EXECUTIVE SUMMARY

AI-POWERED CITIES OF THE FUTURE

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In collaboration with:

ThoughtLab

AI COMES INTO FOCUS

Artificial intelligence (AI) is revolutionizing how cities analyze data, create content, and perform tasks, allowing them to boost productivity, drive efficiencies, and better meet the needs of residents and citizens.

In the future, AI will transform most urban services, from infrastructure and transportation to public safety, health, and the environment. AI will become widely accessible to businesses and residents across cities. As AI advances, some experts believe it will become an urban utility on par with others like electricity and water.

Joining forces to analyze AI usage in cities

To learn how AI will reshape cities, ServiceNow, Deloitte, NVIDIA, and ThoughtLab came together to conduct a pioneering study on the AI plans, investments, and practices of 250 cities around the world. The study examined how these cities harness all varieties of AI, from machine learning and robotic process automation to generative AI (GenAI) and now Agentic AI.

The research covered cities of all sizes located in both developed and developing markets. In addition to an in-depth quantitative survey, ThoughtLab conducted interviews with city leaders and AI specialists in business and academia. This report is the result of that research, and it is designed to serve as a roadmap to becoming an AI-powered city of the future.

THE RISE OF THE AI-POWERED CITY

ACROSS CITIES, THE AI RACE IS ON

Cities globally are sprinting to adopt AI, with many seeing it as a driver of greater productivity and efficiency and, ultimately, economic growth and competitiveness. Over half of cities surveyed now use traditional AI either selectively or widely, and in three years, the percentage will jump to 83%.

The rise of GenAI

GenAI will be a game changer for cities. Unlike earlier forms of AI, GenAI will empower cities to draw on vast sets of data in any format, easily retrieve information, and generate content and analysis instantaneously. Agentic AI will take this ability to the next level by enabling AI technology to take actions on this information without human guidance.

While this new form of AI holds enormous promise for cities, it also exposes them to greater dangers. To mitigate these risks, cities are testing GenAI use cases in-house and setting policies for responsible use before rolling out AI solutions to external stakeholders. As urban leaders fine-tune their plans, the percentage of cities actively employing GenAI is expected to more than triple over the next three years.

Source: AI-powered cities survey

Cities are embracing traditional AI to supercharge smart city initiatives

56%

are selectively or widely using AI today.

Over the next three years, the use of traditional AI will become pervasive

83%

of cities will be selectively or widely using AI over the next three years.

Most cities are already on their GenAI journey

87%

of cities are now planning, piloting, or using GenAI.

Cities plan to ramp up their active use of GenAI

3x

is the increase in the share of cities selectively or widely using GenAI over the next three years—from 18% to 59%.

IDENTIFYING AI LEADERS

To assess AI best practices, ThoughtLab created a maturity model that identified the most advanced cities in the use of AI. The model was based on a city's progress across four pillars of excellence:

1) The level of traditional and GenAI usage in the city
2) AI usage across multiple urban areas
3) The number of controls to ensure responsible AI usage
4) The future-ready foundation needed to succeed with AI

ThoughtLab's economists developed an overall AI maturity score and classified each city into three categories: AI leaders, AI advancers, and AI adopters.

Of the 250 cities surveyed, 20% were classified as leaders, 60% as advancers, and 20% as adopters.

Source: AI-powered cities survey

AI leaders by region

North America

Austin	New York
Boston	Orlando
Chicago	Quebec
Denver	San Antonio
Edmonton	San Francisco
Los Angeles	San Jose
Montreal	Seattle
New Orleans	Toronto

Europe

Amsterdam	Madrid
Barcelona	Marseille
Berlin	Montpellier
Bratislava	Paris
Dublin	Sofia
Edinburgh	Stockholm
Helsinki	Tallinn
Ljubljana	Vienna

Asia Pacific

Beijing
Guangzhou
Hong Kong
Lucknow
Melbourne
Seoul
Sydney
Taipei
Tokyo

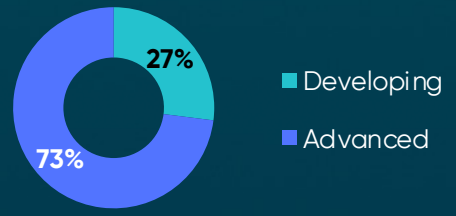
Latin America

Curitiba	Niteroi
Mexico City	Sao Paulo

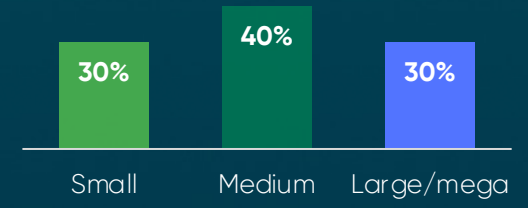
Middle East and Africa

Dammam	Istanbul
Harare	Kuwait City

AI leaders by level of economic development



AI leaders by population size



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AI LEADERS APPEAR TO COPE WITH CHALLENGES MORE EFFECTIVELY

Cities around the world face a host of challenges, from climate change, public health, and high crime to affordable housing, aging infrastructure, and inadequate transportation.

By leveraging AI technologies, cities can overcome these challenges more effectively and improve the overall quality of life for residents. Seventy-eight percent of AI leaders surveyed said they were prepared to deal with these urban issues, compared to 50% of cities beginning to use AI.

Crucially, AI upgrades the resilience of cities, helping them monitor and predict disruptions and recover from them quicker. Such disruptions range from environmental and supply-chain shocks to geopolitical and socioeconomic upheavals. In all cases, far more AI leaders reported having high resilience than their peers.

Harnessing AI can help cities to prepare their urban domains for the future. With a citizen-centric focus, it is not surprising that AI leaders have made the most progress in living, health, and trust, followed by safety, security, and resilience, and then environment and sustainability. Progress has been slightly slower for mobility and transportation and especially urban infrastructure.

Source: AI-powered cities survey

% of cities reporting high resilience by type of urban stressor

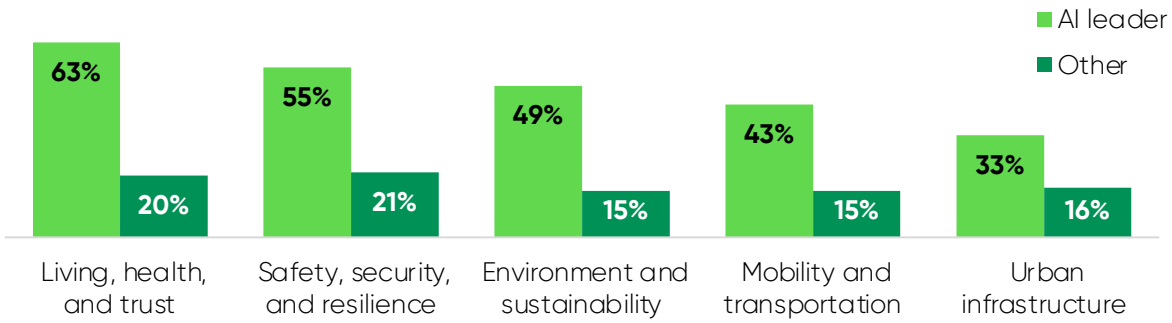
	AI leader	Other
Environmental	**71%**	**42%**
Supply chain	**69%**	**30%**
Infrastructure	**67%**	**37%**
Health and safety	**67%**	**45%**
Technology	**61%**	**41%**
Geopolitical	**49%**	**26%**
Socioeconomic	**47%**	**23%**

78%

of AI leaders are prepared to deal with urban challenges vs.

50% of AI adopters.

Progress made in preparing urban domains for the future
(significant progress)



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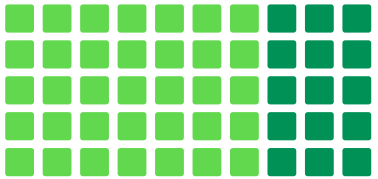
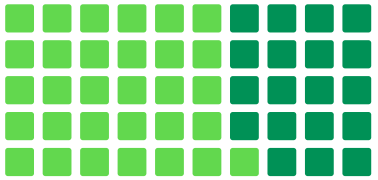
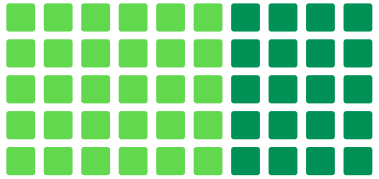
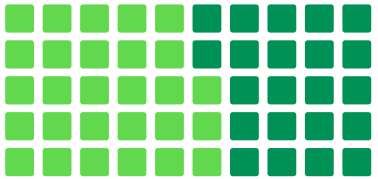
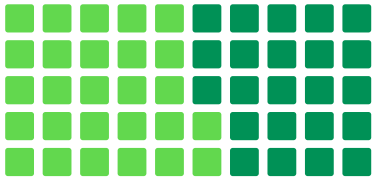
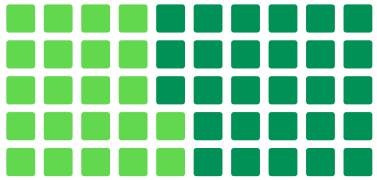
AI LEADERS HARNESS AI ACROSS DOMAINS

Urban domain	% of AI leaders actively using AI	Top use cases	Cities ahead in domain
Government operations One of the first-order uses of AI is to boost efficiency. So, it is hardly surprising that AI leaders employ AI to streamline government operations and improve management.	 **71%**	1. Analyze huge volumes of data 2. Document digitization and processing 3. Continuous service improvements 4. Visualize models for urban development 5. Answer resident questions	1. Daegu, S. Korea 2. Denver, US 3. Guangzhou, China 4. Jaipur, India 5. Melbourne, Australia
Safety, security, and resilience Urban security is one of the top priorities for cities. AI leaders make extensive use of AI to monitor, predict, and respond to urban risks and crime.	 **63%**	1. Camera optimization 2. Video analysis 3. Crime forecasting 4. Natural disaster response 5. Emergency response resource allocation	1. Hong Kong, China 2. Lucknow, India 3. Madrid, Spain 4. Perth, Australia 5. Susono, Japan
Living, health, and trust AI leaders are turning to AI to improve the lives and health of their residents and increase their trust in government.	 **61%**	1. Personalized chatbot assistance 2. Track and analyze health trends 3. Risk factor identification 4. Intelligent self-service portals 5. Social service administration	1. Charlotte, US 2. Denver, US 3. Helsinki, US 4. Jaipur, India 5. Taipei, Taiwan

Source: AI-powered cities survey

AI LEADERS HARNESS AI ACROSS DOMAINS

Urban domain	% of AI leaders actively using AI	Top use cases	Cities ahead in domain
Mobility and transportation AI-enabled mobility is becoming table stakes for AI leaders. Most use AI to improve public transportation routing, traffic management, and flow prediction.	 **57%**	1. Traffic management and flow prediction 2. Smart parking management 3. Intelligent public transportation routing 4. Transportation management and analysis 5. Predictive maintenance and planning	1. Ankara, Turkey 2. Boston, US 3. Hobart, Australia 4. Porto, Portugal 5. Takamatsu, Japan
Urban infrastructure The use of AI to manage urban infrastructure is becoming ubiquitous among AI leaders.	 **55%**	1. Smart infrastructure design 2. Predictive maintenance 3. Network optimization 4. Sensor-based condition monitoring 5. Digital infrastructure security	1. Ankara, Turkey 2. Cork, Ireland 3. Mexico City, Mexico 4. Surabaya, Indonesia 5. Tangshan, China
Environment and sustainability Nearly half of AI leaders actively leverage AI technology, together with digital twins, to enhance sustainability and climate resilience.	 **45%**	1. Water management and monitoring 2. Waste management and recycling 3. Monitoring carbon emissions, air quality 4. Optimize energy and electricity use 5. Design, manage smart buildings	1. Abidjan, Cote d'Ivoire 2. Amsterdam, Netherlands 3. Melbourne, Australia 4. Ostrava, Czech Republic 5. Paris, France

Source: AI-powered cities survey

THE MANY BENEFITS OF USING AI

Increased efficiency and cost savings:
Detroit, US: "Leveraging AI for government management and operations creates numerous benefits, including cost savings, improved accuracy, heightened transparency, and more effective policy creation."

Higher growth and competitiveness:
Doha, Qatar: "We are using AI to foster innovation, which in turn is driving economic growth and competitiveness."

Improved public safety:
Madrid, Spain: "By incorporating AI into a video analysis system, we can identify high-crime areas, accident-prone locations, and other areas that demand attention. This enables us to focus public safety efforts more efficiently."

Better utilization of resources:
Fukuoka, Japan: "The use of energy-efficient streetlights with AI-based sensors saves 20% to 25% on electricity."

Reduced risks and fraud:
Aracaju, Brazil: "We use AI to increase cybersecurity. It analyzes network activity to identify and mitigate cyberattacks on critical city infrastructure."

Better planning and forecasting:
Murcia, Spain: "Predictive maintenance and planning allow us to reduce the need for costly emergency repairs and extend the lifespan of urban infrastructure assets."

Enhanced sustainability:
Shijiazhuang, China: "Using AI in trash management improves recycling, lowers waste disposal costs, and enhances efficiency."

Increased resident engagement and support:
Ankara, Turkey: "Customer-service chatbots are the most effective AI use case for our city. They provide 24/7 support and reduce customer wait times."

Optimized transportation:
Seattle, US: "Smart parking management has been effective in alleviating congestion, cutting down on parking durations, and enhancing air quality. Early results show the potential to slash stops by 30% and CO2 emissions by 10%."

Improved health and wellness:
Chicago, US: "Disease outbreak prediction is the most effective AI use case right now. AI analyzes historical disease data, which helps to significantly reduce the number of cases and fatalities in the city."

Source: AI-powered cities survey

THE PATH TO AI LEADERSHIP

EIGHT AI ACTION STEPS

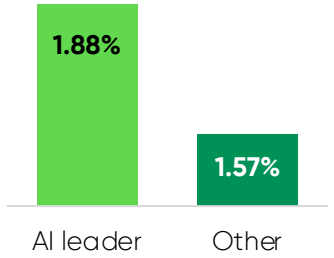
01

Make a top-down commitment

AI leaders have a vision and plan for transforming their economies and urban activities through AI, backed by an adequate budget. Often these plans begin at the national level and cascade down to cities. Thanks partly to such national programs, AI leaders surveyed enjoy bigger technology budgets to support their AI ambitions. Over the next three years, AI leaders will outspend other cities on data and technology.

Expected per capita tech spending, next 3 years

Expected tech spending as % of budget, next 3 years



Source: AI-powered cities survey

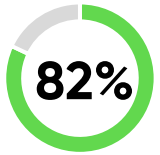
02

Build a modern IT foundation

The road to AI leadership starts with gathering and integrating data from urban domains and external sources, and then putting the data on a secure, cloud-based platform. With automated and streamlined processes in place, these modernized IT platforms make it easy to scale AI solutions and provide them widely to urban stakeholders.

of AI leaders surveyed are midway or advanced in building an integrated data management system.

of AI leaders surveyed are midway or advanced in creating a modern IT platform.



of AI leaders surveyed are midway or advanced in automating and optimizing workflows.

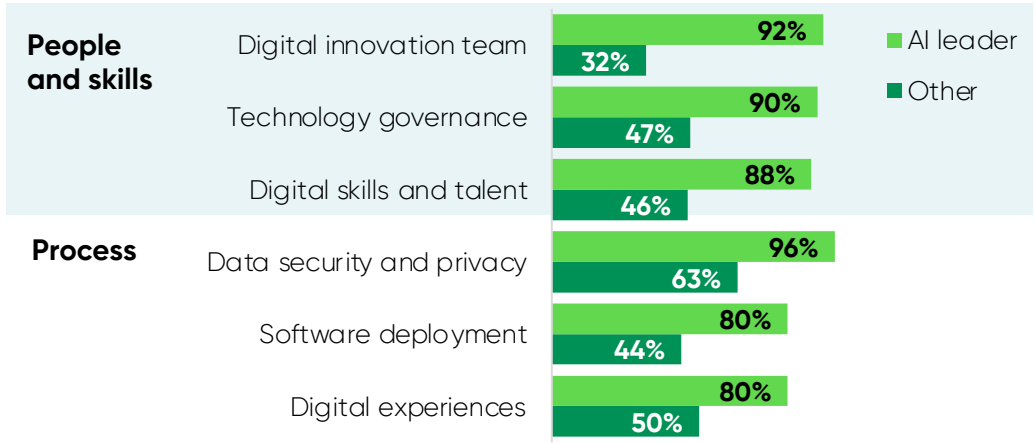
EIGHT AI ACTION STEPS

03

Develop AI skills, talent, and processes

Talent gaps and inefficient processes are common speed bumps on the road to AI success. AI leaders work hard to develop the skills, talent, processes, and culture to take AI to the next level. Six out of 10 leaders surveyed have appointed a head of AI.

Mid- or advanced implementation



Source: AI-powered cities survey

04

Cultivate an innovation ecosystem

AI leaders work with more partners across the private, public, and nonprofit sectors than other cities. They share AI expertise and resources, build access to data and talent, and align strategies and policies with other government players.

Top partners of AI leaders

Private sector	Startups and technology firms	**86%**
	Financial institutions	**63%**
	Corporations/businesses	**63%**
Not-for-profit	Academic/research institutions	**73%**
	Nongovernmental and civil society	**51%**
	Local nonprofits/foundations	**45%**
Public sector	State/provincial government	**76%**
	Other cities or city networks	**69%**
	Public utilities	**57%**

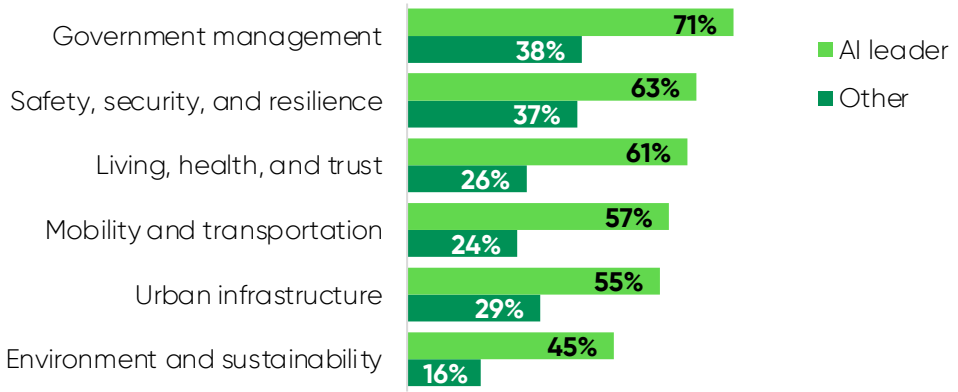
EIGHT AI ACTION STEPS

05

Transform domains with AI and GenAI

AI leaders are fast tracking AI adoption: 76% of those surveyed make wide use of AI today and 90% will make wide use over the next three years. They are doing the same with GenAI: 18% already make wide use of it today, and more than double that (41%) will do so over the next three years. They are scaling AI solutions across every urban domain.

Percent of cities actively using AI by domain



Source: AI-powered cities survey

06

Unlock value by combining AI with other technologies

AI leaders are also ahead of their peers in deploying other critical technologies. AI leaders are increasingly combining these technologies with AI to supercharge performance and create solutions that were previously unimaginable.

Technologies used extensively by AI leaders

1. Cloud	**92%**
2. Biometrics	**90%**
3. Cybersecurity tech	**90%**
4. Chatbots	**90%**
5. IoT	**90%**
6. Data analytics	**90%**
7. Automation	**88%**
8. Mobile apps	**86%**

EIGHT AI ACTION STEPS

07

Keep data security top of mind

As cities ramp up their AI programs, they often boost their use of data from connected IoT devices and other sources, making their systems highly susceptible to security and data breaches. To eliminate these vulnerabilities, AI leaders leverage seven key cybersecurity tools.

Top 7 cybersecurity tools used by AI leaders

Data backup and recovery systems	**80%**
Cybersecurity defenses, such as encryption	**80%**
Automated risk monitoring and detection	**73%**
Data loss prevention tools	**71%**
Identity and access management tools	**67%**
Compliance management/RegTech	**67%**
Security audits, penetration testing	**67%**

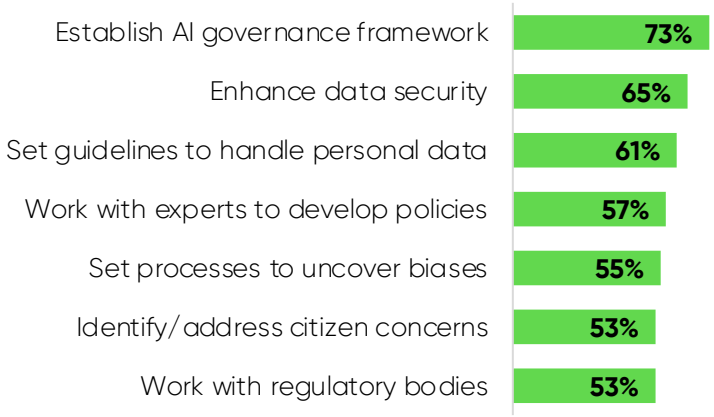
Source: AI-powered cities survey

08

Enable responsible use of AI

While AI creates huge opportunities for cities, it also raises broader concerns for residents. These include the potential for bias and discrimination, data breaches, misinformation, job displacement, and loss of privacy. To mitigate these risks, AI leaders take multiple actions to build robust AI governance.

Top steps AI leaders take to build AI governance



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STEPS FORWARD

Jumbi Edulbehram

Global Business Development, Smart Cities and Spaces, NVIDIA

Becoming an AI-powered city is an ongoing process. It starts with using AI to do existing things better and then evolves to doing things that could not be done before. To start this journey, city leaders should consider eight key steps:

1. Educate the city's workforce on AI technology.
2. Work with AI thought leaders to learn about the art of the possible.
3. Study the AI success stories and use cases from other cities.
4. Target use cases that have meaningful impact and can be customized with city data.
5. Identify internal resources and augment them with AI expertise from partners and service providers.
6. Build data-intensive foundation models, or customize existing ones, to acquire, refine, analyze, and safeguard data.
7. Assess infrastructure, architecture, and operating models to support AI use, while considering the impact on costs and energy consumption.
8. Use governance frameworks, tools and best practices to ensure that AI is adopted responsibly across the city.

William D. Eggers

Executive Director, Deloitte US

Focus on mission outcomes. City leaders should focus on what part of the mission the technology helps them achieve. The more success can be measured through a mission lens, the more competitive tech projects can be in a tight budgeting process.

Develop a behavior-first approach to AI transformation. Technology transformation does not happen in silos; when one area makes a change, other areas throughout the organization may also have to change to keep the whole system operating smoothly. But organizations can't typically change without convincing their people to also adjust and adopt behaviors that support the larger organizational transformational efforts.

Build with scale in mind. One key tenet of scaling successful innovations is pivoting toward data- and evidence-based decision-making. There should be intentionality in selecting the right pilot, establishing measures of success, developing a scaling road map, and growing a network of partners to scale solutions.

Nick Holmes

Global Director, Sustainable Infrastructure and Transportation, ServiceNow

AI-powered cities use scalable digital foundations that are flexible, can be implemented in a modular way, and can work alongside or on top of legacy systems. A great end-to-end IT platform will leverage existing data stores within AI-powered workflows. It will protect your data from and ensure that AI is available in a way that supports, rather than limits, human interaction.

Just like physical infrastructure, digital infrastructure needs to be fit for future purpose. To prepare for the AI era, cities need a single, intelligent platform—one that can responsibly and securely harness data from residents, transportation, the environment, and more to bring AI into every corner of the city. By empowering rather than limiting human interactions, AI can free people to do the work that truly matters.

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For more information, visit servicenow.com

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More information can be found at nvidia.com

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