



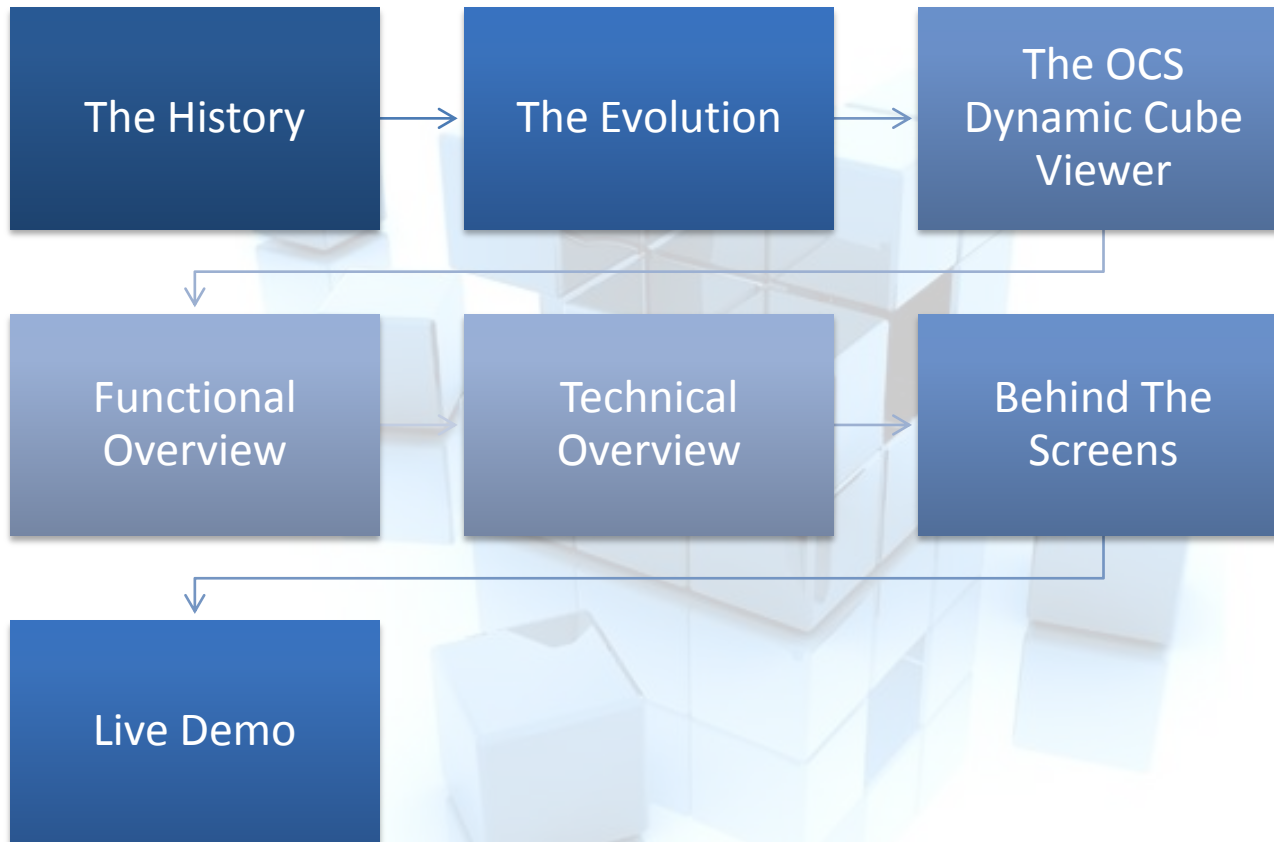
The Dynamic Cube Viewer

OLAP Made Easy



Raymond Ebben, OCS Consulting, the Netherlands

Agenda



► Special thanks to Harro Vos

The History



SAS Web OLAP Viewer - Untitled Data Exploration

File Data View Query Navigator Bookmarks

Query

Selected Items:

- Rows
 - Geography Dimension
- Columns
 - Time Hierarchy
 - Total Actual
- Slicer

Add Remove

Available Items:

- prdsales
 - Total Actual
 - Time Hierarchy
 - Product Hierarchy
 - Geography Dimension

View Data Properties

Month		Dec
		Total Actual
Country	State/Province	
Canada		\$155,964.10
Mexico		\$110,468.70
U.S.A.	California	\$51,997.90
	Colorado	\$55,317.00
	Florida	\$54,794.80
	Illinois	\$272,218.70
	New York	\$52,138.20
	North Carolina	\$47,844.60
	Texas	\$44,770.10
	Washington	\$52,165.60

- Simplify and extend the functionality offered by the SAS® Web OLAP Viewer

The History



► Requirements:

- The application must be **intuitive** and **user friendly**
- For some cubes, certain **combinations** of dimensions are **not allowed**
- The application must allow the users to “**benchmark**” the information they provided **against the derived market total**
- As this is sensitive information, **security and traceability** needs to be implemented

The History



Dimensies	
Tijd [Jaar]	
Tijd [Jaar,maand]	
Product	
Soort verzekering	
Premievorm	

Kolom

Rij

Variabelen:

- ☐ Aantal polissen
- ☐ Verzekerd kapitaal
- ☐ Periodieke premie
- ☐ Premie ineens

Variabelen in:

- ☒ Kolom
- ☐ Rij

Maatschappij: SAS forum demo 1

Weergeven marktgegevens: ☒

Presenteer: Excel

[Maak Tabel](#)

The History



Dimensies		Kolom
Tijd [Jaar]		
Tijd [Jaar, maand]		
Product		
Soort verzekering		
Premievorm		

Rij

Variabelen:

- ☐ Aantal polissen
- ☐ Verzekerd kapitaal
- ☐ Periodieke premie
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Variabelen in:

- ☒ Kolom
- ☐ Rij

Maatschappij:

Weergeven marktgegevens: ☒

Presenteer:

- List of available dimensions

The History



- ▶ Dimensions can be dragged to the row or column
- ▶ Measures can be selected and presented in the row or column

The History



Dimensies		Kolom
Tijd [Jaar]		
Tijd [Jaar, maand]		
Product		
Soort verzekering		
Premievorm		

Rij

Maatschappij:

Weergeven marktgegevens: ☒

Presenteer:

Variabelen:

☐ Aantal polissen

☐ Verzekerd kapitaal

☐ Periodieke premie

☐ Premie ineens

Variabelen in:

☒ Kolom

☐ Rij

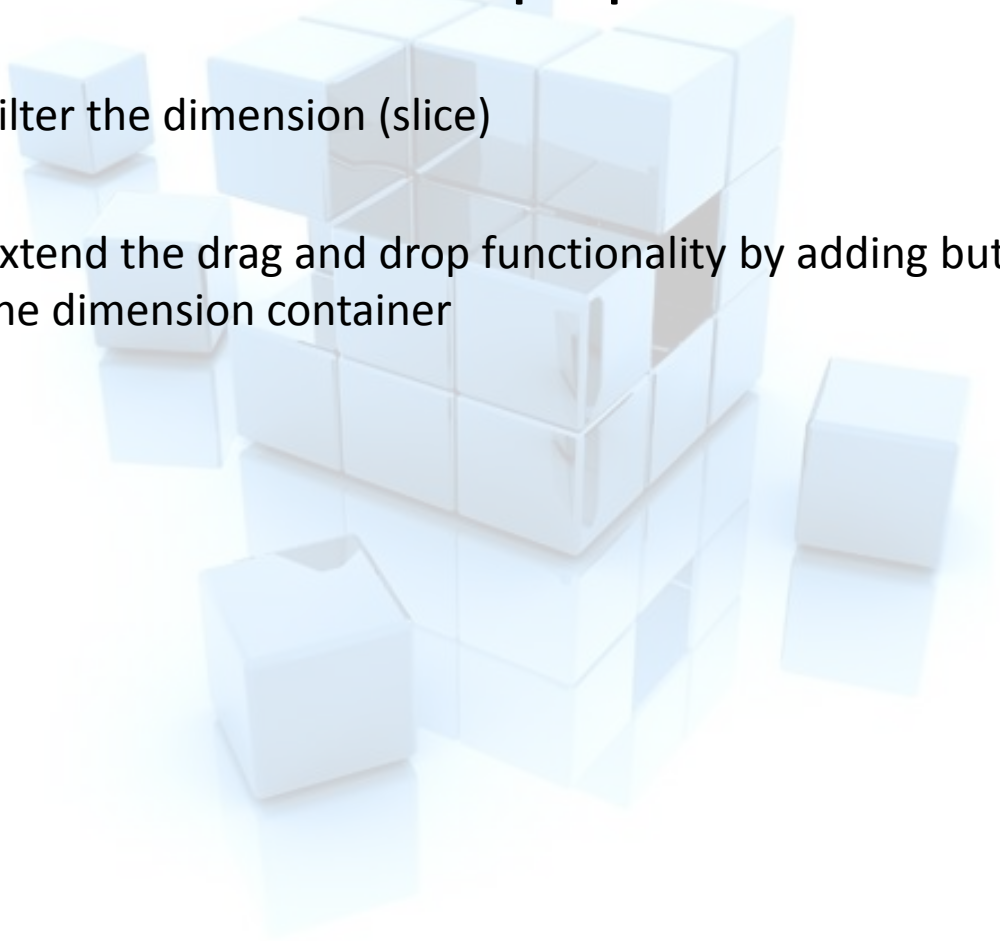
- ▶ Select the company to report on, whether the market total should be displayed and the output format

The Evolution



► Requirements from a user's perspective

- Filter the dimension (slice)
- Extend the drag and drop functionality by adding buttons to the dimension container

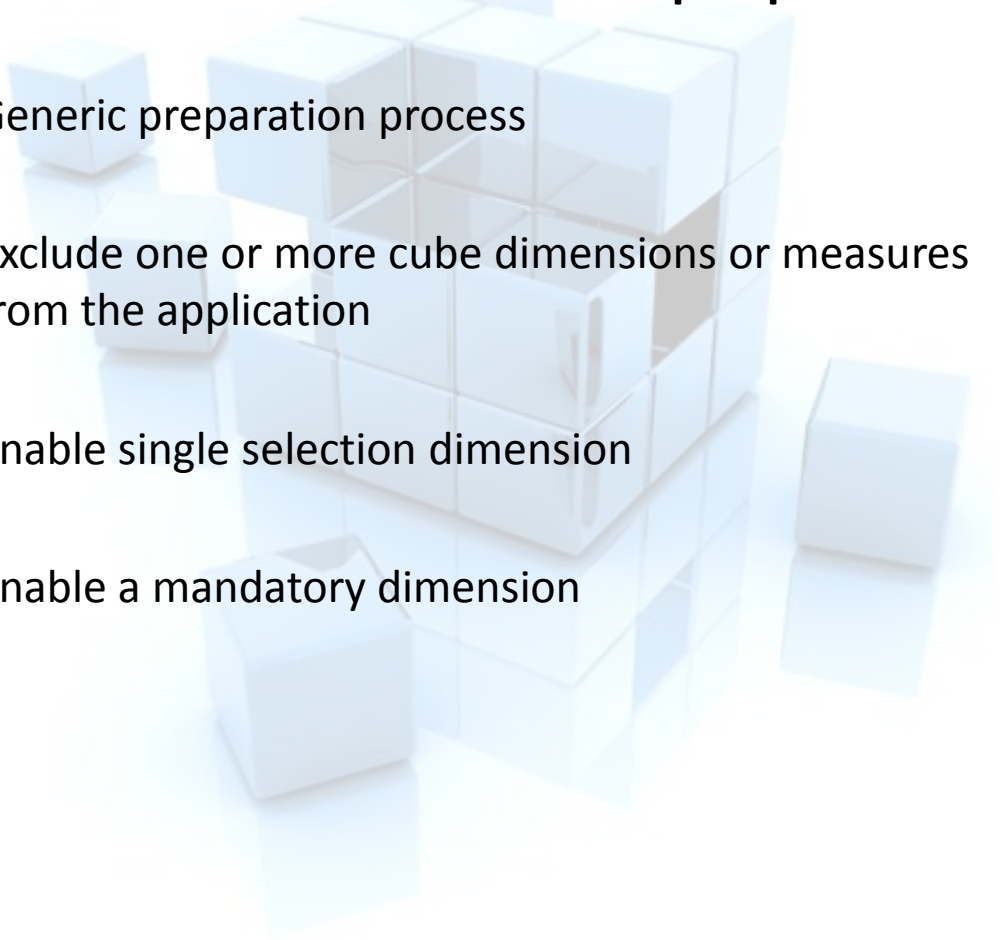


The Evolution



► Requirements from a maintenance perspective

- Generic preparation process
- Exclude one or more cube dimensions or measures from the application
- Enable single selection dimension
- Enable a mandatory dimension



The Evolution



▶ The decision

- ▶ In a 5 year time period several new requirements were received and implemented
- ▶ New and improved web technologies available
 - ▶ Browser functionality
 - ▶ JavaScript
 - ▶ AJAX
- ▶ New and improved SAS® version available
 - ▶ From SAS® 9.1.3 to SAS® 9.4
 - ▶ Improved metadata functionality
- ▶ Extensive experience with current version and its pros and cons

The OCS Dynamic Cube Viewer



View data in cube: AdverseEvents

Category	
Treatment	▼ ↗ ↘
▣ Age category	▼ ↗ ↘
▣ Country	▼ ↗ ↘
Race	▼ ↗ ↘
Sex	▼ ↗ ↘
Smoker (Y/N)	▼ ↗ ↘
Study Identifier	▼ ↗ ↘
Unique Subject Identifier	▼ ↗ ↘
Severity/Intensity	▼ ↗ ↘
Causality	▼ ↗ ↘
Serious Event	▼ ↗ ↘
Results in Death	▼ ↗ ↘

Compare with: All treatments ☒

Rows
▣ Body System or Organ Class ▼

Columns

Measures:

☐ Adverse Events

Show measures in:

☒ Columns

☐ Rows

The OCS Dynamic Cube Viewer



View data in cube: AdverseEvents

Category	
Age category	Filter icon
Country	Filter icon
Race	Filter icon
Sex	Filter icon
Smoker (Y/N)	Filter icon
Study Identifier	Filter icon
Unique Subject Identifier	Filter icon
Severity/Intensity	Filter icon
Causality	Filter icon
Serious Event	Filter icon
Results in Death	Filter icon

Compare with: All treatments ☒

Rows
Body System or Organ Class

Columns
Treatment

Measures:

☐ Adverse Events

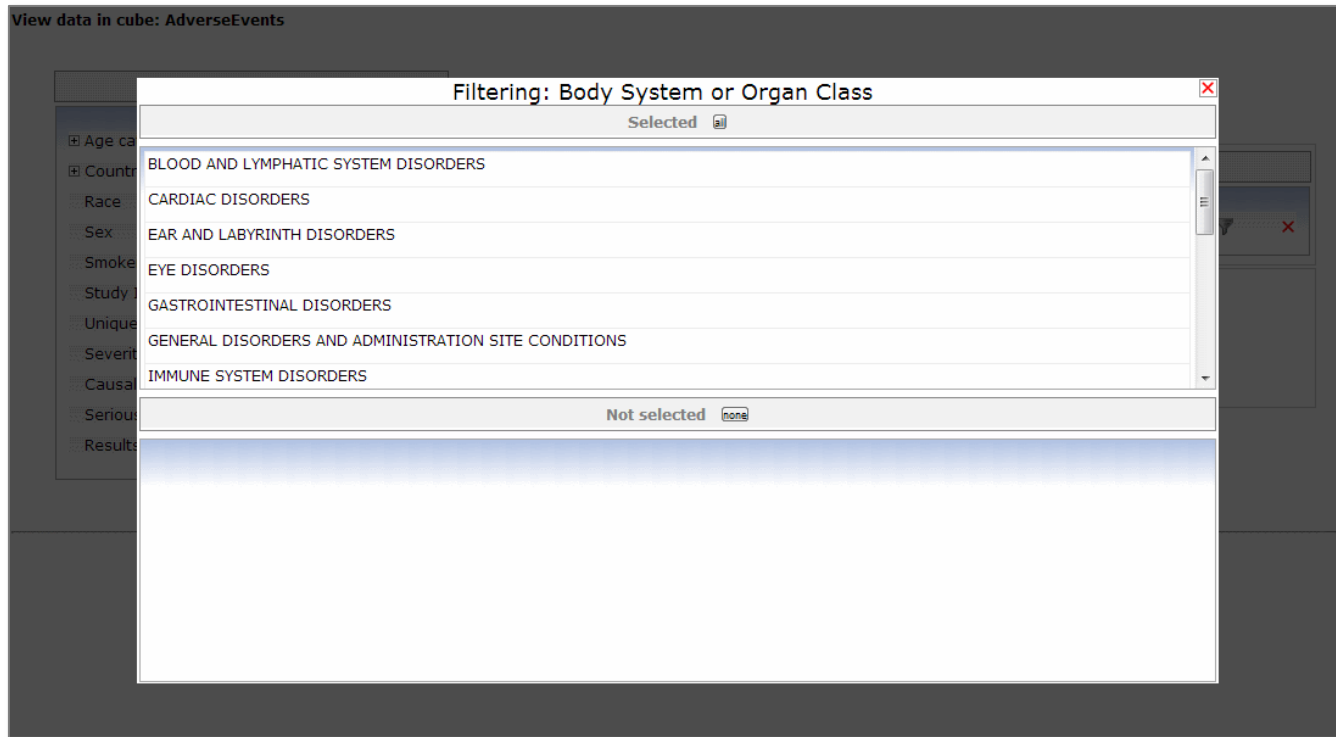
Show measures in:

☒ Columns

☐ Rows

- ▶ Select dimension in the row or column; use 'X' to remove and the filter icon to 'slice'

The OCS Dynamic Cube Viewer



- ▶ Upon clicking the filter icon the distinct values of the dimension are loaded directly from the cube
- ▶ Move values from *selected* to *not selected* or vice versa by clicking them



The OCS Dynamic Cube Viewer

View data in cube: AdverseEvents

Category

- Age category
- Country
- Race
- Sex
- Smoker (Y/N)
- Study Identifier
- Unique Subject Identifier
- Severity/Intensity
- Causality
- Serious Event
- Results in Death

Compare with: All treatments ☒

Columns

Treatment  

Rows

☒ Body System or Organ Class 

Preferred term 

Measures:

☒ Adverse Events

Show measures in:

☒ Columns ☐ Rows

		Adverse Events		
		All treatments	Placebo	Treatment UVW
Body System or Organ Class	Preferred term			
BLOOD AND LYMPHATIC SYSTEM DISORDERS	ANAEMIA	4	3	1
	LYMPH NODE PAIN	1	1	.
	LYMPHADENITIS	2	2	.
	LYMPHADENOPATHY	6	3	3

- ▶ After clicking one of the output buttons (Web, Excel, PDF or RTF), the report is generated
- ▶ If expanded, Body system or Organ Class and Preferred term will be presented. If collapsed, only the Body system or Organ Class will be presented (hierarchy dimension)

Functional Overview



- ▶ Exclude dimensions or measures
 - ▶ Available in the cube, not presented in the viewer
- ▶ Single selection dimensions
 - ▶ Allow only one selection in the filter
- ▶ Mandatory dimensions
 - ▶ This dimension must always be included in the selection
- ▶ Benchmark hierarchy dimension
 - ▶ Present overall totals for benchmarking
- ▶ Don't combine dimensions
 - ▶ Dimensions that may not be selected together

Technical Overview



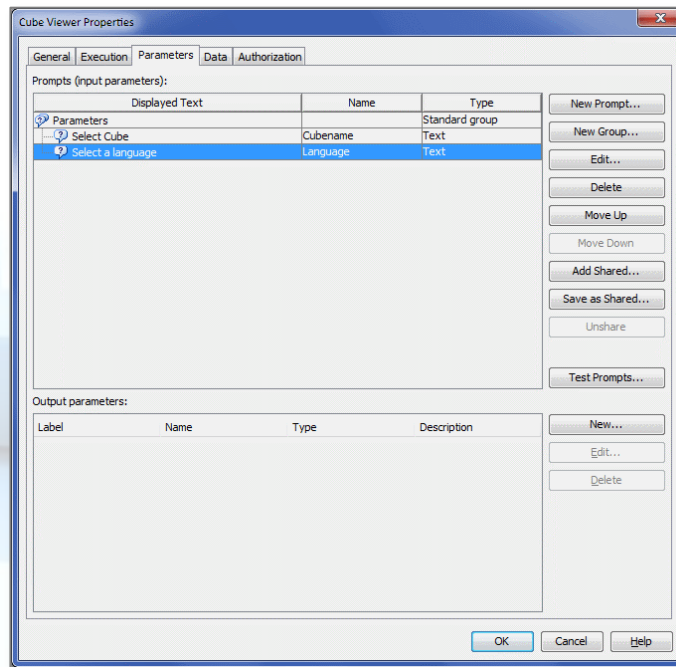
▶ The user interface

- ▶ SAS® Stored Process (SAS® program)
 - ▶ SAS® Base code and SAS® Macro code
 - ▶ HTML, CSS and JavaScript
- ▶ AJAX: Improved responsiveness and enhanced user experience

▶ The application

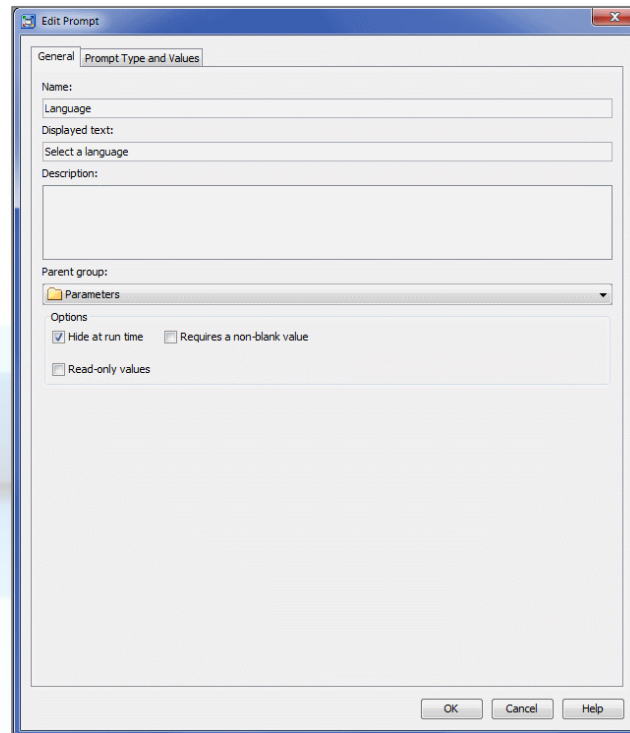
- ▶ Uses only metadata!

Technical Overview



- ▶ The cube and the language can be specified within the stored process
- ▶ Either an instance for each cube, or one stored process and fill the cube selection from the portal

Technical Overview



- ▶ All visible screen elements and messages are controlled by the language parameter

Technical Overview



	language	program	variable	textContent
1	EN	CubeViewLoad.sas	DispCubeTitle	View data in cube:
2	EN	CubeViewLoad.sas	DispBenchmark	Compare with:
3	EN	CubeViewLoad.sas	DispDimHeader	Category
4	EN	CubeViewLoad.sas	DispRowHeader	Rows
5	EN	CubeViewLoad.sas	DispColHeader	Columns
6	EN	CubeViewLoad.sas	DispMeasHeader	Measures:
7	EN	CubeViewLoad.sas	DispMeasRowColHeader	Show measures in:

- ▶ Existing languages can be modified and additional languages can be added to the language dataset

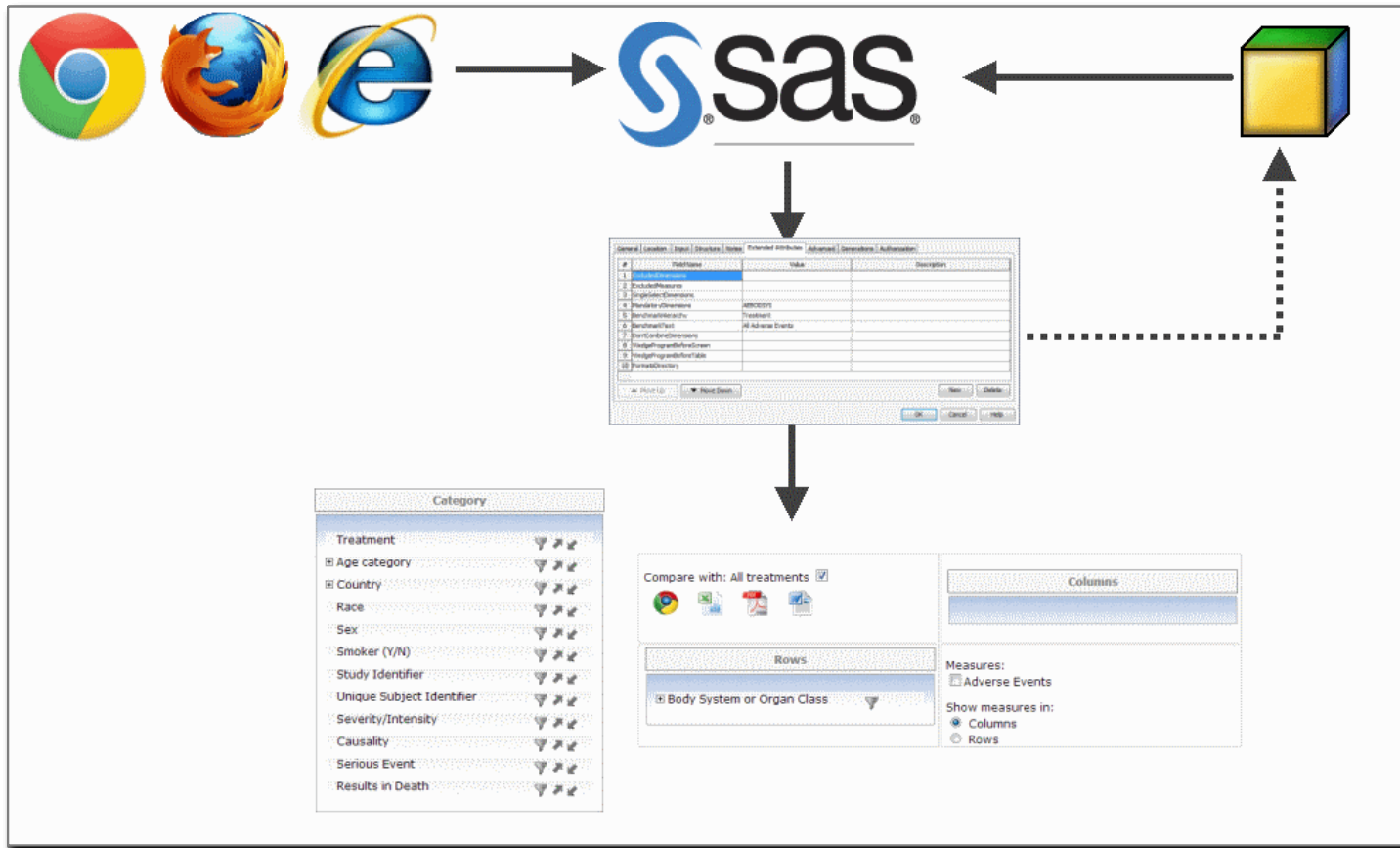
Technical Overview



#	Field Name	Value	Description
1	ExcludedDimensions		
2	ExcludedMeasures		
3	SingleSelectDimensions		
4	MandatoryDimensions	AEBOOSYS	
5	BenchmarkHierarchy	Treatment	
6	BenchmarkText	All Adverse Events	
7	DontCombineDimensions		
8	WedgeProgramBeforeScreen		
9	WedgeProgramBeforeTable		
10	FormatsDirectory		

- ▶ Cube customisation can be performed in the cube's metadata, by using the bespoke extended attributes

Behind the screens



Live Demo

