

data amplified™

PARIS 2017

THE FUTURE OF BUSINESS REPORTING

XBRL, CSV & JSON

Paul Warren

Technical Director
XBRL International



Overview

- OIM – what it is, why we're doing it, where we are with it
- XBRL-JSON
- XBRL-CSV

How XML is viewed today

"I'm hoping this will make our unavoidable XML interactions slightly less painful."

- author of xmlpath for Go, in the public announcement of the library

XBRL & XML

< XBRL is wedded to a technology
that the average techie doesn't like / >

JSON

{ People who want to work with data
quickly want their data in JSON }

CSV

"efficiency" , "simplicity" , "ubiquity"

CSV is still everywhere, and for bulk data transfer, has many benefits

SQL (and NoSQL)

For querying, you want your data in a database

The first problem...

The problem is not that we're wedded to XML, it's that we're wedded to any particular syntax:

XBRL 2.1 fails to separate syntax from semantics, impairing transformation to different formats

The second problem...

- XBRL has evolved significantly since 2003 with additional modules (Dimensions, Table Linkbase, etc)
- New modules have made some older features redundant
- Some of the most complex parts of XBRL v2.1 are the least used.

It's time to simplify

The solution

Open Information Model

OIM: the story so far

- Working Group formed in 2015
- Goals:
 - Identify a simplified subset of XBRL to support
 - Define and document a syntax-independent model for XBRL
- Deliverables
 - The model itself
 - Mapping from XBRL v2.1 ("xBRL-XML") to OIM
 - Definition and mapping of JSON and CSV representations

OIM: the story so far

- **OIM Report Model** – Candidate Recommendation
- **xBRL-JSON** – Candidate Recommendation
- **xBRL-CSV** – Public Working Draft

data 
amplified™

PARIS 2017

THE FUTURE OF BUSINESS REPORTING

OIM Report Model



OIM Model: Key Features

- The **Assumptions** – "the simplified subset"
 - Dimensions must be segment **OR** scenario
 - No complex typed dimensions
 - No other XML content in segment/scenario
- Little used, complex features, often inextricably tied to XML syntax

OIM Model: Key Features

- The **Aspect Model**

Unifies "built in dimensions" (concept, period, unit) with "taxonomy-defined dimensions"

```
{  
  "xbrl:concept": "ifrs:Revenue",  
  "xbrl:periodStart": "2017-01-01T00:00:00",  
  "xbrl:periodEnd": "2018-01-01T00:00:00",  
  "xbrl:unit": "iso4217:EUR",  
  "ifrs:Segment": "myco:HardwareProducts"  
}
```

data amplified™

PARIS 2017

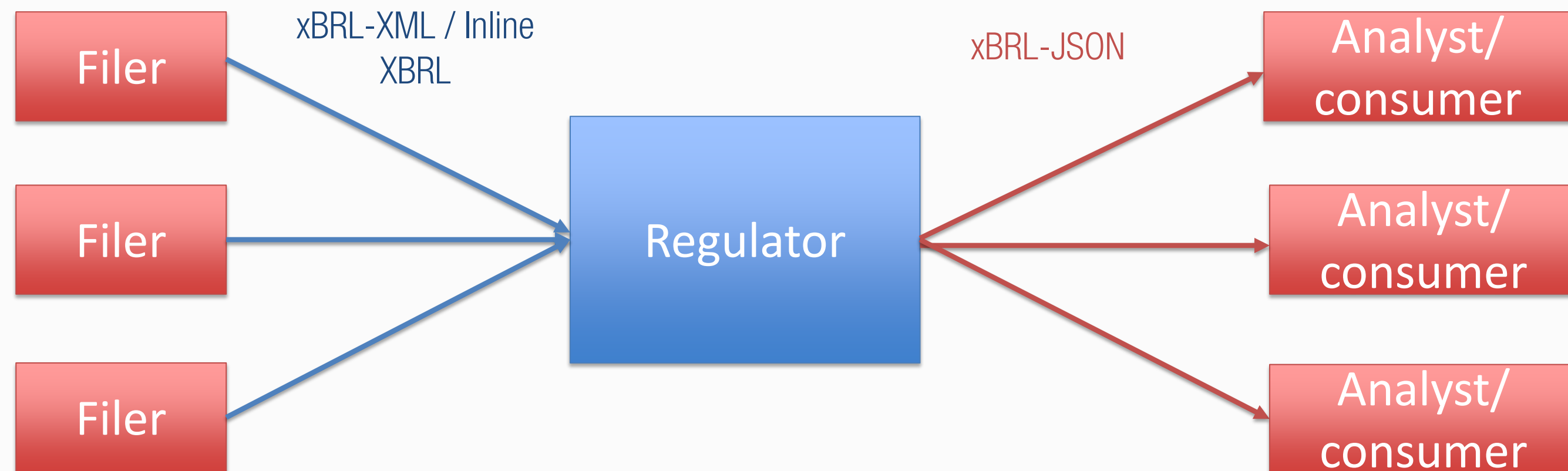
THE FUTURE OF BUSINESS REPORTING

xBRL-JSON



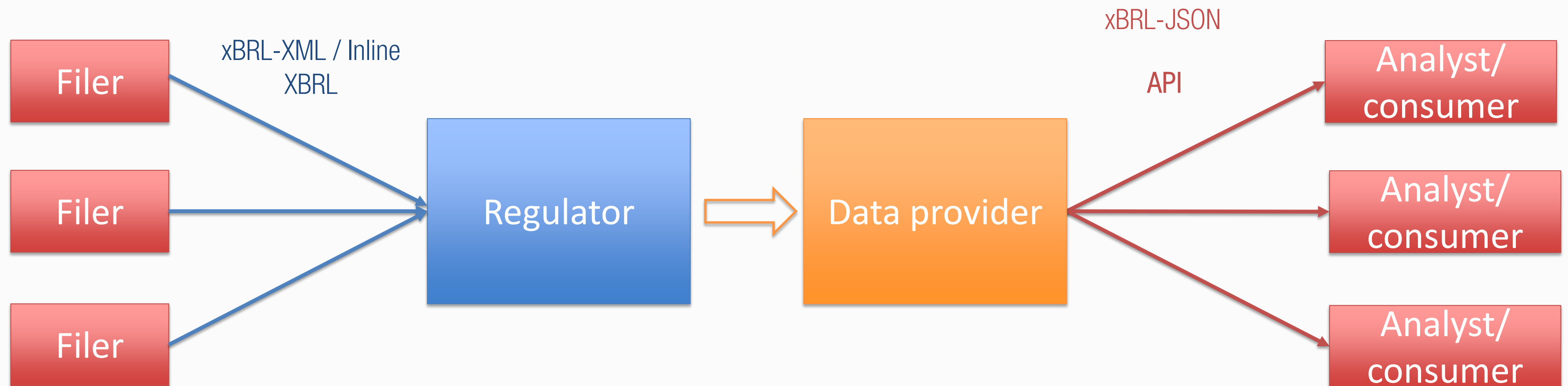
xBRL-JSON

- Make XBRL easy to consume
- Aimed at publishing collected XBRL data
- The strong validation of XML still makes sense for data collection, particularly where Inline XBRL is used



xBRL-JSON

- Make XBRL easy to consume
- Aimed at publishing collected XBRL data
- The strong validation of XML still makes sense for data collection, particularly where Inline XBRL is used



xBRL-JSON

- Make XBRL data more “developer-friendly”
- Syntax continues to be refined
 - Aiming for **good first impression**
- Particularly relevant to providing XBRL data from web APIs
- Development informed by real world usage of XBRL data with JSON
- Aiming for Proposed Recommendation status by end of 2017

```
{  
  "value": "100000000",  
  "accuracy": 2,  
  "aspects": {  
    "xbrl:concept": "ld:LimitGranted",  
    "xbrl:entity": "scheme:01",  
    "xbrl:periodStart": "2008-01-01T00:00:00",  
    "xbrl:periodEnd": "2008-01-01T00:00:00",  
    "xbrl:unit": "iso4217:USD",  
    "ld:Firm": "F50E0CWSQFAUV09Q8Z97"  
  }  
},
```

xBRL-JSON: points of interest

Simplified date representation

Consistency of full date/time beats human readability

("2008-01-01" to "2008-12-31")

```
"xbrl:concept": "ld:LimitGranted",  
"xbrl:entity": "scheme:01",  
"xbrl:periodStart": "2008-01-01T00:00:00",  
"xbrl:periodEnd": "2008-01-01T00:00:00",  
"xbrl:unit": "iso4217:USD",  
"ld:Firm": "F50E0CWSQFAUV09Q8Z97"
```


xBRL-JSON: points of interest

- QNames not "native" to JSON, but very useful
- Considering verbose but standalone options:
 - Clark: `{http://www.xbrl.org/2003/iso4217}USD`
 - JSON-LD: `http://www.xbrl.org/2003/iso4217#USD`

```
"xbrl:periodStart": "2008-01-01T00:00:00",  
"xbrl:periodEnd": "2008-01-01T00:00:00",  
"xbrl:unit": "iso4217:USD",  
"ld:Firm": "F50E0CWSQFAUV09Q8Z97"
```

xBRL-JSON

- Looking to finalise syntax in a Proposed Recommendation by end of 2017
- Now is a good time to experiment with it and provide feedback

data amplified™

PARIS 2017

THE FUTURE OF BUSINESS REPORTING

xBRL-CSV



xBRL-CSV

- CSV is everywhere: embrace it
- Very efficient for large datasets with repeating records
 - Meets need for for **granular data**
 - Aimed at **bulk data collection** and **publication**
- Built on W3C's **Tabular Metadata** initiatives

CSV

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

↓

xBRL-CSV

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

The xBRL-CSV table includes additional metadata: 'Typed Dimension' for the first row, 'Dimension values' for the second row, and 'Concepts' (Fact, Fact, Fact) for the third, fourth, and fifth rows respectively.

CSV: one size does not fit all

- No single format of CSV document would be suitable for all types of XBRL Report
- xBRL-CSV makes it possible to define the layout of CSV files (tables) using JSON metadata

CSV

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

↓

xBRL-CSV

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

The xBRL-CSV table includes additional metadata: 'Typed Dimension' for the first row, 'Dimension values' for the second row, and 'Concepts' (Collateralised) and 'Facts' for the third row.

xBRL-CSV: Loan data example

Consider a simple report consisting of information about loans issued to a number of companies:

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

Let's look at how this would be modelled in XBRL

xBRL-CSV: Loan data example

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	Facts 0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV: Loan data example

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV: Loan data example

Company Typed Dimension	Size	Country	Limit	Percent Collateralised Concepts	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	Facts 0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

Standing data:

Report period start/end
Entity identifier

JSON metadata

- Connection between CSV and XBRL representation is made using a JSON metadata file
- **Hierarchy of metadata** provides information about facts:
 - Report
 - Table (CSV file)
 - Column
 - Row
- Extends **W3C Tabular Metadata** standard

JSON metadata – report level

```
{  
  "http://xbrl.org/YYYY/model#properties": {  
    "xbrl:entity": "scheme:01",  
    "accuracy": 2,  
    "xbrl:unit": "iso4217:USD",  
    "xbrl:periodStart": "2017-05-01T00:00:00",  
    "xbrl:periodEnd": "2017-05-01T00:00:00"  
  }  
  ...  
}
```

Report-level properties provide standing data and defaults for all facts. Can be overridden at table, column or row level

xBRL-CSV: Loan data example

Company Typed Dimension	Size	Country	Limit	Percent Collateralised Concepts	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	Facts 0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV models tables with using different **Column Types**

xBRL-CSV: Loan data example

Numeric simple fact

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

JSON metadata – column definitions

```
{  
  "name": "interest",  
  "datatype": "decimal",  
  "http://xbrl.org/YYYY/model#columnType": "numericSimpleFact",  
  "http://xbrl.org/YYYY/model#properties": {  
    "xbrl:concept": "ld:InterestRateChargedAtInception",  
    "xbrl:unit": "xbrli:pure",  
    "accuracy": 4  
  }  
}
```

JSON metadata – column definitions

```
{  
  "name": "interest",  
  "datatype": "decimal",  
  "http://xbrl.org/YYYY/model#columnType": "numericSimpleFact",  
  "http://xbrl.org/YYYY/model#properties": {  
    "xbrl:concept": "ld:InterestRateChargedAtInception",  
    "xbrl:unit": "xbrli:pure",  
    "accuracy": 4  
  }  
}
```

Column type specifies that each cell in this column produces a **numeric simple fact**

JSON metadata – column definitions

```
{  
  "name": "interest",  
  "datatype": "decimal",  
  "http://xbrl.org/YYYY/model#columnType": "numericSimpleFact",  
  "http://xbrl.org/YYYY/model#properties": {  
    "xbrl:concept": "ld:InterestRateChargedAtInception",  
    "xbrl:unit": "xbrli:pure",  
    "accuracy": 4  
  }  
}
```

Properties defined here are applied to all facts in this column

xBRL-CSV: Loan data example

Numeric simple fact

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV: Loan data example

Numeric simple fact

Numeric simple fact

Numeric simple fact

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV: Loan data example

Simple fact

Simple fact

Numeric simple fact

Numeric simple fact

Numeric simple fact

Simple fact

Simple fact

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV: Loan data example

Property value column

Simple fact

Simple fact

Numeric simple fact

Numeric simple fact

Numeric simple fact

Simple fact

Simple fact

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

xBRL-CSV: Loan data example

Property value column

Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX3D7E7R0M0E5	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

Fact values

Values in first column provide a **dimension value** to facts created by other cells in the same row. This is handled in xBRL-CSV as a “property value column”

JSON Metadata - property value column

```
{  
  "name": "firm",  
  "datatype": "token",  
  "http://xbrl.org/YYYY/model#columnType": "propertyValue",  
  "http://xbrl.org/YYYY/model#columnProperty": "ld:Firm"  
},
```

Definition of first column

JSON Metadata - property value column

```
{  
  "name": "firm",  
  "datatype": "token",  
  "http://xbrl.org/YYYY/model#columnType": "propertyValue",  
  "http://xbrl.org/YYYY/model#columnProperty": "ld:Firm"  
},
```

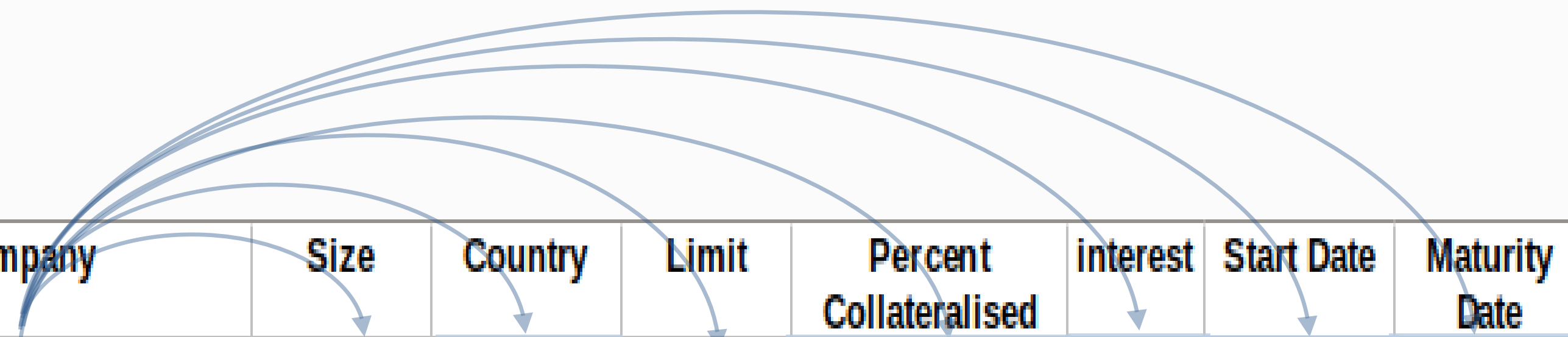
Type of column

JSON Metadata - property value column

```
{  
  "name": "firm",  
  "datatype": "token",  
  "http://xbrl.org/YYYY/model#columnType": "propertyValue",  
  "http://xbrl.org/YYYY/model#columnProperty": "ld:Firm"  
},
```

Name of aspect provided by this property value column (in this case, a typed dimension)

Property value column



Company	Size	Country	Limit	Percent Collateralised	interest	Start Date	Maturity Date
F50EOCWSQFAUVO9Q8Z97	Id:Small	UK	10000000	0.7	0.04	2001-06-01	2020-12-31
AX378AEV345CAME93E45	Id:Medium	US	20000000	0.5	0.02	2010-03-01	2019-12-31
QWEE5SFSYV452DRG3483	Id:Micro	PL	30000000	0.3	0.03	2016-09-01	2017-10-31

loan-data-facts.csv

```
firm,size,country inc,limit,pct collateralized,interest,start,maturity
F50E0CWSQFAUV09Q8Z97,ld:Small,UK,10000000,.70,.040,2001-06-01,2020-12-31
AX378AEV345CAME93E45,ld:Medium,US,20000000,.50,.020,2010-03-01,2019-12-31
QWEE5SFSYV452DRG3483,ld:Micro,PL,30000000,.30,.030,2016-09-01,2017-10-31
```

- Compact representation
- First row is ignored

xBRL-CSV

- Simple, compact format suitable for **bulk** and **granular data**
- JSON metadata provides flexibility of table layout
- Currently at **Public Working Draft**, aiming for **Candidate Recommendation** by December 2017

These samples are available on specifications.xbrl.org
Please review and experiment!

Questions?