UNIPD RESEARCH UNIT
Progress Report

## Francesca FISSORE, Marco PIRAGNOLO, Francesco PIROTTI

MINISTERO DELL'ISTRUZIONE DELL'UNIVERSITA' E DELLA RICERCA
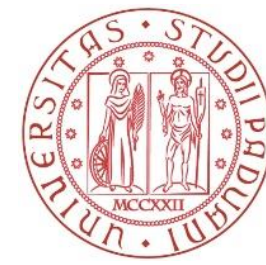
UR UniPD - Team

- ► Targets for UNIPD

- ► Expected results for UNIPD

- ► Progress report

    🟩 finished

    🟨 close

    🟧 work in progress

    🟥 not started yet

- ► Next steps

UR UniPD - TARGETS

► 1.1 Collect "traditional" urbanscape data (**UNIPD**)

► 2. Create an extended 3D data model from existing successful ones and validate it throughout the project by means of cross-checking with project partners' data (**UNIPD**).

► 4. Deploy and share the collected geo data on the Web in compliance with OGC standard web services (CNR, POLITO: server side; POLIMI, **UNIPD**: client side). The visualisation will be through an ad hoc intelligent geoportal, allowing the 4D navigation as well as some processing of the data

UR UniPD - Expected Results
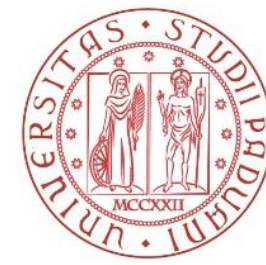
► 10. Software tools and procedures for urbanscape data representation and integration (**UNIPD**)

► 11. Extended 3D data model white sheet (**UNIPD**).

► 12. Extended 3D data model dedicated web page (**UNIPD**)

► 13. A distributed and acentric interoperable geo-spatial data infrastructure sharing on the Web the project's multi source heterogeneous geo-data (CNR, POLITO: server side design; **POLIMI**, UNIPD: client side design; every RU: implementation).

UR UniPD - Expected Results

▶ 14. An INSPIRE metadata record enriched with quality indicators for each GEO BIG DATA element managed by the SDI (CNR, **UNIPD**).

▶ 18. Implementation code for integration with the virtual globe webgis (**UNIPD**).

UR UniPD - Progress

▶ T1.1 Collect "traditional" urbanscape data

DBT - Topographic database for CityGML buildings

In this phase, shapefile⇒CityGML conversion and integration in 3D model is tested on small subsets of vector data: when working prototype is available, urbanscape data will be integrated with partner's contributions.

UR UniPD - Progress

► T1.1 Collect "traditional" urbanscape data

Database topografico

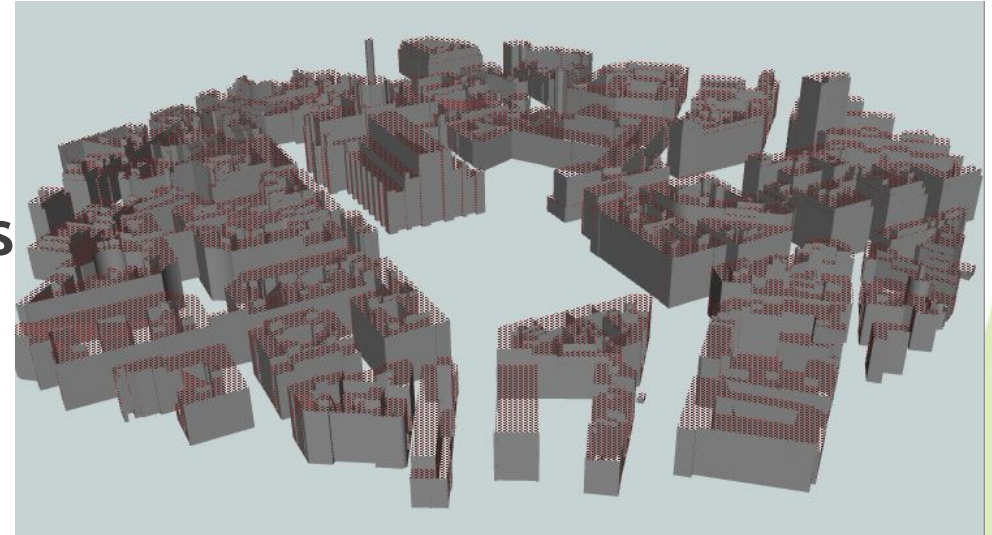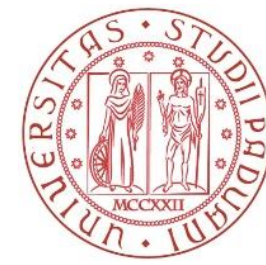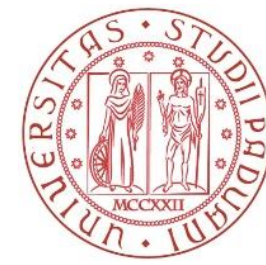| Città	Risorsa	Ultima revisione	Scala	Altezza edifici	Tip	NOTE	i	Licenza
Padova	DBT Regione	10/7/2015	5000	si	shp			IODL 2.0
Milano	DBT Regione	2/13/2017	5000	si	shp			IODL 2.0
Torino	BDTRE - DBT2(	1/31/2017	5000	si	shp	n-download.it/direct/Geoportale/RegionePiemonte/Licenze/BDTRE_DATABASE_GEOTOPO		http://ww
						* SIT città metropolitana di Napoli rimanda al SIT della Regione Campania (legge solo mail posta elettroncia certificata). Di seguito il messaggio: "Per quanto riguarda le unità volumetriche esse non sono disponibili nel data base topografico. Per quanto riguarda le modalità con cui acquisire il data base topografico del comune di Napoli il riferimento è il geom. Panebianco 081-7966936." Il geometra conferma che il database topografico è disponibile ma non le unità volumetrice. Il costo è di 20 euro a livello da richiedersi con		
Napoli*	OSM	5/4/2017		no	shp	PEC		licenza Op
Roma**	OSM	5/4/2017		no	shp	** Contattato il SIT città metropolitana di Roma senza risposta		licenza Op
TOT								

UR UniPD - Progress

- ▶ T1.1 Collect "traditional" urbanscape data
  - ▶ ETL - extract transform and load via Python script - Python + PyXB to interact with OCG schemas

| Binding Module	Namespace
pyxb.bundles.opengis._ogc	http://www.opengis.net/ogc
pyxb.bundles.opengis._sam	http://www.opengis.net/sampling/2.0
pyxb.bundles.opengis._sams	http://www.opengis.net/samplingSpatial/2.0
pyxb.bundles.opengis.atom	http://www.w3.org/2005/Atom
pyxb.bundles.opengis.citygml.appearance	http://www.opengis.net/citygml/appearance/
pyxb.bundles.opengis.citygml.base	http://www.opengis.net/citygml/1.0
pyxb.bundles.opengis.citygml.building	http://www.opengis.net/citygml/building/1.
pyxb.bundles.opengis.citygml.cityFurniture	http://www.opengis.net/citygml/cityfurnitu
pyxb.bundles.opengis.citygml.cityObjectGroup	http://www.opengis.net/citygml/cityobjectg
pyxb.bundles.opengis.citygml.generics	http://www.opengis.net/citygml/generics/1.
pyxb.bundles.opengis.citygml.landUse	http://www.opengis.net/citygml/landuse/1.0
pyxb.bundles.opengis.citygml.relief	http://www.opengis.net/citygml/relief/1.0
pyxb.bundles.opengis.citygml.texturedSurface	http://www.opengis.net/citygml/texturedsur
pyxb.bundles.opengis.citygml.transportation	http://www.opengis.net/citygml/transportat
pyxb.bundles.opengis.citygml.vegetation	http://www.opengis.net/citygml/vegetation/
pyxb.bundles.opengis.citygml.waterBody	http://www.opengis.net/citygml/waterbody/1
pyxb.bundles.opengis.csw_2_0_2	http://www.opengis.net/cat/csw/2.0.2

UR UniPD - Progress

- ► T1.1 Collect "traditional" urbanscape data
  - ► ETL - extract transform and load via Python script - Python + PyXB
  - ► What info to transform "traditional" data ⇒ CityGML?
    - ► Coordinates 3D
    - ► UID -
    - ► Scale (expected accuracy of data)
    - ► ….

UR UniPD - Ongoing Work
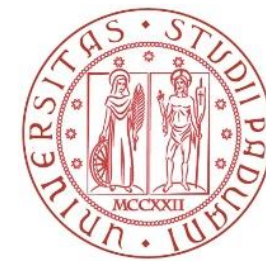
▶ T12. Create an extended 3D data model from existing successful ones ....

CITYGML - "The official OGC Standard for the Modelling and Exchange of Virtual 3D City and Landscape Models"

CityGML also has the concept of ADE (Application Domain Extension) to **extend** the schema with new classes and attributes which are not explicitly modelled in **CityGML**. The difference between ADEs and generics is that an ADE is defined in an extra XSD (XML Schema Definition) file with its own namespace.

► T12. Create
successful

CITYGML - "T
Exchange of V

CityGML also has
Extension) to **exte**
which are not exp
between ADEs an
XSD (XML Schen

Seminar: a Gentle Introduction to C

Posted on November 13, 2017 in Events, News, Presentations, Seminars

TESAF Dept. of Land, Environment, Agriculture and Forestry

Seminar titled "A gentle introduction to CityGML as open s
Giorgio Agugiaro, currently at the Austrian Institute of Techn

A gentle introduction to CityGML as open standard for semantic 3D city modelling

CityGML

OGC

Held November 17th @ 14:00 in CIRGEO lab at the Agripolis

Friday, 17 November 2017
Speaker: Dr. Giorgio Agugiaro
AiT – Austrian Institute of Technology
Time 14.00 – 18.30
Room 15P, Pentagono Building – Agripolis, Legnaro
Introduction – Dr. Francesco Pirotti

CityGML, is an open, standardised data model and format to store and exchange digital 3D models of cities and landscapes. It defines how to describe the most common 3D objects found in cities (e.g. buildings, roads, rivers, bridges, vegetation and city furniture) and the relationships between them. It also defines different levels of detail for the 3D objects, allowing for their representation according to different application domains and purposes.
The seminar will give an introduction about CityGML, will describe its main characteristics, the available tools, and will give an overview of existing applications and case studies adopting the standard.

For more info contact Francesco Pirotti.

DOWNLOAD FLYER

This seminar is funded by the Project of National Interest (PRIN) funded by the Italian Ministry of Education, University and Research (MIUR) - 2015XXXLRN - Urban Geo Big Data

URBAN GEO BIG DATA

View seminar videos:

PART 1 – Introduction to CityGMLSemantic Modeling

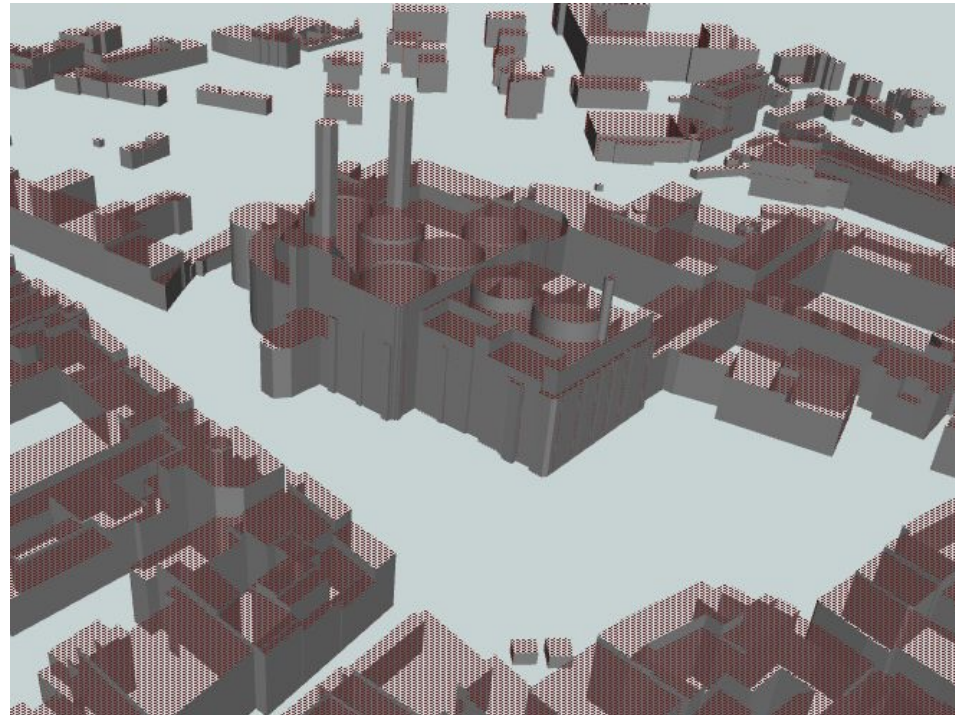PART 2 – UML and programming using the CityGML Model

UR UniPD - Ongoing Work

▶ T12. Create an extended 3D data model from existing successful ones …. success on test in PD (duomo)
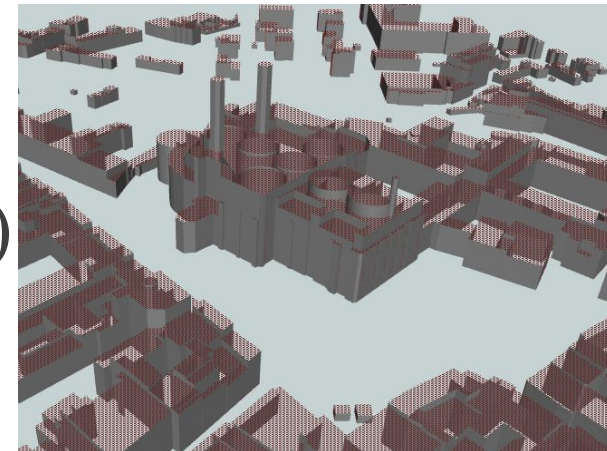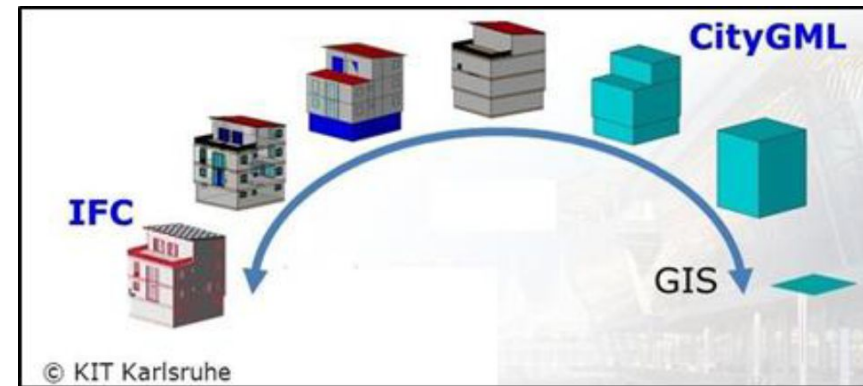
LOD 0

LOD 1

UR UniPD - Ongoing Work

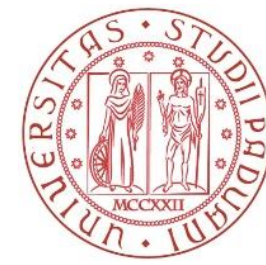▶ T12. Create an extended 3D data model from existing successful ones ....

CITYGML - next steps

– define reachable LOD
– software for conversion
– interact with POLIMI for

visualization

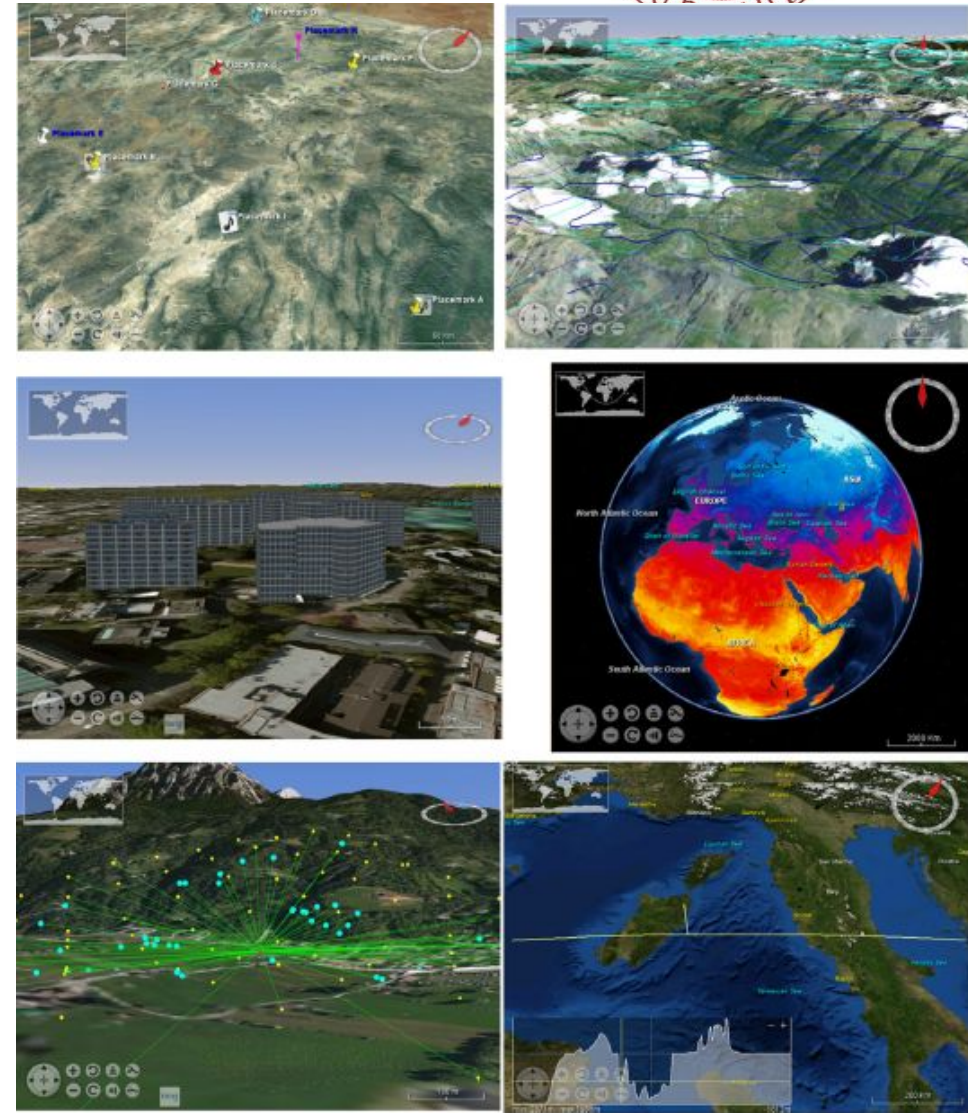– metadata integration (accuracy, scale)
– Extension capabilities (ADE)

► T4. Deploy and share the collected geo data on the Web in compliance with OGC standard web services
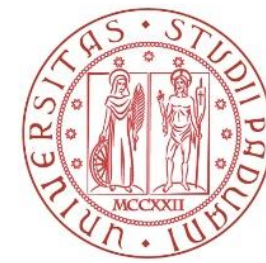
- Webservices and or GML download

UR UniPD - Ongoing Work

▶ R1. Software tools and procedures for urbanscape data representation and integration

▶ R18. Implementation code for integration with the virtual globe webgis CESIUM vs NASA WW

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THANK YOU

TIME FOR DISCUSSION