

Microsoft SQL Server

SSRS Best Practices

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Microsoft



Microsoft SQL Server

Use este guia para o desenvolvimento de relatórios com qualidade, evitando o uso de certas práticas que levam a um mau desempenho do mesmo.

AGENDA

Local vs Remote

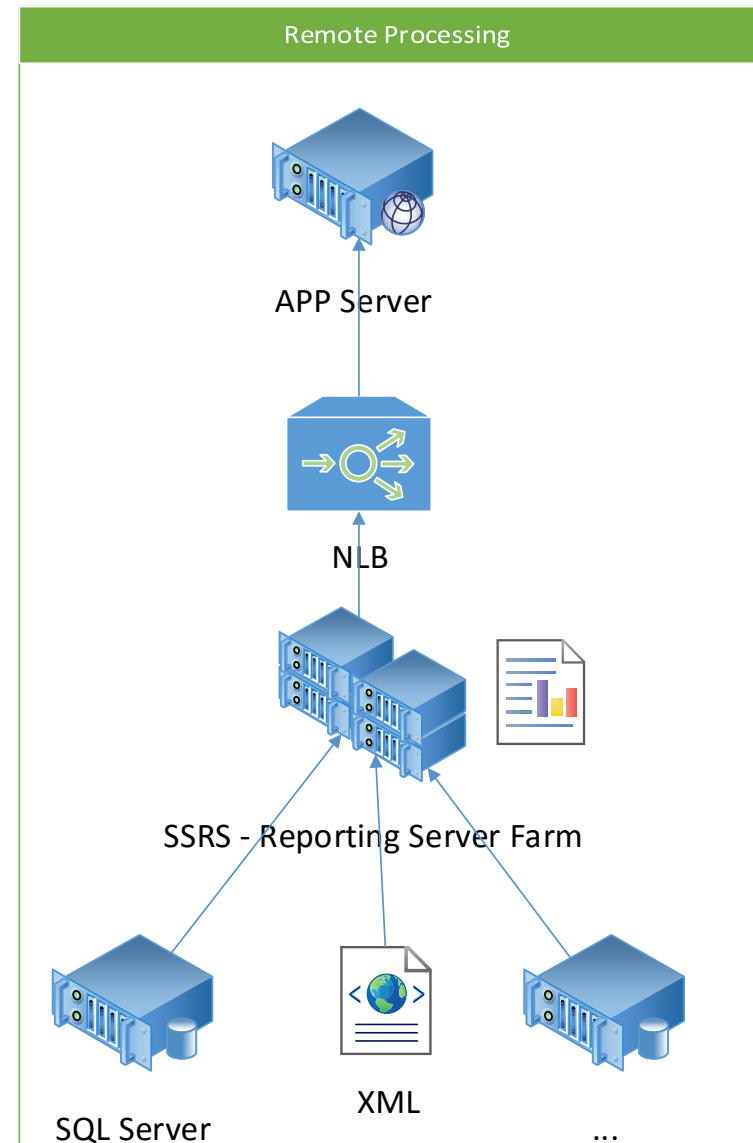
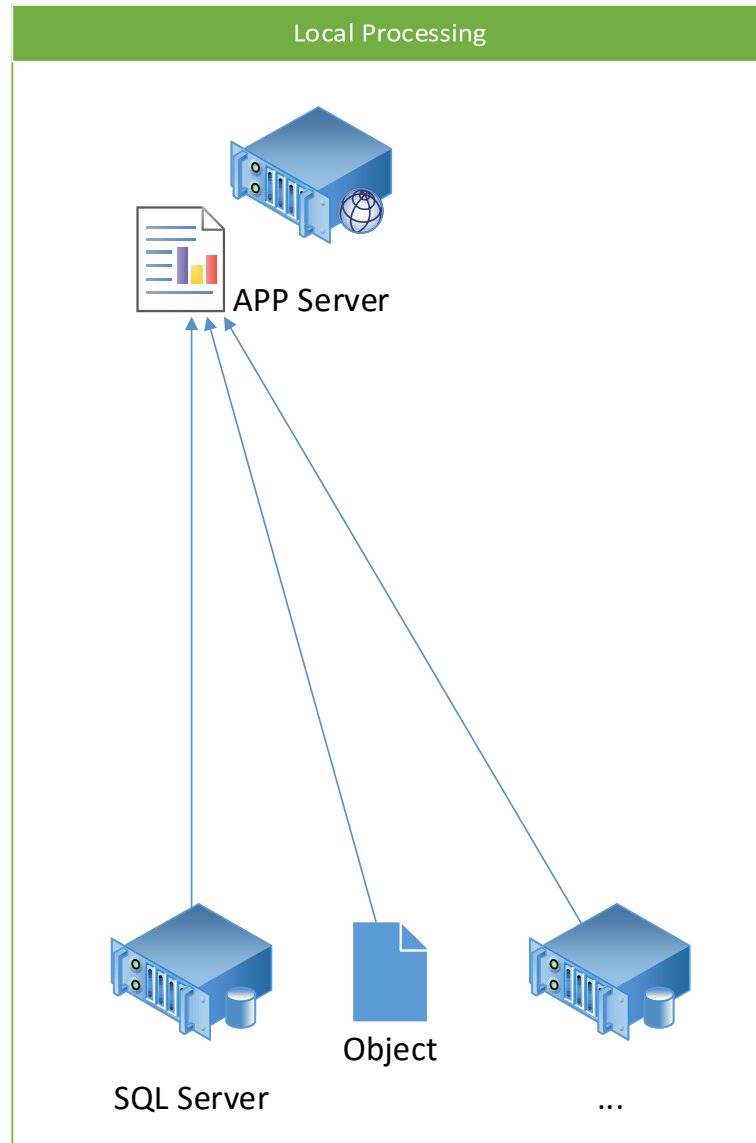
Data Sources

Componentes

Forma de entrega

Local vs Remote

Local vs Remote



Data Sources

Data Sources

Procedures

- Menos tempo usado em compilação de planos.

Planos de execução

- Revise os planos
- Índices
- Parâmetros obrigatórios
- **Relatório Genéricos** !

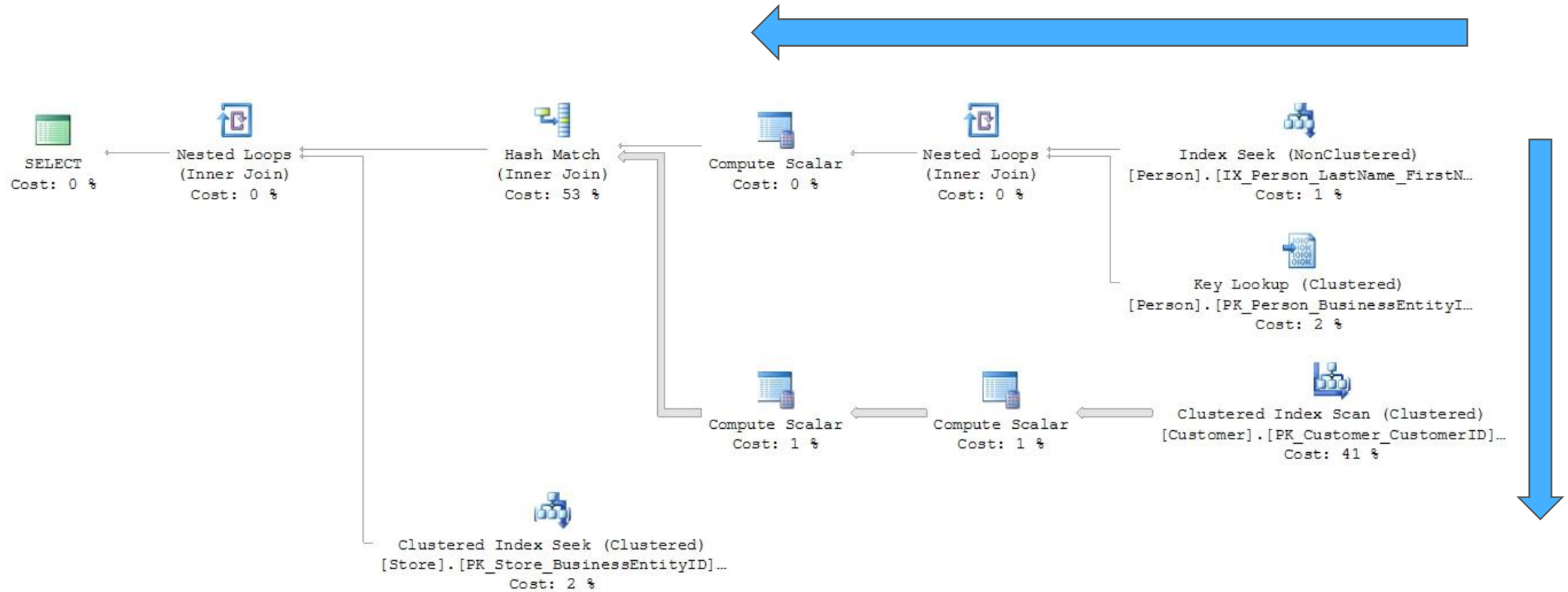
Ordenação

- Trazer dados já ordenados
- Ordenação no report - ORDER BY na origem

Massa de dados

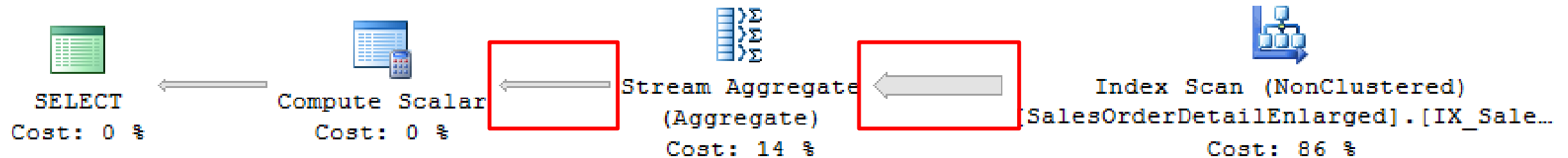
- Relatório de 500 pag ? Quem vai ler
- Group By
- Relatório Analítico / Sintético
- Select *
- Where obrigatórios

Como ler?



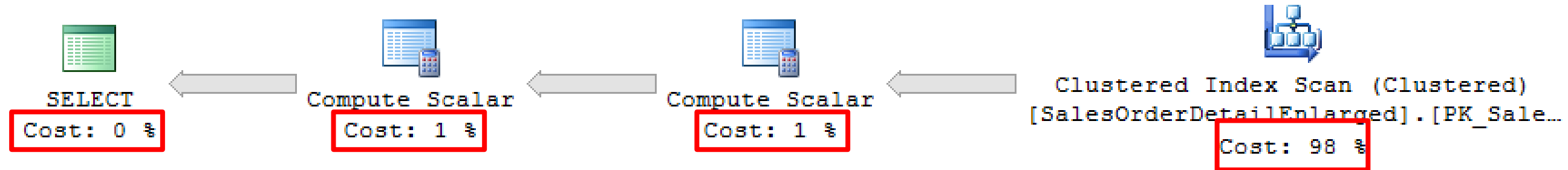
Volume de registros

- Setas indicam volume de registros processados

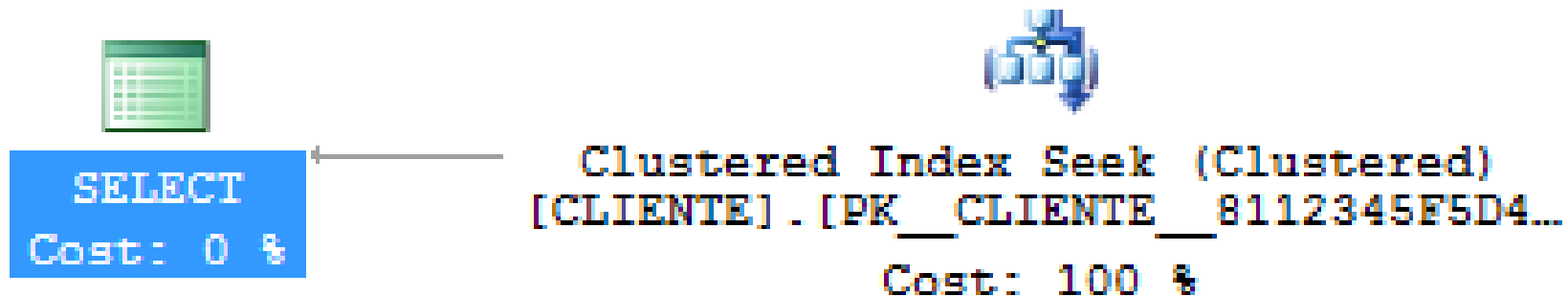
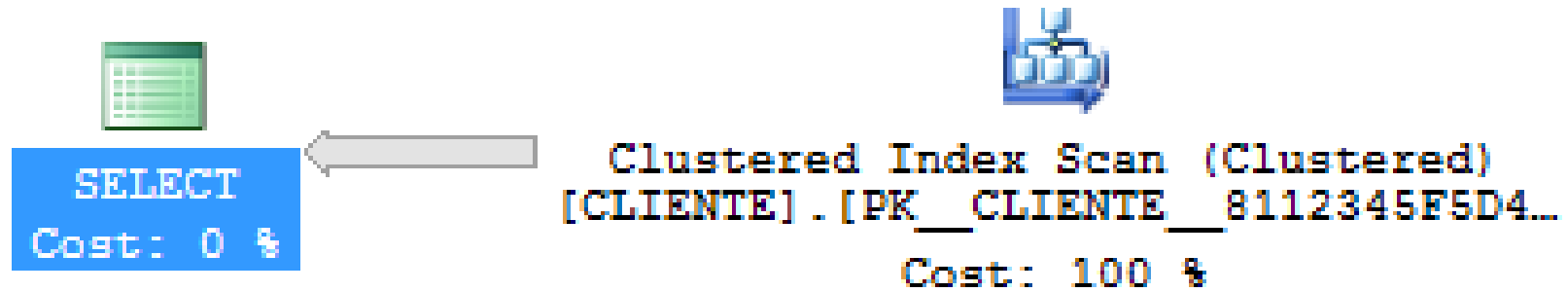


Custo por operação

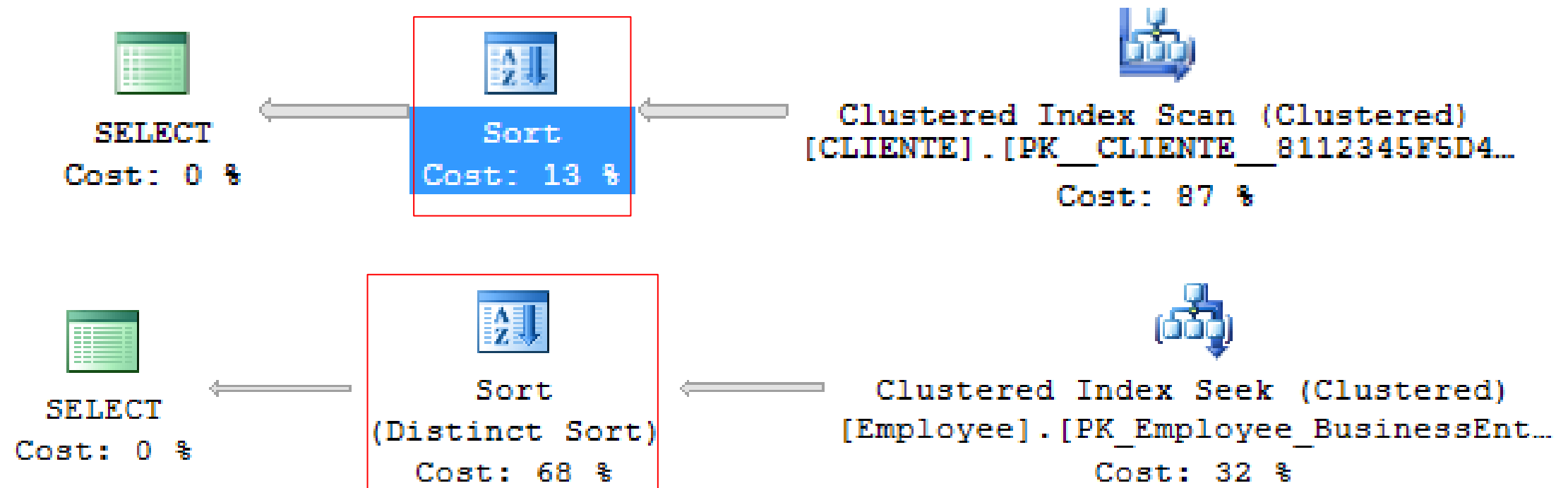
- Percentual do custo de cada operação:



Scan vs Seek



Sort



SARGABLE

- Searchable arguments:*

SARGABLE	Non-SARGABLE
=	<>
>	IN
<	OR
> =	NOT IN
> =	NOT EXISTS
BETWEEN	NOT LIKE
LIKE (sem iniciar com %)	LIKE (iniciando com %)
Campo = FUNCTION(@XPTO)	FUNCTION(Campo) = @XPTO

Relatório genérico

- Impacto

- Table scan, performance.
 - DECLARE @CustomerID INT = 29898
 - SELECT CustomerID FROM Sales.SalesOrderHeader
where **CustomerID = @CustomerID**
 - SELECT CustomerID FROM Sales.SalesOrderHeader
where (**CustomerID = @CustomerID** or **@CustomerID is null**)
 - SELECT CustomerID FROM Sales.SalesOrderHeader
where CustomerID = **ISNULL**(@CustomerID, CustomerID)

Relatório genérico

Procedures específicas

```
SELECT * FROM PESSOA
WHERE RG = @RG
OR      CPF = @CPF
```

```
CREATE PROCEDURE USP_CONSULTA_PESSOA_RG
( @RG VARCHAR(16) )
AS
```

```
    SELECT * FROM PESSOA WHERE RG = @RG
```

```
GO
```

```
CREATE PROCEDURE USP_CONSULTA_PESSOA_CPF
( @CPF BIGINT )
AS
```

```
    SELECT * FROM PESSOA WHERE CPF = @CPF
```

```
GO
```

```
CREATE PROCEDURE USP_CONSULTA_PESSOA -- procedure a
ser chamada pelo relatório
```

```
( @RG VARCHAR(16), @CPF BIGINT )
```

```
AS
```

```
    IF @RG IS NOT NULL
```

```
    BEGIN
```

```
        EXEC USP_CONSULTA_PESSOA_RG @RG
```

```
    END
```

```
    ELSE IF @CPF IS NOT NULL
```

```
    BEGIN
```

```
        EXEC USP_CONSULTA_PESSOA_CPF @CPF
```

```
    END
```

```
GO
```

Relatório genérico

Procedures dinâmicas

```
DECLARE @SQLTEXT AS NVARCHAR(MAX) = ''
```

```
DECLARE @PARAM_A INT = 5
```

```
DECLARE @PARAM_B INT = 10
```

```
SET @SQLTEXT = @SQLTEXT + 'SELECT * FROM TABELA '
```

```
SET @SQLTEXT = @SQLTEXT + 'WHERE 1=1 '
```

```
IF @PARAM_A IS NOT NULL
```

```
    SET @SQLTEXT = @SQLTEXT + ' AND (COL_A = @PARAM_A) '
```

```
IF @PARAM_B IS NOT NULL
```

```
    SET @SQLTEXT = @SQLTEXT + ' AND (COL_B = @PARAM_B) '
```

```
EXEC sp_executesql @SQLTEXT, N'@PARAM_A INT, @PARAM_B INT', @PARAM_A, @PARAM_B
```

Componentes

Componentes

Textbox

Cabeçalho
e Rodapé

Sub
Reports

Images

Tablix

Gráficos

Filtros

Expressões

Textbox

- Para relatórios com muitos Text Boxes, configure as opções "CanGrow" e "CanShrink" para **FALSE**. Assim as text boxes são renderizadas mais rapidamente.

CAN GROW	<div>5</div> <div>Adventur eWorks2 012</div> <div>ONLINE</div>
CANNOT GROW	<div>5</div> <div>Adventur</div> <div>ONLINE</div>

Textbox

- OBS: Todas células de uma tabela são TextBoxes

The image shows a screenshot of a table with a grid structure. The table has two rows: a header row with a dotted background and a data row. The header row has a cell labeled 'Header' and a cell labeled 'Data'. The data row has a cell labeled 'Data' and a cell that is highlighted with a red rectangle. This highlighted cell contains a small icon of a document with a list, indicating it is a text box. To the right of the table is a 'Properties' window for the selected text box. The window title is 'Properties' and the selected item is 'Textbox30 Text Box'. The 'General' section is expanded, showing the following properties:

Property	Value
CanGrow	True
CanShrink	False
Name	Textbox30
ToolTip	

Below the 'General' section, there is an 'Interactive Sort' section with a 'UserSort' property. At the bottom, there is a 'BackgroundColor' section with a description: 'Specifies the background color of the item.'

Tablix

- Evite deixar toda lógica dentro da Tabela ou Matriz.
- Traga os dados já agregados / calculados da origem
 - Tomar cuidado quando estiver trabalhando com média de valores, pois não devemos calcular média sobre de um valor que já é uma média.
- Evite o uso da opção "KeepTogether", ela exige processamento extra quando o SSRS calcula a quebra de página

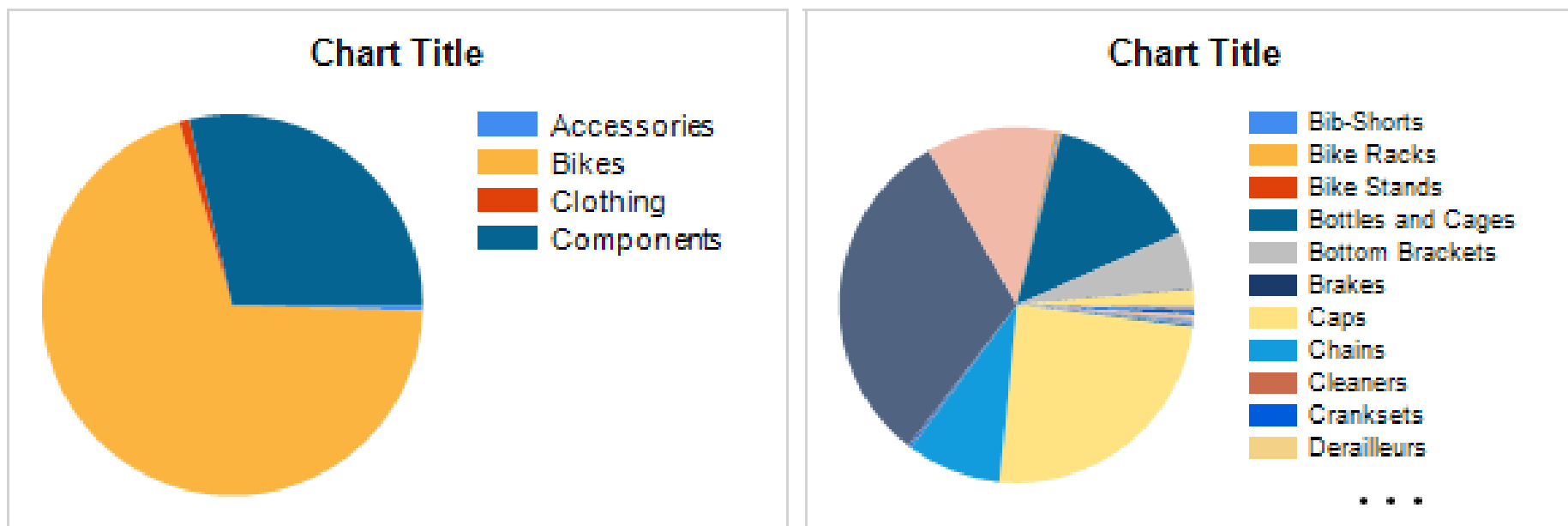
Cabeçalho e Rodapé

Evite fazer
(**Página X de Y**)

Evite **expressões
complexas**

Gráficos

- Considere a quantidade de dados que um gráfico irá receber.
- Por exemplo um gráfico perde sua utilidade se a quantidade de fatias for maior que 8.



Sub Reports vs Actions

- Problema 1: Relatório que retorna tudo

Report1 - Completo

Category	Sub Category	Product Name	Product Number	Product ID	List Price
Accessories					
	⊞ Bike Racks				120.0000
	⊞ Bike Stands				159.0000
		All-Purpose Bike Stand	ST-1401	879	159.0000
	⊞ Bottles and Cages				23.9700
	⊞ Cleaners				7.9500
	⊞ Fenders				21.9800
	⊞ Helmets				104.9700
		Sport-100 Helmet, Red	HL-U509-R	707	34.9900
		Sport-100 Helmet, Black	HL-U509	708	34.9900
		Sport-100 Helmet, Blue	HL-U509-B	711	34.9900
	⊞ Hydration Packs				54.9900
	⊞ Lights				93.9700
	⊞ Locks				25.0000
		Cable Lock	LO-C100	843	25.0000
	⊞ Panniers				125.0000
	⊞ Pumps				44.9800
	⊞ Tires and Tubes				214.3100
Bikes					
	⊞ Mountain				53867.6800

Sub Reports vs Actions

- Solução 1: SubReport (Não recomendado)

Report com SubReport				
Category	Sub Category	SubReport		
Accessories				
	Bike Racks			
		SubReport		
		Product Name	Product Number	Product ID
		Hitch Rack - 4-Bike	RA-H123	876
		List Price	120.0000	
	Bike Stands			
		SubReport		
		Product Name	Product Number	Product ID
		All-Purpose Bike Stand	ST-1401	879
		List Price	159.0000	
	Bottles and Cages			
		SubReport		
		Product Name	Product Number	Product ID
		Water Bottle - 30 oz.	WB-H098	870
		Mountain Bottle Cage	BC-M005	871
		Road Bottle Cage	BC-R205	872
		List Price	4.9900	9.9900
			8.9900	

Sub Reports vs Actions

- Solução 2: Uso de links (Recomendado)

Report3 com Link

Category	Sub Category	List Price
Accessories		
	Bike Racks	120.0000
	Bike Stands	159.0000
	Bottles and Cages	23.9700
	Cleaners	7.9500
	Fenders	21.9800
	Helmets	104.9700
	Hydration Packs	54.9900
	Lights	93.9700
	Locks	25.0000
	Panniers	125.0000
	Pumps	44.9800
	Tires and Tubes	214.3100
Bikes		
	Mountain Bikes	53867.6800
	Road Bikes	68690.3500
	Touring Bikes	31355.4600
Clothing		
	Bib-Shorts	269.9700
	Caps	8.9900
	Gloves	187.4400
	Jerseys	415.9200
	Shorts	449.9300
	Socks	36.9800
	Tights	224.9700
	Vests	190.5000

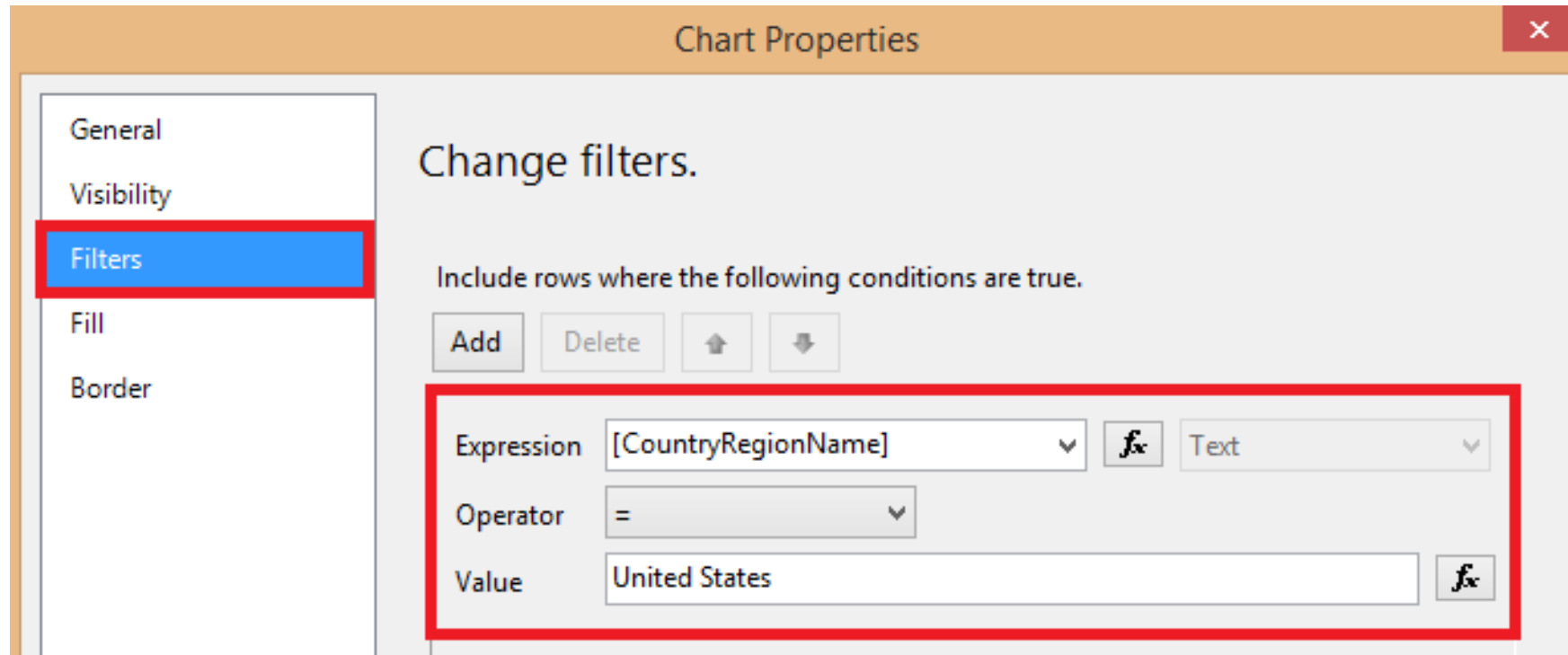
Report3 - Detalhe

Category	Sub Category	Product Name	Product Number	Product ID	List Price
Accessories					
	Helmets				
		Sport-100 Helmet, Red	HL-U509-R	707	34.9900
		Sport-100 Helmet, Black	HL-U509	708	34.9900
		Sport-100 Helmet, Blue	HL-U509-B	711	34.9900

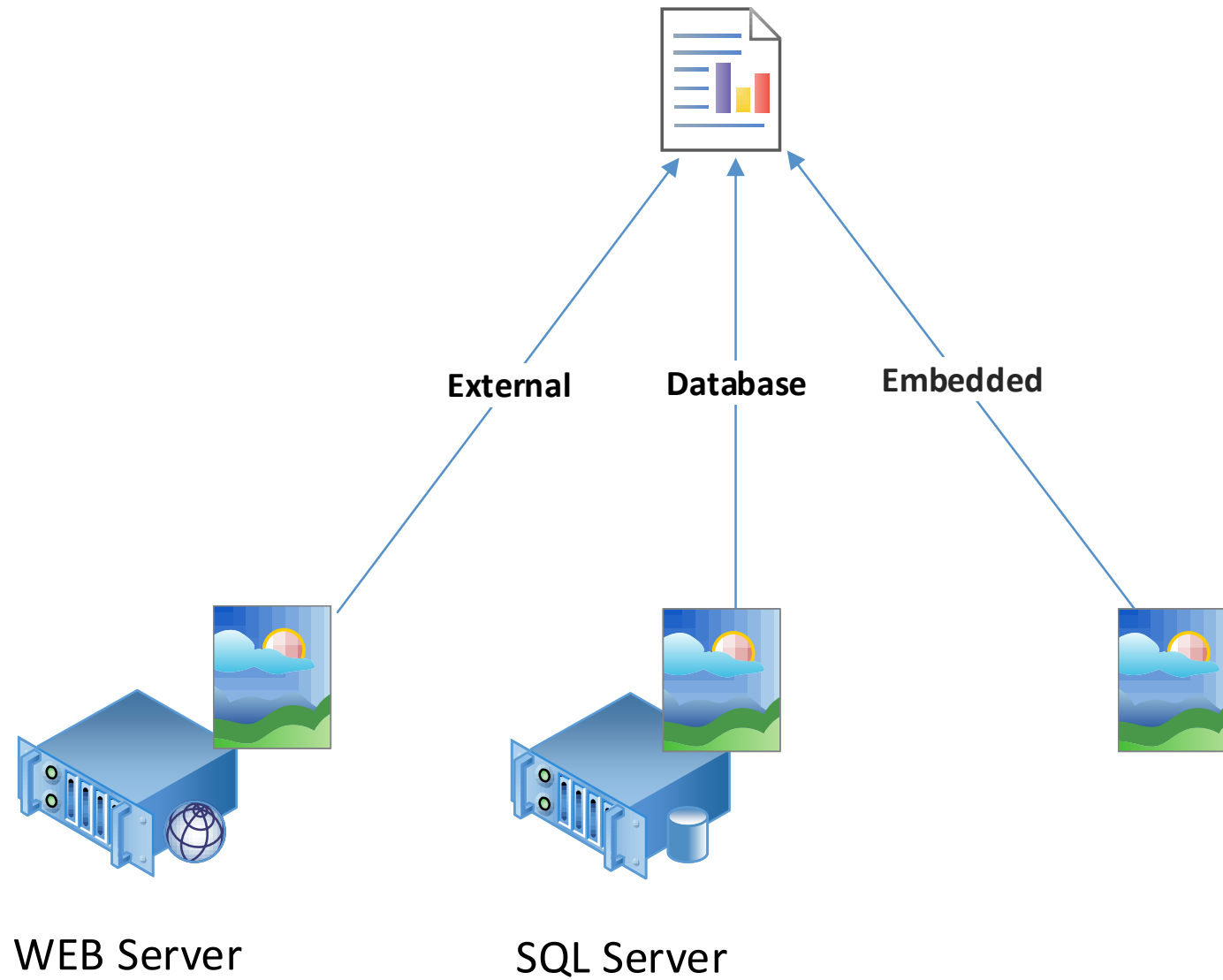
Filtros

- Filtro no Datasource
 - Dê preferência aos filtros realizados na fonte de dados (WHERE)
- Filtro Internos (Datasets / Tablix / Charts / etc.)
 - **Traz toda a massa de dados para o servidor** para que depois a mesma seja filtrada, onerando rede, memória, etc.
- Aceitável em 2 casos:
 - Massa de dados pequena.
 - Fonte de dados não permite a filtragem
 - Por exemplo: web services, arquivos texto, csv, feeds, etc.

Filtros



Imagens



Imagens

Database

- Armazenadas na base de dados
- Pode onerar a fonte e o Reporting Services.

External

- Armazenadas em um servidor Web (**Dependência externa**)
- Não aumenta o tamanho do arquivo de relatório.

Embedded (embarcada)

- Imagem está dentro da definição do relatório e sempre disponível
- Imagens com no **máx 100 Kb.**
- Lembre-se que o usuário terá que fazer o download toda vez que executar
- O ASP.NET possui limite de 4 MB no tamanho do post.

Expressões

Operators

- AND
- <
- /
- +

Program Flow

- Choose
- If
- Switch

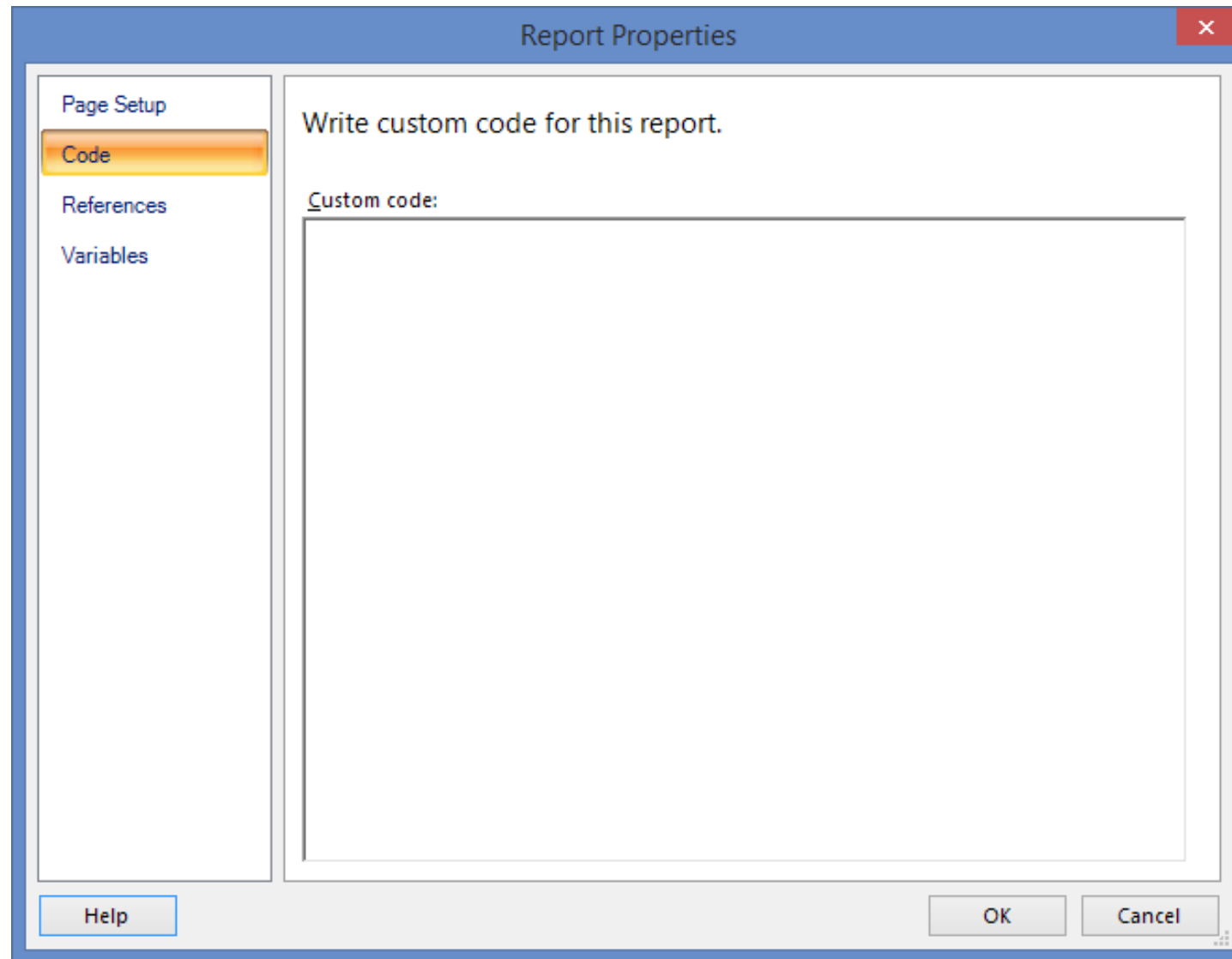
Common Functions

- Year
- Month
- Day

Agregate

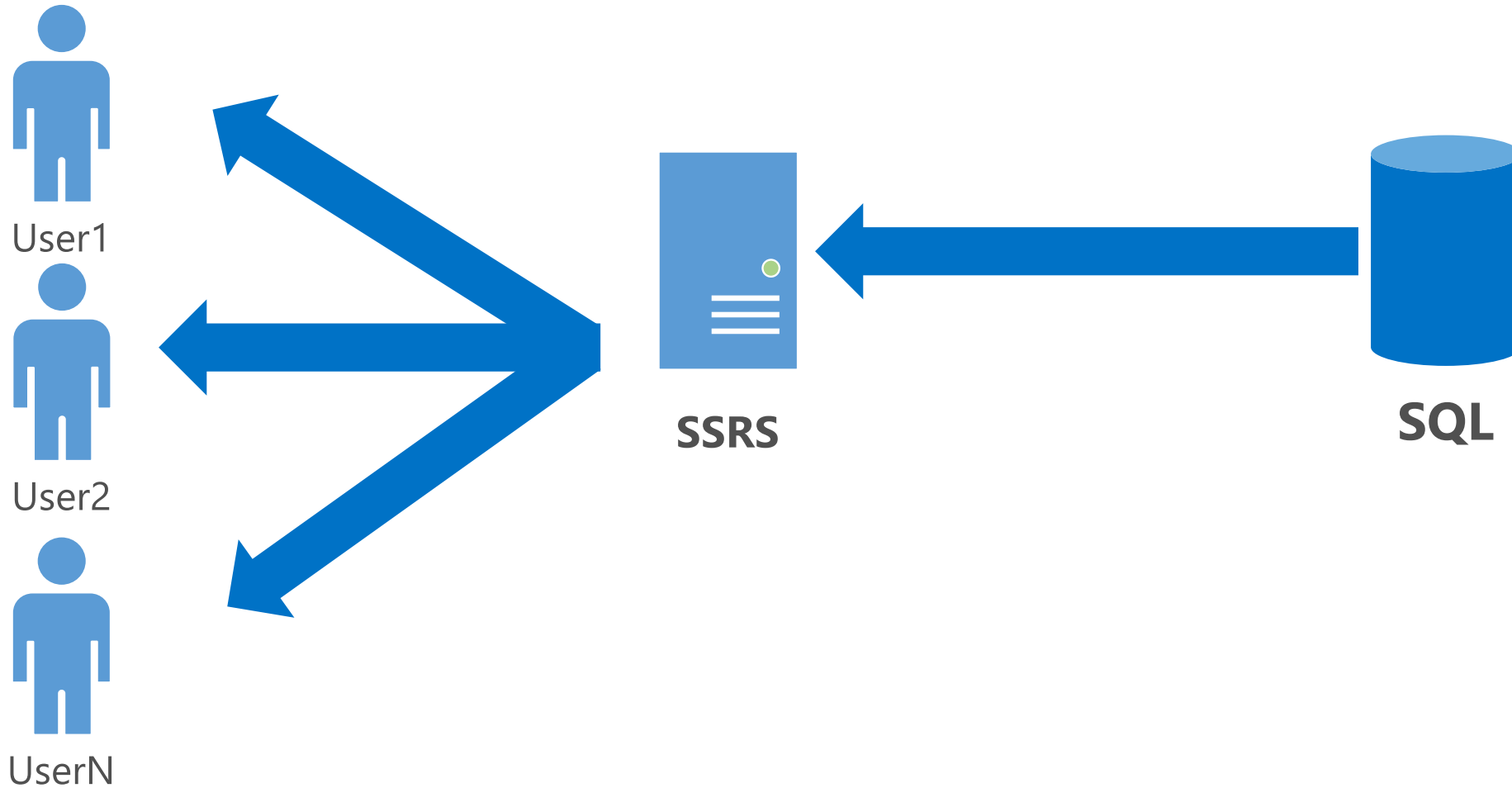
- Sum
- Min
- Max
- First
- Last
- Count Rows
- Count Distinct
- Count
- Avg

Expressões - extensão .NET

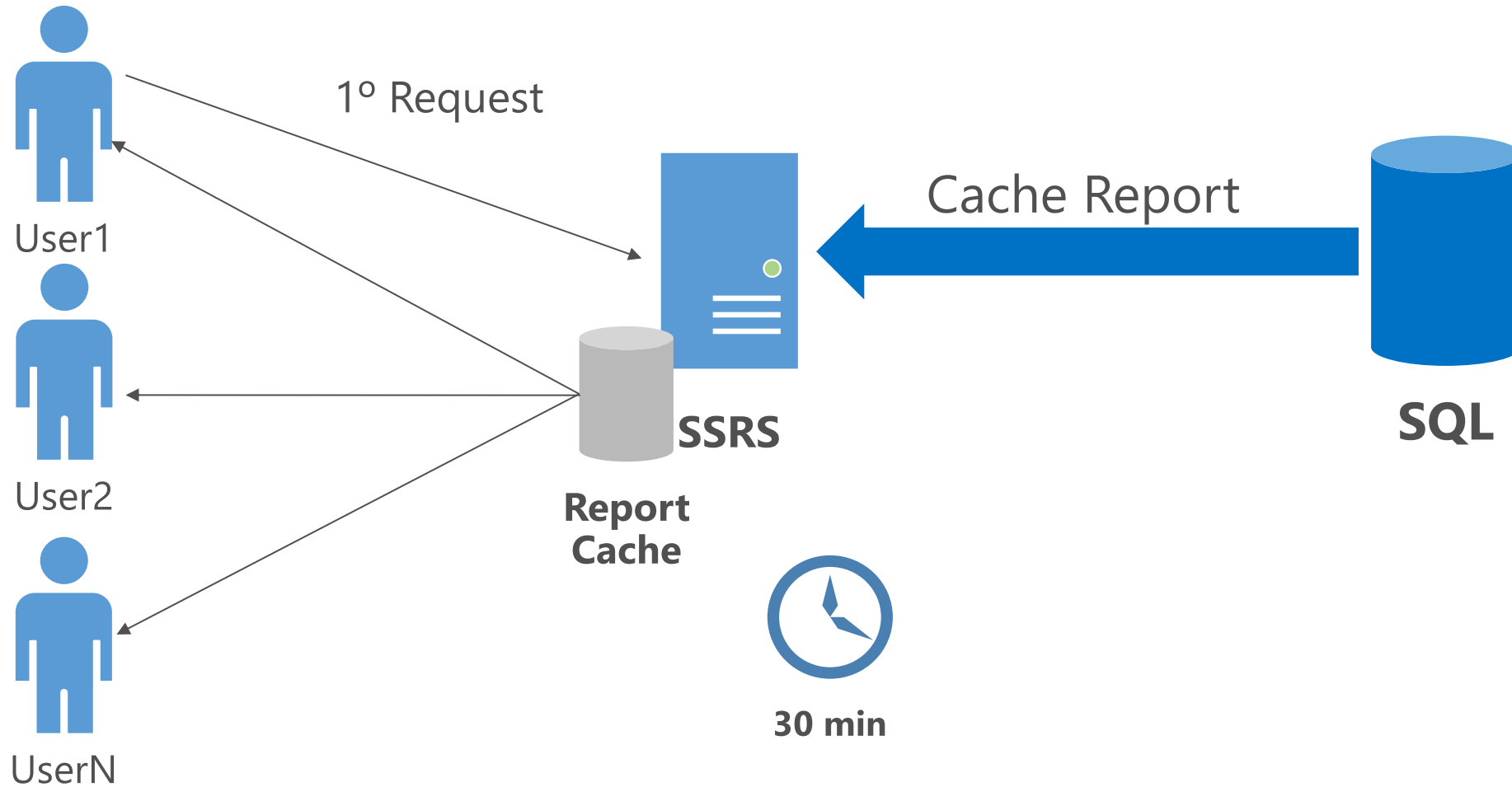


Forma de entrega
(Deploy)

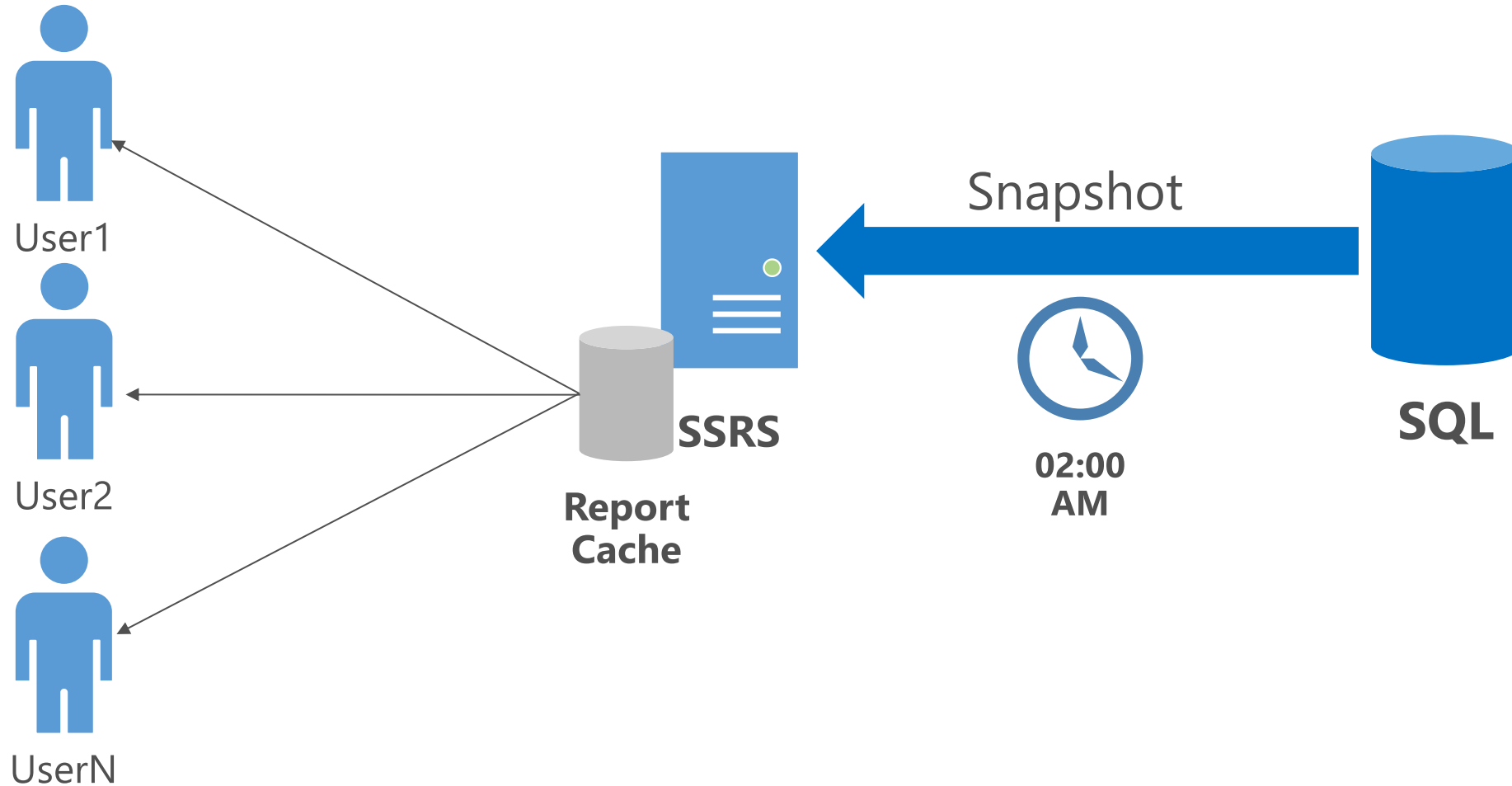
Online



Cache



Snapshot



Snapshots – WHERE vs FILTER

Product Category Bikes

Product Sub Category Mountain Bikes
Road Bikes
Touring Bikes

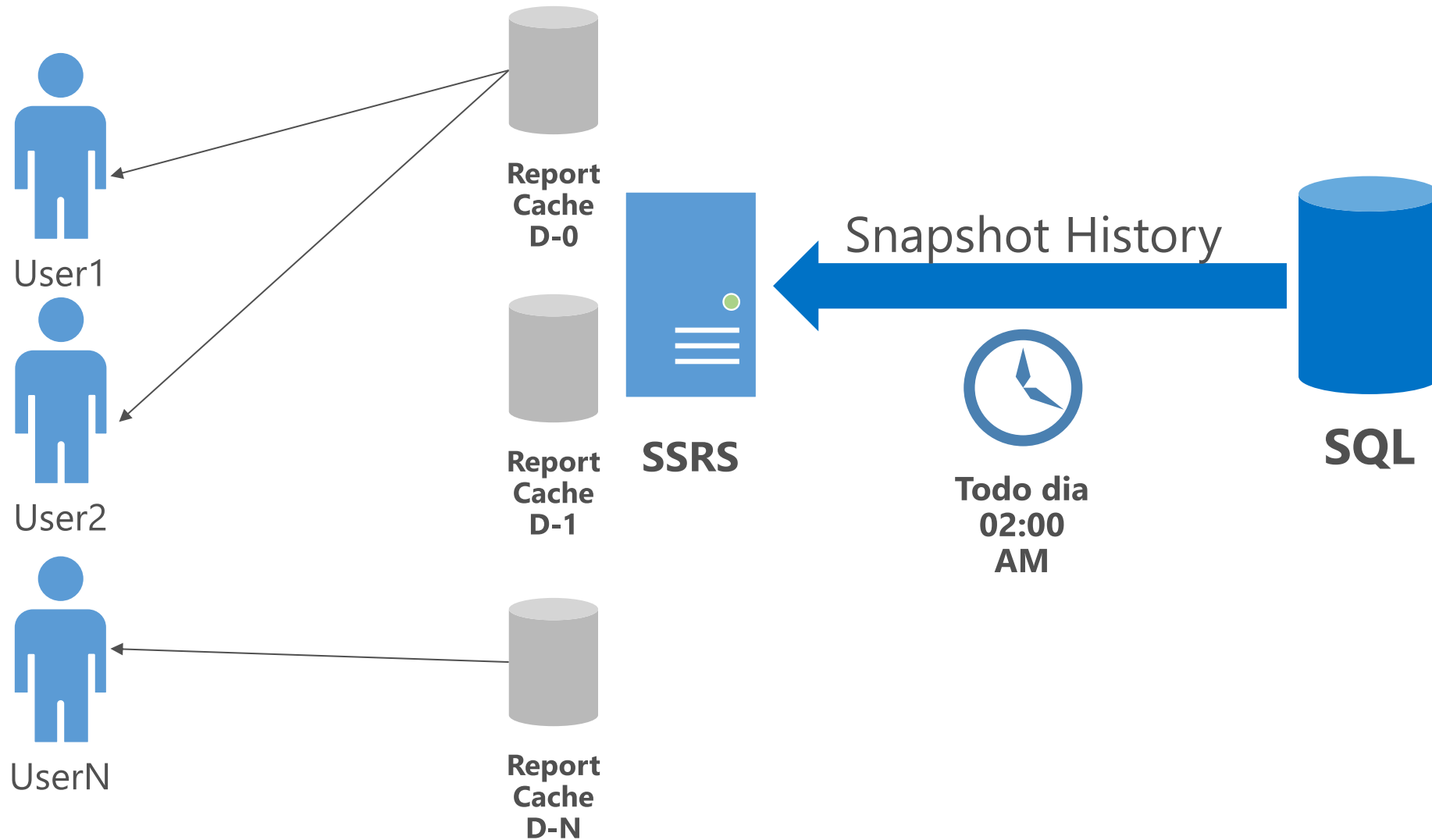
1 de 1

100%

Localizar | Próximo

Product ID	Name	Product Subcategory	Product Category
771	Mountain-100 Silver, 38	Mountain Bikes	Bikes
772	Mountain-100 Silver, 42	Mountain Bikes	Bikes
773	Mountain-100 Silver, 44	Mountain Bikes	Bikes
774	Mountain-100 Silver, 48	Mountain Bikes	Bikes
775	Mountain-100 Black, 38	Mountain Bikes	Bikes

Snapshot History



Formas de entrega (Deploy)

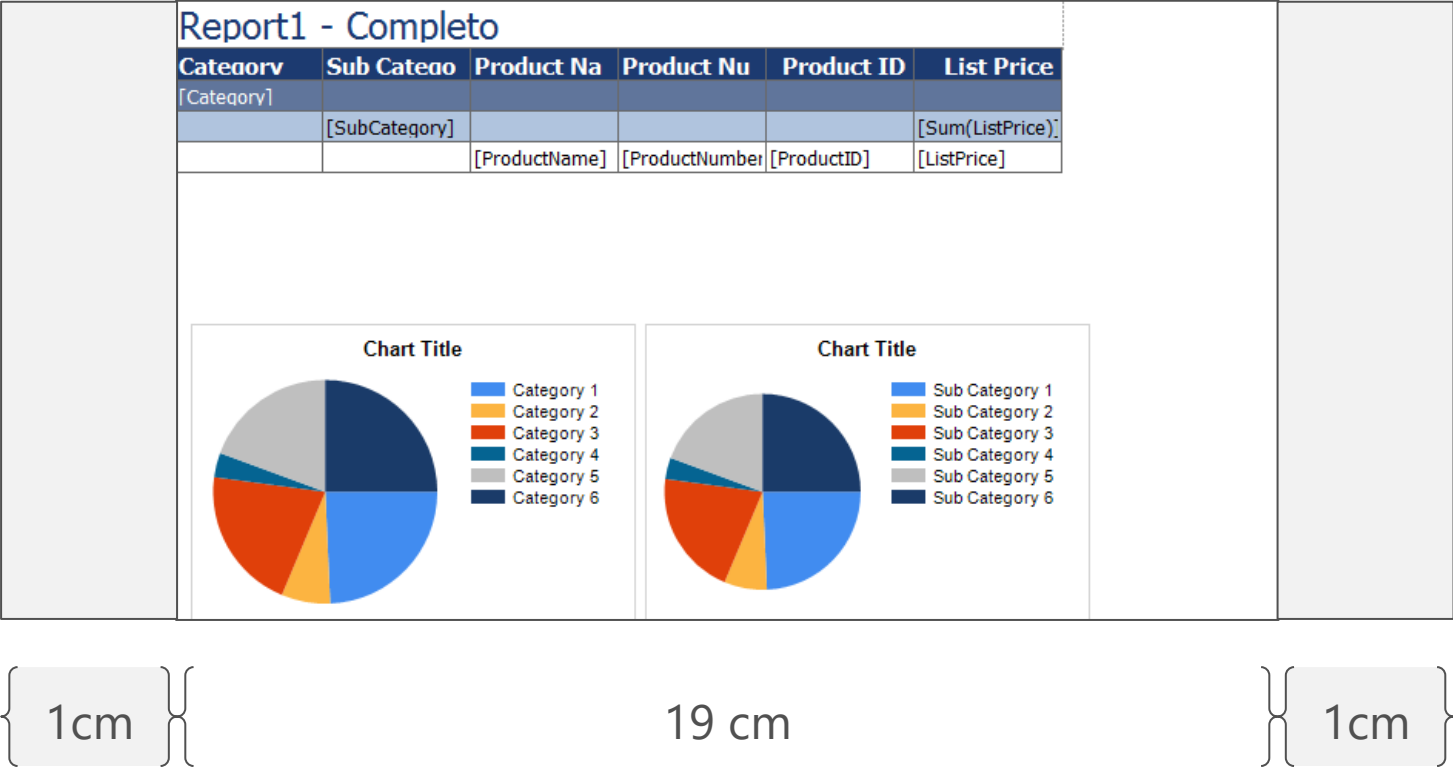
+ Rápidos

- **CSV**
- **XML**
- **HTML**
 - Pode processar página por página

+ Lentos

- **PDF**
 - Consome muito CPU
- **EXCEL**
 - Consome muita memória
- **WORD**
- **TIFF**

Relatório orientado a papel



Relatório orientado a papel

Report Properties

Page Setup
Code
References
Variables

Change page units, size, and margins for the report.

Page units:
☐ Inches ☒ Centimeters

Paper size

Orientation:
☒ Portrait ☐ Landscape

Paper size: A4 Width: 21cm Height: 29,7cm

Margins

Left: 1cm Right: 1cm
Top: 2,54cm Bottom: 2,54cm

Help OK Cancel

Properties

Body

Border

BorderColor Black
BorderStyle None
BorderWidth 1pt

Fill

BackgroundColor No Color
BackgroundImage

Position

Size 19cm; 10,68598cm

Width 19cm
Height 10,68598cm

Width
Specifies the width of the item.

Microsoft SQL Server

Dúvidas

Microsoft

Microsoft SQL Server

Referências

Microsoft



Referencias

- Report Design: Best Practices and Guidelines
 - <http://technet.microsoft.com/en-us/library/cc966445.aspx>
- Report Design Tips and Tricks
 - [http://technet.microsoft.com/en-US/library/bb395166\(v=SQL.90\).aspx](http://technet.microsoft.com/en-US/library/bb395166(v=SQL.90).aspx)
- Report Server Catalog Best Practices
 - <http://blogs.msdn.com/b/sqlcat/archive/2013/09/20/report-server-catalog-best-practices.aspx>
- Reporting Services Performance and Optimization
 - <http://blogs.msdn.com/b/sqlcat/archive/2013/10/30/reporting-services-performance-and-optimization.aspx>
- Caching Reports (SSRS)
 - [http://msdn.microsoft.com/en-us/library/ms155927\(v=sql.100\).aspx](http://msdn.microsoft.com/en-us/library/ms155927(v=sql.100).aspx)

Referencias

- Caching SSRS Reports for Performance
 - <http://blogs.technet.com/b/rob/archive/2010/02/11/caching-ssrs-reports-for-performance.aspx>
- Processing Large Reports
 - [http://msdn.microsoft.com/en-us/library/ms159638\(v=sql.100\).aspx](http://msdn.microsoft.com/en-us/library/ms159638(v=sql.100).aspx)
- Troubleshooting Reports: Report Performance
 - [http://technet.microsoft.com/en-us/library/bb522806\(v=sql.100\).aspx](http://technet.microsoft.com/en-us/library/bb522806(v=sql.100).aspx)
- Conor vs. more SARGable predicates
 - http://blogs.msdn.com/b/conor_cunningham_msft/archive/2010/12/18/conor-vs-more-sargable-predicates.aspx
- Report and Snapshot Size Limits
 - [http://technet.microsoft.com/en-us/library/ms156002\(v=sql.100\).aspx](http://technet.microsoft.com/en-us/library/ms156002(v=sql.100).aspx)

Referencias

- Report and Snapshot Size Limits
 - [http://technet.microsoft.com/en-us/library/ms156002\(v=sql.100\).aspx](http://technet.microsoft.com/en-us/library/ms156002(v=sql.100).aspx)
- ReportViewer Controls (Visual Studio)
 - <https://msdn.microsoft.com/en-us/library/ms251671.aspx>
- Configuring ReportViewer for Local Processing
 - <https://msdn.microsoft.com/en-us/library/ms251704.aspx>
- Configuring ReportViewer for Remote Processing
 - <https://msdn.microsoft.com/en-us/library/ms252075.aspx>

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