Demo: ComDeX Unveiled
Demonstrating the Future of IoT-Enhanced Communities

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The Complexity of Confluence: Challenging Aspects of Smart Communities

Port authority (A), Firefighters (B), Medic Station (C), City Bus Transportation (D), Private Businesses (E), Coast Guard (F)

Each have their own applications, requirements, devices, data, servers etc.
Enabling Widespread IoT Applications

Information Integration? How to do handle the distributed data exchange? Selective Sharing? Data sovereignty?

Fire Handling Monitor

Smart Transportation Application
Introducing ComDeX: Brief High Level View

Federation Topology

\[ \Pi(M) \text{ context aware messages} \]

Publish

\[ \Sigma(T) \text{ topics of messages} \]

Subscribe

IoT Devices

Smart Transportation Application

Fire Handling Monitor

Widespread IoT Applications

DEBS 2023, ComDeX: A Context-aware Federated Platform for IoT-enhanced Communities
ComDeX: How It works very briefly

Data Represented as context aware property graph based entities → Mapped to Pub/Sub Messages → Discovered via advertisements → In a federation of brokers

Property Graph Schema

Pub/Sub

Advertisements

Federation

Data Represented as context aware property graph based entities

Publish

Subscribes

Advertisements

Federation
Live Prototype GUI Interface ComDeX Demo