



European Spatial Data Infrastructure Network

# **Edgematch Reference Data using the SBE- Edgematch Data Model**

*proposed solution and best practice for a edge-  
matching data maintenance*

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## Agenda

- **Edge matching issues to be tackled within the ESDIN project and proposed solutions**
- **The State Boundaries of Europe Edgematch Data Model**
- **Identified issues**
- **Collecting connecting features and database maintenance**
- **Usage of the database (within an edgematch service)**

## Issues on edge-matching processes ESDIN intends to solve

- Avoiding the **export and import of data** on the production platform between neighbours,
- As **international boundaries** are belonging to several countries **decentralised maintenance** where each country can maintain its own boundary would lead to **discrepancies** in longer term.
- Storing the **connecting**( edge-matching) **information** on **data features** to be edge-matched **is not stable enough** in terms of data maintenance where data features of a neighbour can change or disappear.
- To reach efficient and less labored processing in edge-matching

## Solutions on edge-matching processes proposed in the ESDIN project

- Using **reference data** that can be **accessible** to every one and maintained **on-the-fly**
- **International boundaries** (at different LoD) should be unique and **maintained centrally** in **reference data sets** (at different LoD) and accessible to all stakeholders.
- Creating a **set of connecting features** that would hold connecting information and could be **used as reference data** for edge-matching, stored and maintained together with the boundaries.
- To **set up tools** on edge-matching that would refer to those reference data on international boundaries and edge-matching and can be **accessed and used through the WEB**.

## Goals of the State Boundaries of Europe (SBE) project

- Provide and maintain a unique resource for an easy and complete information on European boundaries,
- Support Member NMCAs to identify and solve issues related to national boundaries,
- **Support pan-European cross-border edge-matching of Base Reference Information, and derived products, as a tool of interoperability for INSPIRE and other services.**

See [http://www.eurogeographics.org/eng/03\\_EuroBoundaries\\_overview.asp](http://www.eurogeographics.org/eng/03_EuroBoundaries_overview.asp)

## SBE Data Model and Database

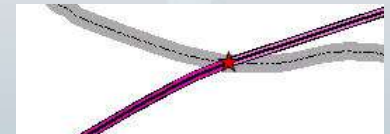
- **Data Model** including an edge match extension has been developed within the SBE Working Group
- **Database** is implemented, stored and maintained at ***swisstopo***

## Modelling Connecting Features for edge matching using the SBE Data Model

- A presupposition for the interoperability of the harmonised datasets with the national contributions within a Distributed Maintenance Architecture are
  - ✓ agreed stable international boundaries for the respective Level of Detail
  - ✓ agreed stable connecting features

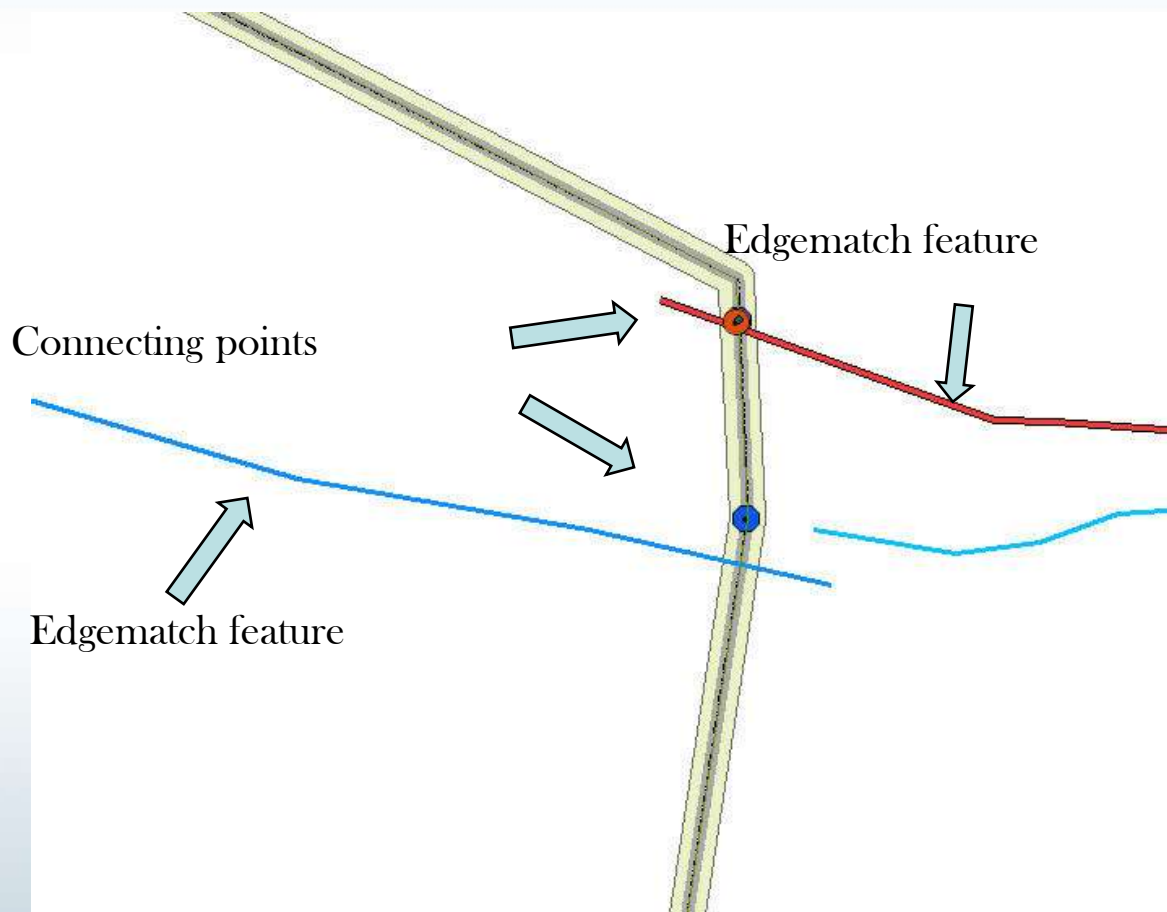
## Edge Match Features & Connecting Points / Lines

- **Edgematching features (EMF) are features which shall be hooked to fixed Connecting Features (CF) coinciding with the agreed international boundary; these may be**
  - ✓ topographic line features which are collinear with the international boundary (normally natural watercourses)
  - ✓ topographic point features on the international boundary (e.g. border crossing facilities)
  - ✓ topographic line features which intersect the international boundary at an edge match connecting point

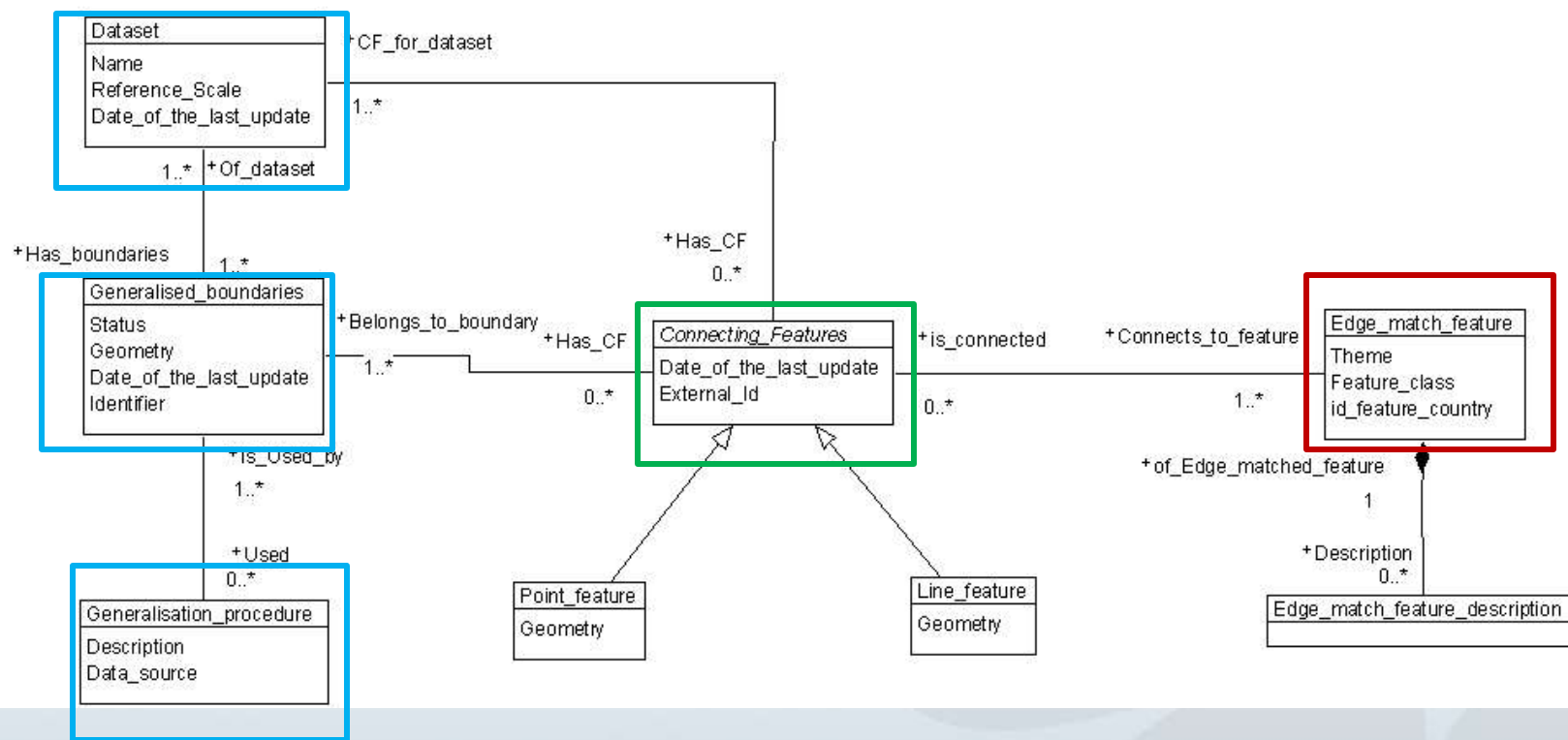


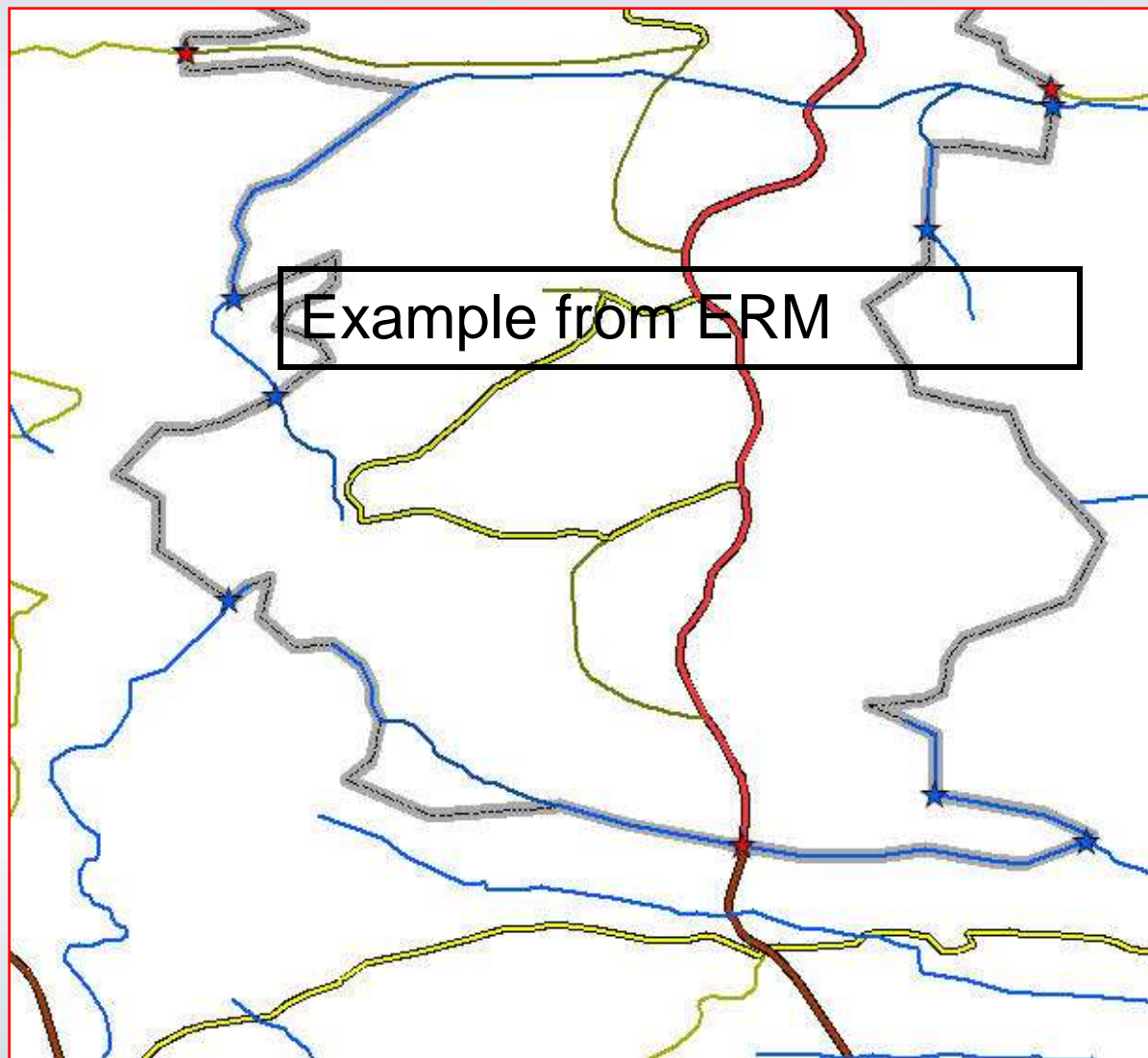


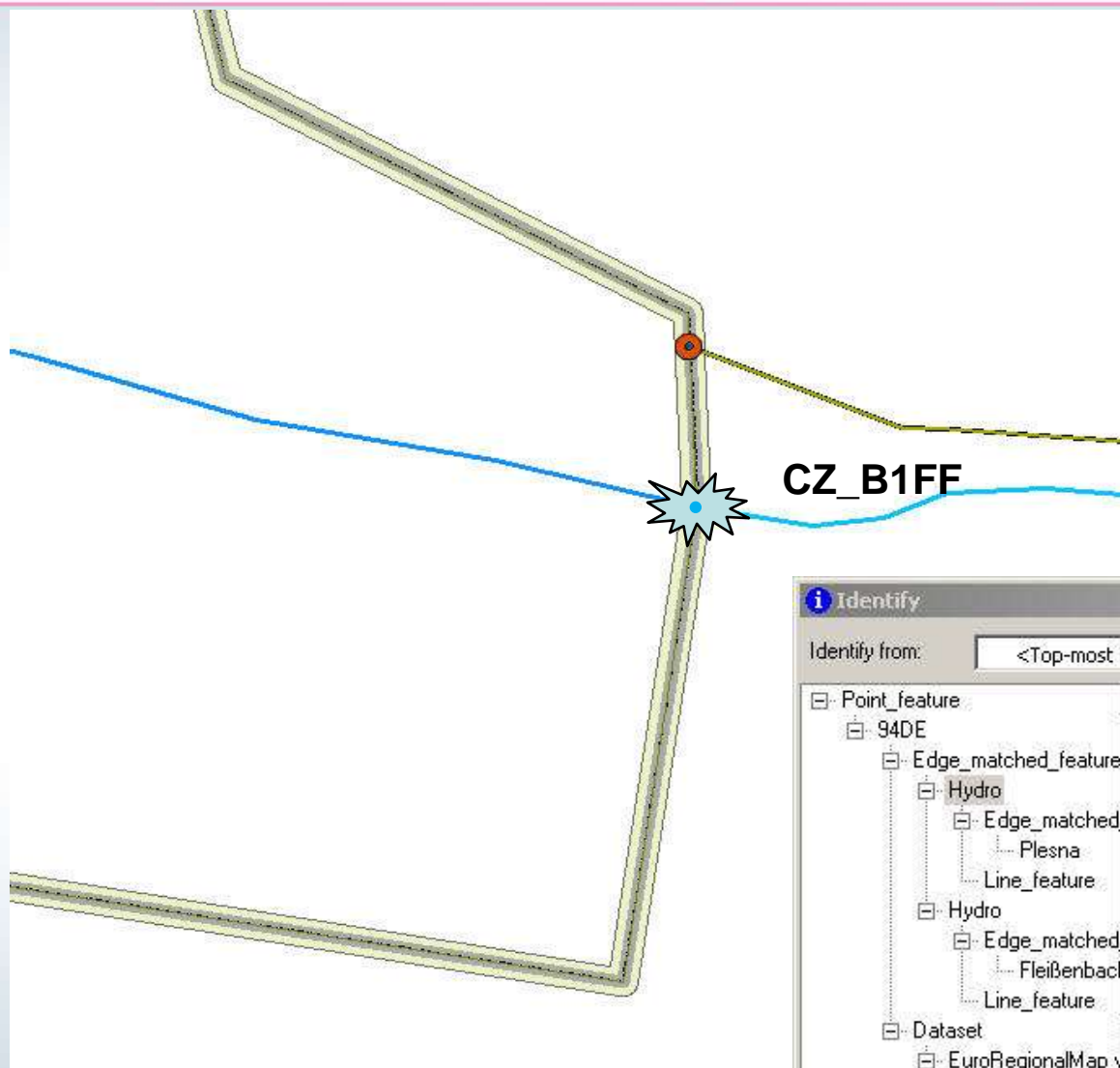
# Edge Match Features & Connecting Points / Lines



# Data Model Theme Edgematch : UML Diagram







**Identify**

Identify from: <Top-most layer>

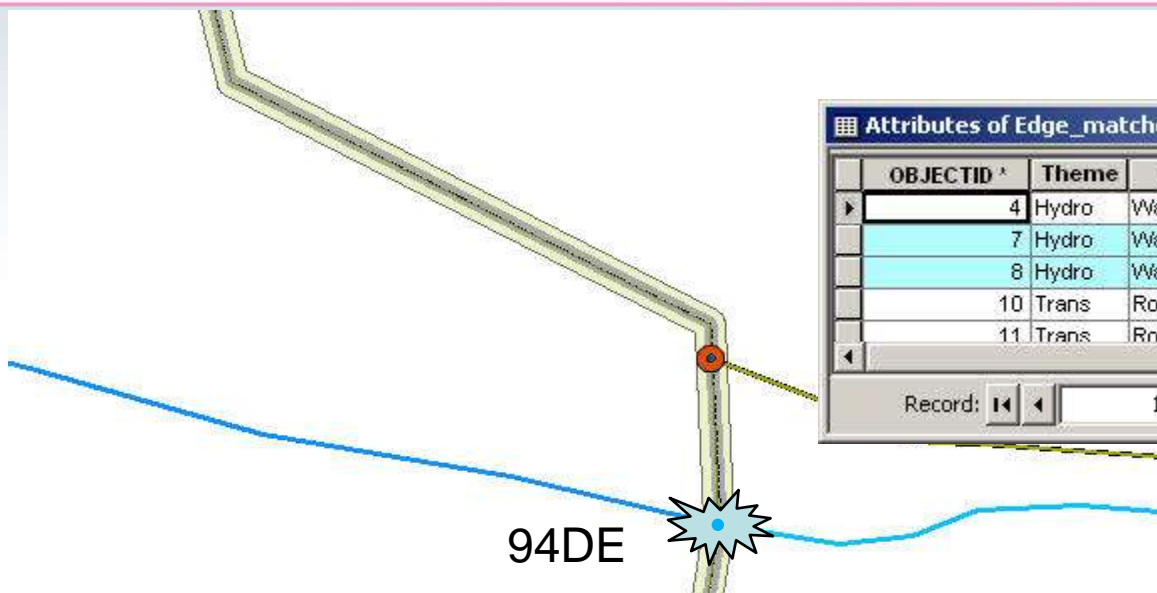
Location:

Field	Value
Feature_class	WatcrsL
id_feature_country	CZ_B1FF
OBJECTID	7
Theme	Hydro

Identified 1 feature

[illegible]





**Attributes of Edge\_matched\_feature**

OBJECTID ^	Theme	Feature_class	id_feature_country
4	Hydro	WatersL	DE_80A1
7	Hydro	WatersL	CZ_B1FF
8	Hydro	WatersL	DE_8F2F
10	Trans	RoadL	CZ_B035
11	Trans	RoadL	CZ_4A0F

Record: 1 Show: All Selected Records (2 out of 5)

**Attributes of Point\_feature**

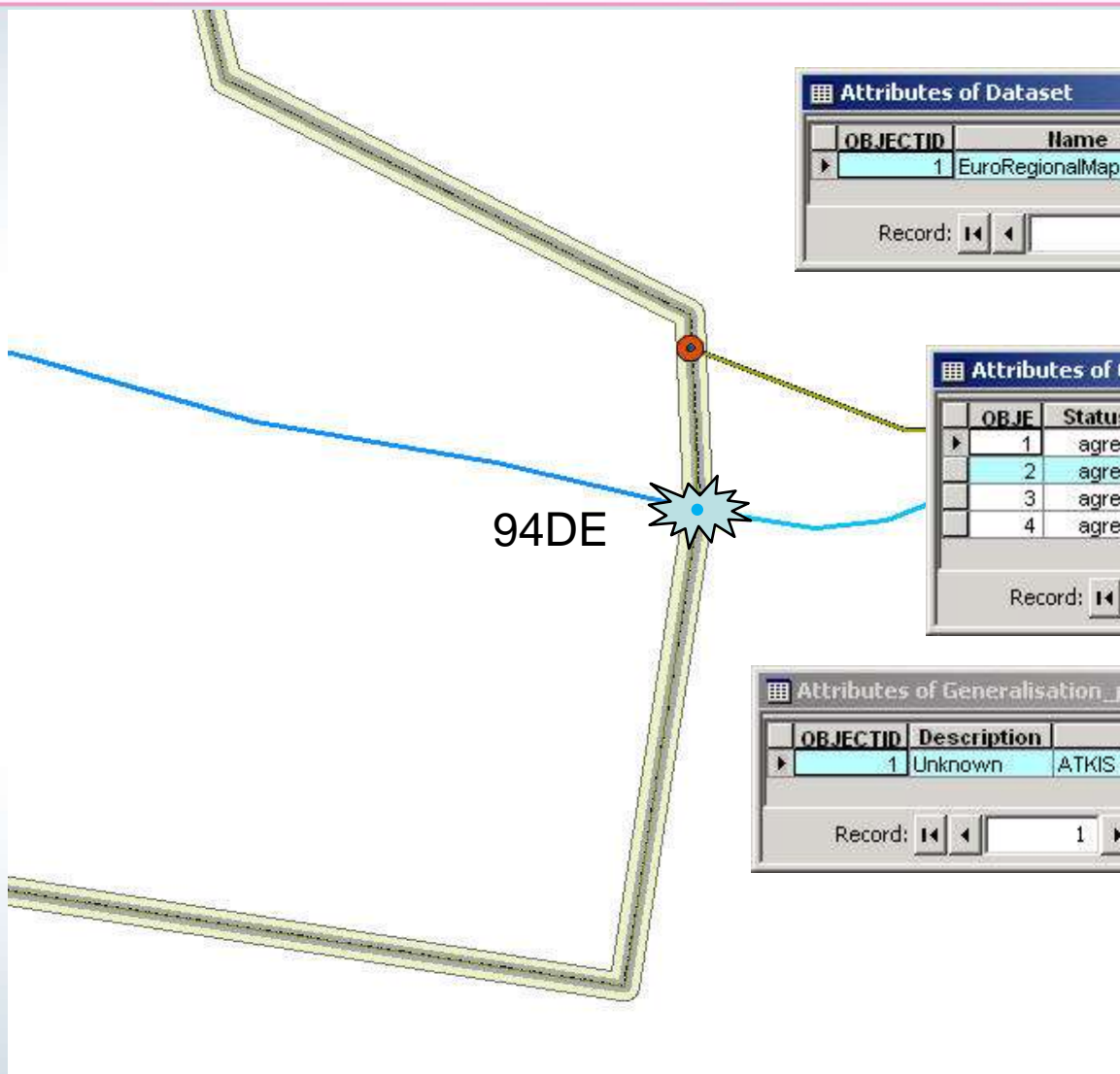
OBJECTID	SHAPE ^	Date_of_the_last_update	External_Id	CF2PF
69	Point Z	00:00:00	93DE	
70	Point Z	00:00:00	94DE	
71	Point Z	00:00:00	95DE	
72	Point Z	00:00:00	96DE	
73	Point Z	00:00:00	97DE	

Record: 1 Show: All Selected Records (5 out of 5)

**Attributes of Edge\_matched\_feature\_description**

OBJECTID ^	of_Edge	Language	Texte	lName	Remark	Identific
1	4	DE	ucs2	Hinterer Langebach	River	DE_name_gew
2	8	CS	ucs2	Fleißenbach	River	DE_name_gew
3	7	CS	ucs2	Plesna	River	CZ_name_rie
4	10	CS	ucs2	216	Secondary	CZ_number_ro

Record: 1 Show: All Selected Records (2 out of 12 Selected)



**Attributes of Dataset**

OBJECTID	Name	Reference Scale	Date of the last update
1	EuroRegionalMap v2.2	1 : 250000	01.04.2008

Record: 1 Show: All Selected Records (1 out of 1)

**Attributes of Generalised\_boundaries**

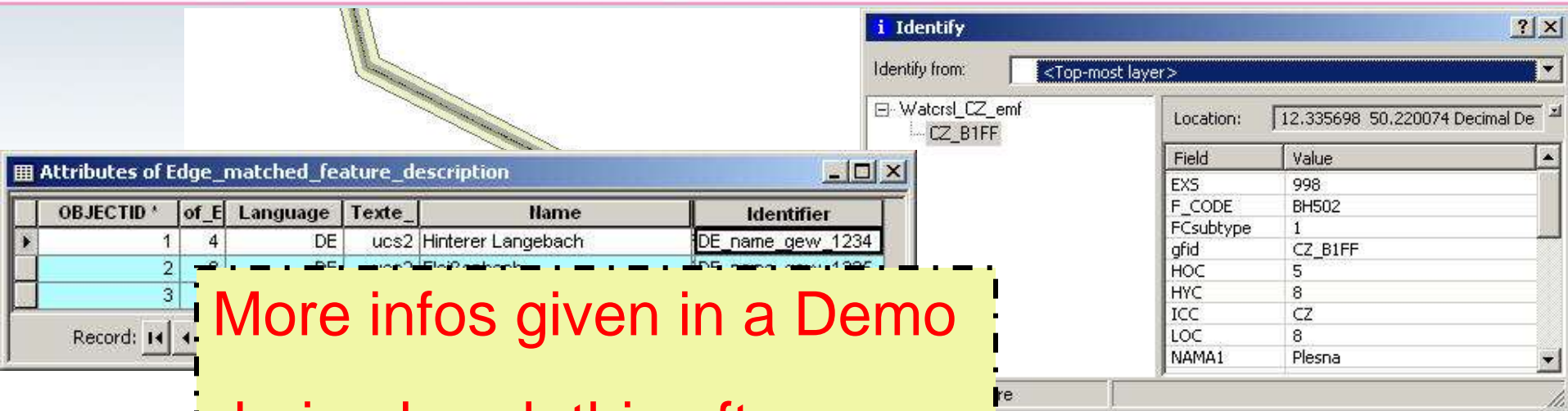
OBJE	Status	SHAPE *	Date of the last update
1	agreed	Polyline Z	00:00:00
2	agreed	Polyline Z	00:00:00
3	agreed	Polyline Z	00:00:00
4	agreed	Polyline Z	00:00:00

Record: 1 Show: All Selected

**Attributes of Generalisation\_procedure**

OBJECTID	Description	Data source
1	Unknown	ATKIS DLM 250

Record: 1 Show: All Selected Records (1 out of 1)



**Attributes of Edge\_matched\_feature\_description**

OBJECTID	of_E	Language	Texte	Name	Identifier
1	4	DE	ucs2	Hinterer Langebach	DE name gew_1234
2	4	DE	ucs2	Hinterer Langebach	DE name gew_1234
3	4	DE	ucs2	Hinterer Langebach	DE name gew_1234

Record: 1

**Identify**

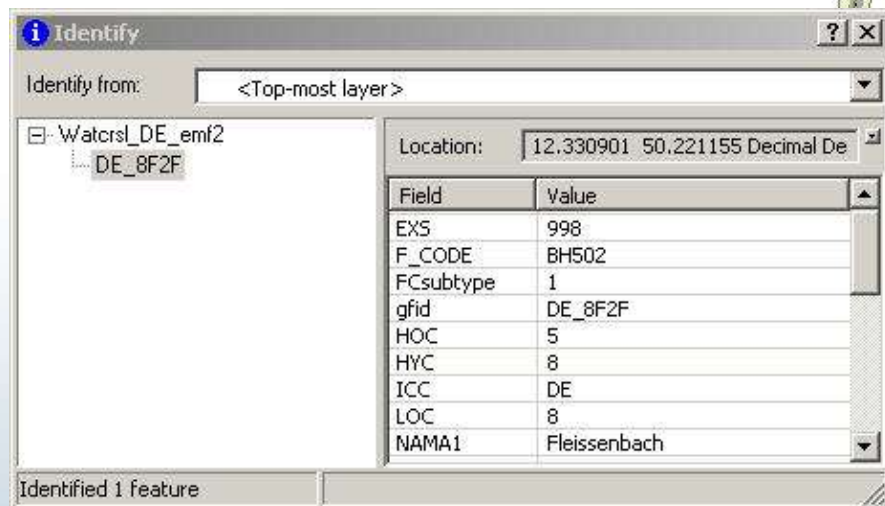
Identify from: <Top-most layer>

Watershed\_CZ\_emf  
CZ\_B1FF

Location: 12.335698 50.220074 Decimal De

Field	Value
EXS	998
F_CODE	BH502
FCsubtype	1
gfid	CZ_B1FF
HOC	5
HYC	8
ICC	CZ
LOC	8
NAMA1	Plesna

More infos given in a Demo during break this afternoon



**Identify**

Identify from: <Top-most layer>

Watershed\_DE\_emf2  
DE\_8F2F

Location: 12.330901 50.221155 Decimal De

Field	Value
EXS	998
F_CODE	BH502
FCsubtype	1
gfid	DE_8F2F
HOC	5
HYC	8
ICC	DE
LOC	8
NAMA1	Fleissenbach

Identified 1 feature



## Issues

- **How shall the edge match feature be described best to support edge matching ?**
  - **which descriptive info is useful for edge matching procedures**
  - **the handling and maintenance of UID** from stakeholders will get a strong impact on the maintenance of edge-matching system
- **the guidelines must consider the respective requirements**

# Collecting features for the Edgematch Database

## 3 scenarios

- For a first edge-matching process
  - Edge matching routines could be extended to capture and store above mentioned infos during run-time
- Once edge matched data already exists (like for ERM, EGM)
  - Automatic capture of connecting features and relevant infos about the related Edgematch features and storage into the database
- Once connecting features exist
  - As update of connecting features is a matter of several stakeholders, rules and guidelines on data maintenance should be provided and as well as tools for update

## Implementation and Maintenance of the Edgematch Database (within an Edgematch Service)

- The Edgematch reference dataset has to be implemented on a server accessible for maintenance and usage
- Edgematch Service Development considers the integration of the Data Model
  - A user interface and respective tools are needed for distributed maintenance of the database
  - Probably the EM data model has to be adapted to requirements

## Usage of the Edgematch Database (within an Edgematch Service)

- Automation assisted edgematch procedures access and use the database (connecting features and edgematch feature info) to support edge matching
- In case the set of connecting features exists the tools are needed that
  - relate edgematch features to connecting points and lines
  - Snap features to the connecting points and lines
- A user interface is needed between the reference database and the edgematch tools
- Probably the EM data model has to be adapted to serve also this purpose

## Expected results and deliverables

- To provide guidelines on edge-matching procedures that need to be followed by the stakeholders
- To improve the Edgematch Data Model that should be implemented together with the edge-matching tools
- To provide guidelines on the updates and maintenance of the connecting information



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**Thank you  
for your attention**

