

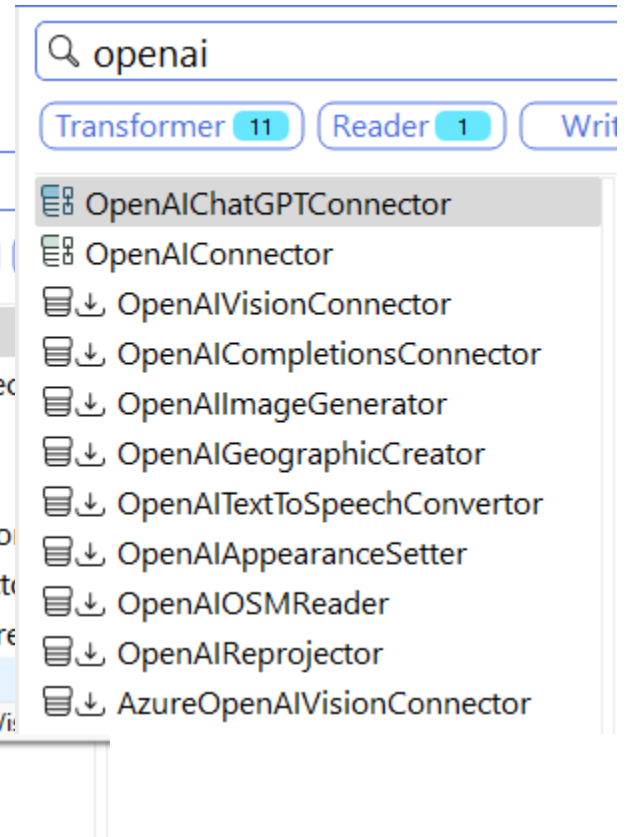
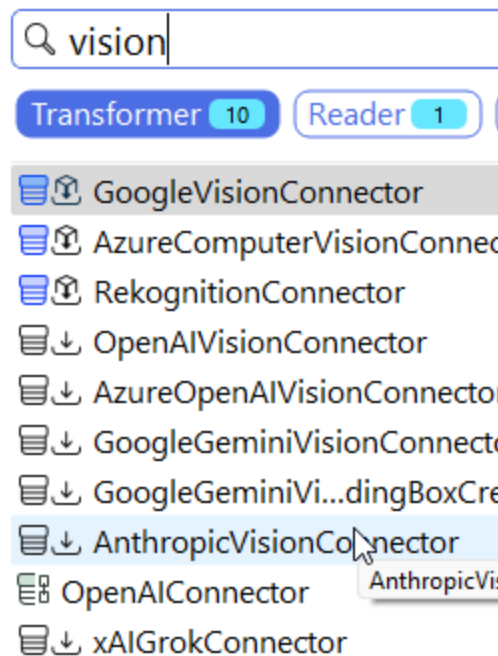
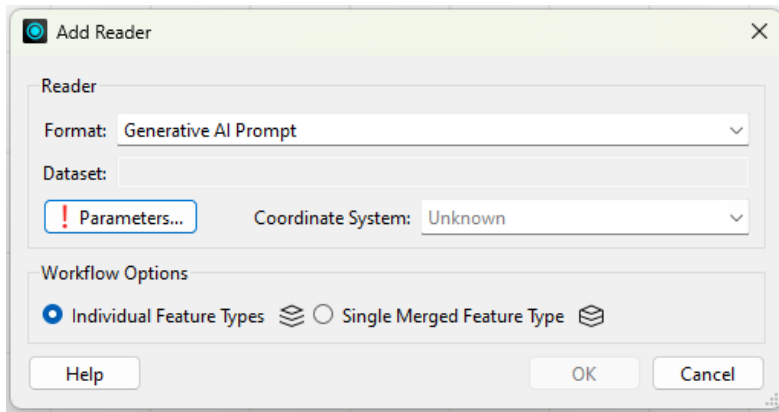


Using AI with FME

Damiano Luzzi

How to use AI with FME

- AI Assist for FME Workbench
- AI Connectors
- AI Reader



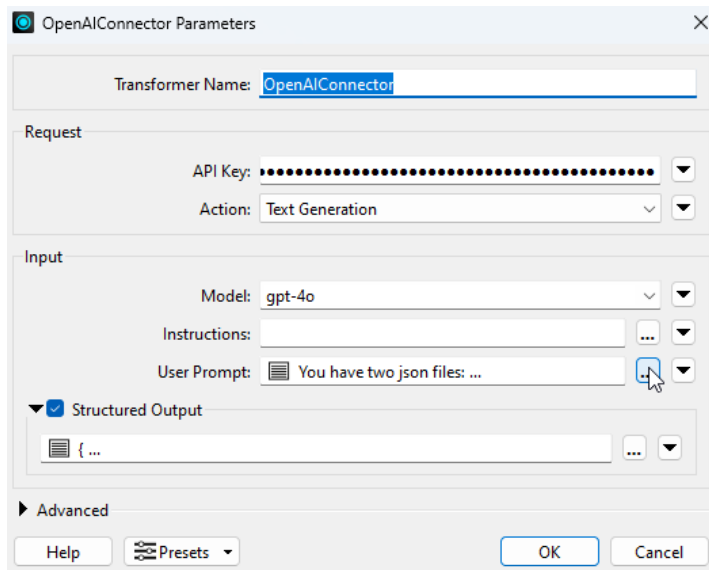
Use Cases for AI in FME

- Data Validation
- Creation of test/dummy data
- Fuzzy Matching
- Schema Mapping



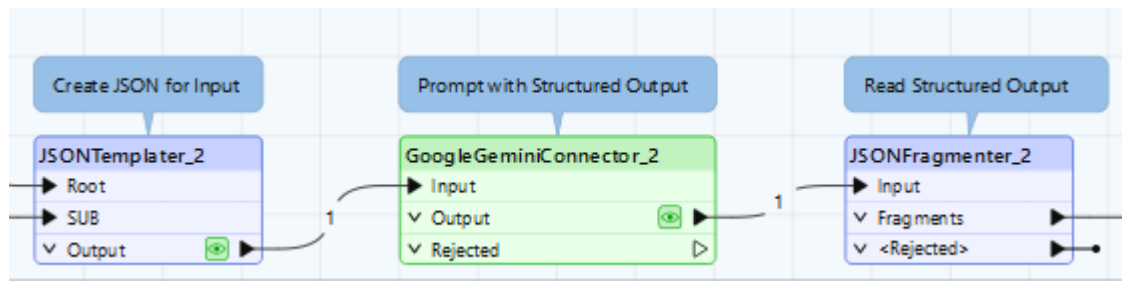
Structured Output for use in AI Connectors

- Ensure responses adhere to a JSON schema.
- Check each AI for their format for Structured Output

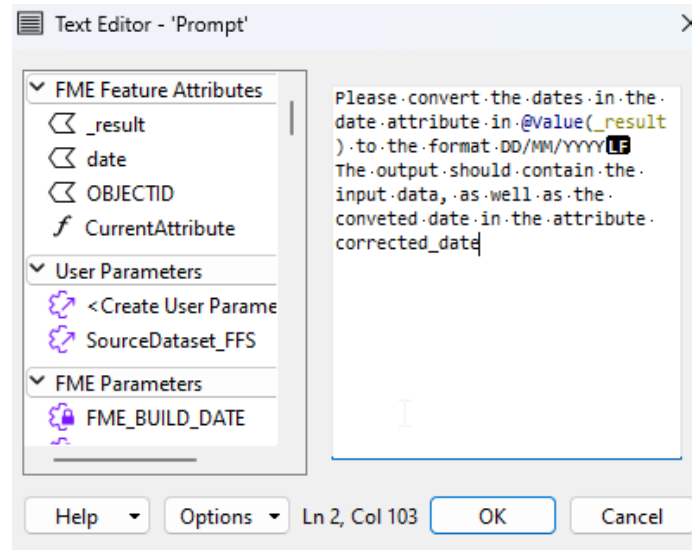


```
{
  "additionalProperties": false,
  "properties": {
    "list": {
      "items": {
        "additionalProperties": false,
        "properties": {
          "corrected_number": {
            "type": "string"
          },
          "padded": {
            "type": "boolean"
          },
          "telefonnummer": {
            "type": "string"
          }
        },
        "required": [
          "telefonnummer",
          "corrected_number",
          "padded"
        ],
        "type": "object"
      },
      "type": "array"
    }
  },
  "required": [
    "list"
  ],
  "type": "object"
}
```

Data Validation - Dates

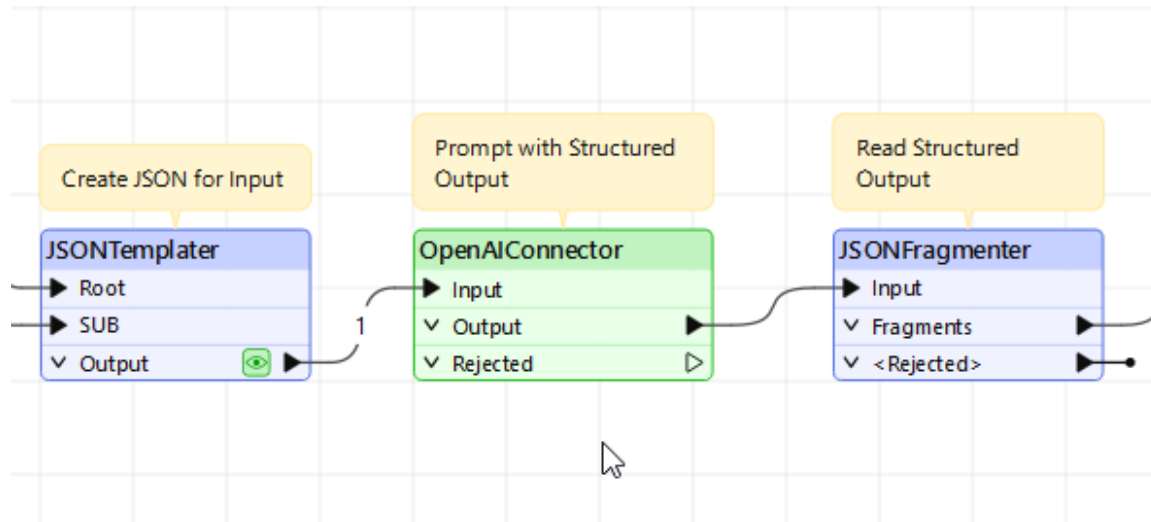


```
[
  {
    "objectid": 432,
    "date": "06.08.21"
  },
  {
    "objectid": 5098,
    "date": "21.10.2022 18:00:05"
  },
  {
    "objectid": 7929,
    "date": "23-12-2021 18:00:03"
  },
  {
    "objectid": 7926,
    "date": "11.12.2017"
  },
  {
    "objectid": 30286,
    "date": "3 décembre 1999"
  },
  {
    "objectid": 30234,
    "date": "17/4/00"
  }
]
```



	date	corrected_date	objectid
1	06.08.21	06/08/2021	432
2	21.10.2022 18:0...	21/10/2022	5098
3	23-12-2021 18:0...	23/12/2021	7929
4	11.12.2017	11/12/2017	7926
5	3 décembre 1999	03/12/1999	30286
6	17/4/00	17/04/2000	30234
7	10 MARS 2000	10/03/2000	31802
8	31/01.2001	31/01/2001	35542
9	05 03. 2009	05/03/2009	41338
10	069/07/2003	06/07/2003	43757
11	1/8/11/2003	01/08/2003	46347
12	1212/2008	12/12/2008	59009

Data Validation – Phone Numbers



	telefonnummer	corrected_number
13	0798368439	+41798368439
14	0325520103	+41325520103
15	0764922362	+41764922362
16	0764931613	+41764931613
17	+410768015563	+410768015563
18	0585178150	+41585178150
19	077.404.52.81	+41774045281
20	+413190049	+413190049
21	0041791233511	+41791233511
22	0783242863	+41783242863
23	0627981072	+41627981072
24	0798388679	+41798388679
25	0448016688	+41448016688
26	+412808333	+412808333

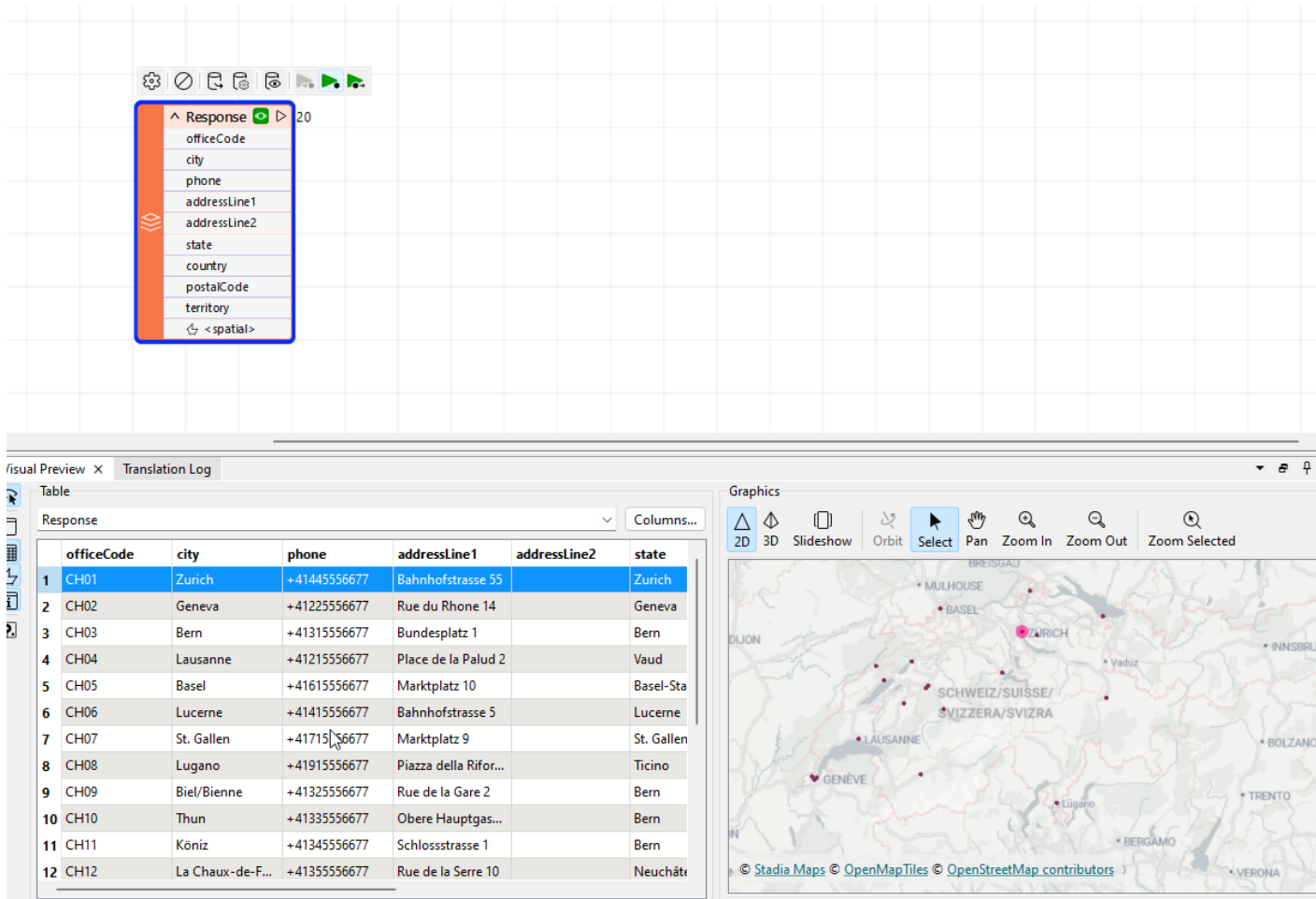
Generative AI Reader

- Allows for creation for of data test purposes based on a schema uploaded
- Can automatically create points in LL84 coordinates
- Can be used in FeatureReader to chain multiple AI prompts based on returned data

Prompt: Create a JSON dataset returning 20 records of offices in Switzerland. The dataset must contain the following attributes "officeCode", "city", "phone", "addressLine1", "addressLine2", "state", "country", "postalCode", "territory", "latitude", "longitude"



Generative AI Reader



The screenshot displays the Generative AI Reader interface. At the top, a panel shows a list of fields: officeCode, city, phone, addressLine1, addressLine2, state, country, postalCode, territory, and <spatial>. Below this, a table titled 'Response' contains 12 rows of data. To the right of the table, a map of Switzerland is visible, showing major cities and regions. The map is labeled with 'SCHWEIZ/SUISSE/SVIZZERA/SVIZRA' and includes a legend for 'Stadia Maps', 'OpenMapTiles', and 'OpenStreetMap contributors'.

	officeCode	city	phone	addressLine1	addressLine2	state
1	CH01	Zurich	+41445556677	Bahnhofstrasse 55		Zurich
2	CH02	Geneva	+41225556677	Rue du Rhone 14		Geneva
3	CH03	Bern	+41315556677	Bundesplatz 1		Bern
4	CH04	Lausanne	+41215556677	Place de la Palud 2		Vaud
5	CH05	Basel	+41615556677	Marktplatz 10		Basel-Sta
6	CH06	Lucerne	+41415556677	Bahnhofstrasse 5		Lucerne
7	CH07	St. Gallen	+41715556677	Marktplatz 9		St. Gallen
8	CH08	Lugano	+41915556677	Piazza della Riforma		Ticino
9	CH09	Biel/Bienne	+41325556677	Rue de la Gare 2		Bern
10	CH10	Thun	+41335556677	Obere Hauptgasse		Bern
11	CH11	Köniz	+41345556677	Schlossstrasse 1		Bern
12	CH12	La Chaux-de-Fonds	+41355556677	Rue de la Serre 10		Neuchâtel

Generative AI Reader



Highest peaks on each continent

Response 7

Visual Preview X Translation Log

Table

Response

	name	country	elevation
1	Mount Everest	Nepal/China	8848.86
2	Aconcagua	Argentina	6960.8
3	Denali	United States	6190.5
4	Mount Kilimanj...	Tanzania	5895
5	Mount Elbrus	Russia	5642
6	Vinson Massif	Antarctica	4892
7	Puncak Jaya	Indonesia	4884

Highest peak in each canton

Response 27

Response

name
canton
elevation
< spatial >

al Preview X Translation Log

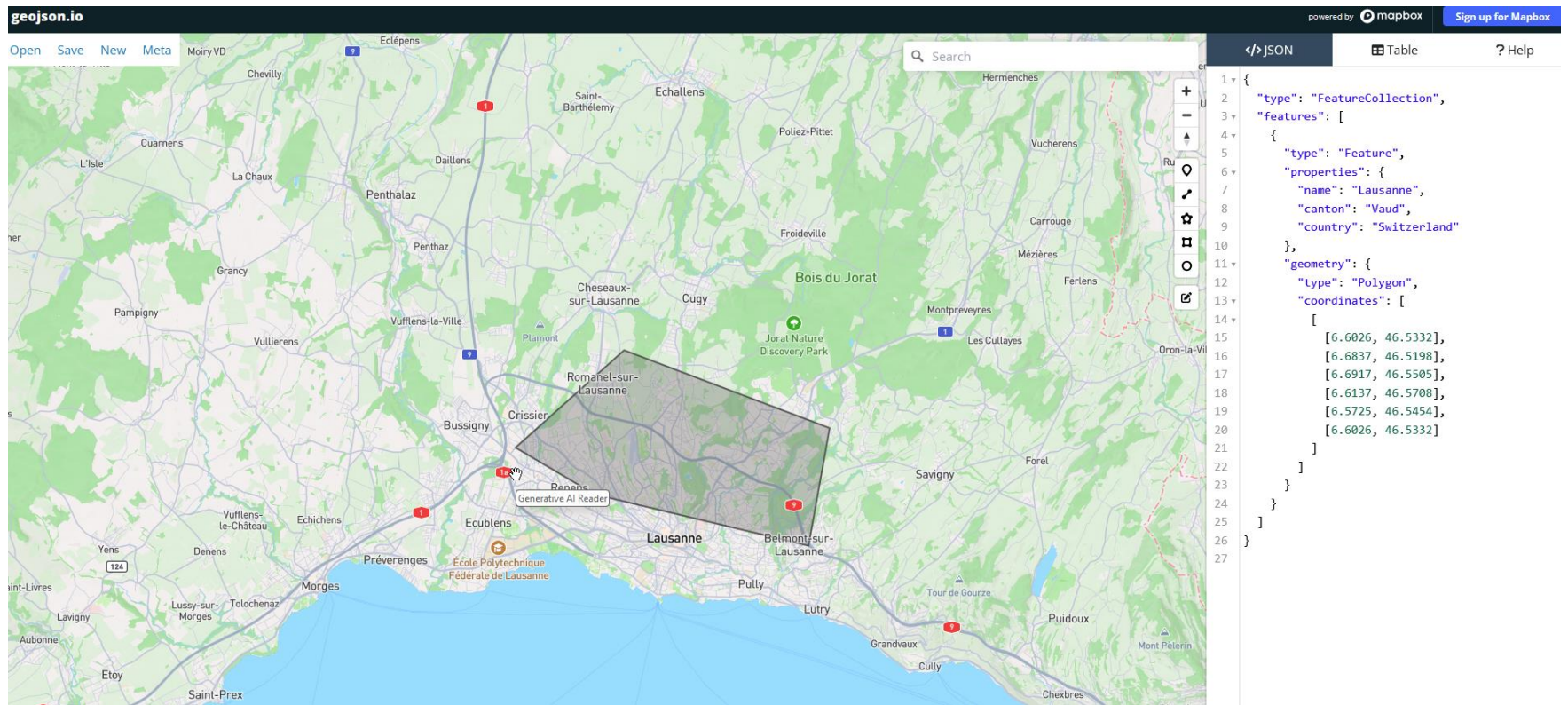
Table

Response

	name	canton	elevation
1	Dufourspitze	Valais	4634
2	Tödi	Glarus	3614
3	Finsteraarhorn	Bern	4274
4	Piz Bernina	Graubünden	4049
5	Tödi	St. Gallen	3614
6	Dammastock	Uri	3630
7	Dammastock	Valais	3630
8	Tödi	Graubünden	3614
9	Dammastock	Bern	3630
10	Wildspitze	Zurich	3458
11	Säntis	Appenzell Inner...	2502
12	Säntis	Appenzell Auss...	2502
13	Chasseral	Bern	1607

Creating geometries

- Generative AI Reader can only create points
- Use AI Connector with prompt to return geometries in GeoJSON



The screenshot shows the **geojson.io** interface. The map displays the city of Lausanne and surrounding areas. A polygon is drawn over a forested area near the city center. The right sidebar shows the GeoJSON output:

```
1 {  
2   "type": "FeatureCollection",  
3   "features": [  
4     {  
5       "type": "Feature",  
6       "properties": {  
7         "name": "Lausanne",  
8         "canton": "Vaud",  
9         "country": "Switzerland"  
10      },  
11      "geometry": {  
12        "type": "Polygon",  
13        "coordinates": [  
14          [  
15            [6.6026, 46.5332],  
16            [6.6837, 46.5198],  
17            [6.6917, 46.5505],  
18            [6.6137, 46.5708],  
19            [6.5725, 46.5454],  
20            [6.6026, 46.5332]  
21          ]  
22        }  
23      }  
24    ]  
25  }  
26 }  
27 }
```

Creating geometries

powered by  [Sign up for Mapbox](#)

Search

Stade Olympique de la Pontaise

Centre hospitalier universitaire vaudois

Palais de Rumine

Châteaux Sec

JSON Table ? Help

```
1 {
2   "type": "FeatureCollection",
3   "features": [
4     {
5       "type": "Feature",
6       "properties": {
7         "name": "Rue de Bourg",
8         "type": "arterial",
9         "direction": "two-way"
10      },
11      "geometry": {
12        "type": "LineString",
13        "coordinates": [
14          [
15            6.631698,
16            46.519962
17          ],
18          [
19            6.632142,
20            46.521293
21          ]
22        ]
23      }
24    },
25    {
26      "type": "Feature",
27      "properties": {
28        "name": "Place de la Riponne",
29        "type": "local",
30        "direction": "one-way"
31      },
32      "geometry": {
33        "type": "LineString",
34        "coordinates": [
```

Fuzzy Matching using AI



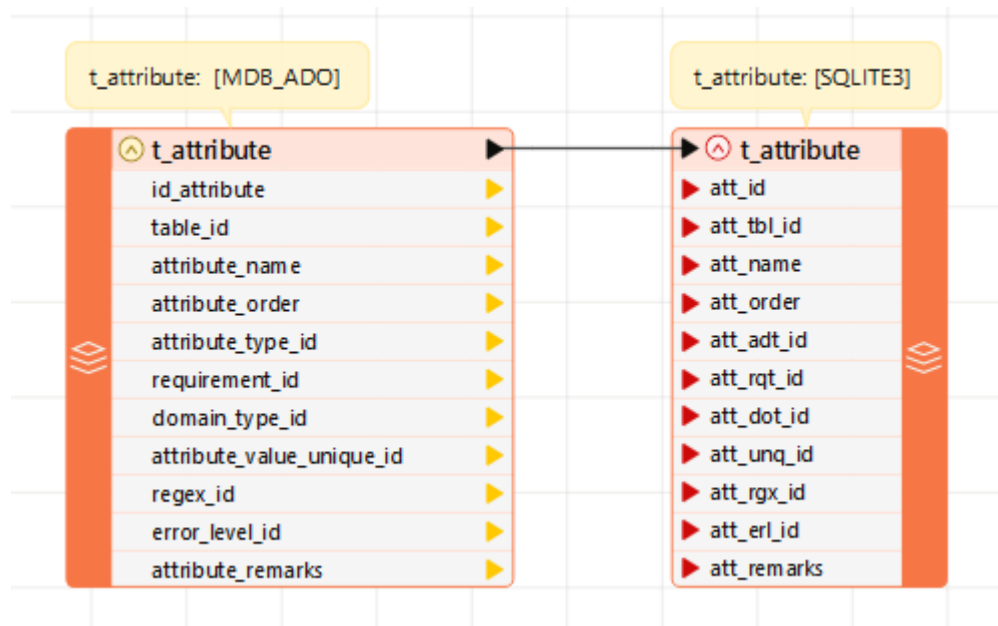
	id	name	surname	address
1	1	Liam	Smith	123 Elm St, Spri...
2	2	Emma	Johnson	456 Oak St, Met...
3	3	Noah	Williams	789 Pine St, Got...
4	4	Olivia	Jones	321 Maple St, St...
5	5	Oliver	Jones	654 Cedar St, C...
6	6	Ava	Garcia	987 Birch St, S...
7	7	Elijah	Martinez	159 Spruce St, ...
8	8	Sophia	Davis	753 Willow St, B...
9	9	James	Rodriguez	123 Elm St, Spri...
10	10	Isabella	Wilson	456 Oak St, Met...
11	11	William	Smith	789 Pine St, Got...
12	12	Mia	Brown	321 Maple St, St...
13	13	Benjamin	Taylor	654 Cedar St, C...
14	14	Amelia	Garcia	987 Birch St, S...
15	15	Lucas	Martinez	159 Spruce St, ...
16	16	Harper	Davis	753 Willow St, B...
17	17	Henry	Lee	123 Elm St, Spri...
18	18	Evelyn	Perez	456 Oak St, Met...
19	19	Alexander	Thompson	789 Pine St, Got...
20	20	Abigail	White	321 Maple St, St...
21	21	Isabell	Wilson	456 Oak St, Met...

id	name	surname	matched_id	matched_name
1	Liam	Smith	11	William Smith
9	James	Rodriguez	1	Liam Smith
10	Isabella	Wilson	21	Isabell Wilson
15	Lucas	Martinez	7	Elijah Martinez

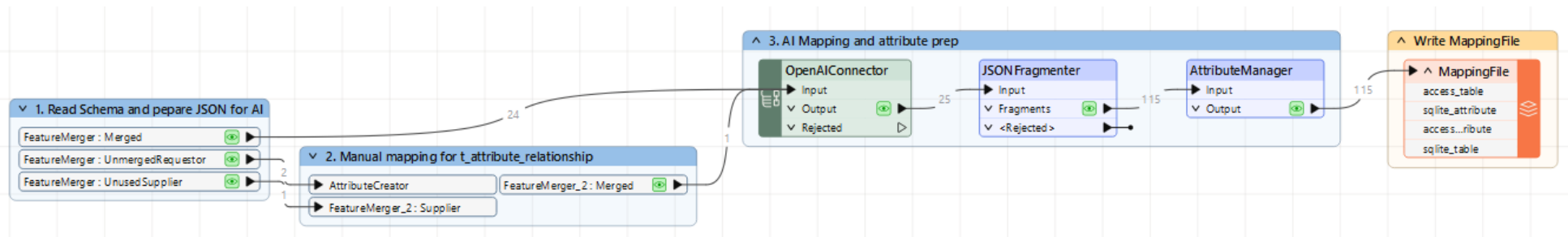
id	name	surname	matched_id	matched_name
1	Liam	Smith	11	William Smith
2	Emma	Johnson	10	Isabella Wilson
4	Olivia	Jones	5	Oliver Jones
6	Ava	Garcia	14	Amelia Garcia
8	Sophia	Davis	16	Harper Davis
12	Mia	Brown	20	Abigail White

Schema Mapping

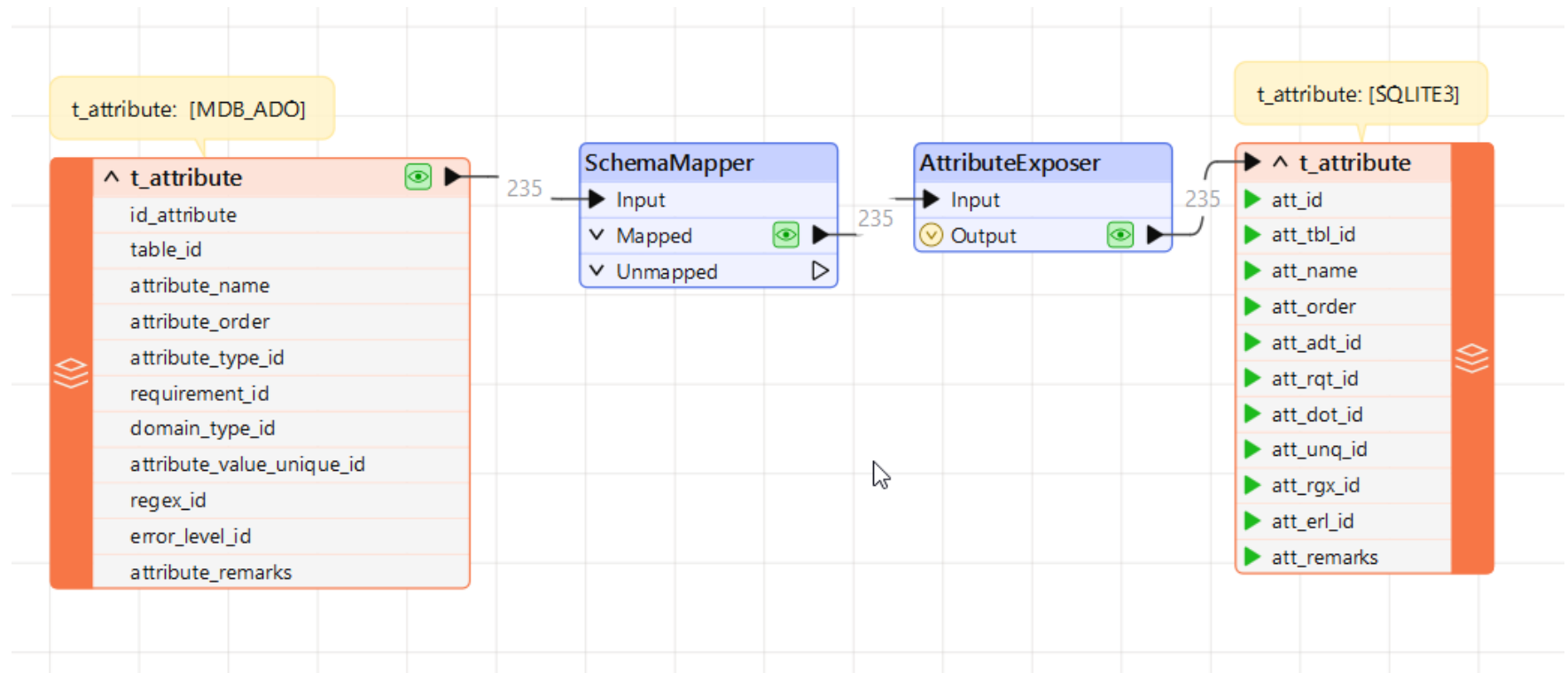
- Create Mapping File to migrate database from one format to another



Schema Mapping



Schema Mapping



Key Takeaways

- FME can work with any AI tool
- Need to use structured data to communicate with AI
- Structured Output saves time and hassle
- Prompts are important
- AI can be useful but results not always 100%



Geopol PictionAI Results

