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CITIVERSE: AI SPARROW AS A MULTISPECIES PARTICIPATION AGENT FOR INCLUSIVE URBAN FUTURES

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ABSTRACT

As cities increasingly adopt the Citiverse paradigm, there is a growing need to move beyond human-centred urban planning and incorporate multispecies perspectives into participatory decision-making. This chapter explores the potential of a Multispecies Resilience AI Agent, represented by a House Sparrow avatar, to facilitate ecological awareness, inclusive participation, and urban resilience. The AI agent was developed to represent non-human perspectives and encourage residents to consider the needs of biodiversity within urban development processes. Findings are based on participatory workshops conducted in Tampere, Finland (N = 19), where participants engaged in conversations with the Sparrow AI within a digital urban environment. Thematic analysis revealed five key outcomes: ecological perspective-taking, emotional engagement, multispecies empathy, playful participation, and conversational trust. Participants used the AI agent not primarily as a decision-support tool, but as a conversational partner that enabled learning, reflection, and imaginative exploration of alternative urban futures. The results suggest that AI agents can act as effective mediators between citizens and ecological concerns, making non-human perspectives more accessible and relatable. The chapter argues that integrating multispecies AI agents into the Citiverse can support more inclusive, resilient, and ecologically aware approaches to urban planning and governance.

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1. Introduction

Cities are increasingly integrating extended reality (XR), digital twins, artificial intelligence (AI), and data-driven infrastructures into urban governance, planning, and citizen engagement (Simonofski, A., Johannessen, M. R., & Stendal, K. 2024; De Siqueira, G., Malaj, S., & Hamdani, M. 2022). These developments are often discussed under the emerging concept of the Citiverse, which envisions interconnected digital urban ecosystems that combine physical and virtual environments to support more inclusive, participatory, and sustainable urban futures. While early applications of the Citiverse have focused on enhancing urban services, decision-making, and citizen participation, they have largely inherited the human-centred assumptions of the broader smart city paradigm (International Telecommunication Union (ITU), 2024; European Commission, 2024).

The evolution of smart cities has shifted from technology-driven approaches toward more human-centred models that prioritise citizen needs, experiences, and service usability. Despite these advances, urban innovation remains predominantly anthropocentric. The perspectives, needs, and vulnerabilities of non-human species are rarely considered in planning and governance processes, even though biodiversity, ecosystem health, and human well-being are deeply interconnected. As cities face growing challenges associated with climate change, biodiversity loss, and rapid urbanisation, new approaches are needed that recognize cities as shared socio-ecological systems rather than exclusively human environments.

This growing recognition has led to increasing interest in multispecies participation, which seeks to incorporate the needs and perspectives of animals, plants, and ecosystems into urban decision-making. Since non-human species cannot directly participate in planning processes, novel forms of representation are required. Recent developments in artificial intelligence offer promising opportunities to address this challenge. AI agents can function as mediators, interpreters, and conversational partners, enabling citizens to engage with alternative perspectives and consider the consequences of urban development beyond human interests alone.

This chapter explores the potential of a Multispecies Resilience AI Agent, embodied as a House Sparrow (Passer domesticus) avatar, to support ecological awareness and participatory urban planning within the Citiverse. Developed in Tampere, Finland, the Sparrow AI was designed to represent non-human perspectives and facilitate dialogue about urban futures, biodiversity, and human-nature coexistence. Through participatory workshops, residents and stakeholders interacted directly with the AI agent and reflected on urban development from a multispecies perspective.

The study addresses the following research questions:

RQ1: How can AI agents representing non-human perspectives support inclusive and meaningful participation in urban planning within the Citiverse?

RQ2: How do participants experience and respond to conversations with a multispecies AI agent in discussions about urban resilience and biodiversity?

By examining interactions with the Sparrow AI, this chapter contributes to emerging research on multispecies participation, participatory AI, and planetary urbanism. It argues that AI agents can extend the scope of urban participation beyond human-centred perspectives and help foster more inclusive, ecologically aware, and resilient approaches to future city governance.

2. Theoretical Framework

The development of the Citiverse presents new opportunities to expand urban participation beyond human-centred perspectives and to reconsider cities as complex socio-ecological systems. This study draws on the interconnected concepts of multispecies resilience, planetary intelligence, and non-human agency to examine how artificial intelligence can facilitate broader forms of participation in urban planning and governance. Participatory urban governance requires mechanisms that recognise and represent non-human interests alongside human needs (Tomitsch et al., 2021).

2.1. Multispecies Resilience

Urban resilience has traditionally focused on the capacity of human communities and infrastructures to respond to environmental, social, and economic disruptions. However, contemporary resilience research increasingly recognises that cities are shared habitats where human well-being depends on the health and adaptive capacity of surrounding ecosystems and other species. Climate change, biodiversity loss, habitat fragmentation, and urban expansion affect both human and non-human populations, creating interconnected vulnerabilities and risks. Consequently, resilience can no longer be understood solely as a human concern but must be viewed as a multispecies challenge. Multispecies resilience conceptualises cities as interconnected socio-ecological systems in which human wellbeing is inseparable from the health and adaptive capacity of animals, plants, and ecosystems (Buckton et al., 2023; O'Donnell et al., 2026).

A multispecies resilience perspective emphasises the interdependence of humans, animals, plants, and ecological systems within urban environments. Rather than treating nature as a passive resource or background condition for human activities, this approach recognises non-human species as active participants in urban ecosystems. Urban green spaces, biodiversity corridors, pollinators, birds, insects, and other species contribute significantly to ecosystem health, climate adaptation, and overall urban liveability. Resilient cities therefore require planning approaches that acknowledge and support the needs of diverse forms of life while fostering conditions for coexistence and ecological regeneration.

2.2. Planetary Intelligence

The concept of planetary intelligence extends beyond conventional smart city models that prioritise efficiency, optimisation, and technological performance. While human-centred smart city frameworks have improved citizen participation and service delivery, they often remain focused on human interests and short-term urban objectives. Planetary intelligence broadens this perspective by recognising that human societies exist within larger ecological and planetary systems whose resilience depends on balancing human prosperity with biodiversity protection, climate stability, and ecosystem health (Raworth, 2017; Fanning & Raworth, 2025). Urban intelligence is therefore increasingly viewed as a means of supporting planetary health through integrated socio-ecological understanding and adaptive governance.

Planetary intelligence understands cities as components of interconnected socio-ecological networks rather than isolated technological systems. This perspective aligns with emerging sustainability frameworks that emphasise biodiversity protection, climate resilience, ecological regeneration, and social well-being as mutually dependent goals. Urban decision-making therefore requires consideration of both human and non-human interests, as well as the long-term consequences of development choices for ecosystems and future generations. Within the Citiverse, digital technologies and AI can contribute to planetary intelligence by helping citizens explore ecological interdependencies, visualise environmental impacts, and consider alternative futures that balance social and ecological needs.

2.3. Non-Human Agency

A central challenge in multispecies urban governance is how to represent the interests and perspectives of non-human entities. Animals, plants, and ecosystems are affected by planning decisions but cannot directly participate in consultation processes or express their needs through conventional democratic mechanisms. The concept of non-human agency addresses this challenge by recognising that non-human actors influence and shape urban environments, even if they do not communicate through human language.

Non-human agency challenges anthropocentric assumptions in urban planning by recognising that animals, plants, and ecosystems influence urban environments and are affected by planning decisions despite their inability to participate directly in human governance systems. Emerging approaches such as non-human personas, multispecies placemaking, and non-human agency frameworks seek to make these perspectives visible within decision-making processes.

Non-human agency does not imply that animals or ecosystems participate in the same way as humans. Rather, it acknowledges that their behaviours, ecological functions, vulnerabilities, and adaptive capacities have consequences for urban systems and should therefore be considered in decision-making processes. Recent research in participatory design and multispecies studies has explored methods for representing non-human perspectives through storytelling, personas, simulations, and digital technologies. These approaches seek to make ecological relationships more visible and understandable to human decision-makers (Gualtieri, G., Druta, O., van Wesemael, P. & Velzing, E, 2026; Tomitsch et al. 2021; Olsen, C. S, 2022).

Artificial intelligence offers a novel mechanism for facilitating such representation. AI agents can act as mediators that translate ecological knowledge into accessible and engaging forms of communication. By embodying the perspective of a particular species, AI agents can encourage users to reflect on urban environments from viewpoints that differ from their own. Rather than functioning as objective decision-makers, such agents create opportunities for dialogue, imagination, learning, and perspective-taking. Through these interactions, participants may develop greater awareness of ecological interdependence and consider how urban planning decisions affect both human and non-human communities.

Together, multispecies resilience, planetary intelligence, and non-human agency provide a conceptual foundation for examining AI-supported participation within the Citiverse. They shift attention from purely human-centred urban innovation toward more inclusive forms of governance that recognise cities as shared environments where the well-being of humans, animals, and ecosystems is fundamentally interconnected. This framework guides the analysis of the Sparrow AI case, exploring how conversational AI may support multispecies awareness, ecological empathy, and more resilient urban futures.

3. Multispecies Resilience AI Agent

3.1. Context: Biodiversity, Urban Futures, and the Voice of Nature

Cities are increasingly recognised as critical sites for addressing the intertwined challenges of biodiversity loss, climate change, and sustainable development. While urban areas have traditionally been designed primarily to support human activities, growing evidence demonstrates that urban resilience depends on the wellbeing of broader socio-ecological systems that include animals, plants, insects, soil organisms, and natural habitats. As urbanisation accelerates worldwide, the fragmentation of habitats, reduction of green spaces, and increasing environmental pressures threaten biodiversity, weakening the ecological systems upon which both human and non-human life depend.

Contemporary urban planning has therefore begun to move beyond purely anthropocentric approaches toward multispecies perspectives that recognize cities as shared environments. Multispecies resilience emphasises that human wellbeing cannot be separated from the wellbeing of other species and ecosystems. The quality of urban life is influenced not only by infrastructure, housing, and transportation networks but also by biodiversity, ecosystem services, and opportunities for meaningful human-nature interaction. Despite increasing recognition of these interdependencies, non-human species rarely have a direct presence within participatory planning processes. Urban consultations, citizen workshops, and decision-making forums generally represent human interests, while ecological concerns are mediated indirectly through experts, environmental reports, or regulations.

The emergence of artificial intelligence creates new opportunities to address this representational gap. Rather than functioning solely as decision-support systems, AI agents can be designed as participatory tools that enable citizens to engage with alternative perspectives and explore complex socio-ecological relationships. Within the broader framework of the Citiverse, conversational AI agents can support new forms of public engagement by translating ecological knowledge into accessible and interactive experiences. Such approaches align with emerging research on non-human representation and multispecies participation, which seeks to include the perspectives of animals, ecosystems, and nature within urban planning discussions.

To explore these possibilities, the City of Tampere developed a proof-of-concept Multispecies Resilience AI Agent, designed to represent the voice of urban nature through an interactive House Sparrow (Passer domesticus) avatar. The project builds upon previous research exploring non-human representation in participatory design and extends these ideas into an AI-supported urban planning context. The Sparrow AI was conceived not as a replacement for ecological expertise but as a conversational mediator capable of encouraging residents to reflect on urban life from a non-human perspective.

Biodiversity Challenge

Contemporary cities face interconnected challenges arising from biodiversity loss, climate change, and ongoing urbanisation. While urban areas are often designed primarily to meet human needs, increasing evidence demonstrates that the resilience and liveability of cities depend on the health of broader socio-ecological systems. Urban biodiversity contributes to ecosystem services, climate adaptation, mental well-being, and environmental stability, yet many species struggle to adapt to rapidly changing urban environments. Habitat fragmentation, reductions in green infrastructure, intensive construction, artificial lighting, and pollution have altered the conditions under which many urban species survive.

Traditional smart city approaches have largely focused on technological optimisation, efficiency, and human-centred service delivery. Although these objectives remain important, they frequently overlook the interests and needs of non-human species. Recent discussions within urban resilience research have therefore advocated for multispecies approaches that recognise cities as shared habitats rather than exclusively human spaces. Within these emerging frameworks, urban planning becomes not only a process of balancing the needs of diverse human stakeholders but also a means of considering the well-being of animals, plants, and ecosystems that form part of the urban environment.

Why Sparrow?

The House Sparrow (Passer domesticus) was selected as the representative species for the AI agent due to its close historical relationship with urban environments and its familiarity among residents. Sparrows have lived alongside humans for centuries and are commonly encountered in neighbourhoods, public squares, parks, and transportation hubs. Their recognisability makes them particularly suitable for public engagement initiatives, as participants can easily relate to the species and draw upon previous experiences of observing sparrows within everyday urban life.

The choice of the sparrow was also motivated by an important ecological paradox. Despite being widely perceived as abundant, House Sparrow populations have experienced significant declines in many European countries, including Finland. This decline highlights how environmental change can affect seemingly ordinary urban species in ways that remain invisible to many residents. Using a familiar species therefore offered an opportunity to stimulate discussion about hidden ecological vulnerabilities and the broader consequences of urban transformation.

From a participatory perspective, the sparrow also provided an accessible entry point into multispecies thinking. Unlike more exotic or controversial species, sparrows generally evoke neutral or positive emotional responses. Their perspective could therefore be used to encourage empathy and reflection without generating immediate resistance or polarisation. As an urban resident itself, the sparrow became a symbolic representative of non-human life within the city and a relatable ambassador for broader ecological concerns.

Tampere Context

The AI agent was developed within the context of Tampere, Finland, a city known for its investments in smart city development, urban innovation, digital twins, and citizen participation. Tampere's commitment to sustainable development, climate action, and urban resilience provides a suitable environment for experimenting with new forms of participatory technology.

The Multispecies Resilience AI Agent emerged as an extension of earlier work conducted through the Station District Digital Twin. Previous workshops revealed that residents consistently

valued green spaces, urban biodiversity, and opportunities for human-nature interaction when discussing future redevelopment plans. Participants frequently highlighted the importance of trees, vegetation, and multifunctional public spaces in creating an attractive and liveable station district (Autero et al. 2026).

At the same time, analysis of the urban digital twin workshops revealed a gap in existing participation processes. While residents were able to discuss their own needs and experiences, non-human perspectives remained largely absent from planning discussions. The development of the Multispecies Resilience AI Agent was therefore motivated by the question of whether artificial intelligence could provide a practical mechanism for introducing ecological perspectives into citizen participation processes and urban resilience planning (Autero et al. 2026).

3.2. AI Agent Design

Avatar

The Multispecies Resilience AI Agent was designed as an interactive digital House Sparrow avatar capable of engaging users in natural language conversations. The avatar combined visual animation, conversational AI capabilities, and ecological knowledge to create a realistic and approachable interaction experience.

A conscious design objective was to avoid portraying the sparrow as a scientific expert or authoritative decision-maker. Instead, the avatar functioned as a conversational participant representing a non-human viewpoint. Visual realism was considered important for supporting participant engagement and helping users perceive the sparrow as a living urban resident rather than simply a technological interface.

The avatar could be displayed within both a web-based environment and the Urban Digital Twin (UDT), allowing participants to encounter the sparrow in simulated urban locations such as green spaces, pedestrian routes, and redevelopment areas. Animation and movement behaviour were included to enhance perceived authenticity and support emotional connection during interactions.

Data Sources

The ecological perspective embedded within the AI agent was informed by multiple sources of information. Local biodiversity data, species information, urban ecology literature, and publicly available knowledge about House Sparrow behaviour and habitat requirements were incorporated during development. Particular emphasis was placed on ensuring that the agent reflected local conditions relevant to Tampere and the wider Pirkanmaa region.

Information provided by local ornithological organisations and biodiversity experts helped contextualise urban ecological issues affecting sparrows and other city-dwelling species. These data sources enabled the AI agent to discuss topics such as nesting opportunities, food availability, habitat quality, climate adaptation, seasonal changes, and urban biodiversity in a manner grounded in local realities.

The intention was not to create a perfect simulation of sparrow cognition, which would be impossible, but rather to develop a credible ecological representation capable of stimulating meaningful discussion and reflection.

Language Model

The conversational component of the system was built using a large language model (LLM) framework. The model was configured to communicate as a sparrow while maintaining factual consistency regarding ecological topics and urban biodiversity.

Special attention was given to conversational style. The agent was designed to speak in accessible language suitable for diverse audiences, including children, residents without ecological expertise, urban planners, researchers, and policymakers. Participants were encouraged to ask questions freely, enabling organic discussion rather than following predetermined scripts (Autero et al. 2026).

Multilingual capabilities were integrated into the system, enabling conversations in Finnish and English, while supporting additional languages when required. This flexibility contributed to

accessibility and allowed participants from diverse backgrounds to engage comfortably with the tool.

Rather than providing definitive answers, the AI agent often encouraged reflection by asking follow-up questions. This reciprocal dialogue helped transform interactions from simple information exchange into participatory conversations (Autero et al. 2026).

Integration with UDT

A key innovation of the project was the integration of the AI agent into the Station District Urban Digital Twin. This connection linked ecological perspectives directly to planned urban development scenarios.

Within the digital twin environment, participants could discuss planned construction projects, mobility infrastructure, public spaces, and green areas while simultaneously exploring how such changes might affect non-human species. The sparrow could therefore contextualise environmental concerns within specific urban locations, helping participants bridge abstract sustainability discussions with concrete redevelopment proposals.

The integration also expanded the role of the urban digital twin. Rather than functioning solely as a visualisation platform, the UDT became a participatory environment where multiple viewpoints, including non-human perspectives, could be explored and negotiated. This step moves digital twins closer to broader Citiverse visions in which immersive technologies, AI, and stakeholder participation become interconnected components of urban governance.

3.3. Workshops

Participants

The AI agent was evaluated through a series of participatory workshops conducted in Tampere during 2026. A total of 19 participants took part in eight facilitated workshop sessions.

Participants represented a diverse range of backgrounds and included residents, city employees, university researchers, and private-sector professionals. The age range extended from approximately nine to sixty years. Several participants possessed prior expertise in urban planning, sustainability, or technology, while others had little previous experience with artificial intelligence or biodiversity topics.

The diversity of participants provided an opportunity to evaluate the accessibility of the AI agent across different demographic groups, knowledge levels, and professional backgrounds.

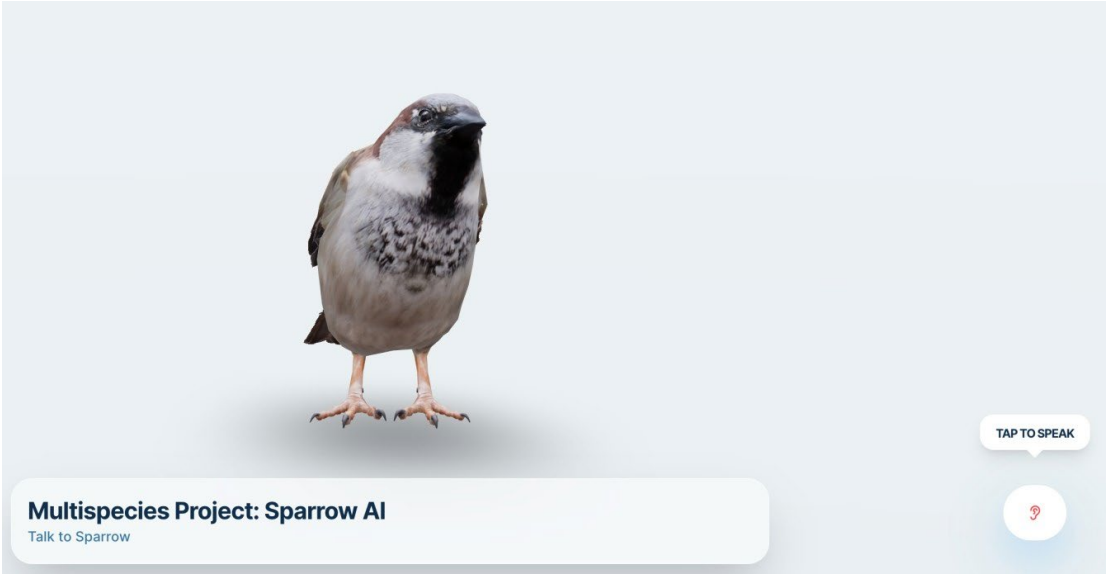
Methods

The workshops employed a participatory and exploratory design. Each session began with a short storytelling-based introduction explaining the broader context of biodiversity challenges, urban development, and the role of the sparrow within the city ecosystem.

Participants then interacted directly with the Sparrow AI through one-on-one conversations while other workshop attendees observed. The conversations typically lasted between fifteen and twenty minutes and covered a broad range of topics, including habitat quality, biodiversity, urban regeneration, climate impacts, and future city development.

Following the interaction phase, participants engaged in facilitated group discussions where they reflected upon the experience and shared reactions to the sparrow's perspective. This approach combined individual interaction with collective sense-making and reflection.

Picture 1. The interactive Sparrow AI agent, 2026.



Data Collection

Multiple forms of data were collected throughout the workshops. Sessions were recorded with participant consent using audio recording tools and Microsoft Teams. Researchers also documented observational notes regarding participant behaviour, emotional responses, interaction patterns, and discussion dynamics.

Additional qualitative feedback was gathered through post-session discussions and researcher observations. This multi-method approach enabled a rich understanding of participant experiences and provided insights into both verbal and non-verbal aspects of engagement.

Particular attention was paid to participants' emotional reactions, levels of curiosity, perceptions of credibility, understanding of biodiversity issues, and willingness to engage with multispecies perspectives.

Analysis

The collected data were analysed using a hybrid thematic analysis approach. Researchers conducted initial coding and interpretation, followed by AI-assisted analysis to identify recurring themes across workshop sessions. This combined human and AI-supported process enabled systematic examination of participant experiences while maintaining researcher oversight of interpretation.

Eight major themes emerged from the analysis. These included emotional engagement, ecological perspective-taking, conversational reciprocity, imagination and playfulness, perceived usefulness, trust and AI awareness, adaptive interaction, and the influence of interaction design on participation.

The findings suggest that participants rapidly moved beyond initial uncertainty and became actively engaged in conversations with the sparrow. The AI agent functioned less as a technical planning tool and more as a catalyst for ecological reflection, empathy, and learning. Participants used the interaction to explore the city from a non-human perspective, discuss alternative urban futures, and consider how biodiversity could be better integrated into planning and governance processes.

Overall, the workshops demonstrated that AI-mediated multispecies participation can provide a novel and accessible mechanism for incorporating ecological considerations into urban planning discussions. The results indicate that conversational AI agents may play an important role in fostering planetary awareness, strengthening citizen engagement, and broadening the scope of participatory urban governance beyond exclusively human concerns.

4. Findings

The thematic analysis of the eight participatory workshop sessions revealed that the Sparrow AI generated a distinctive form of participation centred on dialogue, ecological imagination, and multispecies perspective-taking. Although participants initially approached the interaction with varying levels of familiarity with artificial intelligence, urban planning, and biodiversity-related issues, common patterns emerged across the workshops. The findings suggest that the primary value of the Sparrow AI did not lie in providing expert knowledge or direct decision support but in facilitating reflection, learning, and engagement through conversation with a digital representation of a non-human urban resident.

4.1. Emotional Engagement

One of the strongest findings concerned the emotional responses elicited by the Sparrow AI. Participants frequently described a progression from initial uncertainty and awkwardness to curiosity, enjoyment, and sustained engagement. Many reported that speaking to a bird initially felt unusual, strange, or even slightly uncomfortable. Several participants noted that they were unsure what questions to ask and needed time to understand how to interact with the system.

However, this uncertainty typically disappeared within the first few minutes of conversation. As interactions developed, participants became increasingly relaxed and invested in the dialogue. Many smiled, laughed, or expressed surprise at the Sparrow's answers. The bird's familiar appearance and conversational style appeared to reduce barriers to engagement, enabling participants to approach ecological issues in a less formal and more accessible manner than is typical in urban planning consultations.

The emotional dimension of the interaction proved important because it encouraged continued participation. Rather than treating the encounter as a technical demonstration, participants often began to develop a sense of connection to the Sparrow's perspective. This emotional investment appeared to motivate deeper reflection on environmental topics and supported sustained dialogue throughout the workshop sessions.

Importantly, emotional engagement was not limited to positive feelings. Participants also expressed concern for the Sparrow's welfare when discussing habitat loss, urban development, climate impacts, and biodiversity decline. These reactions suggest that the AI agent was successful in making ecological vulnerabilities personally meaningful and relatable.

4.2. Ecological Perspective-Taking

The second major theme involved the ability of the Sparrow AI to facilitate ecological perspective-taking. Throughout the workshops, participants consistently attempted to understand urban development from the viewpoint of the bird. Questions focused on topics such as nesting sites, food availability, noise, pollution, safety, green spaces, and daily life in the city.

Participants often shifted from discussing their own needs as residents to considering how development projects might affect other species. This shift indicates that the Sparrow AI encouraged a temporary suspension of exclusively human-centred viewpoints. Instead of evaluating urban environments solely in terms of human mobility, convenience, or economic development, participants explored how urban change might be experienced by a non-human resident.

Many participants reported learning new information about urban biodiversity during the conversations. Several were surprised to discover that the House Sparrow is considered endangered in Finland despite its familiar presence in everyday life. This finding highlights the potential of conversational AI to make ecological knowledge more accessible and memorable than traditional information-sharing approaches.

The workshops also demonstrated that ecological learning was closely connected to empathy. Participants frequently expressed concern about habitat fragmentation, declining biodiversity, and the challenges faced by wildlife in urban areas. The Sparrow therefore functioned as a bridge between ecological information and emotional understanding, encouraging participants to view environmental issues through a relational rather than purely technical lens.

4.3. Reciprocal Dialogue

A central aspect of the Sparrow AI experience was the reciprocal nature of the interaction. Unlike conventional surveys, questionnaires, or public consultation exercises, the AI agent did not simply respond to participant questions. It also asked questions, invited reflection, and introduced new topics into the conversation.

Participants repeatedly identified this reciprocity as one of the most valuable elements of the experience. Rather than feeling like interview subjects or data providers, they became active conversational partners. Discussions developed organically, with participants often pursuing unexpected topics or asking follow-up questions prompted by the Sparrow's responses.

The conversational format appeared to support deeper engagement than traditional participation methods. Interactions often lasted between fifteen and twenty minutes without participants showing signs of disengagement. Several participants stated that the conversation felt more natural than completing surveys or attending conventional consultation events.

Reciprocity also contributed to a sense of dialogue rather than information transfer. Participants did not merely receive ecological knowledge but actively co-created meaning through discussion. The Sparrow's questions encouraged reflection on how personal behaviours, urban lifestyles, and planning decisions might influence biodiversity and environmental conditions.

This finding suggests that AI-supported participation may derive its value not from providing answers but from creating opportunities for meaningful conversation and shared reflection.

4.4. Playfulness and Imagination

Playfulness emerged as another defining characteristic of the Sparrow AI workshops. Participants frequently experimented with the system by asking humorous, speculative, or imaginative questions. Examples included asking whether alligators might live in Tampere's lakes, exploring hypothetical climate futures, testing language capabilities, or proposing alternative animal avatars.

This playful behaviour was not merely a source of entertainment. Rather, it often functioned as a mechanism for learning and exploration. By lowering the seriousness traditionally associated with planning processes, playfulness enabled participants to engage more freely with complex environmental issues.

Imaginative scenarios encouraged participants to consider alternative urban futures and speculate about new forms of human-nature coexistence. Discussions sometimes extended beyond sparrows to broader questions about biodiversity, ecosystem restoration, and the role of wildlife in future cities.

Children, in particular, responded positively to the interactive and playful nature of the tool, but similar patterns were observed among adults. Humour and curiosity created a welcoming participatory environment that encouraged sustained engagement across diverse demographic groups.

The findings indicate that imagination and playful exploration can serve important participatory functions by encouraging creativity, reducing psychological barriers, and fostering more open discussions about environmental challenges.

4.5. Perceived Applications

Participants identified numerous potential applications for the Sparrow AI beyond its original role within the workshop setting. While urban planning remained the most frequently discussed use case, participants envisioned broader applications spanning education, environmental communication, public engagement, and AI literacy.

Many participants viewed the Sparrow as an educational tool capable of helping children and adults learn about biodiversity, ecosystems, and environmental stewardship. Others suggested its use in schools, libraries, museums, and public exhibitions. Several participants believed similar AI agents could support environmental awareness campaigns by making ecological issues more relatable and engaging.

The Sparrow was also perceived as a communication tool capable of translating complex sustainability challenges into accessible dialogue. Participants noted that environmental information is often communicated through statistics, reports, or policy documents that many residents find difficult to engage with. Conversational AI offered an alternative approach by presenting information through a familiar and interactive interface.

Some participants proposed extending the concept to additional species, including pollinators, fish, bats, or urban trees. These suggestions indicate that participants viewed the Sparrow not as an isolated experiment but as part of a potentially broader ecosystem of multispecies participation tools.

4.6. Trust and AI Awareness

Participants were consistently aware that the Sparrow was an artificial intelligence system rather than a real bird. Rather than diminishing engagement, this awareness often became an important aspect of the interaction itself.

Many participants actively questioned the AI about its data sources, training processes, limitations, and credibility. These questions demonstrated that users maintained critical awareness while simultaneously engaging with the ecological perspective presented by the Sparrow. Participants generally appreciated transparency regarding the system's artificial nature and viewed openness as an important condition for trust.

Interestingly, emotional engagement and critical reflection coexisted throughout the workshops. Participants could empathise with the Sparrow's perspective while also recognising the technological mechanisms underlying the interaction. This balance suggests that trust in participatory AI may depend less on creating perfect illusions and more on fostering transparent and understandable interactions.

Several participants stated that knowing the Sparrow was AI actually increased their confidence in the exercise because it clarified the experimental and exploratory nature of the tool. Rather than expecting objective truth, participants approached the interaction as a method for stimulating reflection and discussion.

4.7. Adaptive Interaction

Participants frequently observed that the Sparrow appeared to adapt its responses to different contexts, questions, and user groups. The AI demonstrated sensitivity to conversational tone, providing serious answers to complex ecological questions while responding playfully to humorous prompts.

The workshops revealed strong engagement across different age groups, professional backgrounds, and levels of environmental knowledge. Children interacted enthusiastically with the character, while researchers and professionals often pursued more detailed discussions concerning urban ecology and planning.

Multilingual capabilities were also perceived positively. Participants switched naturally between Finnish and English during some sessions, and the system's ability to support multiple languages increased accessibility and inclusiveness.

Adaptive interaction appeared to play a significant role in maintaining participant interest. The ability to personalise responses and accommodate diverse conversational styles enabled the Sparrow to function as an inclusive participation tool suitable for a broad audience.

4.8. Engagement Conditions

The final theme concerned factors that influenced the overall quality of the interaction experience. Participants identified several conditions that either strengthened or weakened engagement.

Embodiment and realism emerged as important factors. The Sparrow's animated movements attracted considerable attention and contributed to the perception that the character represented a living being rather than a simple chatbot. Participants frequently evaluated the authenticity of the bird's movements and interactions with its environment.

The physical setting also influenced the experience. Individual laptop interactions were often perceived as more personal and immersive than larger public displays, which created greater psychological distance between participants and the AI agent.

Technical issues such as response delays were generally tolerated as long as the conversation remained coherent. Participants consistently prioritised meaningful interaction over perfect performance. This finding suggests that conversational quality may be more important than technical sophistication in determining success.

Together, these engagement conditions highlight the importance of carefully designing not only AI systems themselves but also the broader participatory environments in which they are deployed.

5. Discussion

5.1. Embodied Multispecies Participation

The findings suggest that the Sparrow AI enabled a distinctive form of embodied multispecies participation. Unlike traditional urban consultations, participants were invited to imaginatively inhabit the perspective of another species and consider how urban environments might be perceived from a non-human viewpoint.

Through dialogue, participants reflected on the Sparrow's needs, vulnerabilities, and daily experiences within the city. This process encouraged ecological empathy and expanded the range of perspectives considered during discussions about urban development. Rather than treating biodiversity as an abstract planning issue, participants engaged with environmental concerns through the imagined experiences of a living urban resident.

The results indicate that embodiment in participatory AI does not necessarily require immersive virtual reality or physical simulation. Embodied perspective-taking can also emerge through dialogue, imagination, and relational engagement. By encouraging participants to consider another way of inhabiting the city, the Sparrow created opportunities for more inclusive forms of urban reflection.

5.2. AI as a Relational Participation Tool

A second key finding concerns the role of AI as a relational rather than informational technology. The workshops demonstrated that participants did not primarily value the Sparrow because it provided expert answers or technical knowledge. Instead, its value emerged through conversation.

The AI functioned as a facilitator of dialogue, helping participants explore ecological issues, question assumptions, and imagine alternative futures. This contrasts with prevailing conceptions of AI as a decision-support system designed to optimise processes or provide recommendations.

The reciprocal nature of the interaction transformed participation from a process of information collection into a process of shared meaning-making. Participants became active contributors to conversations rather than passive recipients of information. This suggests that conversational AI may play an important role in future participatory processes by supporting reflection, learning, and relationship-building.

5.3. Towards Planetary Intelligence

The Sparrow AI also illustrates a broader shift from human-centred planning toward planetary intelligence. Traditional smart city approaches often prioritise efficiency, optimisation, and human needs, while ecological concerns remain secondary considerations.

The workshops demonstrated that participants were willing and able to engage with non-human perspectives when appropriate tools were provided. Conversations about sparrows frequently expanded into discussions about biodiversity, climate adaptation, ecosystem health, and future urban resilience.

This shift reflects an emerging understanding of cities as multispecies environments in which human wellbeing is inseparable from ecological wellbeing. Within this context, AI agents can serve as mediators connecting citizens with broader socio-ecological systems and encouraging more holistic approaches to urban governance.

The findings therefore suggest that future Citiverse developments should move beyond human-centred participation models and incorporate mechanisms that represent ecological and multispecies concerns alongside human interests.

6. Conclusion

This study explored the use of a Multispecies Resilience AI Agent, represented by a House Sparrow avatar, as a participatory tool for urban planning within the Citiverse. The findings demonstrate the potential of conversational AI to facilitate ecological awareness, multispecies empathy, and meaningful public engagement.

Three key contributions emerge from the research. First, AI agents can introduce non-human perspectives into urban planning and governance processes. By representing the viewpoint of an urban species, the Sparrow AI encouraged participants to consider environmental issues that are often overlooked in conventional consultation practices.

Second, conversational AI can support ecological empathy and participation. The workshops showed that dialogue, reciprocity, playfulness, and emotional engagement can foster learning and reflection while reducing barriers to participation.

Third, the future development of the Citiverse should incorporate multispecies and planetary perspectives. As cities increasingly rely on digital technologies for governance and participation, there is an opportunity to create systems that recognise humans, animals, and ecosystems as interconnected stakeholders within shared urban environments.

Overall, the Sparrow AI demonstrates how participatory artificial intelligence can move beyond efficiency-oriented smart city applications and contribute to more inclusive, relational, and ecologically aware forms of urban governance. By enabling residents to encounter urban life through a non-human perspective, AI agents offer a promising pathway toward a more resilient and multispecies future for cities.

Statement on AI use

During the preparation of this manuscript and related analysis, the authors have used the following GenAI tools: Microsoft Copilot 365 version 2.2026 for the purposes of proofreading, style suggestions, and supportive data analysis. The authors have reviewed and edited the output and take full responsibility for the content of this publication.

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