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EDITORIAL

State-of-the-Art AI for Smarter Cities: A Global Research Showcase

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EDITORIAL

We are living a new era of the Intelligent City lead by the urban and societal transformations we are experiencing today. While global urbanization keeps its growing pathways, the complexity we face in cities is nowadays conditioned by a convulse global context. Contemporary cities face complex challenges—geopolitical tensions, ageing populations, discrimination, inequality, and climate risks (United Nations Human Settlements Programme, 2024; OECD, 2025; Intergovernmental Panel on Climate Change (IPCC), 2023). Yet, they remain vital arenas for human interaction, innovation, and resilience. Urban areas concentrate creativity, foster social movements, and drive economic transformation (United Nations Human Settlements Programme, 2024). Despite fragmentation, cities offer platforms for intercultural dialogue, technological advancement, and inclusive governance (OECD, 2020). Frameworks like the New Urban Agenda (UN-Habitat III, 2016) and SDG 11 promote sustainable urban futures, emphasizing the city's role as a catalyst for positive change. Harnessing this potential requires integrated planning, equity-driven policies, and active civic participation, leveraged by technological support through strategies and specific tools.

Technological changes led by Artificial Intelligence and the spatialization and integration of Data by digital twins are transforming the way we approach urban challenges. The openness of these technologies to a dialogue with human beings, either through the interaction through natural language or the integration of data in visual representations of reality, is diluting the concept of interface, opening a new era in the relationship between technology, cities and their inhabitants.

This number of Street Art and Urban Creativity gathers the research developed within the session "State-of-the-Art AI for Smarter Cities: A Global Research Showcase" that took place within the Smart City Expo World Congress 2025 (6 Nov 2025). Different profiles from universities, research centers and companies, selected by a blind peer review process, shared their works and visions about the latest status-of-art of AI technologies applied to Cities. This breakout in the Congress responded to the growing need to provide cutting-edge knowledge about the latest application of Artificial Intelligence in Cities. Given the extraordinary speed of innovation around artificial intelligence, urban managers cannot wait for all these new technologies to be incorporated into commercial proposals, so they are looking to academia or research laboratories for information on how to transform them into viable projects. To this end, we launched a call for papers on Cities, Artificial Intelligence, and non-commercial products with a minimum technological maturity level

of 5-TRL5 (a minimum real-world proof of concept implemented in cities), originating directly from research. After the mandatory selection and quality-check process, we offered the next 18 proposals to be presented and contribute to this monographic. Cities are immersed to different degrees in the digital transformation of their internal and external resources, systems and human capital. The different stakeholders within the city are incorporating Artificial Intelligence in a variety of approaches and fields. Some of the shared proposals present integrated visions of cities while others focus on specific areas of development such as AI applications to the mobility field, cultural and social areas, public works and urban infrastructures, climate change challenges and integration of AI within digital twins. The role of local governments within this evolving context is key for articulating the initiatives, enhancing the transformative potential of AI and ensuring tangible benefits for citizenship without compromising the ethical principles.

Among the articles in this issue, one of them develops a conceptual model for the Analysis of AI strategies for cities, applied to different cities around the world, and proposed a collaborative exercise in the SCEWC session for validation of the tool: could this conceptual model of AI for cities integrate the research presented within this issue of SAUC. The proposal synthetises, based on an analysis of the strategies of different cities, a framework for stakeholders, objectives and strategical dimensions for defining a conceptual model. The five strategic dimensions integrate the actions present in the AI strategies of the various municipalities. Participating researchers and professionals collaborated to integrate their proposals into the conceptual model of an urban AI city strategy, resulting in a comprehensive vision of the integrating AI into a strategy applicable to cities. The different aspects addressed in the research papers were identified to establish links with the proposed dimensions of the AI city strategy (See Figure 1).:

Institutional Capacity and Ethical Governance: Urban initiatives are being developed to strengthen institutional readiness for AI deployment, focusing on ethical governance frameworks, capacity-building programs for public officials, and the establishment of oversight mechanisms to ensure responsible innovation. This dimension is key for the implementation of Artificial Intelligence within cities, bringing together the development of capacities for the use and implementation of the cities and ethics within this use. Various of the proposals present a transversal approach that connects different dimensions articulated between governance, ethics and strategic and sustainability policies, such as "*The Caatinga as a Living Lab: Climate, Resilience and Smart Cities: Lessons from Brazil's Semi-Arid Region for Global Urban Futures*" and the "*Preplanned City: BGI in Songdo: A Comparative Analysis with New York, Singapore and Vienna*". But also addressing very specific problems, the research "*Negevpulse: Crowdsourced Digital Mapping for Visibility in Unrecognized Bedouin Villages",* proposes an innovative approach bringing together the spatial and technological urban systems.

Data infrastructure and technological foundations: Municipalities are investing in foundational data infrastructures and technological enablers, including interoperable platforms, AI lifecycle management protocols, and support for research and development in urban AI applications. Each of the analysed strategies understand technological basis as a key dimension to be integrated among the different aspects. The paper "*An Insight into Traffic Analysis with Computer Vision: Leveraging Smart Infrastructure for Urban Traffic Flow Analysis*" approaches the technological integration within urban services.

Stakeholder Engagement and Ecosystem Development: Cities are fostering inclusive AI ecosystems by promoting multi-sectoral collaboration, engaging academic and civil society actors, and creating participatory platforms that enable citizen co-creation and feedback in urban innovation processes. This aspect is addressed by the holistic approach research such as the

"*Citizen-Centered Generative AI For Urban Transformation: The AI Copacabana Demo Case*" and the technological efficiency proposal for the use of "*SLMs for Natural Language Database Interaction with the SENSE Citiverse of Cartagena City".*

Strategic Policy adaptation and Sustainability: Urban AI strategies are being aligned with broader sustainability and resilience agendas through adaptive policy frameworks, integration with municipal planning instruments, and the implementation of monitoring systems for evaluating long-term impact. With an integrated vision, but nearer to the research papers about the cities of Caatinga and Songdo (mentioned above) bring together an integrated approach with a strong focus on sustainability for the use of Artificial Intelligence in cities.

In the limit with the next dimension, which combines spatial systems and urban services, proposals with a strong focus on sustainability "*Surplus: Strategic Urban Resource Planning Using Ldts and Unified Kqr Sustainability Metrics: A Methodology to Align Local Digital Twins with Measurable Outcomes*" and "*Enhancing the Reliability of Lorawan: Din Flood Alarm System*" integrate technology into the Urban spatial system.

Urban Intelligence for the Spatial System & Urban Services: to conclude, this is the area where most of the selected research papers are related to. Cities are increasingly launching projects that harness artificial intelligence to optimize core spatial systems—such as mobility, housing, infrastructure, and environmental services—through predictive analytics, sensor integration, and spatial data processing. For this integration, it is key to enable and maximize the impact of AI systems in cities, reducing obstacles and limitations such as the ones identified in the research "*Barriers to the Effective Implementation of AI in Predicting Public Works*". Mobility proposals, related to urban services such as the "*AI-Based Prediction Models for Urban Parking Availability: A Case Study of Valencia*", "*Modelling and Analytics Tools for Electric Mobility: Use-Cases at the Urban Level*" or "*Bike-Sharing Demand Forecasting Using Machine Learning: The Use Case of Valladolid, Spain*". All these research cover aspects that bring technologies from urban services to spatialization, as expressed in Figure 1.

Finally, citizen-centric proposals highlight the importance of the aligning technological implementation, urban services and ethics in urban policies that focus on vulnerable social groups, focusing the elderly and children: "*Atenea Artificial Intelligence for Elderly People: No More Buttons, Menus or Tactile Screens. With Atenea, by a Voice Conversation, Everything Is Possible*" and "*Evaluating Spatial Pedestrian Safety in Riyadh's School Zones Using Multiple Linear Regression and Machine Learning: A Data-Driven Approach*", offering innovative tools for inclusion. Combining cultural services with accessibility to art, the proposals "*Nextgenguides: AI-Enhanced Multimedia Navigation and Content Creation for Cultural Heritage*", "*Augmented Reality Reconstruction of Deteriorated Art*" and "*Object Recognition and Conversational AI in Real-World Contexts: Enhancing Museum Experiences Through Interactive Systems bring together the technological systems to urban services*" provide an added value to culture gathering within cities, but also in wider territories.

Conclusions

The adoption of AI in new intelligent city applications is accelerating across various fronts. From deep learning for designing predictive mobility algorithms to digital twins for monitoring and simulating any urban physical dimension, while from a more human perspective, generative AI opens new dimensions of communication and integration for vulnerable groups, and mixed reality proposes a revolution in the discovery of art and historical heritage, generating a new combined physical-digital (*phygital*) way of understanding culture and tourism. The times from the launch of new algorithms and models to their adoption by research labs are becoming increasingly shorter, making the time-to-market incredibly dynamic. Generating frameworks and strategies

for the integration of these solutions and their alignment with global and local objectives become key for maximizing their impact, ensuring their sustainable and ethical coherence. Cities see that research can provide rapid answers and allow them to access the benefits of the latest proposals almost immediately, and they are beginning to discover models specifically adapted to their needs, develop and coordinating their own technologies, and very soon, their own Agentic AI—topics we will certainly cover next year.

Figure 1: Integration of the different research papers within the AI City Strategy proposal: 1. "The Caatinga as a Living Lab: Climate, Resilience and Smart Cities: Lessons from Brazil's Semi-Arid Region for Global Urban Futures". 2. "Preplanned City: BGI in Songdo: A Comparative Analysis with New York, Singapore and Vienna". 3."Negevpulse: Crowdsourced Digital Mapping for Visibility in Unrecognized Bedouin Villages". 4. "An Insight into Traffic Analysis with Computer Vision: Leveraging Smart Infrastructure for Urban Traffic Flow Analysis". 5. "Citizen-Centered Generative AI For Urban Transformation: The AI Copacabana Demo Case" .6. "SLMs for Natural Language Database Interaction with the SENSE Citiverse of Cartagena City". 7. "Surplus: Strategic Urban Resource Planning Using Ldts and Unified Kqr Sustainability Metrics: A Methodology to Align Local Digital Twins with Measurable Outcomes" .8."Enhancing the Reliability of Lorawan: Din Flood Alarm System". 9. "Barriers to the Effective Implementation of AI in Predicting Public Works" . 10. "AI-Based Prediction Models for Urban Parking Availability: A Case Study of Valencia". 11. "Modelling and Analytics Tools for Electric Mobility: Use-Cases at the Urban Level" . 12. "Bike-Sharing Demand Forecasting Using Machine Learning: The Use Case of Valladolid, Spain". 13. "Atenea Artificial Intelligence for Elderly People: No More Buttons, Menus or Tactile Screens. With Atenea, by a Voice Conversation, Everything Is Possible". 14. "Evaluating Spatial Pedestrian Safety in Riyadh's School Zones Using Multiple Linear Regression and Machine Learning: A Data-Driven

Approach". 14."Nextgenguides: AI-Enhanced Multimedia Navigation and Content Creation for Cultural Heritage",. 16. "Augmented Reality Reconstruction of Deteriorated Art" . 17. "Object Recognition and Conversational AI in Real-World Contexts: Enhancing Museum Experiences Through Interactive Systems bring together the technological systems to urban services". Source: authors elaboration, 2025.

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References

Department of Economic and Social Affairs UN. (n.d.). *Goal 11*. Retrieved November 17, 2025, from https://sdgs.un.org/goals/goal11

Intergovernmental Panel on Climate Change (IPCC). (2023). *Sixth Assessment Report—IPCC*. https://www.ipcc.ch/assessment-report/ar6/

OECD. (2020). *Smart Cities and Inclusive Growth*. https://www.oecd.org/en/publications/smart-cities-and-inclusive-growth_8a4ce475-en.html

OECD. (2025). Cities for All Ages. *OECD Urban Studies*. https://doi.org/10.1787/f0c8fefa-en

UN-Habitat III. (2016). New Urban Agenda. *Conference on Housing and Sustainable Urban Development (Habitat III)*.

United Nations Human Settlements Programme. (2024). *World Cities Report 2024: Cities and Climate Action*. United Nations. https://doi.org/10.18356/9789211065602