

# XBRL Custom components and services

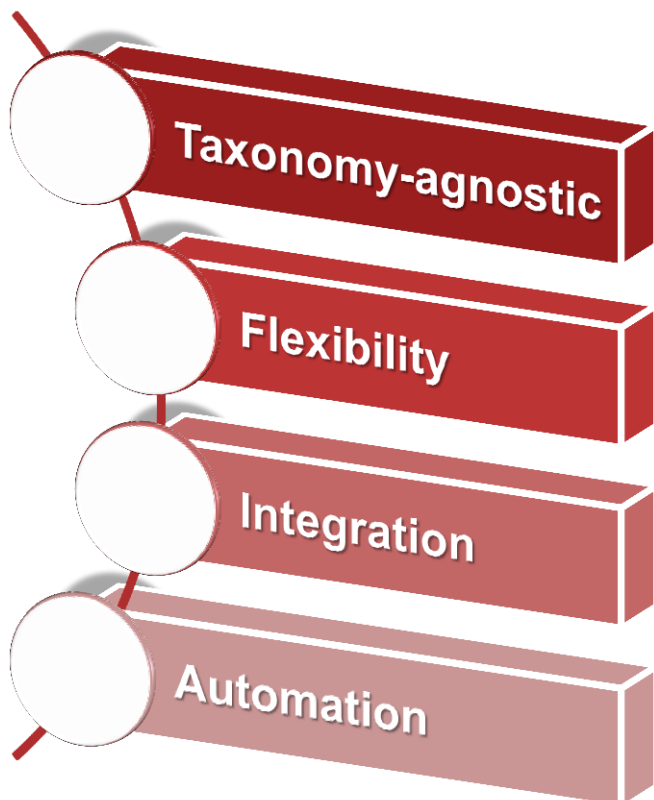
DB-related components

DB-related services

XBRL Taxonomy-related services

*FQS Poland - Center of Excellence of Interstage XWand for EMEA region*

# Our Key Principles



- **taxonomy-agnostic** – independence from taxonomy architecture (e.g. 100% compliance with EBA, EIOPA taxonomies)
- **flexibility** – fully controllable process flow through extensive set of configuration parameters
- **integration** – quick bolt-on to current disclosure systems
- **automation** – easy run-schedule implementation on a workstation from command line or on a server

# XBRL Custom Components cont'd

## Overview



Name of the component	Technology	Main Features description	Demo Version Availability
<b>TABLE2XBRL XBRL2TL</b>	CLI (Java) API (Java)	<b>Converts</b> tabular data (described by table ID and X-, Y-, Z- axis coordinates) to XBRL instance document. The .csv file can serve as an intermediate data format for data extracting from a database. An option for conversion XBRL-to-CSV is also supported (XBRL2TL).	Available for Tests
<b>Table-to-XBRL Wrapper.NET</b>	API (.NET)	Same functionality which offers TABLE2XBRL XBRL2TL – the only difference support for .NET	Available for Tests
<b>DWH2XBRL</b>	CLI (Java) API (Java)	<b>Converts</b> tabular data (described by table ID and dim. coordinates) to XBRL instance document and vice versa. The .csv file can serve as an intermediate data format for data extracting from a database.	Available for Tests
<b>StagingDB</b>	CLI (Java)	<b>Extracts</b> XBRL data from instance document and inserts them into intermediate DB (predefined structure)	Not available yet for tests
<b>XBRL-DWH-Jap</b>	CLI (Java)	<b>Generates</b> DB schema directly from the taxonomy (columnar table approach) <b>Extracts</b> XBRL data from instance document and inserts them into intermediate DB <b>Generates</b> instance documents directly from the DB	Prototype Not available yet
<b>WebServiceXBRL2 DB</b>	API (Java)	<b>custom solution development services offered by FQS Poland</b> to enable the extraction of data from an XBRL instance and insertion it to a relational database.	N/A

Notice: All the above components are offered for an extra fee as Add-ins to XWand API, XWand Runtime is required as an execution environment

# DB-related components and services

StagingDB

Table2XBRL  
XBRL2TL

DWH2XBRL

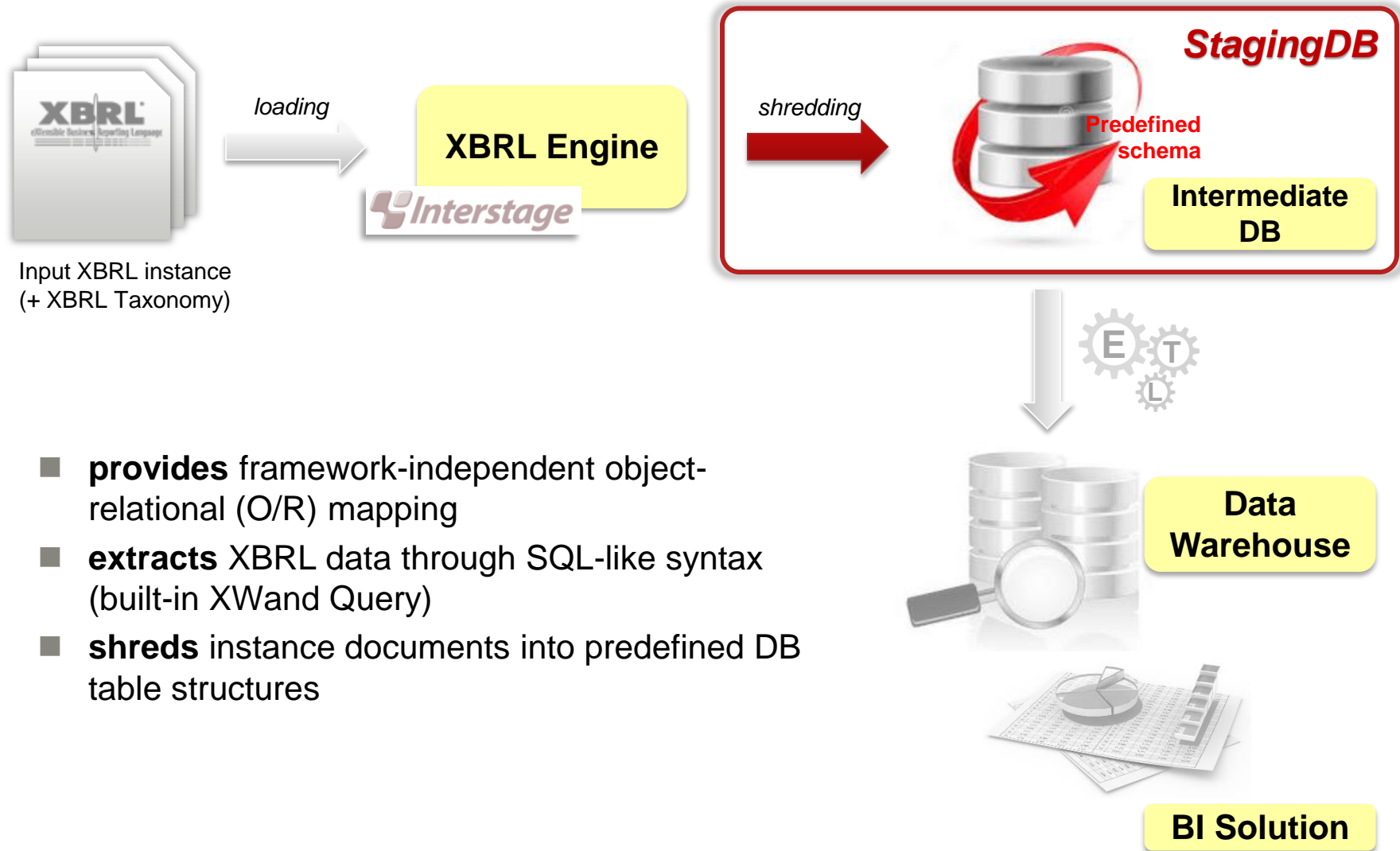


WebService  
XBRL2DB



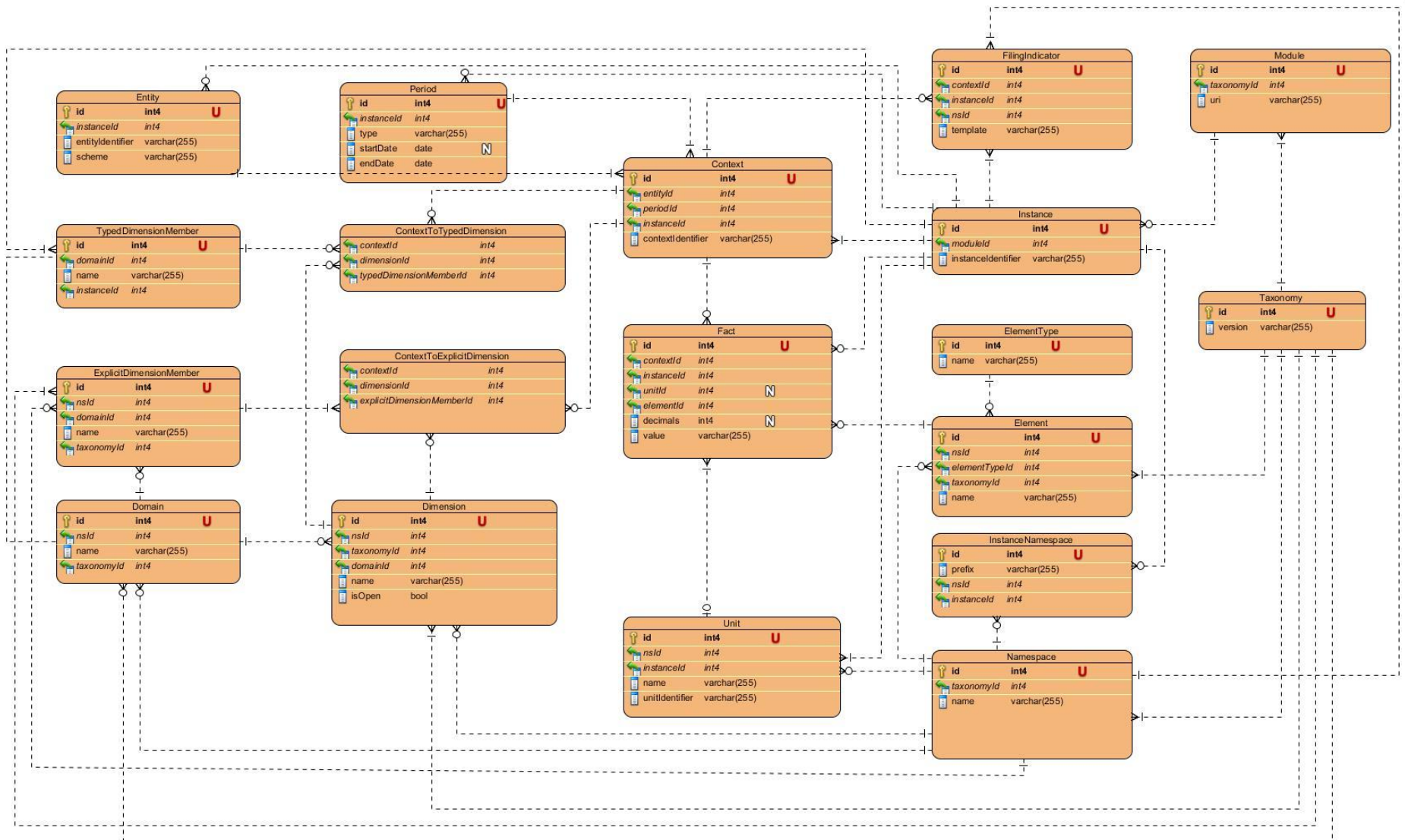
# StagingDB

## Description

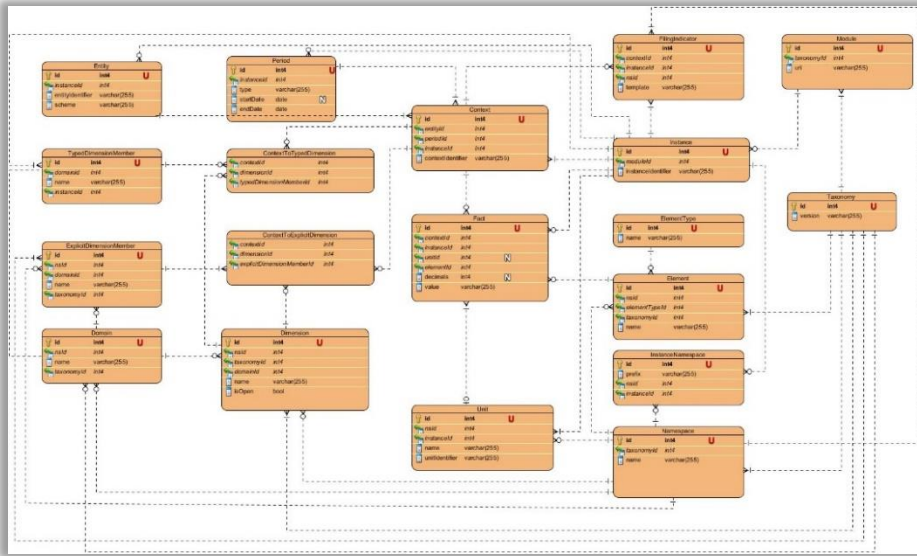


# StagingDB

## DB schema



## Characteristics of DB schema



- instance document-oriented approach
- stores only crucial information from the point of view of analytics
  - definitions of datapoints (concept + combinations of dimensions members)
  - no information about table structures and template layouts (table linkbase)
  - no information about business rules implemented in the taxonomy (formula linkbase)
  - no information about XBRL taxonomy artefacts apart from those that are required for analytics

# TABLE2XBRL

## Description



### Main feature description

**TABLE2XBRL** together with additional utilities (**XBRL2TL**, **TEMPLATOR**) provide a straightforward interface for **conversion** between **database** stored data and the **XBRL format**. Data dumped from a database to a CSV file can be converted, with the use of the component, into an XBRL instance.

**XBRL2TL** utility converts an XBRL document into a CSV file whose data can be then imported into a database. The utilities take the responsibility of transforming tabular data into multidimensional XBRL facts and conversely, transforming multidimensional facts into tabular formats.

### Application scope:

- TABLE2XBRL **converts** a **CSV** file with reported data into an XBRL instance
- XBRL2TL **converts multidimensional** data from an XBRL instance back into a CSV file

### Requirements:

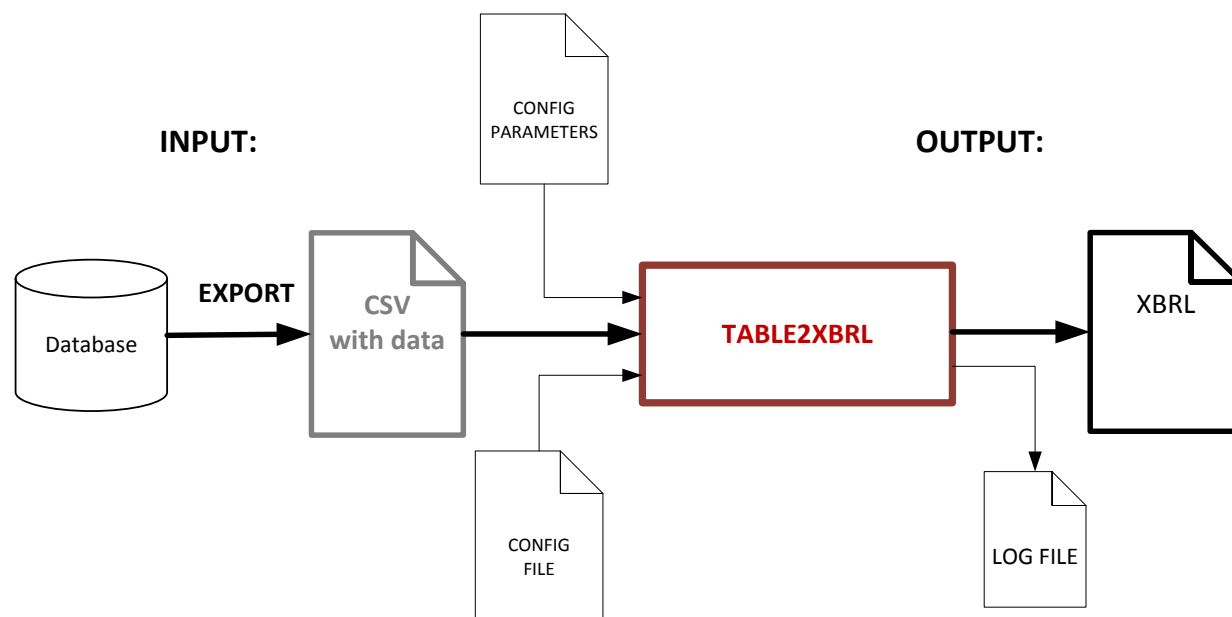
- These utilities only work with taxonomies having the **Table Linkbase layer** compliant with Eurofiling Architecture principles
- Every table's cell in the taxonomy **must be** annotated with a unique combination of the so-called **technical labels** (**RC-code**).

### Other considerations:

- **TABLE2XBRL API** is available and can be integrated in any customer's custom system
- **Set of configuration parameters** provides control over the conversion process e.g. even if a CSV file contains data for all tables referenced by an entry point, only data for a selected list of tables will be converted.

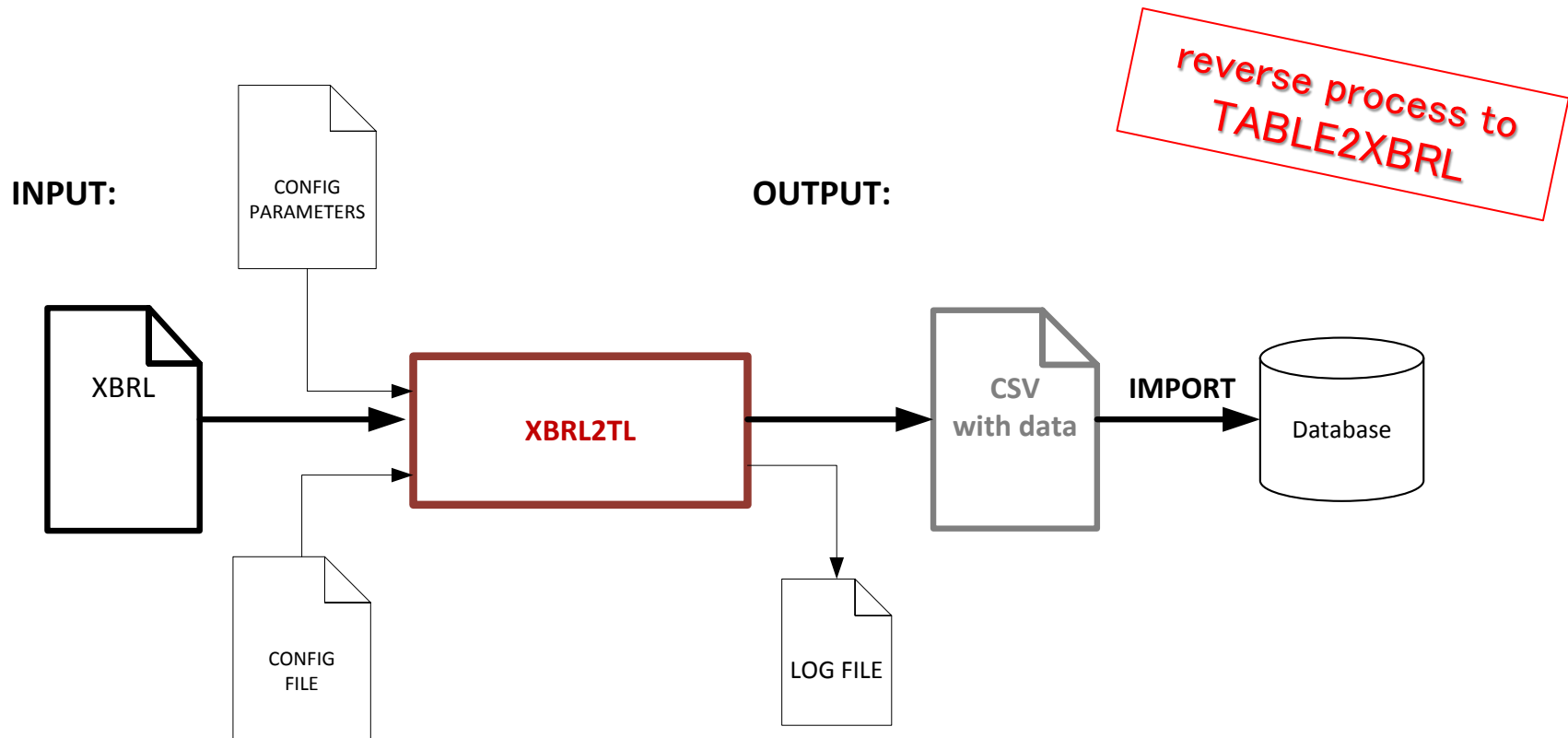
# TABLE2XBRL

## Processing workflow



- **CSV** serves as an **intermediary format** between DB and XBRL instance
- straightforward conversion process into XBRL
- **no complex** XBRL technology **implementation** needed
- **integrate** Table2XBRL with **current DBMS** to enable XBRL-based filing process
- **low-cost** of maintenance in case of taxonomy updates

## Processing workflow



# TABLE2XBRL & XBRL2TL

## Input/Output



### CSV notation

output file identifies XBRL facts by their **RC-codes** in the taxonomy template (**s**heet, **r**ow code, **c**olumn code, **z**-axis coord., **v**alue, **p**recision)

```
1 F 00.01;;010;010;eba_AS;x1;
2 F 00.01;;020;010;eba_SC;x7;
3 F 02.00;;020;010;31038.224;3
4 F 02.00;;090;010;1002;0
5 F 02.00;;100;010;2002;0
6 F 02.00;;120;010;2102;0
7 F 02.00;;130;010;4002;0
8 F 02.00;;140;010;4102;0
9 F 16.01.a;;250;020;4002;0
10 F 16.01.a;;260;020;4102;0
11 F 16.01.b;;270;020;1002;0
12 F 20.04;eba_RCP:eba_EE;140;010;10020.4;1
13 F 20.04;eba_RCP:eba_EE;150;010;20020.4;1
14 F 20.04;eba_RCP:eba_EE;160;010;30020.4;1
15 F 20.04;eba_RCP:eba_EE;170;010;40020.4;1
16 F 20.04;eba_RCP:eba_EE;180;010;50020.4;1
17 F 20.04;eba_RCP:eba_EE;190;010;60020.4;1
18 F 20.05.b;eba_RCP:eba_CZ;010;030;590020.05;2
19 F 20.05.b;eba_RCP:eba_CZ;020;030;690020.05;2
20 F 20.05.b;eba_RCP:eba_CZ;030;030;6010.7278;4
21 F 20.05.b;eba_RCP:eba_JP;010;030;800020.05;2
22 F 20.05.b;eba_RCP:eba_JP;020;030;900020.05;2
23 F 20.05.b;eba_RCP:eba_JP;030;030;4020.05;2
24 F 40.01;;1;050;1040.01;2
25 F 40.01;;1;060;140.01;2
26 F 40.01;;1;070;4040.01;2
27 F 40.01;;2;050;2040.01;2
28 F 40.01;;2;060;240.01;2
29 F 40.01;;2;070;5040.01;2
30 F 40.01;;3;050;3040.01;2
31 F 40.01;;3;060;340.01;2
32 F 40.01;;3;070;6040.01;2
```

Input

Table2XBRL

```
(...)  
<xbrli:context id="cfiling_indicators">  
  <xbrli:entity><xbrli:identifier scheme="http://standards.iso.org/iso/17442:2012"  
  <xbrli:period><xbrli:instant>2014-02-17</xbrli:instant></xbrli:period>  
</xbrli:context>  
<xbrli:unit id="EUR" base="http://standards.iso.org/iso/17442:2012" unitRef="EUR"/>  
<eba_met:ei4 contextRef="c0" eba_SC:x7</eba_met:ei4>  
<eba_met:ei207 contextRef="c0" eba_SC:x7</eba_met:ei207>  
<eba_met:md103 contextRef="c1" decimals="3" unitRef="EUR">31038.224</eba_met:md103>  
<eba_met:md103 contextRef="c2" decimals="0" unitRef="EUR">1002.0</eba_met:md103>  
<eba_met:md103 contextRef="c3" decimals="0" unitRef="EUR">2002.0</eba_met:md103>  
<eba_met:md103 contextRef="c4" decimals="0" unitRef="EUR">2102.0</eba_met:md103>  
<eba_met:md103 contextRef="c5" decimals="0" unitRef="EUR">4002.0</eba_met:md103>  
<eba_met:md103 contextRef="c6" decimals="0" unitRef="EUR">4102.0</eba_met:md103>  
<eba_met:md103 contextRef="c5" decimals="0" unitRef="EUR">4002.0</eba_met:md103>  
<eba_met:md103 contextRef="c6" decimals="0" unitRef="EUR">4102.0</eba_met:md103>  
<eba_met:md103 contextRef="c2" decimals="0" unitRef="EUR">1002.0</eba_met:md103>  
<eba_met:mi53 contextRef="c7" decimals="1" unitRef="EUR">10020.4</eba_met:mi53>  
<eba_met:mi53 contextRef="c8" decimals="1" unitRef="EUR">20020.4</eba_met:mi53>  
<eba_met:mi53 contextRef="c9" decimals="1" unitRef="EUR">30020.4</eba_met:mi53>  
<eba_met:mi53 contextRef="c10" decimals="1" unitRef="EUR">40020.4</eba_met:mi53>  
<eba_met:mi53 contextRef="c11" decimals="1" unitRef="EUR">50020.4</eba_met:mi53>  
<eba_met:mi53 contextRef="c12" decimals="1" unitRef="EUR">60020.4</eba_met:mi53>  
<eba_met:mi53 contextRef="c13" decimals="2" unitRef="EUR">590020.05</eba_met:mi53>  
<eba_met:mi53 contextRef="c14" decimals="2" unitRef="EUR">690020.05</eba_met:mi53>  
<eba_met:mi53 contextRef="c15" decimals="4" unitRef="EUR">6010.7278</eba_met:mi53>  
<eba_met:mi53 contextRef="c16" decimals="2" unitRef="EUR">800020.05</eba_met:mi53>  
<eba_met:mi53 contextRef="c17" decimals="2" unitRef="EUR">900020.05</eba_met:mi53>  
<eba_met:mi53 contextRef="c18" decimals="2" unitRef="EUR">4020.05</eba_met:mi53>  
<eba_met:mi170 contextRef="c19" decimals="2" unitRef="EUR">1040.01</eba_met:mi170>  
<eba_met:mi53 contextRef="c20" decimals="2" unitRef="EUR">140.01</eba_met:mi53>
```

Output

Output

XBRL2TL

Input

# TABLE2XBRL & XBRL2TL Logs



## Screenshots – Processing log

```
1 11:51:51,181 INFO - Table2XBRL 1.0 (Powered by FUJITSU Interstage XWand)
2 11:51:51,191 INFO - Loading configuration file - configs\finrep_con_ifrs_01_2_2004_2005_4001.properties
3 11:51:51,209 INFO - Extracting data from user input file - ..\finrep_con_ifrs_01_2_2004_2005_4001.csv
4 11:51:51,223 INFO - Preparing environment...
5 11:52:30,278 INFO - Filling instance...
6 [====] 5% [=====]
7 [=====] 15% [=====]
8 [=====] 25% [=====]
9 [=====] 35% [=====]
10 [=====] 45% [=====]
11 [=====] 55% [=====]
12 [=====] 65% [=====]
13 [=====] 75% [=====]
14 [=====] 100% [=====]
15 11:52:30,885 INFO - Adding Filing Indicators...
16 11:52:30,887 INFO - INSTANCE FILLING RESULT:
17 11:52:30,887 INFO - Elements in CSV: 32
18 11:52:30,887 INFO - Successfully inserted: 32
19 11:52:30,887 INFO - Not inserted: 0
20 11:52:30,887 INFO - Incorrect elements: 0
21 11:52:30,887 INFO - Others: 0
22 11:52:30,887 INFO -
23 11:52:30,888 INFO - Analyzing generated instance before it is saved...
24 11:52:30,935 INFO - Saved instance is correct. (output\xbrl\finrep_con_ifrs_01_2_2004_2005_4001.xbrl)
25 11:52:30,935 INFO - Application has finished its work.
```

### Table2XBRL

- user-friendly log output
- each conversion step is **tracked** and **documented** in the output
- **summary** statistics available

### XBRL2TL

```
1 11:40:35,073 INFO - XBRL2TL 0.9 (Powered by FUJITSU Interstage XWand)
2 11:40:35,079 INFO - Preparing environment...
3 11:40:36,101 DEBUG - Loading taxonomy set...
4 11:41:00,708 DEBUG - Creating dimensional taxonomy set...
5 11:41:01,403 INFO - Converting XBRL to TLCell collection...
6 11:41:06,282 INFO - Converting from TLCell collection to CSV file...
7 11:41:06,287 INFO - Application has finished its work.
```

# DWH2XBRL

## Description



### Main feature description

**DWH2XBRL** provide a straightforward interface for **conversion** between **database** stored data and the **XBRL format**. Data dumped from a database to a CSV file can be converted, with the use of the component, into an XBRL instance.

**DWH2XBRL** utility converts an XBRL document into a CSV file whose data can be then imported into a database. The utilities take the responsibility of transforming tabular data into multidimensional XBRL facts and conversely, transforming multidimensional facts into tabular formats.

#### Application scope:

- **DWH2XBRL converts** a **CSV** file with reported data into an XBRL instance and vice versa

#### Requirements:

- These utilities only work with taxonomies having the **Table Linkbase layer** compliant with Eurofiling Architecture principles
- No **technical labels (RC-codes)** required

#### Other considerations:

- **DWH2XBRL API** is available and can be integrated in any customer's custom system
- **Set of configuration parameters** provides control over the conversion process e.g. even if a CSV file contains data for all tables referenced by an entry point, only data for a selected list of tables will be converted.

# DWH2XBRL

## Input/Output



### CSV notation

output file identifies XBRL facts by their **coordinates** in the taxonomy (**sheet**, **x-axis coord.**, **y-axis coord.**, **z-axis coord.**, **value**, **precision**)

Table;Dim;Metric;Value;Decimals  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi180;70010.0;3  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi253;70011.0;3  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi119;70012.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x22 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi96;70013.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x13 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi94;70014.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x19 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi97;70016.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x10 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi197;70016.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x10 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi187;70016.0;3  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi101;700110.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x6 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi90;700111.0;3  
C 07.00.a (CR SA) eba\_dim:CRM=eba\_CP:x6 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi102;700112.0;3  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi132;700113.0;3  
C 07.00.a (CR SA) eba\_dim:CF=eba\_PC:x1 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi132;700114.0;3  
C 07.00.a (CR SA) eba\_dim:CF=eba\_PC:x8 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi132;700115.0;3  
C 07.00.a (CR SA) eba\_dim:CF=eba\_PC:x10 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi132;700116.0;3  
C 07.00.a (CR SA) eba\_dim:CF=eba\_PC:x14 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi125;700118.0;3  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi130;700119.0;3  
C 07.00.a (CR SA) eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi130;700120.0;3  
C 07.00.a (CR SA) eba\_dim:EXT=eba\_TR:x7 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi310;700121.0;3  
C 07.00.a (CR SA) eba\_dim:EXT=eba\_TR:x7 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi118;70012.0;3  
C 07.00.a (CR SA) eba\_dim:CP2=eba\_CT:x23 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi180;70020.0;3  
C 07.00.a (CR SA) eba\_dim:CP2=eba\_CT:x23 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi253;70021.0;3  
C 07.00.a (CR SA) eba\_dim:CP2=eba\_CT:x23 eba\_dim:MCY=eba\_MC:x195 eba\_dim:PRP=eba\_PL:x10 eba\_dim:TRI=eba\_TR:x4 eba\_met:mi119;70022.0;3

Input

DWH2XBRL

(...)  
<xbrli:context id="cfiling\_indicators">  
...  
<xbrli:entity><xbrli:identifier scheme="http://standards.iso.org/iso/17442:2012"  
<xbrli:period><xbrli:instant>2014-02-17</xbrli:instant></xbrli:period>  
</xbrli:context>  
<xbrli:unit id="EUR" base="http://standards.iso.org/iso/17442:2012#iso4217:EUR</xbrli:measure></xbrli:unit>  
<eba\_met:ei4 contextRef="c0" decimals="0" unitRef="EUR">4102.0</eba\_met:ei4>  
<eba\_met:ei207 contextRef="c0" decimals="0" unitRef="EUR">4102.0</eba\_met:ei207>  
<eba\_met:md103 contextRef="c1" decimals="3" unitRef="EUR">31038.224</eba\_met:md103>  
<eba\_met:md103 contextRef="c2" decimals="0" unitRef="EUR">1002.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c3" decimals="0" unitRef="EUR">2002.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c4" decimals="0" unitRef="EUR">2102.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c5" decimals="0" unitRef="EUR">4002.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c6" decimals="0" unitRef="EUR">4102.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c5" decimals="0" unitRef="EUR">4002.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c6" decimals="0" unitRef="EUR">4102.0</eba\_met:md103>  
<eba\_met:md103 contextRef="c2" decimals="0" unitRef="EUR">1002.0</eba\_met:md103>  
<eba\_met:mi53 contextRef="c7" decimals="1" unitRef="EUR">10020.4</eba\_met:mi53>  
<eba\_met:mi53 contextRef="c8" decimals="1" unitRef="EUR">20020.4</eba\_met:mi53>  
<eba\_met:mi53 contextRef="c9" decimals="1" unitRef="EUR">30020.4</eba\_met:mi53>  
<eba\_met:mi53 contextRef="c10" decimals="1" unitRef="EUR">40020.4</eba\_met:mi53>  
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<eba\_met:mi53 contextRef="c20" decimals="2" unitRef="EUR">140.01</eba\_met:mi53>

Output

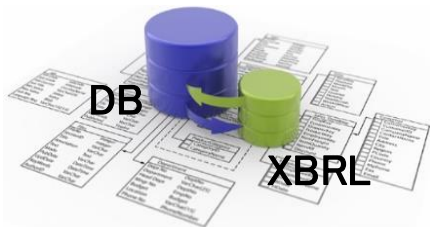
Output

DWH2XBRL

Input

# DB Custom Components

## Pros and cons



Component name	Key functionality	Pros	Cons
StagingDB	<b>provides</b> intermediate database for storage of XBRL data <b>shreds</b> XBRL data into pre-defined DB structures	<ul style="list-style-type: none"><li>- relational model of XBRL taxonomy and instance is built into the Interstage XWand engine</li><li>- integrable with any DBMS (currently PostgreSQL)</li></ul>	<ul style="list-style-type: none"><li>- conversion to desired DB format must be custom developed</li></ul>
Table2XBRL XBRL2TL	<b>converts</b> XBRL-to-CSV and CSV-to-XBRL using visual X/Y/Z coordinates of table cells ( <b>RC-codes</b> )	<ul style="list-style-type: none"><li>- easier for ETL mapping from DWH</li><li>- flexible and independent from DB implementation</li></ul>	<ul style="list-style-type: none"><li>- requirement to keep coordinates consistent in subsequent taxonomy versions</li></ul>
DWH2XBRL	<b>converts</b> XBRL-to-CSV and CSV-to-XBRL using <b>dimensional specification of each data point (dim.coordinates)</b>	<ul style="list-style-type: none"><li>- simplicity of data format</li><li>- low-cost of maintenance in case of taxonomy updates</li><li>- flexible and independent from DB implementation</li></ul>	<ul style="list-style-type: none"><li>- more demanding ETL mapping process</li></ul>

- wide array of services offered by FQS Poland
  - support in definition of project requirements and specifications
  - DB schema design advisory services
  - development of custom XBRL<->DB conversion components based on XWand API
  - integration of the above-mentioned component with the client-specified WebService technology
  - implementation in SOA environment

# XBRL-DWH-Jap: Early Prototype

## Description



XBRL Taxonomy



loading

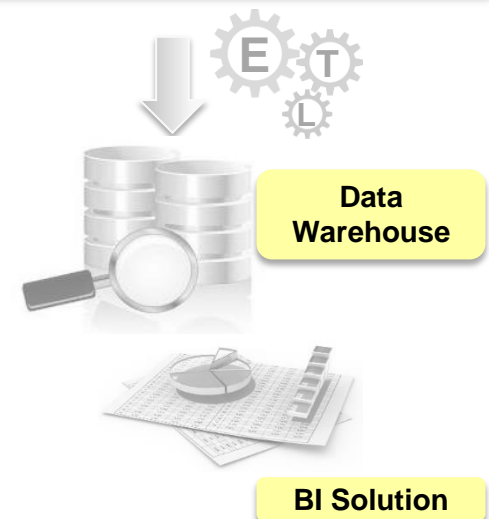
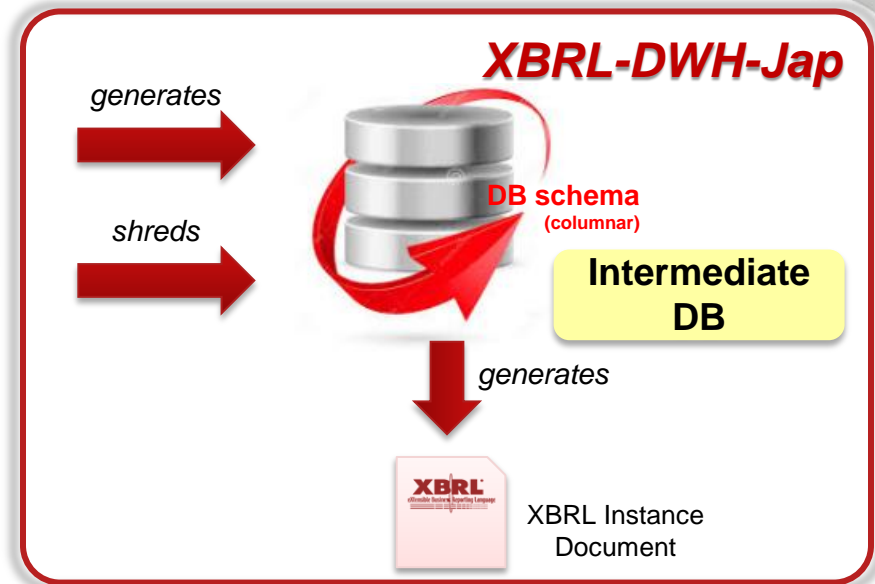
XBRL Engine



loading

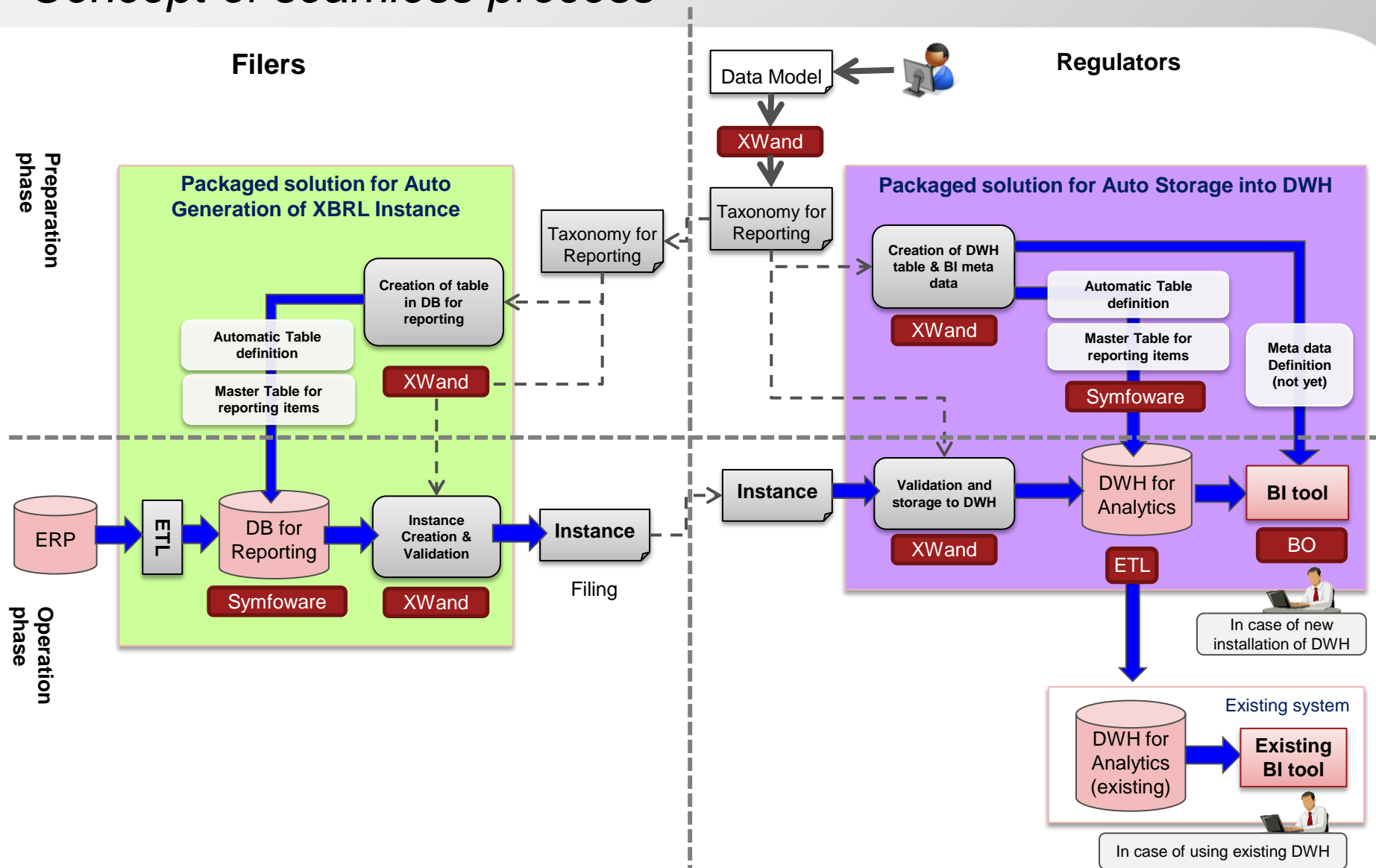
XBRL Instance Documents

- **provides** framework-independent object-relational (O/R) mapping
- **extracts** XBRL data through SQL-like syntax (built-in Xwand Query)
- **generates** columnar DB-table structures from any taxonomy
- **shreds** instance documents into **columnar** DB table structures
- **generates** instance documents directly from DB



# XBRL-DWH-Jap: Filers and Regulators

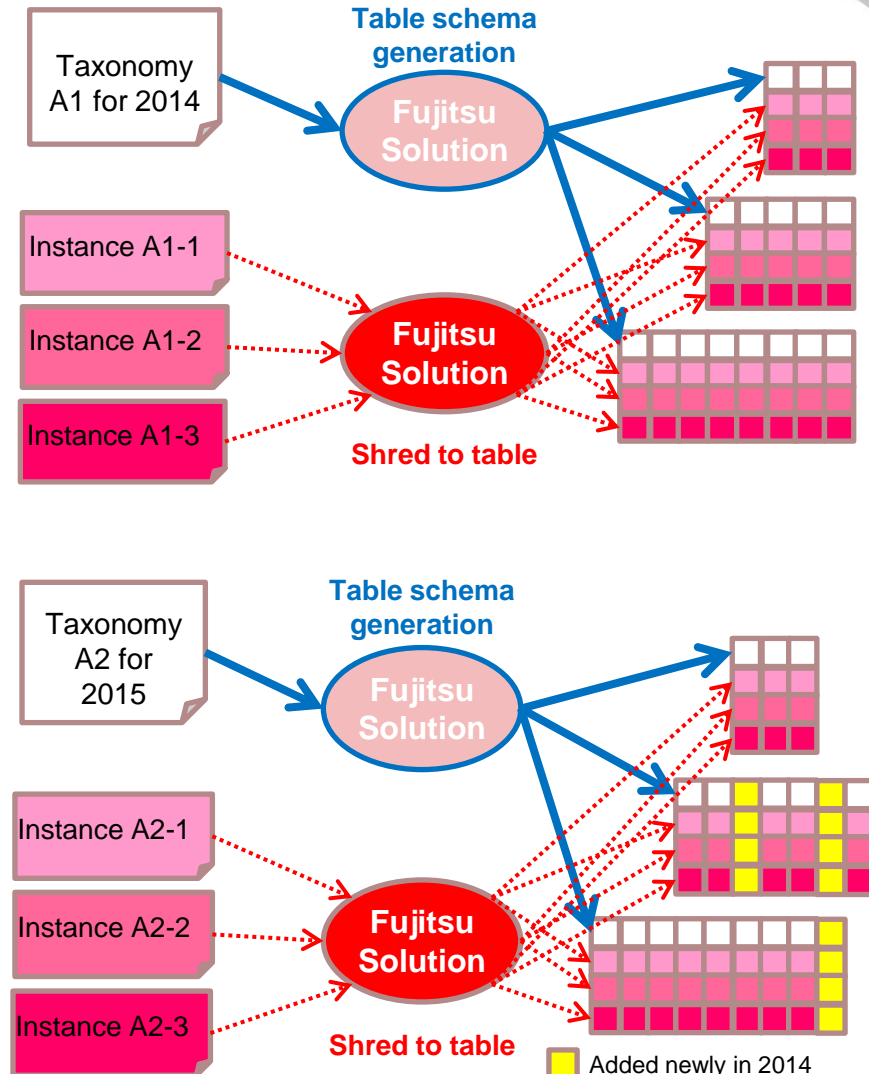
*Concept of seamless process*



# XBRL-DWH-Jap

## *Shredding of Instance Data*

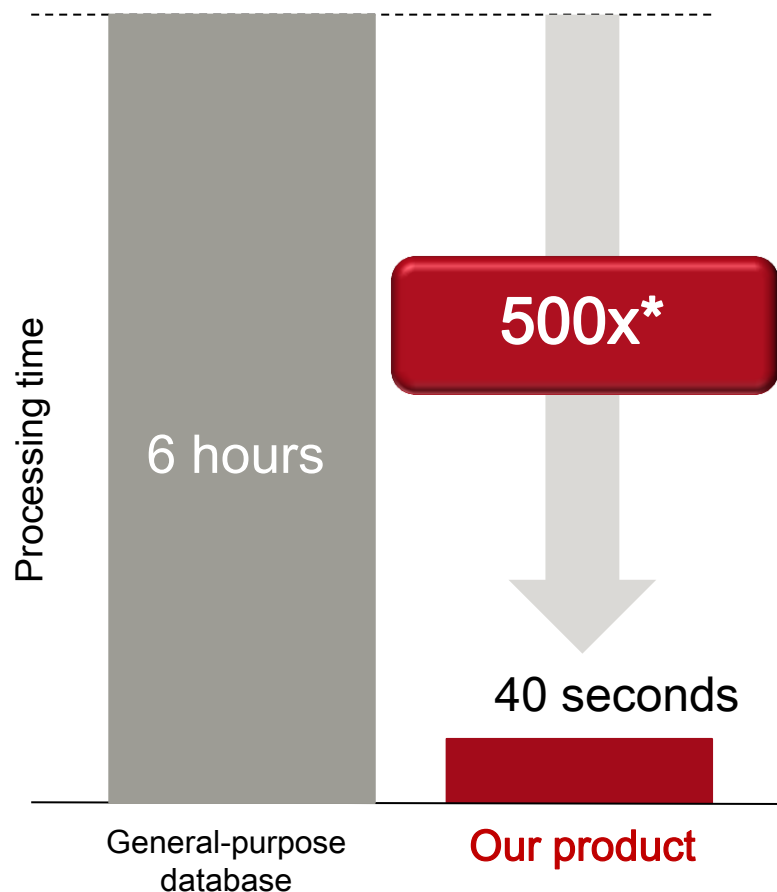
- shred instance data to DWH even if Taxonomies are modified.
- versioning approach – one DB schema per version of the taxonomy
- columnar tables – faster queries – up to 500x



# High-Speed Processing of Large Data Volumes

Data analysis performance 500 times better  
than a general-purpose database

[Example: Aggregating 600 million data items]



## (1) Column store: 50x

- ✓ Stores data in separate columns
- ✓ Reduces I/O by reading only required data

×

## (2) Aggregating compressed data: 10x

- ✓ High data compression suited to item attributes
- ✓ Reduces processing time by aggregating compressed data

# Benefits

*(comparing with current approach)*

## ■ Regulators

### ■ IT staff

- automatic creation of DWH based on the taxonomy
- no additional coding and mapping required
- easier synchronization of meta data and taxonomy definition
- less tasks and efforts at the modification of taxonomy and reflection to DWH (low cost of maintenance)
- less time spent on studying intricate details of XBRL technology and API for XBRL software.

### ■ Business staff

- less effort required to keep integrity between taxonomy and DWH

## ■ Filers

### ■ IT staff

- DB for reporting can be created automatically based on given taxonomy from regulator.
- less time spent on studying intricate details of XBRL technology and API for XBRL software.
- mapping definition between Taxonomy and DB tables for reporting is created automatically.
- generic solution that creates DWH based on any XBRL valid taxonomy

### ■ Business staff

- they can check the mapping between taxonomy and their ERP just using ETL tool without any knowledge on XBRL (function of internal control to check and test quality of mapping – industrial process)

# XBRL Taxonomy-related services

**Quality Review**

**Taxonomy  
Development**

**Taxonomy  
Extension  
Development**



**Business Rules  
Development**

**Training and  
Advisory**

# XBRL Taxonomy-related services

## Overview



- taxonomy development services
- taxonomy extension development services  
(incl. EBA, EIOPA, and IFRS)
- custom business rules development services  
(on Formula Linkbase) for existing taxonomies
- training, consulting and advisory services:
  - XBRL technology
  - IFRS Style Guide and DataPoints Modeling (DPM) methodology
  - + client-specific
- taxonomy quality review services

# For more information please contact



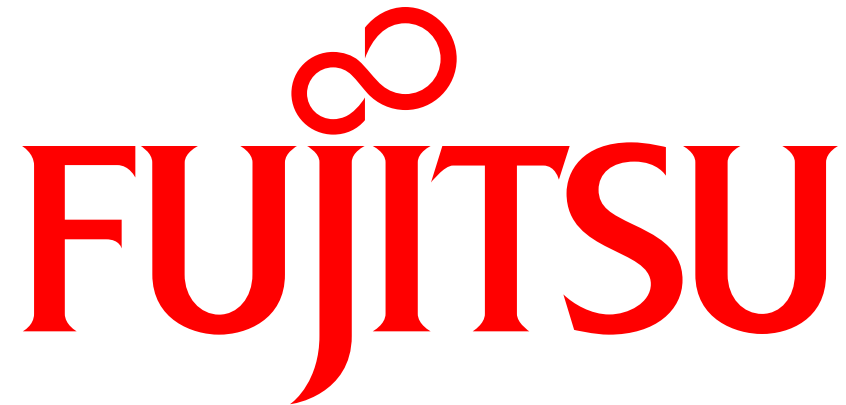
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