

# St. George Bank

# I. Executive Summary

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Over the past five years, St.George Bank has experienced exceptional growth in revenue and profitability while increasing customer satisfaction and its share price. Since 2002, the Bank's management team has pursued a strategy to grow shareholder value through providing excellent customer service, by engaging staff and expanding organically through product innovation and entry into neighbouring markets.

Key to the execution of this customer-focused strategy is the Bank's Group Data Warehouse (GDW), a state-of-the-art tool that provides the data that employees need for faster, more effective decisions and continued customer service excellence. The GDW, based on a Teradata platform and tools, is used by every department throughout St.George. It provides information and analysis that supports customer service and knowledge, regulatory requirements and risk management, and analytics by product, channel and geography.

St.George has more recently discovered new ways to use the data warehouse to support strategic business goals such as compliance, cost reduction and increased profitability. By serving as the information-driven engine of the company, the GDW provides St.George with bottom-line benefits and a unique advantage over its competitors.

# II. Strategy and Implementation

St.George Bank is Australia's fifth largest retail bank and one of the top 20 publicly listed companies in Australia. It is building on its reputation as a dynamic, service-oriented and low-cost organisation and delivering results. For the year ending September 30, 2006, the bank reported Cash AIFRS profits of A\$1,026 million, an increase of 14.5% over the previous year. At the same time, St.George improved efficiency – reducing its expense to income ratio from 47.1% to 44.0%, which was well down from the ratio of 53.6% reported in 2001. These gains did not come at the expense of customer service, with the bank's retail arm seeing a 5% increase in customer satisfaction between 2004 and 2005, according to research group Roy Morgan.

## Growth Strategy

Under Managing Director and CEO Gail Kelly, the bank is pursuing an organic growth strategy built around ensuring high levels of customer service and staff engagement. St.George is also significantly smaller than Australia's four major banks and its operations are concentrated in the states of New South Wales and South Australia.

The bank has been actively embracing the opportunity to expand geographically into Victoria, Queensland and Western Australia. During the year to September 2006, St.George saw its loans business in these three states alone grow by 18% to A\$18.7 billion in residential receivables – well above normal system growth rates.

This strategy was encapsulated in the strategic framework articulated by St.George in 2002 and which the bank has stuck to since. These goals are strongly reflected in the Bank's enterprise data warehouse strategy and are as follows:

- > Deepen and strengthen relationships with customers in our chosen markets
- > Leverage our specialist capabilities for growth
- > Creatively differentiate on service
- > Accelerate and empower relationship selling
- > Build team and performance culture
- > Optimise cost structure.

St.George has not always had an organic growth strategy. The current focus on continuous improvement and low-risk

geographic growth was preceded by a number of major acquisitions around 2000 that sharply increased the Bank's size and scope of operations. These included the incorporation of the major second-tier bank and asset management group Advance Bank, and with it the acquisition of BankSA, South Australia's largest bank. St.George also acquired SEALCORP (now Asgard Wealth Solutions), one of Australia's largest investment administration providers, to substantially increase its presence in wealth management and financial advisory services. These acquisitions required the bank to rationalise its IT systems and approach and move towards the common integrated data model employed today in the GDW.

St.George Bank's data warehouse and business intelligence platform is managed by the bank's Group Information Systems (GIS) team. In the mid-1990s, GIS developed an ad hoc decision support system to help the marketing department assess customer behaviours and profitability. Over time, the Bank created a Group Data Warehouse (GDW) architecture to support a new 360GB enterprise data warehouse – one that included data from nearly all areas of St.George.

The marketing organisation pioneered the use of the warehouse with customer profitability, segmentation and potential-worth applications. Since then, departments such as commercial banking, funds management, finance and human resources have quickly requested applications to help them enhance performance.

### **A successful EDW is a program, not a project.**

**"Most people think the challenge is getting the warehouse in, but that's the project and only 10% of the effort. The program is staying in business – having a mindset to grow the warehouse to meet changing business needs. We must always build for the future."**

– Gary Carter, General Manager, IT Relationships and GDW, St.George Bank

The GIS team added new depth and breadth to the data that was collected and the uses of the warehouse. More than 40 sources of data supported new applications, including customer income, next logical product offerings, and events-based marketing, which uses customer life changes to drive offers for new products or services. Employees used the GDW to gain the information they needed to support decision-making, campaigns and business strategy.

In 2002, St.George instituted a critical change that made the GDW even more valuable: it reconciled the daily history produced by the warehouse with the bank's general ledger. With this change, all financial data became synchronised – eliminating discrepancies between the GDW and accounting data – and allowing the bank to begin using warehouse data to meet increasingly stringent regulatory reporting requirements from the Australian Prudential Regulation Authority (APRA) and The Basel Committee (Basel II).

GIS quickly sensed that the warehouse was being viewed differently. No longer a discrete project, users began seeing it as an ongoing program designed to support the bank's business needs. The bank became more data-driven, using the warehouse to support new initiatives, provide business enablers, and support its strategy and governance requirements.

### **The business that values information succeeds.**

**“Our success is only because of the great people in the business area who can execute and use the data. You have to have a culture that can use the data, have the vision, and actually execute it.”**

– Gary Carter, General Manager, IT Relationships and GDW, St.George Bank

“Once we had that building block in place, we could do our regulatory and credit reporting because we know the numbers are complete and accurate,” says Gary Carter, General Manager – IT Relationships and Group Data Warehouse. “These APRA figures specify our assets, liabilities and risks to the regulators. That's the confidence we have in our warehouse.”

### **Comprehensive Reporting**

By implementing standards that establish how data is modelled and documented in the GDW and how it can be used throughout the bank, the GIS team has created comprehensive, accurate reporting that provides a single version of the data to all users. “Now senior executives, using the reports, can roll up data to the CEO with the assurance that the figures will agree,” says Paul Scott, team leader for group reporting systems.

The warehouse data represents a single source of the truth. The ongoing challenge is governance and control over report production being complete, accurate and relevant to ensure truth in reporting.

To enhance data quality and meet governance requirements, St.George created a GDW Council responsible for creating common definitions of key data elements, such as customers, accounts and products. The Council, which includes senior managers and key data warehouse users including St.George Group Executive Information Technology John Loebenstein, then incorporated those definitions into the data structures for reporting by tools such as Business Objects. The result: using the reports created by the GIS team, users have access to a reporting system that can produce a single version of the data, no matter which statistics are reported. Now, all reports created with the Business Objects tool include accurate data that can be rolled up to the highest levels of executive management.

Today, the GDW is operationally entrenched in the bank, serving every department with data, insights, and business value in areas such as customer service, regulatory requirements and risk mitigation, and powerful analytics.

## Never Accept the Status Quo

Financial institutions commonly re-evaluate their information technology solutions. In 2004, St.George Bank conducted an internal assessment of its Teradata Warehouse. A third-party analysis team from BearingPoint (McLean, Virginia) conducted an independent review. The conclusions from both teams were identical: the bank decided not only to keep the Teradata Warehouse, but also to upgrade it.

“Teradata has proven technology with significant advantages in some key areas, and greater depth and experience in providing industry knowledge and solutions,” says Gary Carter, General Manager – IT Relationships and GDW at St.George Bank. “Teradata’s relationship with BI provider Business Objects is a major plus. Finally, Teradata had the strongest and most relevant references for the bank. In short, Teradata works!”

Realising that St.George would soon exhaust its system capacity, the GIS team implemented a four-node Teradata Model 5400 with V2R6. The warehouse was implemented in one weekend during April 2005. The software arrived preloaded on a single server, which replaced the old data warehouse on another unit. Each node includes Teradata Parallel Database Extensions (PDEs), which enable massively parallel processing. The PDE layer allows the Teradata Database to perform independently of the operating system.

“The machine was staged by Teradata on site,” explains Damian Plueckhahn, Senior Software Advisor and Team Leader, St.George Bank. “When it was handed over to us, it was preloaded with the operating system; we didn’t have to install it or configure it or tune it. Teradata made it easy for us to upgrade and deploy state-of-the-art technology that will help us meet our changing business challenges.”

# III. Banking on Success

**“The St. George Group Data Warehouse serves departments throughout the bank and is widely viewed as a powerful resource that can deliver business intelligence to users and competitive advantage to the bank in various ways.”**

– Gary Carter, General Manager, IT Relationships and GDW, St. George Bank

St. George uses the GDW to support three primary business needs:

- > Analytics and business intelligence
- > Regulatory compliance and risk management
- > Customer service and knowledge.

Within each area there are dozens of applications. The following sections briefly describe the primary applications of the St. George enterprise data warehouse.

## **Analytics and Business Intelligence**

The St. George GDW provides analysis throughout the organisation, which is used to better understand customer behaviour, marketing strategies, industry trends, bank profitability and other business drivers.

### **Enhanced Reporting**

Recognising the growing use of the GDW throughout the organisation, the bank decided in 2005 to expand report generation

tools for end users. First, St. George provided a reporting tool that supports financial and sales reporting; this tool also enhances reporting governance by providing a single view of all bank information.

To give power users even greater reporting capabilities, the bank rolled out web-based business intelligence. The goal is to maximise delivery of analytics and decision support information to the business in a way that users find simple to use. The team created “universes” using tools from business intelligence software provider Business Objects. These are views of the data that apply to specific subject matter areas such as CRM, performance reporting, HR and Basel II.

“It’s getting IT out of the loop, providing users with the power to get the information they need,” says Paul Scott. “They don’t necessarily have to understand SQL and they don’t necessarily have to understand the warehouse, because the report

and universe process delivers the data in business-speak. Users with business knowledge who understand the underlying rules that have been applied to the universe can create any number of extensive and innovative reports.”

The more information that users get from the reports, the more new and interesting questions they think to ask. “It’s like a little seed of imagination growing into a big tree,” says Damian Plueckhahn, senior software advisor, project leader of the infrastructure team and database administrator (DBA). “Once they realise they can get the information, it gets the cogs turning and they expand on their thinking.”

The Bank has long had power SQL users who have been able to develop their own reports. However, these users created duplicate reports or different views of the data. “Power users or the group information systems team would develop SQL queries; then they would copy them into Access or Excel, and they would be distributed from there,” says Scott.

“With the current tools, we are harnessing the warehouse by trying to produce reports that have a standard flavour and are distributed consistently across all divisions. By providing web-based reporting and business intelligence capabilities, we are effectively maximising the power of our end users.”

The following table lists some of the applications for the business intelligence derived from the GDW:

a reporting application to meet Australian Prudential Regulatory Authority (APRA) requirements and created the first Basel II

tions from SAS Institute Inc. to assess the Bank's portfolio for risk variables on all lending products across the Group.

### Sample St.George Bank Reporting Applications

Topic	Objective
Basel II	Meet compliance requirements
APRA	Meet compliance requirements
Group Analytics	Understand divisional performance, as well as performance as a component of total bank performance
HR Information	Understand workforce trends, employee patterns
Retail Lending	Monitor and improve key performance indicators such as pipeline, sales and performance of lenders
Divisional Data	Conduct what-if analyses, create summary snapshot reports

#### Governance Support

The GDW supports St.George's corporate governance initiatives. The Bank has several governance committees for different areas, including one for the data warehouse and another for the group reporting system. These committees, comprised of senior bank executives from across the enterprise, prioritise reporting workloads according to the jobs that will provide the most effective returns to the Bank. These executives also represent all reporting issues from their own divisions and work together to identify opportunities to leverage reporting across divisions.

#### Regulatory Compliance and Risk Management

In 2003, when St.George first implemented

program, the GDW became the foundation for compliance.

APRA reporting is required by the Australian federal government; Basel II is an international risk management framework that helps banks adopt core principles and methodologies for sound banking.

St.George used the GDW to create necessary APRA reports and to collect, store and analyse credit risk data, which ensures that the bank has adequate capital to support its risks.

The enterprise risk management program was enhanced in 2004 and 2005. Today, St.George can analyse its risk using a variety of core variables, such as probability of default and loan exposures. A credit risk management program uses applica-

Also in 2005, the bank added a commercial software program from SAS to determine capital requirements, based on the information stored in the GDW. The program, which incorporates Basel II rules, calculates the bank's capital requirement for each loan then rolls up those requirements so that bank executives can identify capital requirements for retail, corporate, treasury and institutional loans. All detailed calculation results are then returned into the GDW for future needs.

The reconciliation of the bank's GDW data with the general ledger paved the way for St.George to use the warehouse to support its compliance and risk management initiatives. Although the Bank was quick to use the GDW for compliance, increasing regulation and government oversight have given the data warehouse team many opportunities to refine its approaches. Today, these applications support a wide variety of business requirements, including:

**APRA compliance:** St.George must file 49 APRA reports each month and quarter to meet the requirements of the Australian government. The data in these reports feeds the government's data warehouse. The GDW uses approximately 4,000 scripts to create statistics that go into the reports.

**Basel II compliance:** Complying with Basel II requirements and managing credit exposure is critical for St.George; the bank is using its GDW to develop

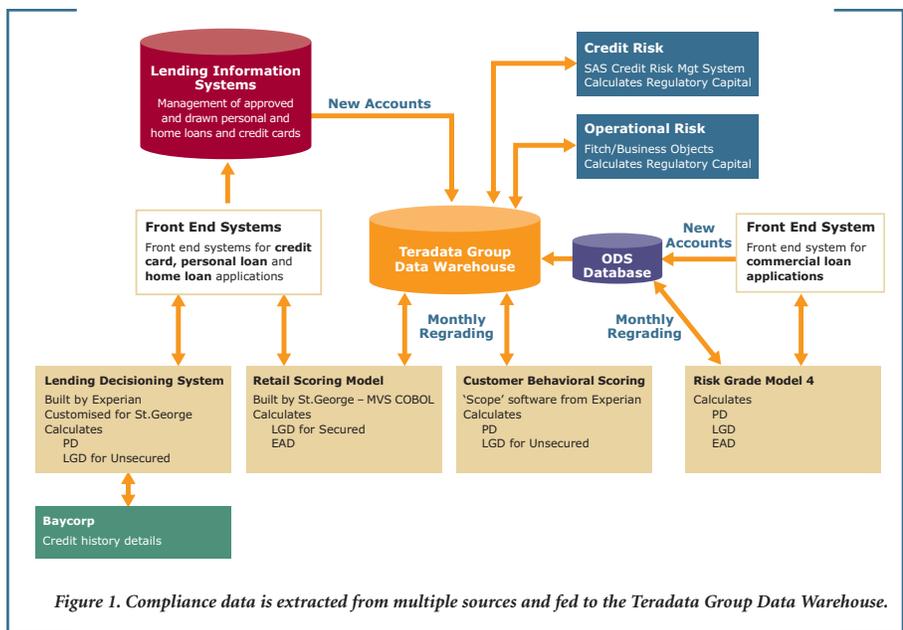


Figure 1. Compliance data is extracted from multiple sources and fed to the Teradata Group Data Warehouse.

expertise far ahead of its competitors. Using a Basel II credit risk application from SAS and a Basel II operational risk application from Fitch Inc., the bank's Basel II process continuously pulls data from a variety of sources, as shown in the figure, and feeds it to the Teradata Group Data Warehouse, which serves as the repository for all credit risk data.

All logical views of the data are created in the GDW, and calculations and derived data are stored there for re-use. High quality data is essential to the success of the Bank's Basel II activities. In fact, recent Basel II activities have helped the bank identify certain data subject areas where data was incomplete or inaccurate. "We found some cases where users were not updating fields, which created incomplete data," says Paul Munns, GDW team leader

for major projects. Missing or incomplete data forces the bank to act conservatively – holding more capital than might otherwise be necessary. The GDW is helping St.George identify data issues in its Basel II activities and create a more complete, accurate picture of operations. Over time, this will enhance the St.George's profitability and success. "Basel offers different levels of accreditation," says Munns. "The more sophisticated we get with our Basel II modelling of risks and lowering our risk variables, the higher our accreditation and the lower the capital we must hold."

**Asset and Liability management:**

St.George uses the GDW to handle two components of its asset and liability management program. The first, managing interest rate risk, helps the Bank maximise

profits in the marketplace on fixed-rate instruments. With approximately 3.5 million loans and deposits, which comprise 75% of the bank's assets, managing interest rates is key to profitability. The GDW collects data from eight source systems and transforms it into gold-level data, which is processed by an interest-rate model to determine whether the Bank should make trades on the assets.

The warehouse provides weekly data that helps the team determine which actions to take and to hedge the Bank's risk. "If the only information we had available during a month was that from the previous month-end, the impact on our profit could be plus or minus A\$30 million of what we currently produce," says Andy Biesaga, executive manager of funds transfer pricing. "If we had no information at all, the Bank probably would not be able to offer fixed rate loans and deposits, as the fluctuations in profit outside our control would be unacceptable to the shareholders."

The second component, funds transfer pricing, is an internal activity that establishes divisional profitability for each group's loans and deposits. The Bank assigns costs or benefits to each product, summarises the data monthly and can assess profitability by division, product or other slices of the data. "We can cost or make the Bank money very quickly, so these asset and liability decisions must be made on accurate information," says Biesaga. "We depend highly on having accurate and current data to show us our

position and what we should do. By mastering the information, we can increase the Bank's profits."

## Customer Service and Knowledge

Like all companies, St.George is continuously optimising its cost model while striving to increase the number and profitability of customers – and enhance the bottom line. The Group Data Warehouse helps the bank do this in several ways. The Customer Knowledge Team, one of the most frequent GDW users, runs many marketing campaigns with the insight delivered by the enterprise data warehouse. For example, by using credit scoring models marketing personnel can determine which customers should be offered pre-approved credit cards with customised spending limits. Using this data, analysts have improved response rates from a typical 1% to 2% to a rate of 5% to 6%. Because the campaigns are far more targeted, fewer non-productive contacts are made – reducing overall campaign costs and increasing success rates.

Further, St.George analysts are using the GDW to dig down into the data and deliver more granular levels of analysis. For example, one team is trying to determine the most effective number of times to contact a customer with a credit card offer. By tracking how many times a customer is contacted, after which contact he or she decides to accept the card, and how the customer rates in the use of the

card, the team is working to understand which customers are most profitable and least risky to acquire.

St.George has built its business on the promise of delivering excellent customer service, making it vital to be proficient at developing, refining and employing data warehouse applications that deliver a new view of customer information. Unlike the first simple applications developed in the mid-1990s to meet marketing's request for information about customer contribution to the bank's profitability, today's customer knowledge applications are more complex. They deliver more granular customer information, which supports marketing campaigns, business decision-making and service approaches. The primary applications include:

**CRM:** From 2000 to 2004, the St.George's CRM capabilities evolved with in-house applications run against the GDW. Using the warehouse to define events-based marketing campaigns, understand the value of different methodologies and develop goals for the Bank, the CRM capabilities supported dozens of new campaigns. Bolstered by a corporate culture that was willing to explore new marketing approaches and discover new ways to enhance customer service, the new program generated response rates of 15% to 20% instead of the typical 10%.

In 2005, St.George installed a new integrated operational CRM application, which helps customer-facing employees

provide even more effective service. The GDW provides information to St.George's new CRM front-end, a PeopleSoft application that operates throughout its branch network. The integrated platform, known as "Firefly", derives information from a variety of data sources and provides a single view of the customer and his or her accounts to staff at the branch and regional level. When a customer's card is swiped by the Customer Service Officer, his or her information is displayed on the monitor. Having this data available in real time helps the Customer Service Officer execute the customer's requests, offer new products or services, or populate a lead form with customer information. Relying on the GDW data, the CRM system can also prompt the Customer Service Officer to begin a conversation about the subject of a new product marketing campaign.

**Propensity:** Predictive models are built using statistical and data mining techniques to calculate the likely behaviour of customers. The application is used to enhance the cross-selling of products, increase customer retention and refine and reduce the target size of campaigns. Information results can help marketing teams prioritise product and service offerings, create value propositions, and segment customers according to qualifiers such as income, geography and behavioural patterns.

**Contribution:** This application calculates the contribution of each customer and his

or her accounts toward the bank's profitability. It can perform cost analysis by activity, channel and product, and it provides tremendous insight into the relative value of customers, products, channels and business units. According to Gary Carter, "The data warehouse directly influences the Bank's strategic plans and tactical plans to improve the bottom line. You can see in our revenue and customer growth over the years that this strategy has been successful. The insight provided by the data warehouse has helped create the success in St. George Bank's operations."

**Customer behavioural scoring:** This application collects information about each customer's activity from six major source systems each month. Considering approximately 400 unique customer and account attributes, an automated match/merge process scores the customer based on total holdings within the Bank. The score is used as a foundation for further decision-making, including which products (such as credit cards or pre-approved home loans) should be offered to each customer. Using the customer behavioural score, St. George can also monitor account and customer behaviour to determine credit risk, fast-track customer applications and determine how aggressively to pursue collection actions. Before the GDW, a process such as this would have been too costly and time-consuming to execute regularly.

**Events-based marketing:** The Bank's customer knowledge organisation includes

three teams that all use the GDW to generate analysis needed for decision-making. The customer and strategic analytics group defines customer segments and performs customer analyses; the marketing analytics group uses the warehouse to target direct marketing campaigns; and an events-based marketing and CRM analytics group is responsible for making every communication relevant and rewarding to the customer. This group coordinates and executes marketing campaigns based on a significant event in a customer's life, such as a pay increase, home purchase or retirement. By identifying these crucial events, this group can initiate relevant, timely marketing communications using the customer's preferred channel (such as phone, mail or email). Using the GDW, the team can refine the target customer group so that the marketing generates positive results. The group then tracks a campaign's results – by elements such as channel and customer segment – and uses modelling capabilities to determine how the campaign can be improved for even better results. "We have a fantastic warehouse," says Kirsten Bryden, head of customer knowledge. "Having history for all of the attributes is fantastic for our management reporting, custom reporting and for the modelling environment because we can always get the information we need."

### Enhanced Decision Support

Using the Business Objects reporting tool to create different universes (views of the

data) for specific user groups, customer-facing groups can quickly gain the information they need to make fast, accurate decisions. "Using certain Teradata features – such as join indexes, partition primary indexes and putting statistics on selected columns – we have reduced the run-time of a report from five minutes to 30 seconds," says Plueckhahn.

The processing speed of the GDW is topped only by the completeness and accuracy of the information provided. "Someone asked me a question recently about how many customers we have in the top tier for a particular program," says Frank Wilson, head of CRM. "I was able to identify the branch, get the number and provide an answer – all within an hour."

The GDW can also support new approaches or verify the value of old ones. For example, one St. George organisation was considering adding a rapid response service to its call centre for high-value customers. Bryden used the GDW to reveal that high-end customers rarely use the call centre and were unlikely to gain benefit from a rapid response team. "I love having the ability to hear a discussion point or take someone's question and investigate the facts, find out why things are the way they are," she says.

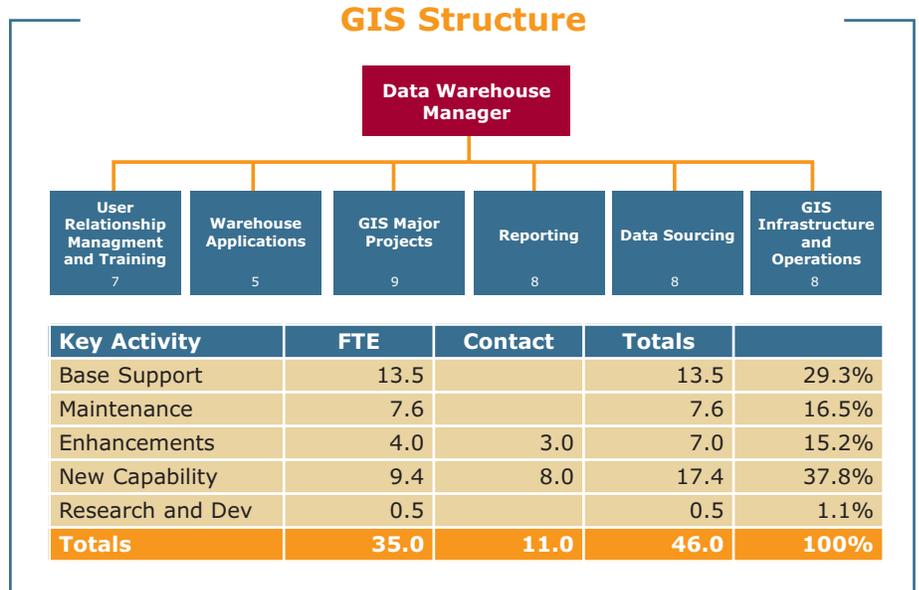
In another example, a unit quantified the value of the "gold card" member program. St. George determined that the gold card members generated an additional A\$9 million annually in cross-sales, uplift and

# IV. Team and Technology

retention – after considering the extra cost to attract and retain them.

Supporting the Group Data Warehouse are approximately 45 Group Information Systems team members, who are split between routine business operations and special projects. Managers focus on how the data warehouse can be used to achieve the Bank’s vision via additional insights from the GDW. “As a result, we have the lowest cost to income ratio in the industry and return on equity in excess of 20% pa,” says Carter. “Our cost ratios and increase in our share price are far ahead of all our competition because of this sort of discipline throughout the bank. The GDW team is just a microcosm of that culture.”

Users are also supported by a User Relationship Management team, who if required pass tasks to other teams to assist business. The teams work very closely together and have a high degree of interaction with the users and the traditional application development teams. 24 by 7 support is provided by the Infrastructure and Operations team to ensure data loading runs smoothly and tolerance exceptions are dealt



with appropriately. Gary stresses the highly knitted nature of the teams, “At 2:00 am in the morning the load of data from a new system may exhibit some out of bounds conditions and the schedule will alert the GDW On Call person – these people need to know the source systems, the ETL rules, the up stream impacts of cancelling a job, i.e. does it effect our Basel II Capital calculations and compliance? Fixes are applied in the early morning hours and the upstream users hardly notice, they and source

application data owners are informed so we can ensure corrections and integrity.”

According to Damian Plueckhahn, the support staff is very lean, with less than one full time equivalent database administrator (DBA) supporting the entire GDW. This minimal requirement frees the GDW team to focus on delivering business benefits to the bank. “With other databases, the DBAs are busy with indexing and creating tables,” he explains. “With Teradata, we automate all of this. They can free their minds and meet their potential, which lets them help the business, understand business problems and enhance data – actually investigate what the users are doing. More important, they are helping me create, drive and implement new visions for the business. We want to use these intelligent, capable people to execute on our vision for the future.”

Approximately 280 people from various parts of the St.George organisation use the GDW. Most users are not part of the GIS;

## Build with the right people.

**The quality of the St.George GIS team contributes greatly to the success of the GDW. “We have a great bunch of people. The knowledge that comes with this team has been a bonus, but the get-up-and-go attitude is the real driver for success. We are the can-do people; we always find reasons to do things, rather than reasons not to do them.”**

- Damian Plueckhahn, Senior Software Advisor and Team Leader, St.George Bank

they are typically business people and data analysts with varying degrees of data warehousing and analysis expertise.

### Technology Detail

The St. George Group Data Warehouse has expanded and changed over the years, keeping pace with the bank's business requirements. Today the hardware platform includes a Teradata four-node Model 5400 machine that runs Teradata V2R6.1. With 4.7TB of data, the GDW includes 13,000 tables in production and 1,300 gold tables. Data loading and access are available around the clock, and the GDW runs

35,000 batch jobs per week. In addition, the bank also implemented a one-node Model 5400 machine with 1.19TB of space for disaster recovery.

The goal for the warehouse is to have a system-independent enterprise data model that is both broad and deep. The "Gold" sources are fully integrated into the GDW, with data refined to fit its naming conventions and generic data model definitions; the "Bronze" sources include unrefined operational data from master files and source systems. Each source system is used to load data into the warehouse daily. All

of the main application systems run by St. George are loaded daily in the GDW. Daily batches are run and uploaded each night; then the system does a comparison and applies any changes in the GDW.

Most processing is done with traditional extract, transform and load (ETL) methodologies and OLE DB to directly populate Teradata tables where SQL transforms are performed. Most data is maintained in the warehouse for historical purposes. However, some volatile data, such as non-business-essential daily balances, is periodically deleted so that

## Technical Benefits of the Teradata System

**Efficient use of resources:** The multi-value compression feature provided with release V2R5 helped the Bank save 10% of the space on its warehouse at a crucial point in time, when space was at a premium. "We saved over 120GB when our warehouse was at 1TB, so that was quite a saving," says Damian Plueckhahn, senior software advisor, project leader of the infrastructure team and DBA. "We were able to keep running an extra six months on the same platform which was nearing the end of its life, as we were preparing for our next upgrade."

**Heavy-duty data processing, with no performance loss:** Partitioned primary indexes helped the infrastructure team extend the transaction table from one to three years. Being able to store this additional information was well-received by users. "We receive many requests to look at transactional data going back more than one year," says Philip Sherry, team leader for Group Information Systems (GIS) user support and training. "Previously, we had only one year available because of the issue in querying a table with that many rows in it. So that improved customer service and enhanced the ability to meet customer needs."

**Safe environment for innovation:** The Teradata Warehouse provides St. George Bank with a safe environment to try innovative ideas and applications. Other operational systems require a more stringent testing environment before new applications can go live. With Teradata, any mistake can be corrected without damage to the Bank's data. "Because we source data into the warehouse and then build on that,

and because we rarely purge any data, we generally hold a long history of data," says Guy Kerr, program manager, GIS applications. "If something goes wrong with our code during testing, we can go back and fix it all the way in history, which gives us a safety net. Many operational systems do not offer that luxury."

**Continual technology advances:** The infrastructure team is looking forward to features that will be available with Teradata V2R6.1. "Features that we want to use include running more loads and exports," says Plueckhahn. "I would also like to have real-time feeds coming from the source systems and real-time updates to GDW. This would benefit areas such as fraud investigations and help us get marketing campaigns off straight away. We could act on event triggers immediately, as opposed to waiting for the overnight processing."

**Manageability:** Despite the thousands of jobs and tables in the St. George GDW and its hundreds of users, it is managed by only one database administrator. The Bank was able to handle APRA compliance with two business people and one IT person; other banks who buy packages to become compliant often have as many as 15 people dedicated to the project. "It truly is set-and-forget 99% of the time," says Gary Carter, General Manager – IT Relationships and Group Data Warehouse. "It allows 99% of queries to run without requiring QA by DBAs. It is very tolerant of poorly written SQL and even alerts us to this so we can discuss with the author. And it efficiently manages a mixed workload of typical long-running queries mixed with numerous short quick queries."

# V. Future Plans

no more warehouse space than necessary is consumed.

St.George Bank plans many improvements and enhancements to the Group Data Warehouse and the way it is used. To meet anticipated new reporting and risk management requirements, the Bank has created a view of the Basel II data within the GDW. This allows users to generate required reports using the Business Objects tool. In addition to supporting Basel II requirements, this data is increasingly used to meet other regulatory needs. It provides a foundation for identifying new trends and patterns in bank activity.

With increasing Basel II experience, St.George has expanded from sheer compliance to true risk mitigation programs. The predictive models developed to enable the loan default projects now support credit risk mitigation. With that information, the bank can refine its models to more accurately reflect recent conditions. In turn, this refined model may also be used to support additional compliance mandates, such as those required under International Financial Reporting Standards (IFRS).

St.George will continue deploying new CRM capabilities that provide customer-facing employees with vital decision-making information. The Bank plans to leverage analytics to identify opportunities and develop new customer insights. And the CRM system will be enhanced so that it can collect more data.

## Technology: keystone of business success.

**“We like seeing where we can leverage the technology, taking all of those new features and enhancements and applying them to the day-to-day running of the EDW. At the end of the day, it benefits us as DBAs and developers, as well as the users and analysts.”**

– Damian Plueckhahn, Senior Software Advisor and Team Leader, St.George Bank

“Working in conjunction with marketing, we have a lot of ideas that have yet to be managed and shaped,” says Malcolm Thompson, Teradata principal CRM consultant. “St.George has a world-class data repository. That’s one of the reasons to opt for this integrated CRM platform.”

The number of data warehouse users is expected to grow; currently we have 280 ad hoc users, we have 1,200 consumers of Business Objects reports and we have an enterprise license to publish (via emailed PDF) Business Objects reports. User response to date has been strong but the GDW team expects explosive future growth as more employees understand how the warehouse can be used. Carter recommends strong governance over the user base and strong proactive support by your DW team in order to ensure optimal use of the warehouse. In the absence of this you are bound to be disappointed by many people doing the same thing.

While much has been achieved and great value derived from the data warehouse

assets, St.George is committed to a process of continuous improvement. Accordingly, the Bank is evaluating enterprise information management tools and processes to improve the ETL function and data quality, as well as the availability and accessibility of the GDW. Furthermore, as the warehouse continues on the path to mission critical, the bank is considering activating its currently cold disaster recovery system and moving towards a dual active implementation. This would enable it to meet increasingly demanding business service level agreements.

Finally, the team is coming face to face with the success of the warehouse. According to Carter, the GDW is so widely accepted that there are more data sources and greater volumes of data than were anticipated. To address this bounty, the bank is developing a “Platinum” data model that will help new users make optimum use of the GDW, without compromising its power or performance for experienced users.

## Lessons Learned

### St. George Bank's Best Practices

**Plan the infrastructure:** Structuring the warehouse as the GDW team did was key to creating an enterprise data warehouse that would best serve the needs of the business, according to Christine Sarkis, project leader. This structure means that all tables (e.g. major, reference and mapping) are defined via a St. George-developed metadata application. This enforces a uniform approach to characteristics such as the history format (all tables have history regardless of change frequency), perspective views (e.g. end of month, end of day), data privacy control and so on. It also allows template code to be combined with metadata-generated code inserts to accomplish much of the Bank's routine change detection and maintenance effort, as well as publishing, archive, sampling and other administrative tasks. Developers get to concentrate on the business of understanding the data with the users rather than the mechanics of moving it.

**Collaborate across the enterprise:** Companies should work closely with their various channels to ensure that each group understands its goals and approaches. "We need their feedback to know what is working and what is not," says Kirsten Bryden, head of customer knowledge. "A collaborative effort with them is much more effective."

**Define terms:** For marketing campaigns and analysis, companies must agree at the start on the metrics and definitions that will guide a campaign's success. "If you have a standard that everyone follows, you can roll up the information," says Bryden. "That sounds really straightforward and obvious, but it's very easy to get carried away about getting the next campaign out the door."

**Develop a road map:** The customer segmentation team created a wish list for customer dimensions that describes the most important needs for retaining and attracting customers in St. George's chosen market segments. The customer knowledge team mapped the capabilities it had and those it required to meet these requirements. Constant communication between the teams is helping the customer knowledge group to build the tools the customer segmentation group needs to succeed.

**Provide adequate warehouse support:** Increasing the focus on the customer support group has helped users succeed in their use of the GDW. Several years ago, support was handled by just one member of the GDW team on a rotating basis. Today, the relationship management team consists of five members who service and train customers of the warehouse so they can better use the resource. The bank is also working on advanced training for users of the data warehouse who have mastered the basics of report generation and analysis. "The key people in the business are seeing an improvement and they are happy to have this service for the users," says Philip Sherry, team leader for Group Information Systems (GIS) user support and training.

**Recognise that GDW exists to support the business:** The GDW team spends significant time working with the business to understand its needs, creating a more effective partnership. Not only does the GDW team understand better what drives the business, but the business is becoming more skillful in understanding how the technology can help them, even coming up with new ideas for what the GDW can provide to meet their needs.

**Have a vision:** "I've always got a road map for five years out," says Gary Carter, General Manager, IT Relationships and GDW, St. George Bank. "You've got to be forward-focused. You can never let your previous best be your ultimate best."

**Communicate:** Gary admits that St. George can do better in this area and has tasked his team to ensure that one of the first things new starters receive when they start in the business is an "Overview of St. George Bank Business Intelligence and Management Reporting". Also ensure that we engage with new senior staff and know what they need, otherwise in the absence of information and support they will venture off and do their own thing, resort to their comfort levels. Duplication is destructive and expensive."

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