Microsoft

Brightstar PLM

**Business Intelligence
making Brightstar shine**

Business Intelligence Summit 2007

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Agenda

- **PLM**
    - **What It Is**
    - **What It Does**
- **PLM Data Volumes**
- **Why SQL Server was chosen**
- **What MS Technology is used**
- **Sample PLM Report**
- **Sample PLM Analysis**
- **PLM Architecture**
- **Challenges and Solutions**
- **PLM Roadmap**

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PLM — What It Is

• **Product Lifecycle Management**

• **BI Application used by Brightstar and their customers (Telco's) to manage and measure profitability of mobile phone handsets**

• Provides information on the lifetime value obtained by provisioning and servicing a handset:

   • stock levels

   • gross margins

   • take-up rates (connections)

   • profitability of a handset

• Provides various dashboards configurable by date, brand, model, style, network type, lifecyle and segment

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PLM – What It Does

Collects and processes data from multiple sources including:

- Data Warehouses

- Billing Systems

- POS System

- ERP Systems (SAP and MS Solomon)

Data is sourced for Brightstar provisioned IMEI (the handset serial number) and conformed to a standardised set of dimensions for reporting and analysis

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PLM – Data Volumes

Data includes call details for handsets and current volumes are:

- On average 8 million rows per day processed

- High volume days 20 million rows processed

- Currently contains over 1.1 Billion usage records in the database

- Expected data volumes are more than double current level

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Why Microsoft SQL Server

Microsoft SQL Server 2005 was chosen because:

- **It covered the full Business Intelligence Stack**

- **No other product provided the same feature set:**

    - **Relational Database, ETL tool, OLAP technology, reporting platform all integrated in one package**

- **"Best of Breed" in the respective areas**

- **No issues with connectivity**

- **No issues with scalability**

- **Lower cost of ownership (CAPEX and OPEX)**

- **SQL Server Roadmap provides "Future Proof" solution**

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What MS Technology is Used

Currently

MS Windows 2003 Server (64 Bit)

MS SQL Server 2005 (64 Bit)

- SSIS (ETL)

- MS Analysis Services (Cubes)

- MS Reporting Services (Reports)

- ASP.NET (Dashboards)

Future

Performance Point ?

Sample PLM Report

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Product Lifecycle Management Portal

Brightstar

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Version: 1.3-15.9 (UAT)

Time Period:	Brand:	Handset:	Style:	Technology:	Segment:	FRED Stage:		
4 Week		All	All	All	Family and Fun	Ranged	Reset	Refresh

- Handset Contribution - $156,075.59
  - **Product P&L**
  - DBP vs 5 Competing Products
  - RRP vs 5 Competing Products
- Handset Contribution Margin - 91%
- Subsidy - 0%
- Revenue - $174,780.00
- Sales - 41
- GMROII - 52
- WOC at CLOC - 626.0 weeks
- WOC at Direct Channel - 137.0 weeks
- Connections

Product ID Card

Product:
Technology:
FRED Stage:
Launch:
Planned EOL:
OEM Price:
Offered by:
Segments:

Product P&L

Report Updated: 16/11/2007

	Avg. Per Unit		Total (22/10/2007 to 16/11/2007)		Total Combined
	Direct	Indirect	Direct	Indirect	
Units Sold			13804	28030	41834
Average Retail Revenue	259	0	$3,574,475.70	$9,503.38	$3,583,979.08
Average Wholesale Revenue	1	348	$7,533.07	$9,758,430.61	$9,765,963.68
ARPU	1036	553	$14,301,925.04	$15,486,628.61	$29,788,553.65
Average Revenue	1296	901	$17,883,933.82	$25,254,562.59	$43,138,496.41
CLOC Purchase Price	349	351	$4,824,071.26	$9,851,093.23	$14,675,164.49
Subsidy Rebate	0	78	$3,810.37	$2,175,060.56	$2,178,870.93
Supply Chain	17	17	$234,668.00	$476,510.00	$711,178.00
Trailing Commission	0	2	$5,496.62	$68,766.67	$74,263.29
Average COGS and Selling Expenses	366	448	$5,068,046.26	$12,571,430.46	$17,639,476.72
Contribution $	930	453	$12,815,887.56	$12,683,132.14	$25,499,019.69
Contribution %	71.76%	50.28%	71.66%	50.22%	59.11%

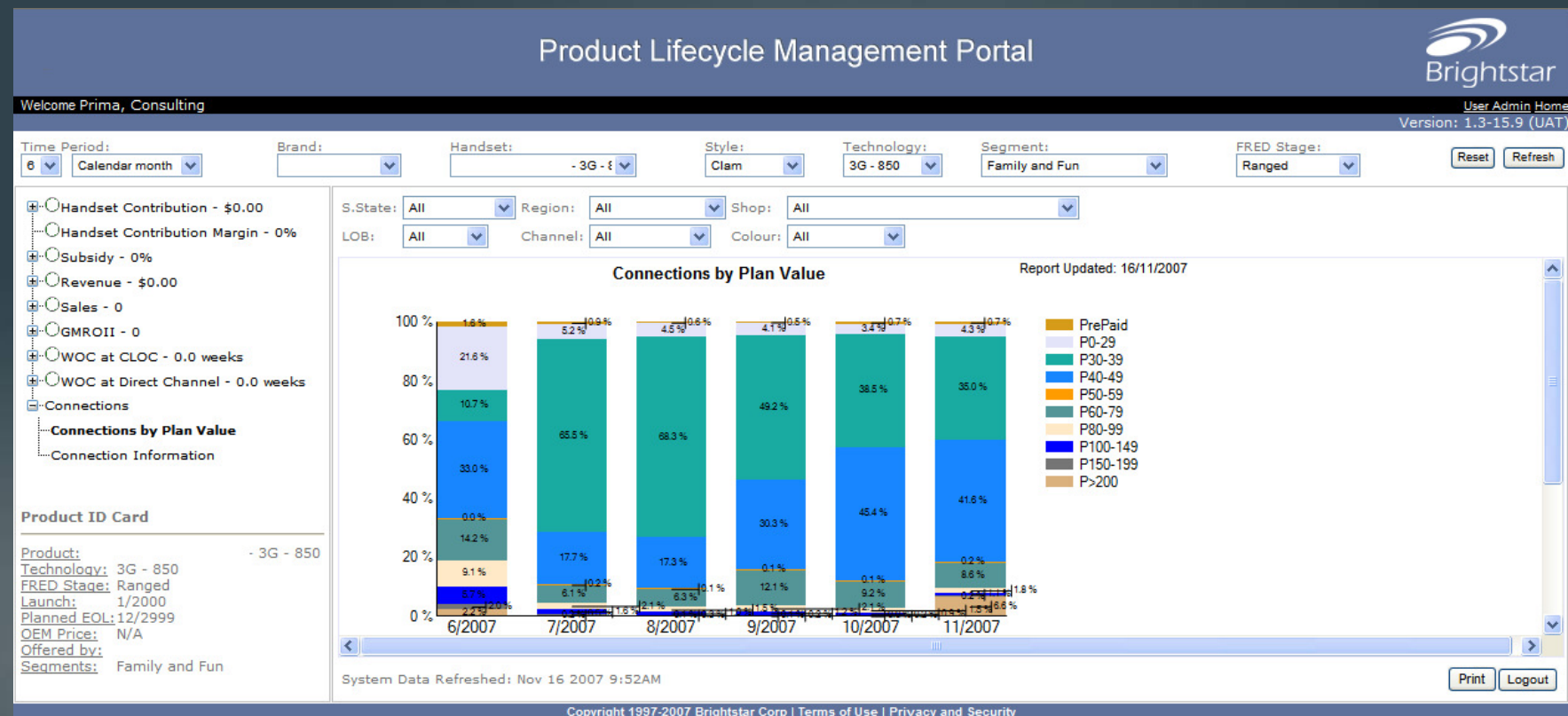System Data Refreshed: Nov 16 2007 9:52AM

Print   Logout

Report Using Reporting Services

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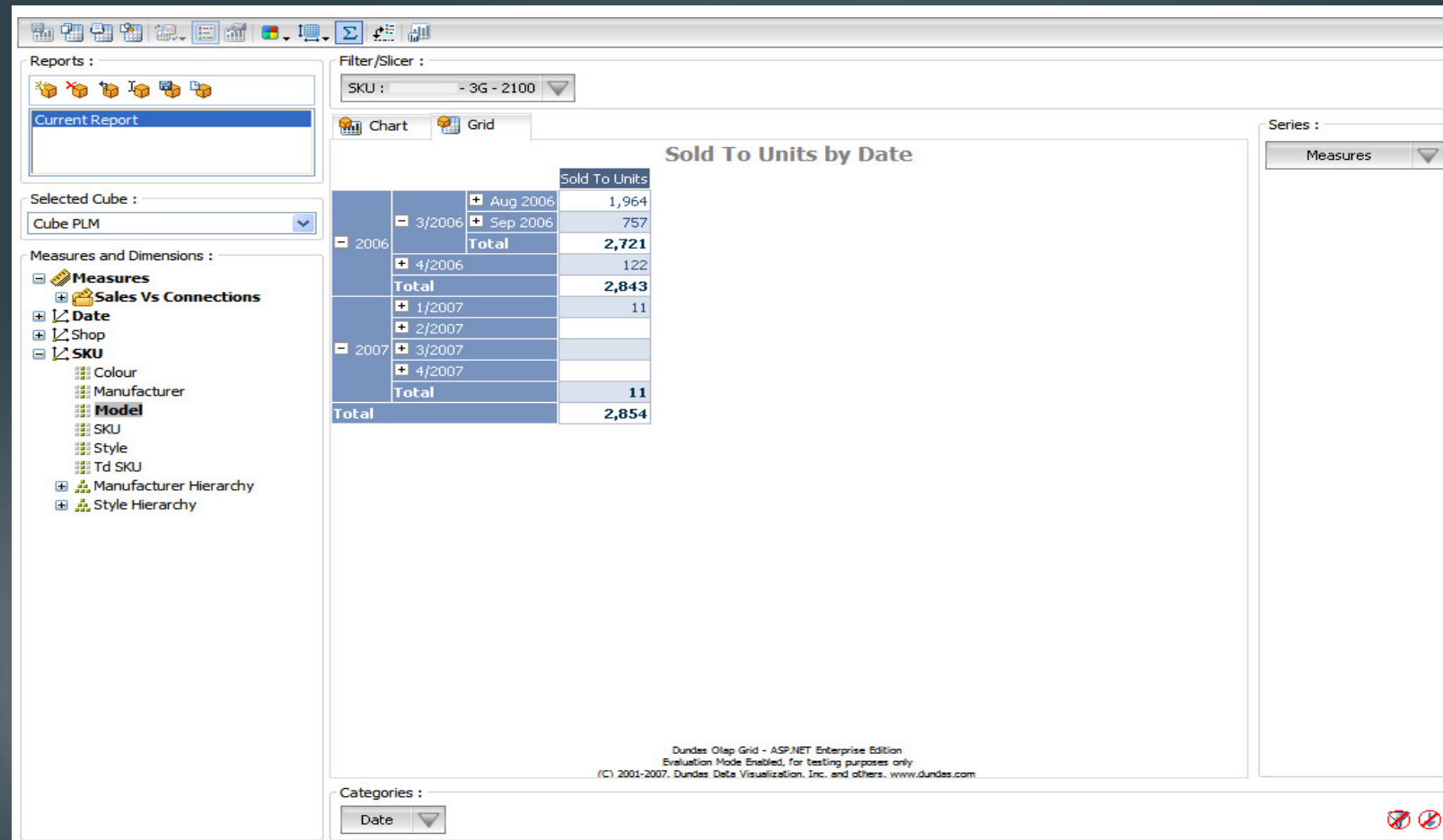
Sample PLM Report

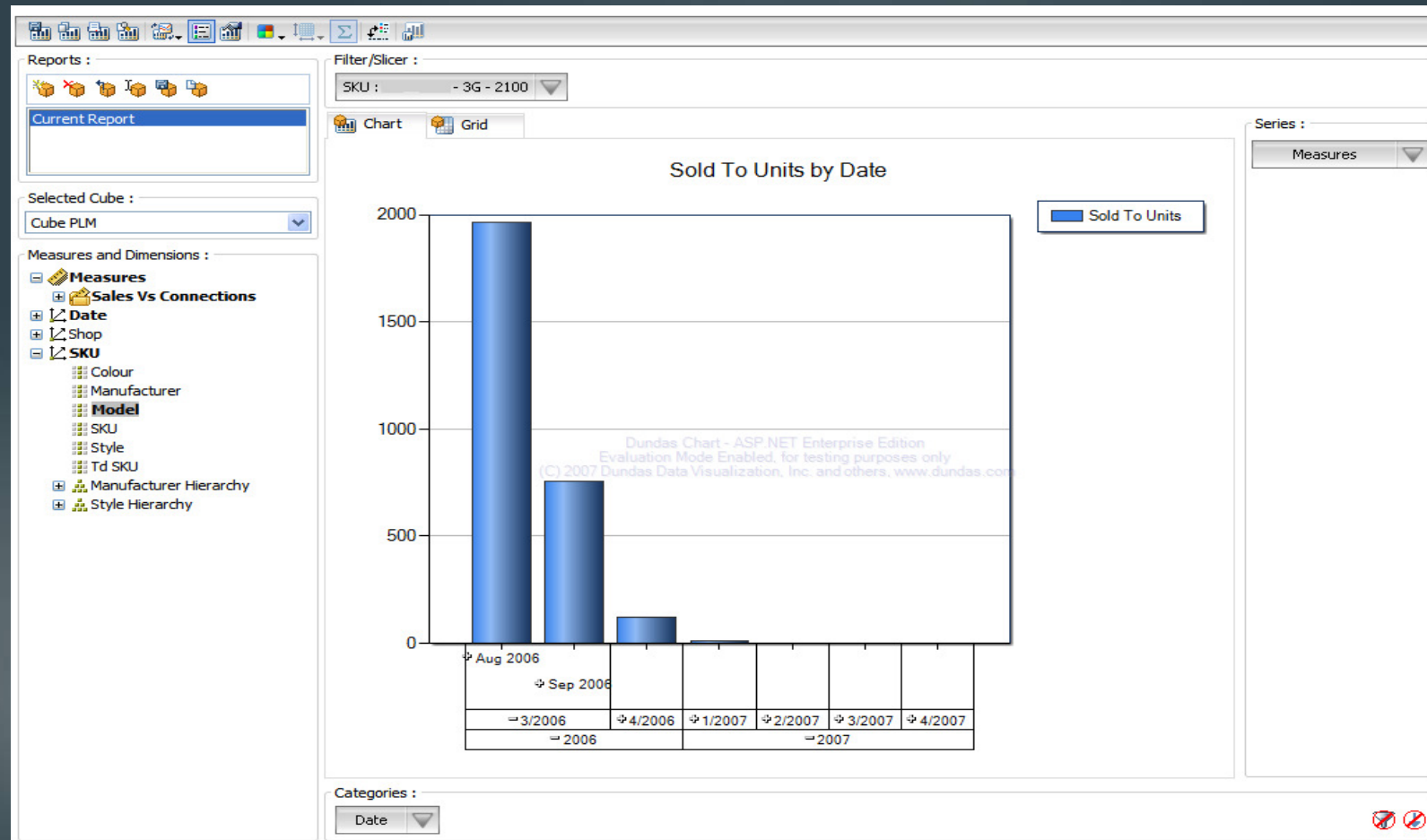*Dashboard Using Reporting Services*

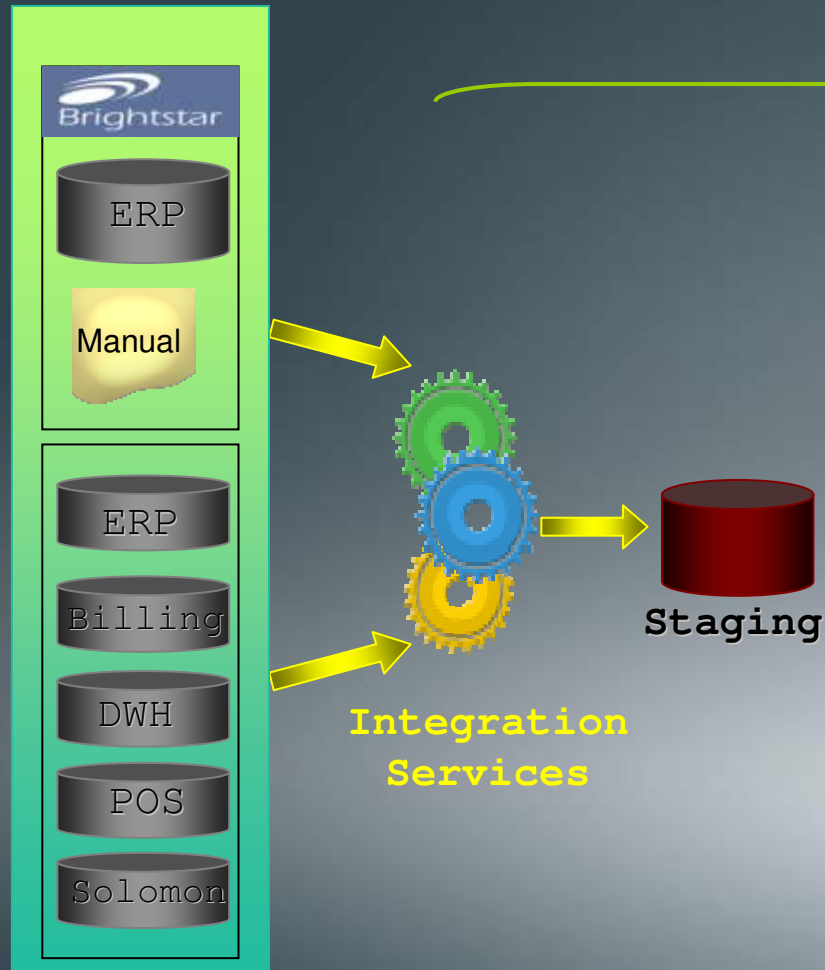Business Intelligence Summit 2007

Sample PLM Analysis (OLAP)

Sample PLM Analysis (OLAP)

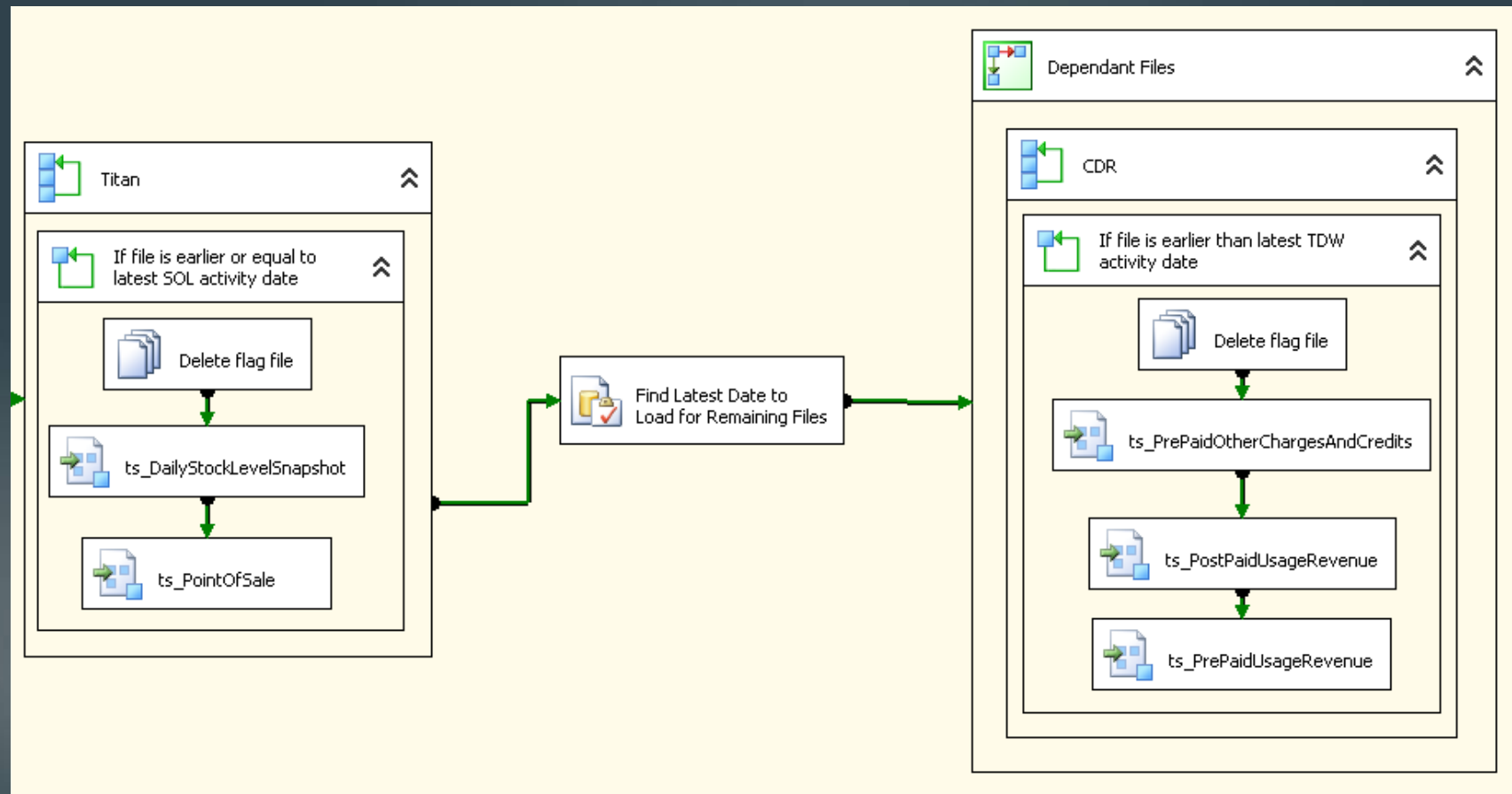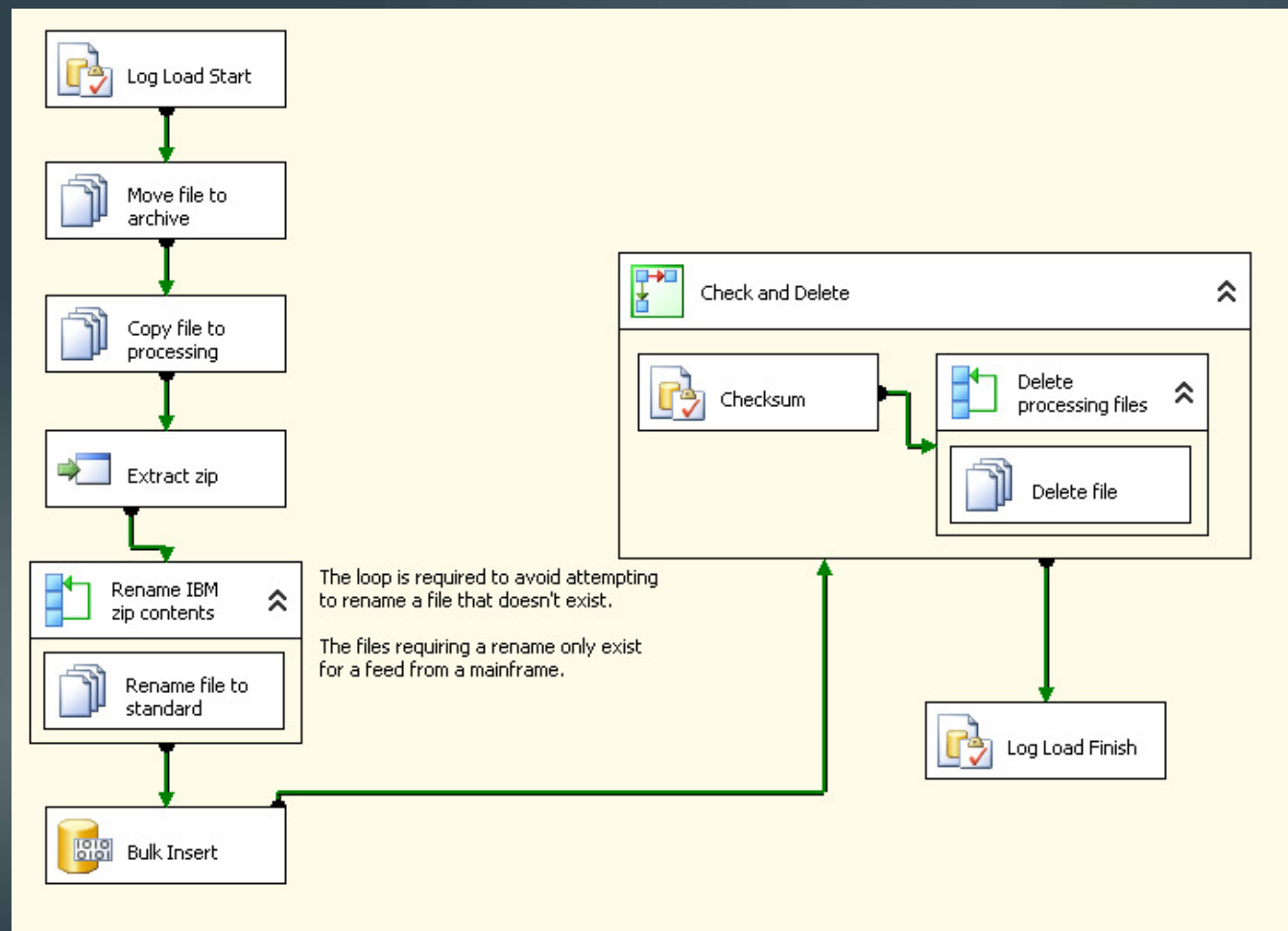# PLM Architecture – Integration Services

PLM Architecture – Integration Services

PLM Architecture

Microsoft SQL Server 2005

Brightstar

ERP

Manual

ERP

Billing

DWH

POS

Solomon

Integration Services

Staging

Stored Procedures

3NF

ODS

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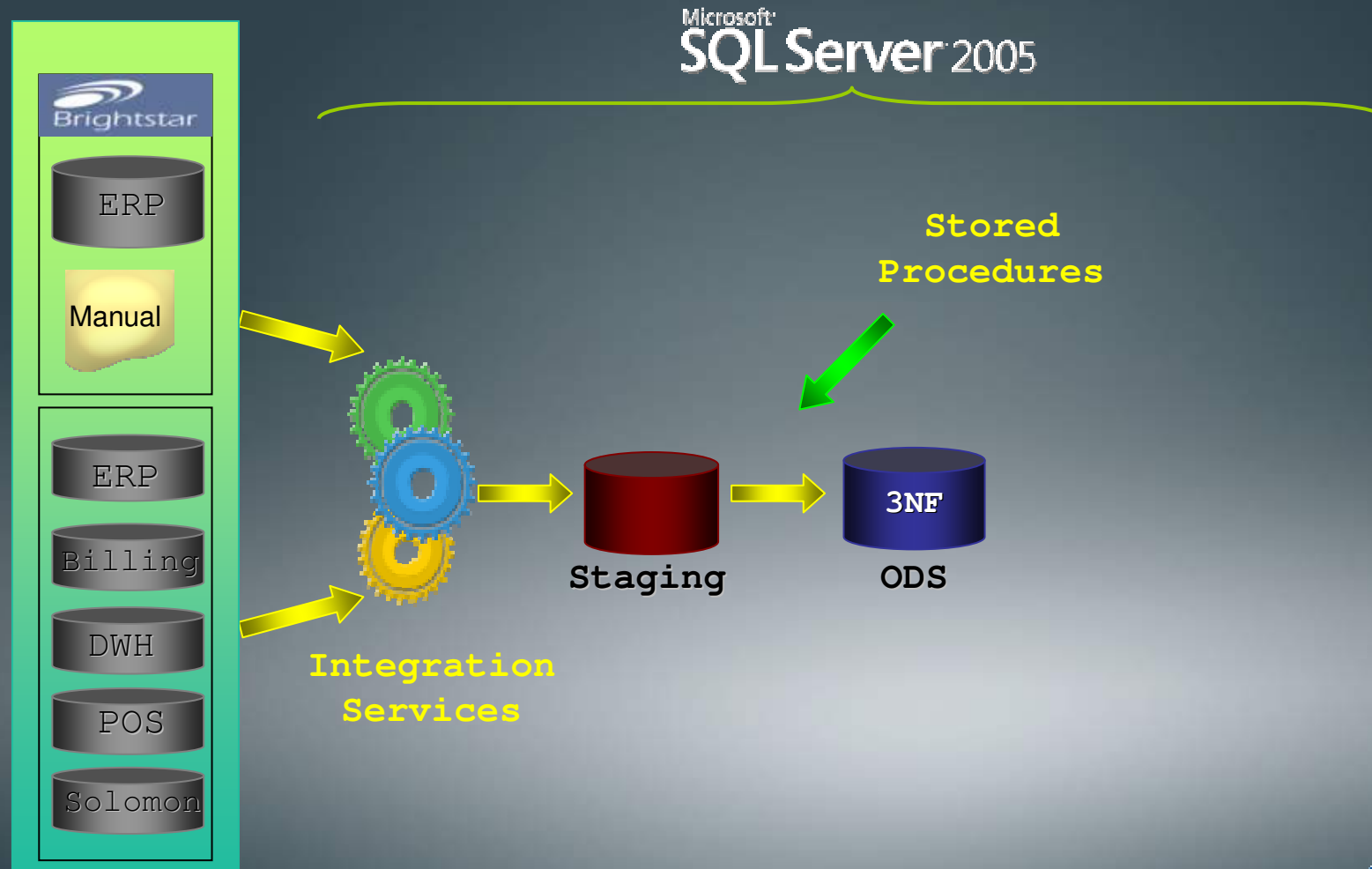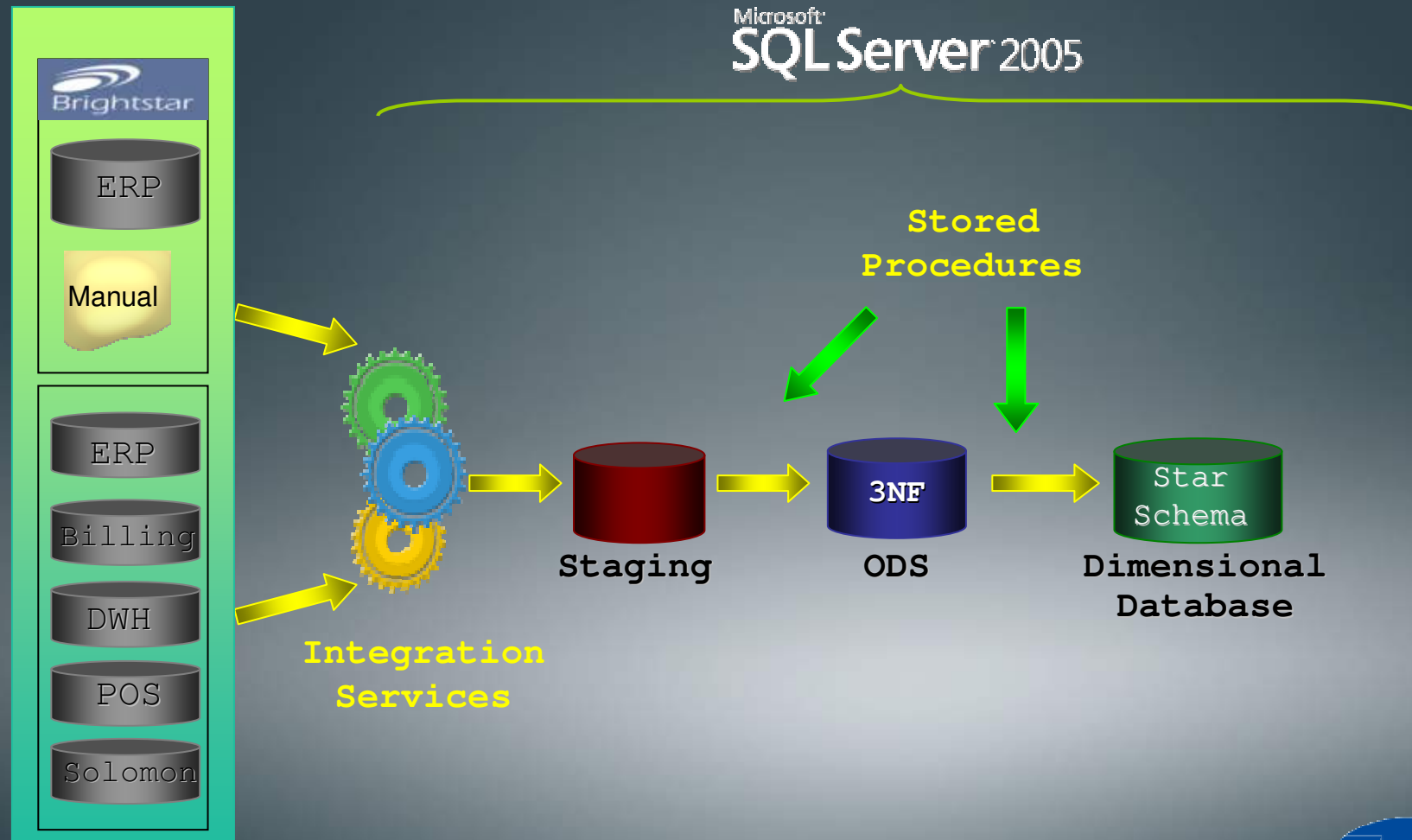
PLM Architecture – ODS

- Database design is 3rd Normal Form

- Data stored at it's natural granularity

- Surrogate keys used

- Type 1 Slowly Changing Dimensions were implemented

- Data Loaded from Staging via Stored Procedures

  - Fast to write and easy to debug

  - Provide the best performance when moving data within SQL Server itself

  - Uses Try – Catch to trap errors and write to logs

  - Uses Common Table Expressions

  - Uses Temporary Tables

PLM Architecture – Dimensional Database

Microsoft
SQL Server 2005

Stored
Procedures

Brightstar

ERP

Manual

ERP

Billing

DWH

POS

Solomon

Integration
Services

Staging

3NF

ODS

**Star
Schema**

**Dimensional
Database**

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PLM Architecture – Dimensional Database

- **Database is dimensional model (star schemas)**

- **Report / Cube specific dimensions and fact tables**

- **Fact tables contain aggregations and calculations only**

- **Surrogate keys used**

- **Data loaded via Stored Procedures**

    - **Dimensions loaded using generic procedure based on metadata from the system tables and information_schema tables**

- **Type 1 Slowly Changing Dimensions implemented**

- **Fact tables truncated, dimensions deleted beginning of each load to improve processing time**

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PLM Architecture – Presentation Layer

Reporting Services

- **Reporting Services used for Dashboards with *Dundas Charts**

- **Easy to implement, configure and deploy**

- **Create reports based on Stored Procedures sourced from the Dimensional Database**

Analysis Services

- **Analysis Services (SSAS) used with Dundas OLAP extension**

- **Provides excellent ad-hoc query capability for users**

- **Cubes quick to deliver once the Dimensional Database was created**

* Dundas ships with SQL Server 2008

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Challenges and Solutions

Large data volumes and tight processing window

Approach taken:

- Use of T-SQL stored procedures

- Enforced referential integrity on very large table using ETL process

Report and Dashboard Performance

Approach taken:

- Used Dynamic SQL to speed up query performance

- Created additional aggregate fact tables

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PLM Roadmap

- Expand the use of Analysis Services cubes

- Increase access to underlying data for ad hoc analysis

- Migrate database to SQL Server 2008

- Performance Point ?

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Drawn at the conclusion of each track

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Questions?

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