


# Transforming Urban Utilities with IoT, AI, and Digital Twins


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# AGENDA



01  Urban Utility Challenges

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02  IoT in Utilities


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03  AI for Predictive Operations

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04  Digital Twins

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05  IIT Bombay Gymkhana Digital Twin

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06  Future Outlook



# Urban Utility Challenges

Ageing  
infrastructure

Inefficient  
monitoring

Fragmented  
data

High  
downtime and  
leakages

Slow response  
cycles

# IoT for Smarter Utilities

Smart meters

Sensor-based  
water/energy  
monitoring

Real-time asset  
health

Example: Smart  
water pressure  
sensors detect  
leakages instantly



# AI for Predictive **Urban** **Operations**

Predictive maintenance

Anomaly detection

Automated workforce routing

Example: AI predicts transformer failures  
ahead of time



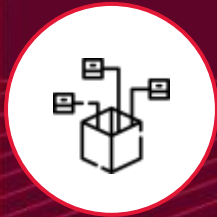
# Digital Twins: A Game Changer



Virtual replicas  
of real assets



Integrate IoT, GIS,  
BIM, SCADA



Simulation &  
scenario testing



Real-time operations  
dashboard



# Case Study: IIT Bombay Gymkhana Digital Twin

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Partnership with IIT Bombay

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3D digital twin of Gymkhana building

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Enables energy modeling, safety planning,  
space optimization

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Foundation for a complete campus twin



# Use Cases **Across Utilities**

Water: Leakage detection,  
demand forecasting

Power: Grid load prediction,  
outage minimization

Waste: Route optimization

Mobility: Traffic digital twins  
& congestion analytics



# Future Outlook



Convergence of IoT  
+ AI + GIS + 5G



Move toward  
autonomous utilities



Cities adopting full-scale  
digital twin ecosystems



# Thank you!