



Upscaling the hum-animal concept and solution:

A guideline for smart cities

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Introduction

Societies are undergoing significant change, along with their sensitivities, resources, and needs. Meeting these emerging challenges requires innovative solutions and effective responses. The human–animal relationship is increasingly at the centre of cultural interest, both nationally and internationally, with a focus on the intangible and relational bonds between humans and animals. In Italy, the number of pets now exceeds the number of residents, and the pet economy itself generates substantial economic and employment opportunities. Research is providing growing evidence of the positive impact of human–animal interactions on people’s physical and psychological well-being, particularly among vulnerable groups. This expanding body of knowledge opens new perspectives on how to address the social and relational needs of contemporary society. Italian society, which has one of the longest life expectancies in the world, is experiencing a demographic shift as the baby boomer generation passes the 60-year threshold. At the European level, population aging is also evident and growing. Social demands are increasing, even among younger populations, partly as a result of the Covid-19 pandemic. Ensuring the sustainability of future welfare models therefore requires the development of inclusive, proactive solutions that support well-being and help prevent situations of fragility. Within this context, innovative approaches capable of generating public goods - such as health, social connectedness, well-being, and inclusion - by mobilizing simple and readily available resources, such as animals, can play a strategic role. Policies that foster interaction between people and animals (**Animal-Nature Based solutions**) are gaining support across broad segments of society. The EU-IN-HABIT research project on smart city solutions piloted the creation of the first city with an integrated human-animal policy. The aim was to generate effective responses for inclusive well-being, with a particular focus on vulnerable groups. Strengthening human–animal interactions can represent a valuable strategy for fostering inclusive well-being, to be pursued through the design of coherent and integrated policies at national, regional, and urban levels.

The State of the Art in Animal Policies

The interaction between people and animals can be broadly categorized into three groups: wildlife, livestock, and companion animals - each with distinct roles, functions, and relevance. Without entering into regulatory specifics, current policies in these areas operate mainly across three domains: 1) environmental, for the protection and management of land, natural resources, and biodiversity; 2) agricultural, with a strong focus on animal welfare and health (with growing coordination between agricultural and veterinary prevention policies); 3) health - for the prevention of the spread of zoonoses and risks to people. The management of companion animals is entrusted to private individuals, in compliance with regulations regarding the proper management of animals and public health, usually administered at the urban level by prevention services and the municipal police. The concept of **human-animal relationships**, the **A-NBS**, introduces a **new idea**.

Research on Human-Animal Relationships

Scientific literature has long highlighted the **benefits** for humans derived from contact/observation and living together with animals (Borrelli et al., 2022). These include the growing demand for contact with nature, the mutually beneficial and dynamic bond influenced by behaviours considered essential for the health and well-being of both parties, which concern the emotional, psychological, and physical aspects arising from relationships between people, animals, and the environment. Evidence of **positive impacts** is found across various life stages and conditions (elderly, children with disabilities, individuals living alone, the homeless, and prisoners). Studies have highlighted a range of benefits associated with human–animal interactions: **physical health**, due to increased physical activity across different stages of life, leading to improvements in blood pressure, cardiovascular function, and even post-surgical recovery; **nervous system** and **stress reduction**; **Reducing feelings of isolation and loneliness**,



alongside greater opportunities for social interaction, facilitated by the role of animals in mediating relationships in diverse contexts; **children and adolescents development**, where a sense of **autonomy** and **independence**, **self-awareness** and **self-esteem**, a sense of **responsibility**, and **relationships** with others are increased.

The hum-animal concept

Scientific evidence demonstrates the potential of innovative solutions and approaches that leverage the positive impacts that animals and their relationships with people provide in terms of inclusion, reduction of loneliness and fragility, social dialogue, and well-being. An innovative human-animal (hum-animal) policy, already tested in urban settings by the EU-IN-HABIT project, enhances A-NBS in different contexts and for different social groups, expanding the availability of public goods that are beneficial for community prosperity. Human-animal innovation operates in a new public context, involving areas and policies that operate in society to support education, training, social and health policies, and the environment, without neglecting the related economic aspects.

The hum-animal proposal finds operational and organizational translations across policies at various institutional levels—national, regional, and city levels. The idea of **A-NBS** is already linked, for some solutions, to national guidelines (Ministry of Health, 2015) on **Animal Assisted Interventions** in various contexts (from social-healthcare facilities to social farms pursuant to Law 141/2015). These interventions are not recognized in the Essential Levels of Assistance (LEA), still designated as one-off, albeit qualified, initiatives. A broader and more innovative vision embraces the **positive interaction between animals and people** and A-NBS as a regeneration tool aimed at increasing the quality of life and inclusive well-being of people, both vulnerable and less so, within a framework of transversal and integrated openness across multiple policies. Thinking in terms of integrated human-animal policies implies adopting the new concept in the vision of policymakers and society to promote, in a simple and consensual manner, useful, effective, and efficient solutions, within the reach of national action and the various institutional levels of government.

Hum-animal Solutions

Human-animal innovation finds operational expression in a variety of specific solutions whose usefulness lies in being integrated into a comprehensive and coherent framework. In the case of the **hum-animal smart city** of Lucca, the urban transformation plan involved: 1) the creation of targeted **public spaces** to enhance relationships between people and animals and ensure better, safer, and healthier relationships between animals and people, and to facilitate exchanges between people who keep animals or who can enhance their relationships in these areas (**relational areas** to facilitate the free and safe movement of animals; **Animal Lines**, accessible to six-legged friends, with different lengths and difficulties related to the needs of people and animals); 2) the creation of a **board game** (City Pets) to educate children and families and a plan of educational activities with schools of various levels, including through co-design tools and participation/training in active citizenship for the minors involved; 3) organizing themed **events**: reading cycles with children and families, relational events, play activities, and activities to discover the abilities of animals (including service activities, from discovering and rescuing people, to Animal Assisted Activities for vulnerable individuals, and training service animals for those with visual or motor impairments or diabetes); 4) **Animal Assisted Interventions** in nursing homes for elders and homes for people with various types of disabilities; 5) innovative **Pet Care services** for vulnerable individuals with pets to reduce anxiety and prevent delays in accessing care by facilitating the care of animals in times of difficulty and, at the same time, activating a social network through animal care; 6) an urban **pet services charter** covering all available resources – private and public – for better and more appropriate animal care and management; 7) **socialization and inclusion initiatives in prisons** through pets; 8) initiatives to support **new youth entrepreneurship** in the pet



economy; 9) **Enhancement of municipal facilities**—kennels and catteries—to promote volunteering and active interaction with citizens' pets, including for NEETs.

Active policies also exist for managing owned animals in **workplaces** and **public places**, on **transportation**, in the use of **museum** facilities and services, in **accessing retail** and service outlets, and in **tourism** facilities (**pet friendly tourism**). Actions to support the **homeless** and **foster employment inclusion** through pets are also being implemented, as well as attention to safety and the **reduction of gender-based violence**. The diversity of A-NBS and their flexibility to adapt to different contexts and targets allows for the reorganization and regeneration of public spaces in cities and regions of various sizes. This responds to growing social demands (including proper pet management) by developing co-therapeutic actions and dynamic, inclusive spaces that encourage dialogue, physical activity, and play, all at a low cost.

Potential Institutional Applications

Human-animal policies may be implemented at various institutional levels. At the national level, through initiatives recognizing the usefulness of the relationship (moving beyond the idea of animals as luxury goods, including in terms of taxation and drug policies); through **pilot projects** in various policy areas (justice, education, family, disability and social issues, health, economics, urban regeneration, and the environment); through the recognition of social and health-related benefits and essential environmental standards (LEAs) for urban and territorial planning and regeneration. At the regional level, through the implementation of incentive policies for urban and territorial planning and regeneration. At city level, through the adoption of **integrated hum-animal plans** and the introduction of **integrated urban policy managers** capable of activating and organizing resources across the territory, including through participatory processes and innovative financing.

Policy Proposals

The proposal for an integrated human–animal policy entails a shift from conventional approaches toward innovative models of human–animal management. This shift cannot be ignored by decision-makers, both because of the broad social consensus surrounding the issue and the general benefits such a policy can generate in terms of **public goods** and **community prosperity** - particularly in a period marked by increasing social needs and declining public resources. The advantages of adopting an integrated human–animal policy stem from two main factors: first, the widespread presence of animals/pets in society and the related demands; and second, the relatively low costs required to mobilize these resources for public purposes. In many cases, existing policies and resources can simply be reoriented or expanded. For example, creating dedicated public spaces for hum–animal interaction does not require shifting the budgets allocated to urban regeneration policies, but rather redefines their purpose. Similarly, awarding contracts to third-sector organizations to deliver residential services for the elderly through Animal Assisted Activities (AAA) adds value while only marginally increasing costs. Numerous other examples can be identified. Additional advantages derive from the positive outcomes of human–animal interactions documented in scientific literature. A mature and innovative policy proposal can therefore establish the conditions to strengthen such interactions in diverse contexts and for multiple purposes through: a) communication and institutional affirmation of the new concept; b) the design of coherent interventions and policies; c) the promotion of actions aimed at disseminating and scaling solutions at the urban, regional, and national scales; d) discussion of the topic within institutional forums (parliamentary committees, the State-Regions Conference, inter-parliamentary groups); e) involvement of cities and regions in launching pilot projects; f) active participation and the creation of local partnerships, activating collective intelligence in innovation and human transformation processes.



The IN-HABIT project has thus created a unique space for European innovation in Italy, which policymakers have the opportunity to adapt and scale across the country, fostering innovation while contributing to the well-being and prosperity of communities and individuals.

The Hum-animal solutions tested in Lucca

In the following pages, the solutions piloted in Lucca are described, highlighting the challenges they faced, their main outcomes, the beneficiary groups involved, and the key stakeholders responsible for their implementation. Additionally, the discussion covers the core elements, impacts, enabling and limiting factors, as well as the main lessons learned.



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Urban hum-animal city planning

Description

IN-HABIT in Lucca introduced the concept of a hum-animal integrated urban policy. The concept looks to human-animal bond in the perspective of the promotion of innovative public good based on Animal Nature Based Solutions. An integrated hum-animal urban policy links diverse sectors -like environment, public building, education, social and health, economic, tourism policies- into an integrated dimension able to valorise human-animal bonds in a new perspective, by enhancing inclusive health and well-being for the citizens with specific attention to the vulnerable ones. A hum-animal city valorise Animal-Nature Based Solutions for elders and people with fragilities, by introducing Animal Assisted Interventions, therapies, and activities for fragile people in public health institutions. It takes into consideration the potential of animals in educational activities, in engaging citizens with specific events and activities, in reorganising public spaces in the hum-animal perspective, enhancing inclusive health and well-being for citizens (by changing daily routine linked to pets' management, increasing their mobility and possibility of gaming, enhancing societal dialogue among diverse social strata via their pet's engagement). Introducing innovative social services able to link hum-animal needs (e.g. for fragile isolated people handling pets, to reengage homelessness running pets).

Challenges

Cities are undergoing profound societal, environmental, and economic changes. At the same time, public funding is becoming scarcer, reducing the traditional provision of redistributive policies, while societal demands are increasing both in volume and in the need for innovative and personalized services. This growing need for public goods calls for the mobilization of creative and unconventional resources. Concurrently, societal attention to nature and animal life is rising, reflected in the increasing number of pets within households. Pets are increasingly regarded as family members, introducing a new perspective on human-animal relationships. Social innovation and participatory approaches can support a transformative process, generating public goods by leveraging these human-animal bonds. In this context, human-animal interactions represent a valuable resource that can be mobilized to meet emerging societal demands.

Results

In Lucca, the establishment of an IN-HUB as a participatory process facilitated the co-design and co-implementation of activities centred on the hum-animal city concept. The active involvement of the municipality was crucial in supporting the initiative, in collaboration with the University of Pisa and Lucca Crea. An initial assessment, combined with the gradual engagement of numerous public and private stakeholders - from both the economic sector and NGOs - as well as citizens, fostered the emergence of new ideas and solutions. The organisation of pilot initiatives listed in this annex provided opportunities to test and evaluate their outcomes and expected impacts, reinforcing the feasibility



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of the hum-animal city concept. The pilot solutions and the hum-animal city concept are closely interrelated, forming a progressive and transformative pathway.

Lucca municipality, is supporting the sustainability of the project with its own budget after the end of the project confirming the interest and the positive outcomes achieved also from a political perspective.

Beneficiary groups

Vulnerable groups like elders, people with disabilities, youngsters, homelessness, all people from different ages and social strata, citizens but also people coming from different neighbourhoods and villages. Women are pretty involved in the new idea, Youngsters entering in hum-animal economic initiatives, Tourists moving with pets.

Relevant stakeholders

Associations operating in different areas of interest: environment, animal friendly, education, social sector, related to fragile groups of individuals, citizens handling pets and not only, economic firm operating directly (vets, educators, retailers, etc) and indirectly (hotels, restaurants, shops, museums) in the sector, public authorities operating in the different policy areas.

Key elements

1. **Reorganization of participatory policy processes:** to mobilize ideas and resources - including human ones - and to introduce new concepts, solutions, and perspectives related to the hum-animal city approach
2. **Open attention to innovative paths from the side of the public authorities:** an integrated policy requires mediation across sectors, competencies, and resources, and is facilitated by a proactive attitude from both political and technical branches of public institutions beyond the municipality, including social and health authorities, schools, and others
3. **Innovative governance:** establishing dedicated spaces for discussion and appointing an urban pet policy manager can support the overall process, mediate the social innovation pathway, and coordinate the organization of diverse pilot initiatives.

Impact

The Lucca case introduced the concept of the hum-animal city and translated it into concrete and operational solutions. These include new services (for vulnerable individuals), opportunities (educational, economic) and practical everyday measures (for people handling animals). Collectively, these solutions contribute to enhancing inclusive health and well-being for the wider community, as also illustrated by the individual examples presented in this manual.

Enabling factors

Raising awareness about urban pets/animal management, ensuring municipal support for the process, and establishing a dedicated arena (IN-HUB) for professionally mediated participatory activities are key components. Equally important is fostering convergence among the diverse stakeholders involved, as well as across the various municipal departments, both at the political and technical levels.

Blocking factors

Political scepticism about the potential political benefits of the hum-animal concept in front of the citizens, lack of internal organisation and dialogue within the administration and with stakeholders, as well as shortcomings in the communication and management of participatory processes. Rigid allocation of public funds. Political instability that emerged throughout the transformative process.

Lessons learned

- The introduction of innovative concepts such as the hum-animal city, the animal-NBS, and an integrated hum-animal city policy is far from straightforward. It requires extensive negotiation, facilitation, and support, and is highly time-consuming in the initial stages.
- Establishing a strong connection between the broad human-animal concept and the implementation of tangible animal-NBS is essential to foster shared understanding and to provide clear political evidence of the transformative process.



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- The generation of rewards—such as enhanced reputation, strengthened identity, pride, trust, and perceived utility—among stakeholders, A-NBS beneficiaries, and political actors is crucial for sustaining momentum and producing positive evidence of the transformative pathway.



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Animal Lines and hum-animal relational areas

Description

These spaces are designed to strengthen human-animal bonds, promote social interaction among people, enhance daily routines, and increase opportunities for physical activity, play, and personal time. They can be organised through the “Animal Lines” - paths linking the city centre with suburban and peri-urban areas, including existing routes and under-utilised surrounding green spaces - and “Relational Areas” - large spaces accessible to people and their pets, connected to the Animal Lines. Relational areas are open to all and specifically designed to accommodate pets, ensuring their safe and unrestricted mobility. Both types of spaces aim to foster human-animal relationships, thereby promoting social cohesion, inclusion, and well-being for citizens, including vulnerable groups.

Challenges

Urban areas are hosting an increasing number of pets, while household sizes are decreasing and pet management is becoming an integral part of daily life. Dogs, in particular, play a significant role in facilitating human-human interactions outside the home, while also improving the daily routines of their owners both indoors and outdoors. However, city planning often does not account for the growing presence of pets and their associated needs. The development of Animal Lines and relational areas addresses these emerging demands by providing well-designed open spaces for pet management. These spaces help prevent negative interactions between pets and people, as well as among pets of different sizes, by offering dedicated areas that ensure safe and harmonious cohabitation.

Results

In the Lucca case, 15km of Animal Lines and two large relational areas have been implemented in the city. Each relational area includes separate spaces for small and large dogs, equipped with specific play structures and designated zones for rest and interaction among dog owners. The Animal Lines feature resting areas and water stations for pets, and are designed with varying levels of difficulty (from short walks to longer routes) catering both to different dog types and to human capabilities, including time availability, mobility (from young to elderly), and energy or willingness to exercise. An app facilitates gamification in the use of the Animal Lines, while a digital platform monitors the frequency of areas usage. Data indicate that these areas are highly frequented by people of diverse ages, social backgrounds, and from different neighborhoods within the city. Users report changes in their daily routines as a result of using these spaces, highlighting the importance of managing and playing with their pets, engaging in physical activity, enjoying personal space, and establishing new social connections. In one of the relational areas, a WhatsApp group of approximately 80 members has been created, helping residents coordinate activities, meet for both leisure and safety, and maintain dialogue. Overall, social interaction among pet owners has improved, extending even beyond the immediate areas. A local community of pet handlers has been established, which is now able to engage in constructive dialogue with the municipality regarding area management.



Beneficiary groups

All people from different ages and social strata, citizens but also people coming from different neighbourhoods and villages. Tourists moving with pets (a larger and well specific target) make use of the area and of the Animal Lines increasing attendance to the city. Areas are organised for people with physical disabilities. In the areas also Animal Assisted Interventions for people with different fragilities can be organised.

Relevant stakeholders

Pet owners of various ages and social backgrounds, local environmental and animal associations, social groups associations (e.g. elders, people with disabilities), municipality, public health authorities involved in animal management and hygiene.

Key elements

- 1. Reorganization of public spaces:** Cities contain public spaces that can be reimagined and adapted through a human-animal perspective. Understanding and connecting these spaces may be more feasible than initially expected.
- 2. Recognition of contextual specificities and expertise:** Local contextual factors play a key role in the reorganization of public spaces from a human-animal perspective. These must be addressed through appropriate professional skills and interdisciplinary expertise.
- 3. Integration of participatory processes:** Implementation is not merely a technical task; it benefits greatly from participatory approaches that give voice to stakeholders, fostering wider engagement, shared responsibility, and long-term ownership.

Impact

The main impacts concern the creation of dedicated spaces that enable better, less conflictual, and more inclusive pet management, as well as the development of city restorative practices that enhance green/blue public areas. These initiatives improve neighbourhood relations, mobility, sensory and play experiences, and inclusivity within the city, while also fostering social dialogue, community building, and innovative partnerships. Such impacts can be easily up-scaled in other cities and contexts, enlarging their overall benefits.

Enabling factors

Increased awareness of urban pet and animal management, identification of existing public spaces and resources that can be adapted to new functions, and the adoption of specific expertise in human-animal behavioural dynamics. Societal sensitivity toward the topic, together with the reorganisation and availability of public funds to support the necessary investments, also play a crucial role. Moreover, there is a growing societal attention to animal-related issues, which further facilitates these transformative processes.

Blocking factors

They largely correspond to the absence or opposite of the enabling conditions. In addition, local planning frameworks, regulatory constraints, and resource availability are key elements that may limit the development of new public infrastructures. Approaches focused solely on pet-related interventions—without embracing an innovative human-animal perspective—also represent a barrier. Finally, the persistent underestimation and limited societal understanding of the potential of human-animal bonds further hinder transformative progress.

Lessons learned

- At the outset, the introduction of the human-animal city concept in Lucca was both straightforward and challenging. On one hand, a growing societal attention toward animals helped facilitate the development of innovative solutions in this direction. The processes of co-design, co-deployment, and co-management progressed relatively smoothly, despite certain administrative constraints. On the other hand, political hesitation arose due to the perceived lack of immediate political rewards associated with the topic, which was not initially considered a strategic priority. Conversely, feedback collected from citizens through direct use of the spaces and interviews was overwhelmingly positive, particularly concerning the new opportunities for spontaneous human-human interactions, the adoption of new daily routines, enhanced personal mobility, and the emergence of community-based initiatives aimed at co-management and active dialogue with the local administration.



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Animal Assisted Interventions (AAI)

Description

Animal Assisted Interventions involve the use of animals to promote human health and well-being. In many countries, including Italy, such interventions are regulated by national guidelines and are delivered by skilled professionals working with trained animals. AAI can take place in a variety of settings and provide innovative animal-based services tailored to diverse populations, particularly vulnerable individuals. They are typically classified into animal assisted activities, education and therapies, depending on the type and intensity of the intervention. AAIs may involve different species, including dogs, cats, donkeys, horses, and rabbits. In Italy, there is a public registry of professionals authorized to provide these interventions.

Challenges

Contemporary society is witnessing a paradigm shift from reactive care toward proactive management of social and health challenges, aimed at enhancing the capabilities and societal participation of vulnerable people. Public budget reductions further underscore the need for cost-effective, proactive solutions that promote self-sufficiency and facilitate daily life for those facing fragilities. This shift requires transformative approaches within public health institutions to introduce innovation despite financial constraints. Implementing such solutions demands substantial organizational restructuring and attitude changes among stakeholders, balancing fiscal limitations with emerging societal needs and the availability of innovative services.

Results

In the Lucca case, from the earliest co-design phases, the primary target groups for the IN-HABIT project were the elderly, alongside younger participants. AAI were conducted with elderly residents of two nursing homes, including individuals living with diverse fragilities, including dementia and physical disabilities. A total budget of €26,000 was allocated for these activities. The AAIs were implemented through the collaborative efforts of social professionals from the two institutions and the formal engagement of professionals from three NGOs specializing in AAI, in accordance with the Italian Guidelines on AAI (Min. Health, 2015). NGOs were actively involved in co-programming activities following relevant Italian legislation. The interventions took place from September 2023 to June 2024 (10 months, approximately 250 days). Each of the three NGOs worked with two groups of elderly participants (six groups in total), with each group comprising 10–14 individuals, for a total of 80 participants. Each group attended a one-hour dog-based educational session every two weeks, totaling 15 sessions per group (90 sessions across the project). Due to consent limitations, 30 out of 80 participants were monitored. The results demonstrated significant **benefits on participants' well-being**, with improvements in their **quality of life** observed in **mobility, psychological state, and social aspects**. Animals acted as catalysts, encouraging elders to participate in activities they would typically avoid due to physical limitations or lack of interest. **Physiotherapists reported improvements in manual dexterity** through dog-related tasks, such as throwing a ball, brushing the dog, or cutting paper for storybooks. **Lasting positive impacts** were observed, including **anticipation for the animals' return and enhanced memory recall in participants** with better cognitive function, such as remembering activity days, groups, and dog names. **Calmness** and sustained



attention increased progressively with each session, driven by the desire to engage with the dog. Social benefits were equally notable, fostering **improved interactions** among residents, as well as between residents and educators or staff. The project facilitated **dialogue among residents** who previously had limited contact, **including across genders**. **Emotionally**, the activities **deeply engaged participants**, including those typically unresponsive, who **expressed interest through body language and emotional responses**. Group conflicts, often present in the residential context, were notably reduced during AAI sessions due to the presence of the dogs and participants' desire to engage. While such conflicts were not eliminated entirely on other days, their intensity was reduced. Even residents who interacted minimally with the dogs still experienced benefits through observation of others' interactions.

Beneficiary groups

AAI can benefit a wide range of groups, including the elderly, individuals with dementia, people with autism, homeless individuals, retained people, among others.

Relevant stakeholders

Municipalities, public health authorities, NGOs (social Cooperatives A & B), associations representing vulnerable groups, research centres, and the general public.

Key elements

1. **Participatory & Inclusive Approach:** engagement of stakeholders in decision-making and co -planning activities
2. **Cross-Cutting Collaboration:** Encouraging partnerships across sectors to strengthen impact.
3. **Capacity-Building & Skill Development:** Participants' empowerment through the improvement of their well-being and quality of life.

Impact

AAIs demonstrate significant potential impacts on vulnerable populations, acting as catalysts to activate residual capabilities in a highly active, spontaneous, and flexible manner. They also enable institutions to renew their practices by introducing new professional roles, fostering pride among staff, and generating motivation through observable results.

Enabling factors

Open and innovative attitudes within health institutions and among professionals, the engagement of municipalities, the availability of specialized AAI-trained personnel. The availability of dedicated budget allocations to support the implementation of new AAI initiatives.

Blocking factors

Budget constraints, entrenched institutional routines, and a shortage of skilled professionals might obstacle the innovation process. Additionally, limited recognition of AAI from a health/care perspective can slow acceptance at both scientific and institutional/policy levels.

Lessons learned

- AAI, within the hum-animal perspective, provide clear evidence of the potential of human-animal bonds, particularly for vulnerable populations. All stakeholders involved - including participants, professionals, policymakers, families caring for people with fragilities, NGOs, and citizens - benefited positively from the outcomes. From this perspective, AAI can be considered win-win solutions when properly implemented. However, initiating these interventions without dedicated resources may encounter challenges related to institutional and planning arrangements from the outset.
- The cost-effectiveness of AAI is particularly notable. For instance, sessions involving groups of 6/8 participants cost approximately 325 € for session, or roughly and 4€ per person per session, highlighting their efficiency in delivering meaningful benefits at relatively low cost.





Pet -Care services

Description

The Pet Care service is an innovative initiative provided by the municipality in formal agreement with NGOs, aimed at supporting vulnerable individuals who experience (also temporary) difficulties in managing their pets. The service seeks assist both people and their animals, strengthening social networks and promoting societal dialogue beyond formal health institutions. Operated 24/7 via telephone by local NGOs, the service offers three types of support: **Domestic** services (caring for the pet at home, purchasing basic necessities); **Outdoor services with the owner** (accompanying the owner to the vet or walking the dog together); **Outdoor services without the owner** (transporting the pet to the vet or walking the dog independently).

Challenges

Handling pets at home often provides vulnerable individuals with companionship, reduced feelings of loneliness, enhanced daily routines, increased mobility, and positive emotional experiences. However, pet management can become challenging in certain circumstances of fragility, particularly for those living alone, with few relatives, or limited social networks. Even otherwise healthy individuals may face temporary difficulties in caring for their pets. In such cases, a vicious cycle can emerge, where personal fragility, anxiety over pet care, and delayed access to health services compound each other, creating additional challenges.

Results

In the Lucca case, from the outset, the concept of reshaping public services from a hum-animal perspective was integrated into the co-design process. The Pet Care service embodies this idea by combining support for both humans and their pets. Launched in June 2024 following a co-planning phase with two local NGOs, the service represents an innovative partnership among public institutions, NGOs, and vulnerable citizens, involving animal-focused associations to extend the local social protection network, particularly for the most fragile individuals. During its first year of operation, the service received 100 calls—20 managed by one NGO and 80 by the other. Of these, 24 met the eligibility criteria and proceeded to service delivery. Requests were predominantly from elderly individuals, though not exclusively. In all cases, support was provided *repeatedly over time*, reflecting the ongoing nature of beneficiaries' needs, with approximately 14 hours of assistance per individual, sometimes split into two daily sessions and, in other cases, delivered in a single session. This highlights both the **sustained demand for assistance** and the intensive nature of care required, underscoring the importance of continuity. Approximately 25% of interventions were conducted outdoors with the owner present, while the majority took place either indoors or outdoors without the owner. For elderly participants, anxiety often stemmed from concerns about their pets' well-being; the service effectively alleviated these concerns, providing a sense of security. Qualitative monitoring revealed **positive impacts on both beneficiaries and volunteers**. NGO staff reported that **the service fostered strong mutual bonds**: volunteers developed **emotional connections** not only with the animals but also **with the people** they supported, creating **meaningful and lasting relationships**. Volunteers emphasized the **profound gratitude** expressed by beneficiaries, who regarded the service as **timely and highly valuable**. Based on these positive outcomes, including feedback from



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citizens who had not directly used the service, the municipality has decided to institutionalize and continue the PetCare program.

Beneficiary groups

Vulnerable individuals who require temporary assistance in managing their pets.

Relevant stakeholders

Municipalities, public health authorities, NGOs (social Cooperatives A & B), associations representing vulnerable groups, research centres, and the general public

Key elements

1. **Innovative human-animal solutions** to support the quality of life for fragile people and to support them in managing their animals at home and outside
2. **Participatory & Inclusive Approach:** Engagement of diverse community members in decision-making and action planning.
3. **Cross-Cutting Collaboration:** Encouraging partnerships across sectors to strengthen impact.

Impact

Two key elements:

Support for vulnerable populations: the service assisted fragile individuals by addressing the care and management of their pets during periods of personal difficulty.

This not only produced very positive outcomes for the individuals involved but also became a valuable source of social support for vulnerable groups;

Reorganization of social service delivery: the service promoted a new approach to social services by engaging additional actors (such as NGOs and volunteer groups connected to pet care) in socially inclusive activities. This approach fosters dialogue between citizens and vulnerable individuals, enhances social inclusion, and strengthen social protection networks.

Enabling factors

Open and innovative attitudes toward a human-animal perspective among the municipality and participating NGOs. Organisational efforts by volunteer groups within the NGOs to implement innovative service solutions, including resources such as authorised vehicles and 24-hour phone support. Availability of a dedicated budget to support Pet Care services.

Blocking factors

Slow recognition and understanding of emerging human-animal demands, needs, and potential. Sectorization of service provision and operational focus within NGOs, limiting flexibility and integration.

Lessons learned

- The primary effort focused on creating a shared vision among stakeholders regarding the potential of a hybrid service designed to support both humans and their pets in situations of fragility. The COVID-19 experience highlighted the need for solutions to assist individuals managing pets during recovery, as well as for those caring for pets while hospitalized and living alone.
- This innovative service also brings to light individual vulnerabilities, facilitating the organization of targeted support services and reducing the likelihood of critical situations, both from a health and social perspective.



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- The organization of innovative services can be implemented relatively quickly and efficiently at the city level, generating substantial benefits for vulnerable members of the local population. Moreover, such services expand the social protection network by engaging new groups and NGOs in the support of fragile individuals.



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Educational activities in schools and board game

Description

Educational activities were implemented over a two-year period in schools in Lucca (primary, secondary, and high schools), as well as within degree courses at the University of Pisa. The activities were co-designed by the municipality's educational department in collaboration with school administrations. Activities were delivered across different classes, either with or without the presence of animals, depending on the specific requests. In cases where animals were involved, the sessions were organized as Animal Assisted Activities (AAA) conducted by certified professionals and trained animals. The educational methodology was designed to be engaging and age-appropriate, adapting content to students' cognitive levels and learning capacities. Each program consisted of four hours of activity (four one-hour sessions). In ten classes across five schools, a condensed one-hour version was implemented, primarily focused on playing a specially designed educational board game. Evaluation tests were administered to assess the educational impact of the activities.

Challenges

Children and young people are showing an increasing interest in animal life and companion animals. Educational activities targeting these groups can play a crucial role in fostering awareness, knowledge, and responsible behaviour toward pets. Moreover, such initiatives can stimulate active and participatory citizenship from an early age by involving students in co-design and engagement processes within the school context. At the university level, new professional skills related to animal management and welfare can also be developed. There is a growing opportunity to cultivate innovative competencies within the hum-animal perspective, preparing future professionals to respond to emerging societal needs and demands.

Results

Across two editions, approximately 250 students participated in the educational activities, with pre- and post-intervention questionnaires collected from about half of them. Upscaling initiatives were also implemented in the Pisa area in collaboration with a local NGO. Students showed a high level of engagement throughout the activities, both because of their intrinsic sensitivity to the topic and the participatory methodologies employed with the support of DFC. All participants, including those requiring specific educational support, were easily involved. The before-and-after analysis of the questionnaires revealed an increased awareness of the topic, as well as a deeper understanding of animal management and respect for animals. The participatory activities further highlighted three key elements: a) the ability of children and young people to co-design innovative hum-animal solutions; b) the strong intergenerational relational link - especially evident in children - connecting animals to their grandparents; c) the development of collaborative attitudes among peers, relatives, friends, and local institutions to address innovative solutions in a participatory manner. High school students particularly appreciated the group work and participatory co-design activities, which led to their active involvement in a dedicated educational event. In primary schools, the use of the educational board game proved effective in encouraging learning through play about pet management both at home



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and in the urban environment. At the university level, students took part in a specific course on Planning the Hum-animal City and Relationships organised by the University of Pisa. The topic also inspired several PhD theses, degree dissertations, and group projects. Furthermore, master's students were introduced to the hum-animal perspective, showing significant interest and engagement.

Beneficiary groups

Students from different levels and classes (primary, secondary, and high schools). Indirectly, their families and relative. University students from the University of Pisa were also involved.

Relevant stakeholders

Municipalities, school administrations and teachers, children and young people together with their families, NGOs and professionals working in the educational sector, and - indirectly – citizens who benefit from the broader social awareness fostered by the initiative.

Key elements

1. **Focus on hum-animal interaction and promotion of A-NBS** in the city design by the way of educational processes
2. **Cross-Cutting Collaboration:** Encouraging partnerships across sectors to strengthen impact.
3. **Capacity-Building, Skill Development and active citizenship:** Participants' empowerment through knowledge and tools supportive for a pro-active transformative approach, engaging new generation in active citizenship.

Impact

More than 250 students participated in the educational activities in Lucca, in addition to those engaged in upscaling activities and university-level courses. Data from the questionnaires revealed that the educational process effectively enhanced students' understanding of animal needs and respect for them. Significant improvements were observed in various areas of canine knowledge and management, such as awareness of dog welfare and practical knowledge of dogs' daily needs. Furthermore, the programme strengthened students' **understanding** of the characteristics that **make a city "pet-friendly"**. After the activities, more children recognised the importance of elements such as accessible water sources for dogs, appropriate waste bins, cleaning practices, public spaces accessible to dogs, and the presence of veterinary clinics.

Enabling factors

The availability of skilled professionals played a crucial role in facilitating the educational activities, supported by the growing awareness among stakeholders of the relevance of the hum-animal education approach. In Lucca, human resources were provided directly by the project, eliminating the need for additional funding - both for local activities and the Pisa upscaling initiatives. Moreover, the direct involvement of the University of Pisa in developing innovative solutions encouraged the active participation of university students and their contribution to co-design initiatives.

Blocking factors

Co-planning activities were initially quite problematic to be organised due to differences in project timelines, municipality engagement and school scheduling. Internal school constraints - linked to national programmes, privacy regulations, parental consent, timetabling, and varying levels of engagement among teachers and administrators - also required careful management. However, once activities began, few blocking factors emerged beyond logistical and scheduling issues.



Lessons learned

- Students can be readily engaged in innovative educational initiatives when animals are the focus, including classes with children who have specific needs.
- Children and young people are capable of generating innovative ideas and hum-animal solutions, gaining hands-on experience in active citizenship.
- Engagement of educational institutions must be carefully planned well in advance, taking into account existing school routines and the need to coordinate with multiple stakeholders to design an appropriate programme.
- Gaming activities can effectively support learning and enhance student engagement in the subject matter.



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Economic innovative initiatives

Description

At the city level, there is growing potential to support economic activities related to pets and pet management, as well as innovative services connected to the promotion of A-NBS. The economic outcomes of the pet economy may include both the enhancement of existing businesses - allowing them to better respond to emerging societal demands and increased attention to animals - and the development of entirely new business ideas. The pet economy encompasses a wide range of activities, engaging people with diverse levels of skills and expertise, from basic competencies to highly specialized knowledge. Notably, many new entrepreneurs in this sector are women, highlighting the potential of the pet economy to support inclusion and gender balance within the economic landscape. Additionally, focus groups and training activities have been organized to promote pet-friendly tourism, targeting existing businesses. (These initiatives often involve firms incubated by the project or companies supporting the IN-HABIT project through their expertise in specific economic areas.)

Challenges

The number of pets is rapidly increasing, and their role within the family life is becoming increasingly significant. Animals are now widely considered integral members of the family, driving changes in attitudes, expectations, and demand for innovative services and solutions. Globally, the pet economy is experiencing strong growth, with projections indicating substantial economic potential across multiple sectors. Currently, the largest market share is held by pet food, followed by tools and devices related to pet management and engagement. At the same time, there is growing demand for services and solutions that support the well-being of pets while strengthening their relationships with humans.

Results

To foster economic activities related to animal and pet management, specific support for young entrepreneurs was provided by B4B, a company specializing in start-up incubation and business plan development. Approximately 20 new entrepreneurs were incubated and supported, including some of the brands previously mentioned. Notably, 75% of the participants were women, reflecting the sector's potential to promote gender inclusion. The initiatives covered a wide range of services and ideas, from digital solutions to tourism-related projects and innovative services for and with animals. Entrepreneurs were guided through mentoring, development, and consolidation of their business ideas, helping them capture emerging opportunities in the growing pet economy while addressing societal demands related to pet management. Both women and young professionals demonstrated strong interest in this expanding sector. Additionally, a dedicated focus group was held with managers of hotels and other tourism-related structures. Training activities were co-designed in response to the identified needs of these managers, including three targeted webinars. Two manuals were also developed for public and private actors to support the tourism sector and facilitate wider adoption of pet-friendly practices.



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Beneficiary groups

Primarily young and middle-aged women and men developing innovative business ideas within the pet economy. Additionally, existing tourism businesses interested in obtaining pet-friendly tourism qualifications.

Relevant stakeholders

Existing firms operating in the pet economy, chambers of commerce, municipalities, business incubators, tourism sector companies, and retailers.

Key elements

1. **Reinforcing competences and business ideas:** to support the organisation of new and sustainable businesses related to the pet-economy
2. **Training and start-up support:** organization of specific training initiatives and financial fund supporting the new entrepreneurial ideas

Impact

Support was provided to 20 new entrepreneurs, some of whom have already launched and successfully consolidated their business ideas within the pet economy.

Webinars targeting the tourism sector were attended by local entrepreneurs, enhancing awareness and capacity in pet-friendly tourism initiatives.

Enabling factors

Presence of an active, innovative economic environment that encourages business initiatives.

Effective communication strategies and strong professional skills for mentoring and incubating new ideas.

Establishment of specific platforms and agreements to support the development of pet-economy initiatives.

Blocking factors

A non-active economic environment or limited local support for innovative initiatives.

Difficulties in organizing platforms for entrepreneurship support. Limited understanding of the potential of the pet economy among stakeholders.

Lessons learned

- There is growing potential for new products, tools, and services that address societal demand for innovative solutions in pet management and related services.
- The pet economy offers a wide spectrum of employment opportunities, ranging from volunteer work to the inclusion of vulnerable individuals in jobs (e.g., in public shelters for abandoned animals) and extending to innovative ventures requiring specialized skills.
- Creating an environment that provides support, training, and financial resources for new entrepreneurs can foster and catalyze the development of a local economic ecosystem centered on the pet economy.





Hum-animal Chart of services

Description

The chart presents the 15 km of Animal Lines, and the 2 relational areas organised in Lucca, along with the results of a census of existing pet-based activities and services in Lucca. This document serves as a practical reference, illustrating the key features of a hum-animal city and providing a framework that can be adapted and implemented in other contexts.

Challenges

Effectively communicating the hum-animal city concept is essential to ensure broad understanding and engagement. This includes citizens, beneficiaries, and tourists who visit the city with their pets.

Results

A Hum-animal Guide was developed for the city of Lucca to assist citizens and tourists in understanding and making use of the city's hum-animal facilities and services. The guide also includes information on municipal regulations and policies regarding the management of animals within the city, providing clear guidance for responsible pet ownership and engagement with urban animal spaces.

Beneficiary groups

All people from different ages and social backgrounds, citizens but also people from different neighbourhoods and villages. Tourists travelling with pets.

Relevant stakeholders

Pet handlers of different ages and social backgrounds, economic operators and public service providers, and a network of professionals involved in animal care and management (veterinarians, dog educators, pet shops, boarding facilities, hotels and B&B, kindergarten for pets).

Key elements

1. **Communication and supportive tools:** the chart presented in hard copy is also available in Lucca's social media
2. **Networking with local private stakeholders:** to present their activity and to populate the chart

Impact

The chart provides a clear overview of the hum-animal concept and its practical application at the city level, highlighting the services and infrastructure available.

Enabling factors

Proactive engagement by the municipality and private stakeholders.
Strong communication efforts to ensure accessibility and understanding.

Blocking factors

No significant obstacles were reported, aside from the need to ensure collaboration for producing an easily usable reference tool.



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Lessons learned

- The hum-animal city concept requires dedicated communication tools, such as charts and guides, to effectively present services and infrastructure to citizens and visitors.
- Proactive engagement by public administration is essential to support, coordinate, and strengthen activities organized at the city level under the hum-animal framework.



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City engagement on hum-animal events

Description

An urban restorative approach linked to the hum-animal concept can be strengthened through the organization of targeted events, enhancing the inclusiveness and playability of the city. Such events create opportunities to engage diverse groups, including children, young people, families, and pet handlers, while promoting awareness of human-animal interactions. In the Lucca case, events included a variety of initiatives, such as: Reading sessions on animals for children, Hum-animal board game activities designed for children and families, Activities in the relational areas facilitated by dog-educators, Creative workshops (e.g. streps creator meetings), Informal, accessible events for sharing results and discussing hum-animal initiatives with citizens, Demonstrations with specially trained dogs (e.g. mantrailing, guide dogs for visually impaired individuals), "Six feet walks" in the nature, Installation of specific spaces for the hum-animal idea in running events and other public gatherings. These activities not only foster engagement and community building but also reinforce the visibility and practical application of the hum-animal city concept.

Challenges

Citizen dialogue can be enhanced through the organization of targeted initiatives and events where people can easily meet, interact, play, and participate in shared activities. Such gatherings facilitate societal dialogue, foster new connections among individuals from different neighborhoods and villages, and strengthen social cohesion within the community.

Results

In Lucca, several hum-animal based events were organised in both public infrastructures (Real Collegio, Piazza Coperta) and in the two relational areas. City Visit also served as opportunity to introduce and present open activities and events. Citizens responded positively to the public initiatives, and in events emphasizing dialogue, participants actively contributed by raising issues, suggesting potential solutions, and proposing new initiatives.

Beneficiary groups

All citizens from different ages and social backgrounds, citizens but also people coming from different neighbourhoods and villages. Occasional tourists present in the area.

Relevant stakeholders

Municipality. Local NGOs operating in different areas of interest (culture, social, environmental, pet related, social groups, etc.). Researchers and professionals with specific links to animals.



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Key elements

1. **Networking with local NGOs, and centres:** to innovate and introduce from diverse perspective meetings and event hum-animal based.
2. **Use of public spaces and communication:** to support an easy and public access to the events
3. **Events facilitators:** to support the smooth and appropriate management of the events

Impact

Events provide opportunities to engage citizens, share information, and collect ideas, fostering continuity and gradual acceptance of the hum-animal concept. They allow participants to enjoy public spaces, meet others, discuss topics, and present proposals, often in the presence of local politicians, enhancing civic dialogue and visibility.

Enabling factors

The organisation of the events is demanding in terms of organisational aspects from the co-design to the co-deployment and co-management. Adequate availability of resources, which may require limited financial investment. Strong communication strategies and the use of existing networks support successful engagement.

Blocking factors

Limited local experience or networking capabilities can hinder the organization and visibility of events. Poor organizational capacity can prevent events from effectively showcasing new initiatives and engaging the public. Insufficient communication may reduce public participation and diminish the impact of the initiatives.

Lessons learned

- The organisation of public events is demanding and benefits greatly from strong networking, communication skills, and effective use of media.
- Simple and enjoyable events tend to attract high participation and engagement.
- Citizens are more likely to attend events with cultural content when the activities are presented in a friendly, engaging, and accessible manner.





Hum-animal Game board

Description

To promote better human-animal interactions, LuccaCrea developed a board game based on the geography of Lucca, incorporating local places and names. The game introduces players to responsible pet management, taking into account the type of pets, family composition, and available city resources. It also highlights external services that can support households in managing multiple pets, providing an engaging and educational tool for families and children.

Challenges

Gaming initiatives are often highly effective in educating the public about civic initiatives and solutions. In Lucca, the gaming approach was previously tested to raise awareness on topics such as waste management and water conservation. For the hum-animal concept, the board game was specifically developed to support understanding and engagement, facilitating a broad comprehension of the concept and its practical implications for citizens and families.

Results

The board game City Pets was co-designed, co-deployed, and disseminated by LuccaCrea in collaboration with the University of Pisa. LuccaCrea contributed expertise in comics and game design, while the University of Pisa provided scientific content and conducted testing on different versions to ensure accuracy and effectiveness before finalization. Professional game developers were also involved to enhance appeal and ensure reliable game mechanics. The game has been widely used both in classrooms during educational activities and at public events organized in Lucca. Additionally, upscaling initiatives in the Pisa area allowed children and young people to engage with the game, extending its educational impact beyond the city.

Beneficiary groups

Mainly children, young people and families during educational activities and during specific events.

Relevant stakeholders

LuccaCrea, developers of games, University of Pisa for the scientific contents, Lucca municipality for the organisation of the related events.

Key elements

1. **Competences in games development:** specific expertise in gamification of specific issue and topics is crucial for the organisation of a good, attractive and playable game.
2. **Deep linkage between the game and the topic to be addressed:** gaming as part of an educational activity demand for a good understanding of the topic and its scientific contents to be translated into the gaming activities. The gaming mechanism should, at the same time, engage participants and address specific cultural points that should be solicited by the game itself.



Impact

The game had a positive impact on participants. It reinforced local identity and trust by being rooted in Lucca's architectural and cultural context. Moreover, students were involved in co-design and testing, linking educational activities to university courses and promoting the gamification of the hum-animal concept.

Enabling factors

Local experience and expertise in game development provided by LuccaCrea were crucial for effectively translating the hum-animal concept into the City Pets board game.

Blocking factors

A lack of dialogue between game developers and the scientific partners could reduce the game's effectiveness in achieving its intended educational and engagement outcomes.

Lessons learned

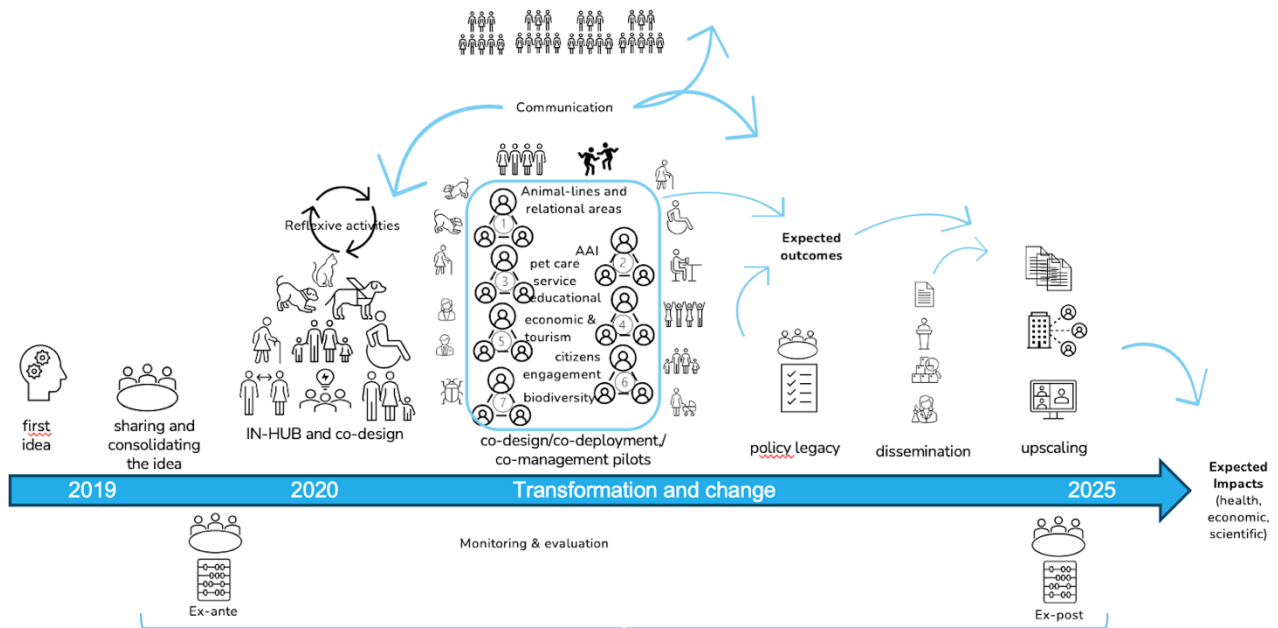
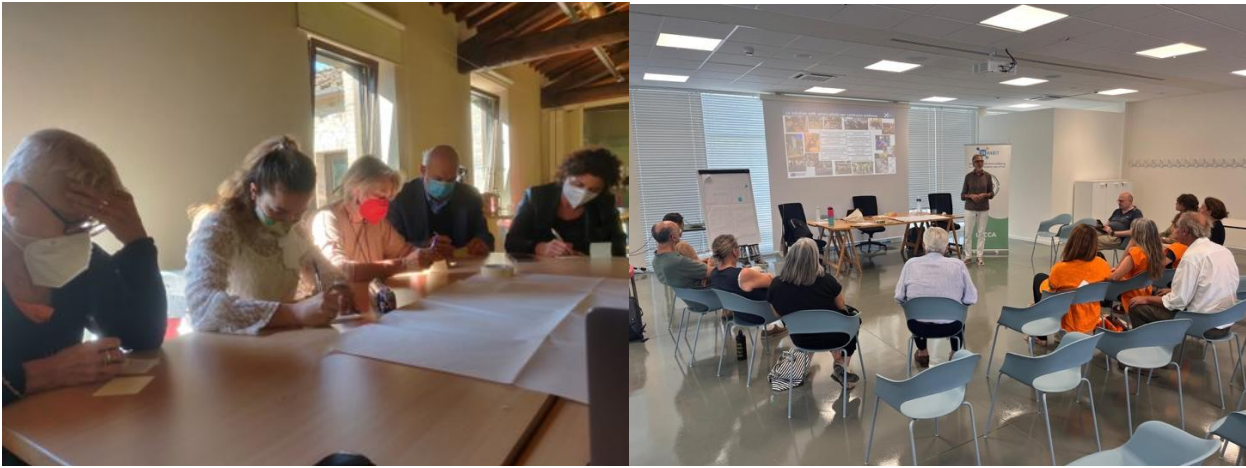
- Gaming is an increasingly effective tool for engaging diverse audiences in educational activities related to public and civic interests.
- Gaming can be easily adapted for a wide range of participants, producing positive outcomes in education, awareness, and community engagement.





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Results: single pilots, participatory process, upscaling activities



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