

# EA Assist™

## *A model-driven approach to data warehouse design*

One of the great challenges faced by organisations is to deliver reliable information to business users, on time. The implementation of a data warehouse to meet this need is a natural solution. The challenge then is being able to deliver a solution to the end users as quickly as possible, usually with a limited budget.

Users' requirements are, however, difficult to define and do evolve over time. Data sources are complex and also change over time. So it is critical to have a design and development process that can achieve early deliverables but deliver a robust data warehouse environment that will stand the test of time .

Therefore, spending sufficient time on design is critical. But with limited budget, the conundrum is to spend adequate time on design and leave sufficient time and budget for development and implementation.

## Background

The development of extract, transform and load (ETL) packages for a data warehouse often consumes the largest proportion of the project's development budget. In fact it is not uncommon for the development of ETL packages to represent one third to one half of the development budget .

Wave decided to think outside the square. If we could reduce time on development we could devote more time to design. There are numerous data warehouse automation tools, but they do not help where the real requirements are—the design.

Wave was engaged by Epworth HealthCare a major private health care group to develop its data warehouse in Microsoft SQL Server 2005. Budget was limited and the complexity in designing a data warehouse for a group as large as this was one thing, but having the time and resources to undertake development and deliver in a short space of time was another.

## Challenge

The introduction of Integration Services (SSIS) in Microsoft's SQL Server 2005 has meant that ETL packages can now be developed in much less time when compared to using Data Transformation Services in SQL Server 2000. These improvements provided by SSIS, however, only make it marginally easier for developers to respond rapidly to changes in requirements.

ETL development process is also the source of the majority of data errors in the destination data warehouse or data marts. Automating ETL development means higher quality output and spending less time on fixing poor code. Gaining efficiencies in ETL development means more time can be invested in design.

## Solution

Wave, having gained significant experience in designing and delivering a number of application systems for other clients using Enterprise Architect (EA) from Sparx Systems, decided to see if it could be extended to Microsoft SQL Server 2005.

This had the potential to change the dynamics of designing and developing data warehouses. A project was initiated in tandem with the Epworth project to extend EA to develop SSIS packages. The outcome exceeded all expectations.



- ▶ Agility
- ▶ Ability
- ▶ Approach



## Solution *(continued)*

The outcome was **EA Assist**.

Wave has used its deep knowledge of business intelligence design and development, and the rich customisation capabilities of SSIS and Enterprise Architect (EA) from Sparx Systems to develop **EA Assist**.

**EA Assist** in its first project has proved that it can significantly reduce the development time for ETL packages and reduce the time required to respond to requirements and design changes from days to hours.

**EA Assist** uses a model-driven generation approach to automate the creation of the SSIS packages complete with data flow task metadata. **EA Assist** uses the APIs of both EA and SSIS to generate the ETL packages based on the ETL design that is modelled and stored in the EA repository. It can be configured with multiple package templates and the transformation types can be specified from within EA using UML operations.

## Business Benefits

**EA Assist** provides a number of business benefits:

- A significant reduction in the time taken (and therefore cost) to deliver the complete BI solution. For example, the use of **EA Assist** at Epworth led to an estimated 80% reduction in the ETL development effort when compared to conventional methods. Moreover, the use of **EA Assist** led to this project being delivered nearly 4 weeks earlier than it would have been if the ETL package were developed using traditional manual methods.
- Changes in business requirements can be reflected in changes to the data warehouse in hours rather than days providing a highly responsive information system to the business.
- Greater time available for design to provide a quality, long-term and flexible data warehouse solution.

## IT Benefits

In addition to the Business Benefits **EA Assist** provides the following IT Benefits:

- The consistent and accurate application of a defined ETL package architecture.
- The ability to use a richer ETL package architecture (e.g. one that provides more feedback to system administrators) due the ease with which it can be applied and changed.
- The ability to easily make global changes to the ETL package architecture should infrastructure or environment changes require it.
- A reduction in the frequency of data warehouse load failures that are caused by bugs in ETL packages.

## Summary

The use of **EA Assist** in conjunction with Enterprise Architect to automatically generate complete SQL Server Integration Services packages significantly reduces the cost of the ETL development process in a BI project. Furthermore, the ability to rapidly deliver an outcome and respond rapidly to requirements changes increases the likelihood that the BI project will be both a business and financial success.

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