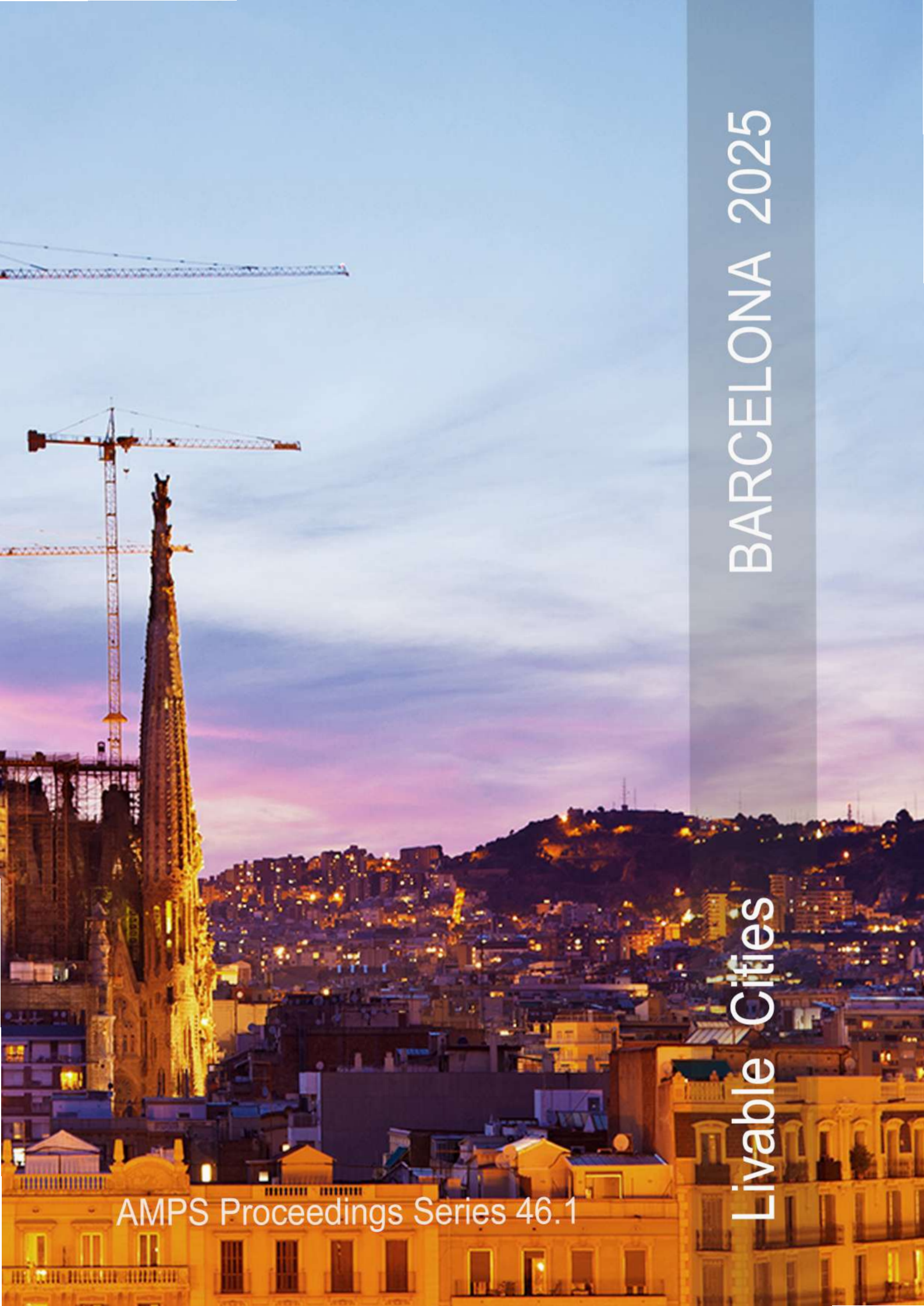




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Livable Cities

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Barcelona. Livable Cities

The Urban Experience: From Social Policy to
Design

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INTRODUCTION

Barcelona. Livable Cities

The Urban Experience: From Social Policy to Design

Barcelona is seen as one of the world's most livable cities. Ranked particularly high for its renowned cultural scene, lifestyle, architecture, outdoor parks and beaches, it is also Europe's third most progressive city for start-ups. Supporting alternative modes of work through its Workation program, it is also attracting entrepreneurs with the digital nomad's visa. However, it is also a city that suffers from unaffordable housing, uncontrolled tourism, noise pollution and over density. It has a high cost of living, has experienced gentrification and has pockets of social deprivation. In such contradictions and paradoxes, it is a microcosm of cities the world over – a place where notions of 'livability' are far from consistent.

How Barcelona, or any other city, responds to this situation is complicated, and often contested. For architects and urbanists, affordable housing may be a question of planning. For sociologists, improvements to the built city are community concerns. For health professionals, air pollution relates to public wellbeing. For environmental activists, urban density is a resource issue. For cultural theorists, the arts and tourism are matters of heritage. For the business sector they are issues of finance. For engineers, transport may be a question of infrastructure. For residents, it's a question of equity and access.

Using the city of Barcelona as an example then, the papers in these conference proceedings explore how cross-disciplinary readings of cities the world over shed light on what makes the places we inhabit 'livable'. They encourage debates around community participation; research projects on design and planning; investigations into urban infrastructure and case studies on smart cities. They offer critiques on accessibility and social justice, examinations of local and migrant cultures, and studies of transport, urban heritage, public health.... and more. In this particular volume, emphasis is placed on sustainability, cities and the role of design.

TABLE OF CONTENTS

Chapter 1	
SETTING PRIORITIES FOR RESILIENCE TO NATURAL DISASTERS IN CITIES IN EAST AFRICA	1
Emmanuel Kasimbazi, Annette Kezaabu	
Chapter 2	
EDGES OF POSSIBILITY: SPECULATIVE URBAN DESIGN AFTER THE FLOODWALL	13
Nuala Flood	
Chapter 3	
ESTABLISHING A SUSTAINABLE URBAN LIVING WITH RESIDENTIAL WATER PRESERVATION IN WESTERN NEWFOUNDLAND AND LABRADOR, CANADA	22
Seyedeh Anahita Mireslami, Morteza Haghiri	
Chapter 4	
OFF GRID DWELLING: A TACTICAL SOLUTION FOR SHAPING A SUSTAINABLE FUTURE	35
Peyman Akhgar, Jena Glover	
Chapter 5	
BUILDING EQUITABLE URBAN FLOODING RESILIENCE: LESSONS FROM PUNE, NAIROBI, AND CALI	44
Aroni Kabita Porna, Ella Howard, Kristen Hudak Rosero, Thaddeus Guldbrandsen	
Chapter 6	
URBAN DENSIFICATION AND ECOSYSTEM SERVICES: A COMPLEX TRADE-OFF	54
Esteban Cacho Pol	
Chapter 7	
ELECTRIC VEHICLES IN MOTION: TRANSFORMING URBAN FREIGHT DISTRIBUTION WITH BATTERY AND HYDROGEN TECHNOLOGIES	64
Giuseppe Napoli, Salvatore Micari	
Chapter 8	
BRIDGING CIRCULAR ECONOMY AND HERITAGE CONSERVATION: CONCEPTUAL DEVELOPMENT AND PRACTICAL INSIGHTS	76
Susanne Fredholm, Malin Weijmer, Jon Williamsson	
Chapter 9	
HYBRIDITY OVER TROUBLED WATERS: COASTAL MILITARY BASES, CLIMATE CHANGE, AND WHAT IT MEANS TO BE URBAN	85
Luka Hamel-Serenity	
Chapter 10	
YOUTH AS URBAN CLIMATE INNOVATORS: EXPLORING THE ROLE OF YOUNG LEADERS IN KUWAIT AND EGYPT'S SUSTAINABLE URBAN DEVELOPMENT	95
Tarek El-Sheikh, Hazel McArthur	

Chapter 11	106
TOOLS TO NEGOTIATE THE SUSTAINABILITY TRANSITION AT THE LOCAL LEVEL	
Diana Reckien, Noah Pflugradt, Bernd Hezel, Maxie Riemenschneider, Soheil Shayegh, Gerard Martinez Görbig, Tala Ghaddar, Christiane Walter, Sandra Barberino Vignola, Nadia Soledad Ibanez Iralde, Anita Susani, Ramon Canal Oliveras, Enric Mont Lecocq, Klaudia Kazmierczak, Agata Skomar, Wenke Hertzsch, Katharina Schwarzfurner-Lutnik, Tobias Gralke, Weronika Radziszewska, Jörg Verstraete, Komal Vendidandi, Tobias Seydewitz, Soheil Shayegh, Giorgio Coppola, Nektaria Efthymiou-Charalampopoulou, Jordi Pascual, Katja Firus, Ilaria Lener, Sara Dorato, Andrea Ancona, Antonella Passani, Johannes Flacke, Shruthi Patil, Matthew Keller, Luis Costa, Jürgen P. Kropp	
Chapter 12	118
THE CITY AND THE SALMON: URBAN ACTIONS AND NON-HUMAN HABITABILITY IN SEATTLE'S WATERSHED	
Jana Thompson	
Chapter 13	131
RESILIENT TURFGRASS MANAGEMENT: INSIGHTS FROM HIGH-USE LANDSCAPES IN WASHINGTON STATE	
Katherine Kraszewski	
Chapter 14	141
ENVIRONMENTAL CHALLENGES, URBAN INFRASTRUCTURES, AND URBAN ACTORS: A TRIVALENT STUDY OF SUSTAINABLE POLICYMAKING IN CITIES	
Ernesto Valero Thomas	
Chapter 15	147
HEAT RESILIENT STREETS: PRIORITISING PEDESTRIAN HEALTH IN HIGH-DENSITY URBAN ENVIRONMENTS	
Olivia Poston, Daniel Liang Xu, Dr. Gareth Simons, Irene Martin Luque, Gregorio Maya	
Chapter 16	162
BLUE URBANISM: REINVENTING THE ROLE OF URBAN PONDS IN ENHANCING SOCIAL CONNECTIONS	
Saranya R S, Karthik Mohan	
Chapter 17	174
VERTICAL COMMUNITIES: HIGH-DENSITY URBAN LIVING IN HONG KONG	
Esther Lorenz	
Chapter 18	180
ALTERNATIVE HOUSING STRATEGIES TO FOSTER SUSTAINABLE LIVELIHOODS IN NEW YORK CITY	
Tal Litwin And Sage Dumont	
Chapter 19	191
THE CRISIS OF MICRO LIVING SPACES – QUESTIONABLE RESULTS DUE TO QUESTIONABLE DESIGNS	
Tim Antoniuk	

Chapter 20	
CO-CREATING AND IMAGINING LIVABILITY: VISIONS AND NEEDS OF HOUSEBOAT RESIDENTS IN THE ENERGY TRANSITION	205
Nick Verouden, Tamara Witschge	
Chapter 21	
DIGITAL PLATFORMS FOR COMMUNITY-LED TOURISM: CO-DESIGNING LIVEABLE RURAL COMMUNITIES IN MARGINAL TERRITORIES	215
Luciana Mastrodonato, Antonio Oromolla, Giulia Candeloro, Nora Inwinkl, Fabio Virgilio, Stefania Parisi, Francesca Belotti	
Chapter 22	
CONTRASTING VIEWS ON DEVELOPMENT OF IMMOVABLE CULTURE HERITAGE? MANAGEMENT OF IMMOVABLE CULTURAL HERITAGE BETWEEN POPULISM AND SUSTAINABLE DEVELOPMENT	235
Matjaz Ursic	
Chapter 23	
URBANISTAI IN ACTION: A CASE STUDY OF PARTICIPATORY URBAN PLANNING	246
Luisa Hilmer	
Chapter 24	
THE AFFECTIVE EXPERIENCE OF ARCHITECTURAL AND URBAN SETTINGS: AN ECOLOGICAL-ENACTIVE PERSPECTIVE	254
Efrosini Charalambous	
Chapter 25	
THE DESIGN SPACE OF INFORMATION AND DATA COMMUNICATION IN PUBLIC SPACES	265
Nergis Aşar, Meltem Erdem Kaya	
Chapter 26	
INVESTIGATION OF THE IDM APPLICATION IN CONSTRUCTION MANAGEMENT: A SYSTEMATIC LITERATURE REVIEW	277
Elif Çileli Umuç, Elçin Filiz Taş	
Chapter 27	
SUPERBLOCK STUDIO: CONTESTING THE CULTURAL HEGEMONY OF THE CAR	290
Lopez Garrido, Gonzalo Jose	
Chapter 28	
SOME OBSERVATIONS ON DIGITAL PLACEMAKING-LED URBAN HERITAGE REVITALIZATION: A CASE STUDY OF MACAO	302
Weijia Wang	
Chapter 29	
URBAN EXPANSION DYNAMICS: EXPONENTIAL GROWTH AND IRREGULAR LAND USE IN CHILE'S CENTRAL COASTAL REGION	311
Álvaro Mercado Jara, Franz Emmil Schreiber Rivera, David Luza Cornejo	

Chapter 30	
EXPLORING THE IMPACT OF POPULATION DENSITY ON WALKING BEHAVIOR	326
Kansuke Nakai, Masayoshi Tanishita	
Chapter 31	
RETHINKING URBANITY THROUGH HYBRIDIZATION: DISSOLVING BOUNDARIES BETWEEN INSTITUTIONAL ARCHITECTURE AND PUBLIC PLAZAS IN BARCELONA	338
Hala Abdalqader, Joel Azar, Michael Hughes	
Chapter 32	
NEIGHBOURHOOD LIVEABILITY FROM THE PERSPECTIVE OF RESIDENTS: CASE STUDIES ACROSS NEIGHBOURHOODS IN GOLD COAST, AUSTRALIA; WELLINGTON, NEW ZEALAND; AND QUEZON CITY, PHILIPPINES	348
Nicolo Del Castillo	
Chapter 33	
TWO DECADES OF URBAN RENEWAL SPECIAL ZONE IN TOKYO: EVALUATING GROUND- LEVEL LAND USE TRANSFORMATIONS	362
Risa Shimizu, Shino Miura	

DIGITAL PLATFORMS FOR COMMUNITY-LED TOURISM: CO-DESIGNING LIVEABLE RURAL COMMUNITIES IN MARGINAL TERRITORIES

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INTRODUCTION

The conceptual framework of liveable cities emerged in the 1970s as a response to urban quality-of-life crises, emphasizing resident participation, sustainable economic development, and quality of life indicators.¹ Contemporary urban studies have developed comprehensive multidimensional frameworks for assessing and promoting livability through measurable indicators and participatory approaches.²

However, this discourse has predominantly focused on urban contexts, leaving rural territories under-theorized despite facing equally pressing challenges regarding community sustainability, demographic decline, and social cohesion.³ Rural territories demonstrate alternative models of human-environment interaction that may require fundamentally different livability frameworks than those developed for metropolitan contexts.⁴

The Italian Abruzzo region, with its predominantly mountainous and rural landscape, represents a paradigmatic case for investigating livability in rural areas. Community-based cooperatives operating in these territories have experimented with digital platforms to support community-controlled development, creating opportunities to investigate how digital infrastructure can support rural livability.⁵

This paper investigates how territorial livability elements in rural contexts are reflected in a digital platform (AbiTerrò) designed through participatory methods involving eight Abruzzo community cooperatives. This research expands livability frameworks beyond urban contexts while contributing to literature on how digital infrastructure can enhance territorial livability and maintain community autonomy.

TERRITORIAL DIMENSIONS OF COMMUNITY-LED TOURISM IN RURAL AREAS

The geographic configuration of the Abruzzo Region, with its predominantly mountainous landscape (65%) and extensive rural territories (34%), represents a paradigmatic case of territorial marginality within the contemporary Italian context.⁶ This complex mosaic of spatial fragmentation reveals how isolation and demographic decline intersect to create conditions of peripherality that challenge conventional livability frameworks. The territorial structure reveals a demographic polarization: over

21% of Abruzzo municipalities remain below the critical threshold of 500 inhabitants. These scattered settlements epitomize the condition of marginal rural areas—territories characterized by limited accessibility to essential services, progressive demographic erosion, and structural disconnection from major economic centers. The resulting settlement pattern reflects not merely geographic constraints, but the ongoing process of socio-economic marginalization that has progressively hollowed out the demographic and productive fabric of these rural communities, creating what Vendemmia⁷ et al. term a "demographic desert" within the broader regional landscape.

These ultra-small municipalities embody the essence of rural marginality, where population density drops below 10 inhabitants per km² and traditional economic activities struggle to maintain demographic viability. Of these municipalities, 53 fall within the provinces of L'Aquila (30) and Chieti (23), specifically concentrated in the predominantly hilly and mountainous areas. Extending the analysis to all "small municipalities"—those with populations up to 5,000 inhabitants that constitute the backbone of rural Abruzzo—reveals the territorial dominance of rurality: 254 municipalities, equal to 83.2% of the total regional administrative units, collectively hosting 339,922 residents (slightly more than a quarter of the regional total).

However, marginal territories also possess distinctive assets that position them uniquely for community-based tourism" (CBT), in which local communities directly manage tourism activities to ensure economic, social, and environmental benefits while preserving cultural and natural heritage⁸ through historical cooperative structures, and resistance to external commodification pressures maintained through collective land ownership models.⁹ These characteristics create favorable conditions for tourism models that prioritize community control and territorial authenticity while leveraging endogenous cultural-ecological knowledge systems, as demonstrated by the National Strategy for Inner Areas.¹⁰

THEORETICAL FRAMEWORK: FROM URBAN TO RURAL LIVABILITY

Urban Livability: core dimensions and spatial characteristics

The concept of livable cities emerged in the 1970s as a comprehensive framework for understanding urban quality of life, emphasizing measurable indicators that determine residents' well-being in metropolitan contexts. This conceptual development occurred as urban scholars began recognizing that traditional economic indicators were insufficient for capturing the complexity of urban life quality.¹¹ Contemporary urban livability research has systematically identified five fundamental dimensions that operate interdependently to create environments supporting diverse populations, economic activities, and social practices while maintaining environmental sustainability.¹²

Accessibility and connectivity encompass transportation systems, digital infrastructure, and efficient access to employment, services, and opportunities. Urban livability research demonstrates that integrated mobility networks fundamentally determine residents' quality of life by reducing travel times, environmental impact, and spatial inequalities while connecting residents to metropolitan opportunities and resources.¹³ The literature emphasizes how transportation accessibility functions as a prerequisite for other livability dimensions, enabling access to employment markets, social services, and cultural amenities that characterize urban quality of life.

Economic opportunities and affordability involve access to diversified employment markets, affordable housing, and sustainable income levels that enable residents to meet essential needs. Urban economics literature reveals how metropolitan areas generate livability through agglomeration effects that create job diversity, entrepreneurial opportunities, and economic resilience while managing cost-of-living pressures.¹⁴ Research demonstrates that economic livability depends on balancing employment accessibility with housing affordability, requiring policy interventions that can maintain economic diversity across urban neighborhoods.

Public services and social infrastructure include healthcare, education, cultural facilities, and institutional services delivered through centralized systems. Urban studies emphasize how metropolitan livability emerges through economies of scale that enable specialized service provision, professional expertise, and comprehensive coverage of resident needs through institutional frameworks.¹⁵ The literature demonstrates that service accessibility requires both spatial distribution and institutional coordination that can deliver standardized quality across diverse urban populations.

Environmental quality and green spaces encompass air quality management, climate control, and environmental health factors. Urban environmental research reveals how cities achieve livability through planned green infrastructure, pollution control systems, and environmental management technologies that mitigate density-related environmental impacts. Studies demonstrate that environmental livability requires systematic approaches to managing the environmental consequences of urban concentration while providing access to green spaces that support resident well-being. Social cohesion and civic participation involve community networks, cultural diversity, safety systems, and governance structures. Urban sociology demonstrates how metropolitan livability depends on institutional frameworks that enable democratic participation, social integration across diverse populations, and collective decision-making through representative and participatory mechanisms.¹⁶ Research reveals that social livability requires institutions capable of managing diversity while creating opportunities for civic engagement and community formation.

These dimensions operate through spatial concentration, institutional specialization, and infrastructure efficiency—characteristics that emerge from urban density, metropolitan scale, and centralized governance systems that can coordinate complex service delivery across large populations. Urban livability literature demonstrates that these mechanisms create interdependencies between dimensions that require systematic coordination to achieve comprehensive quality of life outcomes.

Interrogating rural livability: different spatial logics, alternative mechanisms

The direct application of urban livability frameworks to rural territories reveals fundamental conceptual limitations that have increasingly concerned rural development scholars.¹⁷ Rural and marginal areas operate through different spatial configurations, demographic patterns, economic structures, and governance systems that require alternative analytical approaches. This recognition has led to growing criticism of what Copus et al.¹⁸ term “urban-centric bias” in livability research, which assumes universal mechanisms while neglecting the distinctive spatial ontologies that characterize peripheral territories.

While urban livability emerges through concentration, specialization, and institutional coordination, rural livability operates through fundamentally different spatial and social mechanisms. Rather than density-based efficiencies and centralized service provision, rural territories achieve livability through dispersed networks, place-based knowledge systems, and community-scale governance that emphasize direct relationships over institutional mediation.¹⁹ This distinction reflects alternative rationalities of space that resist metropolitan organizational logics while maintaining community sustainability through different operational principles.

The macro-dimensions of livability—accessibility, economic opportunity, services, environmental quality, and social cohesion—remain analytically relevant across urban and rural contexts. However, their specific characteristics and operational mechanisms differ significantly, requiring frameworks that can accommodate territorial diversity while recognizing alternative pathways to community well-being.²⁰ This perspective challenges universalist approaches to livability measurement that assume standardized indicators can capture the diversity of spatial practices through which different communities achieve sustainability and quality of life.

Territorial accessibility operates through local self-sufficiency networks and seasonal adaptation strategies rather than connectivity to external centers. Rural development literature demonstrates how rural livability depends on communities' capacity to meet essential needs through distributed resources, mutual support systems, and place-based problem-solving rather than efficient transportation to metropolitan services.²¹ This accessibility model emphasizes community resilience and adaptive capacity over connectivity optimization, requiring analytical frameworks that can recognize local resource mobilization as a legitimate livability strategy.

Embedded economic systems transcend urban employment concentration through locally-rooted productive activities, seasonal work patterns, and community-controlled resource circulation. Economic geography research reveals how territorial livability emerges through value retention within local economies, diversified production systems that integrate multiple sectors, and economic activities that maintain harmony with ecological cycles rather than seeking metropolitan market access.²² This economic model challenges growth-oriented development paradigms by demonstrating alternative pathways to economic sustainability that prioritize local control over external integration.

Reciprocal care networks extend beyond institutional service delivery through mutual aid systems, collective resource management, and community-controlled support provision. Social geography literature demonstrates how rural livability depends on direct social relationships and shared responsibility for community welfare rather than specialized institutional services.²³ These care systems operate through informal networks that can substitute for institutional services while maintaining community autonomy over care provision and social support coordination.

Ecological integration replaces urban environmental management with direct participation in seasonal ecological cycles, landscape-specific resource stewardship, and adaptation to geographical constraints. Environmental sociology research reveals how territorial livability emerges through harmony between human activities and ecological processes rather than technological mitigation of environmental impacts.²⁴ This environmental approach emphasizes adaptive co-evolution with natural systems over environmental control, requiring recognition of ecological embeddedness as fundamental to territorial sustainability.

Place-based governance transcends urban civic participation through consensus-building practices, intergenerational knowledge transmission, and collective decision-making rooted in shared territorial commitment. Political geography literature demonstrates how territorial social cohesion emerges through direct participation in community governance rather than representative democratic institutions.²⁵ These governance systems operate through face-to-face deliberation and consensus-building processes that can maintain community coherence while accommodating internal diversity and external pressures.

Distinctive elements of rural livability

From this analysis, three distinctive elements emerge as particularly characteristic of rural livability, differentiating it from urban frameworks while maintaining relevance to community well-being and territorial sustainability:

- Seasonal responsiveness and temporal adaptation;
- Proximity-based social architecture and mutual support systems;
- Territorial knowledge integration and place-based problem-solving.

Seasonal responsiveness depends on communities' capacity to adapt their spatial practices, economic activities, and social organization to seasonal rhythms and environmental variations. Rural territories better achieve livability through flexible adaptation to ecological cycles, weather patterns, and resource availability fluctuations. This temporal dimension represents an ecological temporality that

resists standardization while maintaining community sustainability through adaptive coordination with environmental rhythms. This seasonal responsiveness manifests across multiple dimensions of territorial life. Agricultural cycles organize community labor and resource distribution, with planting, cultivation, and harvest periods requiring collective coordination that determines community availability for other activities.²⁶

Accessibility patterns vary with weather and elevation, creating temporal variations in territorial connectivity that require adaptive transportation strategies and flexible service provision. Economic activities shift between seasonal tourism and agricultural production, requiring communities to develop diversified income strategies that can accommodate temporal variations in economic opportunity.²⁷ Social gatherings organize around harvest cycles and seasonal festivals, creating temporal patterns of community interaction that maintain social cohesion while accommodating ecological rhythms. Communities that successfully maintain livability demonstrate sophisticated temporal coordination systems that enable collective adaptation to environmental variability while maintaining social cohesion and economic viability. These coordination systems operate through collective decision-making processes that can anticipate seasonal challenges, resource sharing mechanisms that can accommodate temporal variations in individual capacity, and cultural practices that maintain community identity across seasonal cycles.²⁸

Research demonstrates that seasonal responsiveness requires institutional flexibility that can accommodate temporal variation while maintaining community commitment to collective welfare and territorial sustainability. Seasonal responsiveness requires place-based knowledge systems that integrate ecological understanding with community organization, enabling residents to anticipate environmental changes and coordinate collective responses. This knowledge integration involves weather prediction systems based on local ecological indicators, resource management strategies adapted to seasonal availability patterns, and social coordination protocols that can maintain community function across temporal variations.²⁹

The knowledge dimension of seasonal responsiveness reflects sophisticated understanding of local ecological systems combined with social organizational capacity to implement adaptive responses that maintain community livability across environmental variation. This temporal dimension of livability challenges universalized approaches that assume standardized service delivery and constant accessibility, instead requiring frameworks that can accommodate cyclical variations and community-controlled adaptation strategies. Urban-derived development models that prioritize year-round standardization may inadvertently undermine seasonal responsiveness by imposing temporal logics that conflict with ecological rhythms essential to territorial sustainability. Recognition of seasonal responsiveness as fundamental to rural livability requires policy approaches that can accommodate temporal variation while supporting community adaptation capacity.

Proximity-based social architecture is based on direct interpersonal relationships, mutual aid networks, and collective resource management rather than institutional service provision. Unlike urban contexts where social cohesion operates through institutional mediation and diverse network connections, rural territories depend on proximity-based relationships that create comprehensive mutual support systems. This social dimension reflects what the relational territoriality that prioritizes direct social relationships over institutional coordination while maintaining collective capacity to address community needs and challenges. This social architecture operates through multiple interconnected mechanisms that create comprehensive community support systems.

Intergenerational knowledge transmission maintains community expertise and cultural continuity through direct mentorship relationships that transfer practical skills, cultural knowledge, and territorial understanding between generations. Reciprocal assistance systems distribute labor and resources according to community needs through informal networks that can mobilize collective capacity to

address individual challenges, seasonal labor requirements, and community infrastructure needs. Collective decision-making processes enable consensus-building and shared governance through face-to-face deliberation that can accommodate diverse perspectives while maintaining community coherence and territorial commitment. Reputation-based trust systems regulate social cooperation and resource sharing through long-term relationship networks that create accountability mechanisms and conflict resolution processes. These trust systems operate through extended personal knowledge that enables assessment of individual reliability, reciprocity commitment, and community contribution, creating social regulation mechanisms that can maintain cooperation without formal institutional enforcement.

Research demonstrates that reputation-based trust requires sustained residence and territorial commitment that enables the development of comprehensive interpersonal knowledge essential to community cooperation and mutual support coordination. Proximity-based social architecture requires sustained residence and territorial commitment that enables the development of long-term reciprocal relationships. This residential stability creates conditions for developing comprehensive interpersonal knowledge, multi-generational relationship networks, and collective capacity for community problem-solving and resource management. The residential dimension of proximity-based social architecture challenges mobility-oriented development models that assume individual optimization through geographic mobility, instead requiring recognition that territorial commitment enables social architecture development essential to community livability. This social dimension of livability depends on community members' willingness to prioritize collective welfare over individual optimization, creating social conditions that can substitute for institutional services through distributed care provision and mutual support. This collective orientation requires cultural values that emphasize community responsibility, resource sharing, and mutual aid over individual accumulation and competition.³⁰ The value dimension of proximity-based social architecture reflects community commitment to collective welfare that enables mutual support systems to function effectively while maintaining individual dignity and community cohesion.

Territorial knowledge integration depends on communities' capacity to integrate place-specific knowledge systems with contemporary challenges, enabling locally-appropriate solutions that maintain territorial sustainability while addressing current needs. Unlike urban contexts that rely on professional expertise and standardized solutions, non-urban territories achieve livability through place-based innovation that combines traditional knowledge with adaptive problem-solving. This knowledge dimension reflects the territorial intelligence that enables communities to develop locally-appropriate responses to challenges while maintaining cultural continuity and environmental sustainability. This knowledge integration manifests across multiple domains of territorial life. Landscape-specific resource management techniques optimize local environmental conditions through agricultural practices adapted to soil conditions, climate patterns, and ecological relationships specific to particular territories. Traditional craft knowledge adapts to contemporary economic opportunities through artisanal production that maintains cultural authenticity while creating income opportunities that support territorial sustainability. Place-based governance systems coordinate collective decision-making according to territorial specificities through consensus-building processes that accommodate local social dynamics, environmental constraints, and cultural values.³¹ Cultural practices maintain community identity while enabling selective engagement with broader networks through festivals, traditions, and social customs that preserve territorial distinctiveness while creating opportunities for cultural exchange and external relationship development. These cultural practices operate as mechanisms for maintaining community coherence while enabling adaptive responses to external challenges and opportunities that can support territorial sustainability without undermining community autonomy or cultural integrity. Territorial knowledge integration requires community-

controlled learning processes that can incorporate external innovations while maintaining place-based appropriateness. This learning capacity involves evaluation mechanisms that can assess external innovations for territorial compatibility, adaptation processes that can modify external solutions to local conditions, and transmission systems that can integrate new knowledge into existing community knowledge systems.

Research demonstrates that successful knowledge integration requires community control over learning processes to ensure that innovation enhances rather than undermines territorial sustainability and community autonomy. This knowledge dimension of livability challenges expert-driven development models that assume professional expertise supersedes local knowledge, instead requiring approaches that recognize community expertise and support locally-controlled innovation processes that strengthen rather than undermine territorial sustainability. Urban-derived development models that prioritize standardized solutions may inadvertently undermine territorial knowledge systems by imposing external expertise over place-based understanding essential to territorial livability. Recognition of territorial knowledge integration requires development approaches that can support community-controlled innovation while respecting place-based expertise and territorial autonomy.

Digital platforms and Community-based tourism

Digital infrastructure can either support or undermine the distinctive elements of rural livability, depending on design principles and implementation approaches. Mainstream digital platforms often impose urban-derived organizational logics that conflict with seasonal responsiveness, proximity-based social architecture, and territorial knowledge systems, potentially disrupting the mechanisms through which non-urban territories achieve livability.

However, participatory digital design processes can create a technological infrastructure that enhances rather than replaces the distinctive elements of non-urban livability. Community-controlled digital platforms can support seasonal responsiveness through flexible content organization and temporally adaptive functionality, strengthen proximity-based social architecture through digital tools that amplify existing mutual support networks, and enhance territorial knowledge integration through platforms that enable place-based information sharing and community-controlled innovation.

The challenge lies in developing digital infrastructure that operates as an extension of existing territorial practices rather than as a replacement for place-based livability mechanisms. This requires co-design processes that position communities as primary decision-makers in digital platform development, ensuring that technological infrastructure supports rather than undermines seasonal responsiveness, social proximity, and territorial knowledge integration that characterize sustainable non-urban communities.

Community-based tourism emerges as particularly relevant to non-urban livability when implemented through frameworks that strengthen rather than commodify the distinctive elements of territorial sustainability. Unlike mass tourism, which often disrupts seasonal rhythms, social architectures, and territorial knowledge systems, community-controlled tourism can enhance non-urban livability through economic activities that integrate with existing territorial practices.

Community-based tourism supports seasonal responsiveness by organizing visitor activities according to agricultural cycles, ecological patterns, and community availability rather than year-round standardization. It strengthens proximity-based social architecture by creating structured opportunities for meaningful interaction between visitors and residents while maintaining community control over tourism development. It enhances territorial knowledge integration by enabling communities to share place-based expertise with visitors while generating economic value that supports territorial sustainability.

The implementation of community-based tourism through digital platforms creates opportunities to examine how technological infrastructure can support the distinctive elements of non-urban livability while enabling selective engagement with broader tourism networks. This intersection provides a concrete context for investigating how participatory digital design can create tools that enhance territorial livability rather than imposing external organizational logics onto local communities.

METHODOLOGY: PARTICIPATORY CO-DESIGN WITH COMMUNITY COOPERATIVES

We employed a transformative methodological framework integrating Design Thinking principles with participatory action research, operationalized through Design Sprint workshops—a systematized five-phase participatory process for identifying territorial challenges, establishing collective objectives, generating contextually embedded solutions, and prototyping community-controlled outcomes.³² This methodological choice represents a deliberate departure from extractive research paradigms, positioning community cooperatives as co-researchers and primary decision-makers, while researchers functioned as methodological facilitators and collaborative documentation specialists.

Our approach synthesizes participatory design theory³³ with territorial development frameworks, creating what we term “territorial co-design”—a methodology that recognizes digital platforms as socio-spatial infrastructures requiring community epistemologies rather than external technological impositions. This theoretical positioning aligns with recent advances in participatory planning that conceptualize communities as distributed cognitive systems capable of generating place-based innovation through collaborative knowledge construction.

Research participants comprised representatives from eight strategically selected Abruzzo community cooperatives operating across diversified sectors including tourism, agriculture, cultural preservation, and social services: La Maesa (Aielli), Vallis Regia (Barrea), Oro Rosso (Navelli), Vivi Calascio (Calascio), La Chiave dei Tre Abruzzi (Popoli), Tavola Rotonda (Campo di Giove), Cuore delle Valli (Goriano Valli), and Sette Borghi (Sante Marie). Selection criteria emphasized: established collaborative experience; demonstrated commitment to community-led territorial development; operational diversity representing territorial complexity; and geographic distribution across Abruzzo's distinctive ecological-cultural zones.

The methodological framework operationalized five sequential yet iterative sessions based on Design Sprint principles. Data generation employed multimodal ethnographic approaches, combining participant observation with collaborative documentation strategies including visual sketches, digital prototypes, recorded discussions, and co-created analytical exercises.³⁴ This methodological triangulation enabled the capture of both explicit knowledge articulations and tacit territorial understandings embedded in cooperative practices. Analytical procedures followed iterative thematic coding protocols designed to identify emergent patterns in participants' territorial values, community-development visions, and platform design preferences, while maintaining collaborative interpretation processes that validated findings through participant feedback loops.³⁵

LIVABILITY ELEMENTS IN THE ABITERRÒ DIGITAL INFRASTRUCTURE

The co-design process resulted in *AbiTerrò*, a platform prototype that demonstrates how digital infrastructure can support the three distinctive elements of rural livability identified in our theoretical framework. Analysis reveals the systematic integration of seasonal responsiveness, proximity-based social architecture, and territorial knowledge systems into platform functionality. The resulting platform reflects what Barns³⁶ terms “place-based digital infrastructure”—technological systems that extend rather than replace existing territorial practices while maintaining community control over development processes.

Seasonal responsiveness in digital architecture

Participants embedded seasonal adaptation directly into platform organization, creating digital infrastructure that responds to temporal variations rather than adhering to year-round standardization. This challenges the temporal universalism of mainstream digital platforms. The platform's activity framework organizes content according to elevation-specific conditions and seasonal accessibility patterns, reflecting central Apennine ecological cycles rather than universal tourism calendars.

Indeed, AbiTerrò aims to offer only services that are in harmony with the rhythms of the seasons: the choice of activities is guided by the natural filter of the four seasons (Fig. 1). This is influenced by various elements, such as climatic conditions, flora and fauna. Wildlife rhythms, for example, shape appropriate outdoor activities, with information about breeding seasons, migration patterns, and conservation protocols. This temporal organization enables visitor coordination with territorial rhythms rather than imposing external demands that conflict with seasonal community practices. In doing so, it preserves communities' ability to prioritize territorial needs over visitor demand while maintaining seasonal responsiveness, which is essential to non-urban liveability.

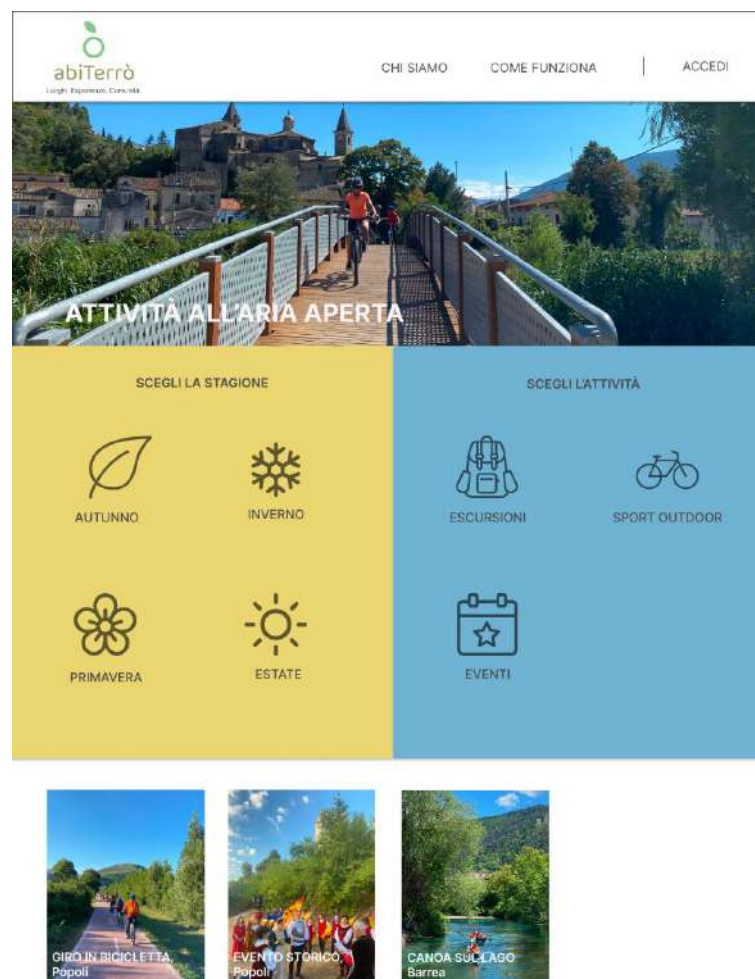


Figure1. Outdoor activities for tourists following seasonal rhythms

This approach is also reflected in additional elements of the booking process, which is not automatic but depends on a booking request to confirm actual availability. In this way, visitors are invited to embrace a different logic, closer to the reality of the territory (Fig. 2). Indeed, the “check availability” feature enables service providers to maintain seasonal flexibility through multi-step confirmation

processes assessing request appropriateness according to current territorial conditions, community capacity, and visitor preparation levels.

Figure 2. “Check availability” request

The overall framework follows the principles of authenticity: providing real experiences consistent with seasonal cycles, it goes beyond merely offering products aligned with the seasons. This is particularly evident for agricultural activities. Indeed, agricultural cycles determine community activities, combining (in specific periods) farming with tourism services, for example by involving tourists in the harvest. Oro Rosso cooperative detailed how October saffron harvest requires intensive community mobilization, potentially requiring tourists’ engagement in these activities. This reinforces the central role of the “land” in authentic experiences.

Furthermore, there is a deliberate effort to eliminate folkloristic elements: authenticity does not mean promoting standardized or stereotypical images of the territory, and the same applies to the idea of seasonality, reinterpreted as a continuum of genuine experiences and values.

Proximity-based social architecture enhancement

The platform amplifies existing proximity-based social networks through digital tools that extend rather than replace direct interpersonal relationships, reflecting what Sandoval³⁷ terms “community-controlled digitization.” The “proximity services” section functions as digital infrastructure for mutual aid coordination, enabling community members to organize collective resource sharing, support, and care provision while maintaining face-to-face relationships essential to territorial social architecture. The proximity services functionality operates through multiple coordination mechanisms. Resource-sharing coordination enables tool lending, equipment sharing, and collective resource management through digital bulletin board functionality,³⁸ through which people can simultaneously access services offered by others or by cooperative communities, and offer their own services (Fig. 3).

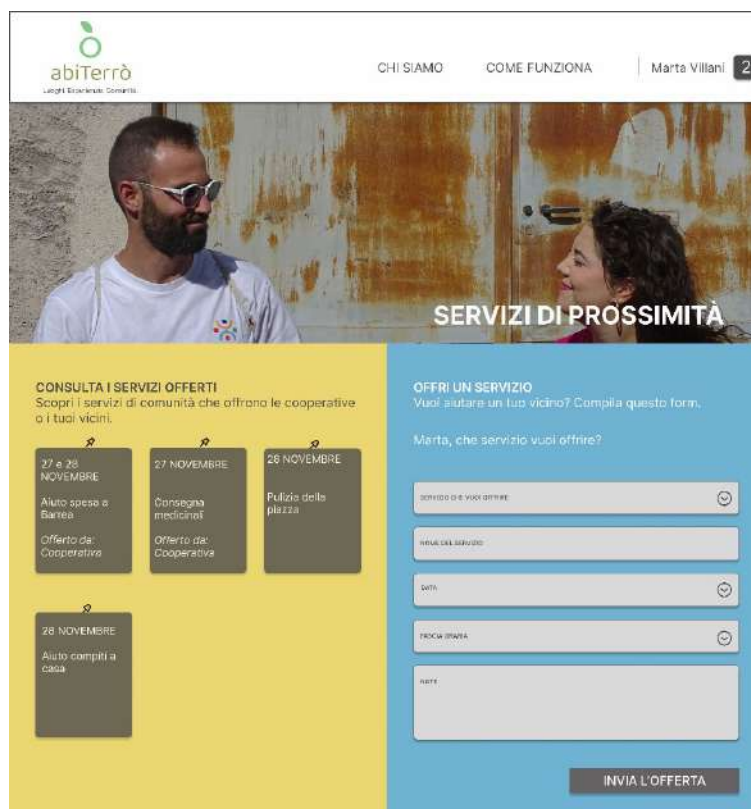


Figure 3. “Proximity services” functionality

Care provision coordination enables eldercare, childcare, and community support activities while maintaining both privacy and dignity. Rather than creating parallel digital communities, AbiTerrò maintains territorial social protocols through interaction designs requiring face-to-face confirmation, reputation-based trust systems, and community accountability mechanisms that preserve the direct relationship foundations essential to non-urban social architecture.³⁹

The platform's unified navigation system reflects the fluidity of territorial identity, enabling users to transition between visitor and community member roles based on sustained engagement rather than predetermined categories. This supports proximity-based social integration processes, through which visitors can gradually participate in territorial mutual support systems while respecting community control over integration pathways.⁴⁰ One of the key features of AbiTerrò is the absence of a strict distinction between “tourists” and “inhabitants”. Tourists can gradually become inhabitants, while inhabitants are not limited to accessing only community services: they can also benefit from services and activities that are typically considered touristic. Accommodation, as a fundamental service, plays a central role within the platform and represents the starting point for enabling the integration of tourists as potential inhabitants of the territory.

Territorial knowledge integration and digital transmission

AbiTerrò operationalizes territorial knowledge as functional infrastructure rather than commodified content, creating digital systems that support place-based problem-solving and community-controlled innovation. This reflects what Scholz⁴¹ identifies as “knowledge commons” which maintain community control over intellectual resources while enabling selective sharing.

In AbiTerrò, territorial knowledge integration and digital transmission emerge in the efforts of community cooperatives to design a digital platform that not only integrates the unique features of the

territory but also adapts its functionalities to these specific characteristics. The co-design process thus represents the very essence of this element of rural livability.

The platform aims to present and strengthen the identity of local communities, characterized by several key features. First, workshop participants highlighted the need to overcome the distinction between tourist and resident. As a result, the platform does not offer differentiated services for these categories, but rather provides the same opportunities for both. Figure 4 shows one of the key sentences on the AbiTerrò platform which summarises this concept (translation: “*Come live with us for an hour, a day... a lifetime*”, emphasising how tourists may even become potential inhabitants of the area). In this sense, it acts as a tool for sharing and enriching local identity, considering visitors as bearers of innovative ideas for the territory.



Figure 4. Tourists as potential future inhabitants of the area

This enrichment also takes place through a functionality that allows a portion of the revenue from each activity or service to be allocated to local projects (such as the regeneration of specific areas or the creation of new public amenities). In this way, visitors' connection with the rural territory also materializes as a direct economic contribution to the community. Figure 5 shows that in the activity booking phase, users can decide the local project to sustain.

Figure 5. People can sustain local projects

The platform's economic mechanisms channel visitor contributions into territorial knowledge preservation and community development, through local spending incentives and collective contributions that strengthen the link between tourism experiences and territorial sustainability.⁴² These mechanisms enable tourism to contribute to the transmission of local knowledge while preserving community control over cultural processes and intellectual property rights.

Rural activities constitute another distinctive element of territorial identity and therefore of the platform itself. All proposed experiences revolve around the idea of “the land”: they mainly include outdoor and food-and-wine activities, but also cultural initiatives, educational experiences, and proximity services, all rooted in rural practices and knowledge. (Fig. 6. Translation: “*We care for the land, we cultivate ideas: you can do it with us*”).



Figure 6. “Land” as a key characteristic of the territory

In addition, the individual profiles of each activity provide a wealth of information, not only of a logistical nature but also general knowledge. For example, in its profile, the Oro Rosso cooperative detailed how saffron cultivation requires knowledge integration across soil preparation, planting schedules, harvesting techniques, and processing methods, combining traditional expertise with contemporary quality standards. Profiles related to traditional crafts document knowledge integration in stone masonry, woodworking, and textile production, using multimedia resources that capture both technical procedures and cultural contexts.

The “experience diary” functionality (Fig. 7.) further supports territorial knowledge transmission by allowing participants to share comments on the activities they experienced. These narratives go beyond impressions and advice, providing practical information and reflections. Rather than reducing territorial knowledge to standardized reviews, they capture learning processes that foster collective knowledge integration and allow selective sharing with visitors seeking authentic engagement.⁴³

Similarly, the use of *badges* associated with completed activities is not linked to economic value or competitive mechanisms, but rather intends to narrow the gap between people and the territory, encouraging mutual recognition among different user groups.

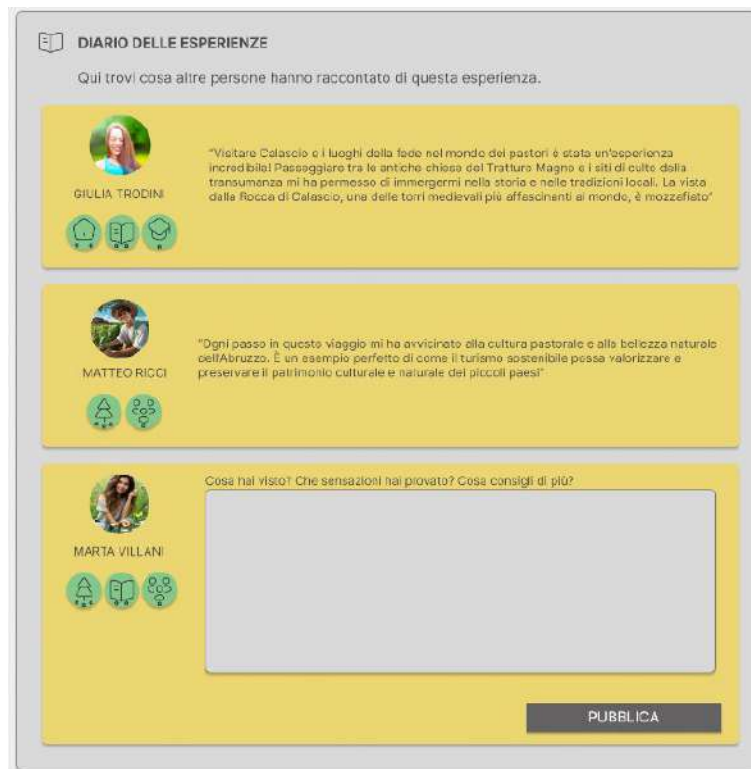


Figure 7. Experience diary

Finally, the platform integrates artificial intelligence tools, such as a bot that supports users in booking activities (Fig. 8.). This tool is designed with priority given to *content curation* over algorithmic optimization, suggesting experiences based on landscape appropriateness, seasonal timing, and community knowledge systems rather than behavioral patterns or commercial priorities.⁴⁴



Figure 8. An artificial intelligence tool guiding users in booking activities

In conclusion, the platform seeks to convey the specific identity of the territory, positioning itself as an alternative to mainstream platforms from which it deliberately distances itself. A clear example of this is the registration process, which requires only essential information, with no intention of data collection, profiling, or integration with external platforms.

CONCLUSIONS

This research demonstrates how participatory co-design can generate digital infrastructure that supports the three distinctive elements of rural livability: seasonal responsiveness, proximity-based social architecture, and territorial knowledge integration. The *AbiTerrò* case reveals how community-controlled digital platforms can enhance territorial livability mechanisms, challenging which identifies as the metropolitan bias in development frameworks.

The identification of these three elements extends livability frameworks beyond universal livability models, providing analytical tools that accommodate territorial diversity while recognizing alternative pathways to community well-being. This expansion demonstrates how spatial context fundamentally shapes the mechanisms through which communities achieve sustainability and quality of life through organizational principles different from the urban concentration, specialization, and institutional coordination emphasized in metropolitan livability research.⁴⁵ The research contributes to a critical rural studies by revealing how temporal adaptation, direct social relationships, and place-based problem-solving create territorial sustainability through context-specific mechanisms rather than universalizable criteria.

The participatory co-design methodology demonstrates how community led cooperatives can function as effective research partners while maintaining community control over knowledge production processes, addressing the need for culturally appropriate design methodologies. The methodological approach offers alternatives to an extractive research paradigms, by positioning territorial communities as experts in their own development needs.

The findings suggest significant implications for rural development policy, particularly regarding the tension between digital infrastructure standardization and place-based development needs.⁴⁶ Current approaches that prioritize connectivity and standardization may inadvertently undermine non-urban livability by imposing urban organizational logics onto territorial contexts that operate through different sustainability mechanisms. Policy frameworks should recognize the community-controlled development, by prioritizing local control over digital infrastructure, seasonal flexibility in service provision, and territorial knowledge systems as legitimate expertise rather than obstacles to modernization. This requires identifying institutional approaches capable of accommodating territorial diversity while providing resources for community-controlled development processes.

Digital infrastructure investment in rural contexts should emphasize the community capacity building rather than external platform adoption, enabling territories to develop technological solutions that enhance rather than disrupt existing livability mechanisms. This approach suggests alternative development models that prioritize territorial sustainability over standardized modernization strategies that may undermine place-based sustainability mechanisms.

This study's focus on Abruzzo's mountainous territories and community cooperatives limits generalizability across different geographical contexts, economic structures, and social organization patterns. The temporal scope limits understanding of long-term impacts of community-controlled digital platforms on territorial livability, requiring what Guest et al.⁴⁷ identify as longitudinal research approaches to assess the durability of community-controlled digital infrastructure.

Future research could investigate how these livability elements manifest across diverse geographical contexts, examine the scalability of participatory co-design methodologies, and explore long-term impacts of community-controlled digital platforms on territorial sustainability. The intersection of territorial livability with broader sustainability frameworks, including climate adaptation and demographic change, represents important areas for continued investigation that could contribute to developing comprehensive approaches to rural sustainability in contexts of environmental and social change.

NOTES

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