

Editorial

# Heritage and Railways: Sustainable Tourism Opportunities Boosted by Digital Transformation

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This Special Issue focuses on the debate and recent trends in research dealing with railways, touristic itineraries, landscape and heritage digital documentation, while keeping in mind the goals of “The European Year of Rail”. This initiative was proposed for the 2021 by the European Commission in order to promote the use of railway transport as a stable and innovative type of land transport and to achieve the goals of the European Green Deal in the field of transport and, with a series of activities and campaigns highlighting the advantages of rail for both holidaymakers and commuters.

Railway is the most sustainable and efficient collective mode of transport due to its low levels of greenhouse gas emissions and the reliability of its service. For this reason, all around the world, sustainable transport policies suggest railways as the most appropriate mode of transport. When focusing on the tourism sector, the railway’s role is still being expanded, despite the many examples of panoramic and themed trains and railways lines [1].

Traditionally, tourism packages, as well as the consumption habits of the average tourist, have been oriented towards “destination experiences” or “multiple destinations”, relegating the journey itself to a purely logistical issue. However, the growing patrimonialisation of landscapes, that is, the aesthetic and cultural valuation of territories beyond the tourist attraction centres, represents a unique opportunity for a different tourism model [2]. A sustainable, less congested tourism, would allow wealth re-distribution among territories. In addition, train rides enable the appreciation of landscapes that are not accessible when other modes of transportation are used, largely due to the geographic limitations their routes [3–5]. This is an advantage for the traveller when seeking a scenic experience of high aesthetic quality. Last but not least, the global railways sector is a heritage in itself for both tangible and intangible cultural reasons [6].

The pervasiveness of ICT and the potential of digital cultural heritage practices have consolidated new paradigms and methods in heritage representation and enhancement [7–9] and become a stimulus for community engagement [10], heritage recognizability and territorial development [11–13]. In this light, digitisation strategies for landscape [14] and tangible and intangible heritage constitute challenging areas of research, and tackling the bottlenecks in the growing usage of data capturing and multiscale acquisitions [15–17] and seizing opportunities in order to boost heritage democratisation and a sense of belonging in the landscape are beyond the scope of tourism.

This Special Issue is intended to cover all the above topics with the aim to collect advancements and best practices in sustainable tourism experiences supported by digital cultural heritage and railways. A general purpose was to compare positions in the definition of new paradigms for the sustainable development of touristic flows with regard to culturally based experiences in a linear landscape or territorial system, which are not only limited to railways. Both theoretical and methodological reflections as well as successful cases of application are presented, providing the RailToLand project with a larger framework.



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## 1. The RailToLand Project

RailToLand was a European project developed from 2019 to 2022. It was a collective ideation platform, funded by the 2019 Erasmus+ KA 203 call for the internationalisation of higher education institutions.

The aim of RailToLand was to develop innovative tools to communicate European Cultural Landscapes through trains. The goal of the project was to explore the social and educational value of the railway landscape. For the RailToLand project, railways landscape was considered common heritage and a catalyst for the consolidation of European identity and the formation of local cultures. The project was aligned with the aims of the European Landscape Convention, which aimed to involve the target population in decision-making processes and design landscape enhancement initiatives [18].

RailToLand was conceived with the desire to address one of the most pressing challenges facing Europe today, the reversal of disintegrative inertia, the consolidation of European identity and social cohesion, and the understanding of diversity within the European community. These objectives were approached from a social awareness of the value of landscapes as a common heritage. Although these reflections are valid for the whole of European society, we considered young university students to be a key demographic of interest regarding this proposal. These young people are just a few years away from becoming the professionals who will decide the future of Europe; this is probably the last chance we educators have to convey messages that will have an impact on their lives. Moreover, university is, or should be, the mirror in which society looks at itself, and the spearhead of innovative initiatives and lines of thought that will strengthen Europe.

Of the achievements of RailToLand, it is possible to highlight some of the dissemination activities accessible to the general public:

1. The MicroMaster's degree "Railway, landscape and new technologies". This comprises three MOOCs dedicated to each of these topics, which can be undertaken free of charge through the agreement of the UPM with the MIRIADAX platform [19].
2. A mobile application pilot project for the Oporto–Vigo railway line. This app explains and interprets the landscape units along the route, as well as the singular points located in its surroundings [20].
3. The roundtable "European railway landscape as a sustainable driver of the tourism sector", held in November 2020,
4. The international seminar "Miradas férreas", held in May 2021, examining railway landscapes from the perspective of art and technology, including a photography exhibition, a literary competition and a film series.
5. The international congress "European landscape and heritage in the digital age", held in Cagli (Italy) in June 2022, within a workshop titled "Digital Heritage & Design Thinking" [21].

When travelling by train, passengers have the possibility to give themselves up to the quiet contemplation of the landscapes they are travelling through. The RailToLand project shows how the railway allows the observation of landscapes in a unique way. New technologies offer unprecedented possibilities for widening a traveller's viewing experience from new perspectives that are not visible from the exact angle of the seat they occupy on a train during travel, such as using images of a particular space in different historical periods. Cultural, symbolic and identity implications appear as scenic possibilities of a train journey.

RailToLand involved six institutions from four European countries, Spain, France, Italy and Portugal. Specifically, four public higher education institutions took part, namely Universidad Politécnica de Madrid (UPM), the leader of the project; Universidad Autónoma de Madrid (UAM); Université Gustave Eiffel de Paris (UGE); and Università Politecnica delle Marche de Ancona (UNIVPM), as well as an applied research centre, Centro de Computação Grafica de Guimaraes (CCG) in Portugal and a worldwide professional association, the International Union of Railways (UIC), based in Paris. The UIC represents the railways

sector and promotes rail transport. Renfe Operadora and Comboios de Portugal (CP), the main Spanish and Portuguese railway operating companies also collaborated.

## 2. A Synthesis of the Special Issue

The Special Issue offers interesting and interdisciplinary sights on the topic of heritage and railways. The paper [contribution 1] by Mehdi Zarehparast Malekzadeh, Francisco Enrique Santarremigia, Gemma Dolores Molero, Ashwani Kumar Malviya, Rosa Arroyo and Tomás Ruiz Sánchez presents a methodology to assess and evaluate to what extent innovative technologies meet the needs of tourists and TSPs (Transport Service Providers) involved in the digital ecosystem for door-to-door trips in Europe, making railways and public transport more attractive and consequently encouraging people to use more inter-modal solutions in public transport. In the paper, readers can find socio-demographic considerations regarding the use of information technology, such as Bayesian network analysis, to improve location-based experiences and journey planning.

The contribution “A Method to Select and Optimize Slow Tourism Routes Using a Quality Index Procedure Based on Image Segmentation and DTM Modelling Based on NURBS: The Case Study of Multimodal Access to Inner Places from the Nodes of the Adriatic Coastline’s Infrastructure Bundle” (Domenico D’Uva and Andrea Rolando) [contribution 2] tests a combination of methods that allows for the optimisation of a mobility network through the multimodal interchange between fast and slow routes. The selected case study is the Costa dei Trabucchi in Abruzzo, Italy, which was considered paradigmatic, even considering the very scarce data, and chosen in order to identify the most suitable routes in terms of spatial quality and walkability/cyclability. If a railway line has recently been decommissioned, the displacement of the line creates opportunities to improve the quality and use of the local territory, with the natural green evolution of the track.

The paper [contribution 3] by Costantino, Mantini, Benedetti, Bartolomei and Predari aims to describe the crucial role of nature-oriented tourism through economic, social and revitalisation strategies. Moreover, their research methodology highlights how digital tools can be used to map and create territorial train networks between municipalities and outline the operations necessary for reactivation, using a case study in the Abruzzo region affected by depopulation and without significant economic activity.

The method proposed in “Multimodal Access to Minor Places in Heritage-Rich Landscapes: GIS Mapping to Define Slow-Tourism Routes from the Stations in the Railway Networks in-between Turin and Milan” [contribution 4] shows how the studied territories, characterized by complex historical landscapes, can be enhanced in terms of sustainable tourism by exploiting the potential of an existing railway network and a widespread network of local roads, which make many unique places in these territories easily accessible. A GIS method based on a quantitative approach has been suggested to perform the spatial analysis by mapping the most significant nodes in a railway network in the most attractive heritage areas in the surrounding landscape of given infrastructure in order to create slow-tourism routes, which can be used both by inhabitants and tourists to move from place-to-place in a more sustainable way.

In [contribution 5], the authors Florentina-Cristina Merciu, Mircea Dorobanțu, Cornel Păunescu and George-Laurențiu Merciu aimed to evaluate the heritage value of the first mountain railway line in Romania using both quantitative and qualitative methods. A rigorous quantitative evaluation of the key attributes of heritage railway, using a system of criteria and indicators and paired with a qualitative methodology, facilitated the critical interpretation of the perception of the local community as a beneficiary of the railway’s heritage and as an active stakeholder involved in its reopening.

**Conflicts of Interest:** The authors declare no conflict of interest.

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