

Why bother with affordable data warehousing & Business Intelligence?

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A typical vendor's definition of Business Intelligence involves such fluffy phrases as "interactive analysis of mission critical corporate information", "quickly identifying business problems and opportunities" and "enabling continuous improvement through knowledgeable decisions". We could never have any brochure or website without the misuse of the word leverage, chucking in the odd "synthesise strategic information" and "information agile".

Other than possibly being the output of the BI equivalent of the Dilbert™ Mission Statement Generator, these share the feature common to too many BI implementations: a vacuous reason for being. If you ask what is the intended outcome of any BI project, too often the answer is a BI system.

Back to basics

The time has come to get back to basics with BI. Every business wants to do one of two things: cut costs or increase sales. Every time a business decides to dedicate resources to an event or initiative it wants to know:

- Why are we doing this?
- How will this increase sales/decrease costs?
- How much will it cost?
- What are my risks?
- When can we have it?
- How much will it really cost?
- When can we really have it?
- Does it come in blue?

Most BI systems do not have a strong enough business justification to be measured against. Furthermore, many have been large, time-consuming and expensive affairs. This is understandable, as the technology has been immature and targeted at high-end systems for customers with big problems. The business understanding of the benefits of these environments has been minimal or totally obvious. This has led to a combination that is typical for newer IT initiatives of a significant amount of hype and too many poor returns.

Luckily, there is a typical maturity model that the software industry follows. Crudely it is:

- A new expensive, risky capability is created. This is seized upon by selected large companies with correspondingly larger problems or opportunities that this capability addresses. The reward for these early adopters is so significant that this is a must-do. Some companies reap substantial rewards. Some screw up.
- The success stories are used as the basis for a wider implementation within the larger corporate arena. Growth in deployment is rapid, often exponential. Costs remain high, as the value to the customers is high and supply is limited. Risks are reduced, as there are success stories to copy, but they are still significant as very few organisations have the experience or skills required at a business, operational and technical level.
- Better competition enters the arena. Some second-generation products are created that contain significant improvements. Some key incumbents expand their offering and maybe re-engineer their products to protect their market. Costs and risks are still high but dropping. Growth continues.
- The solution is applicable to a wide range of customers or situations. The main block is cost and risk. Frequently, the target market is significant enough or the products and approaches immature enough to continue to have a gradual reduction in cost and a reasonably significant reduction in risk. Consolidation starts to occur but in a limited fashion. Vendors merge, die or are bought. The application range does widen but not to small-to-medium businesses (SMBs) to any great extent. Growth starts to slow.
- Where the solution can be applied to SMBs, a key vendor (or vendors) targets the high-volume market with a reduction in costs. New entrants with third-generation products often drive this. If this is successful, the market grows exponentially. The use of newer products, and the knowledge to implement them and the older products, is too narrow and the old mistakes are made again. Often the older products require too high a level of sophistication for SMBs to implement easily. Costs drop significantly – and the risks rise again.

- Consolidation occurs. Somebody wins the marketing war; the market will support only the winners. Knowledge of how to utilise the solutions becomes widespread. Costs and risk reduce. The solution is on the way to becoming commoditised.

How hard is this anyway?

Let's also look at the problem. There are a number of well-kept secrets in BI. Typically:

- The source data is flawed/inconsistent/of poor quality, and needs to be cleaned up.
- The valuable data is held in a system no one understands any more.
- The valuable data is held in a proprietary format/layout that is hard to access.
- Many so-called BI engineering processes involved are crude and only partially effective.
- One is not really sure how valuable the information is until one understands it – a sort of BI Catch-22.
- True data mining almost requires a PhD in theoretical physics and the dedication of a train spotter.

If we combine these strands together we start to question why most New Zealand-based companies would want to implement a BI solution. Costs have been high, it is a difficult task to do correctly, it requires specialised knowledge – and what is the business justification anyway?

There is, however, a much more positive picture emerging.

Let's look at the major changes. They are related to maturity of market and Moore's law. We appear to be moving in to Stage 5 of the maturity model described earlier. Costs are becoming suitable for SMBs, but there are still risks.

Let's look at each of the cost and implementation components in turn: software, hardware, approach (departmental versus enterprise) and services.

Software

The costs are dropping. An excellent example: Microsoft acquired a BI repository, OLAP Services, now called SQL Server Analysis Services. This is a real BI repository available for a song (it is bundled with SQL Server). It may not scale as well as the big boys eg Teradata or have all the sophisticated features and installed base, but it scales as well as what was seen as large a couple of years back, and will continue to grow in capability.

A typical data warehouse requires a major design-and-build task with some serious problems to be solved. This think-big approach was pretty much mandated by the previous cost barriers to entry, ie we needed a big win to afford to do the expensive job, but with decreasing costs we can afford to take a departmental as opposed to an enterprise approach.

For an average New Zealand business, a too-sophisticated package equates to cost, so one would prefer to keep it a bit simple. And this is Microsoft – watch the installed base grow. A recent (2002) independent market analysis (www.olapreport.com/market.htm) has Microsoft's OLAP offerings leading with 24.4 percent of the OLAP market and continuing to rise fast. If we combine this with the ongoing reduction in real costs for the other serious database players (Oracle, DB2), we see a competitive arena with many choices.

That is not to say that Microsoft is the only significant, more cost-effective offering in this arena. It has a good offering at the OLAP repository end (with some limitations) but with an evolving offering in terms of desktop access and reporting. The major other international firms such as Cognos, Business Objects and MicroStrategy all have good mature offerings for the desktop that talk to a variety of repositories, including Microsoft OLAP. Another example of cost reduction is MicroStrategy, which has re-engineered what was quite a sophisticated, high-end and expensive product to be cheaper to purchase and simpler to implement.

In short, general licence costs have dropped and are dropping significantly.

Hardware

Moore's law kicks in with a vengeance here. Given enough memory, the average desktop PC can power a decent database product. A small Intel server with RAID disks and a couple of gigabytes of memory can be had from \$25,000 and up, depending on configuration. In many cases this can even be overkill. You now get the capacity of what would have cost a large six-figure sum five years ago for the price of a second-hand family car. Not only that, it comes on a platform that is generally easier to manage for smaller implementations.

This is not to say we can build a 100-terabyte data warehouse on a PC server platform. There is still a point where the hardware price jumps substantially as we require specialised platforms and the figures do have more than six digits – but that point is pushed back each year. Also, the amount of data we store also increases with time and this does increase the average size of BI solutions. Still, each year hardware prices become a lesser proportion of overall BI implementation costs.

Approach – departmental versus enterprise

We still have to get the data in to our data warehouse platform. This is one of the biggest hidden costs, so do we need the deluxe version? A typical data warehouse requires a major design-and-build task with some serious problems to be solved. This think-big approach was pretty much mandated by the previous cost barriers to entry, ie we needed a big win to afford to do the expensive job, but with decreasing costs we can afford to take a departmental as opposed to an enterprise approach. We can put in place the so-called data mart. This is a BI solution targeted at a specific application or business area. This is not to say that this task becomes trivial, but it does become easier.

This approach has a number of key benefits:

- Cost reduction. The scope – the number of users, data sources, volumes of data, integration and training – all reduce. Complexity is reduced as it is simpler to integrate incompatible data from several heterogeneous systems.
- Risk reduction. It's smaller, simpler and less ambitious.
- Time to deliver. A decent departmental data mart should take three to four months.
- Business justification. The business benefits are usually easier to identify and the barrier to entry is lower. Typically we can find a specific set of reports or performance indicators that can provide a measurable benefit to the business.

Starting with a data mart does not preclude migrating to a data warehouse at a later stage, though this does require the correct and sufficient analysis up-front. For many environments it is the preferred approach for a data warehouse as well as a data mart implementation.

Services

This is another area with improvements in cost and ease of deployment but one that is lagging a bit behind the rest. There is definitely a talent to organising and structuring the BI information to make it available to the business. The source information is never in a form that is immediately suitable for BI use and, as discussed earlier, the biggest hidden cost is the extraction, transformation, load and validation of the data on to a suitable platform.

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Most successful BI implementation teams require a range of skills. There must be a strong investigative ability, the capability to gain an understanding of the business and the meaning of the source data (and its value), and good communication skills. Add to this the specialist technical skills in data warehouse design and the front-end tools, and we have a potentially expensive mix.

There is no denying that there is a need for specialist advice that could cost, but while each business is different, many areas in various businesses have a lot of similarities. For example, a data mart in the sales area will typically involve similar base data such as products, customers, orders, sales regions, and costs etc. The type of queries that first come to mind will be similar: "Tell me my most profitable customers", basket analysis (for retail), "Tell me my most successful/unsuccessful product lines" etc.

Many vendors now have standard data-warehouse models for specific industries which can be adapted rather than constructed from the ground up. This implies that we can do the same job faster with an experienced team, as more can be brought across in terms of design and pieces of software.

A data mart is typically simpler than a data warehouse, so the skill-level requirements are lower. This equates to somewhat cheaper resources. The other driver in this area is the supply and demand. SMBs simply will not pay the same rates as big firms, as it is not justifiable from a business perspective and skills in the BI arena are starting to become more widespread. However, demand will continue to outstrip supply for quite some time, so there will be a lot of inexperienced BI implementers for a while yet.

The bottom line

- Business Intelligence is becoming significantly more affordable and mature.
- BI is suitable for departmental solutions.
- There are still risks attached but they are much more manageable.
- From a business perspective it now makes sense for smaller BI implementations. ■

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Travelling with a laptop?

Want to make the most of your laptop while you are travelling? Try one or more of the following:

- Try turning off the AutoSave feature on your Microsoft Office suite applications, such as Microsoft Excel and Word. This will allow your hard drive to power down without starting up again to do the Auto Save.
- Try copying all the files you'll need to your hard drive while your laptop is plugged in. It takes power for your laptop to access floppy or CD-ROM drives, and if you can move those files to your hard drive (which you'll always need anyway) before unplugging, you'll extend battery life.
- If you don't need sound and can turn it off, do so.
- Consider removing PC cards when not in use. Even when the notebook isn't accessing these cards, they can drain battery power.
- Lower the monitor resolution and reduce brightness on your monitor.
- If you only use your laptop in hotel rooms and want to lighten the load, remove the laptop's battery and CD-Rom. The additional benefit of packing your battery in your checked luggage is that you will not then have to remove it for the security check, which you now have to do at many international airports.
- Many laptops are now sold as "dual voltage", meaning they are designed to operate safely with either 110/120V or 220/240V systems. If a device is dual-voltage, all that should be needed to operate it in a foreign country is an electric adapter plug to convert the device's electric plug to the style of the foreign electric socket. To determine whether your laptop is dual-voltage, look on its power adapter box or on the device itself. The device is dual-voltage if it says something like "Input: AC 100V - 240V, 50/60Hz". It isn't dual-voltage if it says something like "Input: AC 120V, 60Hz" or "Input AC 240V, 50Hz". If your power requirements are the latter, consider buying a converter or transformer to change the voltage it uses in the foreign country. ■