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Managing life-cycle information: from IGN France's BDUni to the OME2 project

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2.The BDUni management system

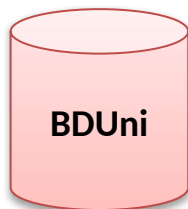
3.Use and re-use of the BDUni management system

1. IGN France's BDUni

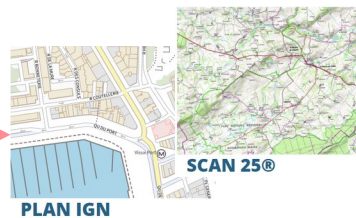
Pointe à Colombier, Saint-Barthélemy – IGN

IGN France's BDUni

- IGN France's central production database
- Created in 2006
- 1:10k multi-theme vector data
 - Buildings
 - Administrative
 - Hydrography
 - Land cover
 - Named places
 - Transport
 - ...
- 200 tables and 1800 fields
- ~180 million live objects and 450 million historical objects
- 690 Go
- PostgreSQL/PostGIS



Database products



Web services



Paper maps



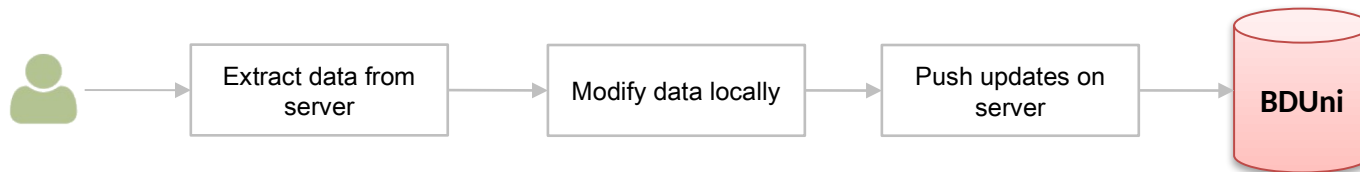
Pan-European products

Updating the BDUi



The BDUi management system

Workflow



→ Many users are working on the BDUi at the same time so conflicts can occur.

→ It is essential to track changes and know who has been doing what.

Main purposes of the BDUi management system:

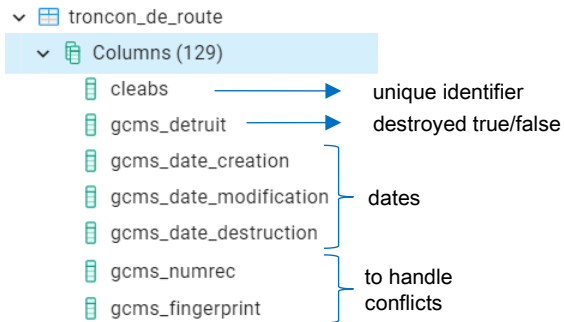
- Keep track of all changes performed on the data through the different tools.
- Record every version of every object in the database, in order to visualize evolutions and provide incremental updates.
- Manage updates from the different tools and handle conflicts.

2. The BDUni management system

Grand récif du nord-est, Mayotte – IGN

Implementation


7 technical fields on all tables



A history table for each table

To store all the successive versions of every object

```

>  transport_par_cable
>  transport_par_cable_h
>  troncon_de_randonnee_hivernale
>  troncon_de_randonnee_hivernale_h
>  troncon_de_route
>  troncon_de_route_h
>  troncon_de_voie_ferree
>  troncon_de_voie_ferree_h
  
```

PostgreSQL triggers

To fill the required information in case of modifications:

- UID updating rules (cleabs)
- Technical fields (dates, destroyed...)
- History tables.

History table example

Main table

	cleabs [PK] character varying (24)	gcms_detrui boolean	gcms_date_creation timestamp without time zone	gcms_date_modification timestamp without time zone	gcms_date_destruction timestamp without time zone
1	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2023-08-26 08:48:30.650131	[null]

Current version of the object

History table

	cleabs character varying (24)	gcms_detrui boolean	gcms_date_creation timestamp without time zone	gcms_date_modification timestamp without time zone	gcms_date_destruction timestamp without time zone
1	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	[null]	[null]
2	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2010-10-13 13:53:46.081155	[null]
3	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2011-09-07 10:52:27.309352	[null]
4	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2014-06-24 12:50:44.818685	[null]
5	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2018-01-15 12:07:10.193572	[null]
6	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2022-12-12 11:59:04.522109	[null]
7	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2022-12-12 13:40:32.029612	[null]
8	TRONROUT0000000013612462	false	2006-08-18 12:13:50.587418	2022-12-12 13:52:43.464953	[null]

Former versions of the object

Management rules

	Main table	History table
Object created	<ul style="list-style-type: none"> ➤ New entry ➤ Fill creation date ➤ Generate fingerprint 	-
Object modified	<ul style="list-style-type: none"> ➤ Fill modification date ➤ Update fingerprint 	<ul style="list-style-type: none"> ➤ Record former version
Object deleted	<ul style="list-style-type: none"> ➤ Set « destroyed » field to true ➤ Fill deletion date ➤ Update fingerprint 	<ul style="list-style-type: none"> ➤ Record former version

Handling conflicts

A user extracts some BDUi data and modifies an object → the object is modified only locally for now

The modified object is sent to the BDUi server with all its attributes, including its original gcms_fingerprint

Does gcms_fingerprint have the same value on the modified object as on the server version of the object ?

Yes

The object is recorded on the server and the technical fields/history tables are filled according to the management rules

No

The object is rejected. Help is provided to the users to solve the conflict through a dedicated interface.

It means that another user has modified the object between the time when the data was extracted and the time when the modified object was sent.

Once he has solved the conflict, the user can try to send his modification again

3. Use and re-use of the BDUni management system

Pointe à Colombier, Saint-Barthélemy – IGN

Accessing historical information

On the « Collaborative space » website* (<https://espacecollaboratif.ign.fr>)

Ex:

https://espacecollaboratif.ign.fr/gcms/database/bdtopo_metropole/feature-type/troncon_de_route/feature/TRONROUT0000000013612462/versions

* For registered users only

History of object TRONROUT0000000013612462

Home > Data > bdtopo_metropole > Tronçon de route > TRONROUT0000000013612462 > History

Only versions regarding modifications of the object's attributes displayed on the Collaborative space are listed below.

Version nb 1

Modification date : 18 August 2006 PM

Numrec : 7960

Origin of the modification : IGN

[Show the complete form of this version of the object](#)

Version nb 2

Modification date : 13 October 2010 PM

Numrec : 5183453

Origin of the modification : IGN

[Show the complete form of this version of the object](#)

Changes :

Field	Former value	New value
nombre_de_voies	2	1
largeur_de_chaussée	4.0	5.0

Delivering incremental updates

- A change-only updates edition of the BDUi is available every trimester.
- On the « Collaborative space » website, registered users can download change-only updates on request.

Add an extraction area on database bdtopo_metropole

Name

my_extraction_area

The name of your area may only contain letters without diacritics, numbers and underscores.

Geometry

Choose a pre-defined geometry from your user areas :

PARIS

Resulting geometry

Bounding box

Calculate geometry

- OR -

Draw on map

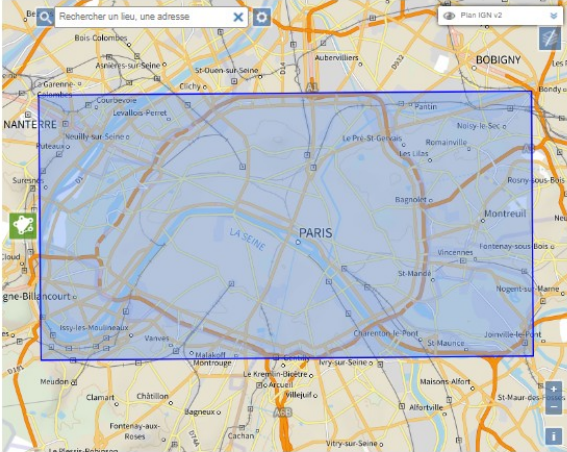
- OR -

Add a WKT geometry

Delete geometry

Data tables

<input type="checkbox"/> Toponymie zones réglementées	Filter fields to extract	Filter by field values
<input type="checkbox"/> Transport par câble	Filter fields to extract	Filter by field values
<input checked="" type="checkbox"/> Tronçon de route	Filter fields to extract	Filter by field values
<input type="checkbox"/> Tronçon de voie ferrée	Filter fields to extract	Filter by field values
<input type="checkbox"/> Tronçon hydrographique	Filter fields to extract	Filter by field values
<input checked="" type="checkbox"/> Check all		



Setting up database with life-cycle management for our partners

- Two simple parameters on the Collaborative space
- Automatic creation of technical fields and triggers

Add database

Title	<div>Versioning management</div>	<div>Conflict management</div>
<input type="text"/>	<div>no</div>	<div>no</div>
System	Geographical extent of the database *	
<div>PostgreSQL</div>	<p>Correctly filling the geographical limits of your database will enable you to limit the navigation on the maps from the <i>Explore the data</i> menu. The extent information needs to be filled with decimal degrees.</p>	
Database name	Fill with pre-defined extent	
<input type="text"/>	X min	X max
	<div>-5.4</div>	<div>9.2</div>
Schema	Y min	Y max
<div>public</div>	<div>41</div>	<div>51.2</div>
Database type	Source	
<div>standard</div>	<input type="text"/>	

Open Maps for Europe 2

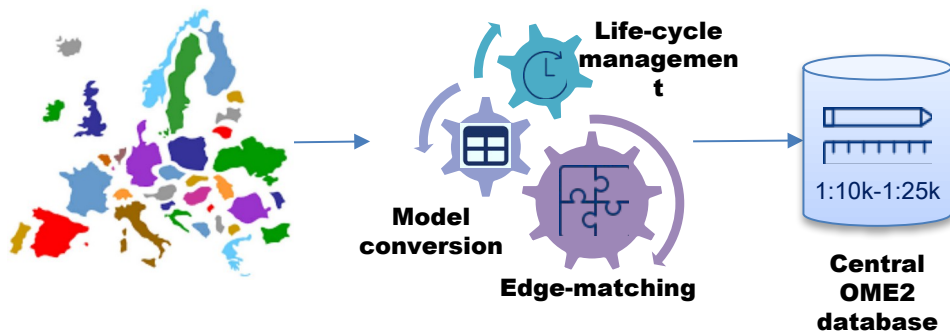
➤ Consortium led by EuroGeographics

- IGN France
- Kadaster Netherlands
- NGI Belgium
- Hellenic Cadastre
- Spanish Cadastre
- IDOX
- BKG

➤ Co-funded by the European Commission

➤ To create a **production process** for:

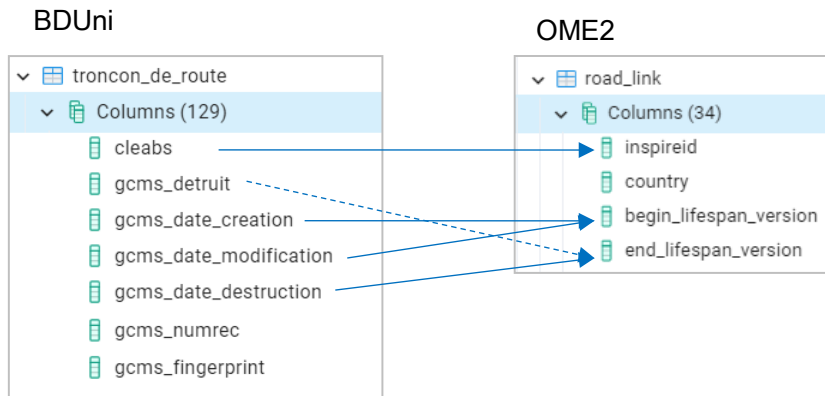
- An **open large-scale** database
- Containing **key themes**: Administrative units, Transport network, Hydrography
- With **authoritative**, **harmonised** and **edge-matched** data
- Including **life-cycle** management (INSPIRE compliant).



Capitalizing on the BDUi experience

- Similar concepts: unique identifier and life-cycle attributes
- The same principles are being implemented in the OME2 database:
 - History tables
 - Re-use of the BDUi triggers to fill the life-cycle information.

→ **A functional life-cycle management system with very little additional implementation.**





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Thank you for your attention

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