SPARX SYSTEMS

St.George Bank
IT Architecture Model

CHALLENGE

St.George Bank needed to model its entire IT infrastructure in the form of a graphical map that was easy-to-navigate, facilitated current and future regulatory compliance requirements and supported an affordable, accurate update process.

WHY ENTERPRISE ARCHITECT

Sparx Systems Enterprise Architect provides a robust, centralized model repository with built-in HTML reporting capabilities for sharing information across the enterprise. Published reports are intuitive and the open, SQL-based repository readily supports information exchange with other environments.

BENEFIT

St.George Bank now has an enterprise model that captures its entire application infrastructure, which is vital for training new staff and maintaining regulatory compliance to such standards as BASEL II.

Background

St.George Bank is Australia's 5th largest retail bank with a market capitilisation of AU$15B[1]. In 2007 St.George undertook a project to document its IT infrastructure using Enterprise Architect, a CASE tool developed by Sparx Systems.

St.George wasn't looking for an "encyclopedic" style of documentation. They wanted something intranet based and very graphical so a user could literally "surf" around the architectural landscape then drill down on areas of interest. Enterprise Architect provided this with a robust data repository (SQL Server) and excellent HTML and Javascript publishing capabilities.

The information documented was all the bank's software applications, databases, hardware platforms, data flows, key personnel and most importantly, the relationships between all these elements.

Goals

The Project and Business as Usual (BAU) goals were to:

- **meet the IT documentation component of Basel II compliance;**
  APRA requires that all Deposit taking Institutions maintain"…at the time of initial approval…and on an ongoing basis…data storage, application purpose and outline all data flows between systems…"[2]

- **place the bank in an advanced position to meet any future documentation compliance requirements (such as for AML);**
  By not limiting the breadth of scope, the bank is taking a proactive position of maintaining enterprise level documentation irrespective of whether there is a current compliance requirement to do so.

- **retain key system knowledge often lost by the turnover of technical staff;**
  Well maintained documentation mitigates the risk of knowledge loss due to the dynamic nature of the IT workplace.

- **provide a high level view of the IT landscape for strategic planning purposes;**
  As well as the standard "context diagrams" created for each system, Enterprise Architect has the ability to create A4 to A0 poster sized diagrams of the IT landscape drawing on a central repository of data so there is no inconsistency between any of the diagrams.

- **provide a tool for training new technical staff;**
  The IT Infrastructure can be represented in such way that the published output is so intuitive that any (technical) person can gain an understanding of the bank's IT landscape without the need for long face to face walkthroughs with subject matter experts (SME's). This facilitates new staff to be productive much quicker with less impact on existing staff.

[1] *Circa Late 2007*
[2] *Prudential Standard APS117 June 2007 pp1,14*

- *provide a common entry point for Solution and Enterprise Architects to perform high level analysis and design;*
  Technical staff become acclimatised to a common documentation standard so the understanding, analysis and findings are more uniform between each technician.

- *implement an affordable process to maintain the currency of information with minimal impact on existing technical staff.*
  An observer must be confident that the documentation provides an accurate and unfiltered view of the current production IT infrastructure and all the interrelationships (particularly data flows). If an observer is uncertain of the completeness of the interrelationships they must perform further investigation via other means and this dilutes the efficiency of the technician.
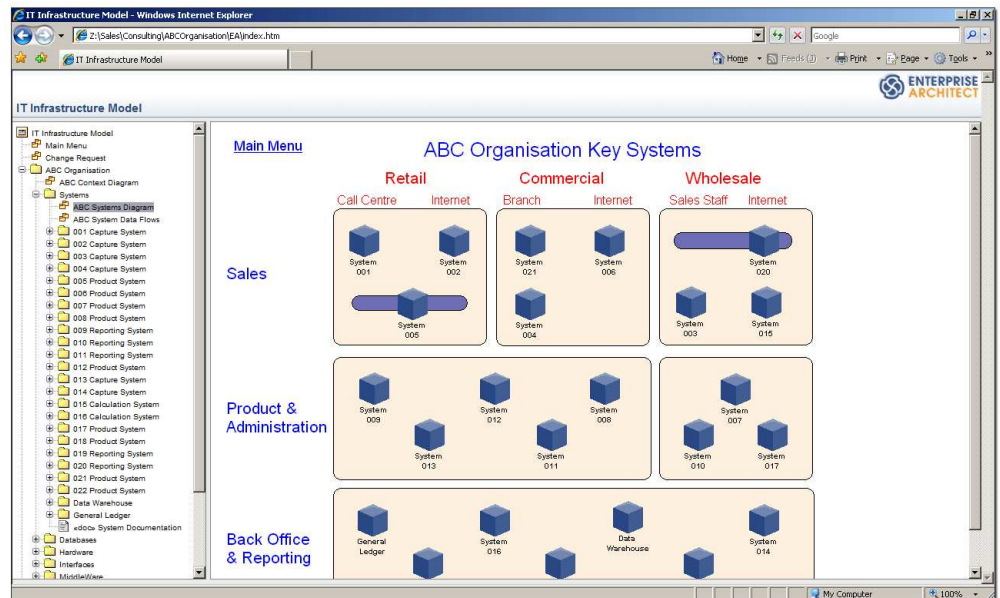

Figure 1   **The "Application" home page organised into sales channels and business functions.**

Tool Selection

Selecting Enterprise Architect as the tool used to capture and publish the information was a fairly straight forward process. The data is held in an open database (SQL Server) allowing access by 3rd party reporting packages, it publishes to HTML in a very intuitive format, it's very low cost to purchase and the published output can run on the bank's intranet. There was also an existing pool of technical personnel within St.George who were competent in the use of Enterprise Architect.

Even if the need arose to migrate the model to an alternative solution in the future, it would be a reasonably simple process using data export features within Enterprise Architect and custom SQL.

Project Scope

To ensure the model could be built in a reasonable time frame, a decision was made to limit the depth of information captured. Once the model was completed, expanding the scope could then be considered.

Initially the scope was limited to capturing:

- *Instances of applications and middleware*

- *Instances of databases*

- *Hardware platforms (including individual physical servers but not as detailed as generic desktops or laptops)*

- *Interfaces or Data Flows between systems*

- *Element Owners. Each element within the model was assigned an owner who was responsible for the accuracy of their element within the model*

- *External Entities (for example other organisations that the bank interacts with)*

The model shows both a physical and a logical view of the data flows. For example, a system may send data to another system via middleware, often it is not very useful to only show the physical view of a data flow feeding into a central piece of middleware as this same middleware may be connected to 100's of other systems making it difficult to discern the data flow's final destination. Logical diagrams don't show the middleware thereby an observer can immediately see the final destination of the data.
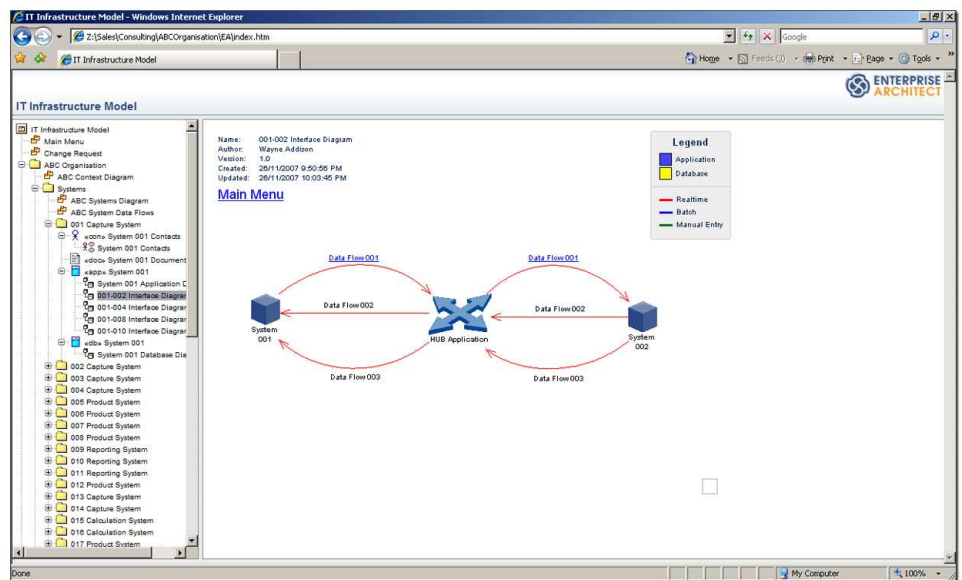

Figure 2   **An interface diagram showing the data flows between 2 systems via middleware**

Project Plan

The project was broken in to 3 phases:

Phase 1
As this approach had not been used in the bank before, phase 1 was a pilot whereby approximately 100 of the most critical systems used by the bank were captured and published. This phase was also used to refine the publishing standards and how the data was structured in the Enterprise Architect repository.

Phase 2
The second phase was to expand the list of applications to include *all* the bank's software applications (excluding desktop tools such as MS Word, Excel, Powerpoint etc.).

Phase 3
This is the ongoing maintenance of the model and is the process of converting from a project to "business as usual" (BAU). Essentially, it was the process of handing over responsibility for the accuracy of the model to each of the element owners but centralising the capture of model data to ensure consistency with standards.

See also *Maintenance* for more detail.

The effort involved in building the model was heavily dependant on the availability of existing documentation and the co-operation of Subject Matter Experts (SME's).

Published Output

It was important that the published output be easy to access and easy to read. Enterprise Architect models can be published in either HTML or RTF. Publishing the model in HTML enabled it to be loaded on the company intranet allowing an observer to navigate around the model much the same as surfing the internet. Print friendly summary reports of each system were created for easy printing of hardcopy versions of the data.

Clip art images were also applied to each of the elements making it an easy to recognise element types.
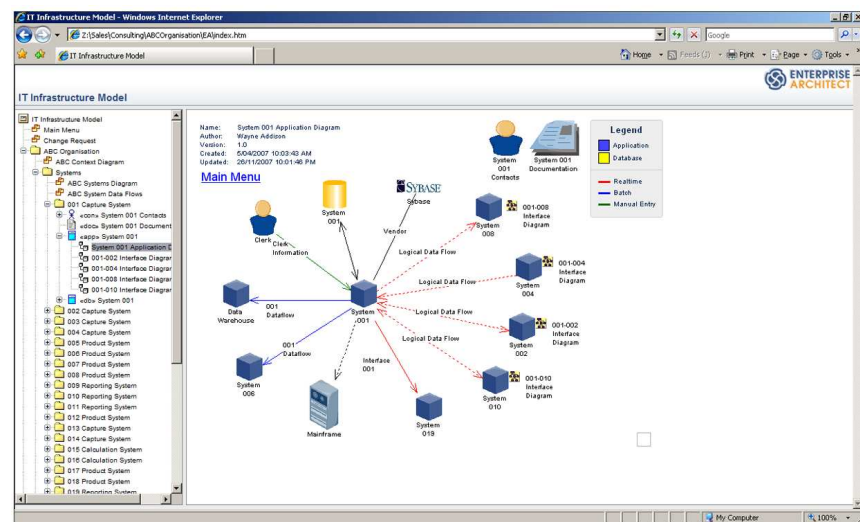

Figure 3   **An example context diagram for "System 001" showing data flows with other applications, databases, key personnel, vendor and hardware platform. Each image is also an active hyperlink taking the observer to a new context diagram centered on the element selected.**

A 3rd party reporting tool (Business Objects) was used to read the Enterprise Architect repository and create tabulated reports of the model elements. For example a system inventory report would show each system by name, a short description, the hardware platform, database technology and key personnel associated with it. The reports can also be filtered to only show Basel II or Anti-Money Laundering (AML) systems etc.

Maintenance

The Achilles heel of any documentation project is always the question of how the information will be maintained. The fundamental strategy at St.George was to centralise the capture and publishing of the model but place the responsibility of its accuracy upon each of the element owners. Each software release (usually each quarter) element owners submit a confirmation form (a dynamic pdf form) to certify their particular element is accurately represented in the model.

The first round of confirmations often identified fairly significant inaccuracies in the model (which was expected) but subsequent quarters only required fairly minor changes to the model (and only took a few minutes for each owner to complete a form).

Figure 4 **Sample page from the quarterly confirmation form.**

Figure 5 **Sample page from the initial data capture form.**

Conclusion

Webtrend statistics show (over a 3 month period) that more than half the Bank's Solution and Enterprise Architects visit the published output every business day for between 3-7 minutes and with between 20-30 page views per visit. This indicates that the information is proving useful to technical staff (because the same people are regularly re-visiting) and they are finding the information they need in just a few minutes.

About the Author

Wayne Addison has 20 years corporate IT systems development experience, most of that time spent in the banking and finance industry. He initiated, built and maintains the IT Architecture Model for St. George Bank. He has also commenced building an IT Architecture Model at an Australian utilities company. Questions regarding this case study or aspects of the project can be addressed to the author directly.

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About St.George Bank

St.George is Australia's fifth largest retail bank and one of the top 20 publicly listed companies in Australia, employing over 9,000 people.

Its national operations span all aspects of the financial industry including retail banking, institutional & business banking, and wealth management. At the Bank's core is a close relationship with its customers and this remains the cornerstone of future strategies, an important tradition that distinguishes St.George from other Australian Banks.

Founded in 1937 as a housing based financial institution, St.George built a reputation as Australia's foremost building society, before achieving full banking status in July 1992.

St.George's core strategy is one of organic growth, harnessing the potential in the franchise and building on its strengths and capabilities. These strengths include a track record of superior credit quality, positive customer service ratings relative to the industry, and product management and product innovation capabilities.

About Sparx Systems

Sparx Systems (www.sparxsystems.com) specializes in high performance and scalable visual modeling tools for planning, designing and constructing software intensive systems.

With customers in industries ranging from aerospace and automotive engineering to finance, defense, government, entertainment and telecommunications, Sparx Systems is a leading vendor of innovative solutions based on the Unified Modeling Language (UML) and its related specifications. A Contributing Member of the Object Management Group (OMG), Sparx Systems is committed to realizing the potential of model-driven development based on open standards.

The company's flagship product, Enterprise Architect, has received numerous accolades since its commercial release in August, 2000. Now at version 7.1, Enterprise Architect is the design tool of choice for over 150,000 registered users in more than 60 countries world wide.

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