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Comparing standard OLAP cubes in Dynamics® AX 2009 with a BI solution based on timeXtender®

Introduction

This document addresses the challenges related to working with standard OLAP cubes in Microsoft® Dynamics® AX 2009. It further discusses how it is possible to create a Dynamics AX Business Intelligence (BI) solution that is broader in scope and more easily modified by using an external tool such as timeXtender.

Standard OLAP cubes with Microsoft Dynamics AX 2009

Dynamics AX 2009 offers integrated maintenance of OLAP cubes from within the ERP application. This has been possible since Axapta version 2.5, and though the functionality has been improved in Dynamics AX 2009, and provides support for virtual companies, enum values, and so on, the functionality is still limited in scope compared to a full-blown BI solution.

The major benefit of using the built-in functionality is that information that is part of the core Dynamics AX 2009 application is now available. This is not the case if you connect on the database level. As a result, information about relations, application names on fields, enum labels, and the setup of virtual companies is handled by Dynamics AX 2009. This is a great help if you have little experience with Dynamics AX.

The technology used behind the scenes is Microsoft SQL Server 2005 and Microsoft SQL Server 2008 Analysis Services (SSAS). Therefore, such a solution can be applied to any front-end that is compatible with Microsoft SQL Server.

Limitations

When you set up OLAP Cubes in Dynamics AX 2009, the system will implement the SSAS in SQL Server, and load the cubes with data, including a schedule for loading data regularly. However, the functionality in Dynamics AX for setting up and defining dimensions and measures is limited as can be seen from the following list.

- **No support for history**
- **No support for incremental updating of data**
- **No support for data quality issues**
- **No support for slowly changing dimensions**
- **No support for other data sources than Dynamics AX 2009**
- **No way of manipulating data, since the fact table is the raw table from Dynamics AX 2009**

Furthermore, it is not possible to make changes to the BI solution from within Dynamics AX 2009. You are required to use the BI Studio developer tools in SQL Server. However, while you can edit the solution in SQL Server, the changes will be overwritten if you subsequently make changes to the data model in Dynamics AX 2009. You therefore have to carefully consider any data model changes.

Consequently, you can easily end up with a solution that can only be maintained by highly skilled Dynamics AX and SQL Server developers.



Security

To access cube data, users must be assigned appropriate roles or specific user access within Dynamics AX 2009, and this affects licensing costs. Alternatively, a manual work-around is required to grant direct access to cube data on Analysis Services every time a redeployment from Dynamics AX 2009 overwrites the cubes.

Predefined OLAP Cubes in Dynamics AX 2009

OLAP Cubes are a part of the role-based interface introduced in Dynamics AX 2009, and come with a set of predefined OLAP Cubes and Key Performance Indicators (KPIs). These OLAP Cubes and KPIs are administered from the Dynamics AX 2009 application and integrated with the different role-based screens.

While the solution covers all major modules of Dynamics AX 2009, it appears that some obvious dimensional relations are missing - in particular relations having to do with inventory and production.

All in all, building standard OLAP cubes in Dynamics AX results in a usable, but also a very basic and limited BI solution.

Cube Modifications

The following is a description from Microsoft concerning modification requirements:

“The predefined OLAP cubes in Dynamics AX 2009 require full license keys. If any configuration keys are disabled, related tables and fields are automatically removed when the Microsoft Dynamics AX database is synchronized. Similarly, when the OLAP database is synchronized with the Microsoft Dynamics AX database, some related cube components are removed. In this case, you must manually remove those elements of the cube, such as key performance indicators (KPIs), calculated measures, and dimensions based on named queries, before you can successfully process the cubes. Use the error messages that appear in the synchronization log as your guide to the elements that must be removed.”

Why use timeXtender as the foundation of the BI solution?

timeXtender breaches the divide between technology and business by removing the need for custom SQL coding. The tool furthermore eliminates the limitations associated with the built-in cube functionality of Dynamics AX 2009.

timeXtender follows the industry de facto standards for building staging data bases, data warehouses, and OLAP architecture, and it supports enterprise data warehouses and data marts as well as multiple servers.

*Microsoft Dynamics AX 2009
Business Intelligence Cube
Reference Guide, p.7*

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timeXtender furthermore contains an embedded spreadsheet formula and business functions interface that allows non-technical users such as business controllers to add advanced calculations to their data cubes without them having to learn or know the complicated MDX language. The calculation formulas are automatically translated into the MDX language needed by Analysis Services.

Customers achieve a very solid foundation for their BI solution, because timeXtender handles an unlimited amount of data sources such as Excel, text files and ODBC in the same project, and has build-in functionality that covers all the limitations of the Dynamics AX 2009 standard cubes.

Furthermore, data that is extracted from the ERP system typically has to go through a cleansing process to ensure that there is no missing information, records with identical information but different IDs, and so on. This data cleansing process is often a surprisingly time-consuming and expensive process that may overwhelm the customer. However, timeXtender provides functionality that can handle any data quality issue that may arise during the creation of the cubes. This functionality greatly simplifies the process, and ensures that the final reports are based on consistent and trustworthy data.

How timeXtender integrates with Dynamics AX 2009

timeXtender comes with an adapter that is specially designed for Dynamics AX 2009 that allows customers themselves to build and maintain the data warehouse and OLAP cubes. The data warehouse and the OLAP cubes are 100% compatible with the role-centers in Dynamics AX 2009.

timeXtender offers a 100% drag-n-drop environment for building the data warehouse and OLAP cubes, and using the built-in adaptor you gain access to all the “hidden” information in Dynamics AX 2009 including help text on each field, etc.

timeXtender QuickCubes for Microsoft Dynamics AX

QuickCubes is an out-of-the box Business Intelligence solution for Dynamics AX 2009 based on the timeXtender platform. Compared to the standard cubes that come with Microsoft Dynamics AX 2009, timeXtender QuickCubes provide similar information, but can be active within only 1 hour. Furthermore, QuickCubes also work with Axapta version 3.0 and 4.0, which means you have full access to your company’s legacy information.

Using QuickCubes for Dynamics AX as the foundation for a BI solution cuts the amount of man-hours spent on getting the solution up and running to a minimum - but gives you all the benefits offered by using timeXtender as the technological platform.

QuickCubes are also available for other ERP systems such as Microsoft Dynamics NAV and JD Edwards as well as for a number of industry verticals.

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