Procesamiento de consultas y optimización

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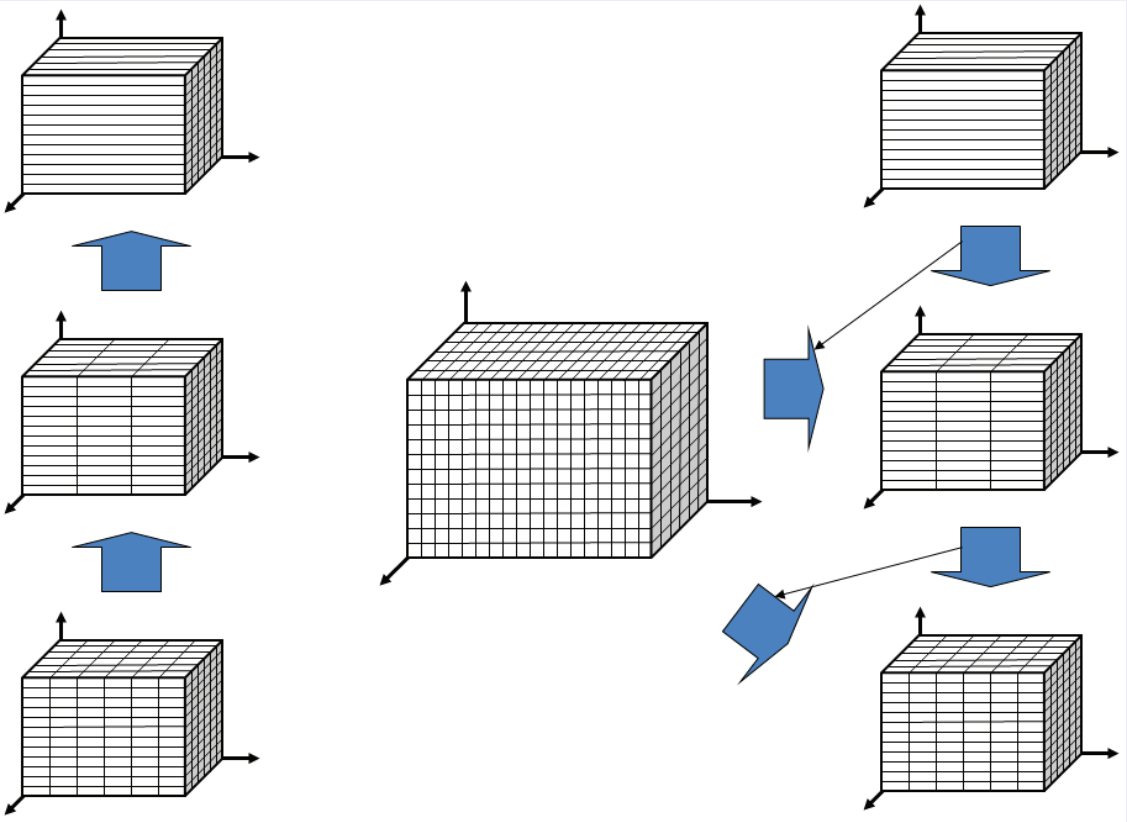
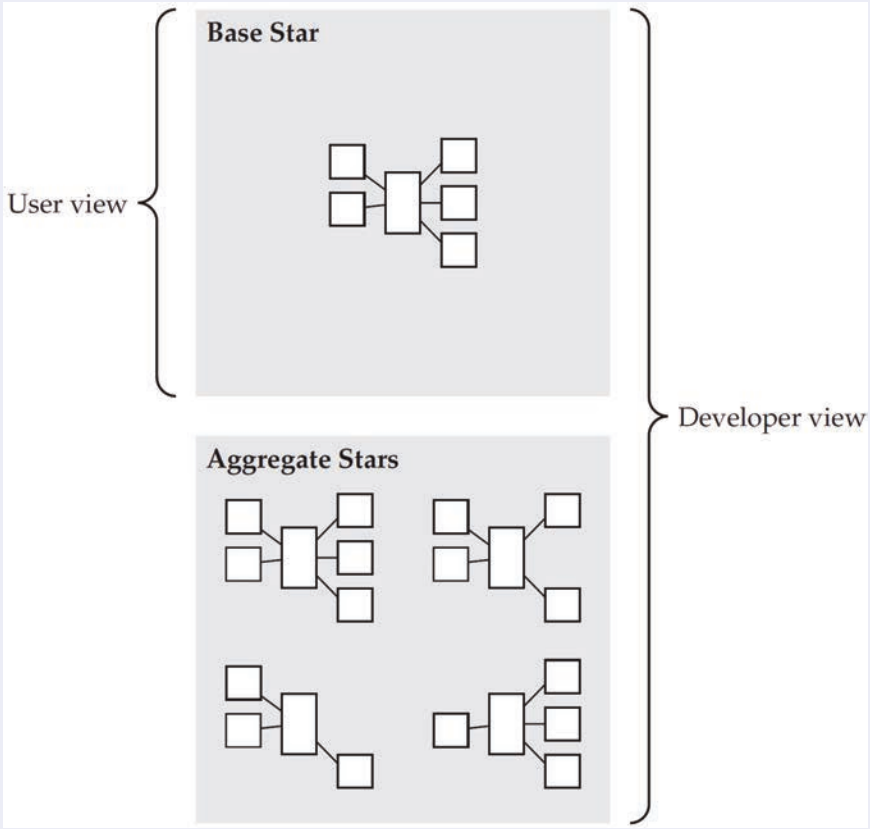
Contenido

Agregados

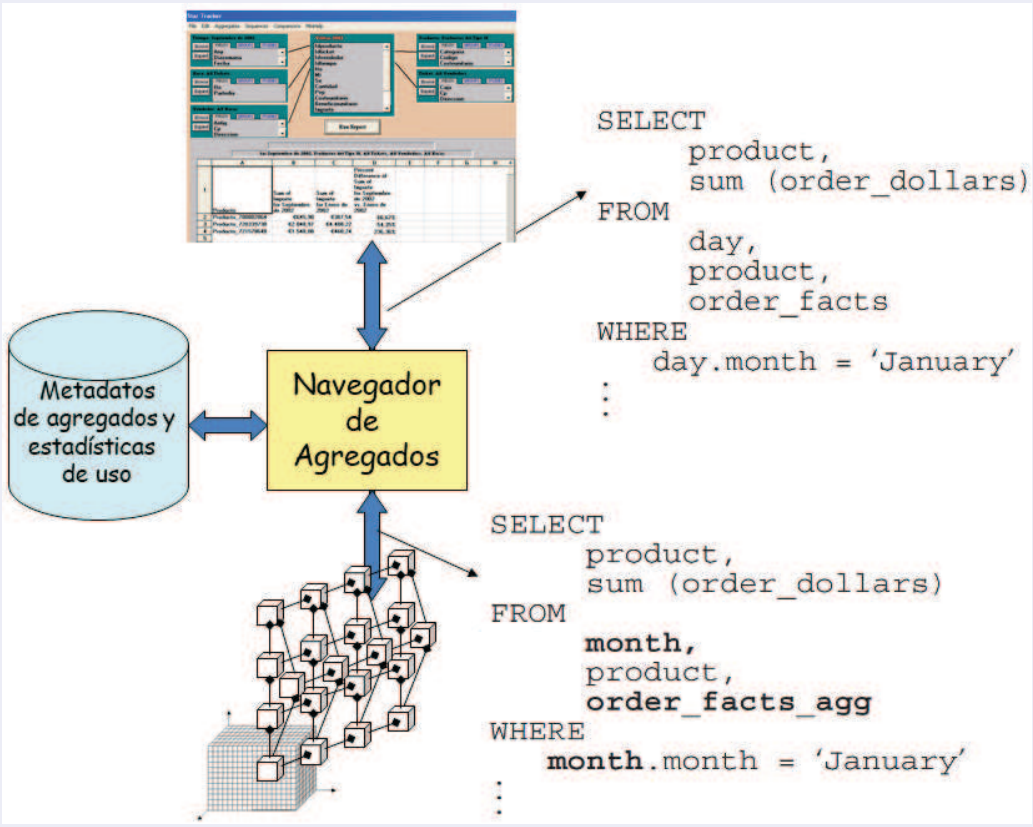
Operaciones multidimensionales



Cubo base y agregados



Navegador de agregados

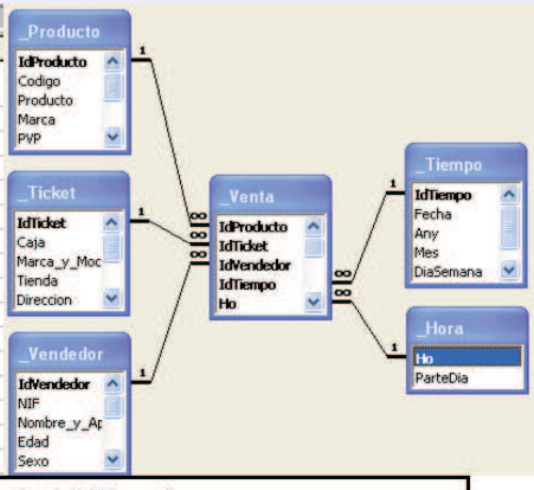


SQL2

Patrón de consulta estándar

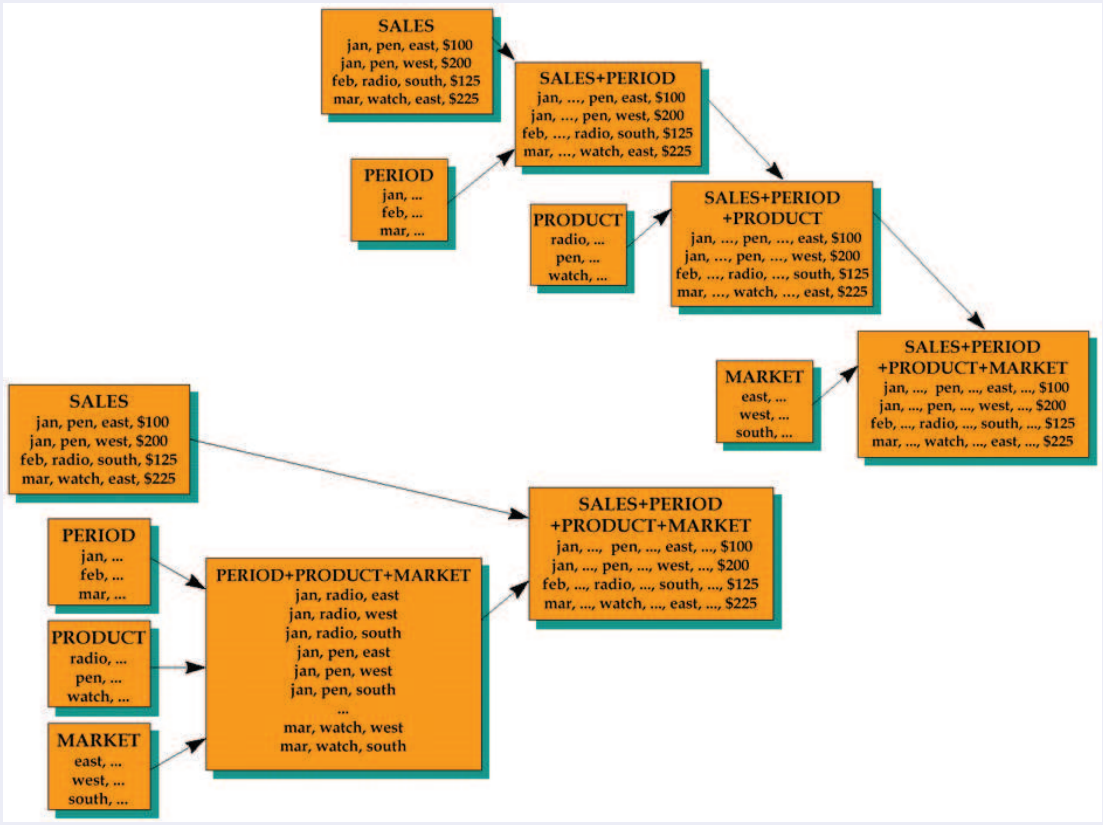
for Enero de 2020

	A	B	C	D	E
1	Diasemana	Marca	Sum of Importe	Sum of Cantidad	
2	Domingo	Marca_1	€4.923,78	94,00	
3	Domingo	Marca_10	€4.460,63	88,00	
4	Domingo	Marca_11	€1.593,80	40,00	
5	Domingo	Marca_12	€3.259,46	44,00	
6	Domingo	Marca_13	€662,96	16,00	
7	Domingo	Marca_14	€4.432,68	70,00	
8	Domingo	Marca_15	€4.662,13	112,00	
9	Domingo	Marca_16	€4.390,17	114,00	
10	Domingo	Marca_17	€471,09	33,00	
11	Domingo	Marca_18	€2.152,34	23,00	
12	Domingo	Marca_19	€4.467,10	66,00	
13	Domingo	Marca_2	€6.188,64	165,00	
14	Domingo	Marca_20	€4.930,33	79,00	
15	Domingo	Marca_3	€3.919,94	73,00	
16	Domingo	Marca_4	€5.967,57	80,00	
17	Domingo				
18	Domingo				
19	Domingo				
20	Domingo				
21	Domingo				
22	Jueves				
23	Jueves				
24	Jueves				
25	Jueves				
26	Jueves				
27	Jueves				
28	Jueves				
29	Jueves				
30	Jueves	Marca_17	€6.976,84	107,00	

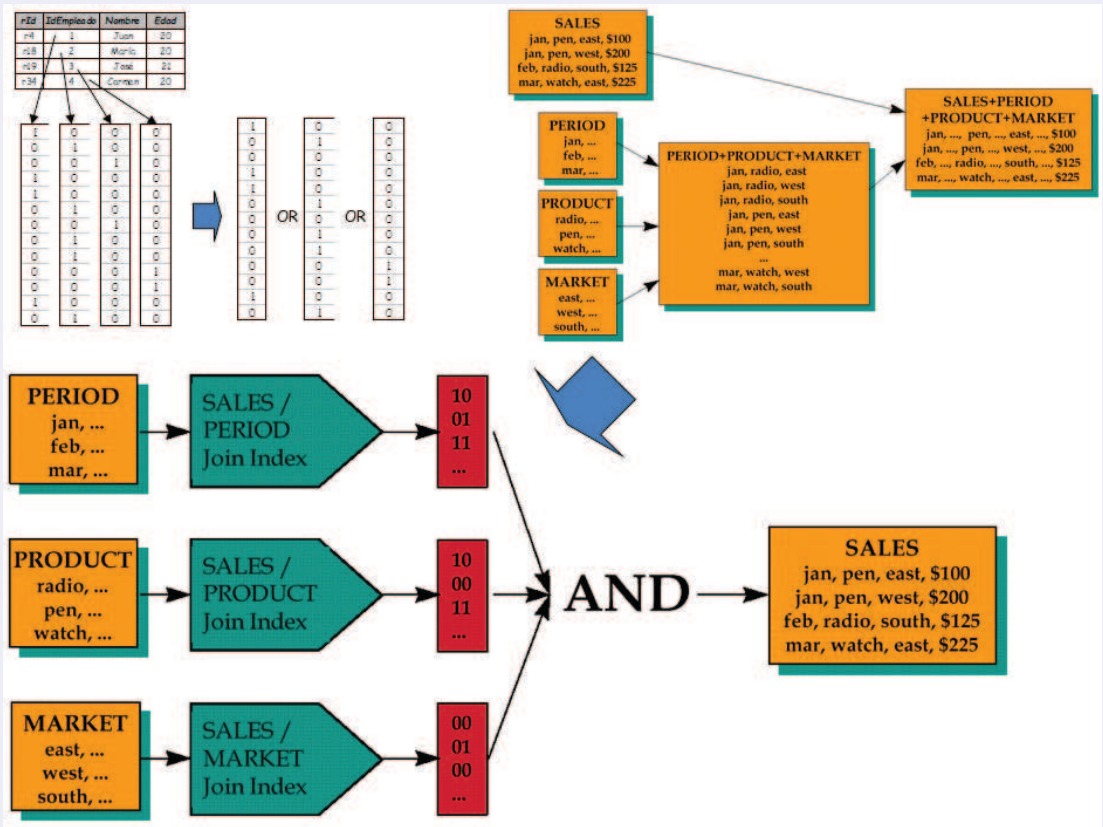



```
select [Tiempo].[Diasemana], [Producto].[Marca],
       Sum( [Venta].[Importe]) as Col1, Sum( [Venta].[Cantidad]) as Col2
from [Venta], [Tiempo], [Producto]
where [Venta].[IDTIEMPO] = [Tiempo].[IDTIEMPO] and
      [Venta].[IDPRODUCTO] = [Producto].[IDPRODUCTO] and
      [Tiempo].[Mes] in ('Enero') and [Tiempo].[Any] in (2020)
group by [Tiempo].[Diasemana], [Producto].[Marca]
order by [Tiempo].[Diasemana], [Producto].[Marca]
```

Cambio en la planificación de la consulta

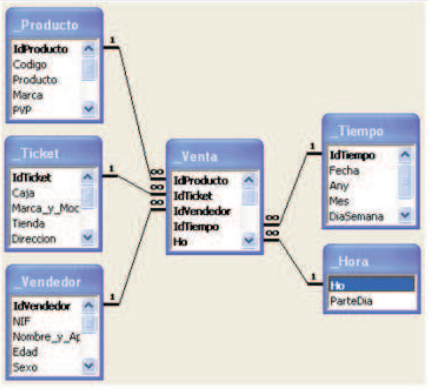


Uso de índices de mapa de bits



SQL3

GROUP BY ROLLUP



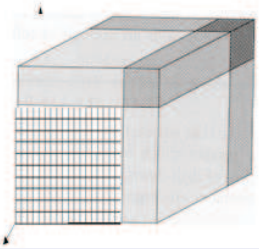

```
SELECT Time, Region, Department, SUM(Profit)
 FROM Sales
 GROUP BY Time, Region, Department
UNION  ALL
 SELECT Time, Region, '' , SUM(Profit)
 FROM Sales
 GROUP BY Time, Region
UNION ALL
 SELECT Time, '', '', SUM(Profits)
 FROM Sales
 GROUP BY Time
UNION ALL
 SELECT '', '', '', SUM(Profits)
 FROM Sales;
```

Time	Region	Department	Profit
1996	Central	VideoRental	75,000
1996	Central	VideoSales	74,000
1996	Central	[NULL]	149,000
1996	East	VideoRental	89,000
1996	East	VideoSales	115,000
1996	East	[NULL]	204,000
1996	West	VideoRental	87,000
1996	West	VideoSales	86,000
1996	West	[NULL]	173,000
1996	[NULL]	[NULL]	526,000
1997	Central	VideoRental	82,000
1997	Central	VideoSales	85,000
1997	Central	[NULL]	167,000
1997	East	VideoRental	101,000
1997	East	VideoSales	137,000
1997	East	[NULL]	238,000
1997	West	VideoRental	96,000
1997	West	VideoSales	97,000
1997	West	[NULL]	193,000
1997	[NULL]	[NULL]	598,000
[NULL]	[NULL]	[NULL]	1,124,000

```
SELECT Time, Region, Department,
 sum(Profit) AS Profit FROM sales
 GROUP BY ROLLUP(Time, Region, Dept)
```

GROUP BY CUBE

Time	Region	Department	Profit
1996	Central	VideoRental	75,000
1996	Central	VideoSales	74,000
1996	Central	[NULL]	149,000
1996	East	VideoRental	89,000
1996	East	VideoSales	115,000
1996	East	[NULL]	204,000
1996	West	VideoRental	87,000
1996	West	VideoSales	86,000
1996	West	[NULL]	173,000
1996	[NULL]	VideoRental	251,000
1996	[NULL]	VideoSales	275,000
1996	[NULL]	[NULL]	526,000
1997	Central	VideoRental	82,000
1997	Central	VideoSales	85,000
1997	Central	[NULL]	167,000
1997	East	VideoRental	101,000
1997	East	VideoSales	137,000
1997	East	[NULL]	238,000
1997	West	VideoRental	96,000
1997	West	VideoSales	97,000
1997	West	[NULL]	193,000
1997	[NULL]	VideoRental	279,000
1997	[NULL]	VideoSales	319,000
1997	[NULL]	[NULL]	598,000
[NULL]	Central	VideoRental	157,000
[NULL]	Central	VideoSales	159,000
[NULL]	Central	[NULL]	316,000
[NULL]	East	VideoRental	190,000
[NULL]	East	VideoSales	252,000
[NULL]	East	[NULL]	442,000
[NULL]	West	VideoRental	183,000
[NULL]	West	VideoSales	183,000
[NULL]	West	[NULL]	366,000
[NULL]	[NULL]	VideoRental	530,000
[NULL]	[NULL]	VideoSales	594,000
[NULL]	[NULL]	[NULL]	1,124,000



2ⁿ SELECTs

```
SELECT Time, Region, Department,
   sum(Profit) AS Profit FROM sales
   GROUP BY CUBE  (Time, Region, Dept)
```


DECODE / GROUPING

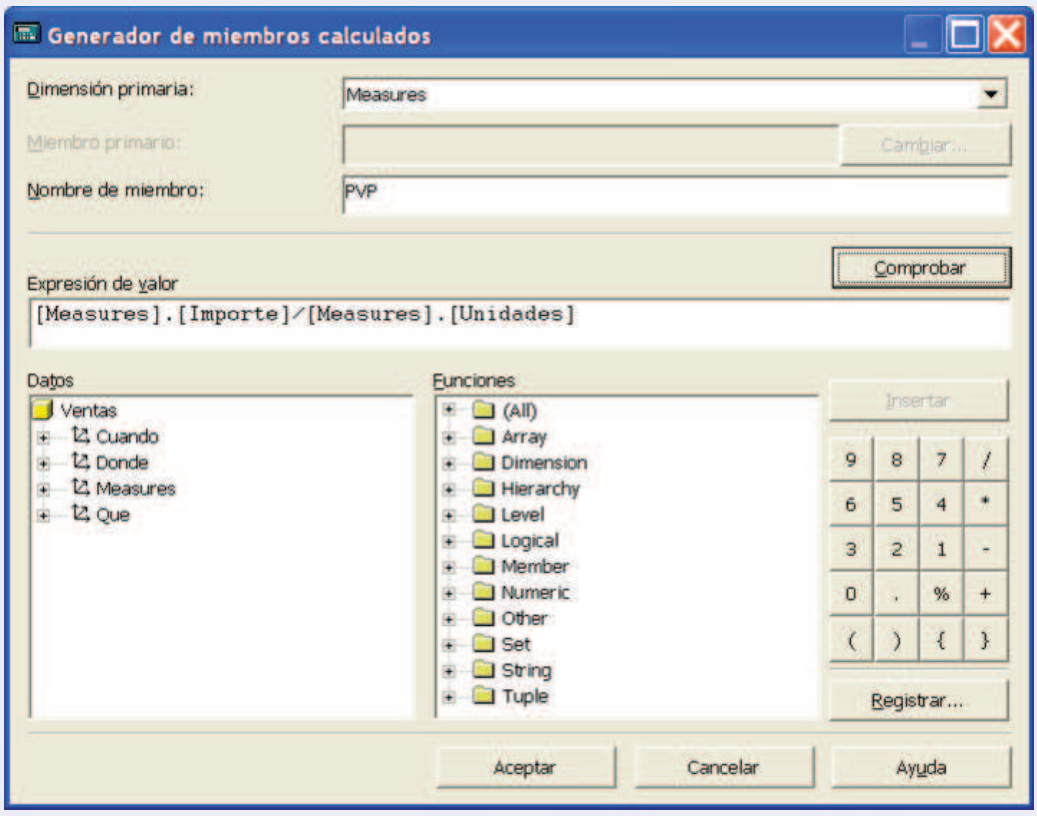
```
SELECT
   DECODE(GROUPING(Time), 1, 'All Times', Time) as Time,
   DECODE(GROUPING(region), 1, 'All Regions', 0, null)) as
   Region, SUM(Profit) AS Profit from Sales
   GROUP BY CUBE(Time, Region)
```

Time	Region	Profit
1996	East	200,000
1996	[NULL]	200,000
[NULL]	East	200,000
[NULL]	[NULL]	190,000
[NULL]	[NULL]	190,000
[NULL]	[NULL]	190,000
[NULL]	[NULL]	390,000

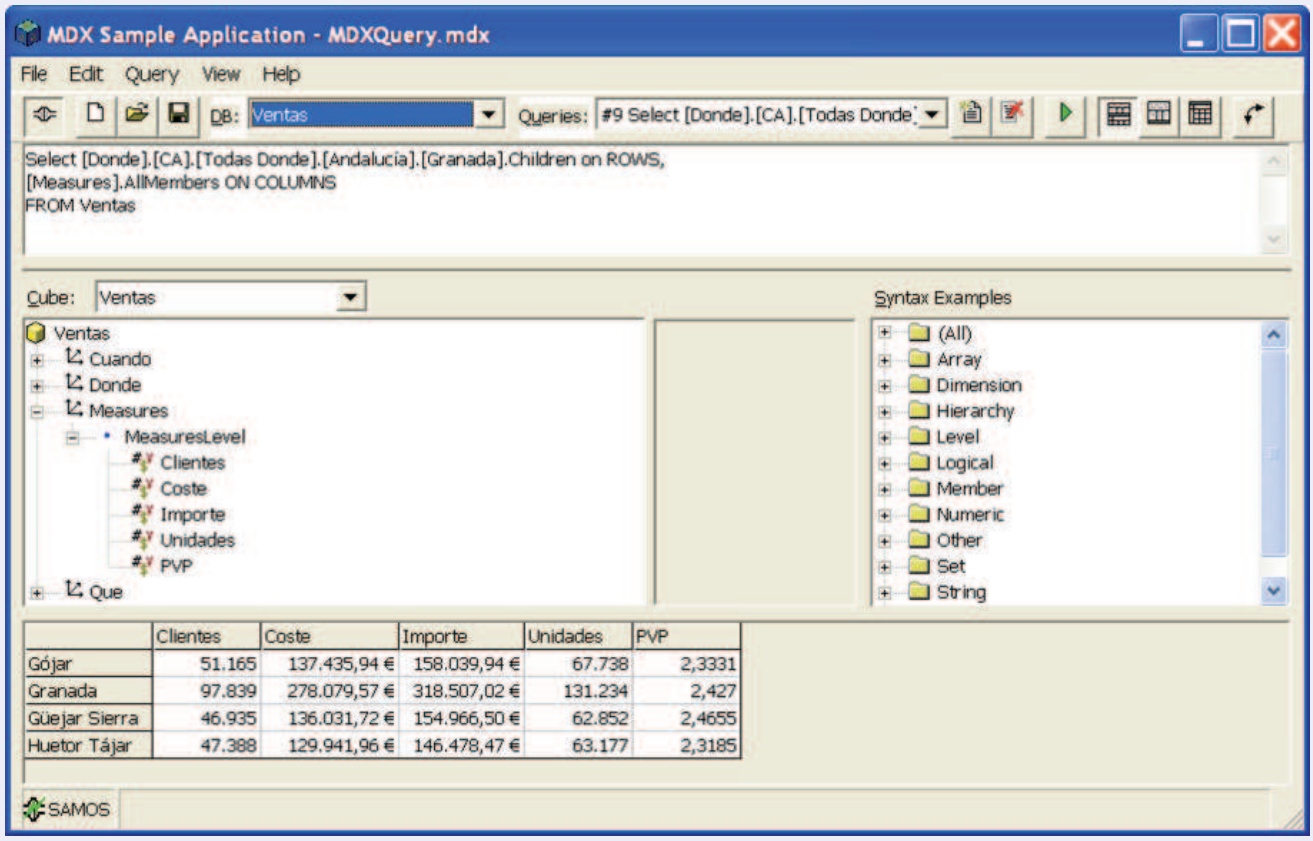
Time	Region	Profit
1996	East	200,000
1996	All Regions	200,000
All Times	East	200,000
[NULL]	[NULL]	190,000
[NULL]	All Regions	190,000
All Times	[NULL]	190,000
All Times	All Regions	390,000

MDX (*Multi-Dimensional Expressions*) y XMLA (*XML for Analysis*)

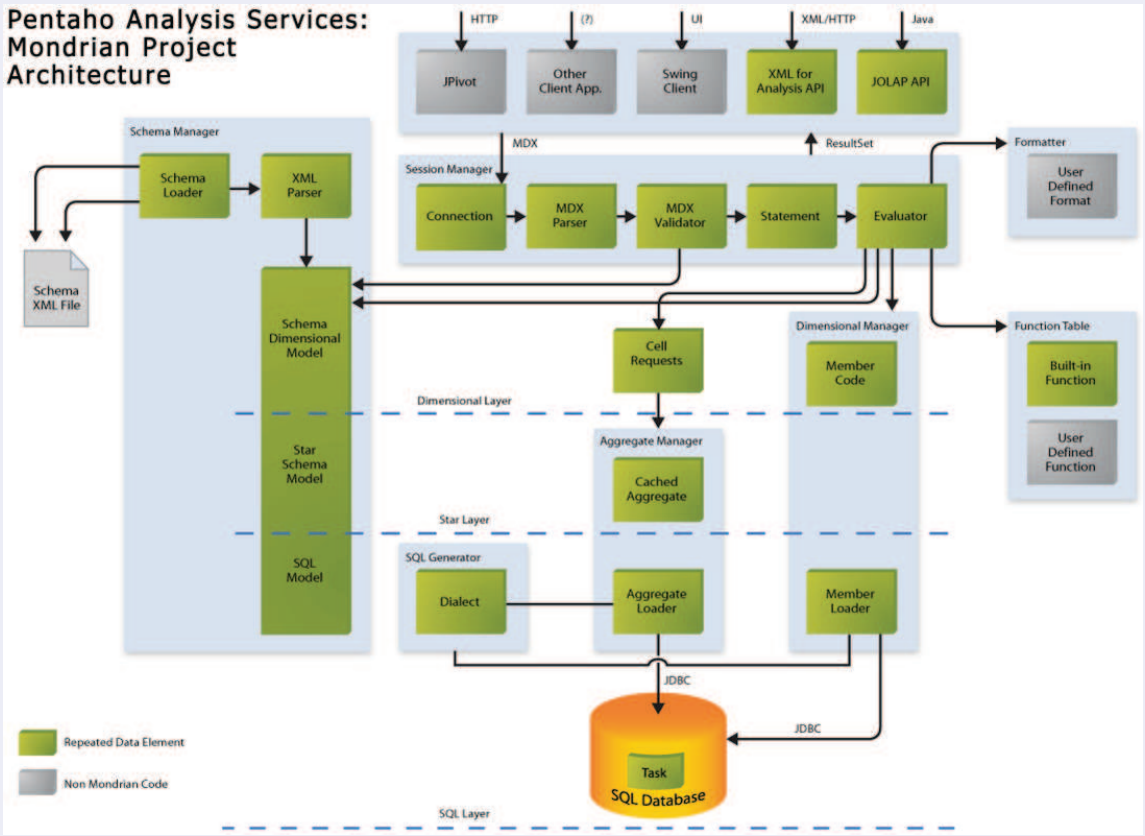
Mediciones calculadas



Informes



MDX y XMLA en *Mondrian*



DAX (*Data Analysis Expressions*)

Columna en DAX

Tabular model

```
1 EVALUATE
2 ADDCOLUMNS (
3     VALUES ( 'Dimension Date'[Date] ),
4     "Running total of Quantity", CALCULATE (
5         SUM ( 'Fact Sale'[Quantity] ),
6         'Dimension Date'[Date] <=
7             EARLIER ( 'Dimension Date'[Date] )
8     )
9 )
```

Bibliografía

Bibliografía

Ada10 C. Adamson: *Star Schema: The Complete Reference*. McGraw-Hill, 2010.

DAX19 *Referencia de expresiones de análisis de datos (DAX)*. `https://docs.microsoft.com/es-es/dax/`

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Mon07 *Layers of a Mondrian system*. `https://mondrian.pentaho.com/documentation/architecture.php`

Ora20 *ROLLUP, CUBE, GROUPING Functions and GROUPING SETS*. `https://oracle-base.com/articles/misc/rollup-cube-grouping-functions-and-grouping-sets`

XMLA18 *Desarrollo con XMLA en Analysis Services*. `https://docs.microsoft.com/es-es/analysis-services/multidimensional-models-scripting-language-assl-xmla/developing-with-xmla-in-analysis-services`