The 30th International Cartographic Conference official website is **www.icc2021.net**
Participants from Remote can attend the sessions in the dedicated section of the website

LANGUAGE
English is the official language. Simultaneous translations will not be provided.

REGISTRATION DESK HOURS
The Registration Desk will be opened at The School of Humanities, University of Florence as follows:
• Monday 13   08.00 - 18.00
• Tuesday 14   08.00 - 19.00
• Wednesday 15   08.00 - 19.00
• Thursday 16   08.00 - 19.00
• Friday 17   08.00 - 19.00
• Saturday 18   08.00 - 13.30

INTERNATIONAL CARTOGRAPHIC EXHIBITION OPENING HOURS
The Exhibition will be opened as follows:
• Monday 13   15.30 - 16.30
• Tuesday 14   09:00 - 16.30
• Wednesday 15   09:00 - 16.30
• Thursday 16   09:00 - 16.30
• Friday 17   09:00 - 12.00
Voting procedure is available on the Conference Platform on **www.icc2021.net**
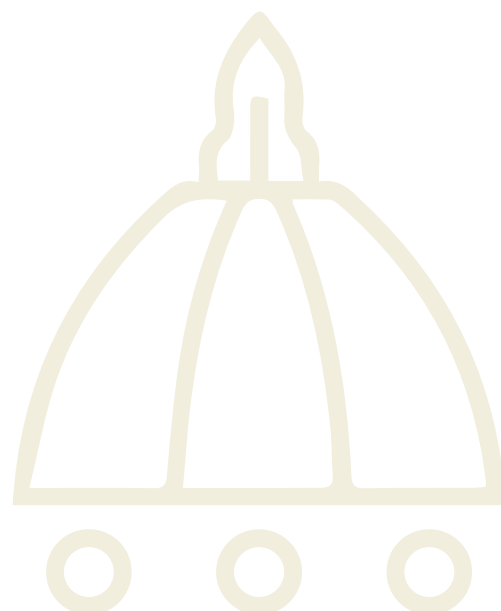
CHILDREN'S MAP EXHIBITION
Barbara Petchenik Children's World Map Drawing Competition

The Barbara Petchenik Competition is a biennial map drawing competition for children. The 2021 exposition is dedicated to the theme "A map of my future world" and hosts 178 children's world map drawings from 32 different countries.

Please visit: **https://vanderkrogt.net/petchenik/index.php**

Venue:
Ex Circolo di Palazzo Medici Riccardi
Via De' Ginori 14, Florence

Inauguration: **Monday, December 13th, 5:00 p.m.**
Visits: **from Tuesday 14th to Friday 17th , 9:00 a.m. - 3:00 p.m.**

LANDSCAPES OF TUSCANY
50 YEARS OF AERIAL PHOTOGRAPHY

PAESAGGI TOSCANI
50 ANNI DI FOTOGRAFIA AEREA PER CONOSCERE IL TERRITORIO

Concept design and settings by **Regione Toscana, Direzione Urbanistica**

Palazzo Guadagni Strozzi Sacrati
Piazza del Duomo, 10, 50122 Firenze FI

CONGRESS NAME BADGE, QR CODE AND ACCESS FROM REMOTE

• For In Person Attendance
Upon registration you will receive your name badge and a QR Code to access the School of Humanities University of Florence conference venue. The QR Code will be emailed to all participants that will attend in person directly from the University of Florence.
Please do not forget to bring your personal QR Code to access the Conference Venue.
The badge and the congress kit will be delivered at the registration desks from the Organizing Secretariat.
You are kindly requested to wear your badge during all sessions and events.

• For Remote Attendance
You will receive a Username and a Password one week before the Conference to login on the Virtual Congress Platform available on the website **www.icc2021.net**

CERTIFICATES OF ATTENDANCE
Certificates of attendance will be sent by email after the conference to all the registered participants that will attend the scientific sessions in person and from remote

INTERNET ACCESS Wi-Fi

Internet access Wi-Fi is available for congress participants throughout the public areas.
To log in please access the wireless Internet access **"Firenze WiFi"**, no password will be requested.

OPENING CEREMONY

In respect of the new anti-Covid19 restrictions, the access to the Opening Ceremony to be held in Salone Dei Cinquecento, Palazzo Vecchio will be limited to 190 seats only. Participants that will attend in person the conference are kindly requested to confirm their presence at the Opening Ceremony by entering the registration platform using their login credentials and clicking on the "Additional Services" icon

COFFEE BREAKS

Coffee break stations will be available in the corridors in front of meeting rooms at floor +1 and +2 as follows:

Wednesday 15	Thursday 16	Friday 17	Saturday 18
11:15 - 11:45	10:45 - 11:15	11:15 - 11:45	11:15 - 11:45
16:30 - 17:00	16:30 - 17:00	16:30 - 17:00	

CONGRESS DINNER

The Congress Dinner will be hosted at **Palazzo Borghese, Via Ghibellina, 110 Florence (IT).**
Friday 17, 20.30 - 23.30.
Admission is by tickets only and must be purchased in advance. Price €100/person and subject to availability.

MOBILE PHONES

Please do not forget to turn your mobile phones to silent mode during sessions.

NON-SMOKING POLICY

The ICC2021 Congress is a Non-Smoking event.
Delegates are reminded that smoking in enclosed spaces is illegal in Italy.

LIABILITY AND INSURANCE

The Congress Secretariat and Organizers cannot accept liability for personal accidents or loss of or damage to private property of participants. Participants are advised to take out their own personal travel and health insurance for their trip.

SAFETY AND SECURITY

Please do not leave bags or suitcases unattended at any time, whether inside or outside the session halls.

FIRST AID

Should you require first aid assistance, please contact the registration desk or any uniformed member of the meeting staff.

TIME ZONE

Florence local time in December is GMT + 1 hour (CET).
Timing indicated in the program is to be considered on a CET - Central European Time basis (GMT + 1)

CURRENCY
Euro (EUR)
All major credit cards (Visa, MasterCard, American Express) are accepted in most of the restaurants, shops etc.

ELECTRICITY
The electric current supplied is 220 V.
Round, two-pin plug points are available, as elsewhere in Europe. In case you have any devices from the USA or UK, please remember to bring a transformer/adapter.

BANKING
Most Florence banks open between 08:30 and 13:30 and 14:45 to 15:45 Monday to Friday. They are closed on weekends and public holidays and most of them have a cash dispenser and a currency exchange service.

USEFUL TELEPHONE NUMBERS IN FLORENCE
• Medical emergency: **118**
• Fire emergency: **115**
• Police: **113**
• Florence airport - information: **055 3061300**
• Florence airport - lost luggage: **055 3061302**

• For international calls from Italy: **00 + country code + number**
• For international calls to Italy: **+39 + city code + number**
• **24hour Pharmacies:**
   Santa Maria Novella Station
   Via Calzaiuoli, 7 r
   Piazza San Giovanni, 20
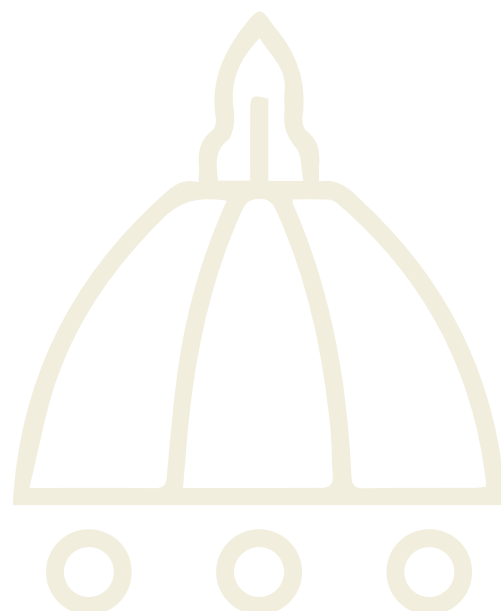
TRAVEL TO FLORENCE

Travel to Florence is via several International Airports: Florence "Amerigo Vespucci", Pisa "Galileo Galilei", Bologna "Guglielmo Marconi", Rome-Fiumicino "Leonardo da Vinci", Milan Malpensa Airport, and more.
In addition, the city has excellent high speed train service connecting to Rome, Milan, Venice, Pisa, Bologna, Verona, Naples. Once in the Florence area, ICC 2021 participants can move easily and safely about the city by walking, the tram, busses, and taxi cabs.
The city has a central position in Italy.

• By Airplane
Florence Airport
The international airport Amerigo Vespucci is situated on the north-west suburban area of Florence, just 4 km from the city centre. It is a 25-minute ride by shuttle bus Volainbus operating between the airport and the central railway station. Tickets can be bought on board or at the newspaper stall or at the Bookshop: it costs **€ 6.00 one way and Euro 10,00 round trip.**
Taxis can be found outside the airport; with a 15-minute ride you reach the city centre at a conventional price:

Working days: **Euro 22,00**
Festive days: **Euro 24,00**
Night service (22,00-06,00): **Euro 25,30**

Supplements:
Luggage **Euro 1,00 each**
From 4th passenger **Euro 1,00 each**

Vespucci Airport is connected to some of Europe's major airports: Amsterdam, Barcelona, Brussels, Bucharest, Dusseldorf, Frankfurt, London Gatwick and City, Madrid, Munich, Paris C. De Gaulle, Paris Orly, Tirana, Zurich, Wien.

FLORENCE "AMERIGO VESPUCCI" AIRPORT
Tel (+39) 055 30615
http://www.aeroporto.firenze.it/

FLIGHT INFORMATION
Tel (+39) 055 3061700 - (+39) 055 3061702
24 hours a day
Pisa Airport
Pisa's Galilei Airport is about 80 km from Florence. It is linked to Florence by rail and road and is connected to the Tuscan capital by train (every hour) and Terravision bus (full flight coverage with 18 return journeys). For information about timetables and fares visit www.terravision.eu For information **www.pisa-airport.com**

Bologna Airport
After the upgrading of the railway line "Freccia Rossa" between Florence and Bologna in just 35 minutes, also Bologna airport is a stop of easy access to Florence. Bologna and Florence airports are also connected by the "Appennino shuttle bus" For timetables visit **www.appenninoshuttle.it**
For information **www.bologna-airport.it**
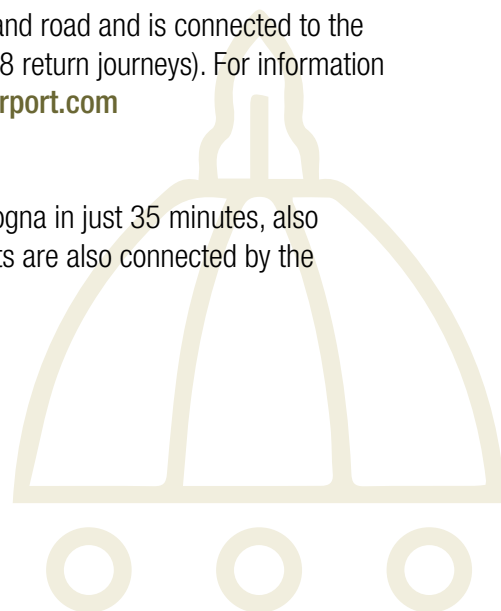
• By Train

The city's main railway station is Firenze SMN (Santa Maria Novella).

Situated in the city centre, it is conveniently close to the major tourist attractions. The station area is also the principal node for buses serving the city and surrounding area (see Getting around by bus).

Other important railway stations are Firenze Campo di Marte and Firenze Rifredi. Local trains connect these two stations with the central one; otherwise, you can catch the ATAF bus to the city center: Italian railway services are made by Trenitalia and by Italo.

• By Car

If you arrive in Florence by car, park it and use public transportation or special tourist transportation to reach the chief parts of the city. Pay particular attention to the notices marking the points of access to the Limited Traffic Zone (ZTL), which corresponds to the historic centre (monitored by electronic gates with information in English), to enter which requires previous authorization.

If you are looking for accommodation, the hotelier to whom you have applied or the garage where you intend to park can provide you with temporary access to the ZTL according to a specific procedure.

MEASURES OF COVID-19 PREVENTION

COVID-19 And Measures For Entry To 30th International Cartographic Conference

To attend in person, the ICC 2021, all participants will be requested to:

• Present at the entrance of the conference venues their EU Covid certificate (Green Pass or equivalent certificate of vaccination) + the Security QR Code that will be provided by the University of Florence by email one week before the Conference. In absence of both these certifications, access will not be allowed

• Wear their protection mask inside the conference venues at any time

• Keep the 1-meter safety distance from other participants and 2 meters safety distance during coffee refreshments

Organizing secretariat and conference venues staff will carefully monitor that these safety rules will be respected by everyone

COVID-19 And Measures For Entry To Italy

Please read more on the following official websites

Italian Websites

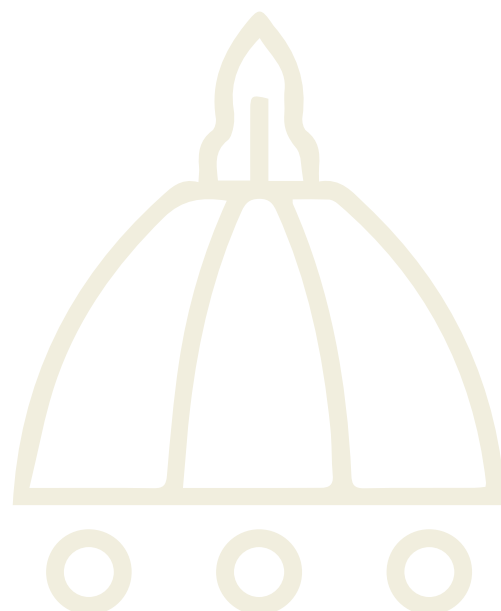Italian Ministry of Health
Ministry of Foreign Affairs
National Tourism Agency
Viaggiare sicuri
Rome Airports

European Websites

European Union Agency
The Guardian

USA Websites

U.S. Embassy and Consulates
CNN Travel Edition

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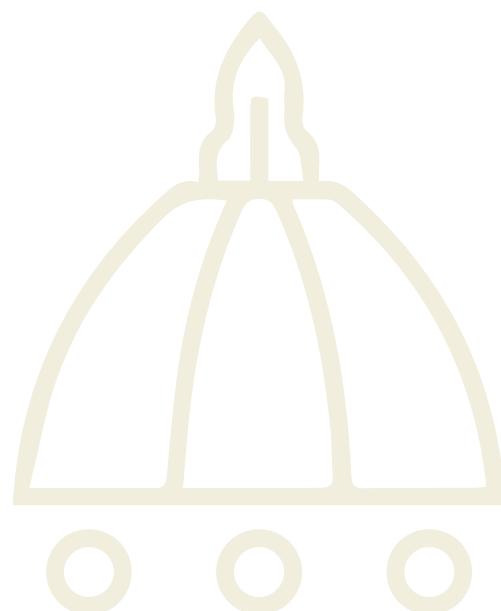esri | THE SCIENCE OF WHERE

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FRIULI VENEZIA GIULIA

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REGIONE AUTÒNOMA
DE SARDIGNA
REGIONE AUTONOMA
DELLA SARDEGNA

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Technical Exhibition
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FULL PAPERS & ABSTRACTS
icc2021.abstract@aimgroup.eu