

Digital Twin Munich: Digital Infrastructure of the Climate-Neutral City

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International Forum on Urban Digital Twins, Munich 12.09.2023

Munich and its Digital Twin



Munich's Perspective on Digital Twin

Digital Representation of the Real City

- (3D-) geodata
- real-time data
- further thematic data

What-if- Scenarios

- analyses
- models
- simulations

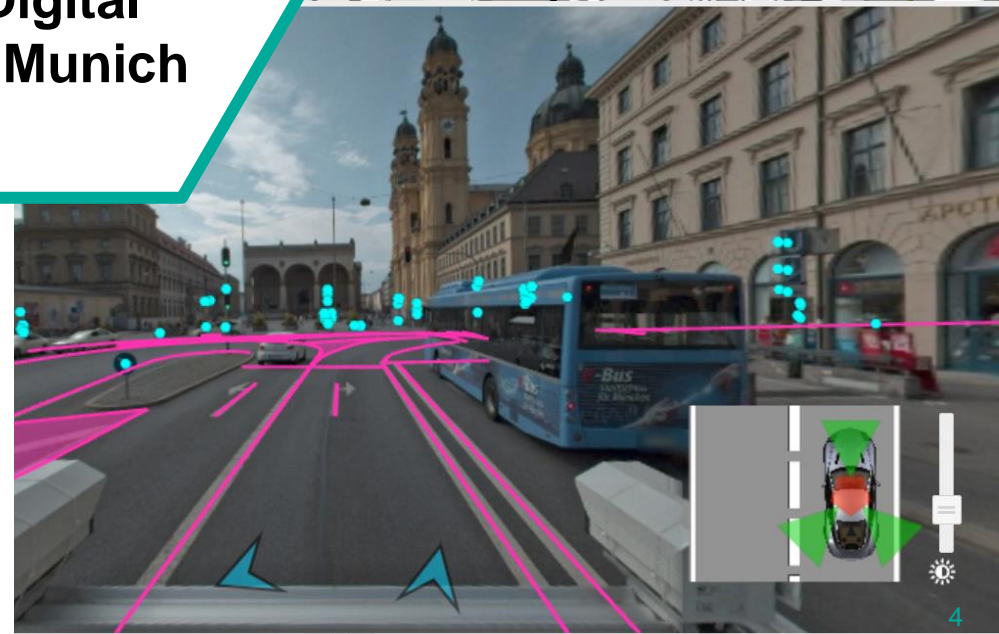


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Digital. Twin.

Changes in
the Real City



Fundamental Data in Digital Twin Munich



Befahrungsnetz: Gebiet 2

ALTSTADT

Videos

Kampagne	Adresse
München 2019	Odeonsp

4



Digital Twin with Temporary Data Update



Detailing the Surroundings



Spring Festival Munich:
Combined data capture of the
surroundings with

- Drone and
- Mapping bike

Targets:

- Enhanced Emergency Preparedness
- Temporary updating of the data based on the digital twin.

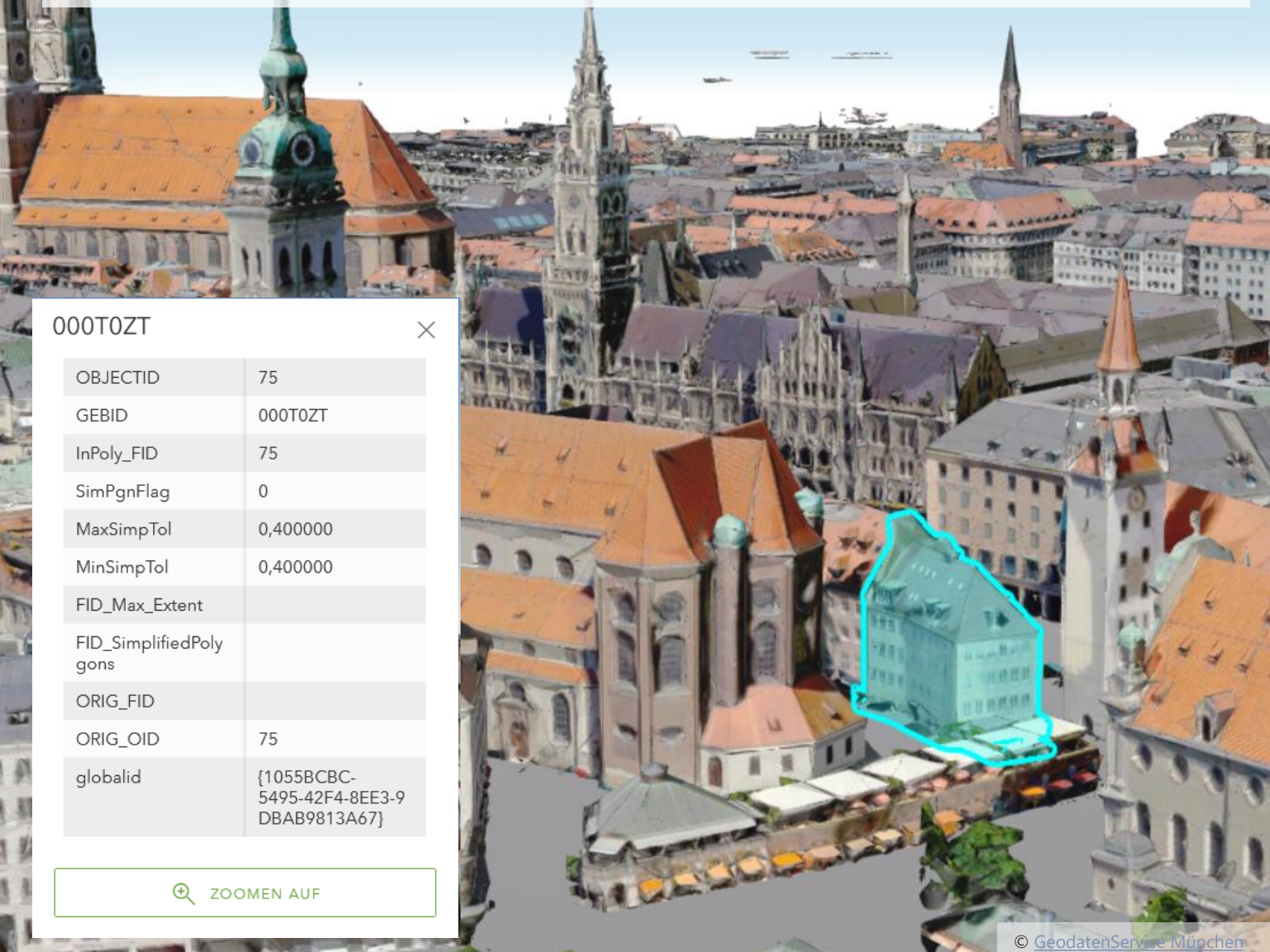


Federal Ministry
for Digital
and Transport



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Building and Housing Register (Gebäude- und Wohnungsregister (GWR))

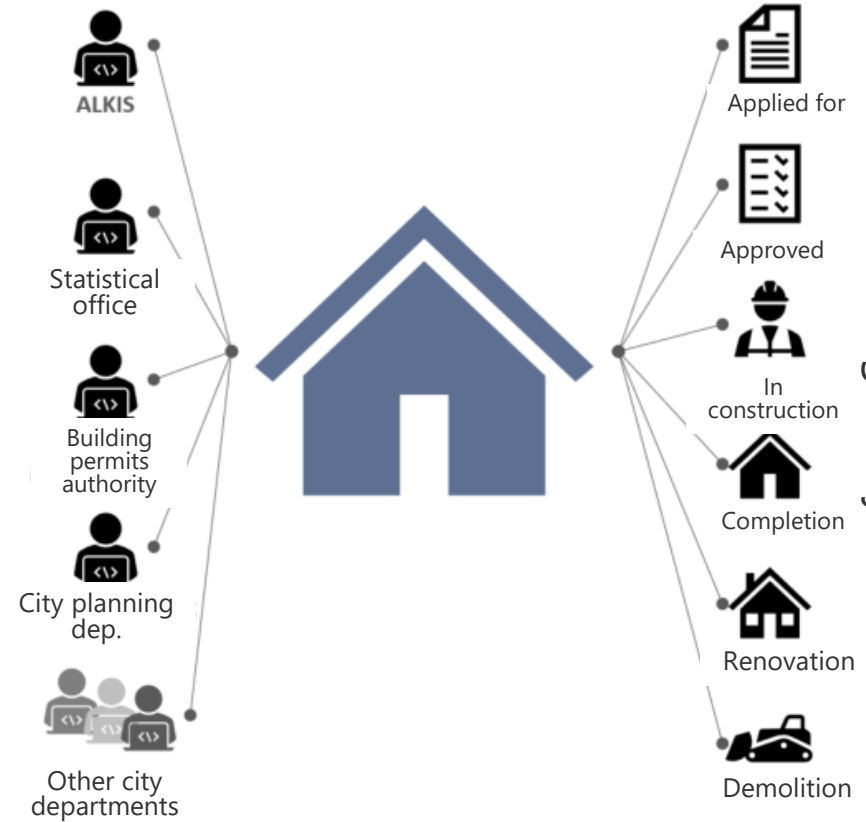


000T0ZT ✕

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ZOOMEN AUF

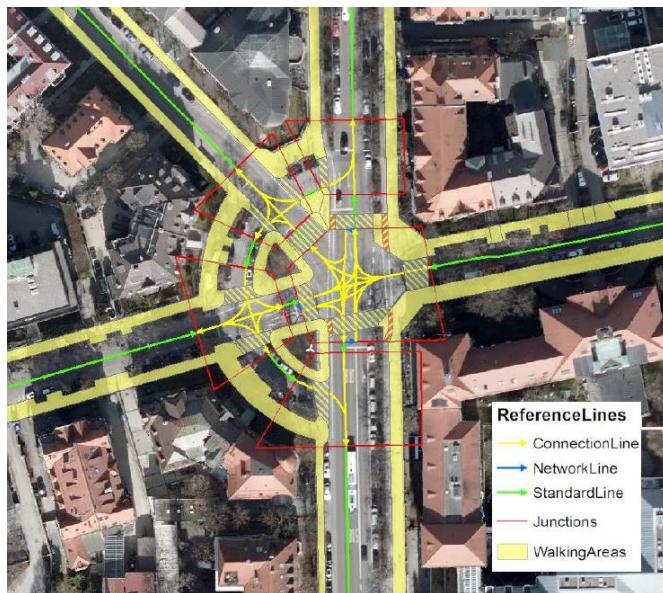
Common, Unified Reference Object Building



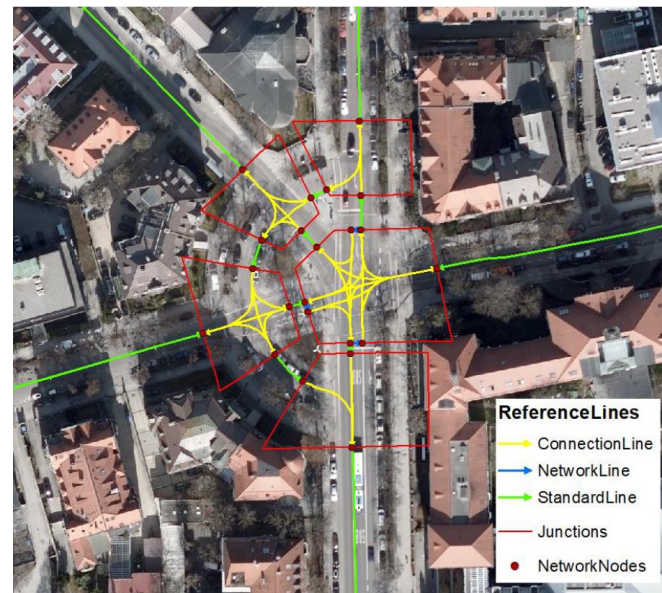
Building Lifecycle

Munich Lane-Model

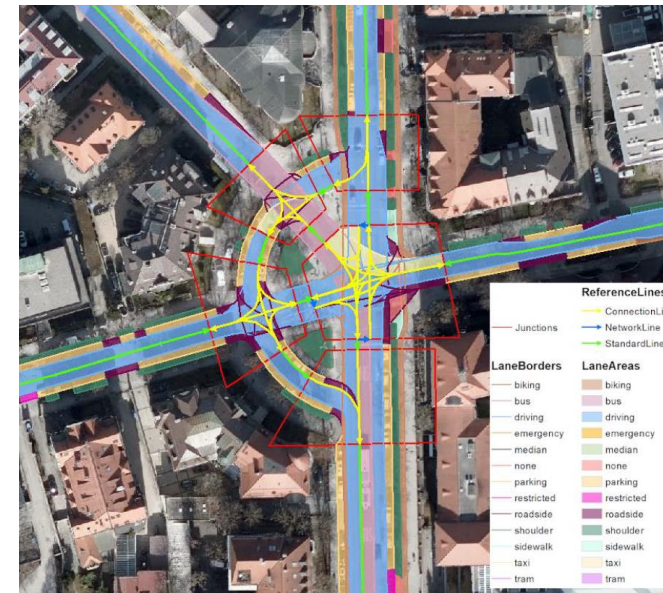
© GeodatenService München



WalkingAreas



NetworkNodes



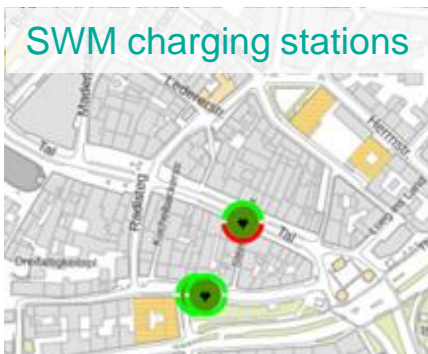
LaneAreas

In Progress

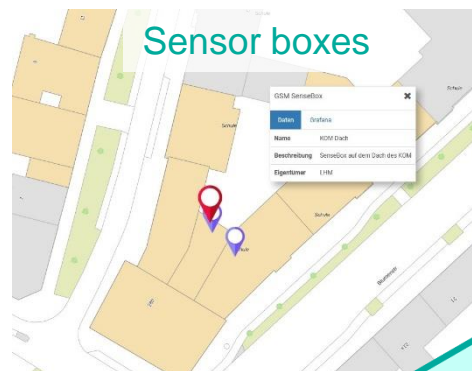
- **Lane-Model:** Digital representation of road space and traffic rules
- **Purposes:**
 - Documentation of the current state and required/desired changes (Changes can be temporary or permanent)
 - As the Data basis for e.g. planning support, accessibility models, automated driving
 - For road space simulations

Internet of Things and Statistical Data

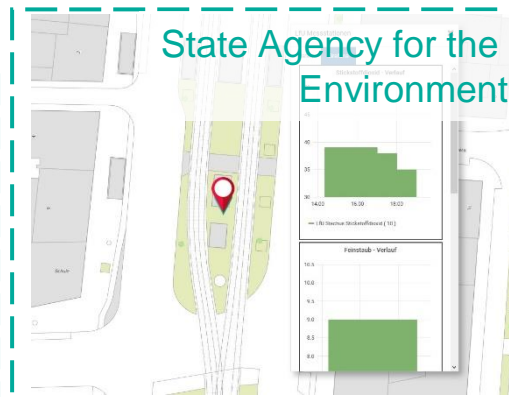
IoT systems of the city of Munich



SWM charging stations



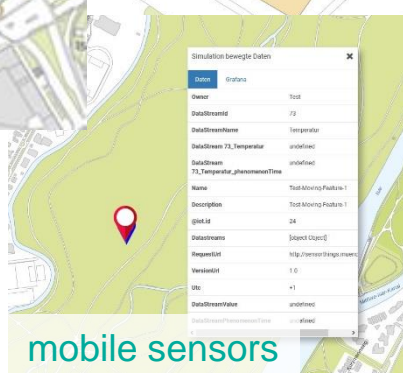
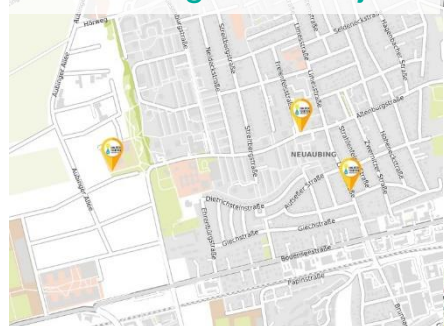
Sensor boxes



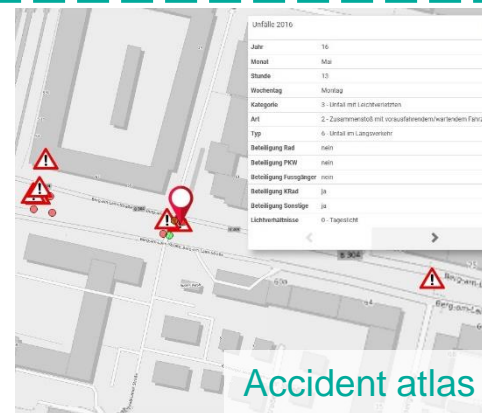
State Agency for the Environment

Bavarian State IoT systems

Smarter Together Project

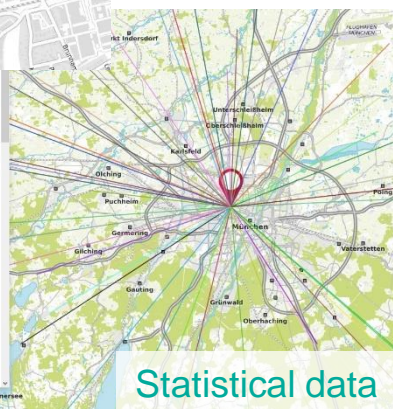


mobile sensors

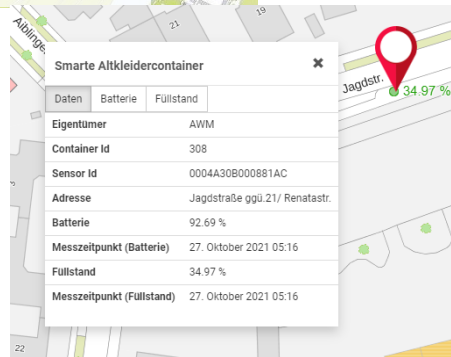


Accident atlas

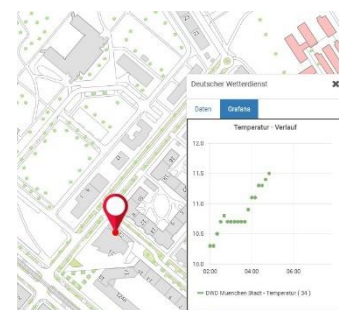
Federal IoT systems



Statistical data



Smart old clothes containers



German Weather Service



Mobility data marketplace



CONNECTED
URBAN
TWINs



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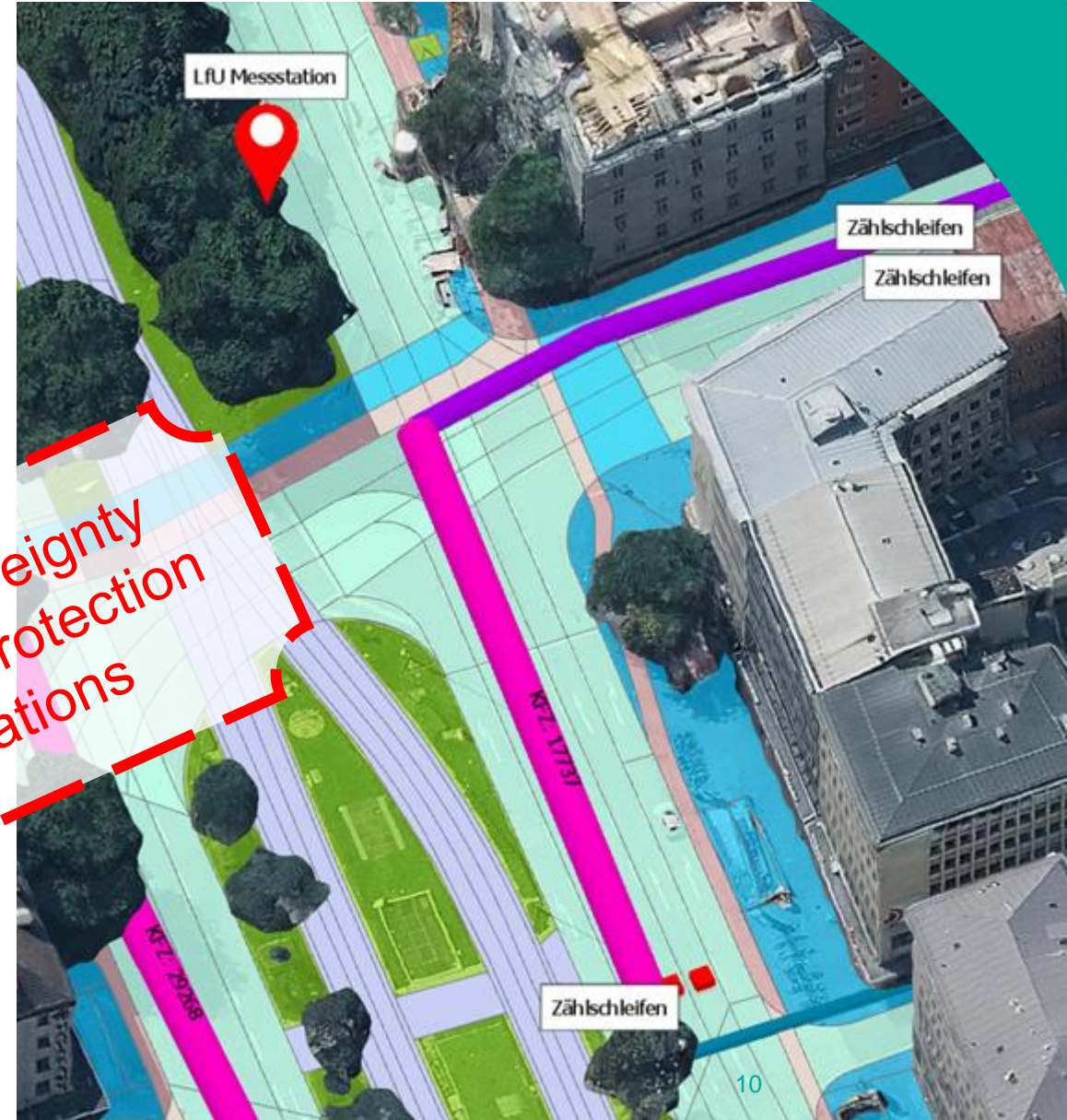
Seamless Integration of Information



Informationen

Shape 34

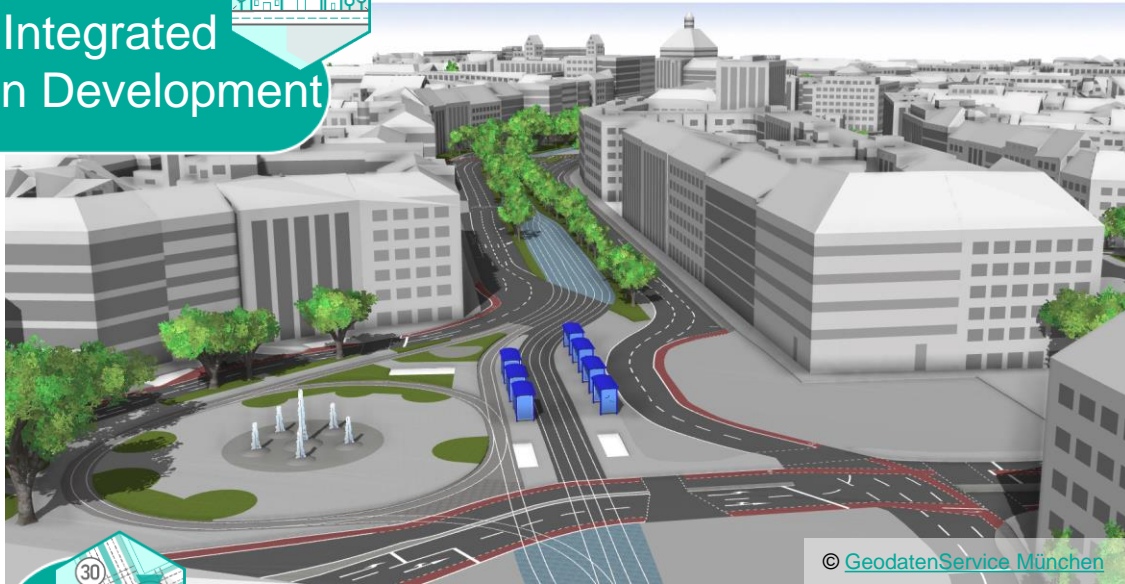
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FID_SimplifiedPolygons	nan
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GEB_NUTZ	WH
GEBID	000T1BF
GESCHOSSE	6
InPoly_FID	327
MaxSimpTol	0.4
MinSimpTol	0.4
NUTZUNGSART	1701
OBJECTID	34
OBJEKTART	1301
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ORIG_OID	1322
PLZ_BEZ	80335
SimPgnFlag	0
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STADTBZIRKSTEIL	1.4
STADTBZIRKSMERTEL	1.4.3
STR_NAME_HAUS_NR	Karlsplatz 7



Data sovereignty
and data protection
regulations

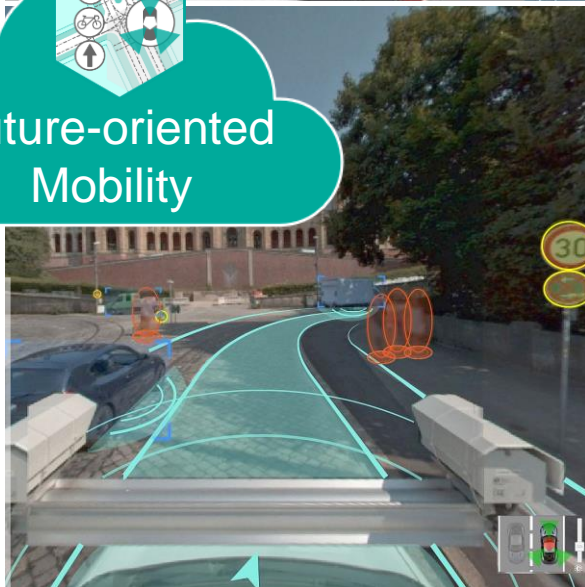
Current Domains and their Use Cases

Integrated
Urban Development



Citizen
Participation

Future-oriented
Mobility

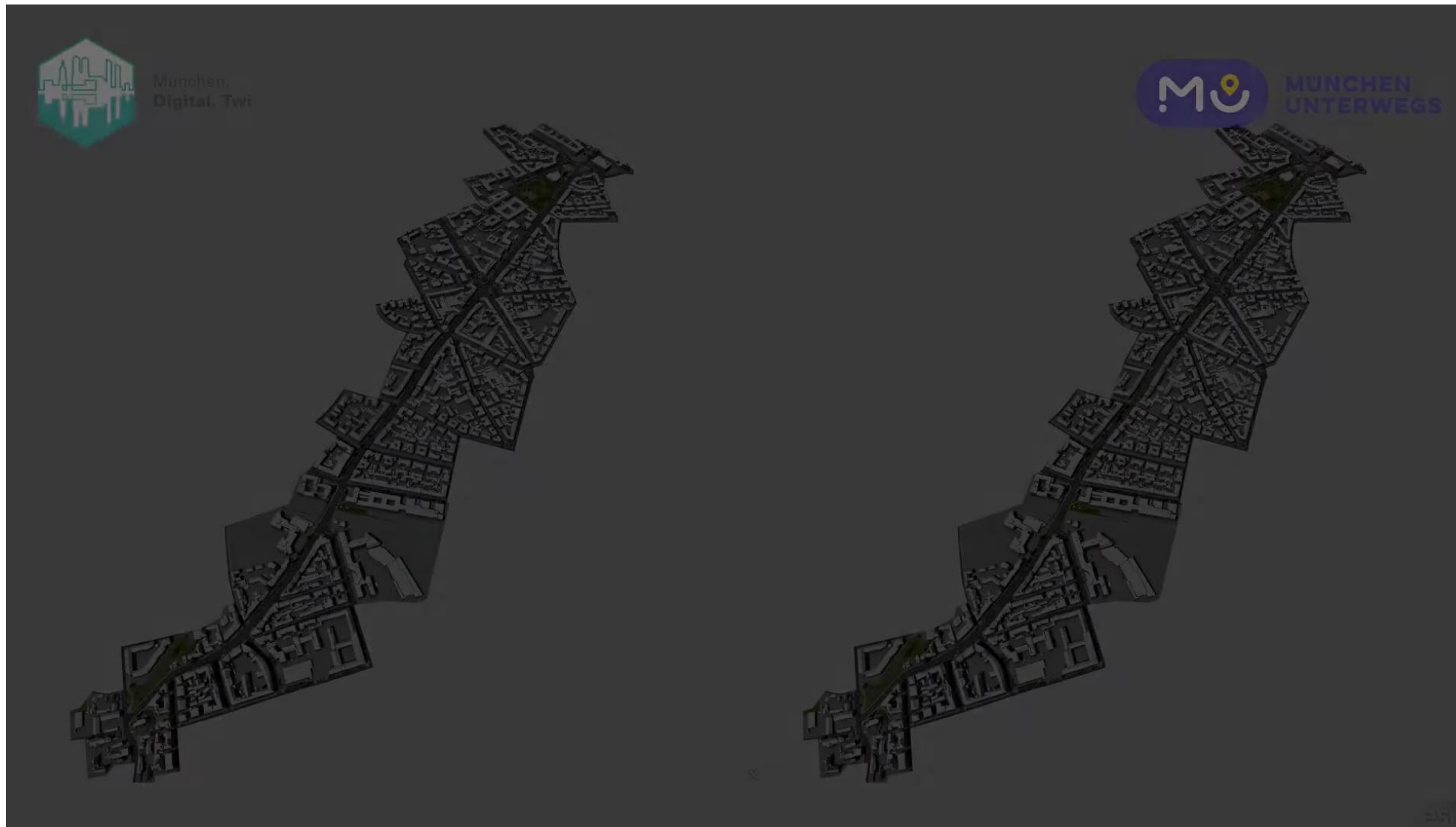


Climate &
Environmental
Protection

Security &
Safety



Munich Cycling Decision: Lindwurmstraße



[Video](#)



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and Transport



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Award for the Digital Event

Citizen's petition for better cycling conditions:
participation in the project Boschetsrieder Straße

German Bicycle Award 2022: 2nd Place!

128 applications,
Category Service & Communication



credits: Michael Nagy/Presseamt München



Smart Info-map for Construction Sites

Network of construction sites of Munich (BAU, MSE), Stadtwerke München, Münchner Verkehrsgesellschaft and private developers

Baustellen (in den nächsten 4 Wochen)

Adresse	Mitterfeldstr.
Art der Maßnahme	Baumaßnahme
Beschreibung	U-Bahn-Bau U5-Verlängerung nach Pasing
Beginn (geplant)	01.01.2021
Ende (geplant)	31.12.2023
Betroffener Bereich	Parkbuch,Fahrbahn
Beeinträchtigung	Umleitungsstrecke MIV inkl. Buslinie 57 mit Haltverboten wegen Sperre der Gotthardstr. westlich Willibaldstr.
Hinweis	Der tatsächliche Bereich der Maßnahme kann von der gezeichneten Fläche abweichen.

Kartographie und Gestaltung: Geodatenservice München | Masterportal V. 2.19.0 | 1 : 5.000 | 100 m | DE-DE



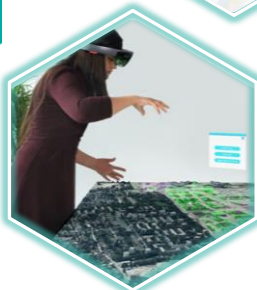
What-if Scenarios for future urban planning



DIN SPEC 91607: Digital Twin for cities and communities

Consortium members

13 x municipalities	10 x industry	6 x science
Hamburg Stadt Köln paderborn.de Paderborn überzeugt.	URBAN TECH REPUBLIC virtual city systems	BKG Wir geben Orientierung. Technische Universität München
STADT REGENSBURG STUTTGART	BERLIN TXL ORACLE Construction and Engineering	Fraunhofer IESE GERICS Climate Service Center Germany Eine Einrichtung des Helmholtz-Zentrums Hereon.
STADT KAISERSLAUTERN Freiburg IM BREISGAU Stadt Leipzig	DIN FIWARE .MSG	Hochschule für Technik Stuttgart gia RWTH AACHEN UNIVERSITY
SMART CITY JENA Landeshauptstadt München	esri Deutschland THE SCIENCE OF WHERE brain-SCC PORTALLÖSUNGEN	<div data-bbox="1714 999 2244 1056" style="background-color: red; color: white; text-align: center; padding: 5px;">3 x associations</div> DEUTSCHER LANDKREISTAG Deutscher Städtetag
BI Stadt Bielefeld Hannover STADT Geestland	GELSENWASSER [ui!] Urban Software Institute	gaia-x Hub Germany



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