FME 2016
Workshop

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FME Desktop: Components and Purpose

FME Workbench

- Definition of workflows
- Setting of parameters
- Publishing to FME Server

FME Data Inspector / FME Viewer

- Visual analysis of data
- Visualize results at any processing step
- Quick translation (Save Data as ...)
- Remark: Viewer is faster, as it does not have to open table views (fmeview.exe)

FME Quick Translation

- Quick 1:1 translation
- Run workbenches

FME Desktop - Editions

Base

- Starter version, no geodatabases
- Limited functionality (Transformers)

Professional

- All formats except writing to proprietary databases and some ESRI formats
- All Transformers

ESRI

- Support R/W for ESRI ArcSDE Geodatabases und Intergraph Geomedia

Database

- Write: Oracle Spatial, MS SQL Server, MS Azure, Amazon, Teradata, JDBC; Netezza (RW)

FME Desktop – Proprietary Formats needing extension

ESRI

- mdb/gdb file based Geodatabases need ArcGIS Installation on the same System (ArcObjects). 32-bit Version only. Not available on LINUX or MAC.
- Exception: gdb file based Geodatabases via API does not need ArcGIS and is 32/64-bit. However, limited functionality, i.e. writes only Multipoint, Point, Polyline, Polygon (no Annotation Layers, Multipatch, Measures etc.)

Oracle

- Client required (Instant Client is sufficient). 32/64-bit must correspond

Geomedia Access Warehouse

- Needs Geomedia-Installation on the same System. 32-bit only, no LINUX/MAC

Formats in general

- Currently over 345 Formats! Won't be less in future!
- Please understand, if our support does not know every single one - nobody does ...

FME Server

Server version of FME

- Works *hand-in-hand* with FME Workbench:
  - Create, define parameters, publish
- After that, depending on your needs:
  - Run in a web-browser (*Self-Service* for users)
  - Batch processing, scheduling
  - *Real-Time* processing
- Notifications:
  - *Subscription*: Notifications, i.e. via e-mail, WebSocket and so on. For example *failure*, *success* etc.
  - *Publication:* FME Server can receive e-mails which will *trigger* processes
- Security:
  - Create users and roles
  - Assign services to users and roles
  - Access rights to services and data
- Jobs/Logging:
  - Jobs overview: done, running, in queue. Failed, success, logs.

Desktop versus Server

Batch processing: Desktop or Server?

- FME Desktop is in a lot of cases sufficient
- Disadvantages:
  - No notifications, you have to program them yourself
  - Manual definition of batch processes
  - Manual scheduling via *Windows scheduled tasks*
- Advantages:
  - Lower software costs
  - Parallel processing possible (however limited to eight parallel running tasks)
  - No complex installation required

When Server?

- Many user who need to occasionally run tasks
- Triggering of processes via notifications or sophisticated notification system required
- *Clean r*epository of Workbenches if you have many FME Users
- Web application development environment required (i.e. using REST services)

32- versus 64-bit

32-bit mandatory:

- ESRI ArcObjects formats: mdb / gdb / Geodatabase SDE
- Geomedia Access Warehouses, Geoconcept Map
- Oracle Spatial: if client 32-bit
- Complete List on http://safe.com/formats under Platforms

32 or 64:

- If 32-bit not mandatory (see above)
- 64-bit has only advantages on very large datasets (i.e. OSM Europe)
- 32-bit and 64-bit can be installed in parallel without problems

64-bit mandatory:

- LINUX / MAC versions are 64-bit only
- ArcGIS Pro, only FME Desktop; ArcGIS Server
- Oracle Spatial: if client 64-bit

A word on updates ...

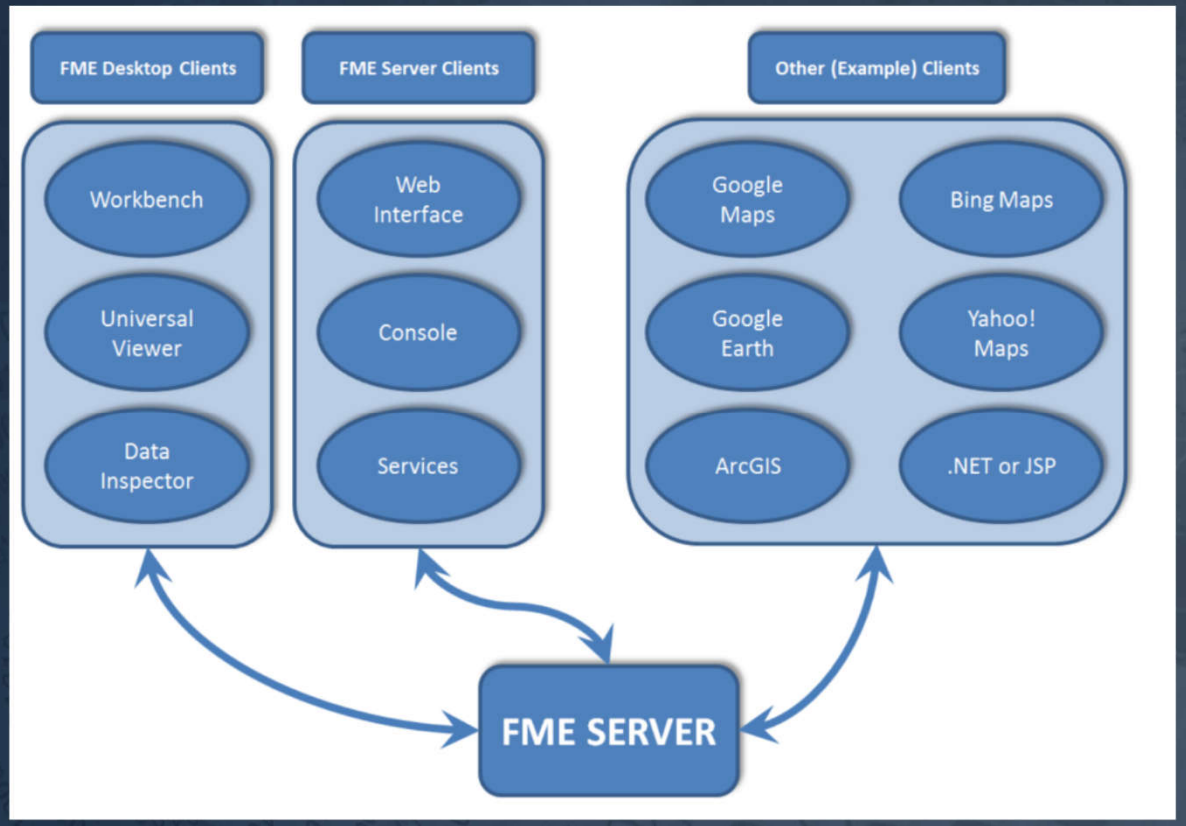
There are almost monthly new versions - but:

- *Never Change a Running System,* even better: *If it works, don't fix it*
- We suggest to install new full versions parallel to the one you use and to better wait for the .1 release.
- On smaller updates read the *what's new,* maybe there is nothing new of use to you
- It is not a problem to have different versions installed in parallel. However, be aware of WB compatibility!

FME Server-Updates:

- Often there are major changes in functionality and user interface.
- Complex installation of upgrades.
- Test environments cost (50% of purchase price, 100% maintenance).
- Versions of FME Desktop / FME Server must correspond: Desktop cannot be newer.
- Requires in any case good planning

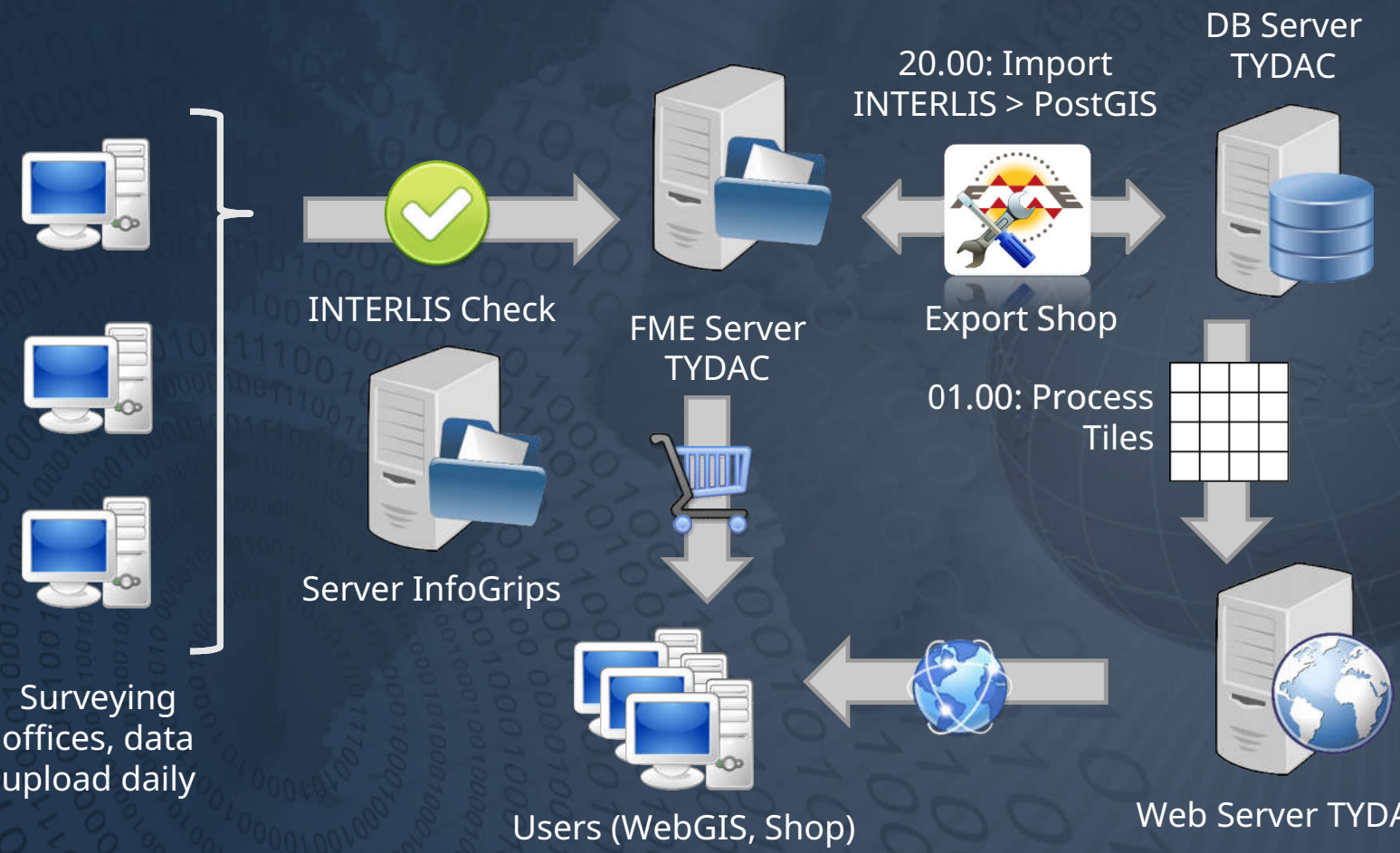
FME Desktop / FME Server Clients



FME Server Clients: Example GeoGR

- Drupal CMS:
  - Content Management (page creation)
  - Shop functionality: basket, processing, payment
- OpenLayers / Web Services:
  - Product visualization via WMTS und WMS
  - GeoGR WebGIS
- PHP:
  - Programming of functions
- FME Server:
  - Batch import in geodatabase
  - Order processing
- How it works - 3 Steps:
  - Create Workbench, define Parameters
  - Publish to FME Server
  - Create page in CMS
  - Done!

GeoGR Workflow



FME 2016 - What is new?

The most important news in 2016 are:

- **AttributeManager**: a *Supertransfomer* for almost everything that has to do with attibutes
- In addition to the **GeometryValidator** there is now an **AttributeValidator**
- Handling Transformer-Versions -> **Upgrade Transformer.**
- **FeatureWriter**: Writing of Features during translation, allows users to do things after features are written, for example via SystemCaller.
- Capability to store **Database Connections**: valid Desktop and Server.
- Visualization of ***rejected*** Objects
- Bookmarks Navigator
- Regular Expressions Editor
- XML Handling even better than before
- Last not least: *Getting Started:* ***It's So Easy, Your Parents Can Do It***

FME 2015 / FME 2016: New Transformers

30 new FME Store transformers since 2015.0

1. AdaptiveLabeller
2. AttributeListExploder
3. AttributeSwapper
4. BNGLatLongReprojector
5. CenterOfGravityAccumulator
6. DateValidator
7. ExcelDateCalculator
8. FeatureAlternator
9. FeatureBuilder
10. GeographicLengthToPointCalculator
11. GeographicSnipper
12. GeographicVoroniCellGenerator
13. HexBinner
14. IPGeocoder
15. JpKsjCurveExtractor
16. JpKsjPointExtractor
17. JpKsjSurfaceExtractor
18. KeyValueAttributeCreator
19. ListStringReplacer
20. NGRToXYConverter
21. OSMDownloader
22. PathSegmentJoiner
23. PointCloudHSVColorSetter
24. StraightLineDiagrammer
25. Unzipper
26. VertexExtractor
27. What3WordsDecoder
28. What3WordsEncoder
29. ZigzagRemover
30. ZipArchiver

FME 2016 - AttributeManager

AttributeManager replaces many transformers and adds functionality:

- Replaces the following Transformer:
  - Copier, Renamer, Remover
  - ValueSetter, Creator, Rounder
  - ExpressionEvaluator!
- New functions:
  - Conditional Value = Tester
  - Null Value Setter
  - Substitute Missing, Null, Empty using default-values or value of the neighbour object
  - Handling of *Adjacent Feature Attributes* in the table -> Value after or before the feature
  - Import-Function, for example from Excel: for renaming attribute o setting values

FME 2016 - AttributeValidator

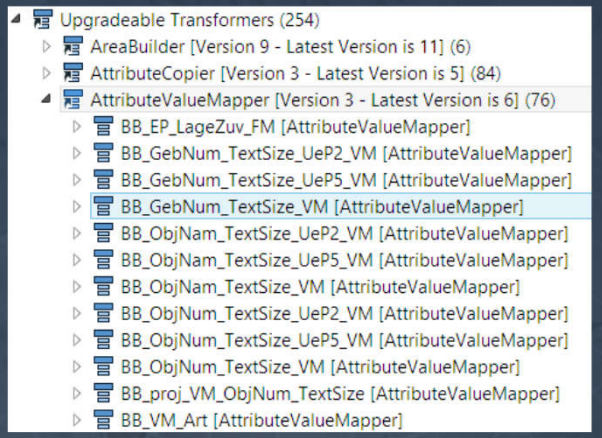
AttributeValidator offers the following functionality:

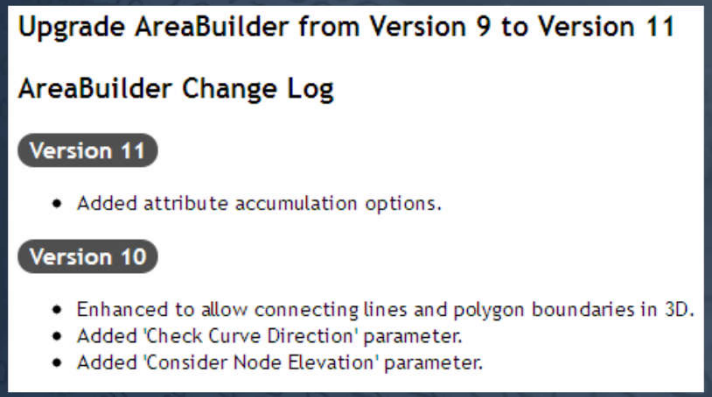
- Type: Double, Boolean, Integer, Numeric, Alphanumeric, String, XML, JSON
- Value ranges
- Case
- Minimal / maximal length
- In: comma-separated list of values (for example bird, fish, frog)
- *Encodable in*
- Not Null
- Unique: first value is processed, following equal values go to *failed* Output Port
- *Has a value*
- REGEX! With the new REGEX Editor/Checker

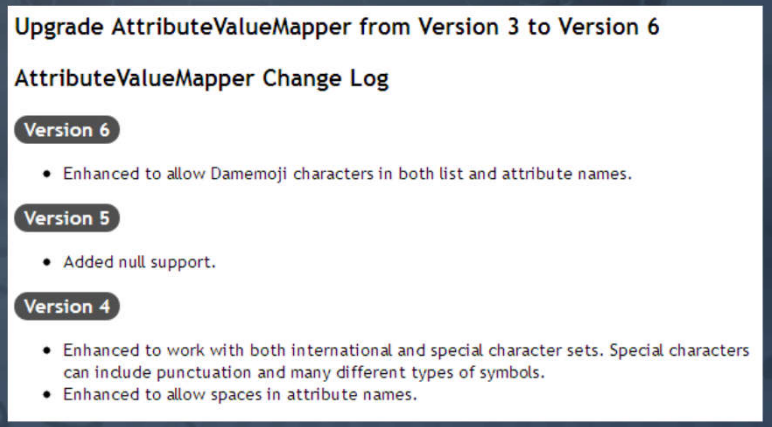
-> Remark: could be used to easily create an **INTERLIS Checker**

FME 2016 - Transformer Versions

- List of all *upgradable Transformers*
- Display of version
- Function *Show Changes*
- However: currently one can only update transformers one by one … improvement pending …

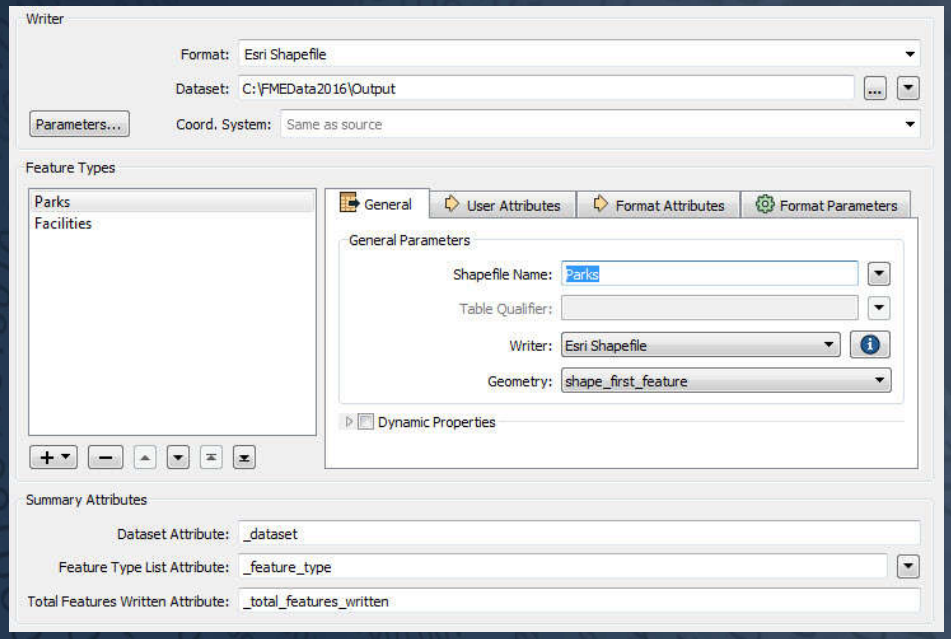


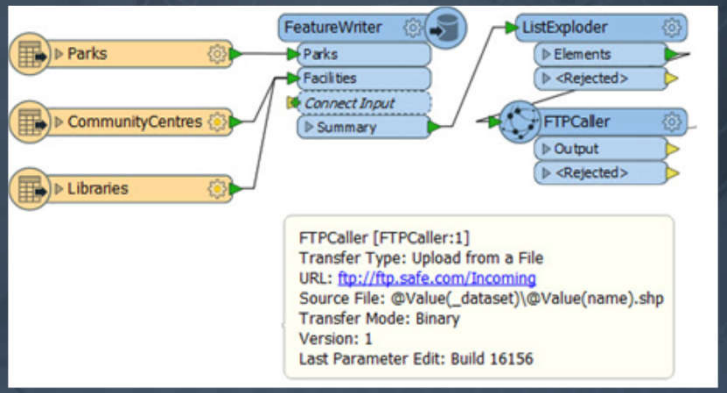




FME 2016 - FeatureWriter

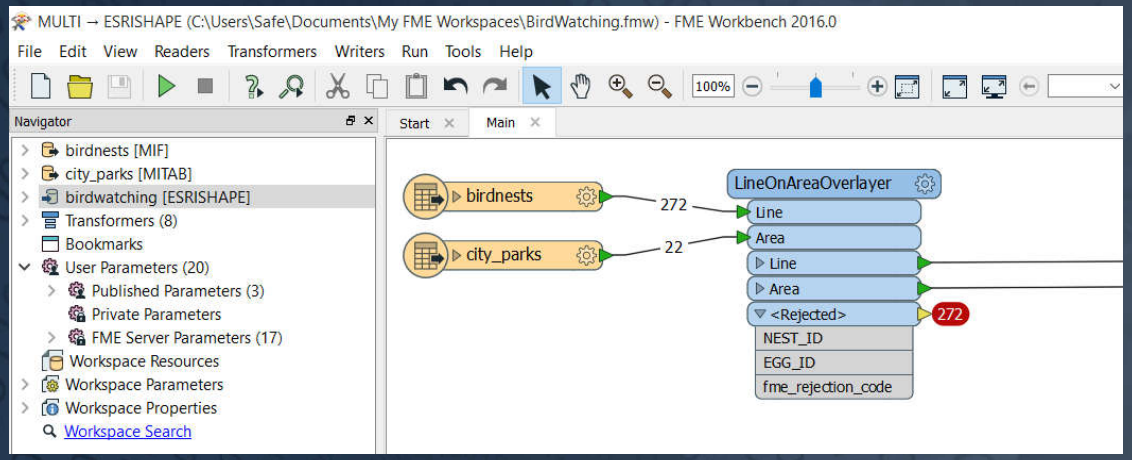
This is the most revolutionary improvement. According to Safe, in future there might be *FeatureReader* and *FeatureWriter* as Transformers only (and will simply be called Reader and Writer). Up to date Transformers could not be before Readers (V 2011) or after Writers (V 2016), now you could for example have an ftp caller or a system caller after writing:



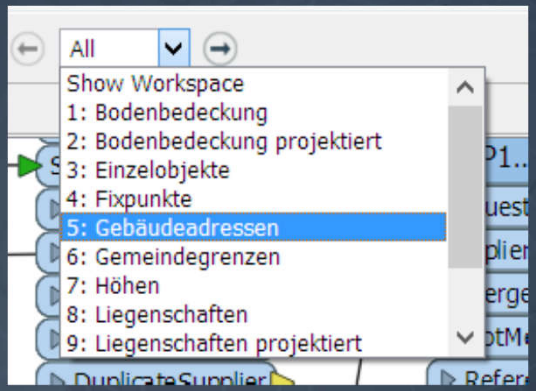


FME 2016 - Other news

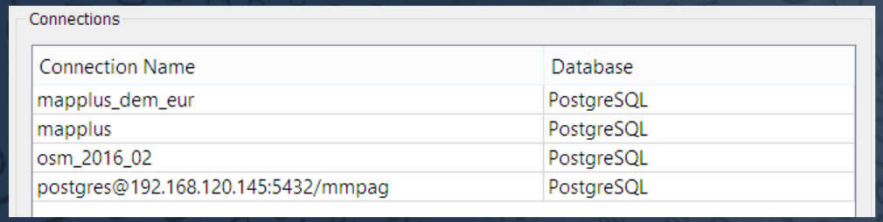
Rejected Features



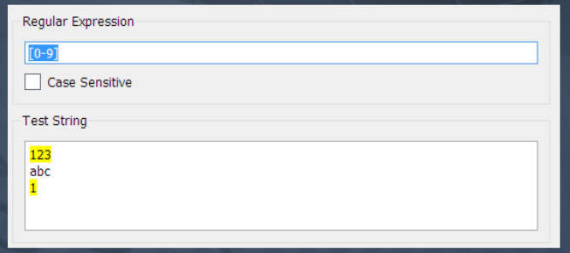
Bookmarks Navigator



Database Connections

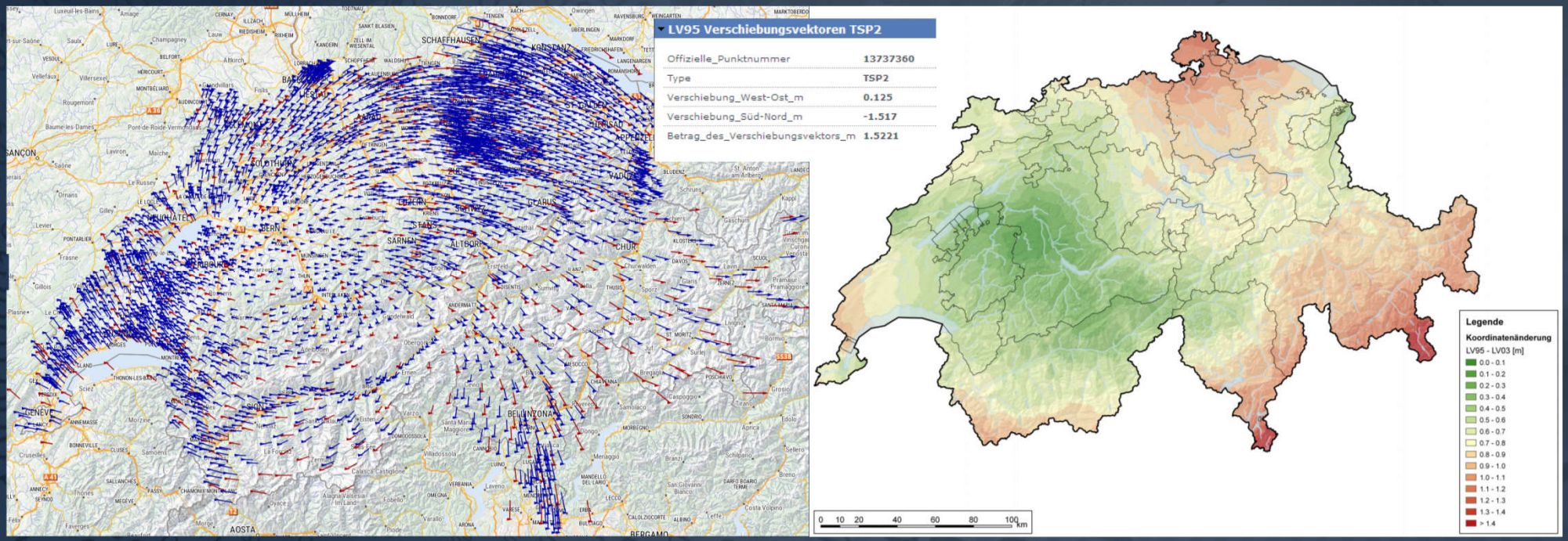


REGEX Editor



Transition of reference frames LV03 - LV95

- Be aware that this is NOT a change in projection, it is a change in reference system, see the shifts below
- The amount of shifting depends on the region, i.e. up to 1.5m and more (Poschiavo, Ticino)



Transition of reference frames LV03 - LV95

Why this effort? Data captured using the national survey system of 1903 (LV03) shows between Geneva and the Lower Engadine systematic deformations of up to 2 - 3 m. A conversion is appropriate for the following reasons:

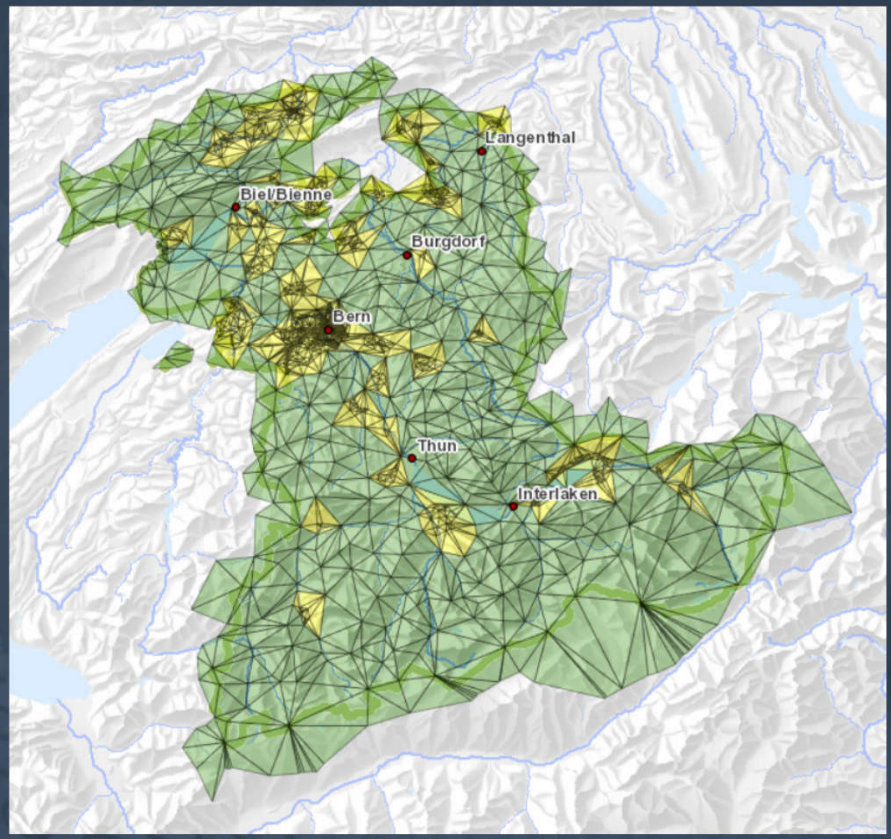
- Use the advantages of GNSS-Technologies (*Global Navigation Satellite System)* such as GPS and especially the new positioning system (Galileo, Glonass, Beidou)
- Data exchange with neighbouring countries
- Data integration in global systems
- Data integration in application such as Google Earth & Maps, Bing Maps & Co.

Switzerland was subdivided into a multitude of triangles, each individually matching local transformation parameters. At the end of 2006 the official transformation data with the label CHENyx06 has been completed in cooperation with the cantons

Transition of reference frames LV03 - LV95

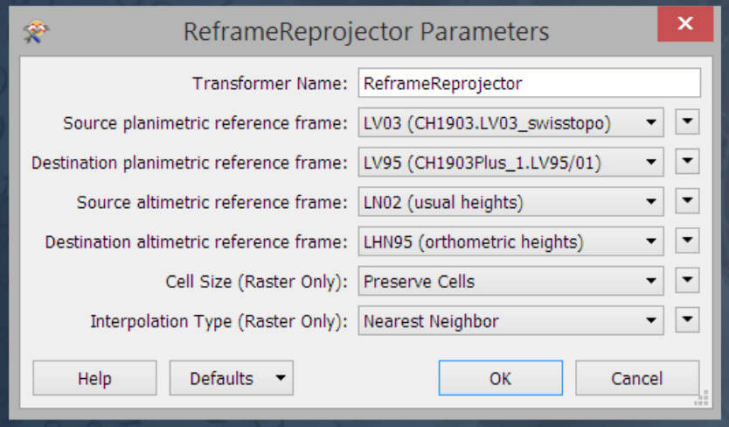
The famous *Kantönligeist* did show up as well here:

- Bern has for example an own, more dense transformation network called BEENyx15 … (see image)
- The City of Basel has BSENyx13 …
- We are not aware of others …



Transition of reference frames LV03 - LV95

swisstopo has developed a Transformer for reference frames in position and/or height for the software FME. This is based on the REFRAME DLL. This plugin allows all transformations in the position and height that are available in the software REFRAME:



Transition of reference frames LV03 - LV95 - Considerations

As an example let us look at GeoGR and at municipal data:

- Generally a WebGIS using scale 1:10'000 and larger can only be switched to LV95 when ALL data has be processed ...
- Surveying data: **should** be converted for the whole country by end of 2016 ...
- Other data will follow **slowly** ... GR **planned** during 2017 ...
- swisstopo: most of the data already available in LV95 ...
- WMS on geo.admin are LV03; however irrelevant, most of the services are scale smaller then 1:10'000. EPSG 2056 (LV95) is supported by the WMS.
- Third party data? irrelevant, most of the data is in a scale smaller then 1:10'000
- Google Maps & Co do not have to change, its already in *world coordinates* ...

FME and INTERLIS

TYDAC INTERLIS Module:

- First FME OEM module ever, first steps in 1997, can be named *vintage* or *legacy* ...
- No further developed, however it does the work ate many clients, since almost 20 years!
- No maintenance, however ewe do support
- INTERLIS 1 only
- Custom Transformer for cleaning Overlaps properly (available as well for ili2fme)
- Many Workbenches for Standard-Translation (most ported to ili2fme)
- There is a proper documentation ...
- Can do things that *ili2fme* cannot:
  - Generate a model (ili) - however not very straight forward, but possible ...
  - Error messages are speaking (no Java blubbers ...)
- New FME User: do not use it for other things than error handling or testing
- Existing TYDAC INTERLIS User: think about to slowly migrate, there is no guarantee that it will work with FME 3000 ... however, we still have old fashion "fme" scripts that do the job ...

FME and INTERLIS

ili2fme Module of Eisenhut Informatik:

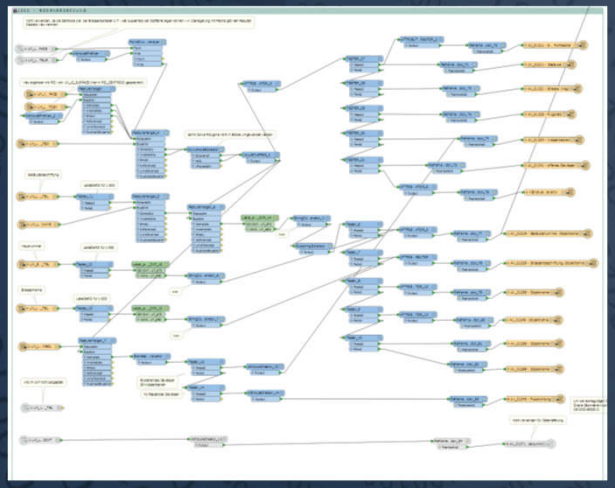
- INTERLIS 1 and 2
- Writing INTERLIS 2 is something like a horror trip (best is then to involve Mr. Eisenhut, he offers support at an hourly rate - do not ask me, want to keep my hairs ...)
- Proper handling of arcs
- Automatic handling of AREA and SURFACE data types
- Reads multiple geometries via attribute, use GeometryCreator in such cases
- Poor documentation, cryptical parapameters
- Sometimes not very helpful error messages (especially with model errors)
- Java API based (available as well for OSX and LINUX)
- Is included in the standard installation of FME, sometimes newer versions at the site of Eisenhut Informatik
- New users or workbenches: use this module in any case

FME Training

It's So Easy, Your Parents Can Do It ... Yes, but a training never harms ... below a real world case:

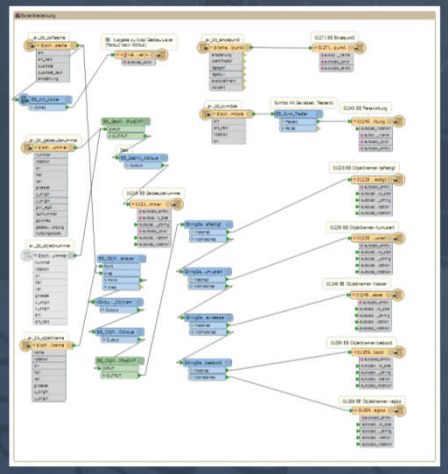
User with no training:

- Soil coverage to Geobau DXF
  - More than 50 Transformers!
  - Total in WB: 360 Transformers
  - *Hardcoded* layer structure



User with training:

- Soil coverage to Geobau DXF
  - 12 Transformers
  - Total in WB: 80 Transformers
  - Layer structure in Excel (as Lookup-Table)



FME Training Offer from TYDAC

Normally at TYDAC, max 7 attendees, upon request as well on-site ad themes upon request:

- Introduction to FME Desktop, 2 days:
  - Concentration on Workbench
  - Training materials made by TYDAC, 230 slides in total
- Introduction FME Server, 1 day:
  - Overview, Installation, Configuration, Downloads
  - Notification Services
- FME and Raster, 1 Tag:
  - What are raster and grids, format specs, what to be aware of?
  - Handling of raster with FME and GDAL/OGR
- FME and ESRI, 1 Tag:
  - Overview of the thousand ERSI formats
  - Handling of Geodatabases: Domains & Subtypes, Relationship Classes, Networks
- FME and INTERLIS, 1 Tag:
  - ili2fme Parameter, INTERLIS odds and draws, what to be aware of
  - Read & Write, examples