



HARNESSING AI FOR SUSTAINABLE INFRASTRUCTURE AND LEGACY OUTCOMES IN BRISBANE 2032 OLYMPICS & PARALYMPICS



IS534: INFORMATION CONSULTING (TEAM 1)

APRIL 28TH 2025

AGENDA – TABLE OF CONTENTS



Executive Summary

- Recommendations
- Expert Insights
 - Dr. Yuhei Inoue
 - Ms. Rose Yeboah
- PESTLE Analysis
- SWOT Analysis
- Major Pain Points



Consumer Segmentation

- Primary Consumers
- Secondary Consumers
- Revenue Breakdown
- Quantifiable Economic Impact



Infrastructural Legacy

- Past Infrastructural Highlights
- Past Infrastructural Challenges



Proposed Technology

- What makes proposed technologies work ?
- Current State
- Technology Impact Matrix
- Risk & Mitigation



Cost & Legal Implications

- Estimated Cost
- Legal Implications



Final Summary

- Final Recommendations
- Appendix
- References

The background image shows the Brisbane city skyline at sunset, with the sky filled with orange and yellow clouds. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. A few small boats are visible on the water.

BRISBANE 2032 EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

Assessing Brisbane's strategy to deliver the world's first Climate-Positive Olympics through smart infrastructure, sustainable development, and adaptive legacy planning.

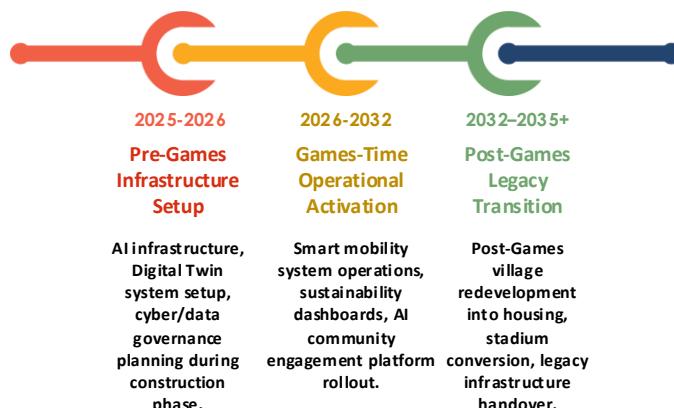
Brisbane 2032

Context: Brisbane 2032 is positioned to deliver the world's first Climate-Positive Olympic and Paralympic Games. The Games present a catalyst for embedding smart infrastructure, sustainable urban development, and inclusive community programs into the region's future.

Objective: Establish Brisbane as a global model for resilient, sustainable, and technology-enabled mega-event legacy delivery.

Challenge: Past Olympics have consistently suffered from cost overruns (172% avg), underutilized infrastructure, and community disengagement. Brisbane's relatively smaller and lower-density population compared to previous host cities presents challenges in achieving high post-Games venue usage, transport system viability, and community engagement.

Timeline:



Priority Actions

- **Implement AI-Driven Infrastructure and Digital Twin Systems:** Deploy predictive AI models and Digital Twins for Games construction, operations, and energy optimization. Simulate traffic, crowd, emergency, and sustainability scenarios.
- **Expand Smart Mobility and AI-Optimized Transport Networks:** Launch Games-time AI transit, congestion management, and routing systems. Transition smart mobility platforms into Brisbane's post-Games city transport framework.
- **Institutionalize Ethical AI, Privacy, and Cybersecurity Standards:** Embed GDPR, Privacy Act, and Olympic data governance in Games infrastructure. Establish smart city cybersecurity frameworks for post-2032 urban operations.
- **Launch Legacy Dashboards and AI Community Feedback Systems:** Deploy open-data dashboards to track Games operational KPIs (carbon, transport, energy). Roll out community feedback systems during Games to guide post-Games adaptive planning.
- **Redevelop Athletes' Villages into Sustainable Communities:** Post-Games, convert Olympic villages into green, affordable residential neighborhoods. Integrate renewable energy, public services, and transit access.
- **Repurpose Stadiums and Venues into Flexible Community and Commercial Spaces:** Redesign and adapt Olympic stadiums for sports, culture, education, and business use. Activate precincts with hybrid public-private operating models.



RECOMMENDATIONS

Strengthening Brisbane's Olympic legacy by integrating AI-driven infrastructure, sustainable development, modular urban planning, and community-centered adaptive systems.

AI-Driven Smart Infrastructure Planning

Multi-Functional Design of Facilities

- Transition Brisbane 2032 sports and fan zones into permanent community wellness hubs, youth academies, and cultural centers.
- Activate accessible public spaces encouraging active lifestyles, mental wellbeing, and social connection across Brisbane neighborhoods.
- Leverage temporary-to-permanent modular designs to ensure long-term cost-effective community facility adaptation post-Games.

Transforming Athletes' Villages

- Deploy AI models and Digital Twins starting during Brisbane 2032 preparations to optimize venue placement, energy efficiency, and Games-time operations.
- Integrate IoT-enabled smart city systems across mobility, security, and sustainability domains.
- Enable dynamic, AI-driven traffic and emergency response coordination specifically for Games-time surges and future mass events.

Repurposing Stadiums and Arenas

- Redesign major venues for concerts, sports leagues, educational events, and public gatherings post-Games.
- Incorporate modular architecture to enable easy reconfiguration of spaces based on community and commercial needs.
- Promote economic viability through flexible leasing models and public-private partnerships.



Feedback Driven Post-Games Legacy Plans

- Deploy AI-powered engagement platforms allowing Brisbane citizens to provide real-time feedback on venue utilization and legacy initiatives.
- Launch public-facing Brisbane 2032 Legacy Dashboards to track sustainability metrics, infrastructure reuse, and community impacts.
- Adapt urban programs dynamically post-Games based on predictive data analytics and citizen participation rates.

Establish a Permanent Digital Twin Platform

- Retain the Olympic Digital Twin to enable real-time monitoring of urban assets, utilities, and event logistics.
- Expand simulations to model future public events, infrastructure expansion, and climate resilience scenarios.
- Use data insights for adaptive energy management, traffic flow optimization, and emergency preparedness.

Sustainability and Carbon Neutrality

- Prioritize modular, prefabricated, and low-carbon structures adaptable for post-Games community use.
- Future-proof Olympic infrastructure against Brisbane's real climate risks: extreme heat, coastal flooding, and seasonal storms.
- Transform Games precincts into solar corridors, biodiversity parks, and carbon-neutral mobility hubs supporting Brisbane's 2035 climate goals.
- Target carbon savings of up to 5,000 tons CO₂e across the lifecycle.

EXPERT INSIGHTS – Dr. Yuhei Inoue

Professor of Sport Management | Specialist Insight: Social Impact, Health & Well-Being through Sport



To ensure Brisbane 2032 delivers a meaningful legacy, we interviewed **Dr. Yuhei Inoue**. Dr. Inoue's experience serving as an expert for the Tokyo 2020 Olympic Committee, combined with his personal engagement as a fan attending major events like Paris 2024 and Beijing 2022, provided valuable insights that significantly shaped our conclusions.



How can Brisbane 2032 ensure that Olympic venues remain useful and beneficial to the local community after the Games conclude?

Design venues for long-term community use - Build flexible, smaller facilities that can serve local communities after the Games and not just large, single-use stadiums.



What strategies can help maintain public interest in sports and physical activity beyond the Olympics?

Focus on building lasting habits, not just short-term excitement - After the Games, inspiration fades quickly. Brisbane should create programs and facilities that help people stay active and connected to sports long after the event ends.

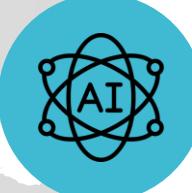
What infrastructure considerations should Brisbane focus on, especially given the region's unique climate challenges?

Build climate-resilient infrastructure, beyond global templates - Adapt venues to Brisbane's real climate risks like flooding and extreme heat, instead of just following the standards.



How can emerging technologies like AI support community engagement before, during, and after the Games?

Use AI and technology to stay connected with the community - Real-time feedback tools (like AI surveys or engagement trackers) can help organizers adapt activities during and after the Games based on how people are actually feeling and participating.





EXPERT INSIGHTS – Rose Amoanima Yeboah

Paris 2024 Olympian, NCAA Outdoor High Jump Champion | Specialist Insight: Athlete Experience, Sustainability, and Tech at the Games

To enrich our understanding of Brisbane 2032's potential social impact, we also interviewed **Ms. Rose Yeboah**. Rose, an Illini student and national athlete for Ghana, has represented her country on the world stage since the age of 19. As the current NCAA Outdoor High Jump Champion and a proud Olympian from Paris 2024, her insights were instrumental in helping us understand the application of AI technologies from an athlete's perspective.



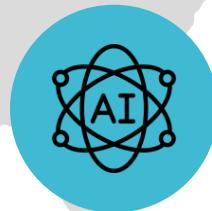
What technologies or digital tools made your experience smoother or more enjoyable as an athlete at Paris 2024?

Enhance athlete experience with integrated smart apps
- Devices like Samsung Flip with integrated maps, access cards, and service portals greatly improved navigation and daily life at Paris 2024. Brisbane should offer a unified app system for athlete logistics, communication, and real-time support.



In your experience, what helped create a sense of connection between athletes and the host city's community beyond just the competitions?

Celebrate community spirit beyond competition
- Rose valued fan parks, celebration stages near iconic monuments that connected athletes and the public. Brisbane could enhance community integration through open-access events and city-wide fan activations post-Games.



PESTLE ANALYSIS – BRISBANE 2032

Analyzing Brisbane's readiness to host a future-forward Olympics through a strategic lens of Political, Economic, Social, Technological, Legal, and Environmental factors.



P

POLITICAL

The Queensland Government & the Australian Government must work together to create stable regulations that are essential to secure funding and manage public infrastructure efficiently. Transparent decision-making and strong political backing will sustain long-term commitments.

E

ECONOMIC

Managing budgets effectively is crucial to avoid financial overruns and ensure sustainable economic impact. Public-private partnerships and long-term revenue strategies will maximize returns for Brisbane 2032.

S

SOCIAL

Community engagement will build local support and foster pride in hosting the Olympics. Safety measures and inclusive initiatives will ensure positive public sentiment towards this massive project.

T

TECHNOLOGICAL

Implementing smart city solutions and digital innovation will optimize fan experience and event operations. AI-driven analytics and digital twins will enhance real-time decision-making.

L

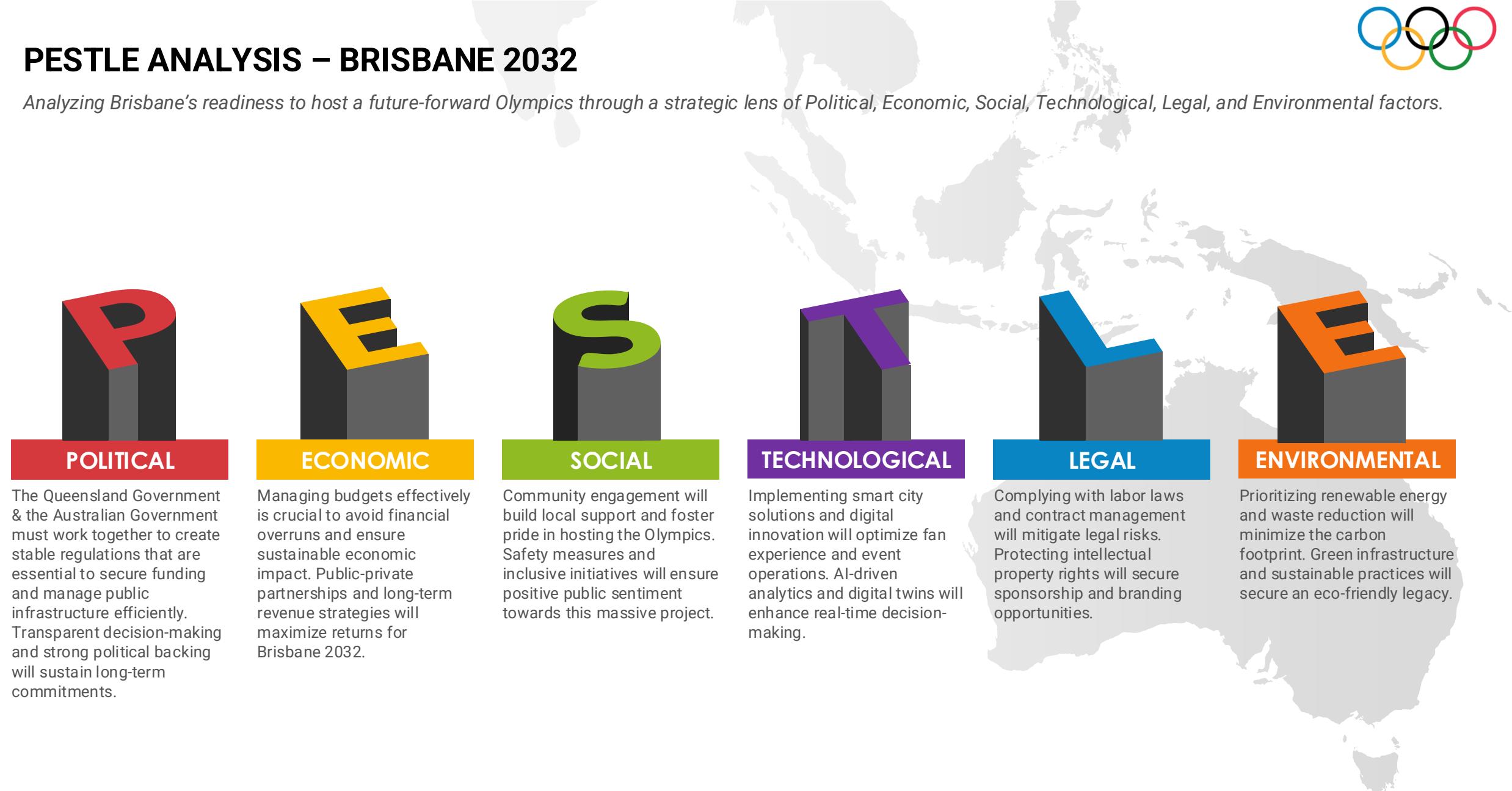
LEGAL

Complying with labor laws and contract management will mitigate legal risks. Protecting intellectual property rights will secure sponsorship and branding opportunities.

E

ENVIRONMENTAL

Prioritizing renewable energy and waste reduction will minimize the carbon footprint. Green infrastructure and sustainable practices will secure an eco-friendly legacy.





SWOT ANALYSIS

Evaluating Brisbane's strengths, weaknesses, opportunities, and threats in hosting a future-ready, AI-integrated, and sustainable Olympic Games.



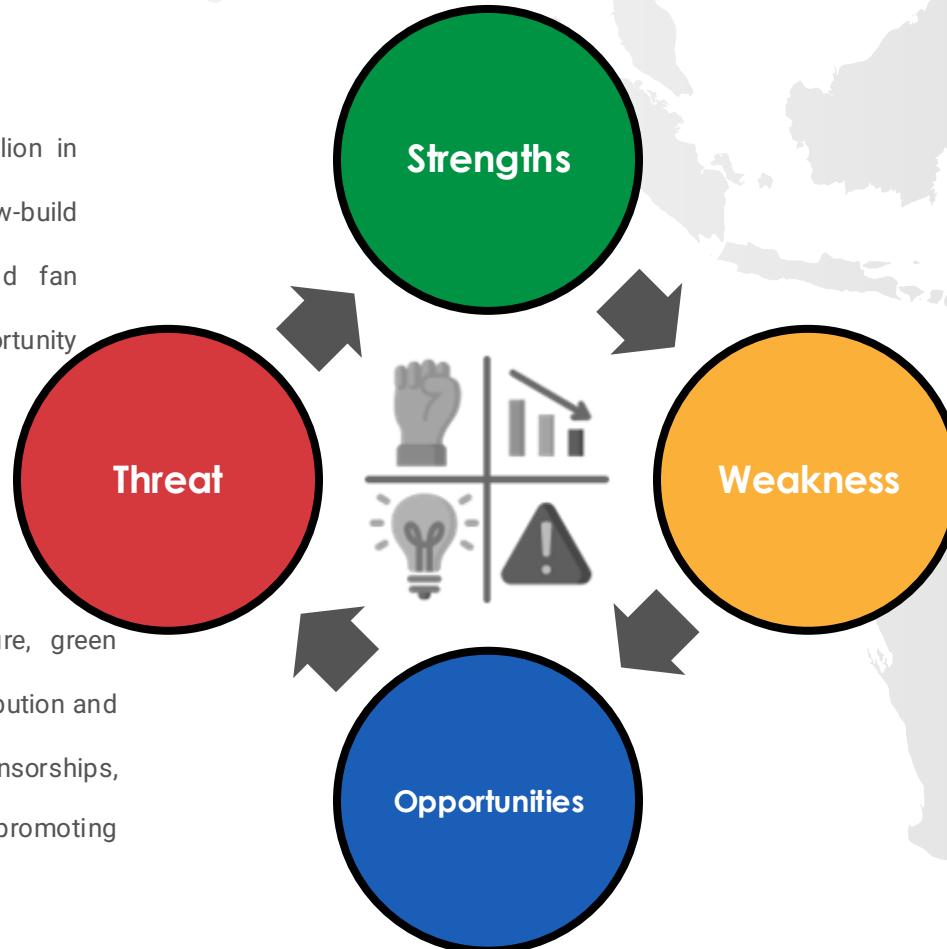
Strengths

- The government is backing projects with AUD \$7.1 billion in infrastructure upgrades.
- Strong reuse of venues (84%), helping to maintain low new-build costs.
- AI helps in planning for better prices, delivery, and fan experience.
- A very long lead time of 11 years provides plenty of opportunity for proper planning and risk reduction.



Opportunities

- Green Olympics legacy via carbon-neutral infrastructure, green housing, and improved public transportation.
- Massive economic growth expected – \$17.6 billion contribution and more than 122,000 jobs across the country.
- Strong potential for public-private partnerships (sponsorships, PPPs, naming rights).
- Chance to become the first Olympic Games to utilize AI, promoting international branding.



Weaknesses

- Recent leadership changes and budget uncertainties have resulted in project delays.
- Brisbane's small population poses a quiet yet critical challenge – limiting local demand for tickets, workforce, and legacy venue use. It's the "elephant in the room" for long-term viability.
- Inadequate legacy planning and few confirmed stakeholders for the post-Games use of the facilities.

Threats

- Environmental risks, including possible harm to wildlife at Fitzroy River sites.
- Historical Olympic trend of venue underuse post-Games (e.g., Rio 2016, Athens 2004).
- Urban transportation bottlenecks in Brisbane can hinder efficient crowd movement.
- Excessive risk of cost overrun – Olympic Games have always been 172% over budget on average.

Sources - Queensland Govt. Brisbane 2032 Value Assessment Report (2022); IOC Brisbane 2032 Candidature File; PwC Sports Intelligence & Deloitte Fan Engagement Reports (2022); KPMG Brisbane 2032 Economic Impact Assessment;



WHAT ARE THE MAJOR PAIN POINTS FOR BRISBANE 2032?

Assessing Brisbane's preparedness to deliver scalable, secure, and inclusive AI-driven infrastructure for the Olympic Games.

Simulation Accuracy and Calibration

Brisbane must ensure AI simulations reflect local crowd behavior, weather, and infrastructure dynamics. Generic models risk planning failures in evacuation, mobility, and stadium layouts. Data from pilot events and urban sensors should inform real-time recalibration for greater reliability.

Digital Twin Integration for Legacy Planning

Digital twins must extend beyond operational modeling to simulate post-Games reuse of venues. Brisbane currently lacks mature planning frameworks to integrate housing, sustainability, and urban regeneration into long-term digital twin applications.

Cloud Infrastructure Scalability

Olympic-scale operations will stress Brisbane's cloud systems. Real-time data from ticketing, surveillance, and athlete services demands resilient cloud architectures with edge computing and redundancy to prevent downtime or latency during peak loads.



Mobility Coordination in a Radial City

Brisbane's radial transport design poses challenges for crowd flow and last-mile movement. AI-based traffic management must integrate multimodal systems to prevent congestion and enable real-time adjustments during high-traffic Olympic periods.

Integration of Temporary and Permanent Venues

Brisbane's reliance on temporary and reused venues risks disjointed infrastructure planning. AI-supported generative design tools are needed to optimize layout integration, ensure safety, and maintain long-term spatial coherence across Olympic zones.

AI Security, Privacy, and Ethics Compliance

AI-driven systems handling biometric and health data must comply with Australian and international privacy laws. Ethical oversight, data protection, and human-in-the-loop protocols are essential to safeguard user trust and institutional accountability.

Up next: A closer examination of the proposed solutions and how they address Brisbane's most pressing Olympic-related challenges.



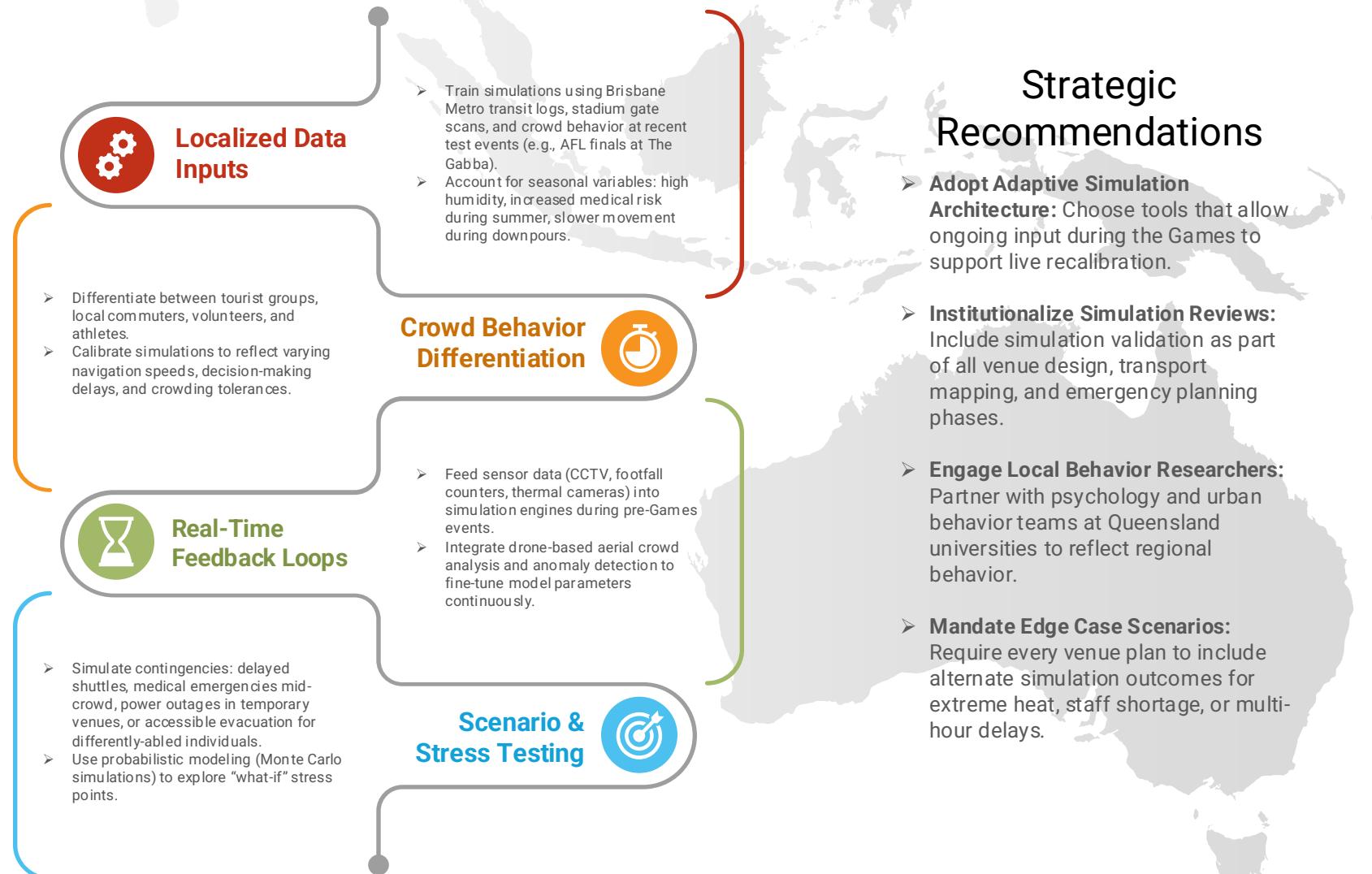
SIMULATION ACCURACY AND CALIBRATION

Assessing Brisbane's preparedness to deliver scalable, secure, and inclusive AI-driven infrastructure for the Olympic Games.

Why This Matters for Brisbane 2032

As the Brisbane 2032 Olympic Games approach, AI simulations are expected to shape critical infrastructure decisions—ranging from stadium layout and transport design to emergency evacuation planning. However, if these simulations are based on generic assumptions rather than localized behavioral, environmental, and urban data, the results may misguide planners, risking congestion, safety hazards, and misaligned infrastructure investments.

Simulations must be continuously calibrated using Brisbane-specific inputs, real-time feedback from urban sensors, and learnings from test events to ensure that every AI output is rooted in **on-ground realities**. The key elements of this can be studied in the adjacent table.



For Brisbane 2032, simulation isn't just about modeling the Games—it's about learning from the city itself. Calibrated, adaptive simulations will empower smarter layouts, safer decisions, and a more seamless Olympic experience for all.

Strategic Recommendations

- Adopt Adaptive Simulation Architecture:** Choose tools that allow ongoing input during the Games to support live recalibration.
- Institutionalize Simulation Reviews:** Include simulation validation as part of all venue design, transport mapping, and emergency planning phases.
- Engage Local Behavior Researchers:** Partner with psychology and urban behavior teams at Queensland universities to reflect regional behavior.
- Mandate Edge Case Scenarios:** Require every venue plan to include alternate simulation outcomes for extreme heat, staff shortage, or multi-hour delays.



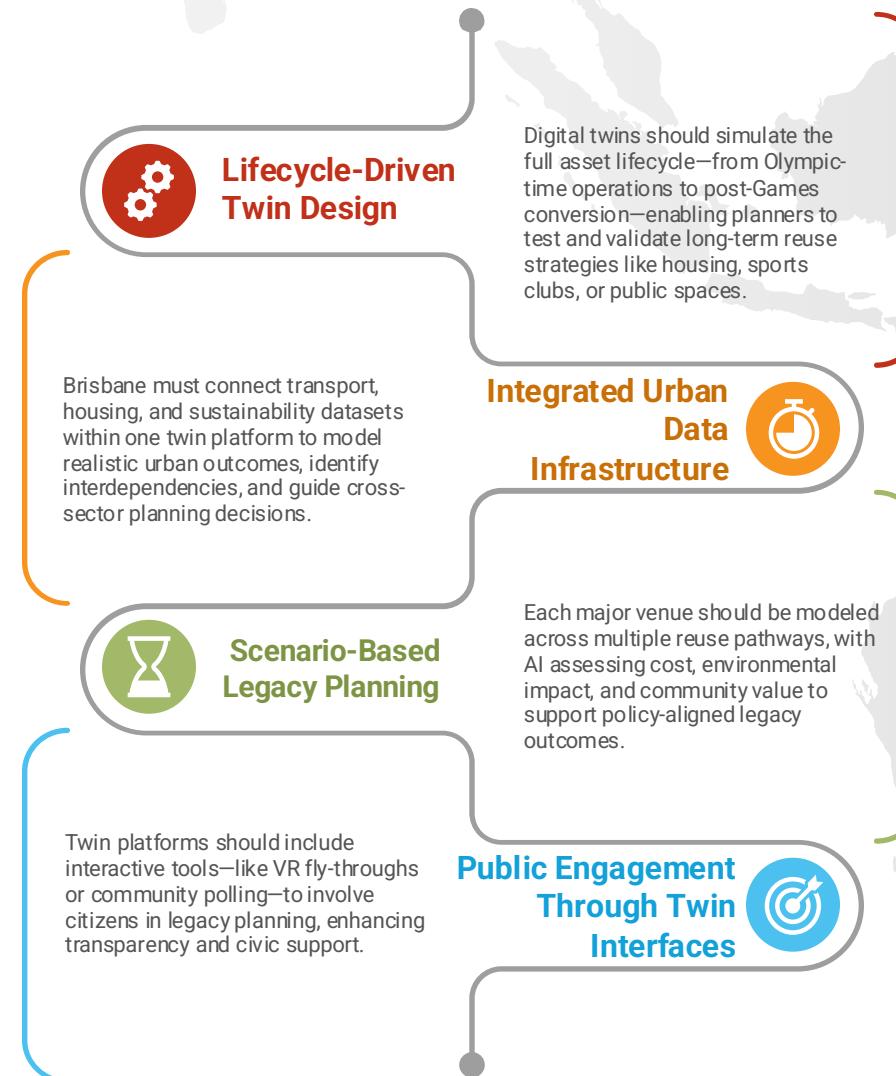
DIGITAL TWIN INTEGRATION FOR LEGACY PLANNING

Building Post-Games Value Through Data-Driven Venue and Urban Transformation

Why This Matters for Brisbane 2032

While digital twins are commonly used for real-time operations during mega-events, their full potential lies in shaping the long-term legacy of Olympic infrastructure. Brisbane, with multiple permanent venues and Olympic villages under development, must go beyond construction-phase modeling and use digital twins to simulate post-Games transformation, including housing conversion, urban regeneration, and energy optimization.

Without strategic integration of twin technologies into legacy planning, Brisbane risks creating underutilized or unsustainable assets post-2032.



Strategic Recommendations

- **Mandate Digital Twin-Backed Legacy Plans:** Every venue proposal must include post-2032 usage scenarios modeled with digital twins and assessed for long-term social and financial value.
- **Create a Central Twin Governance Framework:** Establish an inter-agency platform to share twin data between transport, housing, sport, and sustainability departments.
- **Integrate Community Co-Design Tools:** Use participatory twin interfaces to collect citizen feedback on venue reuse (e.g., sports complex vs. public library).
- **Track Lifecycle Emissions:** Embed energy, HVAC, and carbon tracking into each venue's twin to plan retrofits for net-zero targets.

Legacy begins before the Games do. With digital twins, Brisbane can plan for what's next—not just what's now—ensuring every Olympic asset becomes a long-term civic asset.



CLOUD INFRASTRUCTURE SCALABILITY

Ensuring Resilient, Real-Time Performance at Olympic Scale

Why This Matters for Brisbane 2032

Brisbane 2032 will rely on cloud-based systems to run real-time Olympic operations—ticket validation, surveillance analytics, athlete tracking, logistics coordination, mobile apps, live scoring, and international broadcasting. These services must be delivered simultaneously, at scale, and with minimal latency. Any failure during peak load moments could disrupt services across venues, compromise safety systems, or erode user confidence.

Scalability, edge deployment, and system redundancy are non-negotiable pillars of Olympic cloud design.



Strategic Recommendations

- Partner with leading cloud providers (e.g., AWS, Azure, Oracle Cloud) offering proven high-concurrency event support.
- Use local telecom providers (e.g., Telstra) for 5G-enabled edge infrastructure at venues.
- Conduct full-scale pre-Games stress testing, simulating game-day traffic, outage scenarios, and live multi-venue loads.
- Implement a central Cloud Operations Command Center to oversee orchestration, alerting, and failover response.

At Brisbane 2032, milliseconds matter. Building resilient, scalable cloud systems is the foundation for every Olympic interaction—from the ticket gate to the broadcast booth.



MOBILITY COORDINATION IN A RADIAL CITY

Solving Olympic-Scale Movement in a Structurally Constrained Urban Form

Why This Matters for Brisbane 2032

Brisbane's urban layout is structured in a radial (nuclear) format, meaning transport and traffic naturally converge toward the city center. While effective for a mid-size city, this design presents serious challenges for Olympic-scale crowd management—especially when dispersing thousands of spectators, athletes, and staff across multiple venues in short time frames.

To avoid severe congestion, delays, and negative public perception, Brisbane must deploy AI-driven multimodal mobility systems that dynamically adapt to crowd flow and network strain.



Strategic Recommendations

- Partner with transit authorities (Translink, Brisbane Metro) to integrate fare, location, and capacity data into an AI mobility layer.
- Deploy predictive foot traffic sensors and crowd analytics at all major transport nodes and Olympic venues.
- Pilot dynamic routing systems (temporary shuttle hubs, flex-lane allocation) during test events in 2028–2030.
- Launch a unified mobility app with live navigation, alerts, and congestion avoidance for all Olympic attendees.



INTEGRATION OF TEMPORARY AND PERMANENT VENUES

Designing Spatial Continuity Across Short-Term Infrastructure and Long-Term Urban Assets

Why This Matters for Brisbane 2032

Brisbane's bid for the 2032 Olympics is rooted in sustainability and cost-efficiency—with 84% of venues either reused or temporary. While this minimizes construction waste and financial burden, it introduces a significant challenge: coordinating temporary and permanent infrastructure to ensure seamless urban functionality, visitor experience, and post-Games legacy value.

Without cohesive spatial integration, Brisbane risks producing fragmented venue layouts, inconsistent user flows, and logistical inefficiencies across Olympic zones.



Strategic Recommendations

- Require all venue proposals to include an integration audit: how will temporary structures interact with transport, crowd flow, and post-Games plans?
- Adopt AI generative planning software for layout testing and design refinement across Olympic zones.
- Pilot community-centric post-use concepts—turn temporary stadium sites into public plazas, green zones, or temporary marketplaces within a 3-year window.
- Include overlay plans and deconstruction logistics in city permits and infrastructure blueprints.

Temporary doesn't mean disconnected. With AI-supported planning, Brisbane can align short-term Olympic needs with long-term urban form—creating infrastructure that evolves, not evaporates.



AI SECURITY, PRIVACY, AND ETHICS COMPLIANCE

Building Trustworthy Systems to Power a Secure Olympic Experience

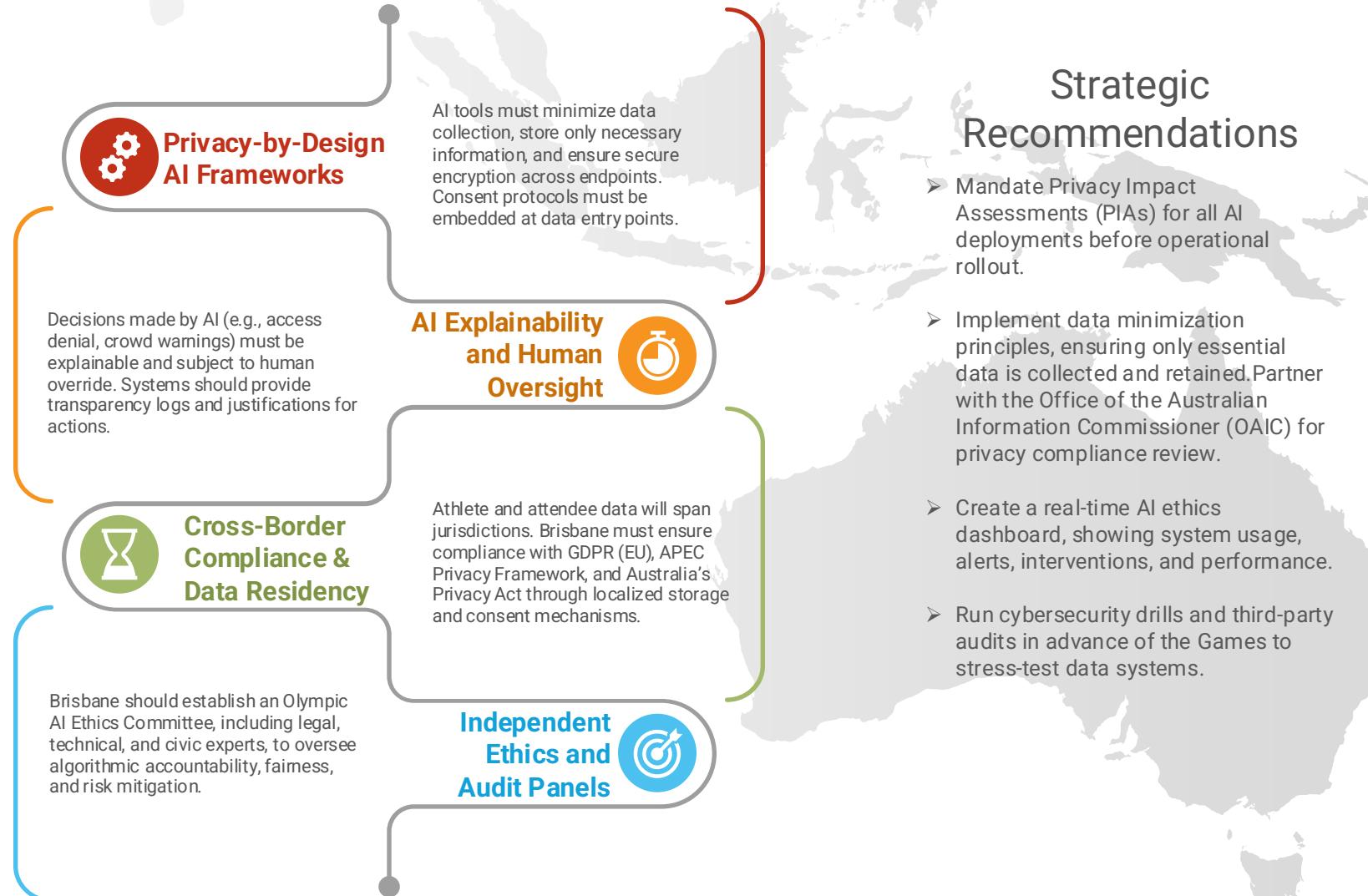
Why This Matters for Brisbane 2032

AI will play a central role in Brisbane 2032's operations—powering surveillance, biometric access, health monitoring, crowd analytics, and predictive response systems. These applications will collect and process highly sensitive personal data from athletes, spectators, staff, and international visitors.

Without robust compliance with Australian and international protection laws, Brisbane risks:

- Legal liability,
- Public backlash, and
- Irreversible loss of institutional trust.

AI systems must be transparent, secure, and ethically governed.



The background image shows the Brisbane city skyline at sunset, with the sky filled with orange and yellow clouds. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. A few small boats are visible on the water.

BRISBANE 2032 CONSUMER SEGMENTATION



CONSUMER SEGMENTATION

Consumers can be classified broadly into Primary and Secondary Consumers, which have a great influence on changing urban planning, investments, and the utilization of long-term infrastructure.

Spectators and Fans

As of now, specific projections for Brisbane 2032 are still pending. Historical data, however, suggests that events like the Sydney 2000 Olympics drew millions of spectators, and the same might be expected for Brisbane.

Athletes and Teams

Based on past Olympic games, the Brisbane 2032 Games is expected to accommodate more than 10,500 athletes, who will be competing in more than 32 sports disciplines.

Volunteers and Workforce

From the Tokyo 2020 Games which hired up to 80,000 volunteers, Brisbane 2032 can expect the same or a greater number of volunteers and staff to assist with event management.

Primary

Secondary

Consumers

Media and Broadcasters

It is estimated that thousands of media personnel, journalists, photographers and broadcasters from all over the world are expected to cover the Brisbane Olympics. Previous Games, had over 20,000 accredited media representatives, which suggests the same order of magnitude for Brisbane.

Governments & City Authorities

The Queensland Government has made available approximately AUD \$7.1 billion for Olympic-related infrastructure projects. This includes upgrading The Gabba, Brisbane Arena and supporting transport systems like Cross River Rail and Brisbane Metro.

Sponsors & Corporate Partners

Brisbane 2032 is expected to generate over \$1.5 billion in sponsorship revenue, in line with Tokyo 2020 trends. Opportunities are Venue naming rights (for instance, Brisbane Arena), Branded Olympic merchandise and digital campaigns.

Local Businesses & Real Estate Developers

SMEs and local vendors will be able to benefit from procurement, catering, accommodation, transport and event related services. Hospitality sectors are already anticipating 80 percent + hotel occupancy rates during peak Olympic weeks.

PRIMARY CONSUMERS – INFRASTRUCTURE NEEDS

World-class experiences for fans, athletes, volunteers, and media begin with seamless, inclusive, and tech-enabled infrastructure.



Accommodation: There will be a need for numerous lodging facilities, including hotels and short-term rentals.

Transportation: Many of the attendees are likely to use public transport, which means that adequate transportation is required to handle increased load.

Spectators and Fans



Athletes and Teams

Olympic Villages: Athletes' facilities must be set up to provide housing for athletes, ideally in close proximity to the competition sites.

Training Facilities: Athletes need easy access to top-notch training facilities in order to be at their best.

Transportation: Dedicated and efficient transit systems are required to ensure that movement is on time. The transportation plan should include the following elements:

Housing: The volunteer force requires budget friendly and easily reachable lodging options.

Transportation: This is because reliable transit systems are deemed essential to punctuality and the efficiency of volunteers.

Training Facilities: It is essential to have spaces that are ready for training sessions and briefings in order to prepare the workforce effectively.

Volunteers and Workforce



Media and Broadcasters

Media Centers: With high-speed internet, broadcasting facilities and real time data access.

Broadcasting Facilities: State of the art studios and commentary boxes for live coverage of the events.

Transportation: This is because reliable and prioritized transit options are essential to ensure swift movement. **Technology Support:** The latest digital infrastructure including 5G connectivity and cloud-based content management systems.



SECONDARY CONSUMERS – INFRASTRUCTURE NEEDS

Sustainable growth, smart cities, and strategic partnerships are the pillars that carry the Olympic legacy forward.

The need for more retail spaces, hospitality options and mixed use developments must therefore be addressed by local businesses and real estate developers as they get ready for the increased demand. New hotels and short-term rentals, as well as the revival of commercial areas, will require a proper approach to the management of temporary growth related to the Olympics and the development of long-term economic strategy.



Governments & City Authorities

Governments and city authorities will have to increase funding for public transport, enhance the security infrastructure and invest in sustainable urban projects in order to accommodate the increase in visitors without leaving a negative mark on the city. This will involve increasing the capacity of emergency services, improving roads and integrating smart city technologies as key to the smooth conduct of business both during and after the games.

Local Businesses & Real Estate Developers



Sponsors & Corporate Partners

Sponsors and corporate partners will require aesthetically appealing brand activation zones, premium hospitality spaces and high-tech media infrastructure in order to interact with the target audience properly. It is therefore important that seamless logistics, immersive digital experiences and exclusive networking venues are well considered in order to enhance engagement and provide a world class brand presence.

QUANTIFIABLE ECONOMIC IMPACT



Brisbane 2032 promises a powerful economic ripple—fuelling billions in spending, job creation, and urban development through both primary and secondary consumer impact.

Spectators, athletes, and workforce members are anticipated to generate over \$2.5 billion in direct spending, primarily through ticket sales, accommodation, local transit, dining, and tourism.

Volunteer and workforce mobility boosts local transit revenue and fills thousands of short-term housing leases, contributing \$200+ million in ancillary benefits.

Brisbane's fan parks, hospitality zones, and cultural festivals, are estimated to add \$150–200 million in indirect economic value through sponsor activations and visitor participation.

Consumer spending in food & beverage, merchandise, and city attractions is expected to cross \$700 million, driven by the average spectator spend of \$120–150 per day

PRIMARY CONSUMERS



Significant stimulus in the construction industry, with projections indicating \$3.6 billion in contracts awarded to local firms for Olympic infrastructure.

Real estate uplift in Olympic-adjacent precincts, with land and property values forecasted to grow by 15-25% in the five years leading up to the Games.

Small business engagement: over 10,000 SMEs across Queensland expected to participate in supply chains, hospitality, transport, and logistics.

~91,600 full-time equivalent job years in Queensland, covering construction, event operations, and support services.

Tourism and hospitality sectors to experience a 20–30% rise in visitation during the Olympic window, generating an additional \$2–3 billion in short-term spending.

Sources: Queensland Government Reports, International Olympic Committee (IOC) Reports, Brisbane 2032 Organizing Committee Publications, KPMG Australia Reports & Economic Analysis , Australian Bureau of Statistics (ABS)



REVENUE BREAKDOWN AND POTENTIAL BENEFITS

Brisbane 2032 is more than a sporting event—it's a \$17.6 billion catalyst for social unity, economic growth, and climate-positive transformation.

Delivering additional social benefits including:



ENHANCED
sense of
community
pride and social
cohesion



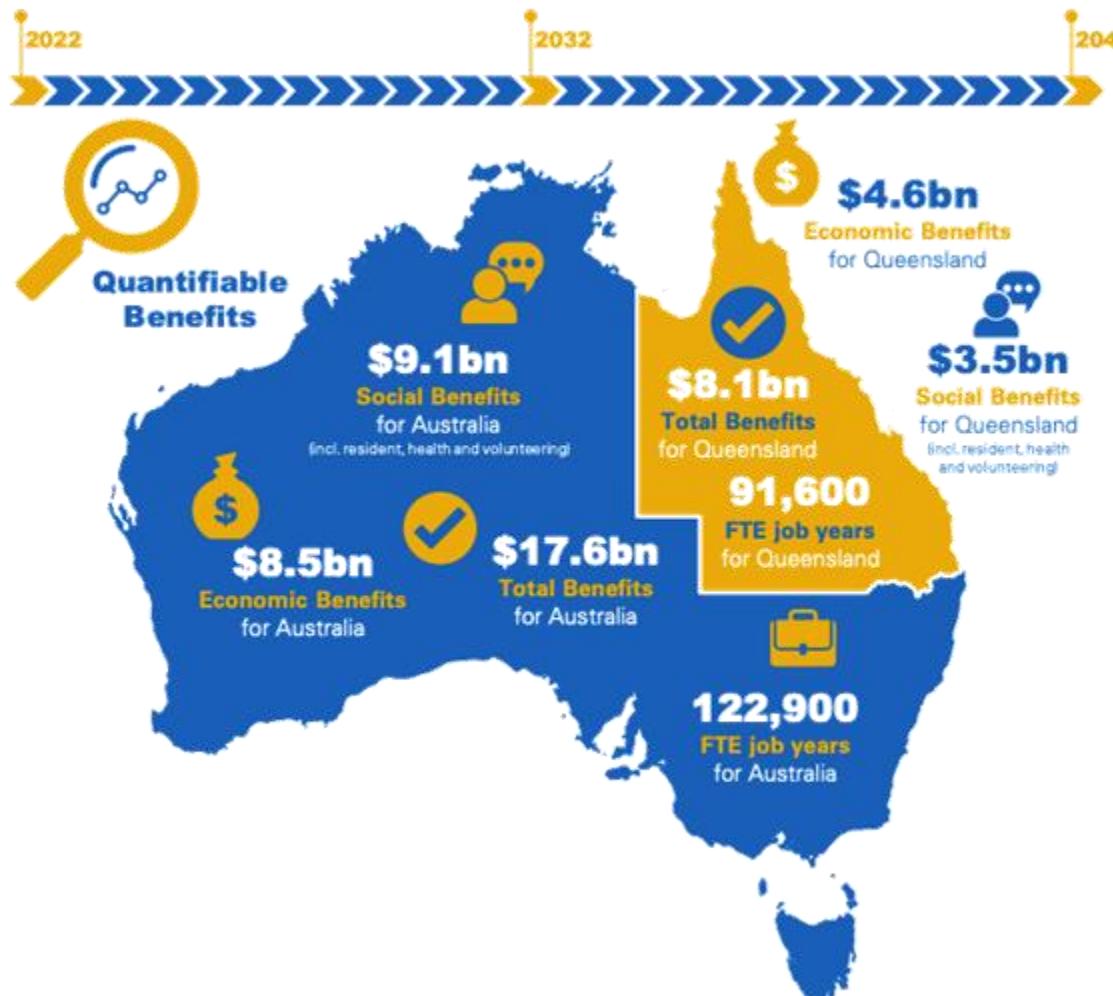
ENHANCED
partnerships
between
industry and
government



IMPROVED
elite sporting
pathways



ENSURING
the Games are
inclusive for all



Delivering a Climate Positive Games through:



REPURPOSING AND UPGRADING
existing infrastructure with
enhanced environmental credentials



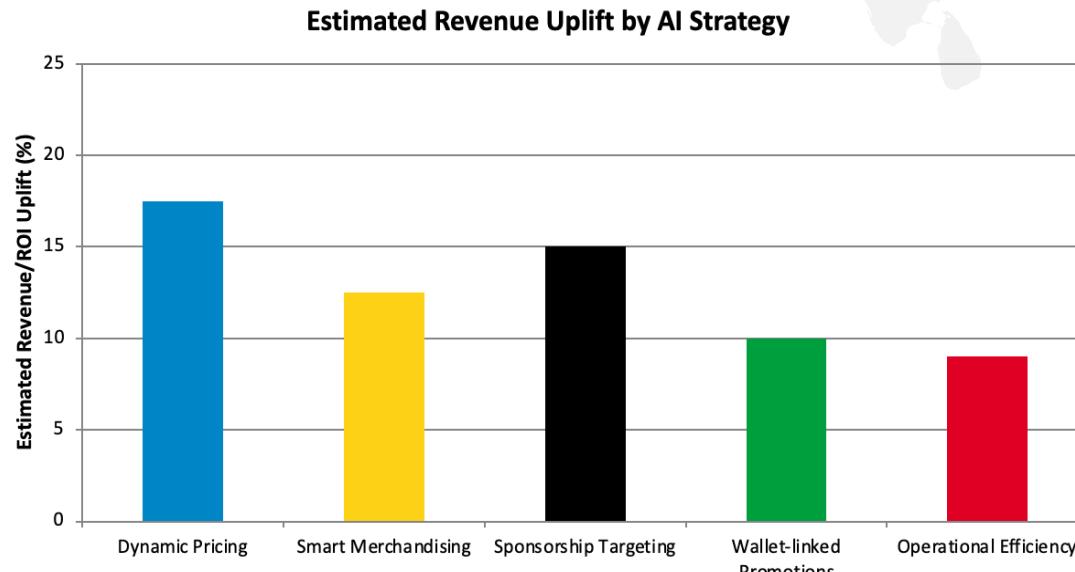
IMPLEMENTING
reducing, reusing,
and recycling
initiatives



MINIMISING
congestion and
emissions **through**
initiatives such as
greater use of public
transport



AI-POWERED REVENUE LEVERS



Sources: PwC Sports Intelligence Report 2022, EY Olympic Digital Outlook, Deloitte Fan Engagement Report 2022, Visa Consumer Insights 2021

AI programs are anticipated to increase Brisbane 2032's net revenue by over \$200M, optimize consumer spend, and reduce operational waste redefining Olympic operations' ROI levers.

Brisbane 2032 can become the first Olympics to use AI wisely, leveraging data to:

- Grow revenue per fan - Utilize AI to make personalized offers, dynamically price according to demand, and promote in real-time.
- Develop experiences unique to individuals; utilize behavior data to personalize content, products, and experiences to specific audience groups.
- Deliver green infrastructure efficiency - Introduce AI to logistics, crowd management, and energy optimization to reduce wastage and enhance long-term urban operations.

Strategy	Revenue Impact	Benefit Summary
Dynamic Pricing	↑ 15–20% ticket revenue	Maximizes session-based demand with auto-adjusted pricing
Smart Merchandising	↑ 10–15% conversion	Increases average basket size with AI-driven bundles
Sponsorship Targeting	↑ 12–18% sponsor ROI	Enhances ad relevance with real-time audience targeting
Wallet-linked Promotions	↑ Daily spend	Triggers in-the-moment offers for food, merch, services
Operational Efficiency	↓ 8–10% cost	Cuts workforce/logistics costs via predictive resourcing

Artificial intelligence enables deeply personalized and streamlined experiences for both sponsors and participants. It provides real-time price variation, logistics, merchandise, and fan engagement, thereby setting a model for Olympic revenues in the future.

The background image shows the Brisbane city skyline at sunset, with the sky filled with orange and yellow clouds. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. A few small boats are visible on the water.

BRISBANE 2032 INFRASTRUCTURAL LEGACY



PAST INFRASTRUCTURAL HIGHLIGHTS - Sustainability, Innovation, and Impact

London 2012



- Transformed **560 acres** of contaminated industrial land in East London into **Queen Elizabeth Olympic Park**, catalyzing long-term housing, parks, and community growth.
- **£6.5B investment** upgraded rail, buses, bike lanes, and pedestrian routes, permanently enhancing East London mobility.
- Established the **London Legacy Development Corporation (LLDC)** before the Games to drive long-term venue reuse.
- Pioneered mobile-first engagement and data-driven operations

Rio 2016



- Introduced modular designs like **Future Arena**, enabling dismantling and repurposing post-Games.
- Major upgrades to **metro (Line 4)** and new **BRT (Bus Rapid Transit) corridors**, improving urban mobility.
- Revitalized the old port district with new museums, commercial spaces, and public plazas.
- Enabled early adoption of **cloud computing** and **smart city deployments** for Brazil.

Qatar 2022



- **Stadium 974** was built from shipping containers and designed for full dismantling post-event – a global first.
- Deployed AI-driven crowd control, smart cooling systems, and real-time transport management across Doha.
- Stadiums and key infrastructure were certified under the **Global Sustainability Assessment System (GSAS)** for environmental performance.

Paris 2024



- Paris reused **95%** of the existing venues and built temporary sites, minimizing new construction and environmental impact.
- Held events at landmarks like the **Eiffel Tower, Seine River, and Place de la Concorde**, blending Olympic competition with Paris's cultural identity and boosting tourism visibility.
- The Olympic Village was designed to seamlessly transition into a mixed-use neighborhood post-Games with housing, schools, and businesses.
- Paris 2024 achieved a **50% lower carbon footprint** compared to London 2012 through renewable energy, green mobility, and material reuse.

Past Olympic and global events show that sustainable design, smart innovation, and legacy-driven planning are essential for delivering enduring impact beyond the Games.



PAST INFRASTRUCTURAL CHALLENGES - Building Smarter for Brisbane

London 2012



- East Village housing became largely unaffordable post-Games, pricing out original residents.
- Venues like the **Water Polo Arena** were dismantled or underutilized due to lack of sustainable post-use planning.
- Total costs **exceeded £9B**, nearly quadrupling original estimates due to contingency and security expenses.

Rio 2016



- Key venues like the **Olympic Park and Velodrome** fell into severe disrepair within two years post-Games.
- Over **77,000** residents were displaced, many without compensation or adequate relocation.
- Widespread corruption scandals in construction projects inflated costs and damaged Rio's financial health.

Qatar 2022



- Global backlash over **migrant worker treatment** overshadowed sustainability achievements.
- Despite modularity plans, several stadiums face uncertain reuse or downsizing delays.
- Widespread use of biometric and AI surveillance during the tournament raised serious global privacy concerns with several data leaks during the event.

Paris 2024



- Costs exceeded initial projections by **10–15%**, mainly due to security upgrades, inflation, and COVID-19 recovery adjustments.
- Redevelopment around **Seine-Saint-Denis** raised concerns over displacement and affordability loss for local communities.
- Heavy reliance on **AI, OBS Cloud 3.0 broadcasting**, and digital ticketing increased exposure to cyberattacks during the Games.

Past events reveal that without adaptive planning, sustainable reuse, and ethical governance, even well-designed infrastructures risk financial strain, underutilization, and community disengagement.

The background image shows the Brisbane city skyline at sunset, with the sky filled with orange and yellow clouds. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. A few small boats are visible on the water.

BRISBANE 2032 PROPOSED TECHNOLOGIES



PROPOSED TECHNOLOGIES

Brisbane 2032 seeks to redefine Olympic planning and execution through smart, adaptive technologies.

Predictive Analytics & Machine Learning

Expected to forecast ticket sales, transportation demand, and accommodation needs using historical and live data. Could enable dynamic pricing strategies and real-time resource allocation during peak event periods.

AI-Powered Simulation

Will be used to digitally model crowd dynamics, transport flow, and emergency scenarios to inform venue and city planning. Aims to optimize safety protocols and reduce logistical bottlenecks through predictive scenario testing.



Digital Twin Technology

Proposed to simulate venue usage, energy consumption, and stress testing of Olympic infrastructure. May assist in evaluating legacy use scenarios, such as converting athlete villages into public housing.

Cloud-Based AI Infrastructure

Planned to support real-time systems including ticketing, surveillance, fan applications, and live data streaming. Will offer scalability and resilience to handle peak digital traffic across venues and operational networks.

Smart City Management Systems

Designed to unify control of transport, utilities, and emergency response through IoT-connected infrastructure. Intended to streamline operations, improve service coordination, and enhance sustainability outcomes during the Games.



WHAT MAKES PROPOSED TECHNOLOGIES WORK ?

AI - Powered Simulation

AI-powered simulation enables real-time scenario modelling for crowd movement, transportation, and emergency responses. These simulations help inform infrastructure planning, operational safety, and user experience before physical deployment.

Predictive Analytics & Machine Learning

Predictive analytics leverages historical and real-time data to forecast demand, resource usage, and behavioural trends. It supports smarter, more responsive operations during high-density events.

Use cases – Brisbane 2032 Applications

-
- 1 Crowd Flow Modelling:** Simulate spectator movement through stadiums, entry gates, and concourses to predict congestion points. This supports layout refinement to improve overall crowd throughput.
 - 2 Infrastructure Optimization:** Analyse how different configurations (e.g., restroom locations or signage placement) affect traffic and accessibility in high-density areas.
 - 3 Evacuation Planning:** Model emergency evacuations based on event schedules and threat types to determine optimal exit routes and safety zone placement.
 - 4 Transport Hub Simulation:** Evaluate the load on train, bus, and pedestrian routes during peak arrival/departure times to prevent bottlenecks.
 - 1 Ticket Demand Forecasting:** Use regression and time-series models to predict ticket sales trends and optimize event scheduling. This supports pricing strategy and crowd control.
 - 2 Dynamic Pricing Algorithms:** Implement ML models that adjust ticket and merchandise prices based on demand signals, competition levels, and inventory turnover.
 - 3 Staffing Optimization:** Anticipate volunteer no-shows or peak staffing demands using classification models and historical attendance data.
 - 4 Inventory Forecasting:** Use unsupervised learning to predict food, merchandise, and medical supply needs per venue.



WHAT MAKES PROPOSED TECHNOLOGIES WORK ?

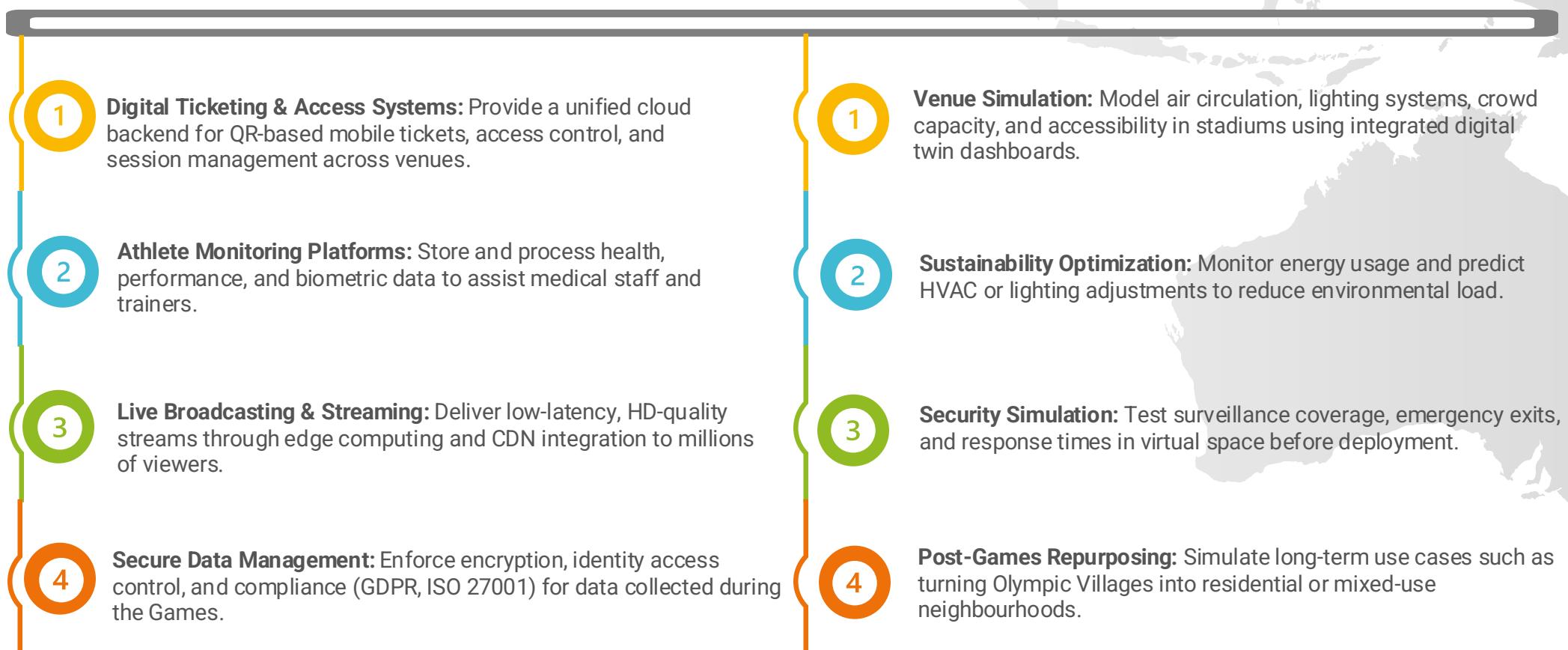
Cloud-Based AI Infrastructure

Cloud infrastructure offers the computational and storage backbone for Olympic operations, enabling fast data processing, system integration, and resilient digital experiences across all user touchpoints.

Digital Twin Technology

Digital twins combine BIM models, sensor feeds, and real-time simulation to create virtual counterparts of physical assets. These systems allow stakeholders to optimize design, monitor performance, and explore legacy options pre- and post-Games.

Use cases – Brisbane 2032 Applications





WHAT MAKES PROPOSED TECHNOLOGIES WORK ?

Smart City Management Systems

Smart city platforms provide unified oversight of transit, utilities, waste, and emergency services using IoT and AI. These systems enable live decision-making and cross-agency coordination at urban scale.

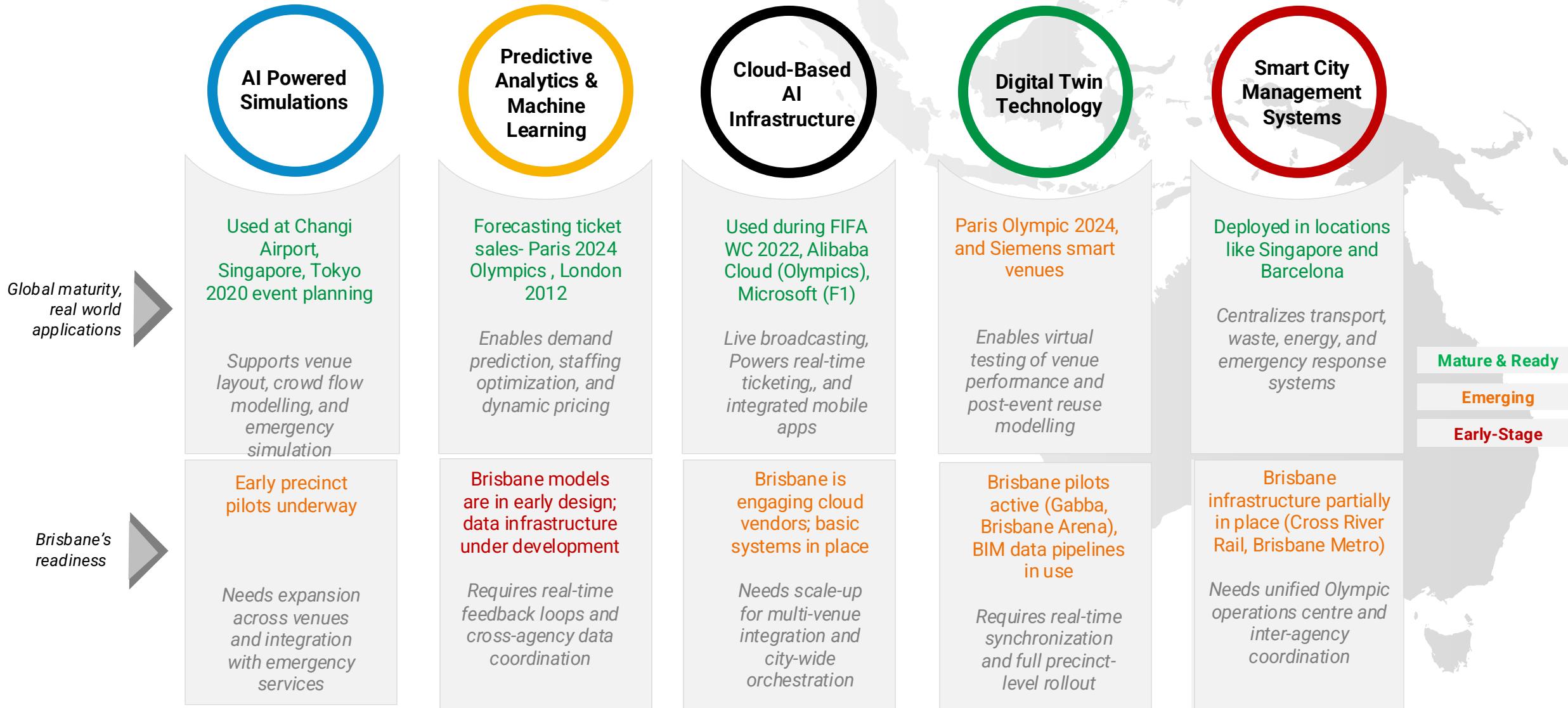
Use cases – Brisbane 2032 Applications

- 
- 1** **Waste & Utility Automation:** Optimize garbage pickup, water supply, and energy grid performance based on real-time usage and predictive demand.
 - 2** **Crisis Response Management:** Connect emergency responders, hospitals, and traffic authorities into a single system for immediate coordination.
 - 3** **Sustainability Scorecards:** Visualize and track energy usage, CO2 emissions, and waste generation across Olympic venues.
 - 4** **Mobility Coordination:** Aggregate real-time data from metro, buses, bike sharing, and pedestrian areas to manage crowd flow and reroute traffic when necessary.



CURRENT STATE OF THE PROPOSED TECHNOLOGY

Global maturity, real world applications and Brisbane's readiness





TECHNOLOGY-DRIVEN IMPACT MATRIX

Mapping how key smart technologies enhance the Olympic experience for spectators, athletes, city authorities, and local communities.

Spectators

Enhancing experience, accessibility, and safety

- **AI-Powered Simulation:** Predicts and prevents crowd congestion at entry points and transport hubs.
- **Predictive Analytics:** Offers personalized updates (e.g., transport, queues, offers) through mobile apps.
- **Smart City Systems:** Supports real-time navigation and environmental comfort (e.g., cooling, noise).
- **Cloud Infrastructure:** Enables smooth ticketing, mobile wayfinding, and event alerts at scale.

Athletes & Teams

Supporting logistics, safety, and health monitoring

- **Cloud Infrastructure:** Stores biometric, training, and performance data in real time.
- **Predictive Analytics:** Helps in medical forecasting (injury prevention, load management).
- **Smart City Systems:** Ensures optimized athlete transport and emergency access routes.
- **Digital Twins:** Simulates warm-up spaces, track layout, and facility usage for performance optimization.

City Authorities

Coordinating emergency response, transport, and sustainability

- **Smart City Systems:** Centralized control for traffic, utilities, waste, and emergency services.
- **AI Simulation:** Plans and validates crowd management strategies across venues and public spaces.
- **Cloud Infrastructure:** Powers secure data sharing across city departments and agencies.
- **Predictive Analytics:** Anticipates peak demand for police, transit, sanitation, and health resources.

Legacy Communities
Delivering long-term value through reuse and urban innovation



RISKS AND MITIGATION STRATEGIES FOR PROPOSED TECHNOLOGIES

For Brisbane 2032, emerging technologies must align with the city's infrastructure realities, urban dynamics, and public trust imperatives.

Risks	Mitigation
Data Privacy & Cybersecurity Risk of data breaches involving sensitive athlete, visitor, and operational data across cloud and IoT systems	Data Privacy & Cybersecurity <ul style="list-style-type: none">Enforce GDPR, Australian Privacy Act, and ISO 27001 compliance.Use end-to-end encryption, strict access controls, and consent-driven data collection
Post-Games Infrastructure Underuse Risk of AI systems and infrastructure being abandoned or underutilized after the Games.	Post-Games Infrastructure Underuse <ul style="list-style-type: none">Use Digital Twins for early legacy planning.Simulate venue reuse (housing, parks, education centers) before construction
Simulation Inaccuracy Simulations may not perfectly predict real-world behavior during peak crowd or emergency situations.	Simulation Inaccuracy <ul style="list-style-type: none">Continuously calibrate simulations using live event data.Perform contingency scenario testing (Monte Carlo simulations)
Integration Challenges Lack of coordination between city departments (transport, emergency, utilities) may disrupt smart city operations.	Integration Challenges <ul style="list-style-type: none">Set up a Unified Olympic Command Center with AI dashboards.Establish live data sharing protocols across agencies
Cost Overruns from Technology Deployment Failure to properly budget for AI infrastructure, digital twins, or cloud services could cause budget blowouts.	Cost Overruns from Technology Deployment <ul style="list-style-type: none">Engage vendors early through SLAs.Adopt modular, scalable cloud architectures to "pay-as-you-go"

A photograph of the Brisbane city skyline at sunset. The sky is filled with dramatic orange and yellow clouds. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. Several small sailboats are visible on the water. The overall atmosphere is vibrant and captures the beauty of the city at dusk.

BRISBANE 2032 COST & LEGAL IMPLICATIONS



TOTAL ESTIMATED COST OF IMPLEMENTING PROPOSED TECHNOLOGIES

Spend once, win thrice principle:

Financial: For ≈ US\$19.2–\$25.6 million in digital cap-ex you unlock US\$115.2–\$224.0 million of hard savings and new revenue (5-10× pay-back).

Sustainability: The same stack cuts ~5,000 t CO₂-e up-front and >2,000 t CO₂-e per year through smarter buildings and fleets.

Legacy & Risk: You leave Queensland with an AI-ready smart-city operating layer, slash schedule-overrun risk by up to 15%, and future-proof venues for community use—not mothballs.

Digital-Twin Technology

With US\$4.5–\$9.6M (~US\$192K–\$320K per venue) Brisbane can deploy digital twins to optimize HVAC, lighting, and crowd flows in real time. These systems can cut energy use by 8–15%, saving US\$26–\$58M and reducing 190–600 tonnes of CO₂ per stadium annually. Even post-Games, venues will continue self-optimizing through AI updates.



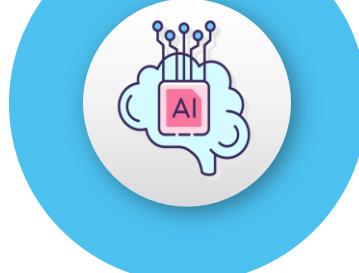
AI-Powered Simulations

An investment of US\$3.2–\$6.4M (~US\$128–\$256k per venue) enables Brisbane to simulate crowd, transport, and emergency scenarios before construction. Early clash detection and design re-work prevention could save US\$32–\$64M and cut 5–15% of capital costs, while preventing 2,000–5,000 tonnes of CO₂ emissions.



Cloud-Based AI Infra

An investment of US\$3.2–\$4.5M (~US\$165–\$264k per venue) allows Brisbane to scale compute power dynamically. This elasticity could cut data-center costs by 30–40%, saving US\$23–\$46M, while green cloud regions reduce emissions by 200–500 tonnes of CO₂-e per venue annually.



Predictive Analytics & ML

An investment of US\$2.4–\$3.2M (~US\$64–\$160k per venue) enables Brisbane to forecast real-time demand, optimize staffing and logistics, and recover US\$19.2–\$38.4M while cutting 150–400 tonnes of CO₂-e per venue. Predictive algorithms position resources precisely ahead of crowd movements.

Smart-City Management Systems

For US\$2.0–\$4.0M (~US\$96–\$192k per precinct) Brisbane can deploy a unified control platform to manage traffic, waste, energy, and emergency responses from a single dashboard. Real-time optimization could save US\$26–\$51M in operations and cut 100–300 tonnes of CO₂-e per venue annually. One smart system orchestrates buses, bins, and power flows across the city like a perfectly tuned orchestra.

Turn drawings into data, concrete into code and Opex into opportunity – the only thing we can't afford is to build Brisbane 2032 the 2022 way.



ENVIRONMENTAL IMPACT AND REDUCED CARBON FOOTPRINT

Brisbane's tech stack can reduce up to 5,000 tons CO₂e, directly supporting its ambition to be the first climate-positive Olympic host

AI-Powered Simulations

AI-powered simulations are estimated to reduce carbon emissions by approximately 2,000 to 5,000 tons of CO₂e during the planning and construction phases of Olympic venues. By enabling virtual testing of designs and operational scenarios, these simulations help prevent unnecessary construction changes, thereby lowering the use of cement, steel, and fuel during rework phases. For instance, avoiding a single venue redesign can save between 100 to 200 tons of CO₂e. When applied across multiple venues, early interventions facilitated by simulations can lead to substantial cumulative savings. Additionally, optimizing layouts and logistics through simulations contributes to further reductions in material usage and energy consumption.



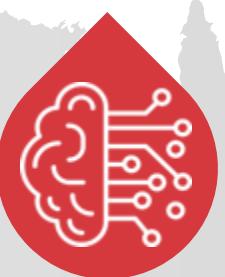
Predictive Analytics and Machine Learning

Predictive analytics and machine learning tools help optimize operations by reducing unnecessary resource consumption and emissions. Improved crowd distribution models minimize traffic congestion and vehicle idle time, saving approximately 30–70 tons CO₂e. Optimized staff and volunteer scheduling avoids redundant transportation, reducing emissions by another 40–100 tons. Additionally, better demand forecasting curbs overproduction and refrigeration requirements for perishable goods, leading to 50–150 tons CO₂e savings. These combined interventions result in net emissions savings of approximately 150–400 tons CO₂e per venue over the planning and execution lifecycle of the Games.



Cloud-Based AI Infrastructure

Estimated CO₂e Savings: ~200–500 tons CO₂e per venue annually. Transitioning to cloud-based AI infrastructure reduces reliance on energy-intensive on-premises data centers. Cloud providers often utilize renewable energy sources, leading to lower carbon footprints. For instance, implementing AI systems in buildings has shown to reduce HVAC energy consumption by up to 15.8%, saving significant amounts of CO₂e annually.



Digital-Twin Technology

Annual energy use per Olympic venue = 3–5 GWh (conservative estimate)
Digital twins enable 8–15% energy savings via smarter HVAC, lighting & scheduling.
240,000–750,000 kWh saved/year/venue → ~190–600 tons CO₂e saved per venue annually → \$30,720–\$100,000 saved/year (can save up to \$300,000 or more, depending on the energy usage patterns) (@\$0.13/kWh)

Implementing digital twin technologies can lead to an estimated **15% reduction in emissions**, translating to significant CO₂e savings per venue. These technologies optimize energy and HVAC usage in real time by simulating and monitoring various operational aspects of the venues. For example, digital twins enable smarter HVAC, lighting, and scheduling, which can result in substantial energy savings and corresponding emission reductions. The adoption of digital twins in events like the Paris 2024 Olympics has showcased their effectiveness in enhancing sustainability.



Smart City Management Systems

Estimated CO₂e Savings: ~100–300 tons CO₂ per venue annually.

Smart city systems integrate AI-driven solutions for energy management, optimizing urban infrastructure and services. Real-time data analysis enables efficient energy use, reducing emissions. For example, implementing digital twins and AI in building management has demonstrated energy savings of up to 30%, contributing to substantial CO₂e reductions.



WHAT LEGAL IMPLICATIONS SHOULD WE CONSIDER?

Ensuring AI use aligns with legal standards is key to protecting people, infrastructure, and trust during global events.

Security

AI systems will undertake vital functions like crowd monitoring, access control, wearable health information, and hence will be open targets for cyberattacks.

Key Legal Considerations -

- Liability for data breaches on personal or operational data
- Protection of infrastructure obligations under national law
- AI model vulnerability management (adversarial attacks)

Relevant Laws -

- Australian Security of Critical Infrastructure Act 2018
- Cybersecurity Strategy 2023–2030 (AU)



Privacy

Since AI collects sensitive data privacy protection is critical especially because of international participation.

Key Legal Considerations -

- Consent acquisition: Transparent, informed, withdrawable
- Restrictions on data use: Purpose-based, time-limited retention

Relevant Laws -

- Australian Privacy Act 1988
- General Data Protection Regulation (GDPR) (EU visitors/athletes)
- IOC Athlete Data Protection Guidelines



International Data

The Olympics involve global citizens. AI systems must respect data protection laws from multiple countries and handle data transfers lawfully.

Key Legal Considerations -

- Data residency requirements (e.g., EU data stored in the EU)
- International data transfer agreements with third-party vendors
- Consent from international athletes/visitors regarding their data use

Relevant Laws -

- GDPR, California Consumer Privacy Act (CCPA), APEC Privacy Framework



Ethical AI Use

AI should not replace human judgment in high-stakes decisions like medical triage, emergency responses, or crowd control predictions.

Key Legal Considerations -

- Human-in-the-loop safeguards for critical system
- Bias audits in predictive models
- Redress mechanisms for users affected by AI decisions

Relevant Laws -

- UNESCO AI Ethics Recommendation
- OECD Principles on AI



The background image shows the Brisbane city skyline at sunset, with the sky filled with orange and yellow clouds. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. A few small boats are visible on the water.

BRISBANE 2032 FINAL RECOMMENDATIONS



FINAL RECOMMENDATIONS | BRISBANE 2032

Brisbane's legacy will be built through resilient infrastructure, climate-positive innovation, dynamic citizen engagement, and seamless smart city integration beyond 2032.



Smart Operations and Resilient Infrastructure Management

Establish an AI-enabled, real-time Olympic Operations Center integrating venues, transport, energy, safety, and crowds.

Deploy Digital Twins for dynamic monitoring, predictive maintenance, and emergency response coordination.

Build scalable cloud-edge architectures for high availability and disaster resilience.

Ensure all technology is designed for adaptive reuse by Brisbane's public sector post-Games (e.g., smart city control rooms).

1

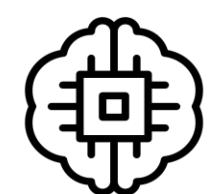
2

Legacy-First Infrastructure and Post-Games Activation Strategy

Mandate legacy conversion blueprints for every venue: stadiums → community hubs, athlete villages → green residential districts.

Design modular, flexible architecture that simplifies post-Games repurposing without costly retrofits.

Launch early partnerships with local businesses, schools, nonprofits to activate post-Games venue use cases immediately after 2032.



Climate-Positive and Disaster-Resilient Urban Development

Integrate climate-resilient construction standards (e.g., heatwave resistance, flood mitigation) across all Games precincts.

Achieve carbon-neutral operations through renewable grids, sustainable transport, and green building certifications (e.g., Green Star, LEED).

Incorporate green corridors, biodiversity hubs, and permeable surfaces into Olympic village and venue design.

3

4

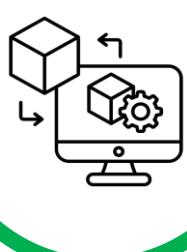
Legacy Monitoring, Reporting & Community Adaptation

Launch open-data dashboards tracking post-Games infrastructure use, sustainability, and community engagement.

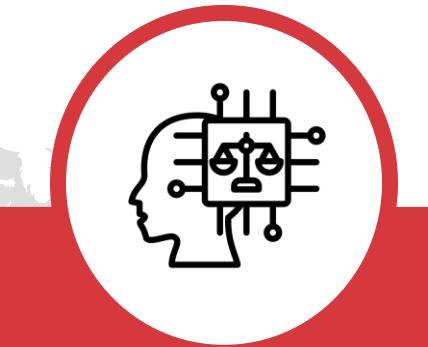
Use citizen feedback and AI-driven analytics to adjust venue usage and public services dynamically.

Publish annual Brisbane 2032 Legacy Reports to ensure transparency and drive adaptive legacy management.

Enable dynamic reallocation of underused assets through predictive analytics and AI-driven citizen engagement insights.



5



Seamless, Inclusive Mobility and Community Services

Expand AI-enabled smart mobility systems across rail, bus, bike, pedestrian, and ferry networks with a Games-to-legacy transition plan.

Prioritize inclusive design: real-time accessibility support (multilingual apps, disability routing, AI-guided crowd movement).

Build "last mile" connectivity hubs around all Olympic venues ensuring easy integration into Brisbane's long-term mobility fabric.

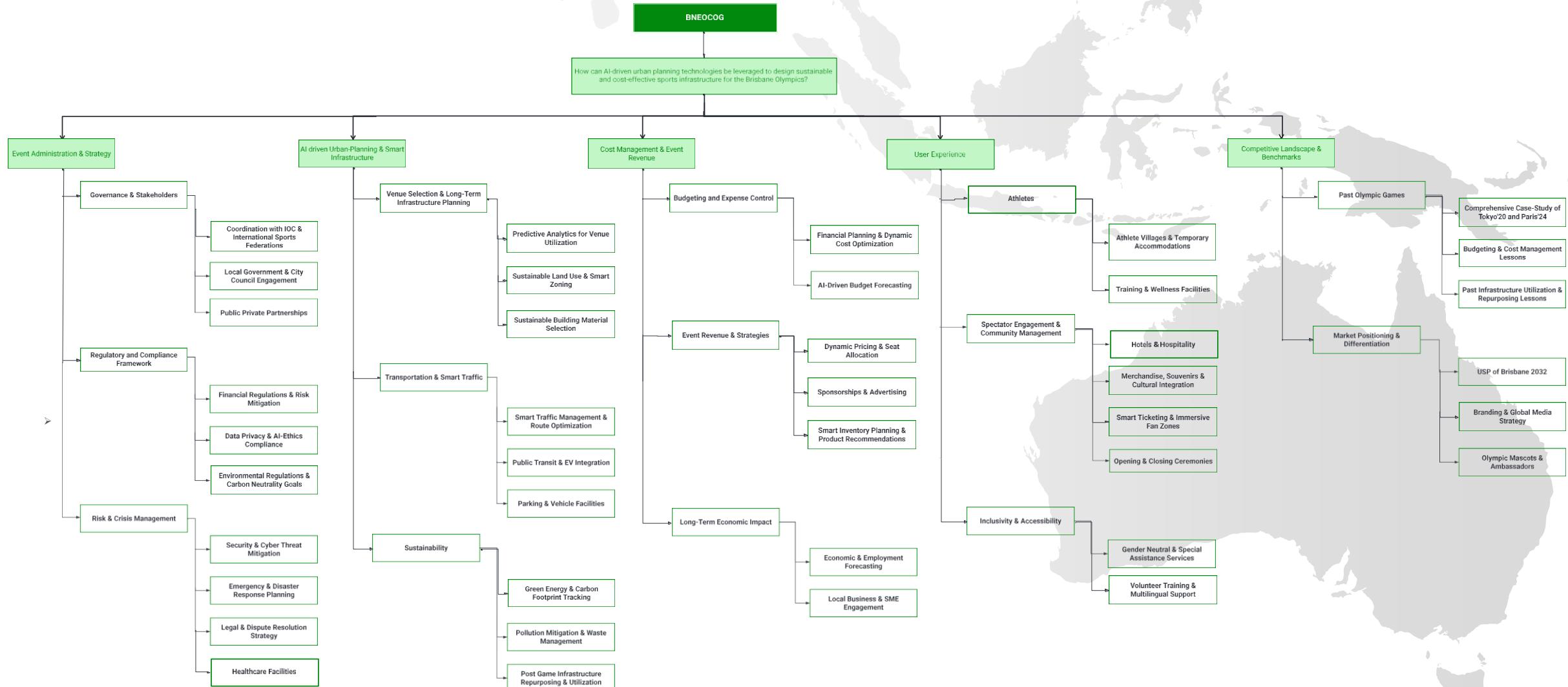
A photograph of the Brisbane city skyline at sunset. The sky is filled with dramatic, colorful clouds in shades of orange, yellow, and blue. The city's modern skyscrapers are reflected in the calm water of the river in the foreground. Several small sailboats are visible on the water. The overall atmosphere is serene and captures the beauty of the city at dusk.

BRISBANE 2032 APPENDIX

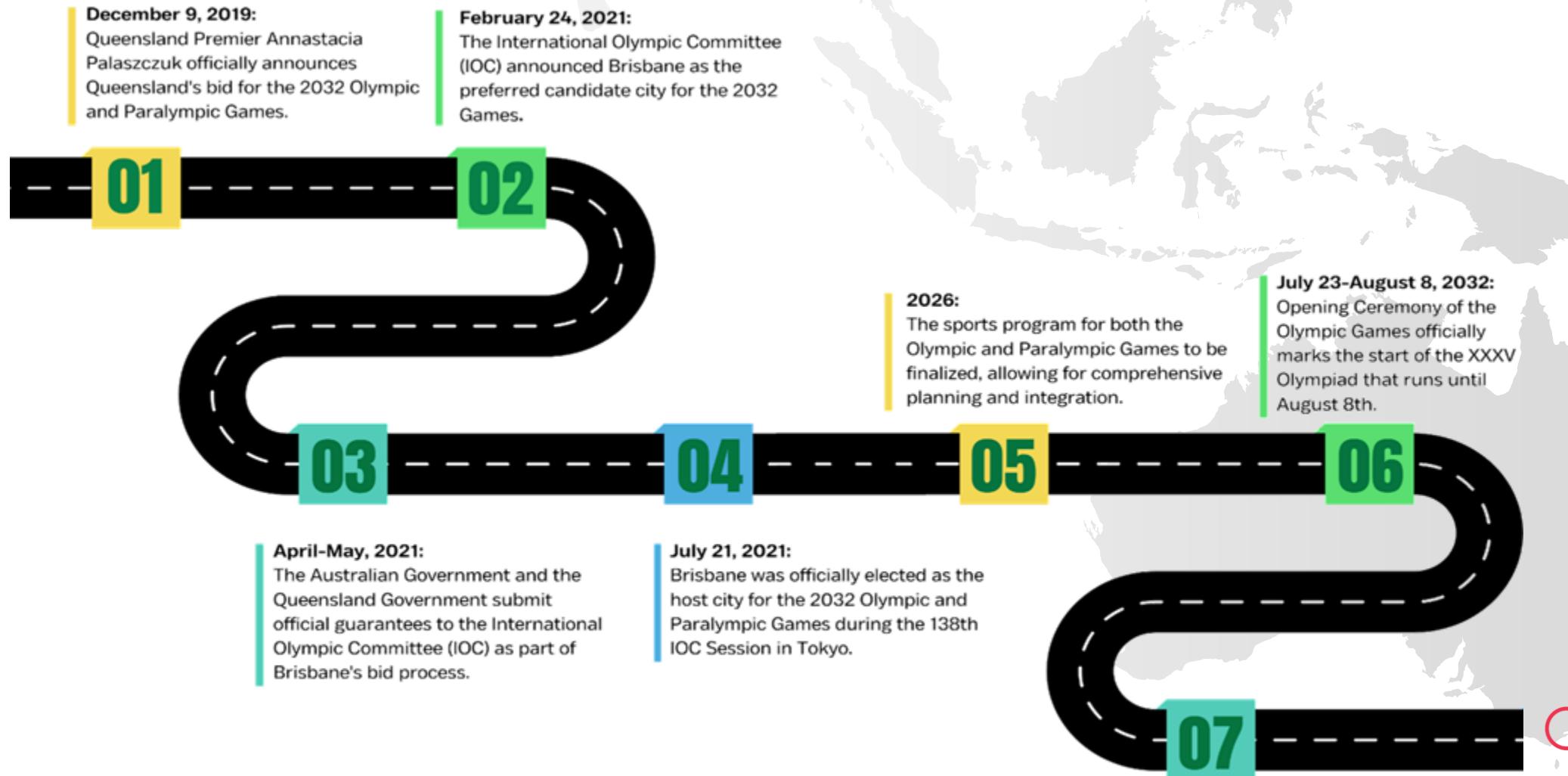
ISSUE TREE



Mapping the core challenges and solution pathways to deliver a sustainable, efficient, and globally impactful Brisbane 2032 Olympic Games.



ROAD TO BRISBANE 2032



From bid to bold vision—Brisbane's Olympic journey is a decade-long roadmap of strategic commitment, global collaboration, and sustainable ambition.
Every milestone on this path reflects not just progress, but purpose—laying the foundation for a transformative and climate-positive Olympic legacy.



How can Brisbane 2032 be designed to deliver lasting social value beyond the Games themselves?

Prioritize multi-use venues that can serve local communities post-Games. Smaller, flexible facilities can promote regular community use rather than becoming “white elephants.”

What strategies have ensured that Olympic events translate into increased long-term sport participation?

Develop programs and public spaces that keep people active year-round, not just during the Games. Embed physical activity into daily routines and community life.

Your research often links sport engagement with health outcomes – how can Brisbane design Olympic programming to enhance population health?

Focus on habit formation. Temporary excitement fades quickly, so it's important to offer sustained access to inclusive, health-focused programs.

You've written about climate vulnerability in sport – what specific risks should Brisbane account for in its Olympic infrastructure planning?

Brisbane should go beyond global templates and consider local risks like flooding and heatwaves. Infrastructure needs to be resilient, not just compliant.

If you were advising Brisbane 2032 directly, what would be your top recommendation for using technology to support inclusive legacy outcomes?

Use AI-driven feedback and community engagement tools to tailor programs in real time—understand how people are feeling, engaging, and what barriers they face.

What role do community identity and sport fandom play in building Olympic legacy at a local level?

Strong local identity can transform Olympic enthusiasm into ongoing civic pride. Programs should be co-designed with local communities to reflect shared values



What technologies enhanced your experience at Paris 2024?

Integrated apps made logistics (schedules, updates, nutrition) seamless and reduced stress for athletes.

How can Brisbane strengthen athlete-community connection?

Host cultural exchange events and open training sessions to make athletes more accessible and relatable.

What stood out in terms of sustainability at the Games?

Eco-friendly practices in athlete villages (waste reduction, reusable materials, smart cooling) were impactful and should be expanded.

How can training and recovery facilities improve?

Brisbane should invest in smart recovery tech (wearables, cooling pods, AI trainers) for peak performance.

What helped you feel included and supported as an international athlete?

Multilingual support teams, diverse meals, and inclusive signage all made a huge difference. Brisbane should build on that.

How can Brisbane elevate the overall athlete experience?

Give athletes a platform to share their stories and experiences beyond medals – amplify athlete voices in public spaces and media.



PRIMARY CONSUMERS

Core Stakeholders at the Heart of the Brisbane 2032 Olympic Experience

Spectators and Fans

As of now, specific projections for Brisbane 2032 are still pending. Historical data, however, suggests that events like the Sydney 2000 Olympics drew millions of spectators, and the same might be expected for Brisbane.

Athletes and Teams

Based on past Olympic games, the Brisbane 2032 Games is expected to accommodate more than 10,500 athletes, who will be competing in more than 32 sports disciplines.



Volunteers and Workforce

From the Tokyo 2020 Games which hired up to 80,000 volunteers, Brisbane 2032 can expect the same or a greater number of volunteers and staff to assist with event management.

Media and Broadcasters

It is estimated that thousands of media personnel, journalists, photographers and broadcasters from all over the world are expected to cover the Brisbane Olympics. Previous Games, e.g. Tokyo 2020 and Paris 2024, had over 20,000 accredited media representatives, which suggests the same order of magnitude for Brisbane.

Sources: Sydney 2000 Broadcast Report - Olympic.org, Olympics.com - Spirit of Volunteering in Tokyo



SECONDARY CONSUMERS

Understanding the Broader Ecosystem of Indirect Stakeholders Driving Olympic Success

Public Investment: The Queensland Government has made available approximately AUD \$7.1 billion for Olympic-related infrastructure projects. This includes upgrading The Gabba, Brisbane Arena and supporting transport systems like Cross River Rail and Brisbane Metro. These investments will enhance connectivity, accessibility and sustainability in and beyond the 2032 Games, in readiness.

Commercial Revenue Generation: Brisbane 2032 is expected to generate over \$1.5 billion in sponsorship revenue, in line with Tokyo 2020 trends.

Opportunities are Venue naming rights (for instance, Brisbane Arena), Branded Olympic merchandise and digital campaigns, Integration in digital ticketing, transport passes, and wearable tech.

Governments & City Authorities

Local Businesses & Real Estate Developers

Sponsors & Corporate Partners

Economic Opportunity: As stated by the Queensland Government's Economic Impact Report, the Games are expected to produce \$8.1 billion in economic and social value for Queensland alone, and \$17.61 billion for Australia over a 20-year time frame. Real estate appreciation is expected to occur mainly in the Olympic precincts and along the upgraded transport corridors (Woolloongabba, Albion) respectively.

Business Engagement: SMEs and local vendors will be able to benefit from procurement, catering, accommodation, transport and event related services. Hospitality sectors are already anticipating 80 percent + hotel occupancy rates during peak Olympic weeks.

Sources: KPMG Preliminary economic, social and environmental analysis report for Brisbane 2032 Olympics and Paralympic Games



CONSUMER SEGMENTATION

WHY CONSUMER SEGMENTATION MATTERS?

Strategic Urban Development

- Encourages data-informed infrastructure investment that is a reflection of genuine consumer demand and not overcapacity or wastefulness.
- Helps Brisbane 2032 optimize zoning, transport planning, and smart city integration for future applications.
- Example: London 2012's infrastructure planning led to 90%+ post-Olympic venue usage, ensuring urban development beyond the event.

Public-Private Partnerships (PPP)

- Fosters collaboration between governments, investors, and business houses to deliver a well-funded, well-organized event.
- Enables the city to utilize corporate sponsorships to fund infrastructure, lessening the taxpayers' burden.
- Example: Los Angeles 2028 is a 100% privately financed model, which caps the city's financial exposure while assuring economic profit.

Financial Sustainability

- Guarantees the economic sustainability of Olympic ventures in the long term by aligning capital spending with revenue-generation possibilities.
- Consumer-driven segmentation supports forecasting of demand, leading to better budget allocation and sustainable funding sources.
- Example: Paris 2024 will generate €3.8 billion in sponsorship and ticketing revenues to cover infrastructure costs.



KEY GOALS FOR CUSTOMER EXPERIENCE

Seamless Event Access & Navigation

Simple and efficient ticketing systems, mobile entry, and contactless payments. AI-powered crowd management for smooth flow between public transport stations and event venues.



Affordable & Transparent Pricing

Low-cost ticketing plans and transparent pricing plans. Reasonable access and travel prices to make the event reachable to an international crowd.



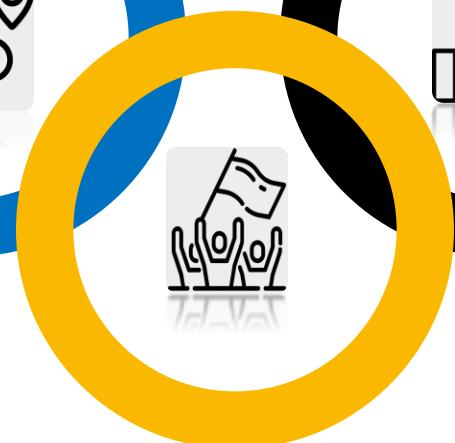
Sustainability & Eco-Friendly Games

Carbon-neutral venues and renewable energy-based facilities. Electric vans or bike rentals are offered as green transportation plans for the attendees.



Immersive & Interactive Fan Experience

Experiences augmented reality (AR) and virtual reality (VR) for deeper interaction. User-generated AI-powered, personal recommendations for restaurant, shopping, and entertainment activities.



Safety, Security & Inclusivity

Predictive security fueled by AI for fostering safety and immunity from interference. Convenient facilities like unisex areas, disabled guests' facilities, and multilingual services for tourists.



REVENUE BREAKDOWN AND METRICS

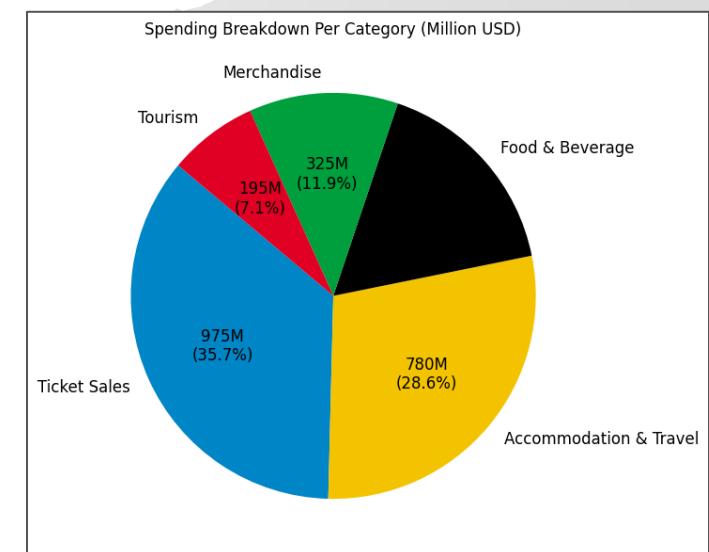
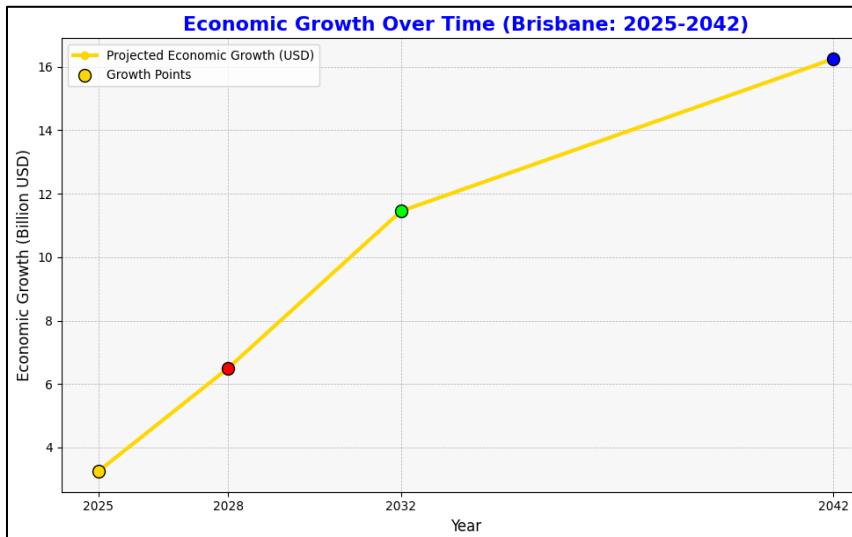
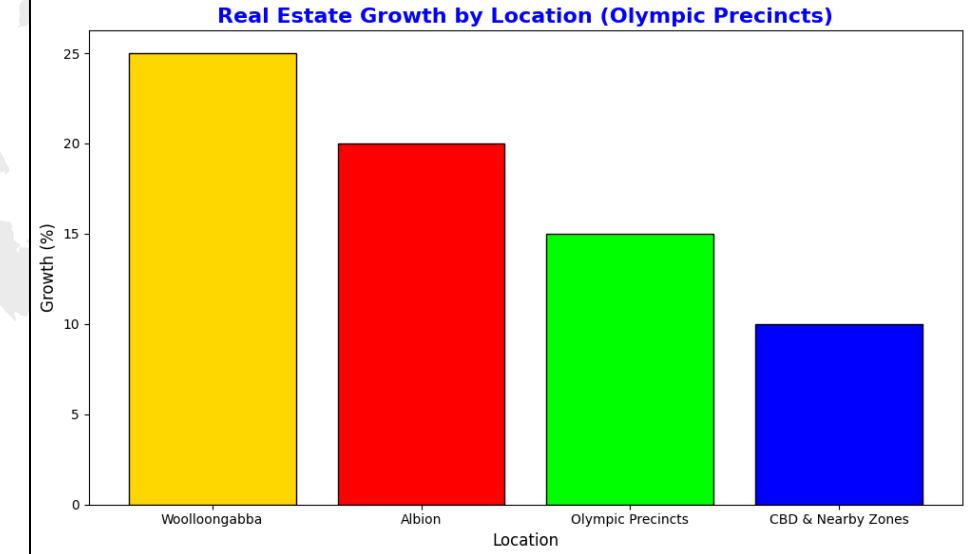
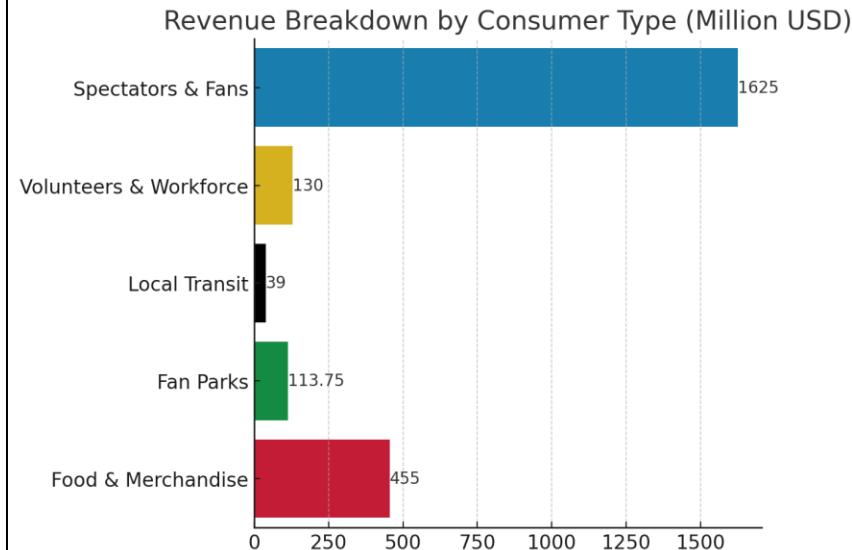
\$9.1 billion social benefits for Australia

\$8.5 billion economic benefits for Australia

122,900 FTE job years for Australia

80% of venues utilizing renewable energy

\$325M Merchandise & Retail Revenue





HOW DID OUR PREDECESSORS USE THE CONCURRENT TECHNOLOGY?

London Olympics, 2012



Integrated Technologies:

AnyLogic for venue logistics and crowd simulation
GIS modeling for urban planning and transport coordination
Smart Ticketing infrastructure enabled by Atos and BT
Omega Quantum Timer with starting blocks integrated for sprint start reaction times
Sources: New Developments from London 2012 – IAAF Tech Report

Tested Technologies:

Mobile ticketing platforms integrated via LOCOG and BT
Pervasive sensing for athlete training (via UCL & UK Sport)
Sources: Delivering London 2012: ICT Enabling the Games
Delivering London 2012: ICT Enabling the Games.
Institution of Engineering and Technology (IET) publication.

Successes:

Olympic Broadcasting Services (OBS) delivered 5,600 hours of HD content
BBC alone streamed 106 million online video views
Smart City infrastructure allowed efficient data flow across 34 venues
Sources: Delivering London 2012: ICT Enabling the Games

Failures:

Limited post-Games reuse of tech infrastructure (overlay systems removed)
Missed opportunities in live AI-powered analytics for crowd insights
Sources: Delivering London 2012: ICT Enabling the Games
Sources: Delivering London 2012: ICT Enabling the Games

HOW DID OUR PREDECESSORS USE SIMILAR TECHNOLOGIES?

Rio Olympics, 2016



Integrated Technologies:

Real-time Results Distribution System by Atos (broadcast data < 0.5 sec)
Cloud-first infrastructure: Volunteer portal, workforce & accreditation systems
Broadcast innovation via Olympic Broadcasting Services (OBS)
Mobile engagement: Samsung Galaxy Studios and 12,500 custom S7 phones for athletes

Tested Technologies:

Virtual Reality broadcast coverage (85+ hours, 360° video)
Partial 8K Super Hi-Vision trial (live in Japan, down converted for global use)
Public engagement via Samsung VR, McDonald's Youth Program, Coca-Cola Olympic Station

Successes:

OBS delivered 7,100+ hours of HD footage using 1,000+ cameras and drones
Rio 2016: Most digitally consumed Games with 7 billion social media views
Record-breaking coverage: 356,000 hours, 584 channels, 270+ digital platforms

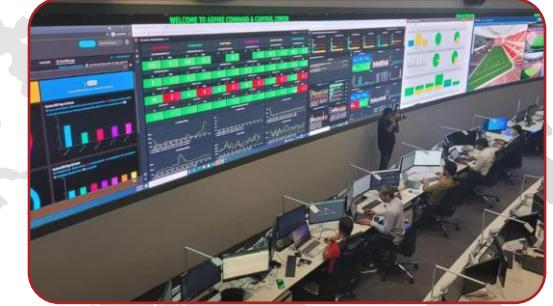
Failures:

Low legacy value for some mobile infrastructures post-Games
Integration gaps across national and private digital engagement platforms
Unused legacy initiatives in education (Transforma by Dow & Bridgestone)



HOW DID OUR PREDECESSORS USE THE CONCURRENT TECHNOLOGY?

FIFA World Cup, Qatar 2022



Integrated Technologies:

AI-Powered Ball Tracking: Adidas + Kinexon sensor embedded in match ball (AI Rihla)

Semi-Automated Offside Technology (SAOT): 12 stadium cameras + inertial measurement unit (IMU) inside the ball

Connected Stadiums: 5G-enabled venues powered by Ooredoo and Cisco

Digital Twins Infrastructure: Smart venue management via Aspire Zone Foundation.

Tested Technologies:

Lusail Stadium Cooling System: Targeted air ventilation via solar-powered chillers

Fan Experience via Hayya App: Real-time travel, ticketing, and smart fan ID integration

Successes:

First World Cup with full stadium digital twin integration and AI officiating

Seamless broadcast delivery using cloud and edge computing infrastructure

Extensive VR media content and smart transportation coordination

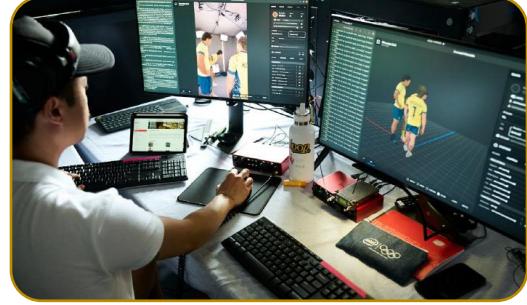
Failures:

Early-stage integration for AI-driven sustainability dashboards

Data silos between telecom and stadium operation platforms

HOW DID OUR PREDECESSORS USE THE CONCURRENT TECHNOLOGY?

Paris Olympics, 2024



Integrated Technologies:

AI-enhanced OBS broadcasting: multi-camera replay, stroboscopic and motion tracking
Ultra High Definition (UHD) with immersive 5.1.4 audio and cinematic camera lenses
Cloud-based broadcasting (OBS Cloud) powered by Alibaba
AI-assisted data graphics: diving entry, serve speeds, trajectory, and athlete motion

Tested Technologies:

Virtual Olympic Village experiences using digital twins and AR/VR
Real-time fan storytelling through automatic highlight reels and social creator partnerships
Inclusivity: Airbnb partnerships for accessible hosting, Olympic Torch stay at Musée d'Orsay

Successes:

11,000+ broadcast hours with record 28.7 billion viewing hours globally
First Olympics with full 3D broadcast overlays and AI-generated replays
12+ billion social media engagements, 5 billion viewers across all platforms

Failures:

Limited commercial monetization of immersive/creator experiences
Complexity in integrating AI insights across 30+ partner broadcasters



ESTIMATED SAVINGS VIA EACH PROPOSED TECHNOLOGY

Brisbane stands to save \$20M–\$64M per domain by pre-empting delays, overspend, and infrastructure misalignment.

Cloud-Based AI Infrastructure

Expected savings from cloud-based AI systems range from **\$23M to \$46M**. These platforms reduce IT infrastructure costs through elasticity (pay-as-you-go compute), eliminate on-premises hardware maintenance, and enhance scalability during peak events. Integrated surveillance and ticketing reduce manual staff hours and operational bottlenecks. Furthermore, combining compute, analytics, and AI tools in one stack cuts down system integration and downtime costs.

AI-Powered Simulations

Estimated cost savings from AI-powered simulations are projected between **\$32M to \$64M**, with scope for even more significant savings. These tools reduce project delivery costs by 5–15%, significantly lower change-order expenses (by 50–75%), and minimize delays. For example, avoiding just 5% of construction re-work with 50% attribution to the AI-Powered Simulation technology on approximately A\$4B (~\$2.56B, assumed as the proportion of budget used for ground-up venue construction / re-work out of the A\$7B ~ \$4.48B venue development budget) could yield \$64M in savings alone. Simulations could also reduce overengineering by optimizing structural and layout decisions early in the design process.

Digital-Twin Technology

Digital twin platforms are expected to yield savings of approximately **\$26M to \$58M**. Real-time optimization of HVAC and lighting reduces energy costs by 8–15% per venue, while simulation-driven repurposing and conflict detection can avoid costly retrofits or inefficient infrastructure. Preventing overbuilt venues and resolving layout issues early can save \$640K–\$1.3M per venue, especially when applied to 20 large facilities and 17 repurposed venues with minimal modifications. Additional savings in energy conservation include ~\$30K - \$150K/venue/year.



Smart-City Management Systems

Smart city platforms may save **\$26M to \$51M** across the Games through efficient management of utilities, traffic, and emergency services. Real-time waste routing and electricity grid balancing reduce operational costs. Crisis response coordination across agencies minimizes redundancy and idle service overlap. Additionally, predictive demand planning avoids unnecessary expansion of physical systems, saving capital outlays and ongoing service costs.

Predictive Analytics & Machine Learning

Predictive analytics and ML models can save an estimated **\$19.2M to \$38.4M**. Labor cost reductions from optimized staffing alone (10–25%) account for major savings across venues. Improved dynamic pricing boosts ticket and merchandise revenues by 5–15%, while waste reduction in food and medical inventory (10–20%) adds further operational savings. ML dashboards also streamline decision-making, reducing response costs during high-pressure moments.



MODE OF DEVELOPMENT AND VENDOR OPTIONS

Brisbane's vendor-first approach enables faster deployment while maintaining control through local integration and oversight.

Cloud-Based AI Infrastructure

Fully vendor-managed through AWS, Azure, or Google Cloud contracts. In-house development is infeasible and cost-prohibitive (~\$128M+). Cities manage data controls and compliance, while vendors ensure uptime and scalability. Maintenance is governed by SLAs, with minimal internal load. Used effectively at Tokyo 2020 for real-time venue analytics.



AI-Powered Simulations

Primarily sourced through vendor licensing (e.g., Autodesk, AnyLogic), these tools are not developed in-house or acquired via M&A. While internal teams may fine-tune simulations, building from scratch would incur high opportunity costs (~\$12.8M). Maintenance includes software renewals, scenario updates, and retraining, averaging \$128K–256K per venue. Paris 2024 followed a similar vendor-driven model.

Digital-Twin Technology

Adopted via enterprise vendors like Siemens and Microsoft, digital twins require heavy vendor infrastructure, with limited internal customization. In-house development is avoided due to high complexity and 2–3 year delays. Maintenance is significant (~A\$320K/year), covering sensor calibration, 3D model refreshes, and analytics. Dubai Expo 2020 followed this hybrid approach.

Smart-City Management Systems

Typically, vendor-built (e.g., IBM, Hitachi), smart platforms are customized by cities but not built in-house. M&A is uncommon; building from scratch poses major integration risks. Maintenance is high due to critical operations and sensor uptime. Singapore's Smart Nation strategy reflects this mix of vendor support with local customization.

Predictive Analytics & Machine Learning

ML systems use cloud platforms (AWS, Google) combined with internal data teams for model development. Full outsourcing is rare due to the need for localized control. Opportunity cost of not building in-house is high (loss of adaptability). Maintenance (model retraining, data pipelines) is moderate (\$192K–\$320K across 3 years). Tokyo 2020 used this co-development model.

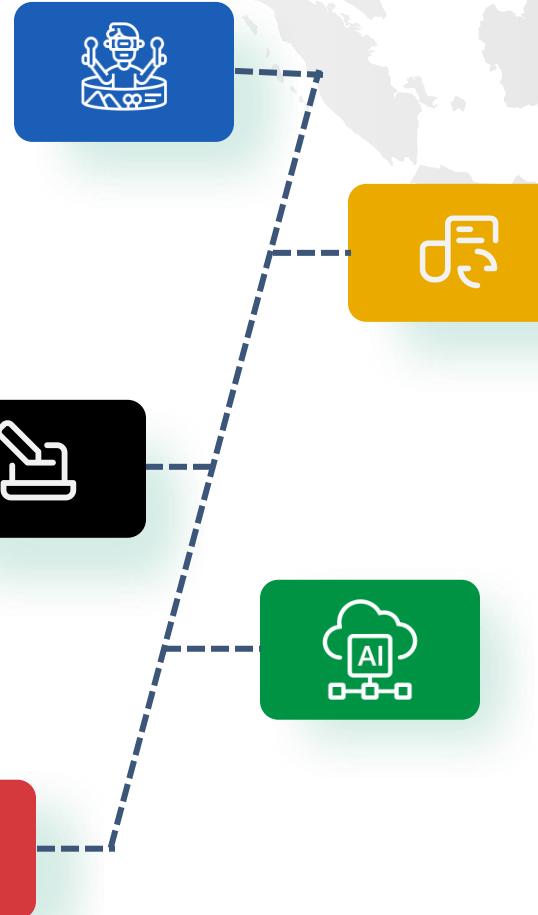


OPPORTUNITY COSTS ASSOCIATED WITH THE PROPOSED TECHNOLOGIES

For Brisbane, delaying tech adoption risks cost blowouts, stranded assets, and missed climate targets.

AI-Powered Simulations

Opportunity costs for AI simulations stem from the time-intensive model calibration, need for skilled system integrators, and early decision reliance on synthetic data. Misalignment between simulated and real-world behaviour can lead to costly late-stage redesigns if assumptions are inaccurate. Additionally, initial simulation setup may delay early-stage approvals by weeks if not well-planned. These delays may risk sunk costs in parallel design activities that could become invalidated.



Digital-Twin Technology

Opportunity costs for digital twins arise when data silos or integration bottlenecks delay real-time insights. Incomplete or inaccurate IoT data ingestion can lead to false optimization outputs (e.g., faulty HVAC efficiency models), causing misinformed operational decisions. Furthermore, heavy reliance on vendor-managed platforms can reduce internal agility and adaptability. There is also the risk of underutilizing the platform if staff are not sufficiently trained to leverage simulation dashboards effectively.

Predictive Analytics & Machine Learning

The main opportunity cost comes from overfitting predictive models to historical patterns that may not hold true during live events (e.g., weather shifts, last-minute political or health restrictions). If staff rely too heavily on model suggestions, there is reduced space for human intervention during real-time deviations. Additionally, not aligning models with external systems (ticketing, logistics) risks duplicative forecasting pipelines that drain data science resources.

Smart City Management Systems

These systems often require public agency alignment and procurement cycles that span months. Delays in city-level approvals or infrastructure ownership ambiguity can cause lost momentum. Another risk is the missed coordination between overlapping systems—e.g., traffic AI vs. emergency routing—which, if not properly integrated, results in fragmented decision-making. Moreover, initial investments in legacy systems may become sunk costs if not migrated strategically.

Cloud-Based AI Infrastructure

Cloud-first infrastructure demands upfront architectural redesigns. Opportunity costs emerge if platforms are misconfigured (e.g., underestimating concurrent usage or data spike thresholds), leading to performance bottlenecks. There's also the risk of vendor lock-in – migrating workloads across clouds later can become prohibitively expensive. Delayed provisioning of identity and access protocols may also stall AI module deployment across Olympic venues.

BRISBANE 2032 REFERENCES



REFERENCES

- Australian Government – Department of Home Affairs - Security of Critical Infrastructure Act 2018 - <https://www.legislation.gov.au/Details/C2018A00029>
- Cyber Security Strategy 2023–2030 (Australia) - Australian Cyber Security Strategy - <https://www.homeaffairs.gov.au/reports-and-pubs/Cyber-Security-Strategy-2023-2030>
- Australian Privacy Act 1988 - <https://www.legislation.gov.au/Details/C2023C00357>
- General Data Protection Regulation (GDPR) – EU - <https://gdpr-info.eu/>
- IOC Athlete Data Protection Guidelines – International Olympic Committee - <https://olympics.com/athlete365/wp-content/uploads/2020/10/IOC-ADPG.pdf>
- Australian AI Ethics Principles – Department of Industry, Science and Resources - <https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework>
- Public Governance, Performance and Accountability Act 2013 (PGPA Act) - <https://www.legislation.gov.au/Series/C2013A00123>
- California Consumer Privacy Act (CCPA) - <https://oag.ca.gov/privacy/ccpa>
- APEC Privacy Framework - <https://www.apec.org/publications/2005/12/apec-privacy-framework>
- Disability Discrimination Act 1992 (Australia) - <https://www.legislation.gov.au/Details/C2018C00125>
- Web Content Accessibility Guidelines (WCAG 2.1+) – W3C - <https://www.w3.org/TR/WCAG21/>
- UNESCO AI Ethics Recommendation (2021) - <https://unesdoc.unesco.org/ark:/48223/pf0000381137>
- OECD Principles on AI (2019) - <https://oe.cd/ai/en/ai-principles>
- International Association of Athletics Federations. (2012). New developments from London 2012 technology (IAAF Technical Report). <https://www.worldathletics.org>
- Institution of Engineering and Technology. (2012). Delivering London 2012: ICT enabling the Games. IET. <https://www.theiet.org/media/press-releases/press-releases-2012/30-july-2012-delivering-london-2012/>
- International Olympic Committee. (2012). IOC marketing report London 2012. Lausanne, Switzerland: IOC. https://stillmed.olympic.org/Documents/IOC_Marketing/London_2012_Marketing_Report.pdf
- International Olympic Committee. (2016). IOC marketing report Rio 2016. Lausanne, Switzerland: IOC. <https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/IOC/What-We-Do/Marketing/Rio-2016-Marketing-Report.pdf>
- Adidas. (2022). Adidas reveals the first FIFA World Cup™ official match ball featuring connected ball technology. <https://news.adidas.com>
- Dignited. (2022, November 20). What technology is being used in Qatar's FIFA World Cup 2022? <https://www.dignited.com>
- Prescouter. (2022, December). Technology in the 2022 FIFA World Cup Qatar. <https://www.prescouter.com>
- Qatar Loving. (2022). Connected Tournament Report: Qatar's technological innovations. <https://www.qatarloving.com>
- Wired Middle East. (2022, November). All the technology in Qatar's FIFA World Cup 2022. <https://wired.me>
- International Olympic Committee. (2024). IOC Marketing Media Guide – Paris 2024. Lausanne, Switzerland: IOC.
- International Olympic Committee. (2024). IOC Marketing Report – Paris 2024. Lausanne, Switzerland: IOC.
- McKinsey – Smart Cities: Digital Solutions for a More Livable Future - <https://www.mckinsey.com/capabilities/operations/our-insights/smart-cities-digital-solutions-for-a-more-livable-future>
- World Economic Forum +5McKinsey & Company+5Medium+5
- IOC – Paris 2024: Setting New Standards in Sustainable and Inclusive Sport Events - <https://olympics.com/ioc/news/paris-2024-setting-new-standards-in-sustainable-and-inclusive-sport-events>
- Olympics +2Olympics+2Olympics+2
- Deloitte – 2023 Sports Industry Outlook - <https://www2.deloitte.com/sg/en/pages/technology-media-and-telecommunications/articles/sports-business-trends-disruption-2023.html>
- World Economic Forum – Digital Twin Cities: Framework and Global Practices - <https://www.weforum.org/publications/digital-twin-cities-framework-and-global-practices>
- World Economic Forum +1World Economic Forum+1
- Smart Cities Dive – Singapore Tops Global Smart City Rankings Again - <https://www.smartcitiesdive.com/news/singapore-tops-global-smart-city-eden-strategy-institute-ranking/597661/>
- Smart Cities News | Smart Cities Dive
- Cross River Rail – Official Project Website - <https://crossriverrail.qld.gov.au/>
- Autodesk Forma Documentation - <https://www.autodesk.com/products/forma/overview>
- AnyLogic Pricing Documentation : <https://www.scribd.com/document/428955164/Prices-AnyLogic-USD-pdf?>
- Digital Twin Strategy for Machine Builders - <https://kalypso.com/viewpoints/entry/digital-twin-strategy-for-machine-builders>
- Supply to the Brisbane 2032 Olympic and Paralympic Games - https://www.business.qld.gov.au/running-business/marketing-sales/tendering/supply-queensland-government/olympic-games?utm_source=chatgpt.com
- Amazon SageMaker pricing - <https://aws.amazon.com/sagemaker/pricing/>
- How AI Can Speed Climate Action - <https://www.bcg.com/publications/2023/how-ai-can-speed-up-climate-action>
- Reduce Carbon and Costs with the Power of AI - <https://www.bcg.com/publications/2021/ai-to-reduce-carbon-emissions>
- Ergon Energy Tariffs - <https://www.ergon.com.au/retail/business/tariffs-and-prices/large-business-tariffs/kva-tariffs#:~:text=These%20generally%20change%20each%20year,our%20large%20business%20tariffs%20page.>
- Bentley OpenBuildings Software - <https://en.virtuosity.com/openbuildings-designer?srslid=AfmBOorAvCPDjsheZJaScYGDDezLRuwz9U1RePYSpCGFykLUijDWfig>



REFERENCES

- Azure Virtual Machines pricing - <https://azure.microsoft.com/en-us/pricing/details/virtual-machines/windows/>
- Azure Monitor pricing - <https://azure.microsoft.com/en-us/pricing/details/monitor/>
- Azure Bandwidth pricing - <https://azure.microsoft.com/en-us/pricing/details/bandwidth/>
- Azure Managed Disks pricing - <https://azure.microsoft.com/en-us/pricing/details/managed-disks/>
- AWS ML Best Practices - <https://docs.aws.amazon.com/sagemaker/latest/dg/best-practices.html>
- Google Cloud Sustainability - <https://cloud.google.com/sustainability>
- Mchirgui, N., et al. (2024). "The Applications and Challenges of Digital Twin Technology in Smart Grids: A Comprehensive Review." Applied Sciences, 14(23), 10933. <https://doi.org/10.3390/app142310933>
- Keolis Group : Shared Mobility Solutions - <https://www.keolis.com/en/keolis-an-expert-in-shared-mobility-for-all/>
- AWS Cloud Sustainability - <https://sustainability.aboutamazon.com/products-services/aws-cloud>
- Deloitte Cloud Computing Case Studies - <https://www2.deloitte.com/us/en/pages/consulting/articles/cloud-computing-case-studies.html>
- AWS For Sports - <https://aws.amazon.com/sports/>
- Review of reducing energy consumption and carbon emissions through digital twin in built environment - <https://www.sciencedirect.com/science/article/pii/S2352710224027189>
- How AI is making buildings more energy efficient - <https://time.com/7201501/ai-buildings-energy-efficiency/>
- Understanding the Carbon Footprint of AI and how to reduce it - <https://www.carbon-direct.com/insights/understanding-the-carbon-footprint-of-ai-and-how-to-reduce-it>
- Tableau Pricing Documentation - <https://www.tableau.com/pricing>
- Artificial Intelligence in Net-Zero Carbon Emissions for Sustainable Building Projects: A Systematic Literature and Science Mapping Review - <https://www.mdpi.com/2075-5309/14/9/2752>
- Reinventing construction through a productivity revolution - <https://www.mckinsey.com/industries/engineering-construction-and-building-materials/our-insights/reinventing-construction-through-a-productivity-revolution>
- ArcGIS Urban Pricing - Collaborative, data-driven urban planning - <https://www.esri.com/en-us/arcgis/products/arcgis-urban/buy>
- Outsight LIDAR Crowd-Flow Technology - <https://insights.outsight.ai/outsight-olympic-laureate/>
- Efficient Event-Planning & Content Delivery with Intel's Technology Stack - <https://www.intel.com/content/dam/www/central-libraries/us/en/documents/2024-10/all-solutions-paris2024-ebook.pdf>
- A Guide to Azure Digital Twins - <https://www.bacancytechnology.com/blog/azure-digital-twins?>
- Brisbane 2032 Delivery Plan - https://ddu5wlntfgohw.cloudfront.net/media/Queensland_Government-2032_Delivery_Plan.pdf
- Industrial Deep Decarbonization - <https://www.cleanenergyministerial.org/content/uploads/2023/04/iddi-factsheet-23-mar-2023.pdf?>
- BIM Technician Salary in Australia - <https://www.salaryexpert.com/salary/job/bim-technician/australia?>
- Sydney Olympic Park – Energy Usage - <https://www.sydnelympicpark.nsw.gov.au/community/user-guide/electricity-use?>
- Senior Data Scientist Salaries in Australia - https://www.glassdoor.com/Salaries/sydney-australia-senior-data-scientist-salary-SRCH_IL_016_IM962_KO1738.htm
- Building Information Modelling Technician Salaries in Australia - <https://www.salaryexpert.com/salary/job/bim-technician/australia?>
- 100-Day Review Brisbane 2032 Olympic and Paralympic Games Infrastructure - <https://cdn.qiica.au/documents/100%20Day%20Review%20Report%20-%2020%20March%202025%20APPROVED.pdf>
- Queensland Government Reports - <https://www.qld.gov.au/about/brisbane2032, https://www.qld.gov.au/about/delivering2032, https://www.qld.gov.au/about/brisbane2032/legacy-program, https://www.qld.gov.au/about/brisbane2032/stay-informed, https://www.premiers.qld.gov.au/publications/categories/reports/2032-olympic-and-paralympic-games.aspx>
- International Olympic Committee (IOC) Reports - <https://olympics.com/ioc/brisbane-2032, https://olympics.com/ioc/documents/olympic-games/brisbane-2032-olympic-games, https://stillmed.olympics.com/media/Documents/International-Olympic-Committee/Commissions/Future-host-commission/The-Games-of-The-Olympiad/Future-Host-Commission-Report-to-EB-Targeted-Dialogue-Brisbane-2032.pdf>
- Brisbane 2032 Organising Committee Publications - https://library.olympics.com/Default/doc/SYRACUSE/3025611/annual-report-2021-2023-brisbane-organising-committee-for-the-2032-olympic-and-paralympic-games?_lg=en-GB, https://olympics.com/en/news/brisbane-2032-organising-committee-strategic-plan-press-release
- KPMG Australia Reports & Economic Analysis - <https://stillmed.olympics.com/media/Documents/International-Olympic-Committee/Commissions/Future-host-commission/The-Games-of-The-Olympiad/2032-Games-Economic-Analysis-Summary-Report.pdf>
- Australian Bureau of Statistics (ABS) - <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release, https://www.abs.gov.au/statistics/people/population/household-and-family-projections-australia/latest-release>
- Sydney 2000 Broadcast Report - https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/LOC/How%20We%20Do%20It/Broadcasters/EN_Sydney_2000_Broadcast_Report.pdf
- Olympics.com – Spirit of Volunteering in Tokyo - <https://olympics.com/loc/news/spirit-of-volunteering-continues-in-tokyo>

THANK YOU



Citius, Altius, Fortius – Communiter