

NOVEMBER
8TH - 9TH

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2024

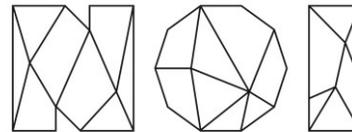
SFSCON - South Tyrol Free Software Conference



NOI TECHPARK
SÜDTIROL / ALTO ADIGE

BASIC CORE South Tyrol

A project to solve the topographical complexity of the National Spatial Data Catalogue.



TECHPARK SÜDTIROL / ALTO ADIGE

Edoardo Scepi (SGV)



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What is Basic Core (BC)?



The Basic Core represents a synthesised and reorganised technical content specification, created through a redistribution and simplification of the spatial model still used today in the National Spatial Data Catalogue.

Originated in early 2000s in Bolzano → Modernized starting from 2011 for public administration needs

The primary objective → define a minimum set of information → for adequately describe the territory within the typical use context of the public administration → ensuring its sustainability in terms of the ability to keep it updated and aligned with the transformations of the territory.





This Simplification Process



Mandatory to adapt and optimise the spatial-data managed by the Provincial Administration

1 - Exclusion of data already included in consolidated provincial or national sectoral archives or information systems:

SINFI - Federated National Infrastructure Information System



ANNCSU - National Archive of Urban Street Numbers



AINOP - National Computerised Archive of Public Works



SIC - Cadastral Information System



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This Simplification Process



2 – Layers NOT Included:

00 Geodesy and Photogrammetry

03 Addresses

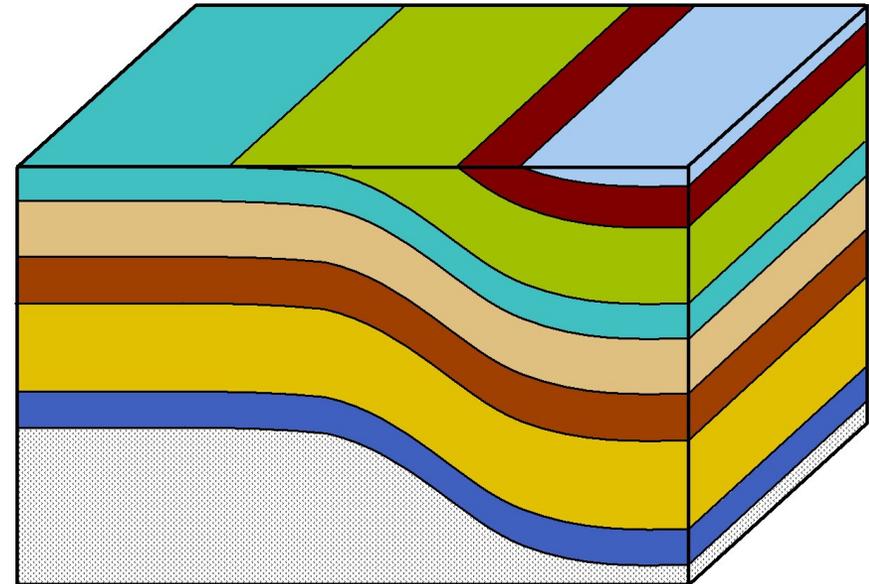
07 Underground Networks

08 Toponymy

09 Administrative Areas

Info from Digital Elevation Models (DEM)

All grid structures in Layer 01 Transport and Layer 04 Hydrography



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Operational Methodology



Choices: Basic Core specifics refers to the Spatial Model where...

A 2D management of the geometries was opted → transferring where possible the Z-Value from the geometric component to specific attributes

Highly relevant for: Volumetric Unit, Building Block, Partition Element and Endeavour → Elevation from DTM – DTS

And using a single geometric component for each object class → reducing complexity → allowing synthetic geometries derived from those of higher detail

Example: surface of a building → derived from the geometries of the volumetric units that compose it

In addition, an attribute called “Level relative to Ground” was introduced to manage information about of objects relative to the lowest level of an artefact.





Operational Methodology



Choices: Basic Core specifics refers to the Information Contents where...

A significant reduction in the number of object classes was realised, merging those with related types and reorganizing the enumerated attribute domains in a systematic and hierarchical manner

Scalable management of information at different levels of detail (municipal, provincial, regional, or national)

Example: merge of the classes *Industrial Artefact, Monumental and Urban Design Artefact, Sports Equipment, Transport Infrastructure Artefact, and Duct line* into the new class ARTEFACT

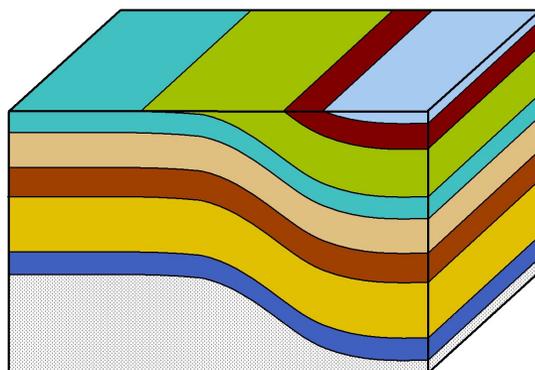
The number of Attributes per class was reduced → According to the 'once only' principle we decide to adopt → Information derived and retrievable from specialised sources (SINFI, ANNCSU, etc.) was considered Duplicate



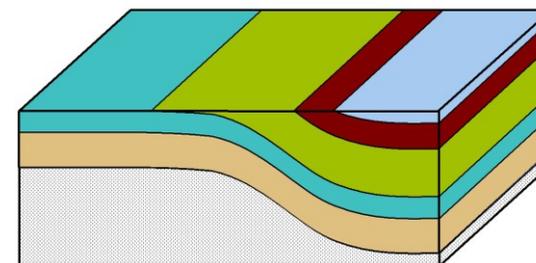
Comparison Basic Core – National Core



LAYERS	National Core Classes	Basic Core Classes
Mobility/Viability	6	4
Properties	26	8
Hydrography	6	4
Orography	4	2
Vegetation	8	4
Settlement pertinences	9	1
Total	59	23



National Core



Basic Core





From NC to BC - ETL Procedures



Extract, Transform, Load procedure → migration of objects in Municipal and Provincial Topographic DB



Tools chosen to manage Basic Core

The GeoUML Catalogue

enables the precise cataloguing of spatial object classes

The GeoUML Validator

ensures that data respect spatial integrity constraints and conform to specifications

AVAILABLE IN

D.D.D. - detailed descriptive document

.SCS – Specification Files



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From NC to BC – Automatic Transformation



Conversion of the basic spatial information layer of the whole South Tyrol → Only possible thanks to our technology partner **SIAG** → Expert in the creation of multiple, dedicated **FME** (Feature Manipulation Engine) Scripts

Import and Mapping: the data according to the NC schema and compare them with the Basic Core model.

Geometric and Semantic transformation: Basic Core schema requires a different and simplified geometric representation.

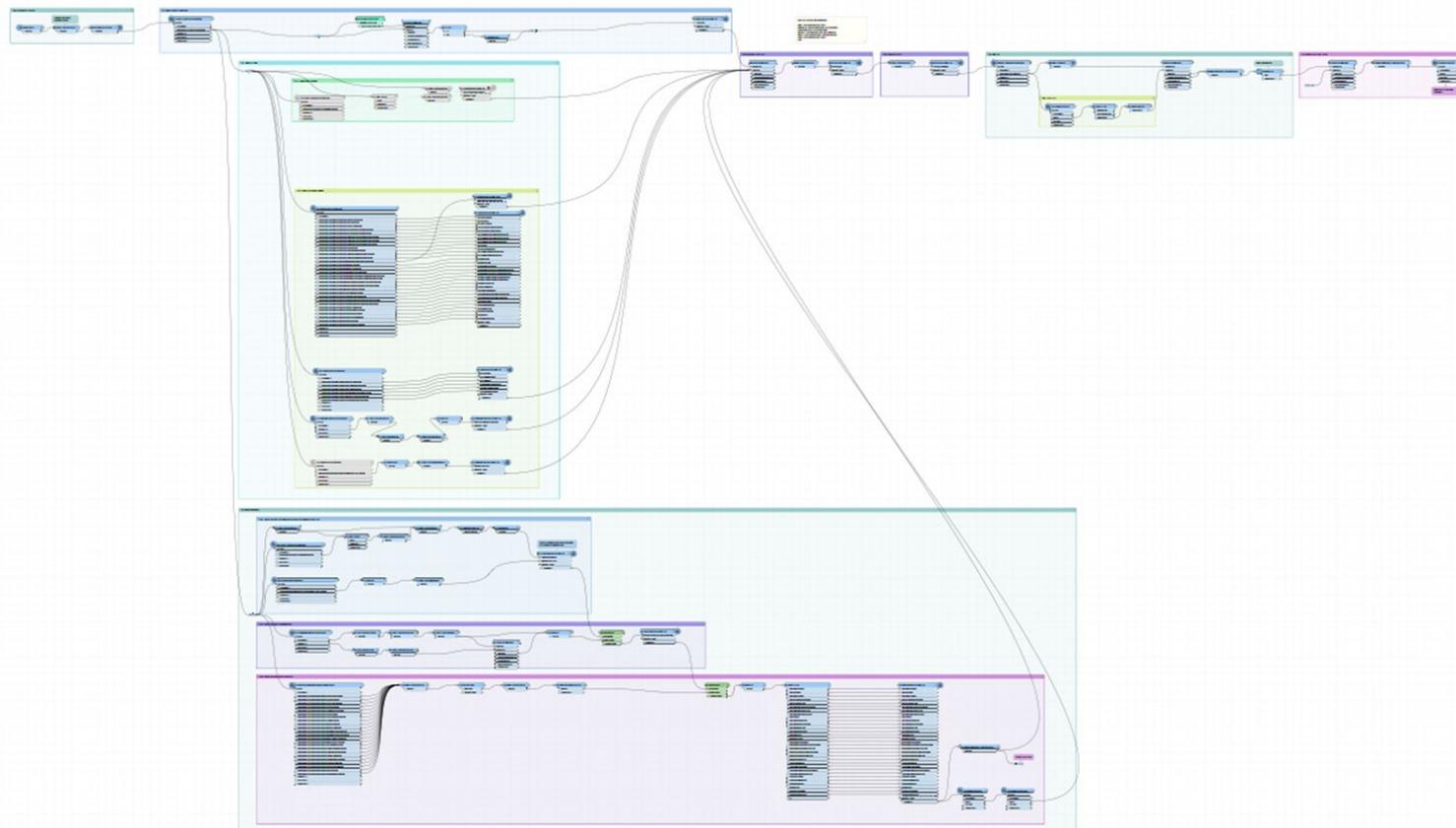
Validation and Data Cleaning: Validation and cleaning checks; elimination of duplicates, correction of topological errors, etc.

Export and Publication: Export to the new format based on the Basic Core model and publication on a dedicated WebGis.





From NC to BC – Automatic Transformation



FME Export Script Example



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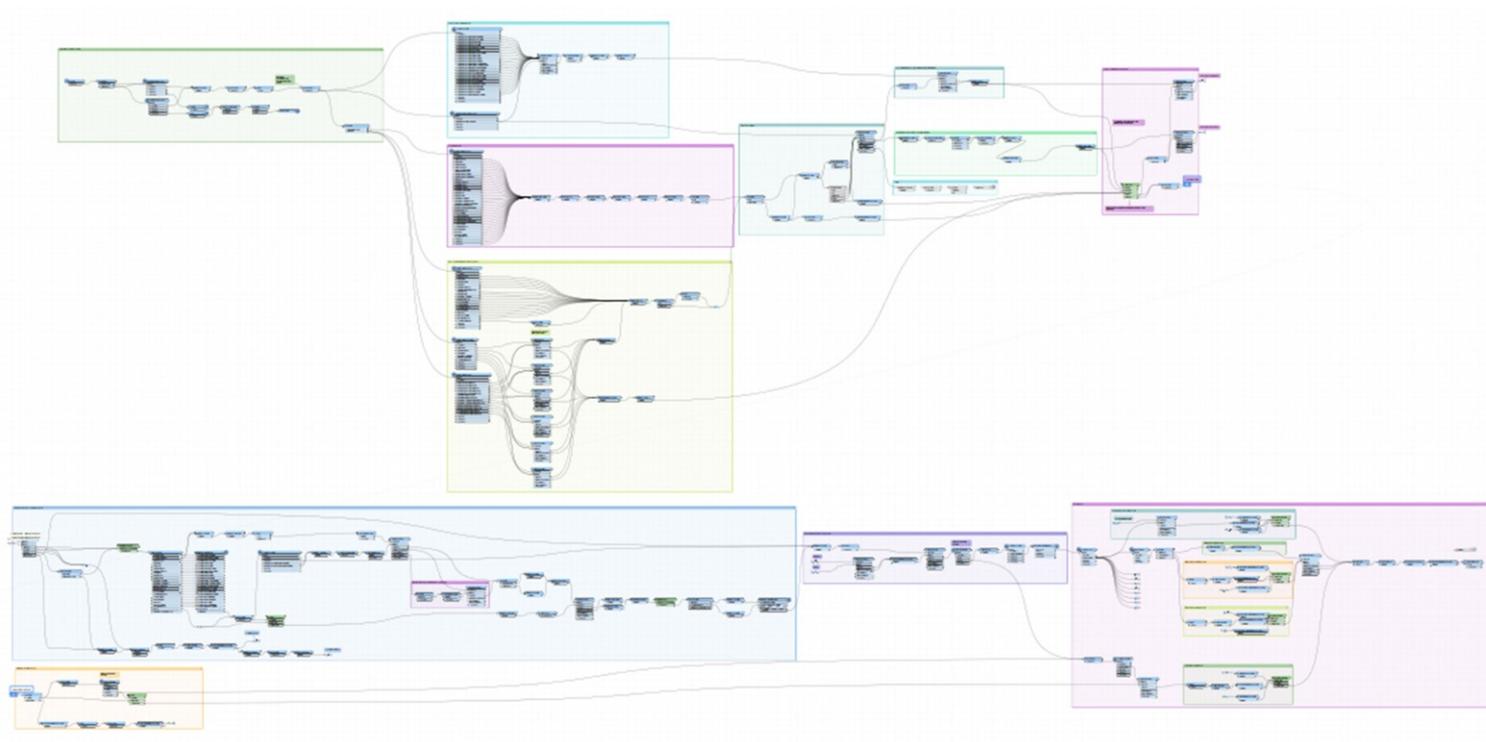
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From NC to BC – Automatic Transformation



FME GeoPKG Checks Script Example



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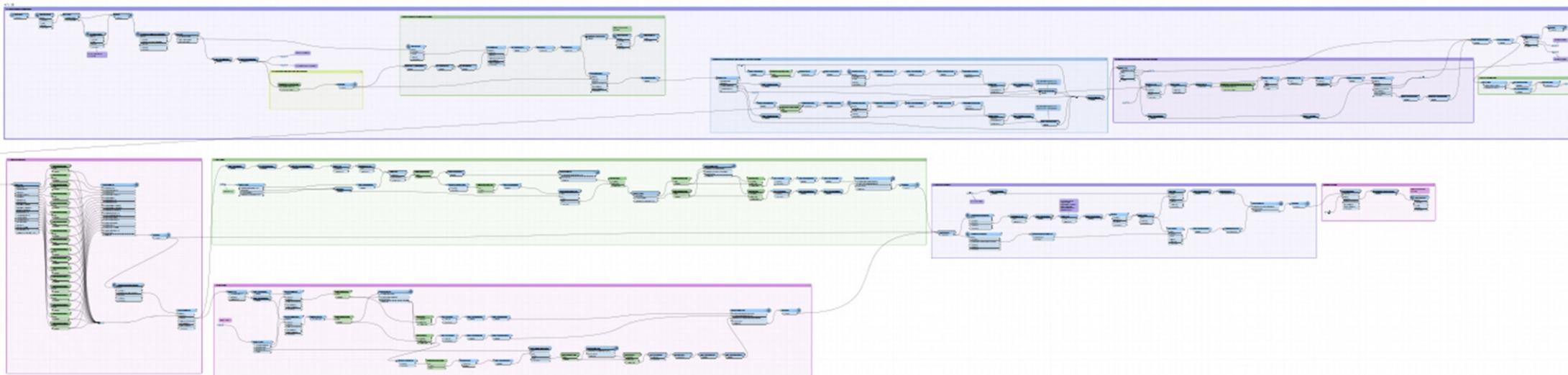
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From NC to BC – Automatic Transformation



FME Import Script Example



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Online Dashboard and QGIS Projects



Massive automatic transformation... → Ok all the controls created... → But? → Manual check, correction and updating!!!



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Based on the new MapView platform an online editing dashboard was created to allow users to visualise, analyse, edit and/or update Basi Core data.



<https://mapview.civis.bz.it/>



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Online Dashboard and QGIS Projects



The dashboard features an intuitive UI that allows easy access to all the functionality provided

BasicCore Edoardo Scept

Lista Sessioni + Nuova sessione Apri mappa

ID	Proprietario	Email	Titolo	Stato	Ultimo messaggio	Ultima modifica	Ricerca rapida
79	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Pfunders 1	In fase di approvazione		16/09/2024 12:05	 
69	Alfons Facchini	alfons.facchini@gemeinde.enneberg.bz.it	Frena	Approvata	Sessione approvata dal supervisore Lorenz Berger	16/09/2024 10:56	 
36	Daniel Platzer	daniel.platzer@tsens.eu	Longnui	Archiviata	Sessione archiviata in automatico dal sistema: approvata da più di una settimana	14/09/2024 07:30	 
56	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Weitentail	Archiviata	Sessione archiviata in automatico dal sistema: approvata da più di una settimana	14/09/2024 07:30	 
55	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Alte Industriezone	Archiviata	Sessione archiviata in automatico dal sistema: approvata da più di una settimana	14/09/2024 07:30	 
78	Pietro d'Orio	Pietro.dOrio@siag.it	CALL-833334 Fix "Aree di traffico non strutturato" BZ	Archiviata		12/09/2024 14:00	 
76	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Niedervintl Dorf	Approvata	Sessione approvata dal supervisore Lorenz Berger	11/09/2024 17:55	 
74	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Erler	Approvata	Sessione approvata dal supervisore Lorenz Berger	11/09/2024 16:56	 
77	Maurizio Zorzi	maurizio.zorzi@gemeinde.neumarkt.bz.it	Zona artigianale Würth	Archiviata		11/09/2024 15:56	 
75	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Ortshammer	Approvata	Sessione approvata dal supervisore Lorenz Berger	11/09/2024 14:24	 
71	Daniel Gusella	daniel.gusella@gemeinde.vintl.bz.it	Landmann	Approvata	Sessione approvata dal supervisore Lorenz Berger	11/09/2024 11:17	 

15 << 1 2 3 4 5 >>

Works Session List



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BasicCore Edoardo Scepi

Dettaglio sessione Lista Sessioni

ID 28 Proprietario Edoardo Scepi Modifica Azioni

Email edoardo.scepi@gvcc.net Titolo Test_Strade_Edo

Stato **Dati esportati** Ultima modifica 16/09/2024 12:56

Stato	Messaggio	Nome utente	Data
Dati esportati	590 features esportate. 1 Features da verificare	Edoardo Scepi	16/09/2024 12:56
Pronta	590 features sono state importate con successo.	Pietro d'Orio	26/07/2024 16:06
Creata	HARD RESET	Pietro d'Orio	26/07/2024 16:00

```
graph LR; Creata --> Bloccata; Creata --> Pronta; Bloccata --> Pronta; Pronta --> Dati_esportati[Dati esportati]; Pronta --> Editing_Maps[Editing Maps]; Dati_esportati --> Importi_fatti[Importi fatti]; Dati_esportati --> Dati_importati[Dati importati]; Importi_fatti --> Dati_importati; Dati_importati --> In_fase_di_approvazione[In fase di approvazione]; In_fase_di_approvazione --> Rifiutata; In_fase_di_approvazione --> Approvata; Rifiutata --> Archiviata; Errore_di_sistema[Errore di sistema];
```

Works Session List





Online Dashboard and QGIS Projects



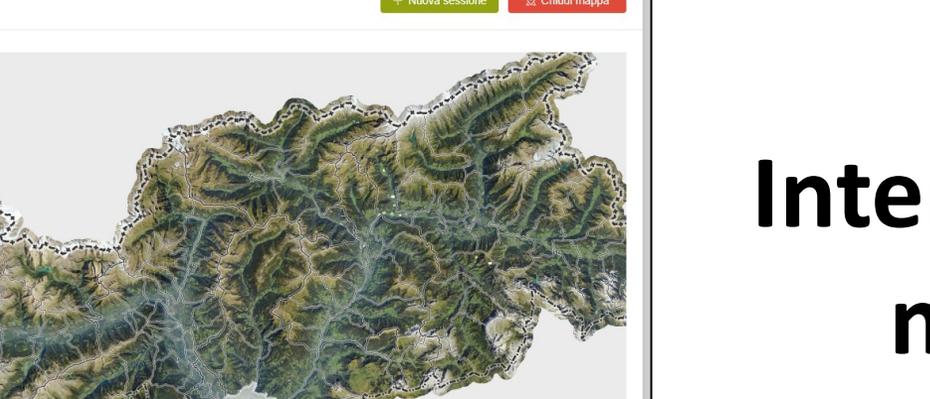
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BasicCore Edoardo Sceptl

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75	Daniel Gusella	Ortshammer	Approvata	 
71	Daniel Gusella	Landmann	Approvata	 
73	Daniel Gusella	Ortshammer	Archiviata	 

15 < 1 2 3 4 5 >



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Interactive map



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Editing Toolbox



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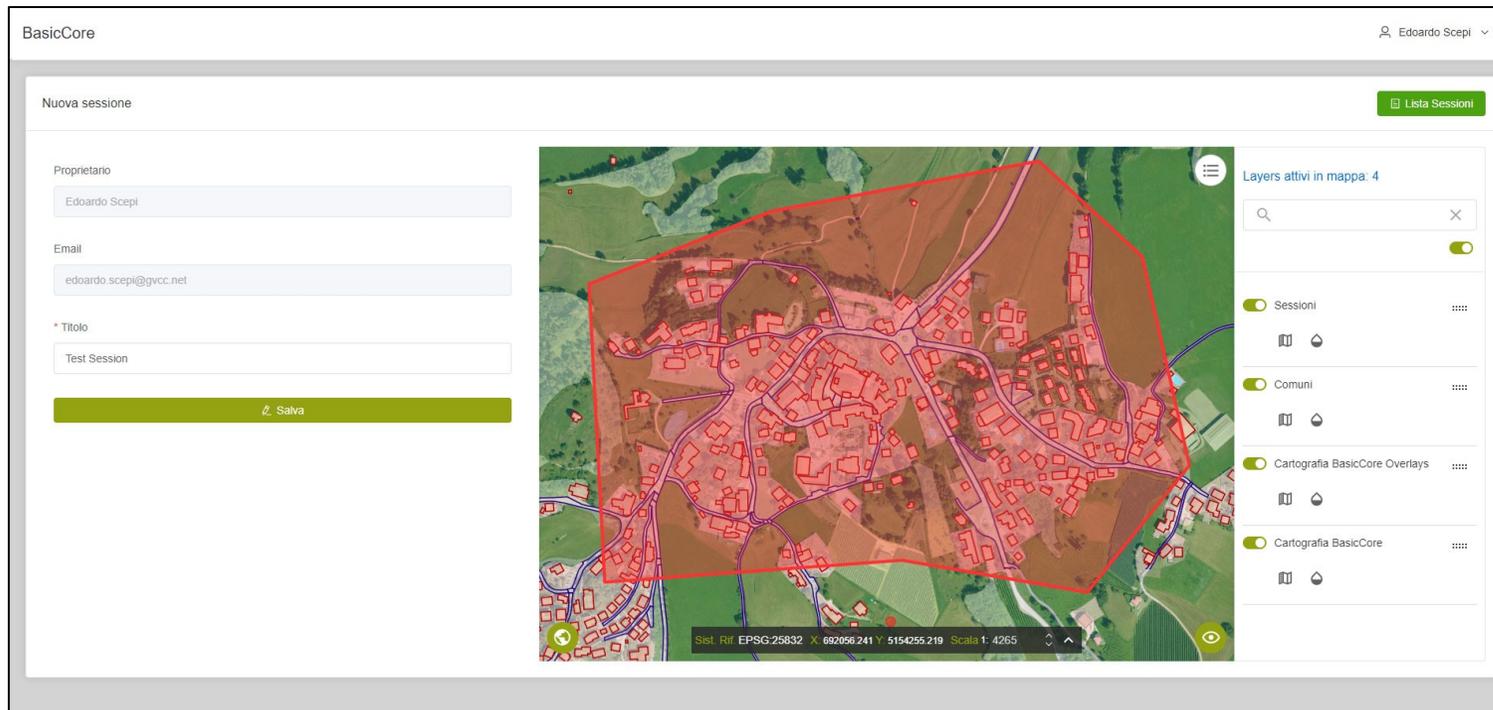
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BC work session creation



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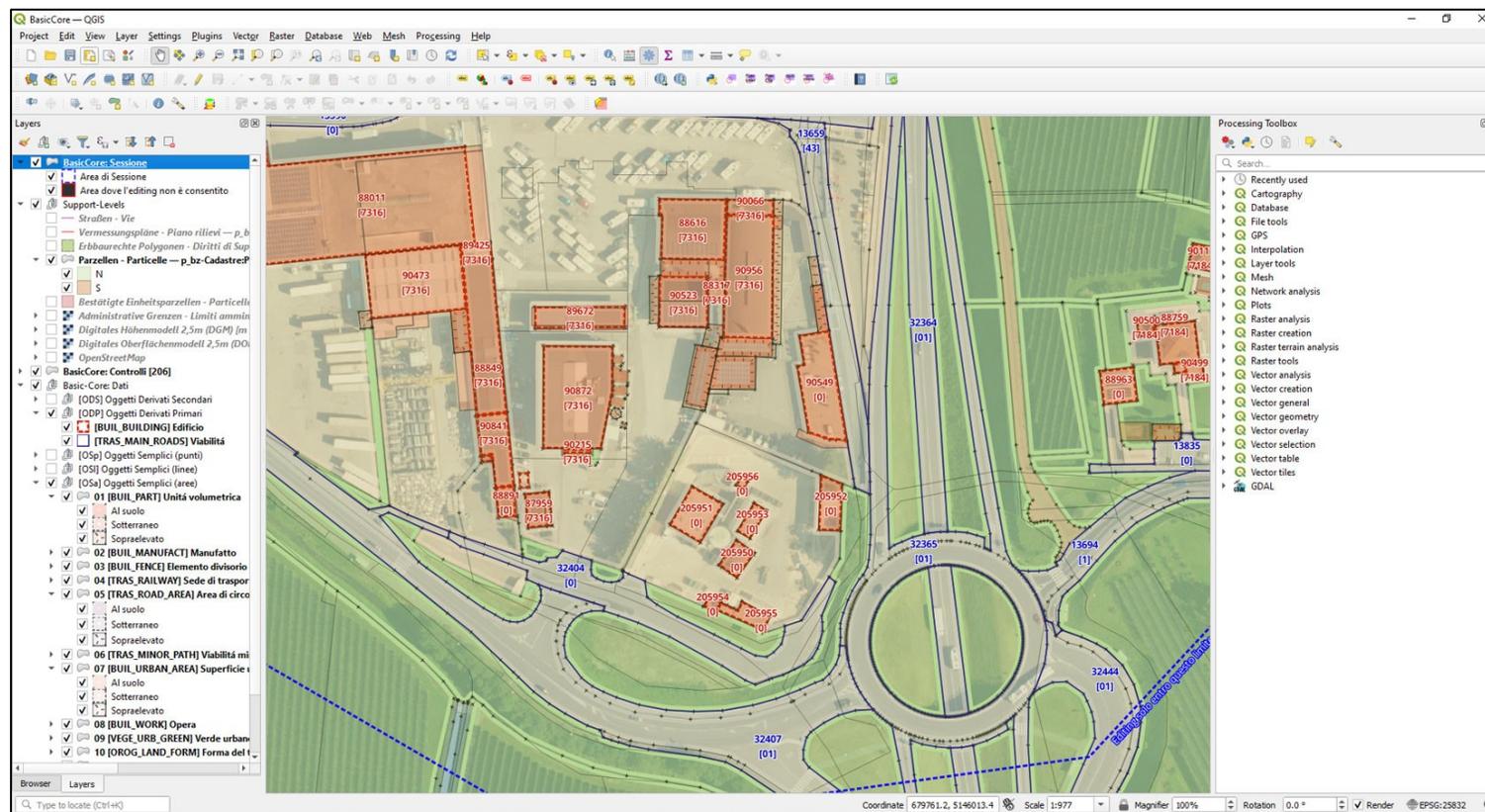
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Online Dashboard and QGIS Projects



Tailor made Basic Core QGIS project



- Checks
- Support Levels
- Orthophotos
- OperStreetMap

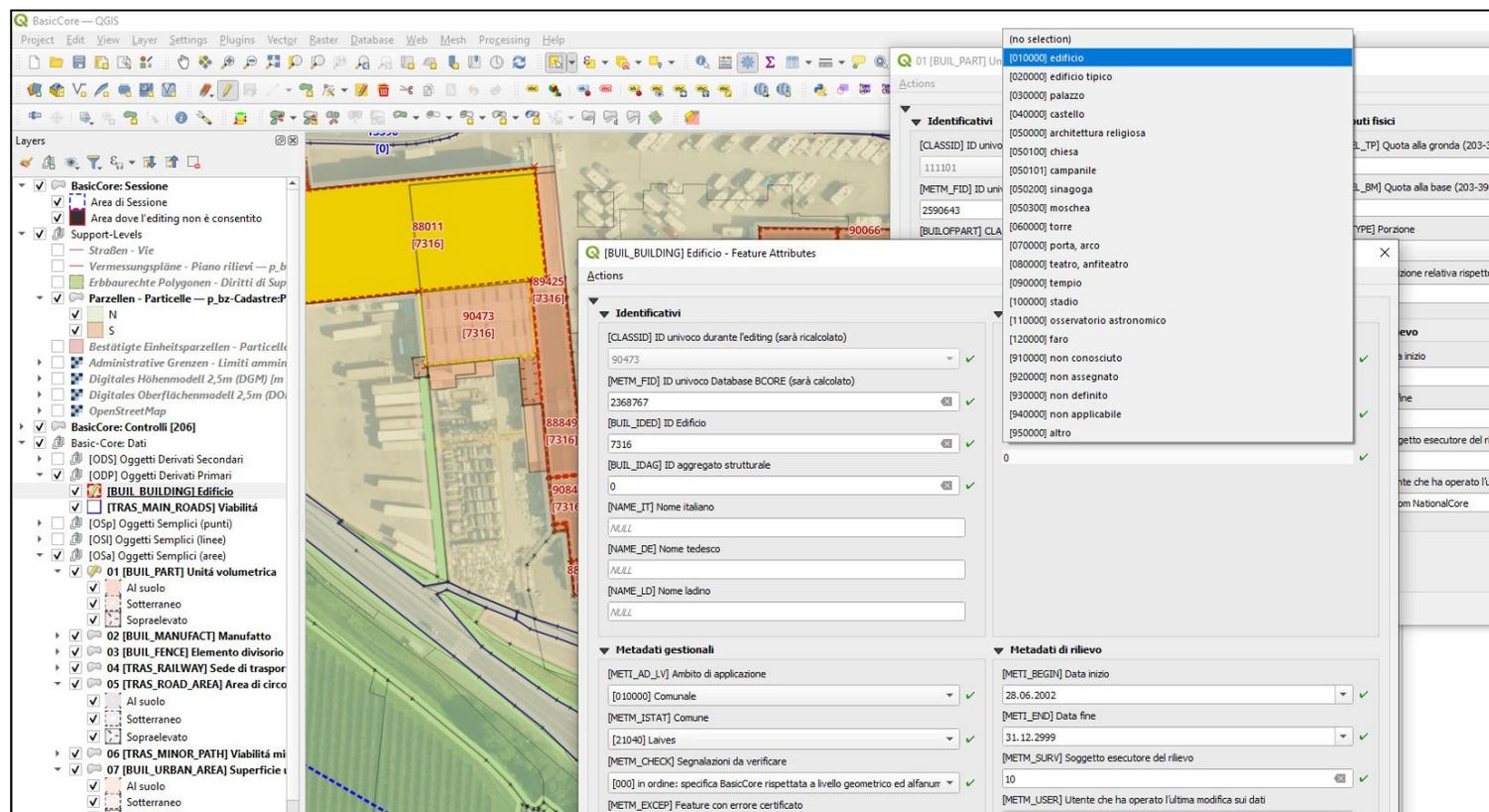




Online Dashboard and QGIS Projects



Tailor made Basic Core QGIS project



Basic Core QGIS project control and entry masks



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Online Dashboard and QGIS Projects



Visualizza sessione Chiudi

Layers attivi in mappa: 13

- Sessioni
- Checks
- [ODS] Oggetti Derivati Secondari
- [ODP] Oggetti Derivati Primari
- [OSp] Oggetti Semplici (punti)
- [OSI] Oggetti Semplici (linee)
- [OSa] Oggetti Semplici (aree)
- Piano rilievi (pregeo)
- Particelle
- Cartografia BasicCore Overlays
- Cartografia BasicCore
- Uso del suolo Corine

Sist. Rif. EPSG:25832 X: 680400.756 Y: 5145663.442 Scala 1: 2000

Before



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Online Dashboard and QGIS Projects



Visualizza sessione Chiudi

Sist. Rif. EPSG:25832 X: 680412.529 Y: 5145650.207 Scala 1: 2000

Layers attivi in mappa: 13

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- [OSa] Oggetti Semplici (aree)
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After



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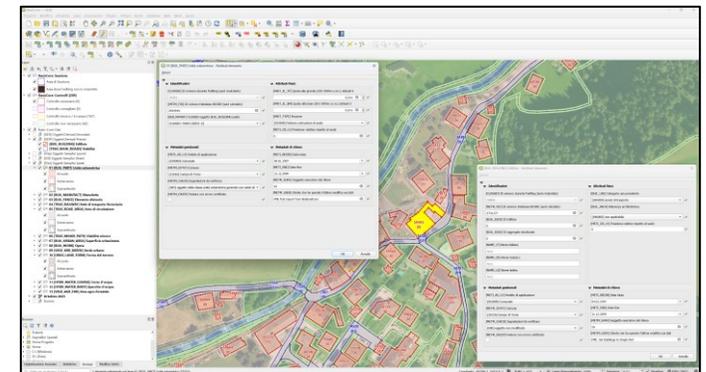
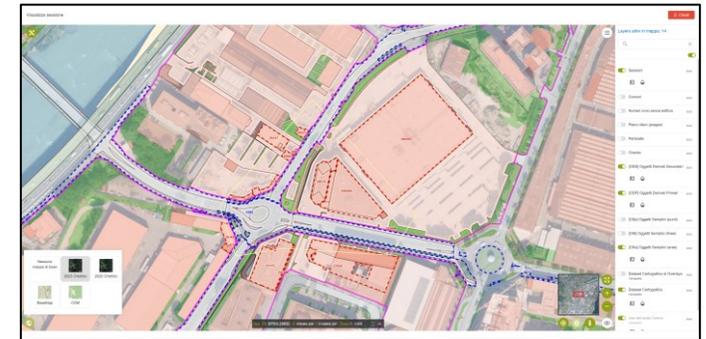
Basic Core Pilot Project



Second half of 2024 → 20 municipalities in South Tyrol → Correction/updating of the BC cartography

Project Phases:

- **Training:** use/understanding of the tech-spec, use of dashboard/QGIS and methodology.
- **Inconsistencies analysis:** identifying discrepancies with the situation on the ground.
- **Update/Correction:** real technical work phase.
- **Data validation and integration:** test of the full potentiality of the system.





Conclusions & Outcomes



(Many and Positive!)

Conclusions

- Model for future large-scale interventions.
- Step towards the standardisation of spatial data management for the Provincia Autonoma di Bolzano.
- Active participation of the municipalities → More reliable technical base map (future decisions/interventions).
- Particularly useful not only for the purpose of interacting with the new BC layer.



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(Many and Positive!)

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Outcomes

- Improved accuracy of the cartographic data.
- Constant and autonomous updating of spatial and cartographic information.
- Streamlining of land use planning
- Inter-municipal cooperation
- Costs Reduction



Conclusions & Acknowledgment



Providing a concrete benefits in the management of such important layer as a basic technical vector cartography



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Conclusions & Acknowledgment



Providing a concrete benefits in the management of such important layer as a basic technical vector cartography

The simplified tech-spec and the System realized will make the BC a real and concrete tool in land management



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Conclusions & Acknowledgment



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The simplified tech-spec and the System realized will make the BC a real and concrete tool in land management

Future developments → expanded and integrated system → to monitor changes over time → collaborate in real time with all the stakeholders of this crucial sector!



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Thanks to:



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Spoiler Alert!!!



Would you like to have a touch of MapView.....?

And maybe BasicCore.....?????????



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