

"Don't worry about new data releases"

Efficient, automatic
Street network management

Matching

Update

Conflation

Street Network Management

Agenda

- **Situation / Motivation**
- **Solutions**
 - Matching / Conflation
- **Update**
- **Summary / Conclusion**

Street Network Management

Situation / Motivation



Street Network Management

Situation / Motivation

- **Business case**
 - Routing
 - Navigation
- **Need of optimal road networks**
 - Coverage
 - Attributes
 - Up-to-dateness
- **First Choice:** Here, TOMTOM,...



Street Network Management

Situation / Motivation

- **Coverage**

- Missing roads
- ... to oil wells, plants, quarries, forestry roads
- Planned roads needed
- Digitization not detailed enough

- **Attributes**

- Restrictions, weights, business logic

- **Up-to-dateness**

- Roads still not collected by data providers

Networks not optimal



**Bad routing and
navigation
results**

Street Network Management

Situation / Motivation

- Integration / adding of missing roads
- Deleting of roads
- Adding of attributes
- Changing of attribute values
- Changing or adding of restrictions

Networks not optimal



**Bad routing and
navigation
results**



**Users edit the
street network**

Street Network Management

Situation / Motivation

- **User changes are made**
 - in specific areas
 - for specific purposes
- **No GIS or data acquisition specialists**
 - Can not maintain the complete network

Bad routing and navigation results



Users edit the street network



Users need to update the street network

Street Network Management

Situation / Motivation

- **When using the new update**
 - What happens with the edits?
 - Where are the edits?
 - Where are new streets from the vendor?
 - Where are attribute changes?
 - What if the edited streets from the user are now part of the update?
 - What happens with streets deleted by the user that are now back again in the update?

Users edit the street network



Users update the street network



Users want to get the new data and keep the edits

Street Network Management

Matching / Conflation

Matching



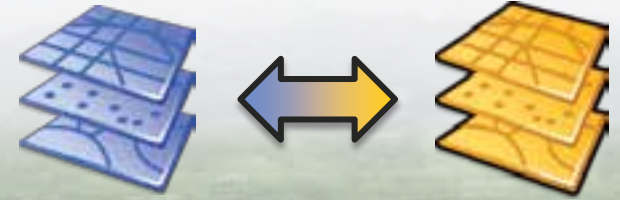
Conflation

Update



Street Network Management

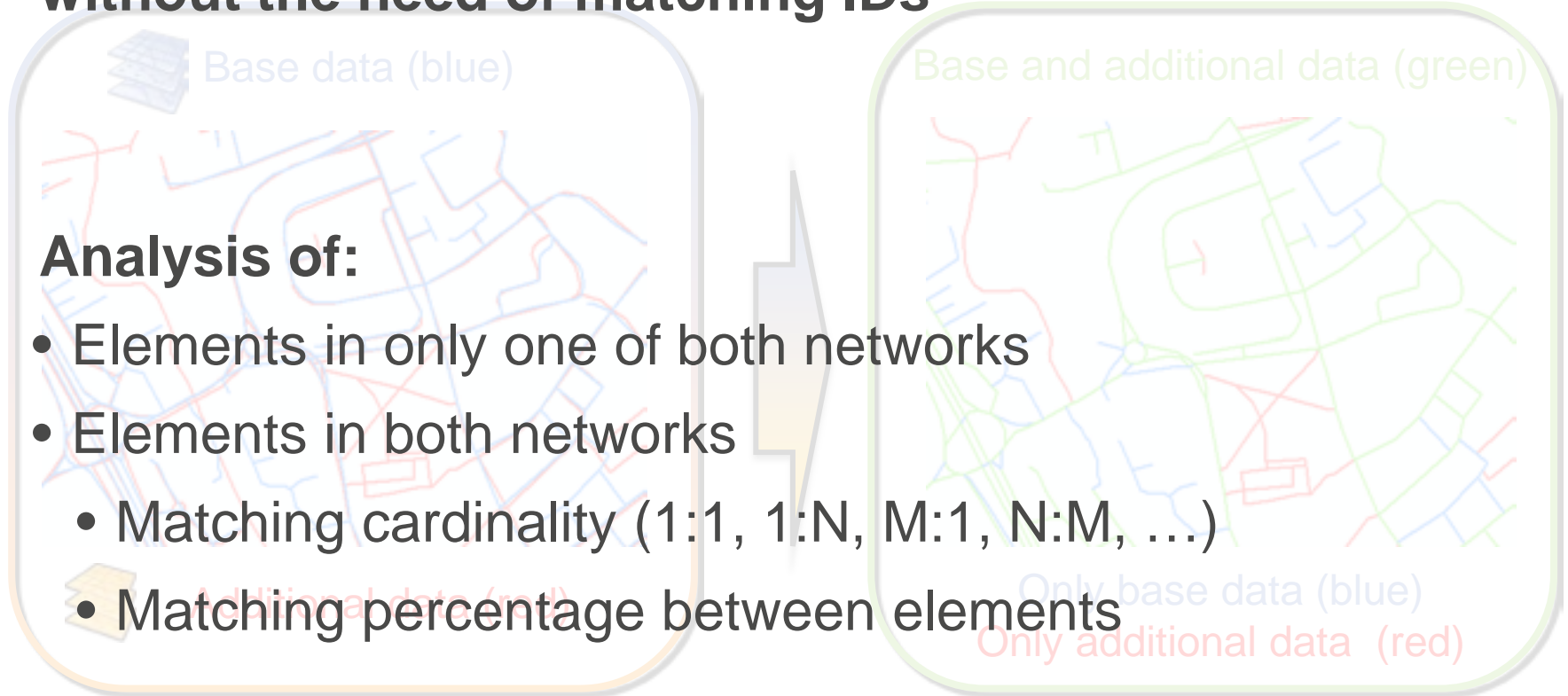
Matching



- Comparison of 2 or more street networks **without the need of matching IDs**

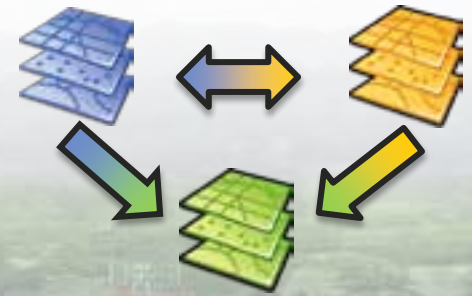
- **Analysis of:**

- Elements in only one of both networks
- Elements in both networks
 - Matching cardinality (1:1, 1:N, M:1, N:M, ...)
- Matching percentage between elements



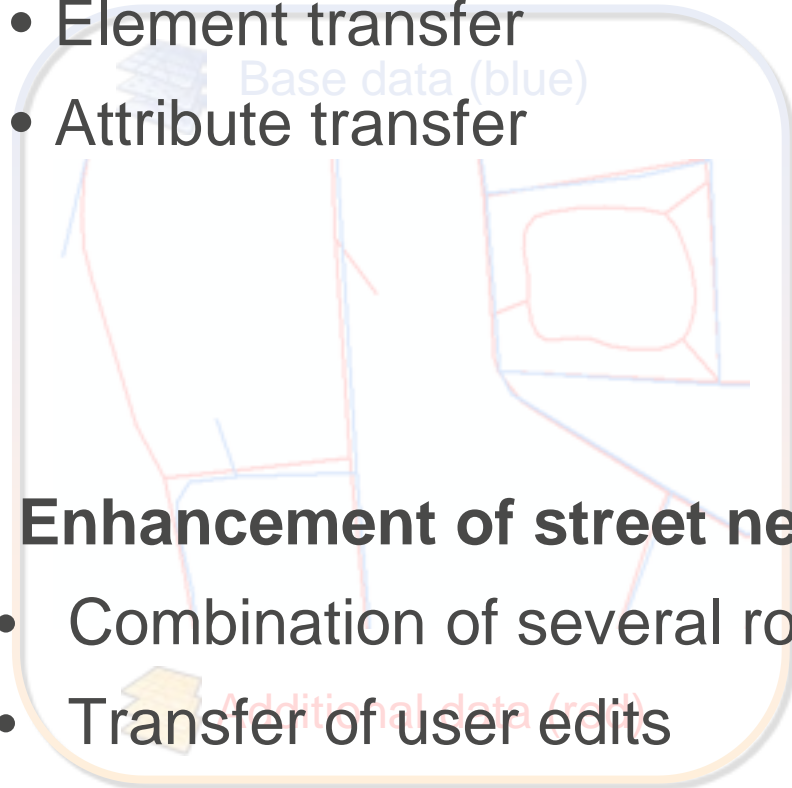
Street Network Management

Conflation



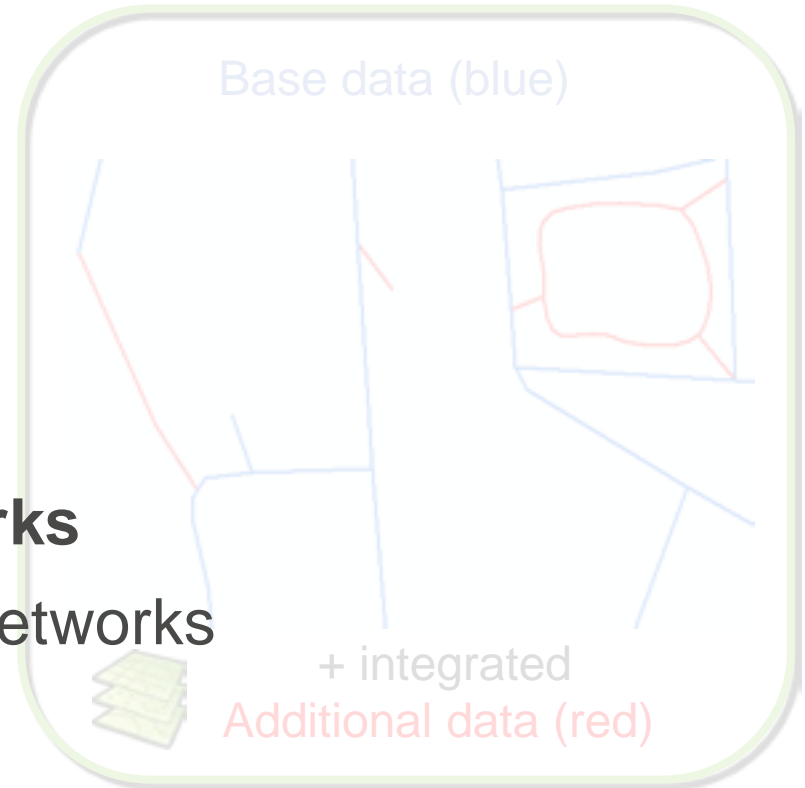
- **Integration of two or more networks** into one “integrated” data set

- Element transfer
- Attribute transfer



- **Enhancement of street networks**

- Combination of several road networks
- Transfer of user edits



GEONIS Street Network Manager

Workflow

p conflation result

matching information

OID	ID	BD UID	AD UID	FrRatio	ToRatio	Sequence	MCertainty
0	0	10000290	10000460	1	0	0	65,22
1	1	10000185	10000146	0,27	0	0	88,63
2	2	10000181	10000146	0,37	0,27	0	88,63
3	3	10000180	10000146	1	0,37	0	88,63
4	4	10000214	10000054	0,67	1	0	74,92
5	5	10000215	10000054	0,67	0	0	74,92
6	6	10000221	10000052	1	0,79	0	71,74
7	7	10000218	10000052	0,79	0,61	0	71,74

0 (0 out of 519 Selected)

Street Network Management

Update

Matching



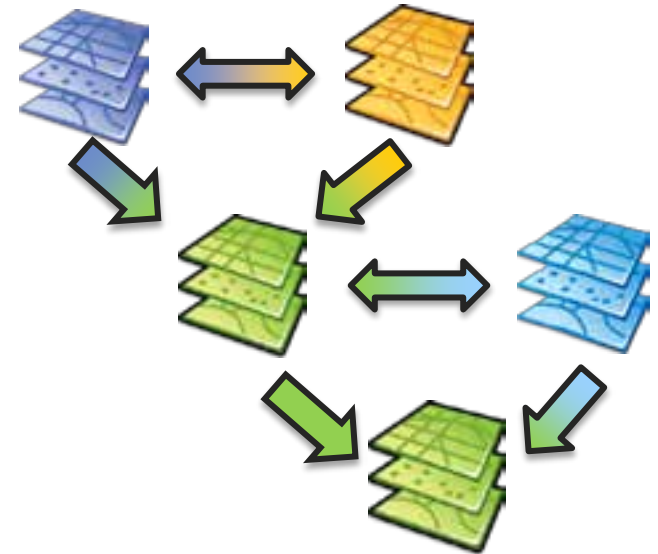
Conflation

Update

Street Network Management

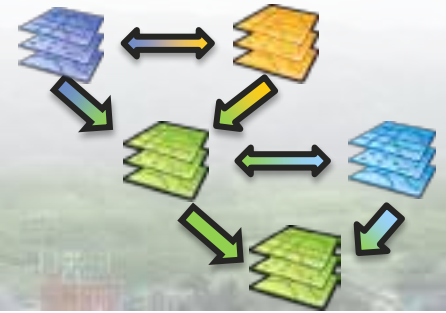
Update processing

- **Matching & Conflation => Update**
 - Matching and Conflation are the basis for the update of street networks
 - Recognition of network changes between releases
 - Recognition and transfer of user edits
- **Automatic** generation of a
 - **Up-to-date** network incl. **specific user edits**

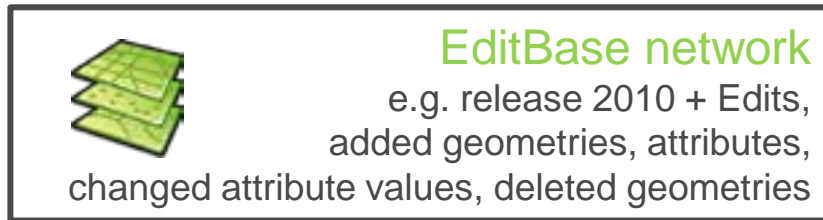
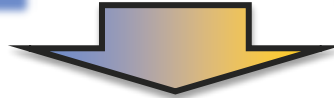
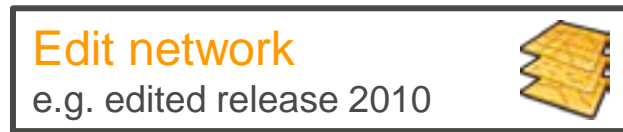


Street Network Management

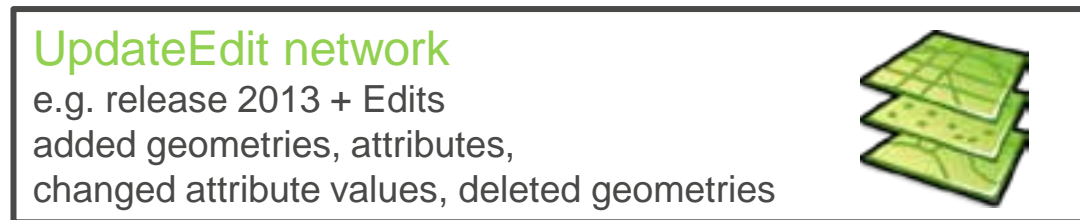
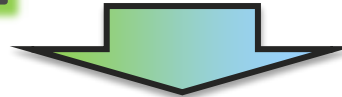
Update processing



**Matching
Conflation**

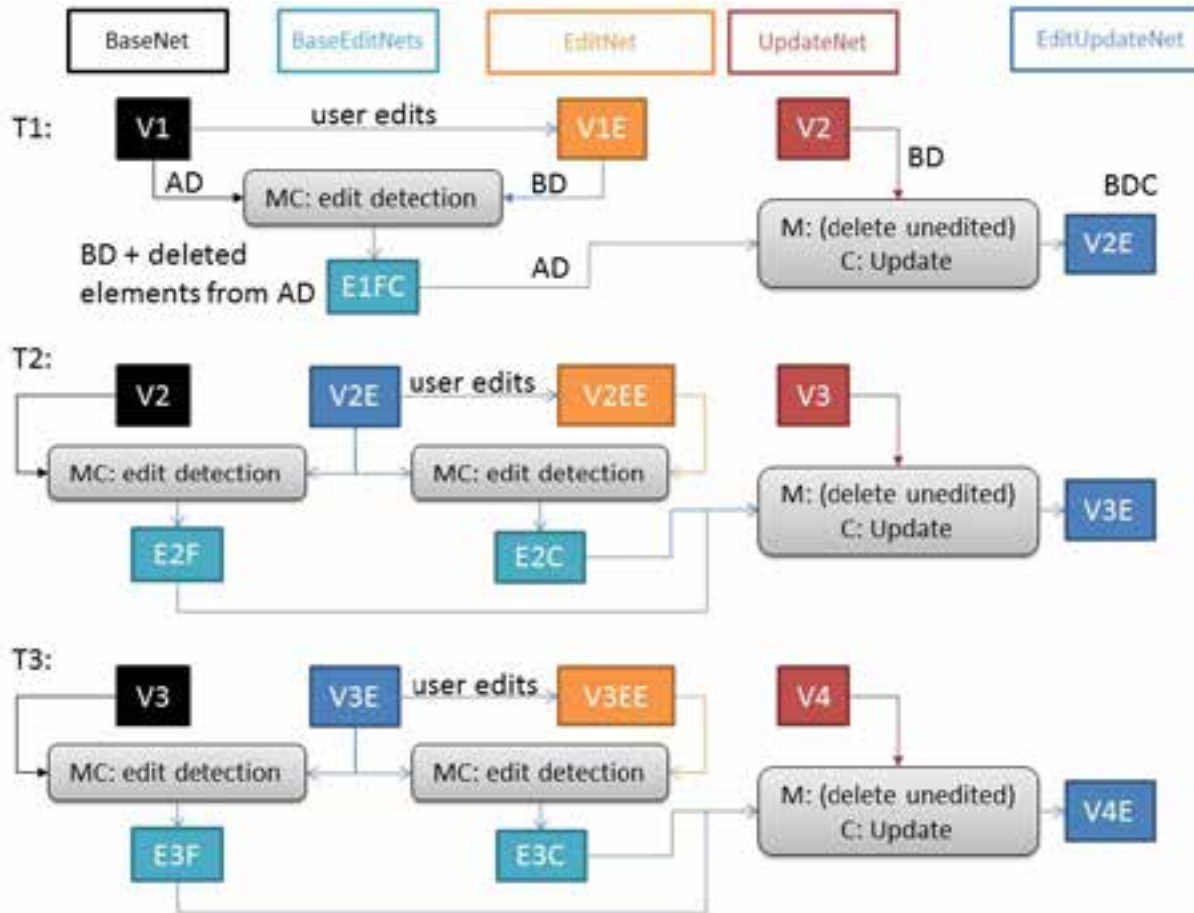


**Matching
Conflation**



Street Network Management

UseCase: Update



"Don't worry about new data releases"

Summary

Matching

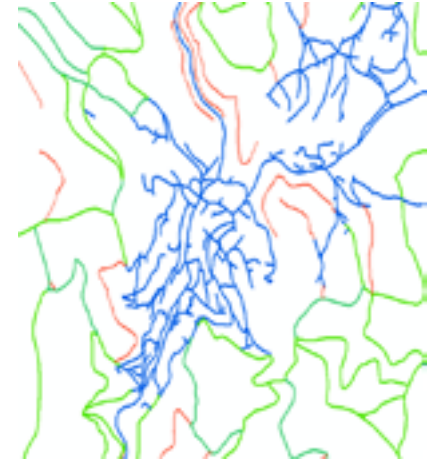
Update

Conflation

Street Network Management

Summary

- **Matching and conflation offer**
- Recognition of changes in complex networks
 - New, changed, deleted geometry
 - Changed attribute values
- Qualified transfer of elements between networks
- **Cost-efficient, flexible solution for the update of street networks**



"Don't worry about new data releases"

Efficient, automatic street network management

Thank you

Geocom Informatik GmbH

Dr. Heiko Willenbacher

Ringstr. 7, 85402 Kranzberg

h.willenbacher@geocom-informatik.de