Building a Smart City

Integrating AI, IoT and Emerging Technologies

What is a Smart City?

- Data-driven, technology-enabled urban system
- Optimizes mobility, energy, water & governance
- Integrates sensors, networks, computation & AI
- Human-centric design for quality of life

Global Smart City Exemplars

- Singapore – Smart Nation ecosystem
- Barcelona – IoT city operations
- Amsterdam – Open data & living labs
- Songdo – Purpose-built smart city
- Abu Dhabi – Top global ranking

Singapore Smart Nation

- National AI Strategy & Smart Nation 2.0
- Smart mobility, health, governance
- Virtual Singapore 3D digital twin

Barcelona IoT Model

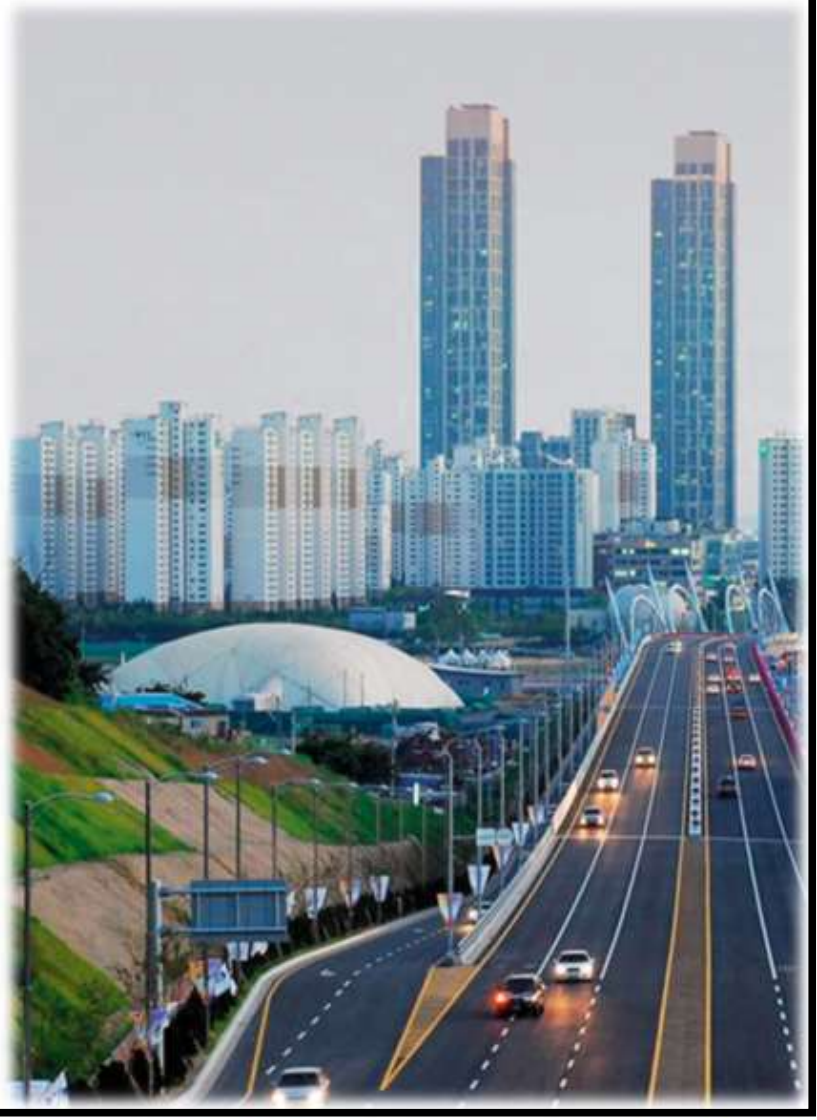
- Smart lighting, parking, waste & water
- Sentilo IoT middleware
- Efficiency & service improvements

Amsterdam Smart City

- Open data innovation
- IoT Living Lab experimentation
- Citizen participation & governance

Songdo Smart City

- 500,000+ sensors
- Automated infrastructure operations
- Lessons on adoption & human factors

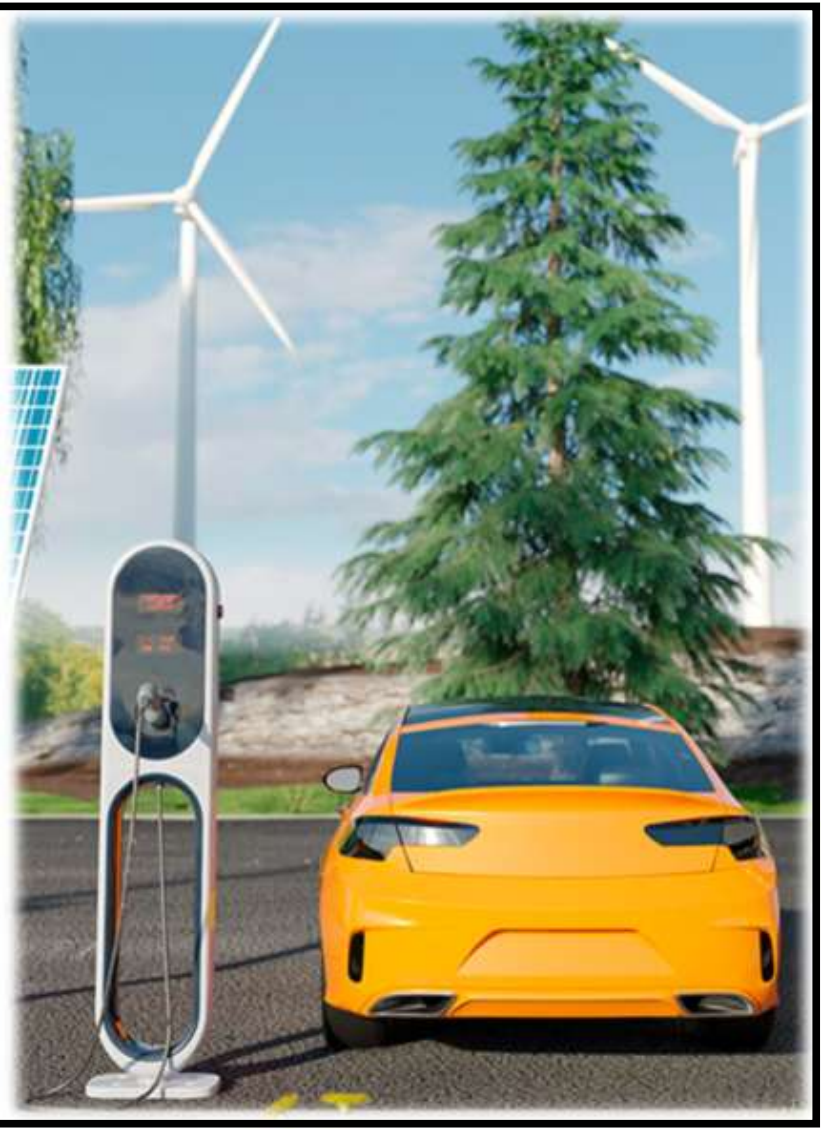


Tech Stack: AI, IoT & Emerging Tech

- IoT sensors & actuators
- 5G, LPWAN, fiber
- Edge/cloud compute
- AI/ML optimization
- Digital twins for simulation

Domain Use Cases

- Smart mobility: traffic, AVs, parking
- Smart energy: grids, lighting, HVAC
- Smart governance: e-services, chatbots, open data



Smart City Architecture

- Data sources → ingestion → storage
- AI/analytics → services layer
- Governance, security & interoperability

Challenges & Risks

- Privacy & surveillance concerns
- Cybersecurity threats
- Vendor lock-in & standards
- Algorithmic bias
- Financial sustainability

Design Principles

- Human-centric
- Open standards & APIs
- Security & privacy by design
- Evidence-based scaling
- Triple-helix collaboration

Conclusion

- Smart cities = cyber-physical ecosystems
- AI + IoT enable adaptive, efficient cities
- Scientists essential for innovation & governance

Thank You !