



BIM Data for Smart Cities: Challenge and Opportunity

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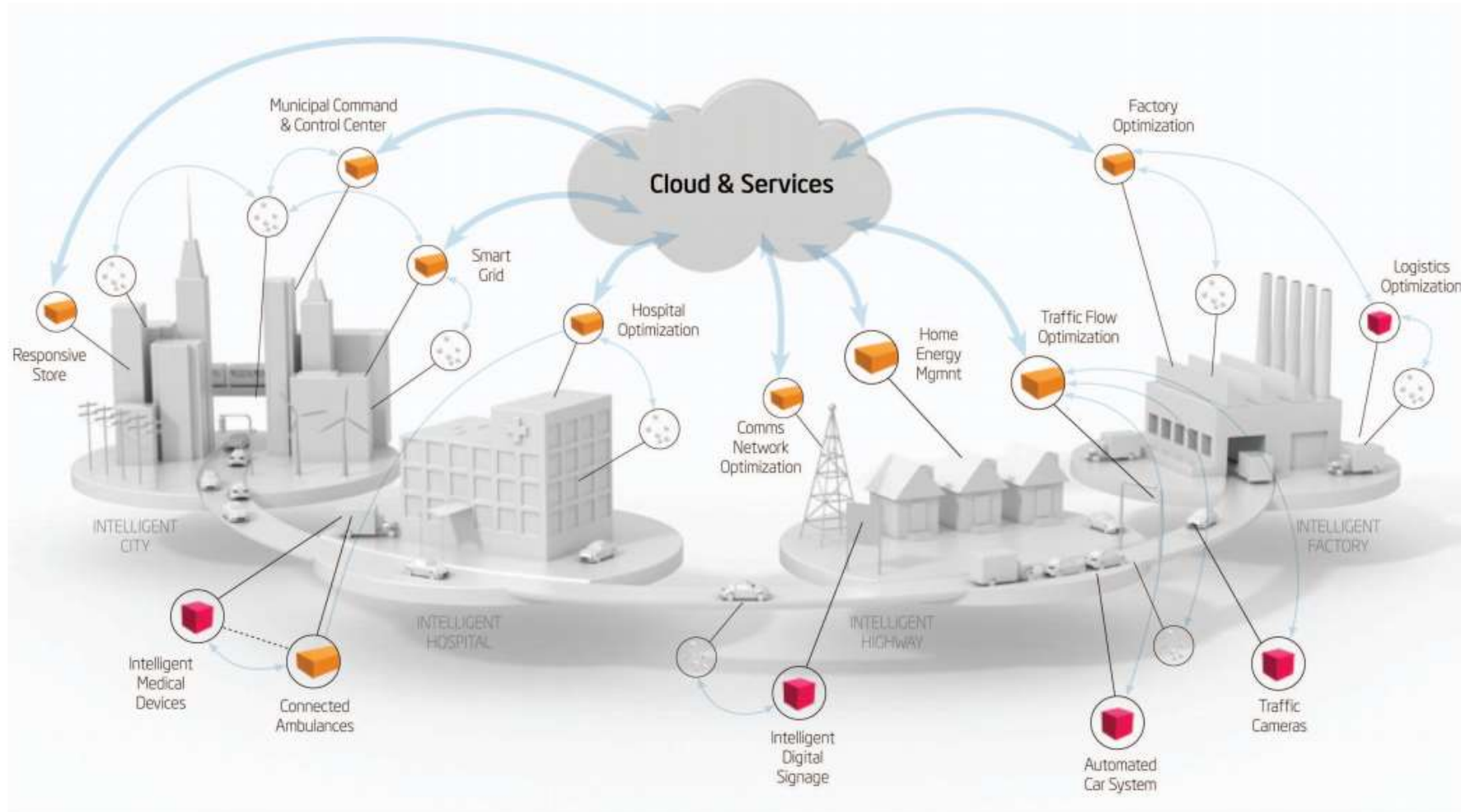
Smart City Challenge:

Linking IT systems for Innovative Services

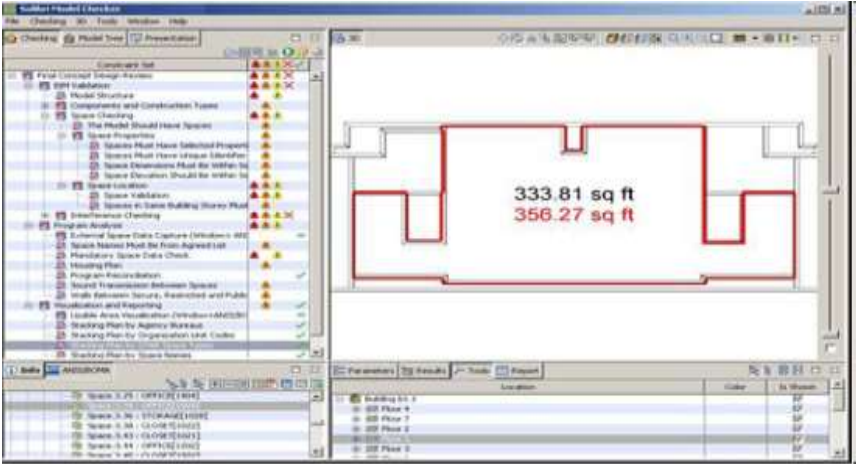
- Public Spaces
- Smart Grid, Smart Water, etc.
- Intelligent Buildings
- Adaptive Traffic Control
- Public Safety and Security
- Pollution Monitoring
- Emergency Response
- Health Monitoring
- Solar Energy Monitoring
- Open Data

Smart Cities: Linked 3D Models

Overcoming Islands of technology and organizations



Building Information Models (BIM): From Design to Multi-Purpose Use

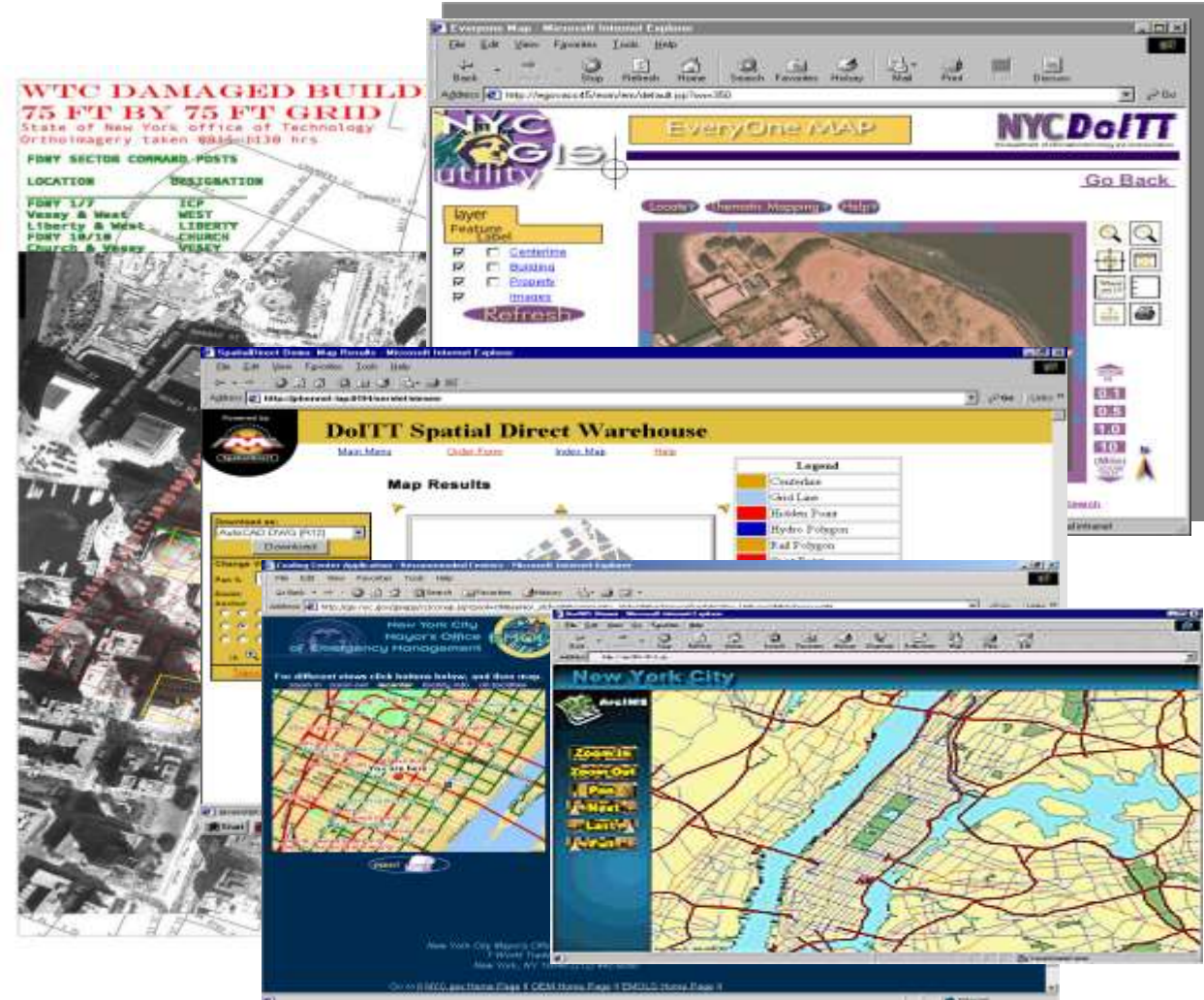


New York City

- Centralized GIS Utility based on Oracle Spatial
- Developed standardized digital basemap for all agencies
 - 6,000 miles of underground pipes
 - 1 million water/sewer connections
 - 32,000 sq. miles of Infrastructure Data
 - 7,500 digital photographs
- Multiple GIS applications: ESRI, Bentley, MapInfo, GE Smallworld
- Core component of city's 311 application

NYC DoITT

the department of information technology and telecommunications





Transport for London

Service updates at 22:36

Now Later This weekend

Bakerloo	Good service
Central	Good service
Circle	Good service
District	Good service
DLR	Good service
H'smith & City	Good service
Jubilee	Good service
Metropolitan	Good service
Northern	Good service
Overground	Good service
Piccadilly	Good service
Victoria	Good service
Waterloo & City	Good service

[Buses](#) [Roads](#) [River](#)



Data feeds

Other feeds available now

- London Underground passenger counts data
- Live roadside message signs
- Barclays Cycle Hire docking stations
- Live traffic camera images
- Rolling Origin & Destination Sur
- Predicted wait times at stations during the Games
- Games postcode data
- Journey planner API data
- Oyster card journey information

[See our full list of feeds](#)

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City of Berlin – 3D City Model

Implemented by TU Berlin

- 550000 buildings, reconstructed from 2D cadastre and LIDAR data
- Textures extracted from oblique aerial photography
- Stored in 3DCityDB
- 2012 Oracle Spatial Excellence Award



Images courtesy of: TU Berlin, Institute for Geodesy and Geoinformation

Underground Utilities

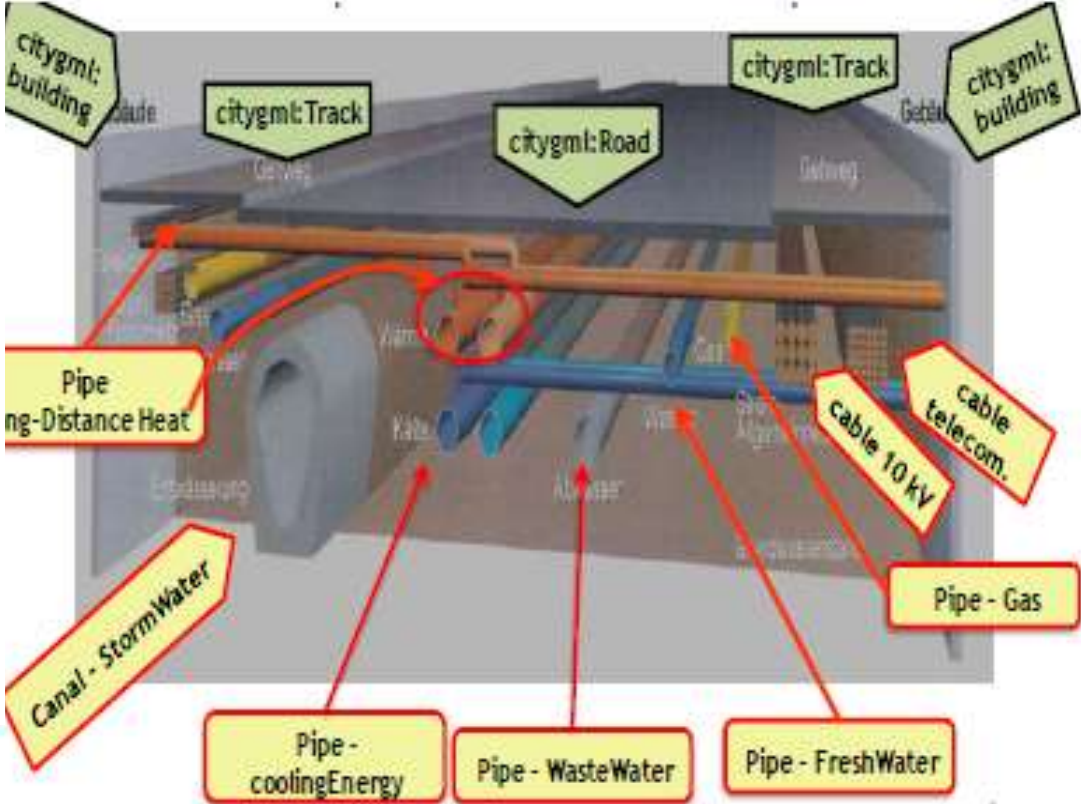


Figure Source: Becker, T., Nagel, C., Kolbe, T. – Semantic 3D Modeling of Multi-utility Networks in Cities

Benefits: Re-Purposing 3D Infrastructure Data

Context: Underground Utilities

Collaborative street paving work

- Faster and more efficient construction processes
- Greater coordination between utility agencies
- Fewer service line accidents

Emergency response and rescue

- Rapid achievement of a common operating picture and situation awareness
- Improved decision making and less wasted efforts
- Avoidance of cascading effects

Benefits: Re-Purposing 3D Infrastructure Data

Context: Construction and Maintenance

Capital construction projects

- Reduced time spent awaiting information, inspections and approvals
- Improved coordination between infrastructure agencies

Identifying and mitigating infrastructure threats and vulnerabilities

- Improved analytics about infrastructure interactions and interdependencies
- Identify critical infrastructure nodes and hubs for special protection

Leapfrog IT Silos with Spatial Cloud Services

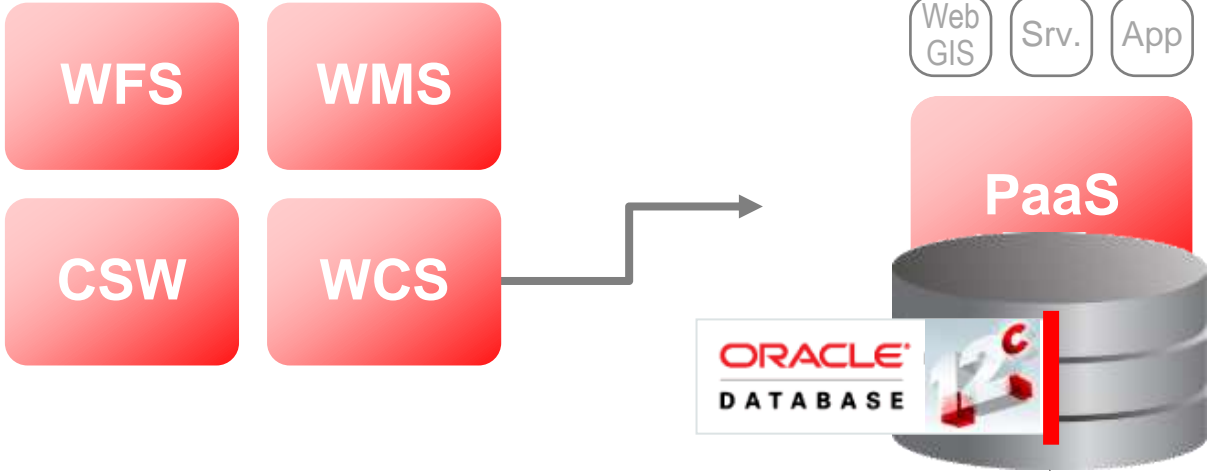
Requirements

Database functionality:

- Spatial queries
- RDF support
- Versioning/Long Transactions

Use existing open standards

- Interoperability
- Protect the Investment



Some Next Steps:

- Develop strategy
- Involve key stakeholders (agencies, utilities, public)
- Leverage data sources: CAD, databases, GIS, open source
- Prototype a BIM to CityGML workflow
- Use open standards for interoperability (NBIM, OGC...)
- Understand your organization's Cloud hosting plans