Generic Change Detection for Railway Infrastructure Data

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About Me

- André Zehnder
- EBP Schweiz AG
- GIS & Data Analyst
- Geography, UZH
- FME since 2013.1

Services

Software development

Data analysis (spatial, temporal)

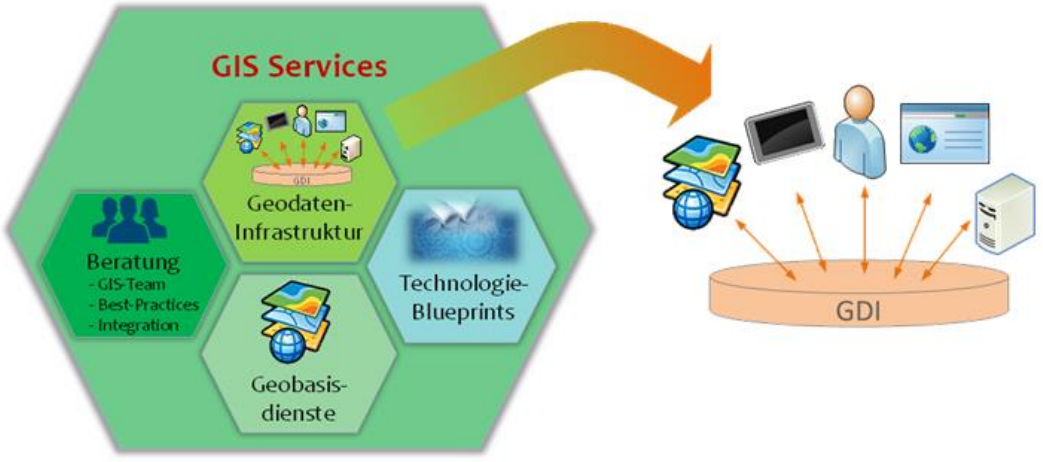
IT consulting

Business domains

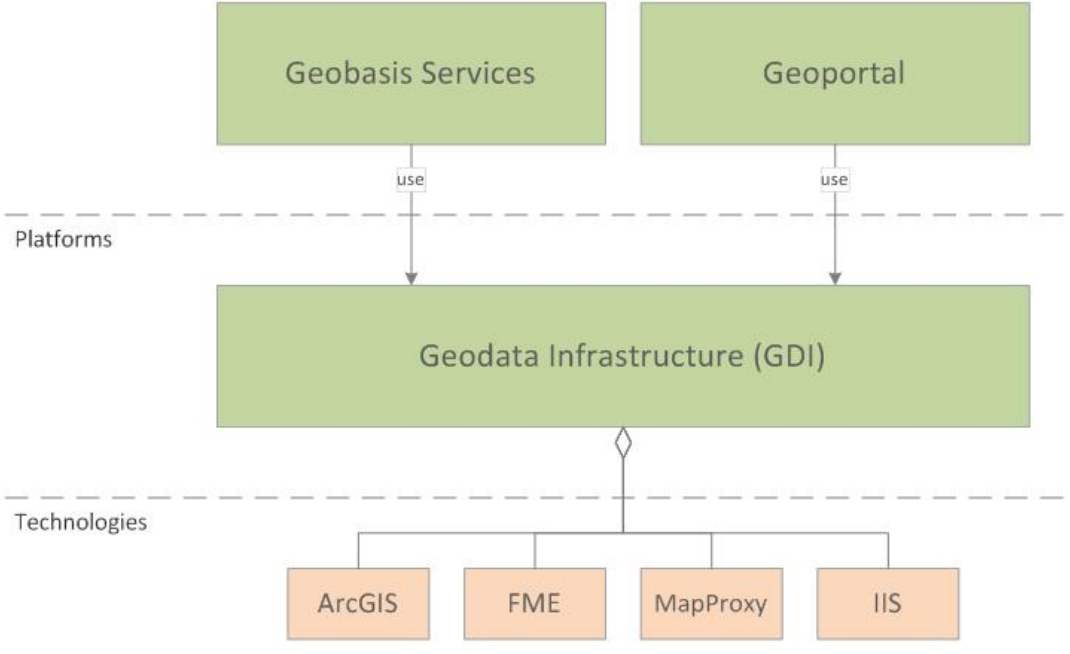

Background

SBB CFF FFS

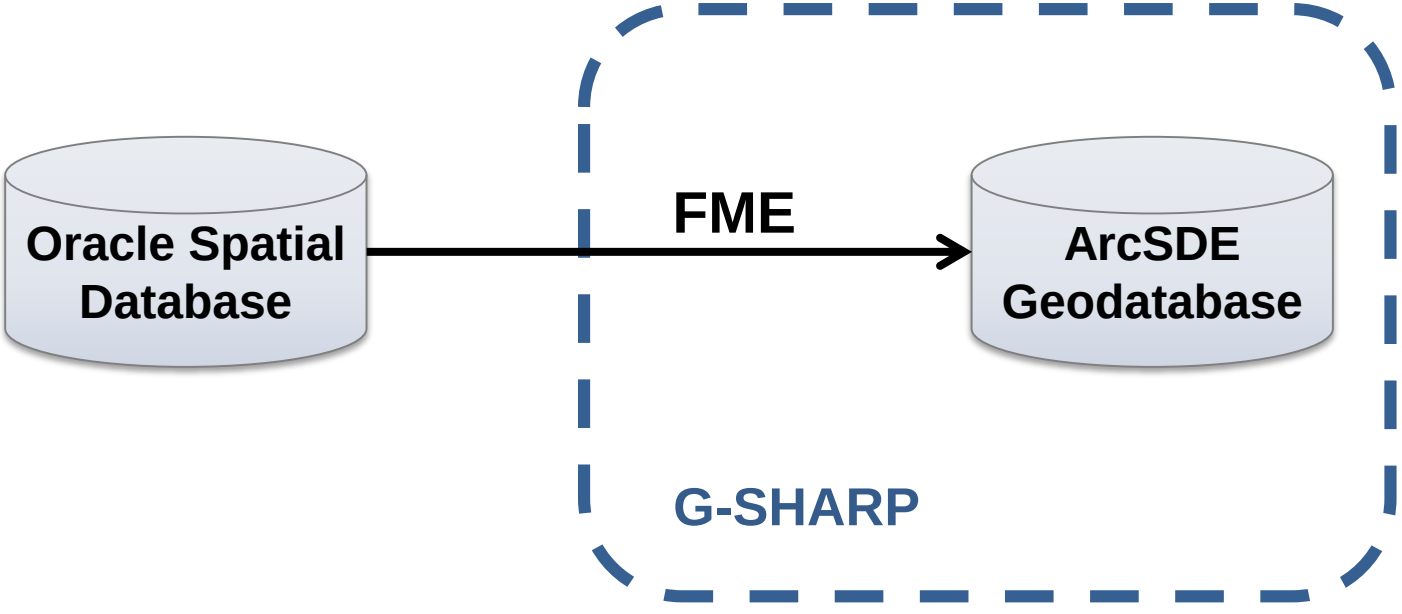
G-SHARP



- Geodata Infrastructure for SBB
- Serves Desktop, Web and Mobile Clients
- Key Technologies
  - ArcGIS Server
  - ArcGIS Desktop
  - FME Server
  - FME Desktop



Transfer of infrastructure data



Transfer of infrastructure data

Infrastructure data

- Railway tracks
- Buildings
- Signals
- Railway platforms

➡ 300 feature classes

➡ 60 million objects

SBB CFF FFS

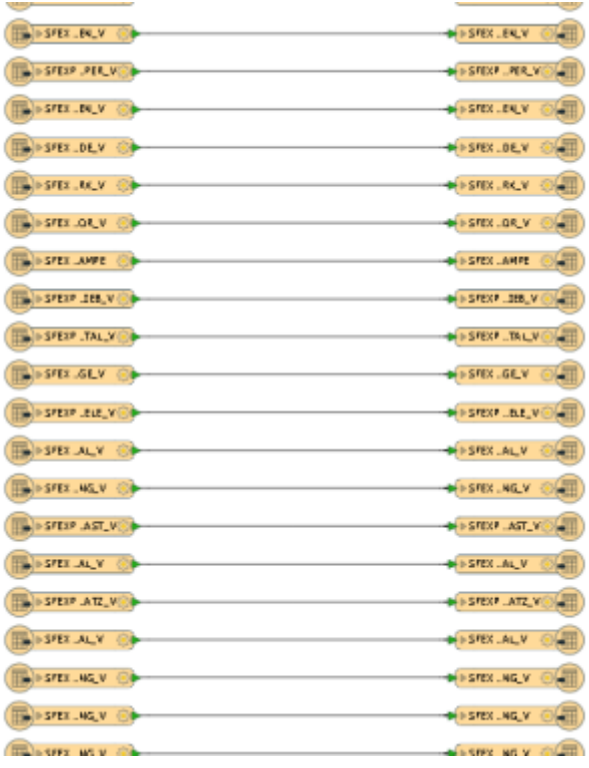
Requirements

- Repeatable transfer of all data records
- Identify and write changes nightly
- Keep history of changes
- Minimal effort for maintenance
- Automatization of whole process
- Option to parallelize
- Scalability


Implementation

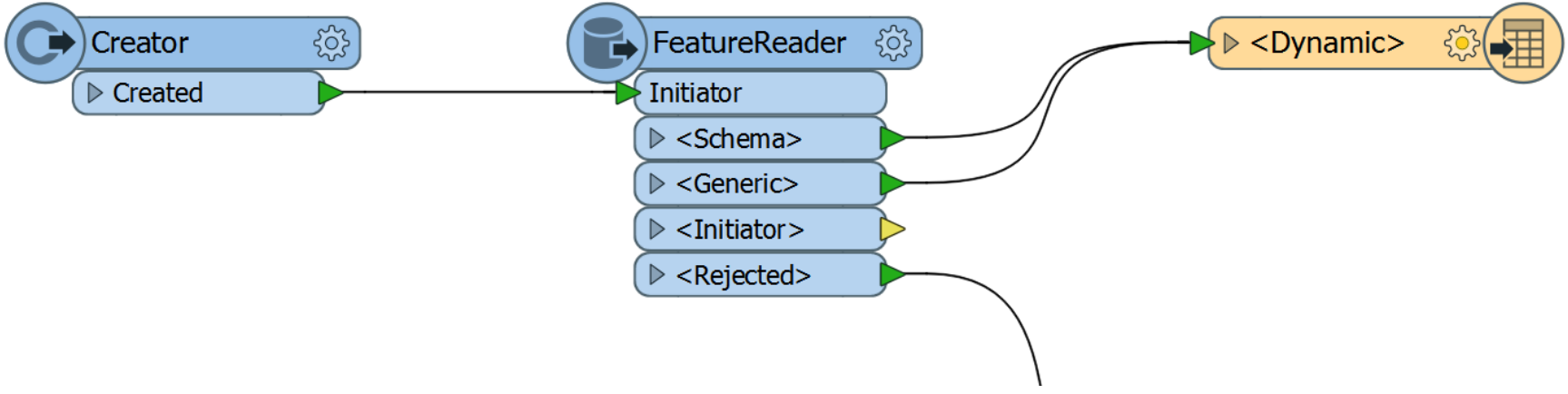

Basic Design

«Repeatable transfer of data»

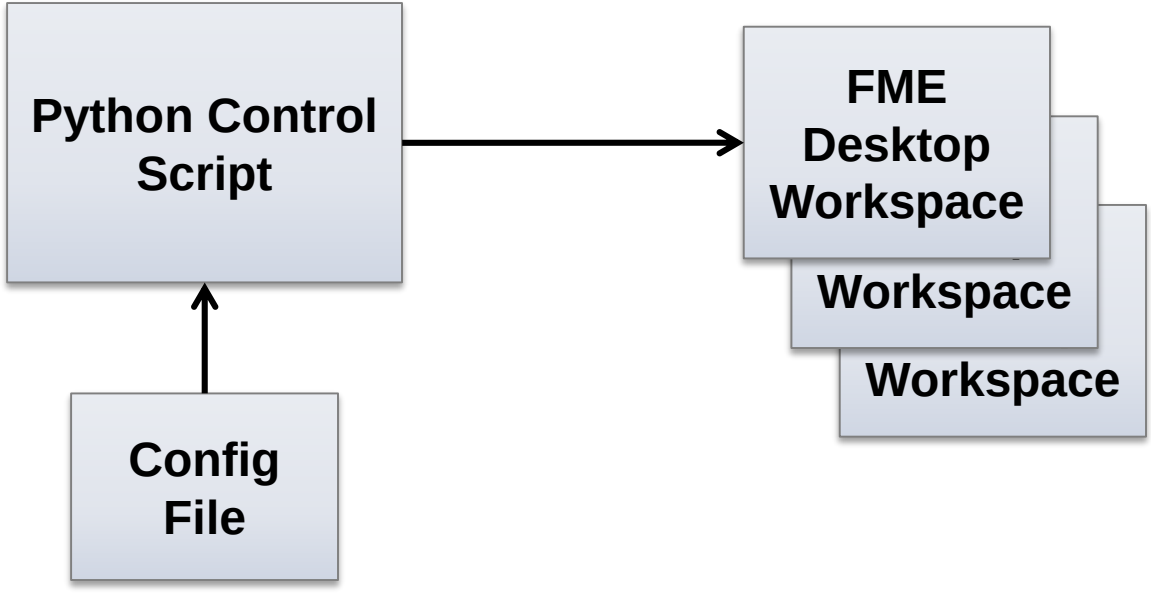


«Repeatable transfer of data»

Better: Generic approach



Controlling and automatization



Two scenarios

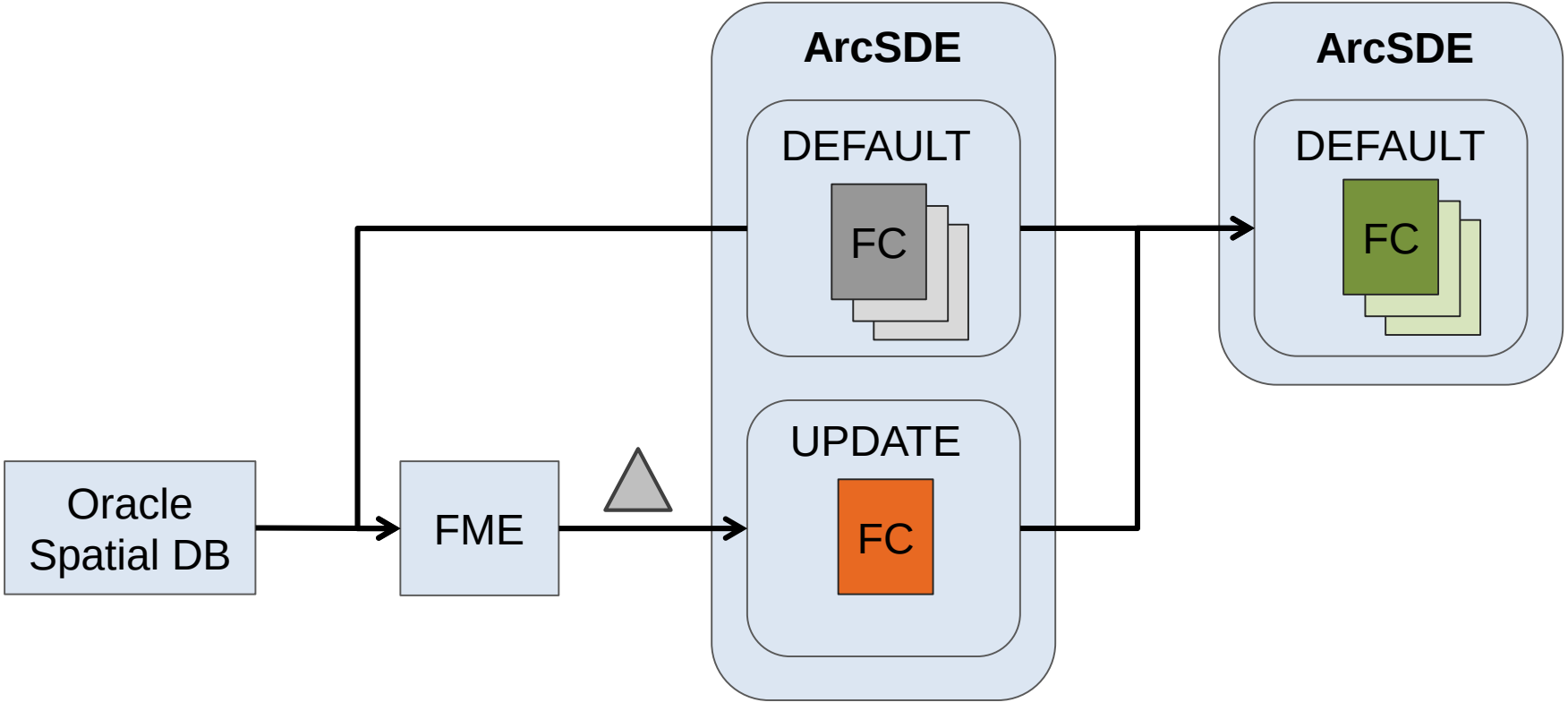
Full Load

- Transfer all records of feature class
- Define schema
- Activate ArcGIS Versioning and Archiving

Increment

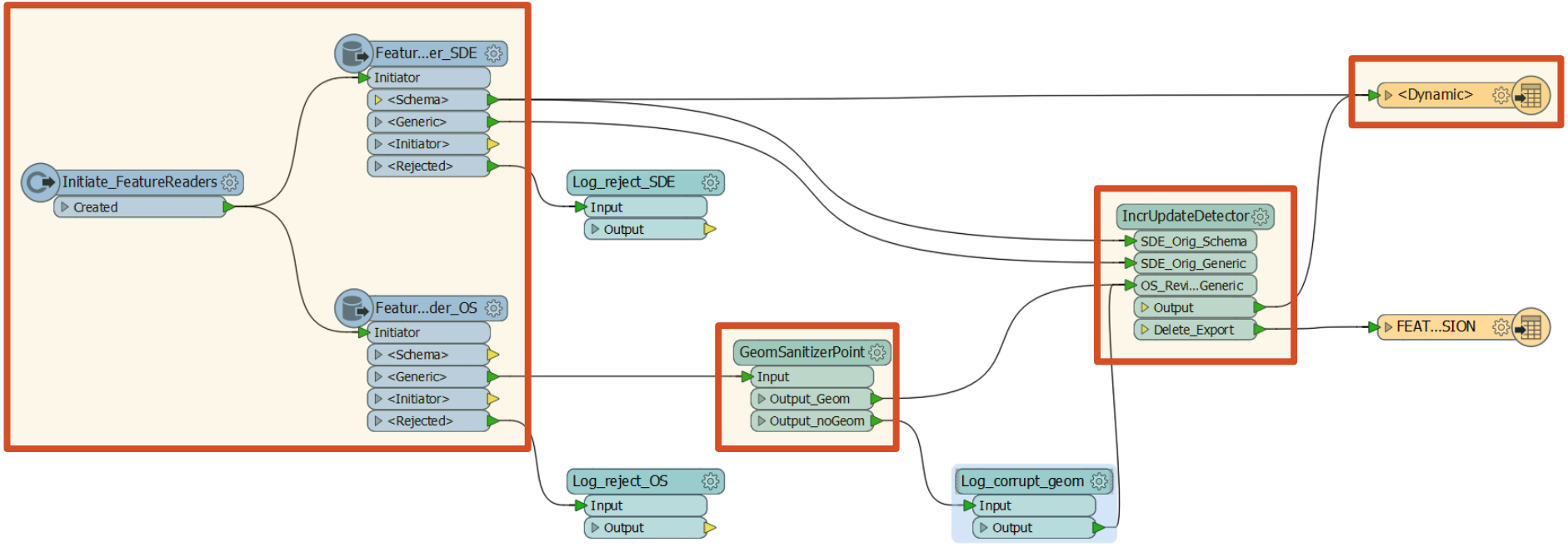
- Transfer changes since last run
- Changes are written to «update» version
- Post changes to default version

Increment Process

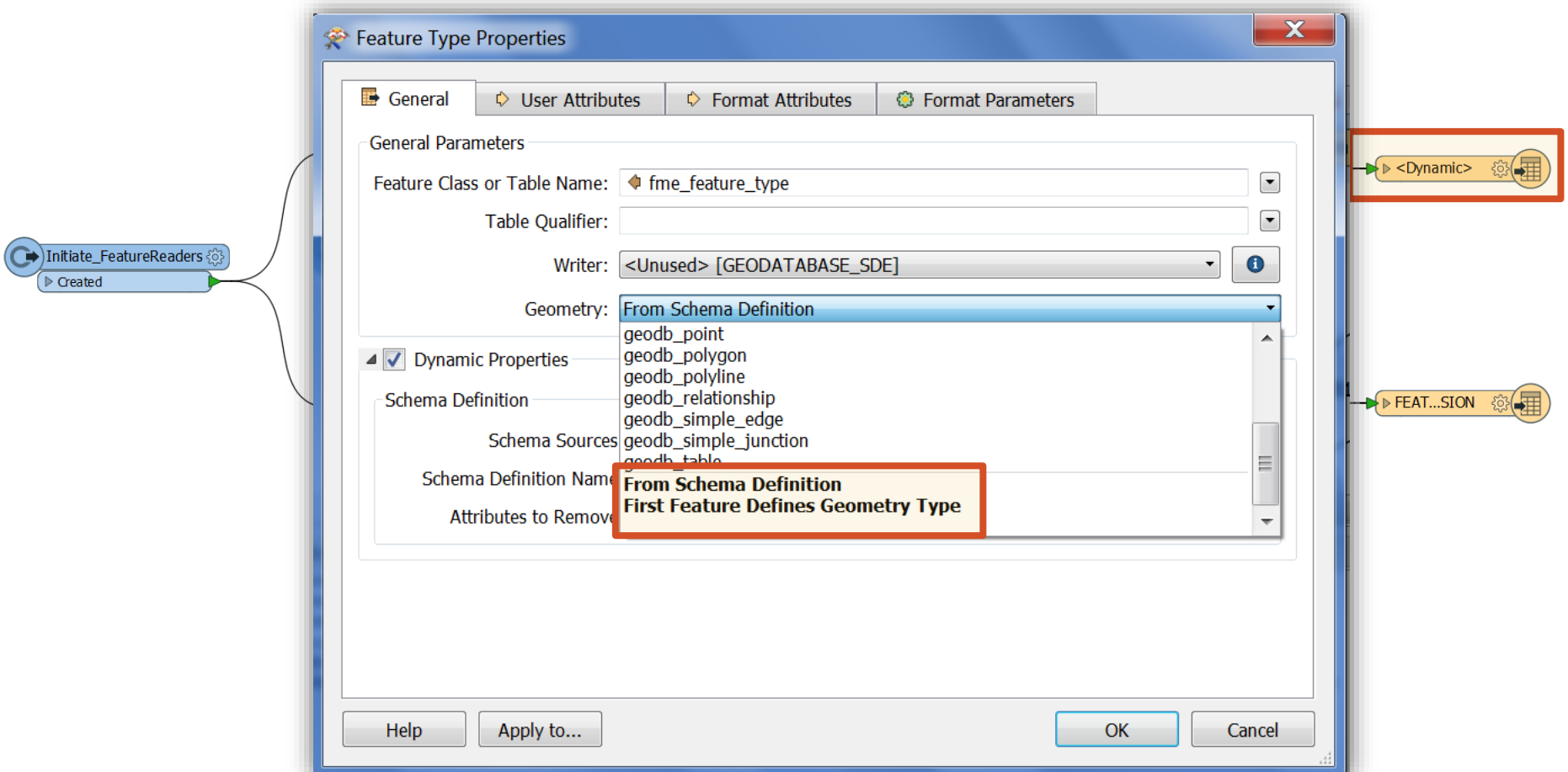



Generic change
detection

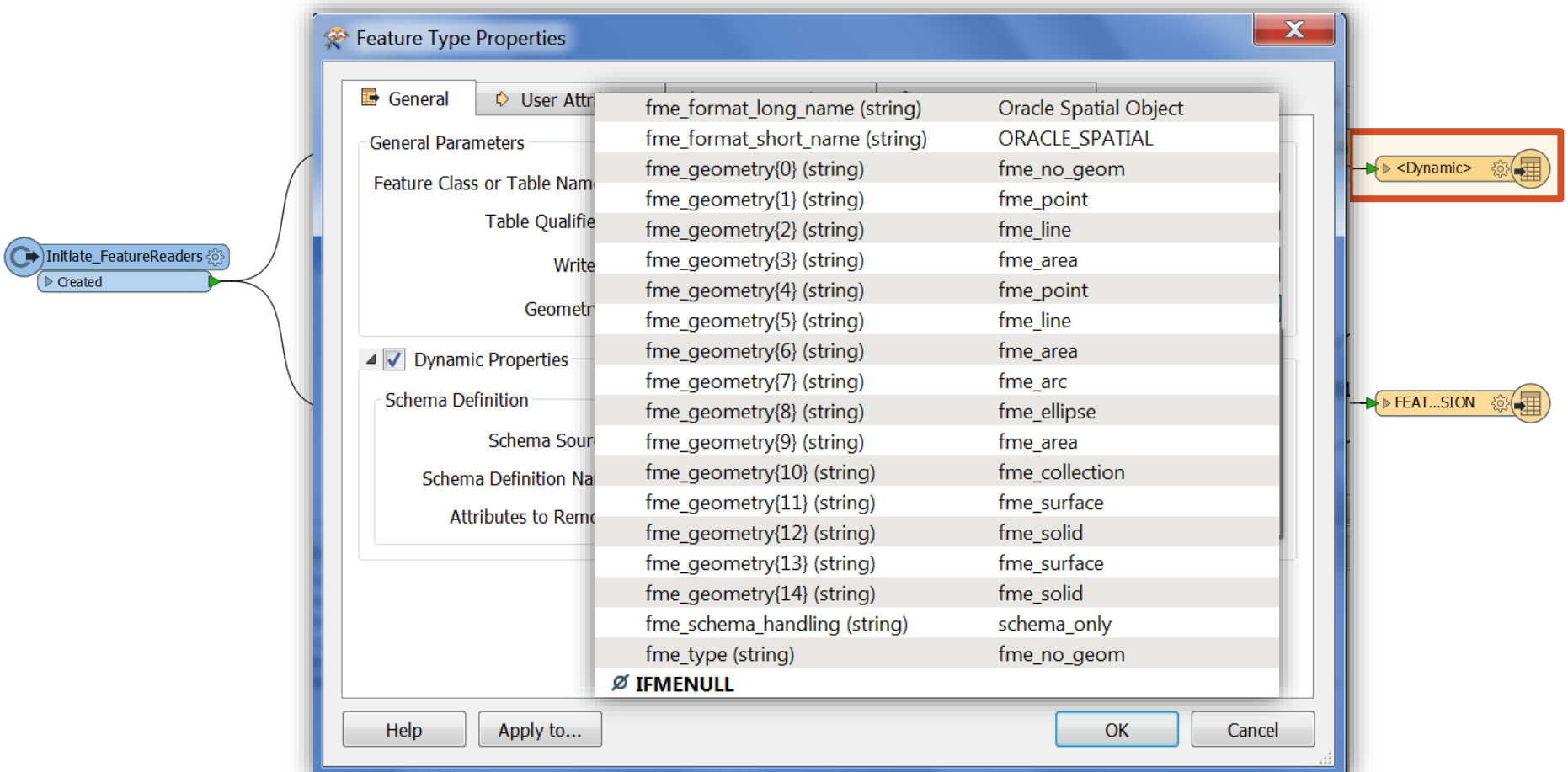
Increment-Workspaces



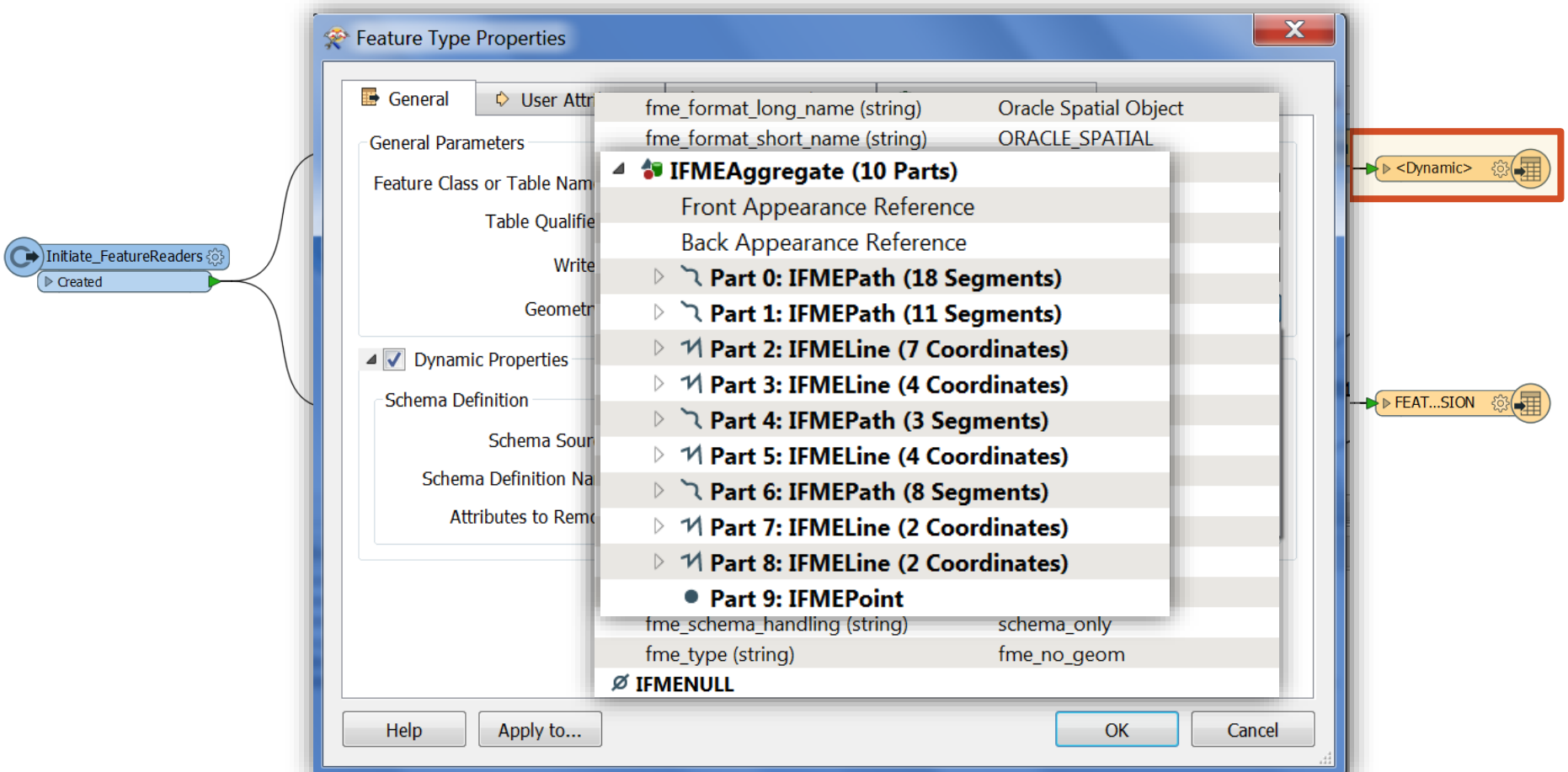
Increment-Workspaces



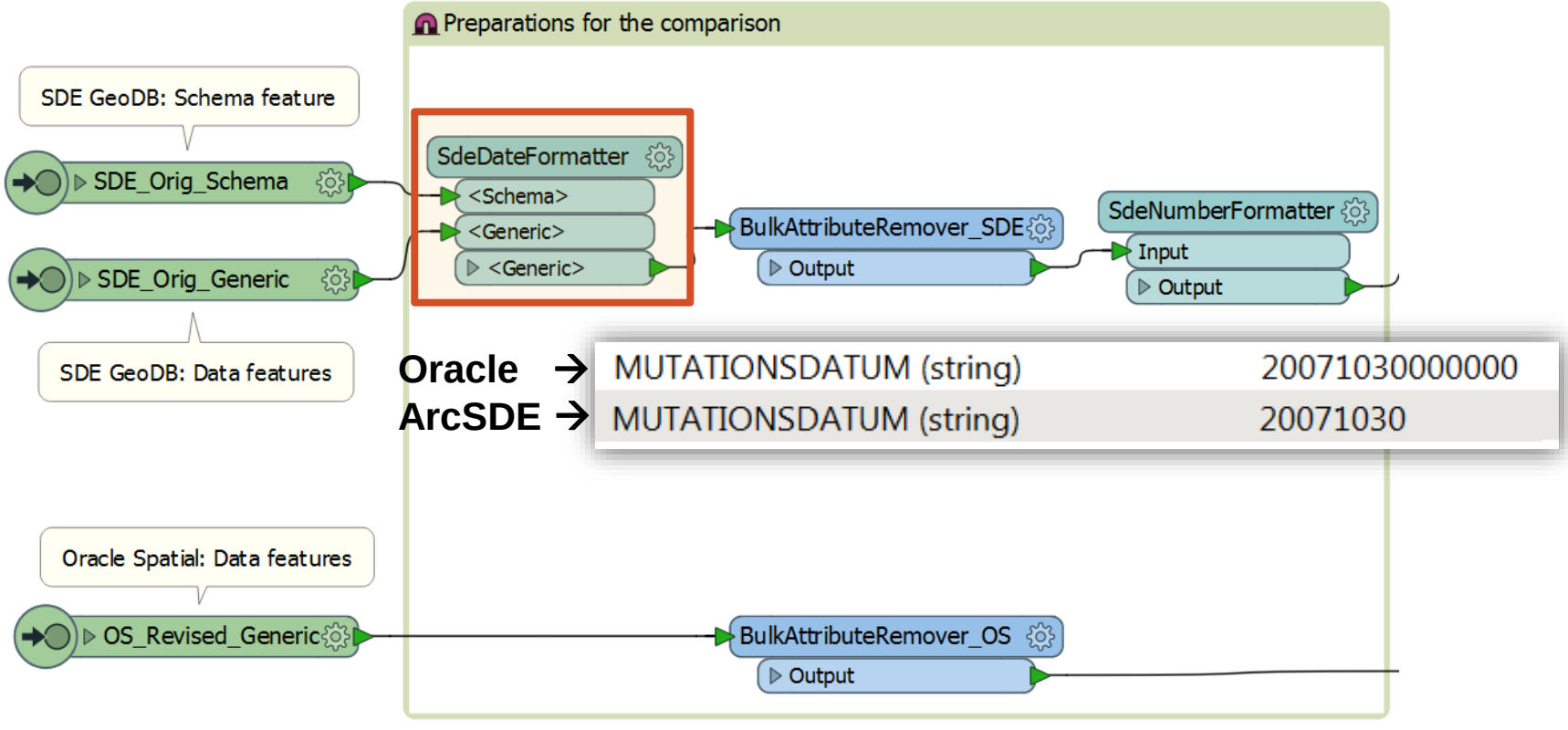
Increment-Workspaces



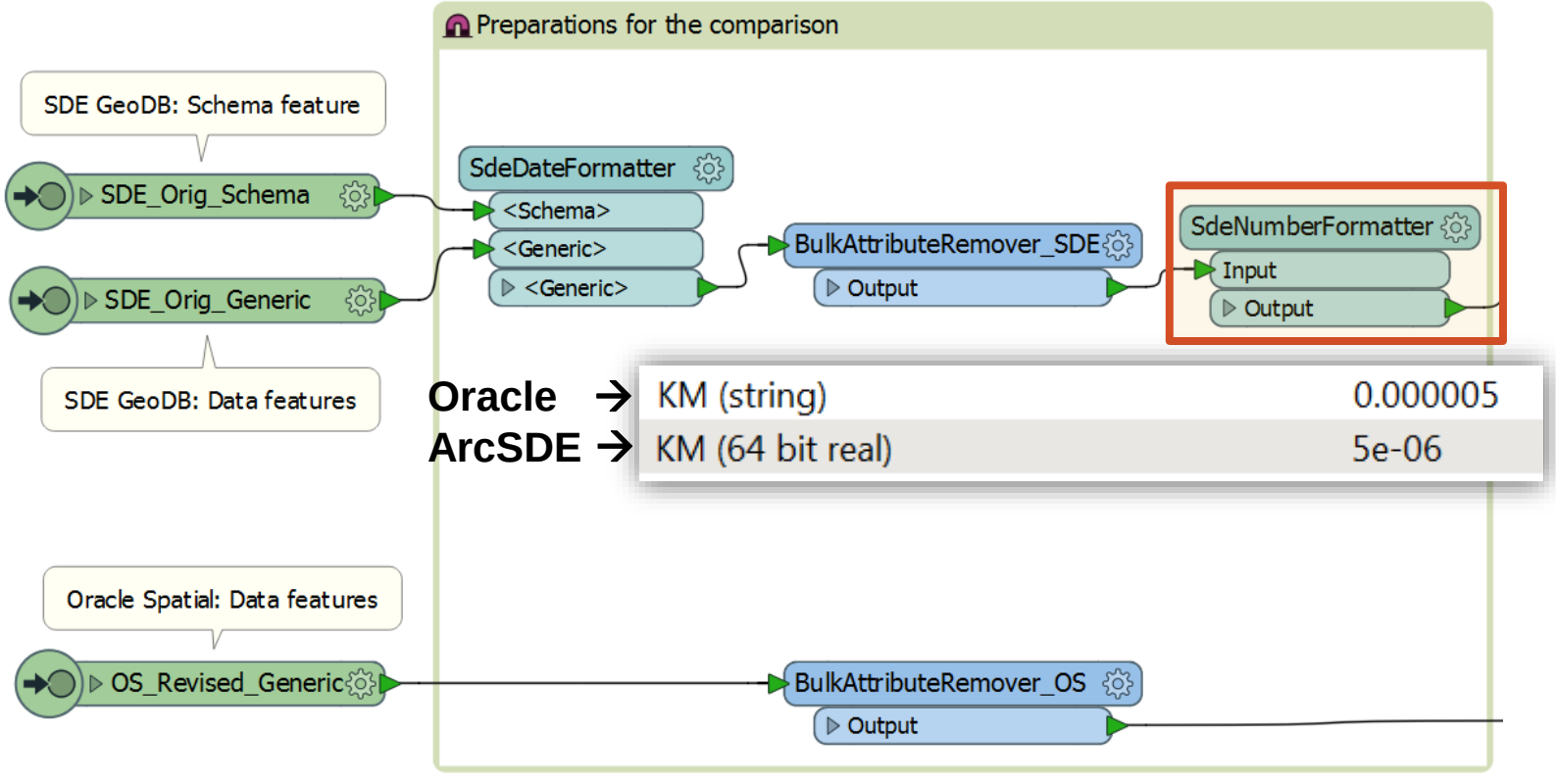
Increment-Workspaces



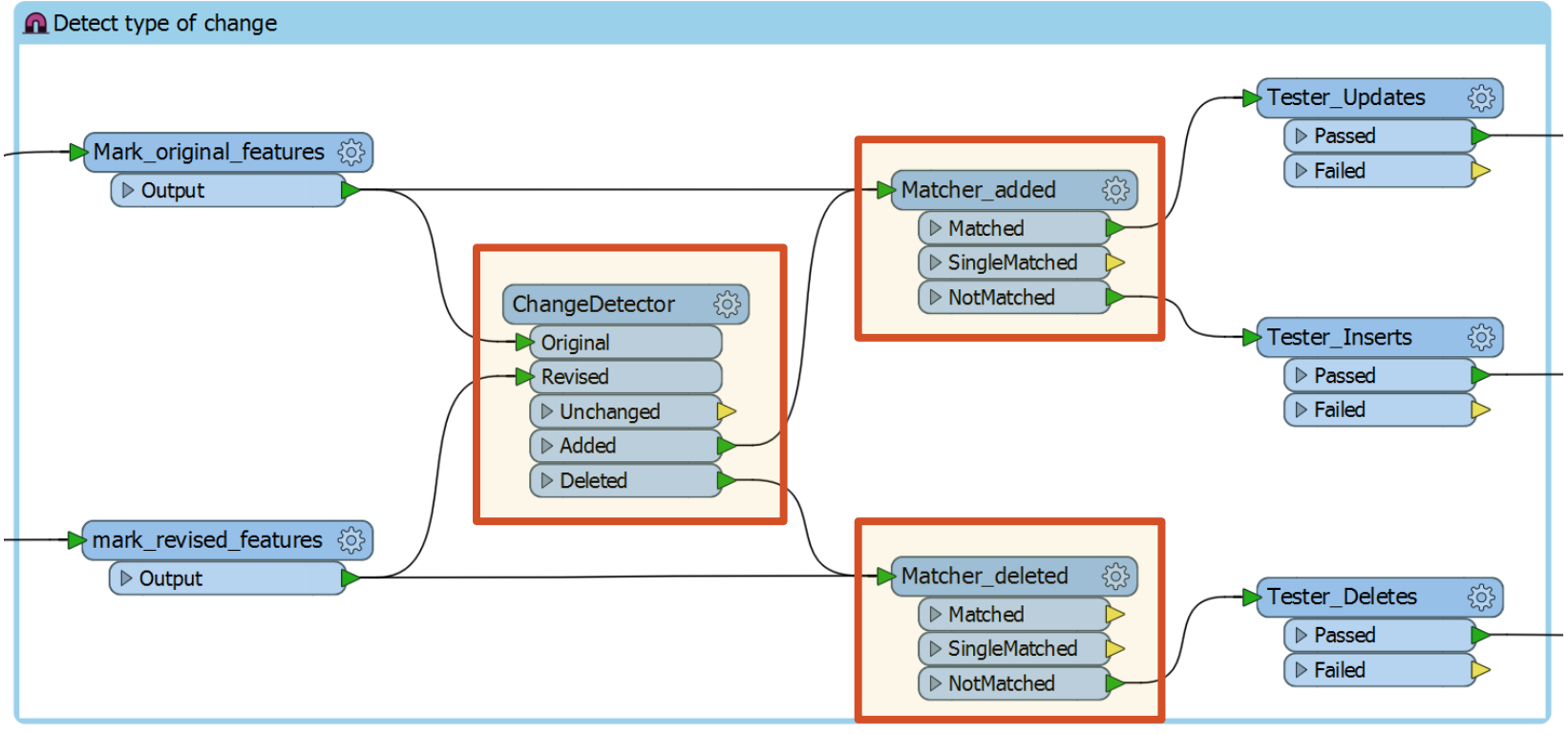
Step 1: Harmonize sources



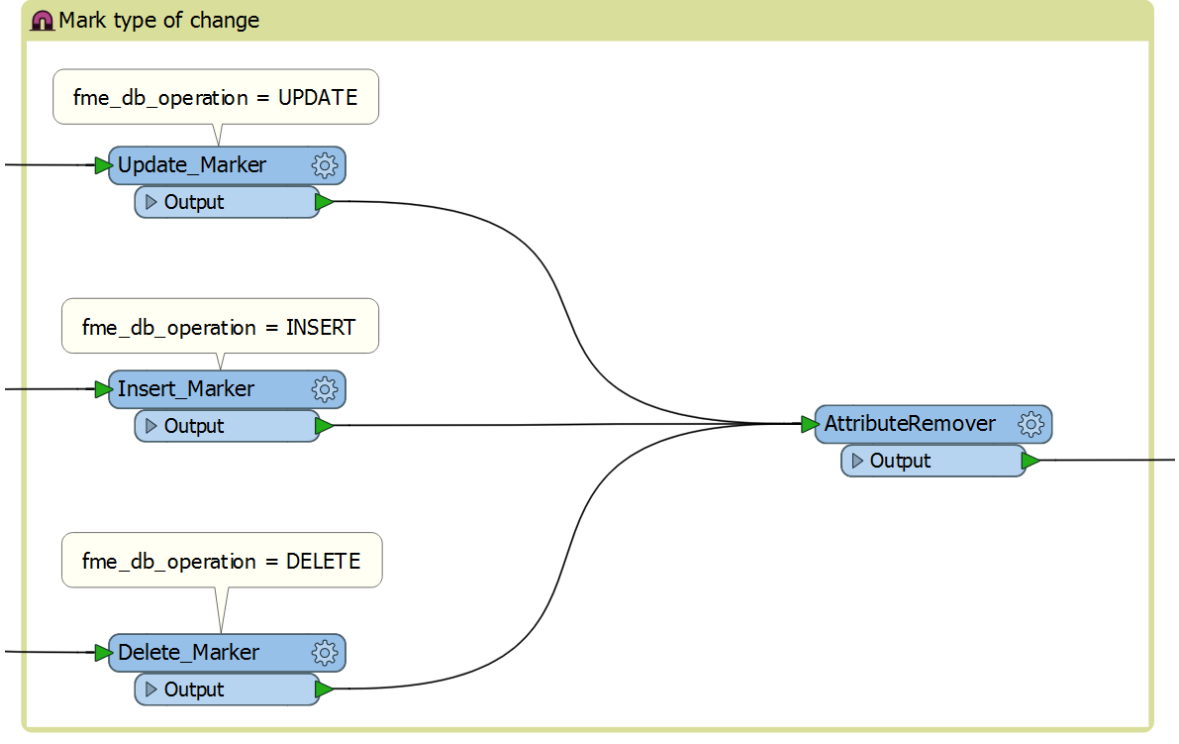
Step 1: Harmonize sources



Step 2: Detect changes



Step 3: Mark changes



Reward of all the efforts…

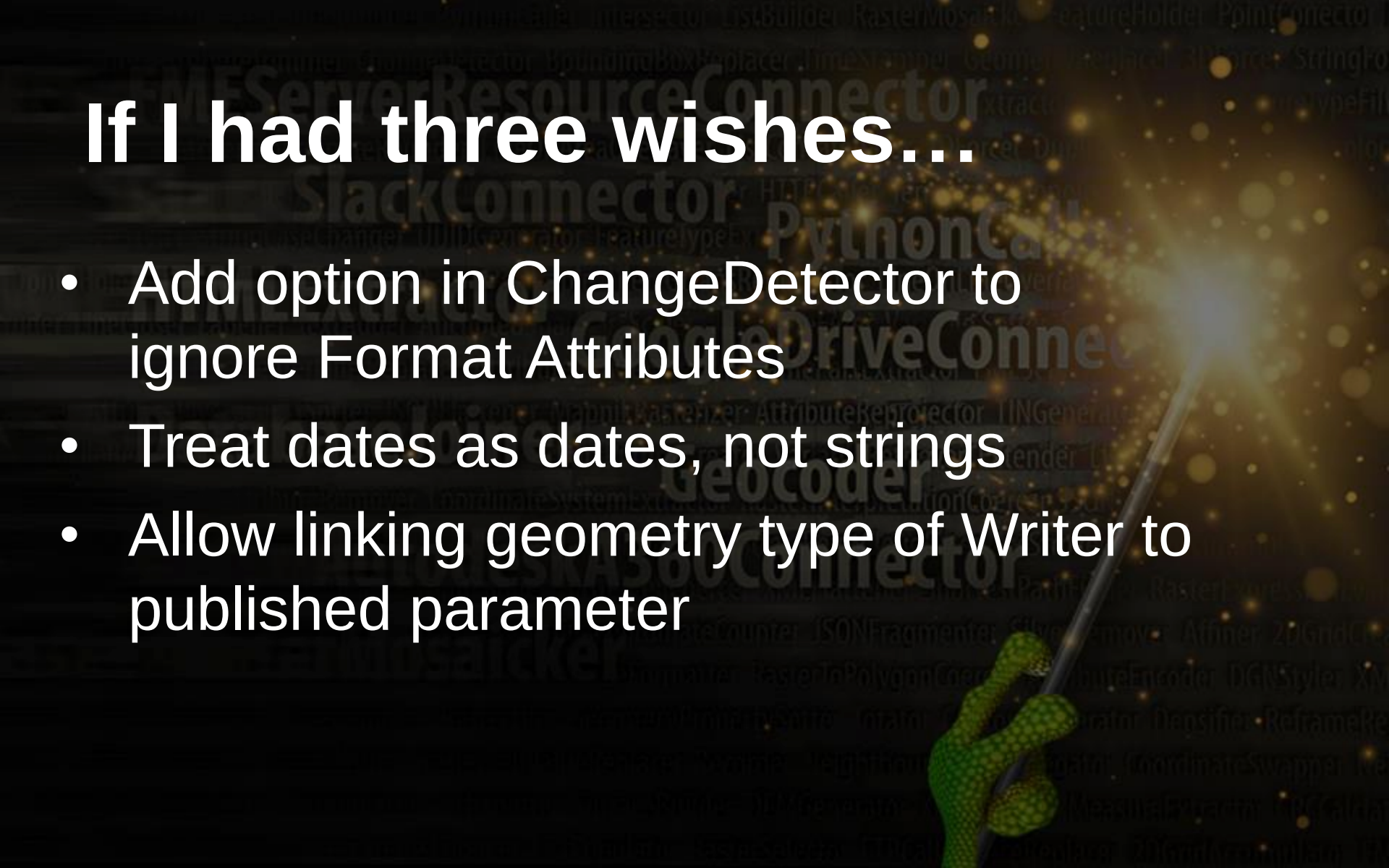
```
2017-03-14 12:25:07 | INFO: Start rebuilding of indexes.
2017-03-14 12:25:42 | INFO: Finished rebuilding of indexes.
2017-03-14 12:25:52 | INFO: Start updating statistics.
2017-03-14 12:29:32 | INFO: Finished updating statistics.
2017-03-14 12:29:32 | INFO: Writing start condition value to
the  SFEXP database.
2017-03-14 12:29:38 | INFO: Status 'READ SUCCESS' successfully
written to status table of SFEXP.
2017-03-14 12:29:38 | INFO: Increment process is complete.
```

Take home messages

- Generics worthwhile for large-scale projects
- Take care of source-specific properties
- Schema is separately

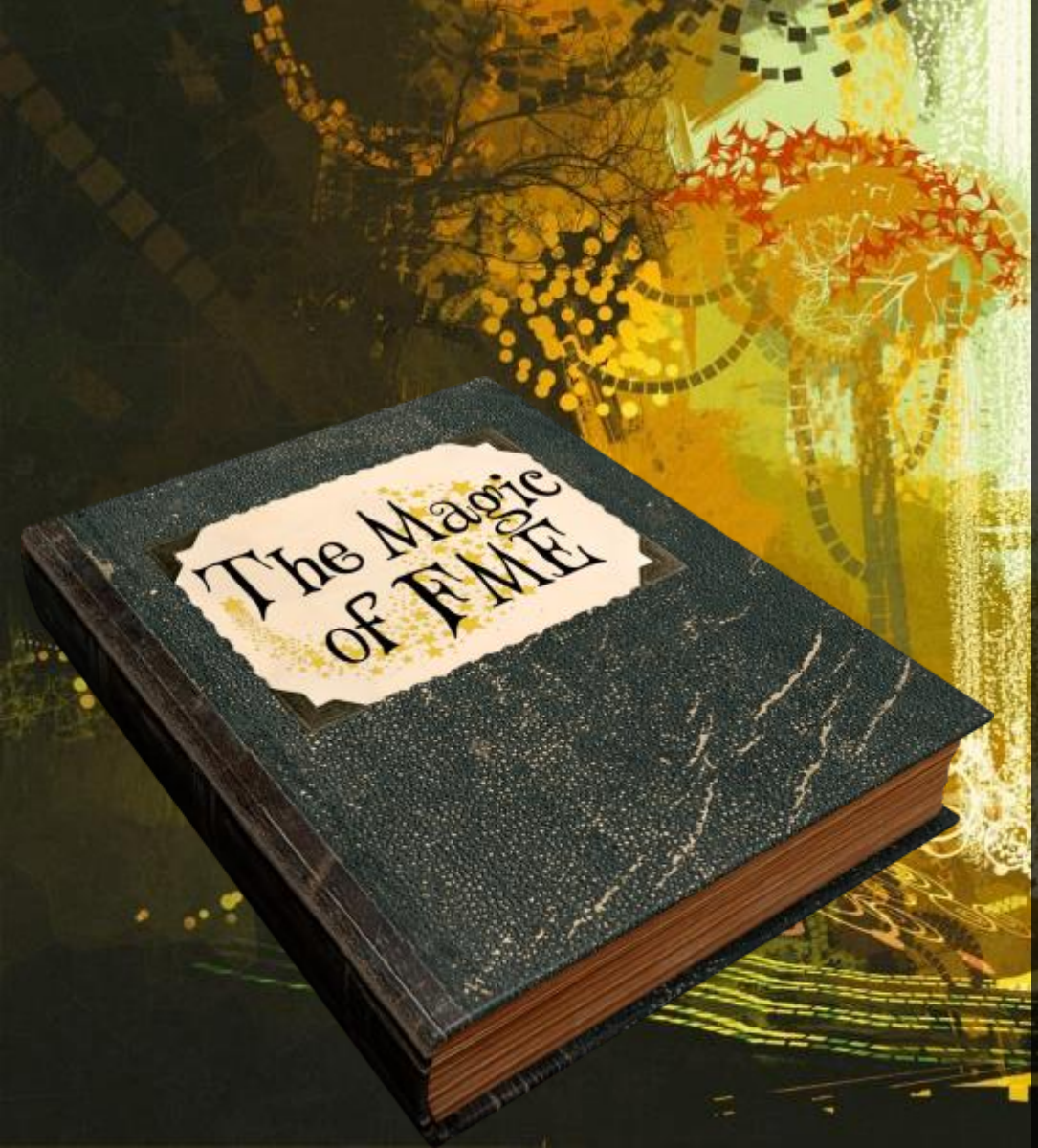
If I had three wishes…

- Add option in ChangeDetector to ignore Format Attributes
- Treat dates as dates, not strings
- Allow linking geometry type of Writer to published parameter



Thanks to…

- Jürg Mannes
- Lukas Schildknecht



Thank you!

Did we spark your interest?

Any further questions?

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