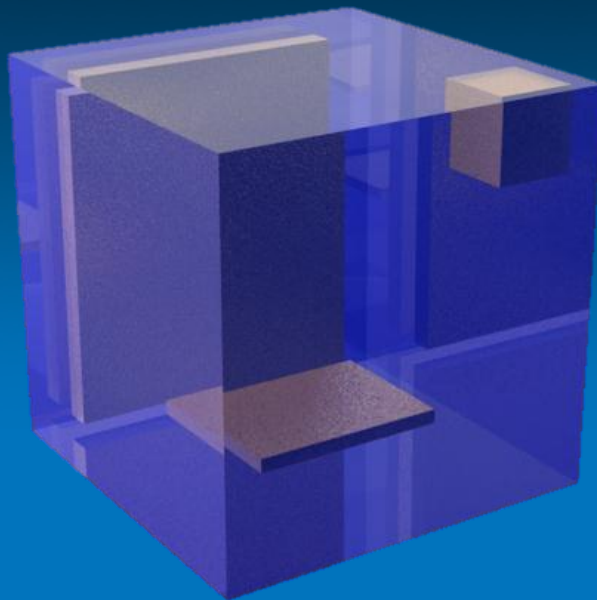


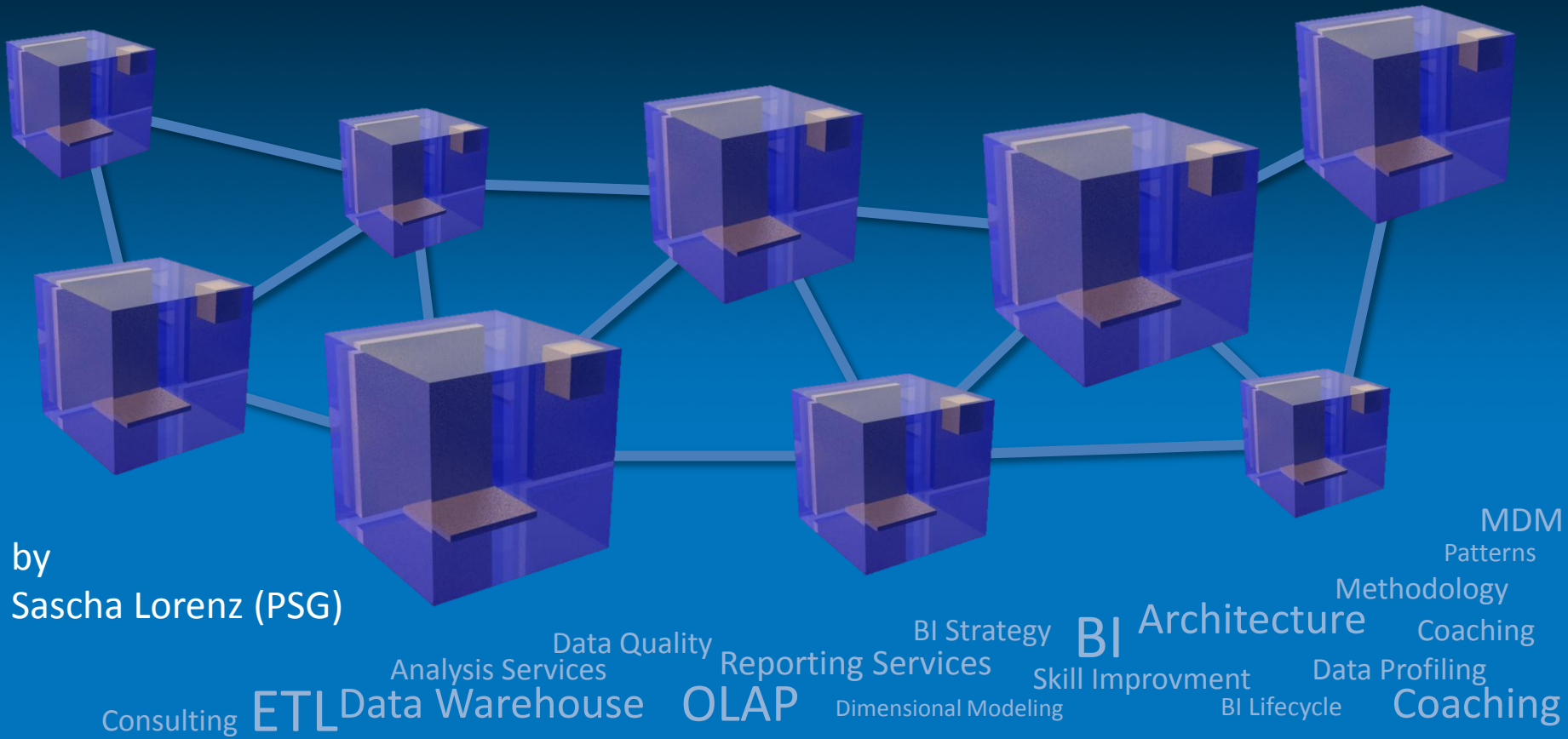
# 28 Weeks later - How to scale-out your MS Business Intelligence Environment



by  
Sascha Lorenz (PSG)

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling

# 28 Weeks later - How to scale-out your MS Business Intelligence Environment



# About me...

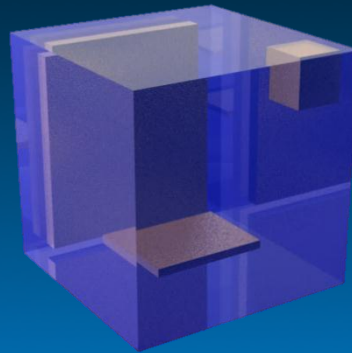
- Sascha Lorenz
- Principal Consultant, Coach & Trainer
- PSG Projekt Service GmbH, Hamburg
- Our Customers are German Federal Agencies, Shipping Companies and Banks (Fonds Administration & NPL)
- Engaged in German PASS Chapter (Hamburg/Bremen)

Follow me on **Facebook** and  
<http://saschalorenz.blogspot.com>

A word cloud of business intelligence and data management terms. The words are arranged in a horizontal, slightly curved layout. The most prominent words are 'BI Architecture' and 'Coaching', which are larger than the others. Other visible words include 'MDM', 'Patterns', 'Methodology', 'Data Quality', 'Reporting Services', 'BI Strategy', 'Skill Improvement', 'Data Profiling', 'Data Warehouse', 'ETL', 'OLAP', 'Dimensional Modeling', 'BI Lifecycle', 'Consulting', 'Analysis Services', and 'Data Profiling'.

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Skill Improvement  
Data Profiling  
Data Warehouse  
ETL  
OLAP  
Dimensional Modeling  
BI Lifecycle  
Consulting  
Analysis Services  
Data Quality  
Reporting Services

# Scale-up



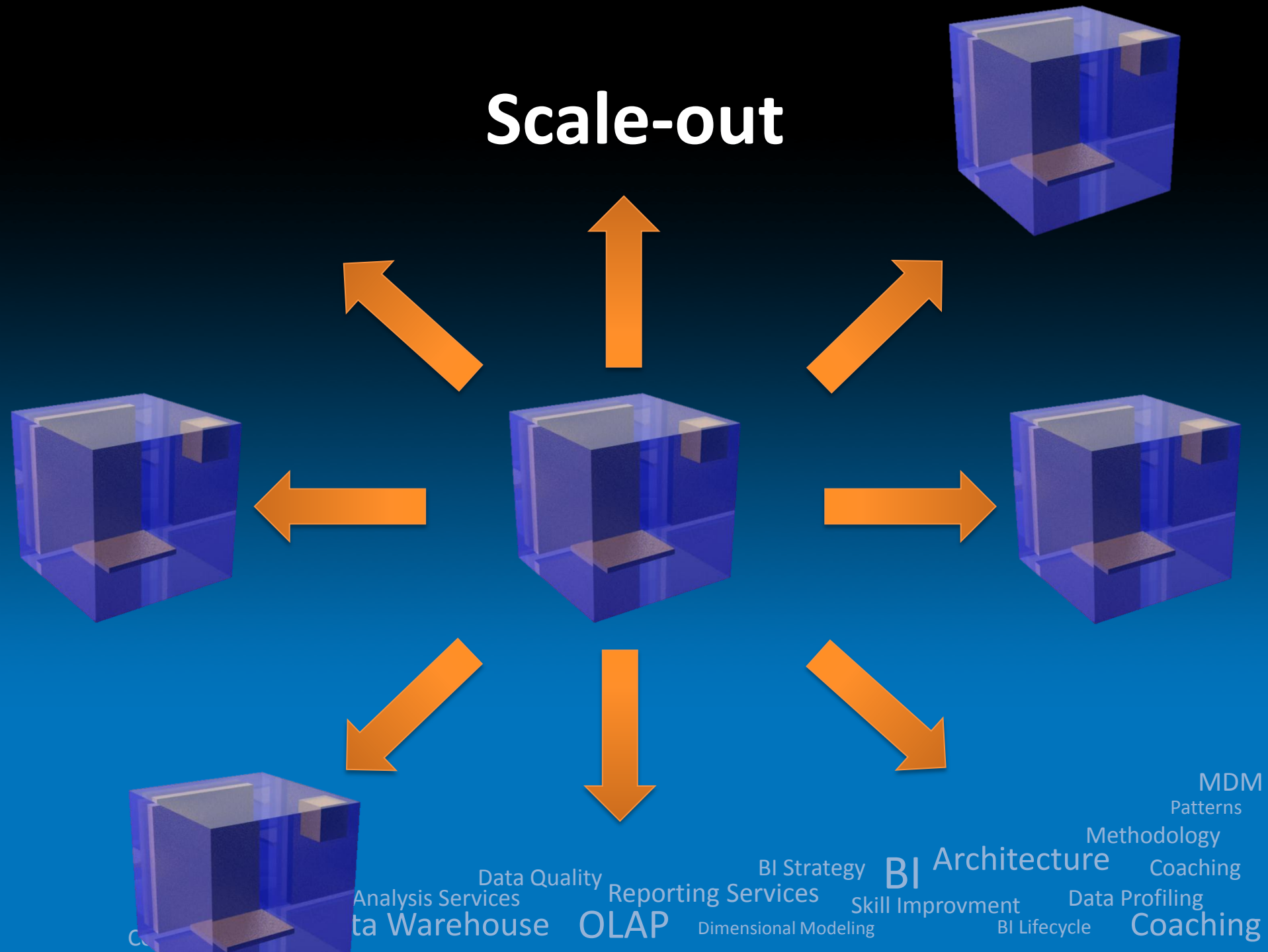
MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Motivations/Challenges...

- Reuse Data (Structures...)
  - Master Data (Management)
    - Dimensions
  - Business Process Data
    - Fact Table / Measuregroup
- Heavy Workload!
  - Processing Power
  - Too many users
- High Availability
  - 24x7x365 – Globalization !

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Skill Improvement  
Data Profiling  
Data Warehouse  
ETL  
OLAP  
Dimensional Modeling  
BI Lifecycle  
Coaching  
Analysis Services  
Data Quality  
Consulting

# Scale-out



# Scale-out

## Logical

- **Linked Dimensions**
- **Linked Measuregroups**
- **Shared Scalable Databases**

## Physical

- **Backup/Restore**
- **Copy (Detach/Attach)**
- **Deployment**
- **Synchronization**
- **Shared Scalable Databases**
- **Remote Partitions**

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Fundamentals



- Where is my SSAS Database?
- Who are you and what have you done with my SSAS Database?

MDM  
Patterns  
Methodology  
Coaching  
BI Strategy  
BI Architecture  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Consulting

# Where is my SSAS Database?

The screenshot shows the 'Database Properties' window for 'Adventure Works DW 2008R2'. The 'General' tab is active, displaying the following information:

General	
Name	Adventure Works DW 2008R2
ID	Adventure Works DW 2008R2
Description	A Unified Dimensional Model that encompasses the Adventure Works data warehouse
Create Timestamp	02.04.2011 13:30:07
Last Schema Update	02.04.2011 13:30:07
Last Update	02.04.2011 13:33:00
Read-Write Mode	ReadWrite

Below the 'General' tab, the 'Security Settings' and 'Status' sections are visible. The 'Storage' section is empty, with a red arrow pointing to it, indicating the missing database location.

The 'Object Explorer' on the left shows the hierarchy: SQL Server (10.50.1713.1) > Databases > Adventure Works > Data Sources > Adventure Works DW 2008R2. The 'Connection' section shows the server is 'SQLF' and the connection is 'ABC\administrator'.

MDM  
Patterns  
Methodology  
Coaching  
BI Strategy  
BI Architecture  
Data Quality  
Reporting Services  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Consulting  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Analysis Services  
Data Quality  
Reporting Services  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Consulting  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Analysis Services

# Where is my SSAS Database?

Object Explorer

Connect

Analysis Server Properties

Select a page

- General
- Language/Collation
- Security

Script Help

Name	Value	Current Value	Default Value	Restart
BackupDir	C:\Program Files\Microsoft SQL Server\MSAS10_50\MSSQLSERVER\OLAP\Backup	C:\Program Files\Micr...		yes
Commit Timeout	0	0	0	
CoordinatorExecutionMode				
DataDir	C:\Program Files\Microsoft SQL Server\MSAS10_50\MSSQLSERVER\OLAP\Data			
DataMining \ AllowAdHocOpenRowsetQueries	false			
DataMining \ AllowSessionMiningModels	false			
DataMining \ MaxCon...				
		false	false	
		false	false	
		true	true	
		false	false	
ForceCommit Timeout	30000	30000	30000	
Log \ FlightRecorder \ Enabled	true	true	true	
Log \ QueryLog \ CreateQueryLog Table	false	false	false	
Log \ QueryLog \ QueryLogConnectionString				
Log \ QueryLog \ QueryLogSampling	10	10	10	
Log \ QueryLog \ QueryLogTableName	OlapQueryLog	OlapQueryLog	OlapQueryLog	
LogDir	C:\Program Files\Microsoft SQL Server\MSAS10_50\MSSQLSERVER\OLAP\Log	C:\Program Files\Micr...		yes
Memory \ HardMemoryLimit	0	0	0	
Memory \ LowMemoryLimit	65	65	65	
Memory \ TotalMemoryLimit	80	80	80	

C:\Program Files\Microsoft SQL Server\MSAS10\_50\MSSQLSERVER\OLAP\Data

Connection

Server: SQLF

Connection: ABC\administrator

[View connection properties](#)

Progress

Ready

☐ Show Advanced (All) Properties

☒ Save Only Modified Properties

Reset default

OK Cancel

MDM  
Patterns

Methodology

Coaching

Data Profiling

Coaching

BI Lifecycle

Skill Improvement

Dimensional Modeling

Reporting Services

OLAP

Analysis Services

Data Quality

Consulting ETL Data Warehouse

BI Strategy

BI Architecture

# Who are you and what have you done with my SSAS Database?

C:\Program F

Adventure Works.0.cub

Adventure W

Clustered Cu

Customer Clu

Customer Clu

Dim Account.

Dim Currency

Dim Customer

Dim Departme

Dim Destinatio

Dim Employee

Dim Geograph

Dim Organiza

Dim Product.(

Dim Promotion

Dim Reseller.(

Dim Sales Rea

Dim Sales Ter

Dim Scenario.

Dim Time.0.di

Fact Internet

Fact Reseller

Fact Sales S

Fact Currency Rate.0.det

Fact Finance.0.det

Fact

Customers\_2001.0.prt

Cus

Cus

1.fact.data

data.hdr

data.mdf

log.LDF

Fact Internet Sales 1.1.det

Fact Internet Sales Reason.1.det

Fact Reseller Sales.1.det

Fact Sales Quota.1.det

Fact Sales Summary.1.det

info.1

Internet Orders.1.det

MdxScript.0.scr

Perspective.0.persp

Perspective 1.0.persp

Perspective 2.0.persp

Perspective 3.0.persp

Perspective 4.0.persp

Analysis S

ETL Data Warehouse

MDM

Patterns

Methodology

Coaching

BI Strategy

BI Architecture

Skill Improvement

Data Profiling

BI Lifecycle

Coaching

Consulting

Dimensional Modeling

9798 Files in 109 Folders

# Demo

## A quick look at a SSAS Database



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Scale-out

## Logical

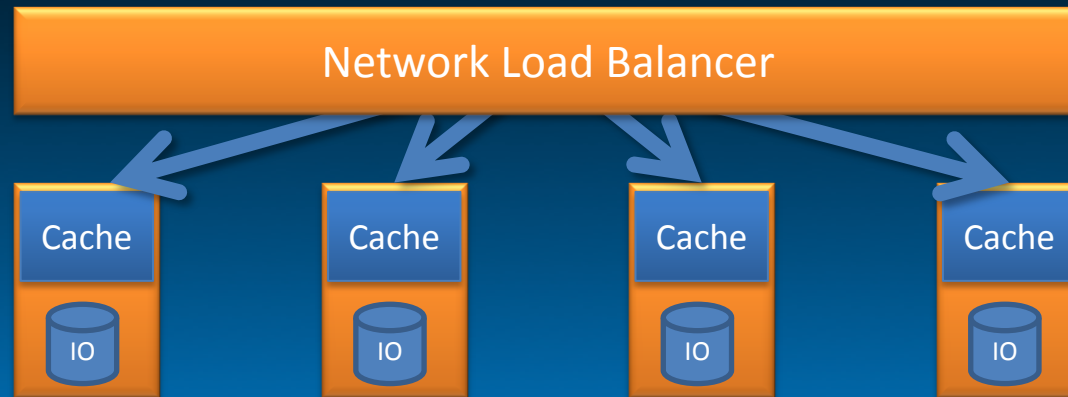
- **Linked Dimensions**
- **Linked Measuregroups**
- **Shared Scalable Databases**

## Physical

- **Backup/Restore**
- **Copy (Detach/Attach)**
- **Deployment**
- **Synchronization**
- **Shared Scalable Databases**
- **Remote Partitions**

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Backup & Restore...



Abf File

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Consulting

# Scale-out

## Logical

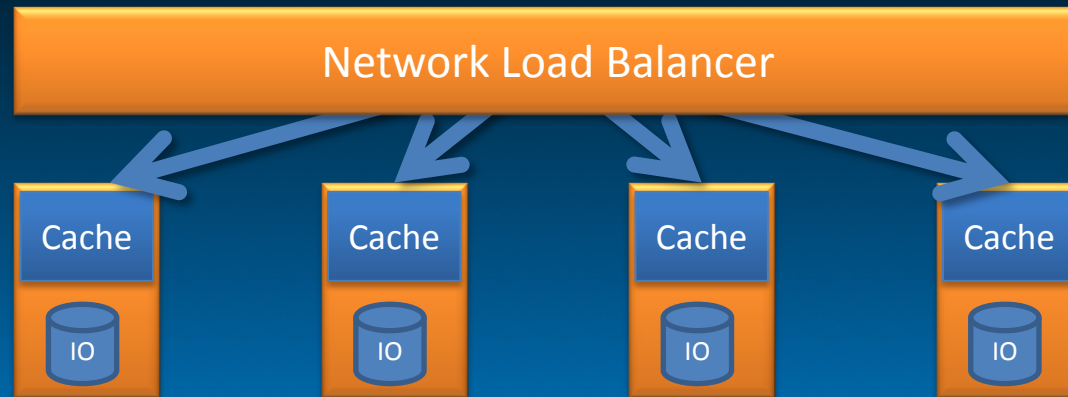
- **Linked Dimensions**
- **Linked Measuregroups**
- **Shared Scalable Databases**

## Physical

- **Backup/Restore** ✓
- **Copy (Detach/Attach)**
- **Deployment**
- **Synchronization**
- **Shared Scalable Databases**
- **Remote Partitions**

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Detach/Attach



SSAS DB Folder...

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Detach/Attach in AMO

```
using Microsoft.AnalysisServices;

Server srv = new Server();
Database db;
srv.Connect("localhost");
if(srv.Databases.ContainsName("AMO Cube"));
{
    listBox1.Items.Add("DB exists...");
    db = srv.Databases["AMO Cube"];

    db.Detach();
    listBox1.Items.Add("Detach...");

    srv.Attach(@"C:\Program Files\Microsoft SQL
               Server\MSAS10_50\MSSQLSERVER\OLAP\Data\AMO
               Cube.0.db",ReadWriteMode.ReadWrite);
    listBox1.Items.Add("Attach...");
}

srv.Disconnect();
```

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching

# Scale-out

## Logical

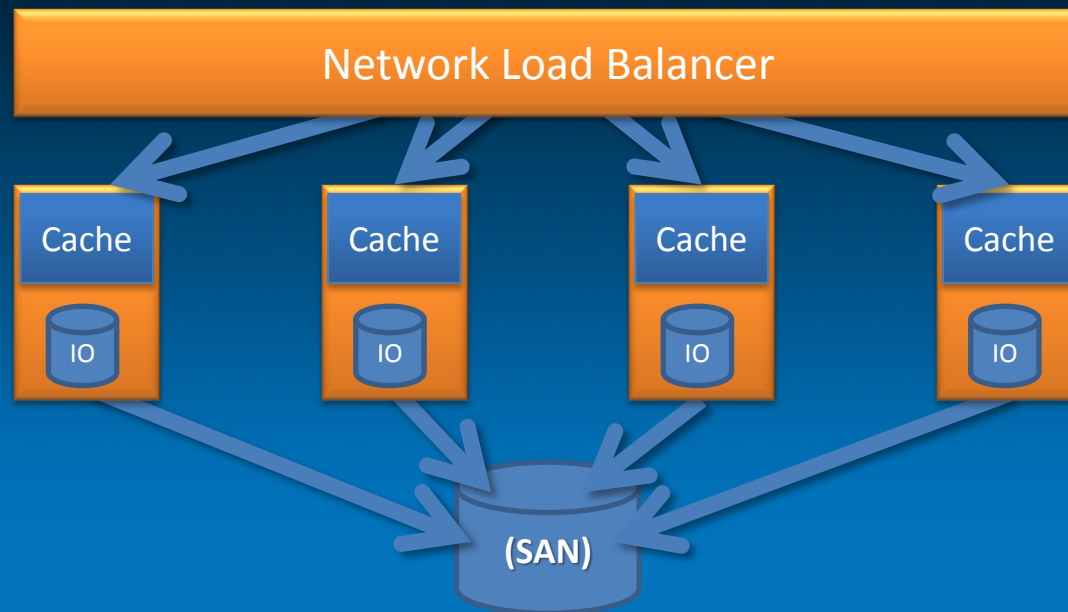
- Linked Dimensions
- Linked Measuregroups
- Shared Scalable Databases

## Physical

- Backup/Restore ✓
- Copy (Detach/Attach) ✓
- Deployment
- Synchronization
- Shared Scalable Databases
- Remote Partitions

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Shared Scalable Database



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Consulting

# Demo

## Shared Scalable Database



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Scale-out

## Logical

- Linked Dimensions
- Linked Measuregroups
- Shared Scalable Databases ✓

## Physical

- Backup/Restore ✓
- Copy (Detach/Attach) ✓
- Deployment
- Synchronization
- Shared Scalable Databases ✓
- Remote Partitions

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# How to „move“ a SSAS Database?

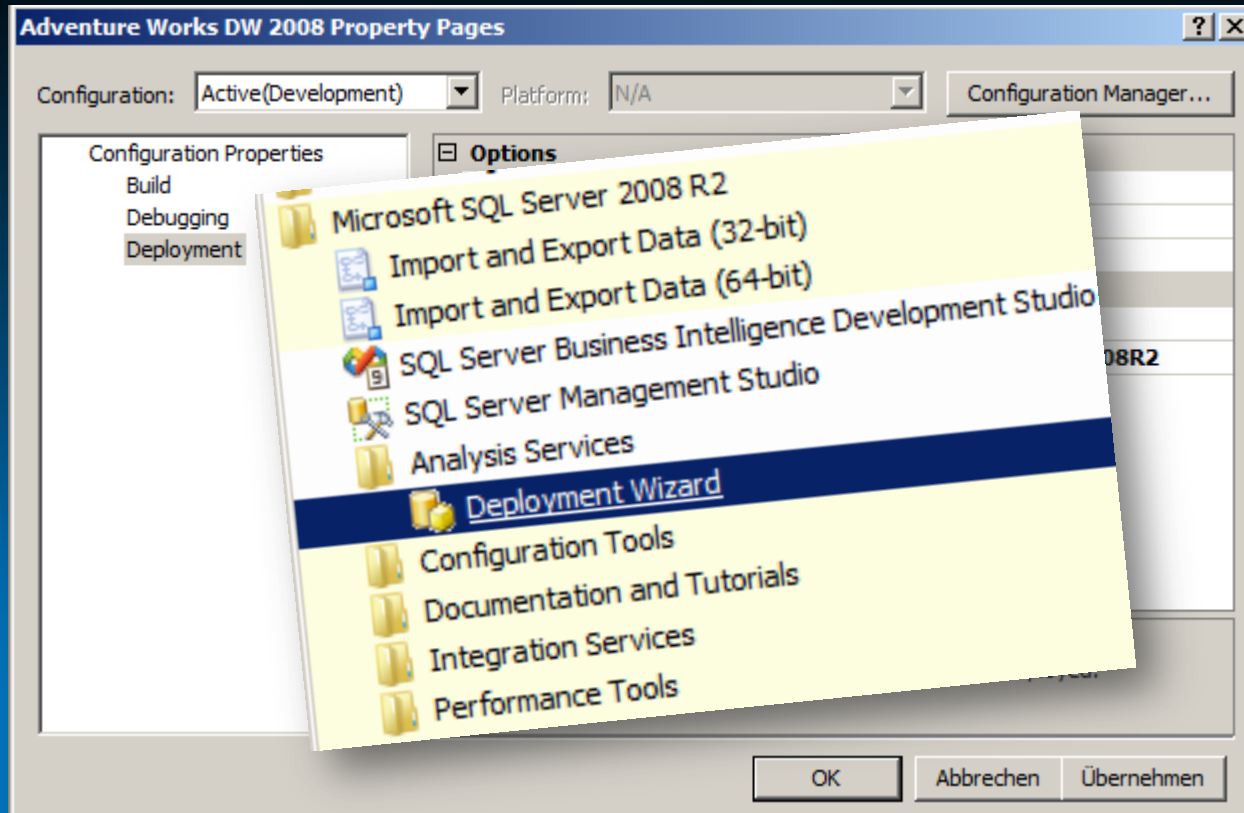
- Simple *copy & paste* is „almost unmanageable“...
- Possible Answers:
  - Deployment Wizard
  - Synchronization



A word cloud of various business intelligence and data management terms. The words are arranged in a horizontal, slightly overlapping manner. The most prominent words are 'BI Architecture' and 'Coaching', which are larger than the others. Other visible words include 'MDM', 'Patterns', 'Methodology', 'Coaching', 'Data Profiling', 'BI Lifecycle', 'Skill Improvement', 'Reporting Services', 'OLAP', 'Data Warehouse', 'ETL', 'Consulting', 'Analysis Services', 'Data Quality', 'Dimensional Modeling', 'BI Strategy', and 'Deployment Wizard'.

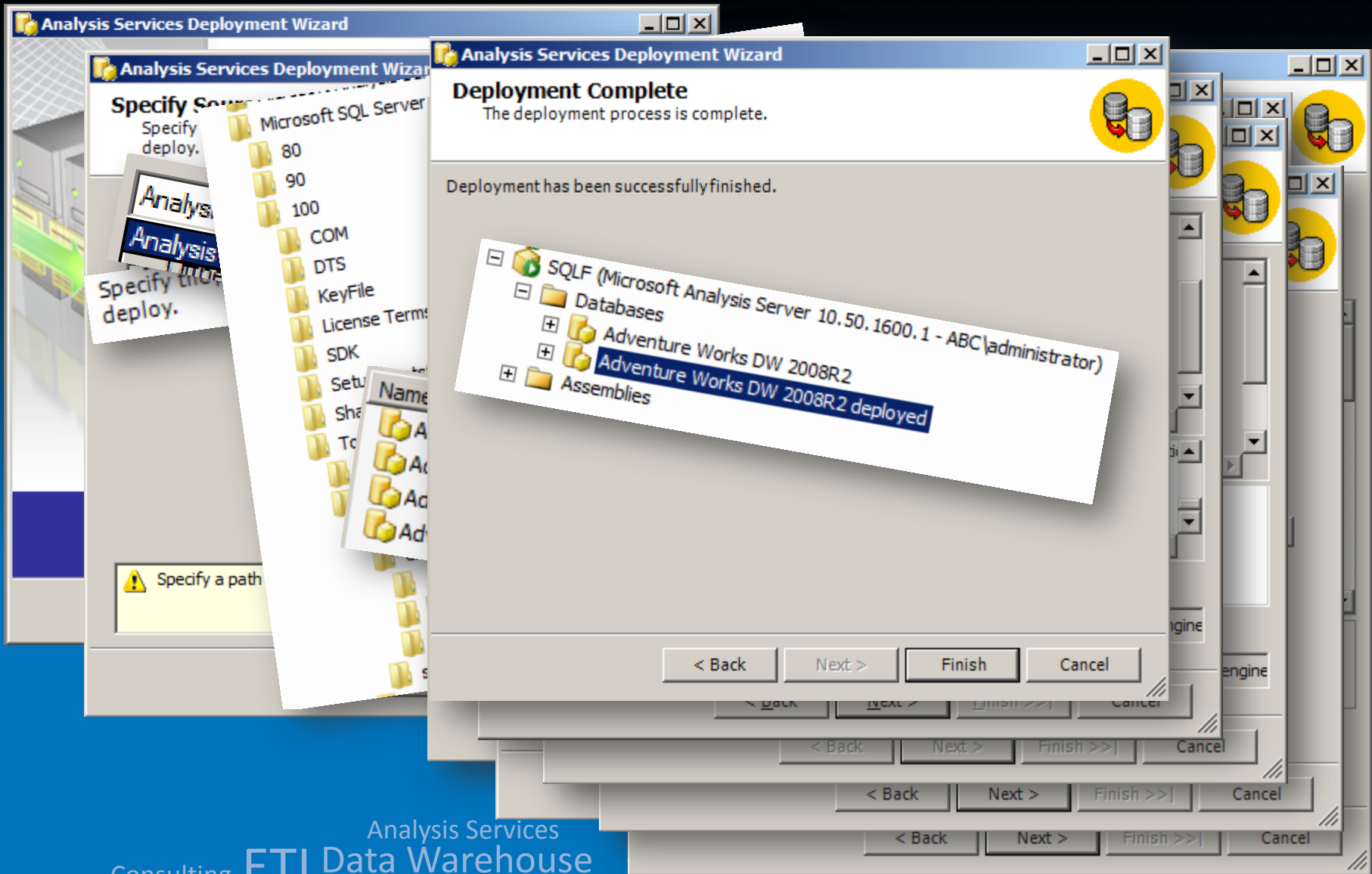
MDM  
Patterns  
Methodology  
Coaching  
Data Profiling  
BI Lifecycle  
Skill Improvement  
Reporting Services  
OLAP  
Data Warehouse  
ETL  
Consulting  
Analysis Services  
Data Quality  
Dimensional Modeling  
BI Strategy  
BI Architecture  
Coaching

# Deployment in BIDS ?



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
ETL Data Warehouse  
OLAP  
Dimensional Modeling  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Consulting

# Deployment Wizard



# Scale-out

## Logical

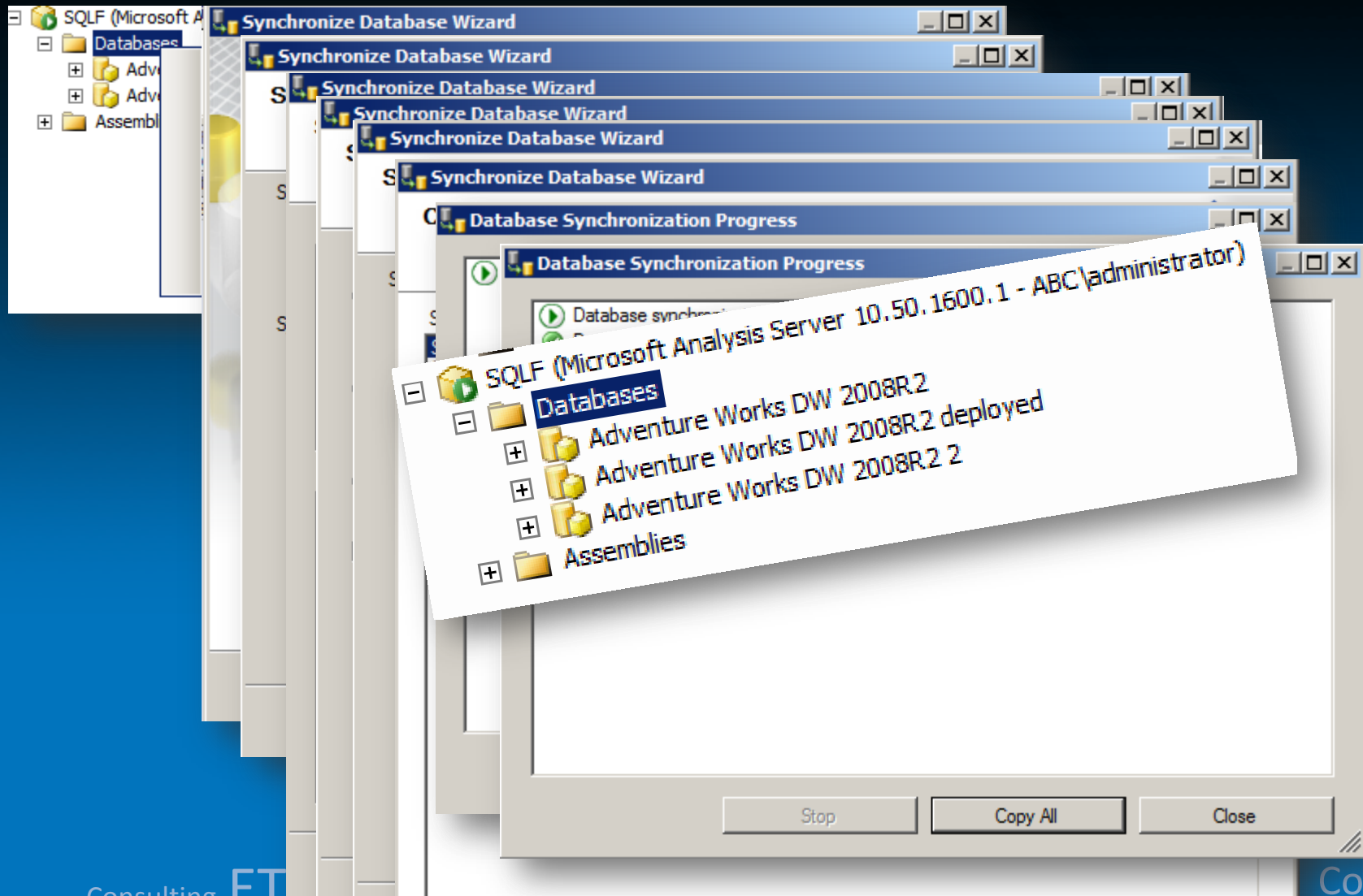
- Linked Dimensions
- Linked Measuregroups
- Shared Scalable Databases ✓

- Backup
- Copy (Detach & Attach)
- Deployment
- Synchronization
- Shared Scalable Databases ✓
- Remote Partitions

XML/A  
Scripting...

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Consulting

# Synchronize Wizard



# Scale-out

## Logical

- Linked Dimensions
- Linked Measuregroups
- Shared Scalable Databases ✓

## Physical

- Backup/Recovery
- Copy (Data)
- Deployment
- Synchronization
- Shared Scalable Databases ✓
- Remote Partitions

XML/A  
Scripting...

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Consulting

# How use XML/A in .NET?

```
using Microsoft.AnalysisServices.AdomdClient;  
  
AdomdConnection admdcon = new AdomdConnection(tbConnString.Text);  
  
admdcon.Open();  
  
AdomdCommand cmd = admdcon.CreateCommand();  
  
cmd.CommandText = tbXMLA.Text;  
  
int result = cmd.ExecuteNonQuery();  
  
admdcon.Close();
```

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching

# Scale-out

## Logical

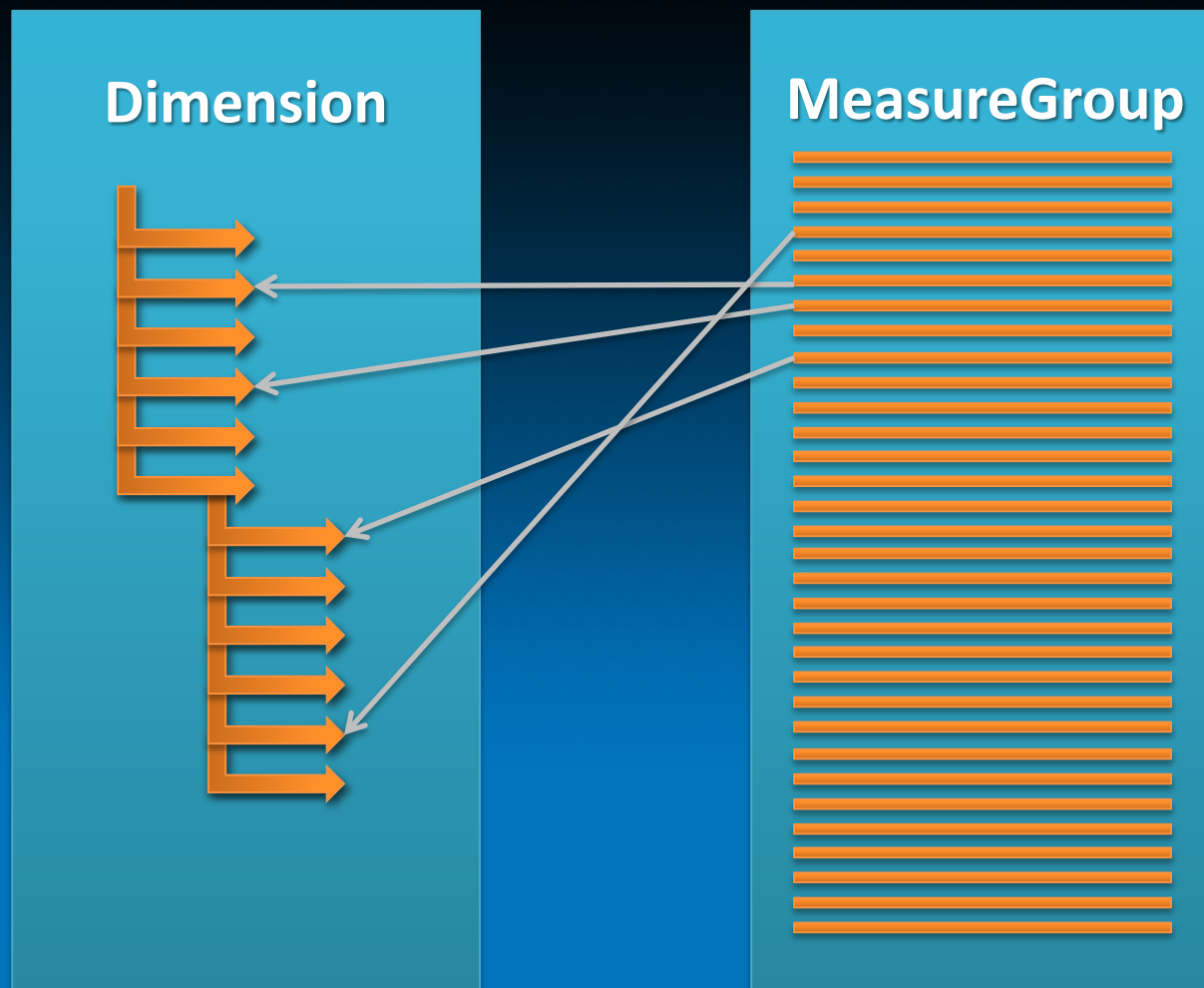
- Linked Dimensions
- Linked Measuregroups
- Shared Scalable Databases ✓

## Physical

- Backup/Restore ✓
- Copy (Detach/Attach) ✓
- Deployment ✓
- Synchronization ✓
- Shared Scalable Databases ✓
- Remote Partitions

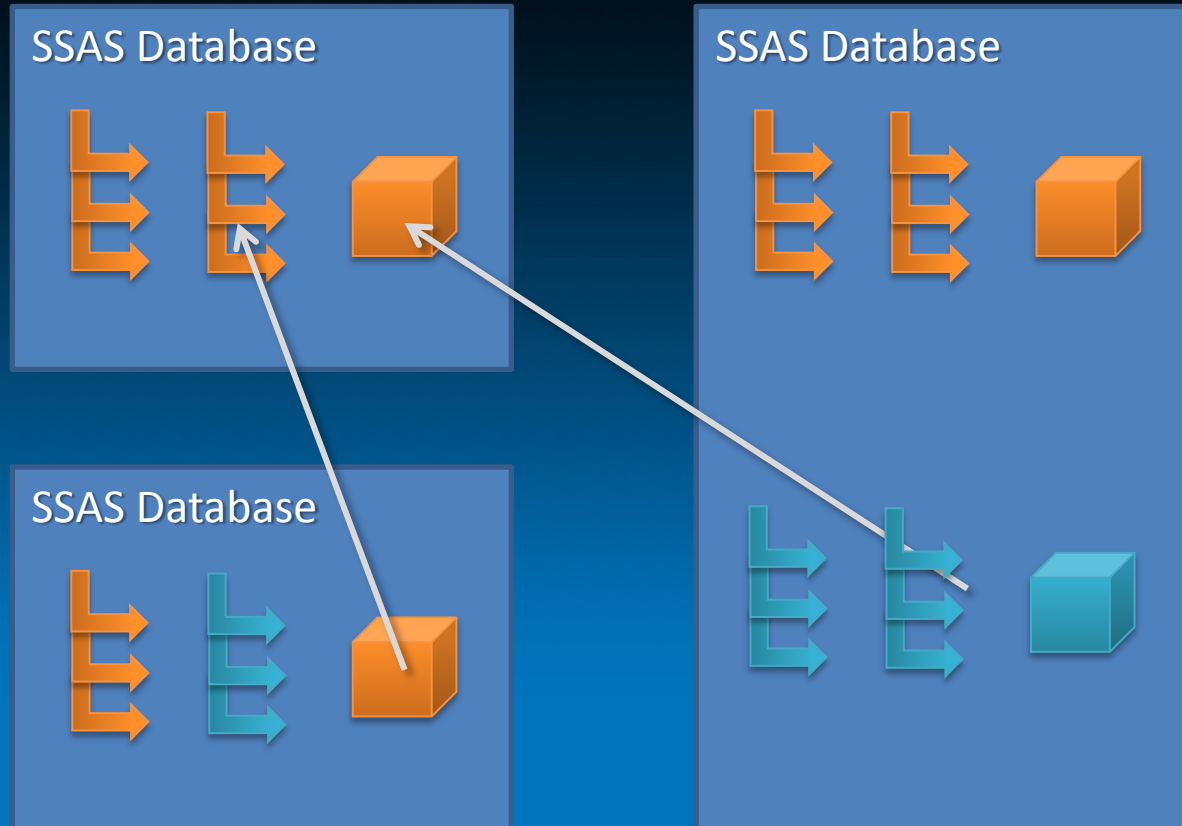
MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Linked Dimensions



MDM  
Patterns  
Methodology  
Coaching  
BI Strategy  
BI Architecture  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
OLAP  
Dimensional Modeling  
Consulting

# Linked Dimensions & Measure Groups



MDM  
Patterns  
Methodology  
Coaching  
BI Strategy  
BI Architecture  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Consulting

# Linked Dimension

The screenshot displays the 'Define Relationship' dialog box in SQL Server Enterprise Manager, illustrating the configuration for a linked dimension. The dialog is titled 'Define Relationship' and contains the following elements:

- Select relationship type:** A dropdown menu set to 'Regular'.
- The dimension table is joined directly to the fact table.** A text label.
- Granularity attribute:** A dropdown menu set to 'Product'.
- Dimension table:** A text box containing 'Linked table'.
- Measure group table:** A text box containing 'FactInternetSales'.
- Relationship:** A table with two columns: 'Dimension Columns' and 'Measure Group Columns'. The 'Dimension Columns' column contains 'Linked column'.
- Advanced...** A button to expand the dialog.
- OK**, **Cancel**, and **Help** buttons at the bottom.

In the background, the 'Solution Explorer' pane shows a list of dimensions, with 'Product 1' selected. Other dimensions listed include Account, Clustered Customer, Customer, Date, Department, Destination, Employee, Geography, Internet Sales, Organization, Product, Promotion, Reseller, Reseller Sales, Sales Channel, Sales Reason, Sales Summary, Sales Territory, Scenario, Source Currency, and Subcategory Basket Analysis.

Additional dialog boxes visible in the background include 'Linked Object Wizard' (Select Objects) and 'Completing the Wizard'.

# Linked Dimension

- Prerequisite:

Feature \ LinkFromOtherInstanceEnabled	false	fa
Feature \ LinkInsideInstanceEnabled	true	tru
Feature \ LinkToOtherInstanceEnabled	false	fa

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Demo

## Linked Dimensions



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Summary Scale-out

## Logical

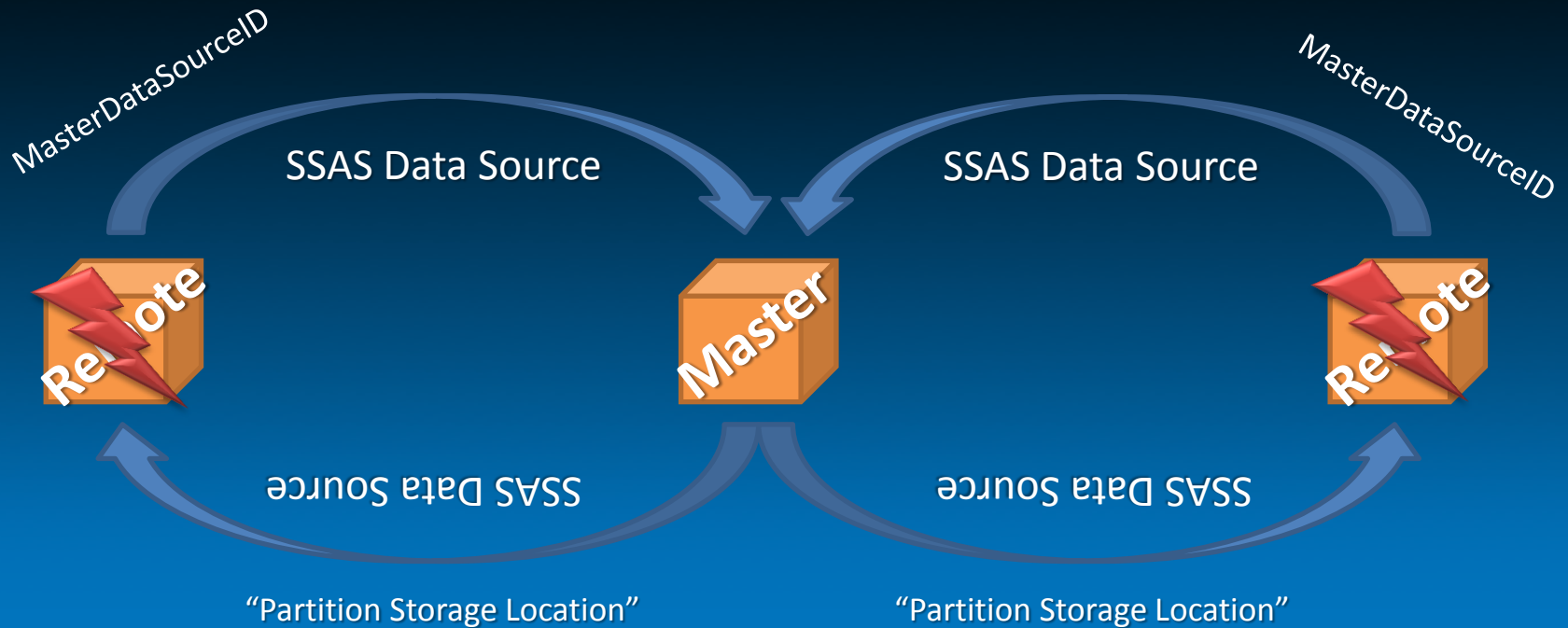
- Linked Dimensions ✓
- Linked Measuregroups ✓
- Shared Scalable Databases ✓

## Physical

- Backup/Restore ✓
- Copy (Detach/Attach) ✓
- Deployment ✓
- Synchronization ✓
- Shared Scalable Databases ✓
- Remote Partitions ✓

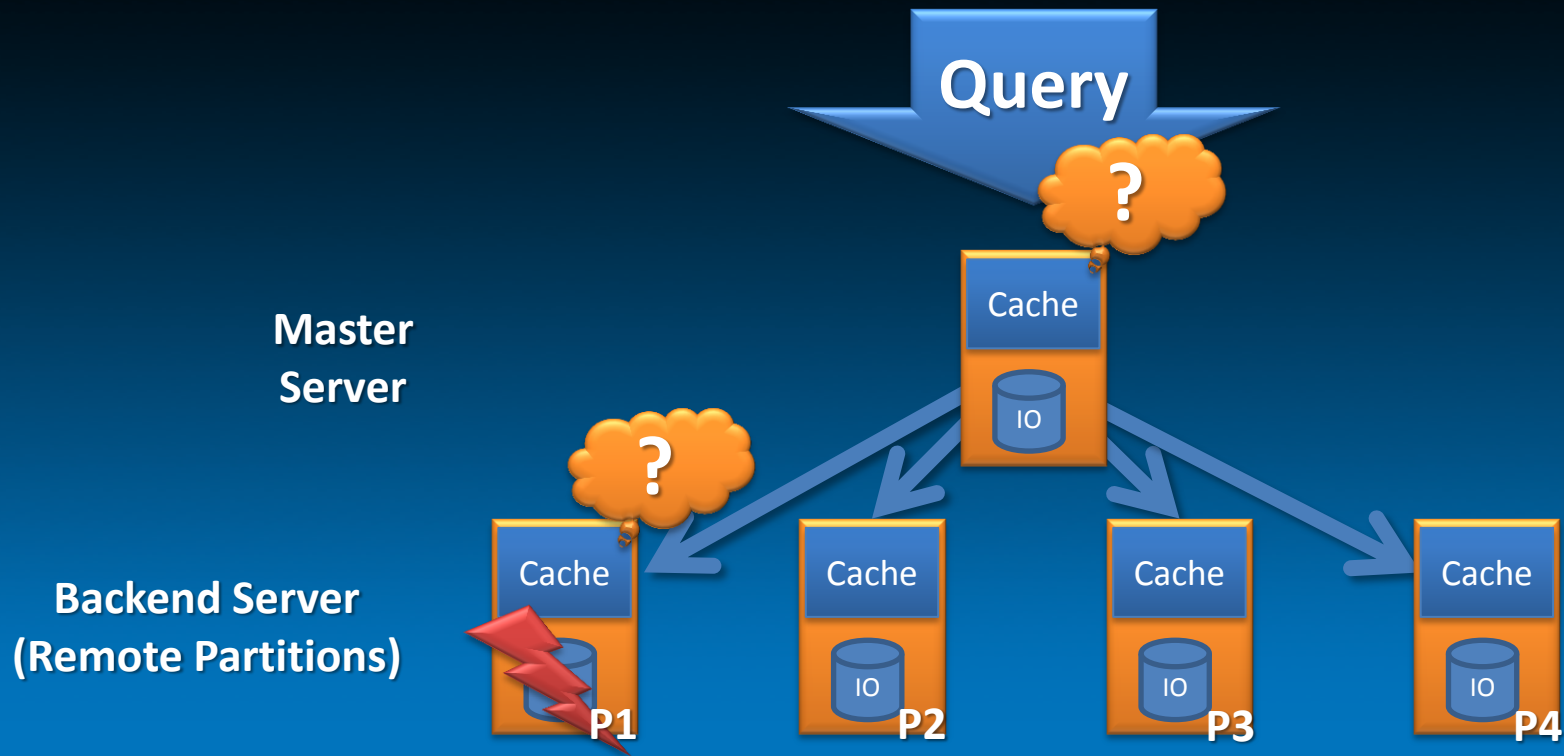
MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Consulting

# Remote Partitions



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching  
Reporting Services  
Dimensional Modeling  
OLAP  
Data Warehouse  
ETL  
Analysis Services  
Data Quality  
Consulting

# Remote Partitions



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Checklist for Remote Partitions

- Create a common SSAS DB on *Master*
- Create an empty SSAS DB on *Remote*
  - Create a Data Source pointing to *Master*
  - Alter the MasterDataSourceId Property
- Create a Data Source pointing to *Remote* on *Master*
- Alter the “Partition Storage Location” on *Master*
- That’s all! 😊

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Demo

## Remote Partitions



MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Common Errors

- Wrong Data Source Typ
- Using Localhost („.“)
- No Data Source pointing to Remote
- No Data Source pointing to Master
- Missing „MasterDataSourceId“
- LinkFromOther.../LinkToOther... Settings
- Security Settings

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Analysis Services...

```
using Microsoft.AnalysisServices;  
...  
using (Server svr = new Server())  
{  
    svr.Connect(„myServer");  
    Database db = svr.Databases.Add(pDatabaseName);  
    db.DataSourceImpersonationInfo = new  
    ImpersonationInfo(ImpersonationMode.ImpersonateServiceAccount);  
    db.Update();  
    DataSource ds = db.DataSources.Add(pDSName);  
    ds.ConnectionString = pDSConnString;  
    ds.Update();  
  
    db.MasterDataSourceId = pDSName; // Here...
```

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
Data Profiling  
BI Lifecycle  
Coaching

# Scale-out

## Logical

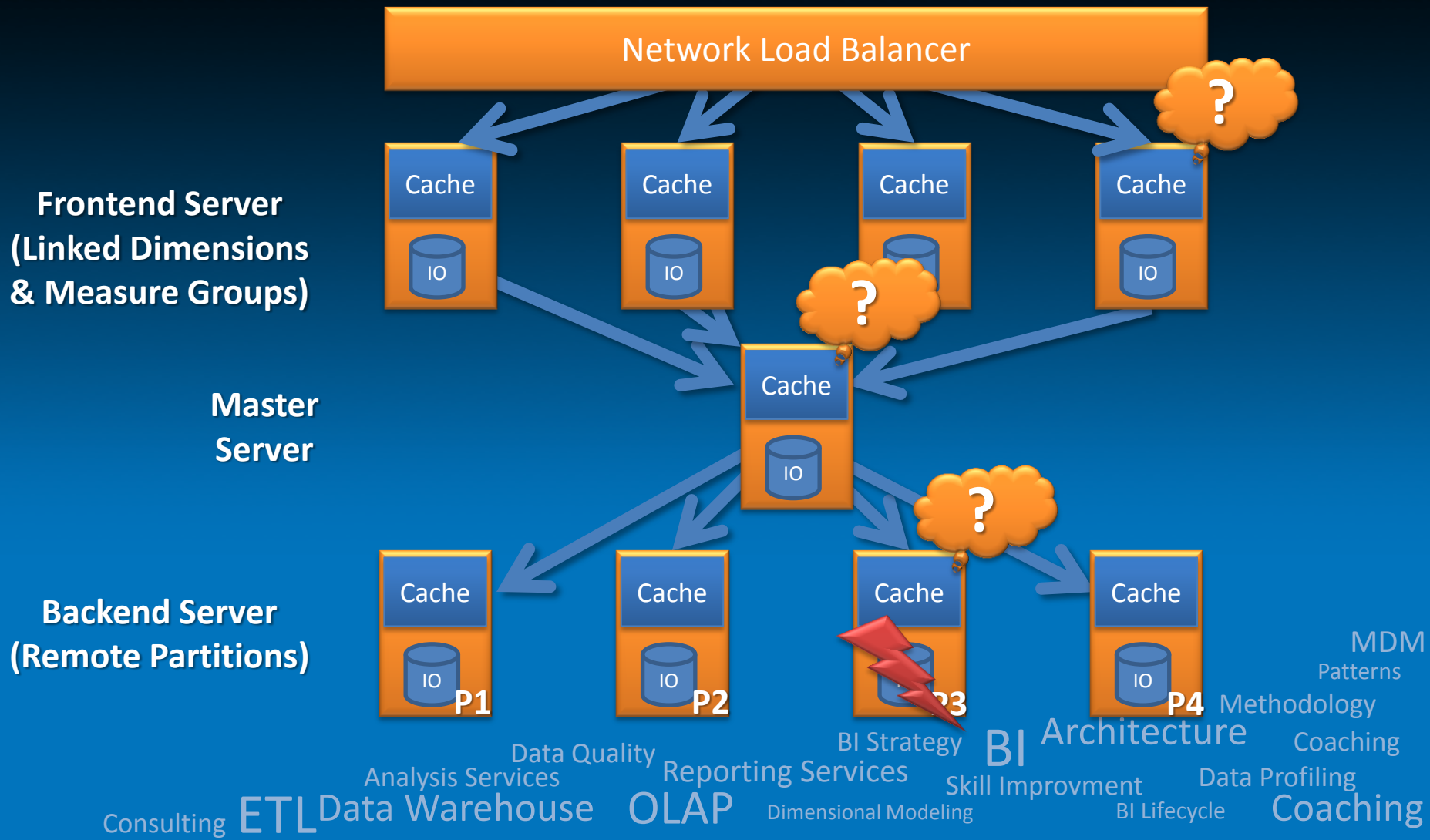
- Linked Dimensions ✓
- Linked Measuregroups ✓
- Shared Scalable Databases ✓

## Physical

- Backup/Restore ✓
- Copy (Detach/Attach) ✓
- Deployment ✓
- Synchronization ✓
- Shared Scalable Databases ✓
- Remote Partitions ✓

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
Data Warehouse  
ETL  
Consulting  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching

# Analysis Services Farm Setup



# Summary

## Scale-out ✓

### Logical

- Linked Dimensions ✓
- Linked Measuregroups ✓
- Shared Scalable Databases ✓

### Physical

- Backup/Restore ✓
- Copy (Detach/Attach) ✓
- Deployment ✓
- Synchronization ✓
- Shared Scalable Databases ✓
- Remote Partitions ✓

MDM  
Patterns  
Methodology  
Coaching  
BI Architecture  
BI Strategy  
Reporting Services  
Data Quality  
Analysis Services  
ETL  
Data Warehouse  
OLAP  
Dimensional Modeling  
Skill Improvement  
BI Lifecycle  
Data Profiling  
Coaching  
Consulting

So long...

Any Questions?



A word cloud of various business intelligence and data management terms. The words are arranged in a horizontal, slightly curved layout at the bottom of the slide. The terms include:

- MDM
- Patterns
- Methodology
- Coaching
- BI Architecture
- BI Strategy
- Reporting Services
- Data Quality
- Analysis Services
- ETL
- Data Warehouse
- OLAP
- Dimensional Modeling
- Skill Improvement
- BI Lifecycle
- Data Profiling
- Consulting

# The End

# Thank you!

Follow me on Facebook and <http://saschalorenz.blogspot.com>

Send me a mail -> [lorenz@psg.de](mailto:lorenz@psg.de)



A word cloud of business intelligence and data management terms. The words are arranged in a horizontal, slightly curved layout. The most prominent words are 'ETL', 'Data Warehouse', 'OLAP', 'BI Architecture', and 'Coaching'. Other visible words include 'Consulting', 'Analysis Services', 'Data Quality', 'Reporting Services', 'BI Strategy', 'Skill Improvement', 'Data Profiling', 'BI Lifecycle', 'Dimensional Modeling', 'Methodology', 'Patterns', and 'MDM'.

Consulting ETL Data Warehouse OLAP BI Strategy Reporting Services Skill Improvement Data Profiling BI Lifecycle Dimensional Modeling Methodology Patterns MDM Coaching