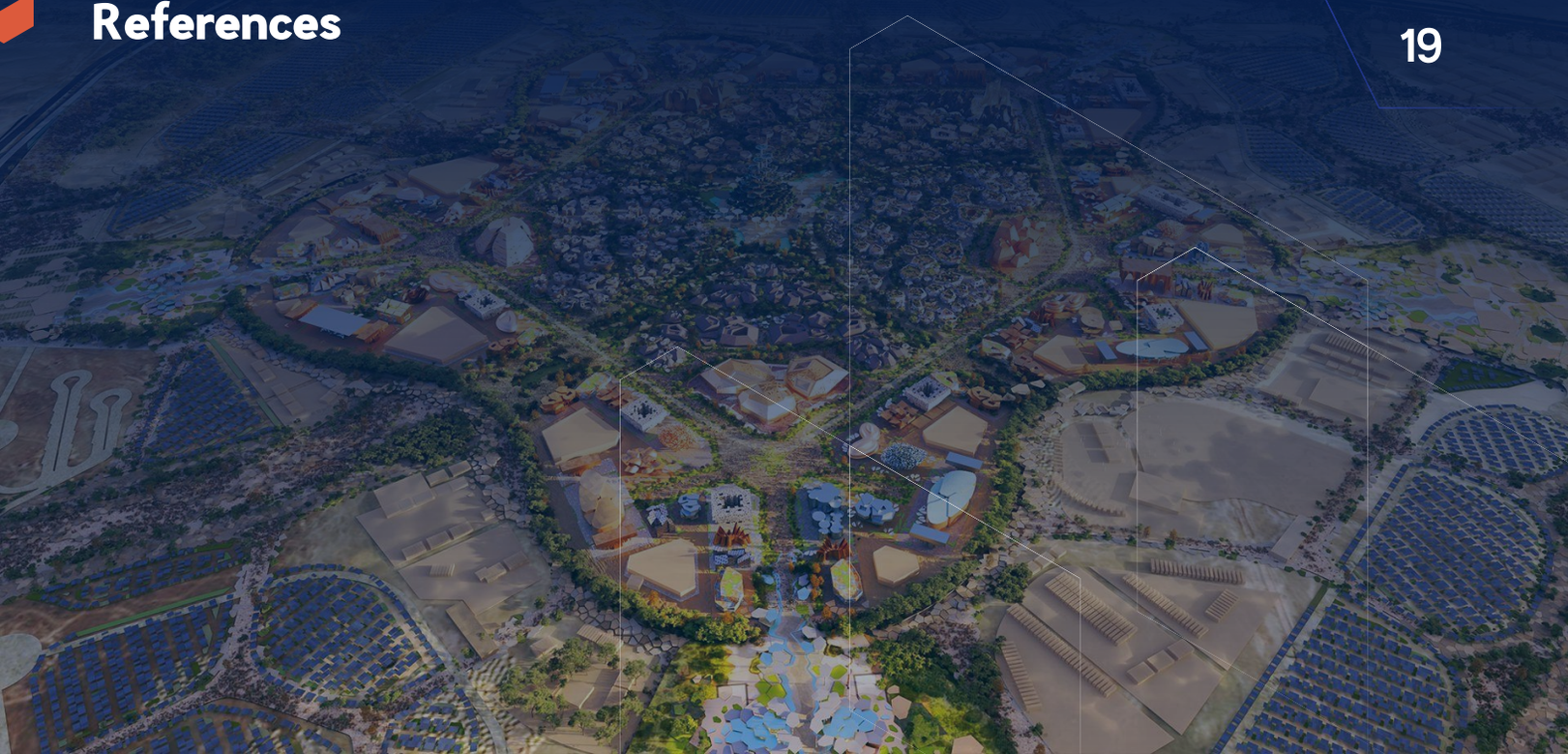
Expo 2030 Riyadh

Delivering a Smart, Integrated, and Seamless Global Event



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Foreword

Riyadh Expo 2030 Showcases a New Model of National Transformation

Riyadh Expo 2030 will be one of the decade's most significant global gatherings and a milestone in Saudi Arabia's transformation journey. The Expo demonstrates how integrated digital infrastructure, intelligent mobility, and advanced service delivery models can operate at national scale, positioning Saudi Arabia as a leader in next gen smart city systems under Vision 2030.

Modern Expo Delivery Requires Integrated Digital and Operational Models

Global benchmarks show a shift toward connected event environments that rely on real time data, interoperable platforms, and immersive digital journeys. Managing millions of visitors demands unified operating models that combine technology, operations, and experience design to deliver secure, seamless, and high-quality interactions at every touchpoint.

Elm's Proven Experience in National-Scale Digital Platforms and Integrated Visitor Operations

As Saudi Arabia prepares for Expo 2030, Elm is well positioned to support the event's digital backbone and operational foundations. Elm's experience running secure data environments, national platforms, and large-scale visitor services provides capabilities directly relevant to the Expo context, enabling a resilient, coordinated, and reliable experience for global audiences.



Riyadh Expo 2030 as a Milestone of Saudi Arabia's Vision 2030 Ambition

01



Riyadh Expo 2030 in the Context of Saudi Arabia's National Ambition

Expo 2030 Riyadh represents a major milestone in Saudi Arabia's transformation under Vision 2030, reflecting institutional, technological, and infrastructure progress. As the Kingdom's first World Expo, themed "The Era of Change: Together for a Foresighted Tomorrow," it demonstrates national capability to host a complex global event and reinforces commitment to international engagement.

The Three Key Sub-themes of the Expo 2030 Riyadh

Transformational Technology

AI, robotics, and future mobility powering next gen smart cities.

Sustainable Solutions

Climate adaptation, clean energy, and ecosystem regeneration.

Prosperous People

Expanding access to health, wellbeing, education, and opportunity.

Expo 2030's Alignment with Pillars of Vision 2030

01

A Vibrant Society

Creates cultural, recreational, and visitor ecosystems; promotes global cultural exchange.

02

Thriving Economy

Drives tourism, logistics, and service-sector growth; attracts global investment.

03

An Ambitious Nation

Strengthens governance, global partnerships, and institutional credibility.

Expo 2030 delivery requires unified governance, world-class infrastructure, and coordinated multi-sector execution, demonstrating Saudi Arabia's institutional strength and technological readiness.

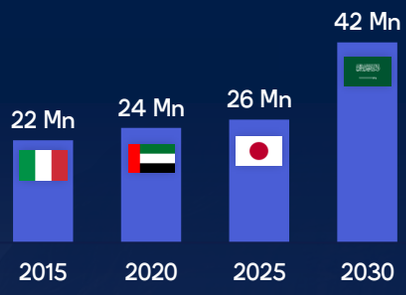
Riyadh Expo 2030: A Mega Event of Unprecedented Scale and Impact

Riyadh Expo 2030 is one of the decade's largest global events, bringing together nations, innovators, and visitors in a showcase of technology, culture, and sustainable development. It serves as a platform for collaboration on global challenges and is positioned as a long-term economic catalyst that supports diversification and investment attraction.

Participation & Size







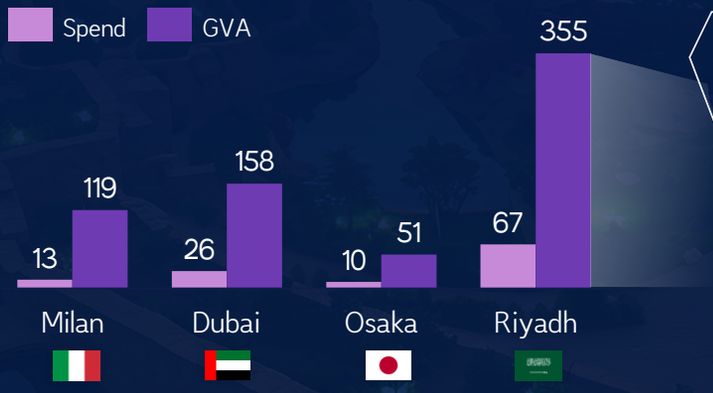
25%
Higher country participation vs Osaka 2025

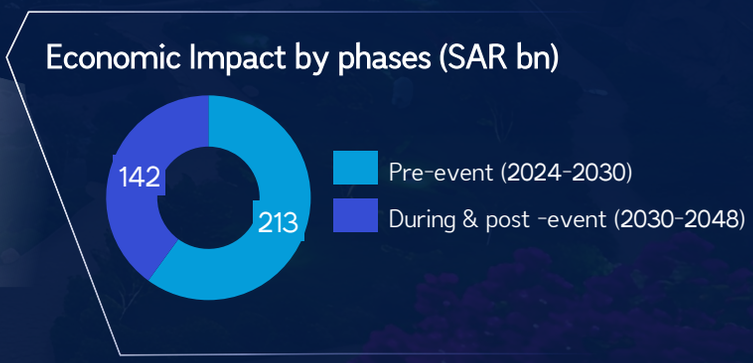
3.9x
Larger Site vs. Osaka 2025

64%
Higher estimated visitors compared to Osaka 2025

Economic Impact & Value Creation

With a budget 6x larger than previous Expos, Expo 2030 represents a major national investment in infrastructure and innovation, driving long-term economic diversification, tourism, and business growth. Modern Expos such as Dubai and Osaka demonstrate that benefits extend well beyond the event period, a trend expected to be amplified by Riyadh Expo 2030.





5.3×
estimated economic return (2023-2048)

40%
of GVA realized Pre-2030

60%
of GVA realized Post-2030

A Unified National Delivery Ecosystem for Riyadh Expo 2030



Riyadh Expo 2030 requires a delivery structure capable of coordinating infrastructure, digital systems, and operations at a national level. The Expo 2030 Riyadh Company (ERC), established by PIF, is responsible for planning, development, and operationalization. The Royal Commission for Riyadh City (RCRC) provides strategic oversight and alignment with national and urban priorities. Together with ministries, giga projects, and private sector partners, this ecosystem enables the Expo to operate as a cohesive national program.

National Policy and Infrastructure

Core ministries guiding policy, fiscal oversight, and infrastructure development to ensure financial, logistical, and environmental readiness

وزارة الاستثمار
Ministry of Investment
PIF
وزارة الشؤون البلدية والقروية والإسكان
وزارة النقل والخدمات اللوجستية
Ministry of Transport and Logistic Services
وزارة الاقتصاد والتخطيط
MINISTRY OF ECONOMY & PLANNING

Tourism, Culture, and Experience Drivers

Ministries and destination bodies shaping cultural programming, tourism offerings, and visitor experiences aligned with Saudi identity and global positioning

وزارة السياحة
Ministry of Tourism
وزارة الثقافة
Ministry of Culture
SAUDI TOURISM AUTHORITY الهيئة السعودية للسياحة
Saudi Welcome to Arabia
DISCOVER SAUDI

Digital and Data Infrastructure Enablers

Government and major private players providing the digital backbone through secure connectivity, integrated data platforms, and AI enabled operations

وزارة الاتصالات وتقنية المعلومات
MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY
Digital Government Authority هيئة الحكومة الرقمية
SDAIA
stc
علم elm

Implementation and Delivery Partners

Execution partners combining giga project expertise and private sector capability to deliver infrastructure, and services that operationalize the national vision

علم elm
أرامكو السعودية saudi aramco
Qiddiya
تحالف tahaluf
مؤسسة حديقة الملك سلمان King Salman Park Foundation

EXPO 2030 RIYADH SAUDI ARABIA

The Expo's realization depends on a whole-of-government approach led by ERC and supported by an integrated ecosystem of ministries, municipal authorities, giga-projects, and private entities working in synchrony

Riyadh Expo 2030 as a Living Smart City

02



World Expos Have Evolved Into Smart City Environments and Integrated Digital Platforms



In the 21st century, World Expos became integrated ecosystems that blend technology, sustainability, and human experience. Riyadh Expo 2030 represents the next stage in this evolution. It is the first Expo designed from inception as an integrated smart city environment, where infrastructure, mobility, energy, data, and governance operate as one coordinated system. With AI enabled platforms, real time analytics, and climate responsive design, Expo 2030 functions as a model for future urban ecosystems, establishing the foundation for its transformation into Expo City Riyadh beyond 2030.

		Outcome
2030 Riyadh	**Expo as an Integrated Smart City** \ Unified energy, mobility, data, governance \ Permanent innovation district post event	**1st Expo designed as an integrated smart city system**
2025 Osaka	**Real time AI operations and digital twins** \ Site wide IoT sensors and analytics \ AI powered event guidance, translation and visitor services. Blockchain wallets.	**Integration of AI in Expo delivery**
2020 Dubai	**Hybrid participation through global digital access** \ Virtual pavilions and blockchain wallets \ Immersive digital experiences and XR	**Digital Platform model for participation at scale**
2015 Milan	**Smart resource systems and digital sustainability** \ Smart energy and water management \ Data based environmental monitoring	**Sustainability and analytics integration**
2010 Shanghai	**Urban innovation and digital mobility integration** \ Metro linked to Expo site \ Digital ticketing and basic IoT deployments	**Early model of connected city event delivery**

Riyadh Expo 2030: The First Expo Designed as an Integrated Smart City Environment

Riyadh Expo 2030 introduces a new model for how global events are planned, operated, and sustained. It is the first World Expo designed from inception as a fully integrated smart city system, with AI enabled infrastructure, renewable energy networks, unified mobility systems, and a clearly defined post event transformation strategy. This approach positions Expo 2030 beyond a six-month gathering, establishing the foundations of a permanent innovation district within Riyadh.



Masterplan Defined as a "Prototype for Future Cities"

- The official masterplan publicly describes Expo 2030 as a **"prototype for future cities"**, integrating nature-based urbanism with advanced digital infrastructure.
- The site design uses **regenerated wadis**, **climate-responsive shading**, and **pedestrian-first movement corridors**, engineered for Riyadh's climate conditions.



Smart Infrastructure Integrated From the Outset

- Expo 2030 embeds **AI powered systems**, **high-speed digital connectivity**, **renewable energy solutions**, and **coordinated mobility** (metro connection and event transit) into the core design.
- Smart Infrastructure is permanent and **city scale**, enabling the Expo to function as a working smart district rather than an event overlay.



Post-Expo Transformation Into a Permanent Innovation District

- After the event, the site is planned to transition into a long-term **Global Village and innovation hub**, combining cultural, residential, retail, and knowledge-economy activities.
- The Expo site is to function as a **permanent district** within Riyadh's broader urban development strategy.

Riyadh's model sets the conditions for an Expo that functions as a coherent urban system rather than a temporary venue. With smart infrastructure, integrated mobility, and climate responsive design embedded from the outset, the Expo serves as a living demonstration of how smart cities of the future can be designed and managed at scale

How Modern Expos Function as Live Smart City Environments

World Expos increasingly operate as interconnected urban systems that integrate transport, utilities, and digital infrastructure through shared data and intelligent management platforms. These environments function as live demonstrations of how cities can coordinate mobility, energy, water, and citizen services within a unified, data-driven framework that enhances efficiency, inclusivity, and sustainability. Riyadh Expo 2030 extends this evolution by embedding AI-enabled infrastructure, integrated mobility networks, and sustainable resource systems to serve as a permanent model for future smart cities.

Smart Mobility and Logistics

Shanghai 2010
Expanded and linked citywide mobility to the Expo zone, adding multiple metro lines

Dubai 2020
Trialed autonomous shuttles on site

Riyadh 2030
Will deploy smart mobility systems and advanced infrastructure

Real-time Data Systems

Dubai 2020
Leveraged Siemens real-time analytics of energy, water, and building performance

Osaka 2025
Set up a Data Utilization Expert Committee to promote data use

Riyadh 2030
Deploying AI-enabled infrastructure and live digital platforms across the site

Clean Energy & Water Management

Milan 2015
Embedded alternative water sources for participants

Dubai 2020
Leveraged smart irrigation, water-use monitoring, and renewable energy integration

Riyadh 2030
Creating Climate-responsive architecture and green building standards

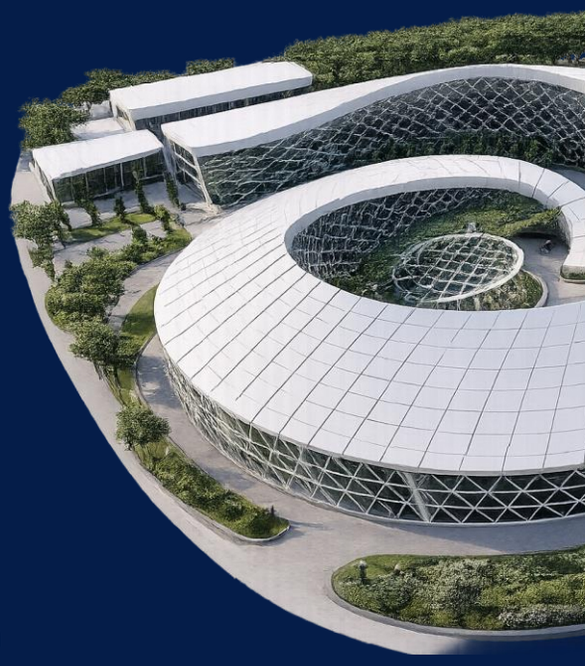
Digital Citizen Services & Accessibility Solutions

Dubai 2020
Provided site-wide accessible services, including sensory-access features and dedicated accessibility tools

Riyadh 2030
Emphasizes inclusivity as a core pillar of the Expo, showcasing KSA's progress in making a more inclusive, sustainable and connected future for all



Technology is Redefining Expos as Adaptive, City Scale Operating Systems



World Expos are deploying advanced technologies that operate across infrastructure, operations, and visitor experience to create smart city environments. These systems manage energy, mobility, data, and engagement in real time to keep the event efficient and adaptive. Each Expo demonstrates how technology can coordinate complex environments, linking people and services through intelligent systems and integrated design.

Modern expos are being transformed through

4 core technology applications

01

Venue & Mobility Infrastructure

Expos operate as connected smart environments through WiFi-6, 5G, and IoT systems that link people, devices, and services. Autonomous transport uses AI routing and sensors to move visitors safely while coordinating with IoT platforms.

02

Digital Visitor Experience

Digital platforms extend the Expo beyond the physical site through virtual pavilions and metaverse access, increasing global participation. Blockchain wallets and digital twins enable secure transactions, personalized journeys, and real time digital engagement,

03

Exhibitor & Operations Management

Operational platforms at Expos function like smart city control centers, integrating logistics, security, and data analytics to monitor flows and infrastructure in real time. These systems enable coordinated decision-making and efficient site-wide management.

04

Immersive Showcase Experience

Immersive projection surrounds visitors with synchronized light, sound, and motion. Robotics provide real-time assistance, while AR and VR overlay digital content to expand storytelling, enhance navigation, and deepen exhibition engagement.

Venue Infrastructure Systems That Transform Expos Into Fully Connected Urban Networks

WiFi-6 Connectivity

- WiFi-6 networks form the digital backbone, linking systems, devices, and visitors across the entire site.
- High-capacity bandwidth supports real time data exchange, IoT connectivity, and site wide operations at scale.

450
Wi-Fi 6 Nodes

3,500
Access points

Autonomous Transport Infrastructure

- Autonomous shuttles use AI routing and sensor networks to manage movement safely and efficiently.
- These services act as live testbeds for integrated urban mobility and low emission transport systems.



100
Autonomous buses deployed

15-25
Passenger capacity

IoT-enabled Infrastructure Platforms

- IoT platforms link buildings, utilities, and transport through real time data networks.
- Integrated monitoring optimizes energy, water, and visitor services, improving operational efficiency.

130+
Buildings connected via IoT

20+
Integrated Subsystems

Digital Visitor Experience is Central to Expos Delivering Seamless, High-Quality Journeys



Metaverse Platforms & Virtual Expos

- Metaverse environments extend participation beyond the physical site through virtual pavilions, performances, and cultural content.
- Interactive access creates a continuous link between on-site and global visitors in real time.

192
Virtual National Pavilions

250 Mn +
Virtual visits

Blockchain



- Blockchain enables secure transactions, digital tickets, rewards, and collectible assets through unified digital wallets.
- Traceable digital assets support personalization and higher engagement across the visitor journey.

1Mn +
Digital Wallet Accounts

90%
Visitor Satisfaction for Cashless System



Digital Twin & 3D Visualization

- Digital twins recreate the Expo site in detailed virtual form for simulation, monitoring, and real-time augmentation.
- 3D scanning and AI visualization add digital layers for wayfinding, storytelling, and interactive engagement.

1:1
Digital twin of Expo Site

30x
Demand exceeding supply for 3D body scan experience

Exhibitor & Operations Management Mirror the Systems that Keep Smart Cities Running

Event Planning Platforms

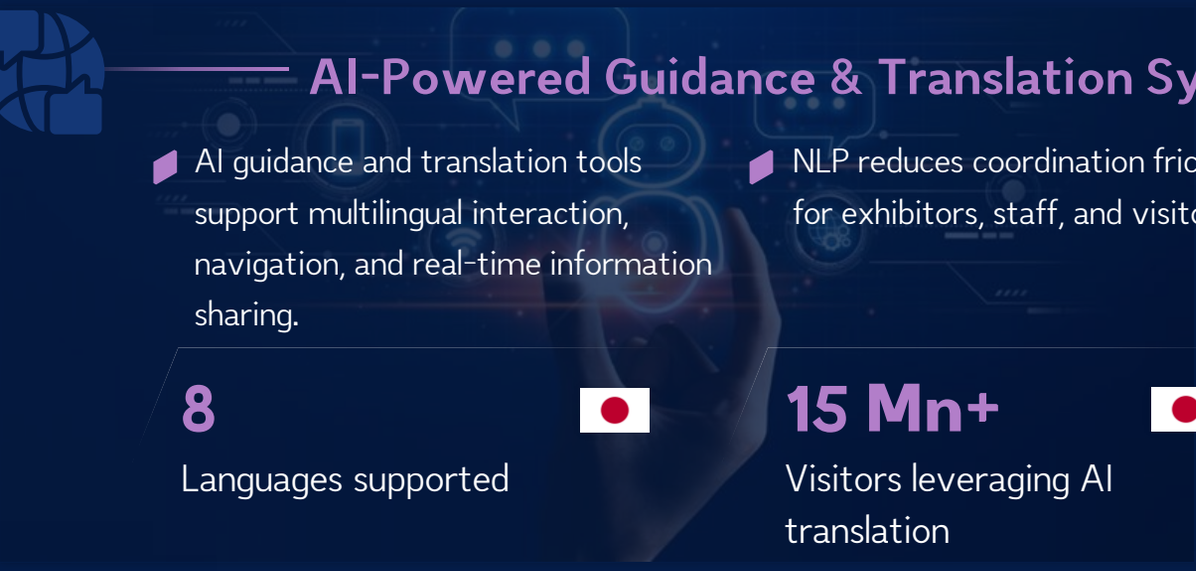


- AI-enabled planning tools support coordinated design and logistics through a single map-based platform
- Real-time visualization and workflow adjustment improve accuracy and integrated operation

1600
Staff utilizing the event planning platform

12,000+
Hours spent on planning platform

AI-Powered Guidance & Translation Systems





- AI guidance and translation tools support multilingual interaction, navigation, and real-time information sharing.
- NLP reduces coordination friction for exhibitors, staff, and visitors.

8
Languages supported

15 Mn+
Visitors leveraging AI translation

Security & Crowd Management



- AI-enabled platforms allow Expos run as dynamic, map-based systems with real-time coordination of pavilions, routes, and services.
- These systems visualize visitor flows, track infrastructure, and adjust logistics in real time to keep operations smooth and safe.

15,000
Surveillance cameras

1 TB
Visitor Data
From 8,000+ IoT sensors

Immersive Showcase Experiences Reflect the Creative Pulse of Smart Cities



Immersive Display & Projection

- Large-scale projection and LED systems create real-time visual environments linked to site events
- Holistic display formats surround visitors with synchronized light, sound, and motion

250+
Projectors powered the Al Wasl Dome

360°
Integrated Projection System

Interactive Robotics

- AI enabled robots and responsive devices deliver assistance, information, and real-time interaction across the site.
- Robotics demonstrate coordinated automation and human interaction in intelligent event environments.

150+
Service robots deployed

50+
Robots developed by 25 companies showcased





AR & VR

- AR and VR systems extend exhibitions into digital environments with interactive content linked to user movement.
- Mixed reality overlays digital content on physical spaces to enhance navigation, storytelling, and engagement.

4 km²
Of the Expo's site was enhanced with augmented reality features through the official Expo app.

Global Events Are Driving the Next Wave of Smart City Innovation

Global mega events are becoming testbeds for advanced smart city solutions. From AI enabled visitor services and fully digital broadcast systems to zero emission mobility and immersive displays, these events demonstrate how innovation can enhance connectivity, efficiency, and sustainability. The initiatives showcased today provide scalable models that will shape the intelligent cities of the future.

IP and IT Based Infrastructure

LA Olympics 2028

- Olympic Broadcasting Services is shifting from traditional hardware to a fully IP based, cloud driven broadcast system. AI and 5G powered workflows will enable flexible, and energy efficient live coverage.

AI Integration into Live Event Broadcast

LA Olympics 2028

- Google is integrating AI powered search into NBCUniversal's LA28 coverage. Real time queries on athletes, schedules, and results will provide rapid answers and digital companion support, enhancing how global audiences consume the Games.

Hydrogen-Powered Trains

Milan Cortina Games 2026

- Milan Cortina 2026 will debut Italy's first hydrogen-powered regional train, the Alstom Coradia Stream, to link Alpine venues on non-electrified lines. Its onboard hydrogen fuel cells enable zero-emission travel, marking a first for Olympic transport.

AI Facial Recognition Cameras

World Cup 2030

- Morocco's Tangier Stadium will deploy AI based facial recognition and 900 surveillance cameras to enhance stadium security. The system forms part of Morocco's national safe city program extending to AFCON 2025 host cities.

Electric Air Taxis

LA Olympics 2028

- The official LA28 air taxi program will pilot electric vertical take off and landing routes for VIP and spectator transport. Vertiports connecting airports and venues will demonstrate next generation urban air mobility with low noise and zero emissions.

3D Holographic Displays

CES 2025

- Holograms showcased at CES 2025 used large LED fan arrays to project life size visuals. The technology is becoming mainstream for trade shows and live events, offering new possibilities for immersive presentations.

Venue & Mobility Infrastructure | Digital Visitor Experience | Exhibitor & Operations Management | Immersive Showcase Experience

From Integrated Infrastructure to Operational Intelligence

Riyadh Expo 2030 demonstrates how a global event can function as a fully integrated smart city, where mobility, energy, data, and visitor services operate within a unified ecosystem. The Expo advances the traditional event model by embedding intelligent infrastructure and digital systems that enhance sustainability, efficiency, and overall experience at scale.

This evolution establishes the foundation for the types of digital capabilities required to manage such environments. As Saudi Arabia accelerates its shift toward data driven, seamlessly connected urban systems, the focus moves from physical infrastructure to the platforms, architectures, and operational intelligence that sustain it.



References

1. Bureau International Des Expositions (BIE) - Expo 2030 Riyadh bie-paris.org/2030-Riyadh
2. Vision 2030 – A Vibrant Society vision2030.gov
3. Vision 2030 – A Thriving Economy vision2030.gov
4. Vision 2030 – An Ambitious Nation vision2030.gov
5. Expo 2030 Riyadh expo2030riyadh.sa
6. NHK World Japan - Expo 2025 nhk.or.jp/nhkworld/en/news
7. Alrajhi Capital - The Era of Change: Together for a Foresighted Tomorrow argaamplus.s3.amazonaws.com
8. Bureau International Des Expositions (BIE) - Not just "Better City, Better Life" bie-paris.org/not-just-better-city-better-life
9. Ministry of Environment and Energy Security (MASE) - The Expo We Learned mase.gov.it
10. Expo 2015 Milano - Sustainable Solutions Guidelines mae.ro/guidelines_sustainable_solutions.pdf
11. Expo 2020 Dubai - Bringing Expo 2020 to the world: Legacy lives on through Virtual Expo expo2020dubai/virtual-expo
12. Expo 2025 Japan - Digital Expo expo2025.or.jp
13. NHK World Japan - Expo 2025 expo2025.or.jp
14. Expo 2025 Japan - Digital Wallet expo2025.or.jp/digitalwallet
15. NHK World Japan - Expo 2025 expo2025.or.jp
16. Gulf News - Expo 2020 Autonomous Vehicle expo-2020/rta-starts-trial-run-of-autonomous-vehicle-at-expo-2020-dubai
17. RTA - Expo 2020 Autonomous Vehicle rta.ae/starting-trial-run-of-autonomous-vehicle-at-expo-2020
18. Siemens - Expo 2020 Dubai Create Blueprint Future Smart Cities siemens.com/siemens-works-expo-2020-dubai-create-blueprint-future-smart-cities
19. Siemens - Expo 2020 Dubai Opens Future City Blueprint Digitalized Siemens Technology siemens/expo-2020-dubai-opens-future-city-blueprint-digitalized-siemens-technology
20. Expo 2025 Japan – Data Utilization expo2025.or.jp/data-utilization
21. Expo 2020 Dubai - Expo Initiatives expo2020dubai/expo-initiatives
22. Arch Daily - Expo 2030 Riyadh Unveils First Details of its Masterplan harchdaily.com/expo-2030-riyadh-unveils-first-details-of-its-masterplan
23. The National News - Expo 2020 Dubai Certified as a Sensory Accessible Event thenationalnews.com/expo-2020-dubai-certified-as-a-sensory-accessible-event
24. Expo 2020 Dubai – Accessibility expo2020dubai.com/accessibility
25. Expo City Dubai – Accessibility expocitydubai.com/accessibility-at-expo-city-dubai
26. Cisco - Expo 2020 Dubai cisco.com/expo-2020-dubai
27. Expo 2025 Japan expo2025.or.jp
28. OECD.AI - Expo 2025 Japan oecd.ai
29. Middle East Architect - Expo 2020 Dubai middleeastarchitect.com/siemens-trials-new-smart-city-app-on-expo-2020-dubai
30. Tunnels Infrastructure - Siemens Expo 2020 Dubai tunnels-infrastructures/siemens-expo-2020-dubai-smart-cities
31. Expo 2020 Dubai – Participants expo2020dubai.com/participants
32. Think with Google - Expo 2020 Dubai thinkwithgoogle/dubai-expo-2020-hybrid-event
33. Google Play - Hash Wallet play.google/hashwallet
34. Expo 2020 Japan – News expo2025.or.jp/news
35. Bureau International Des Expositions (BIE) - Signature Pavilions Forging Lives within bie-paris.org/signature-pavilions-forging-lives-within-null2
36. Oricon Japan – News oricon.co.jp/news
37. Arch Daily - Expo 2025 Osaka archdaily/expo-2025-osaka-pavilion-null2
38. Iventis - Expo 2020 Dubai iventis.com/waseela-pioneering-map-based-event-planning-at-expo-2020-dubai
39. Expo 2025 Japan - Personal Agent expo2025.or.jp/personalagent
40. Siemens - Expo 2020 Dubai Security Technology siemens.com/expo-2020-dubai-security-technology-for-the-smart-cities-of-tomorrow
41. Splunk - Expo 2020 Dubai splunk.com/expo-2020-dubai
42. Expo 2025 Japan - Smart Mobility expo2025.or.jp/smart-mobility
43. Virtual Expo Dubai - Expo 2020 Dubai Xplorer App virtualexpodubai.com/expo-2020-dubai-xplorer-app
44. Expo 2025 Japan - Projection System expo2025.or.jp/projection-system

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Social Media Channels

