WHITE PAPER

Why senior management must lead business intelligence strategy

"We can't solve problems by using the same kind of thinking we used when we created them."

— Albert Einstein

SYBASE®

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EXECUTIVE SUMMARY

Does your company still rely on slow and expensive systems to generate business intelligence? Are you still waiting hours, even days, for analysis of trends that demand an immediate response?

The next generation of business intelligence systems can provide almost instantaneous analysis of your entire business, but – and it's a big but – without leadership from senior management, it's unlikely that you'll ever take advantage. This white paper explains why.

Every vendor has its own way of describing today's operating environment. It's an on demand world, an information society, a digital economy, a global village. Whatever you call it, the facts are hardly in dispute. There are more connections between companies, government agencies, people and systems than ever before. More interactions and transactions take place electronically than ever before. The volume of data an organisation has to process is increasing exponentially.

Information is the real currency of this environment, and agile intelligence is the real differentiator. In other words, your success absolutely depends on the insight you have into the key factors affecting your business, in as close to real-time as possible:

- Analysing performance based on an up-to-the-minute, consolidated view of operations
- Empowering users – from board level downwards – to sense and respond to trends, opportunities and threats that affect the bottom line
- Being able to ask any question, any time, and get an immediate answer

In most organisations, this agile decision-making capability is strangled by the traditional approach to business intelligence, which depends on systems designed for data management five years ago – or more – when data volumes were significantly lower.

Not only does this approach lead to the accepted 'wisdom' of having to wait hours or days for intelligence on something as critical as business performance, or market trends. Not only is it much more expensive to buy, build and maintain. Not only does it take longer to implement, but it also affects the agility of your organisation, and it simply cannot scale to meet the decision-making needs of a business operating in an increasingly complex, data-rich world.

Why this is the case is relatively easy to understand. Some companies have responded to previous bad experience of IT projects by 'playing it safe' with limited scope implementations that generate limited results. Others actively pursue vendor consolidation strategies that encourage the continuing use of outmoded technology. Many business intelligence projects suffer from 'too many cooks' syndrome, with no clear direction from business leaders, and far too many organisations have no clear strategy at all.

Most companies struggle to obtain up-to-the-minute intelligence on the operations of a single department, let alone a consolidated view of the performance of the entire business. That's why you have to change your business intelligence strategy, and why it is too strategically important for senior management not to take a lead.

THE BUSINESS CASE FOR AGILE INTELLIGENCE

This is not a technical white paper. It talks about a revolutionary new approach to business intelligence, an approach that depends on next-generation data management software, but it does not dwell on the technology. The technical detail is utterly compelling, but it's the business case that really matters.

The introduction summarised the key issues surrounding business intelligence: the massive growth in the volume of data a company has to manage; the importance of speed and agility in making informed decisions about your business on a tactical and a consolidated strategic level; the need to empower users to make accurate decisions quickly; and the huge cost of traditional approaches to solving these problems. This section looks at the business impact of each in more detail.

Surviving the data explosion

The complexity of the modern business world is more than matched by the complexity of today's IT infrastructure. Organic growth, mergers and acquisitions, and long-term investment in IT have created a technology landscape characterised by silos of information held on different systems in different departments, subsidiaries and geographies. We have a relentless desire to capture data, and huge quantities of it. That's a role fulfilled by relational databases, which are ideally suited to this task: they are designed to cope with massive throughput of transactions. As a result we're storing more data about products, customers, sales, receipts and so on than ever before.

The challenge isn't capturing data – it's putting that data to effective use. At the beginning of the 1990s, no-one could have imagined just how large a volume of data a typical company would come to rely on, or how essential it would be to be able to query these vast stores of information. Data analysis is key to understanding the performance of your business – performing profitability analysis, generating reports for legislative compliance, analysing sales and marketing campaigns, predicting buying trends and more.

"The demands of regulatory compliance, and the trend towards enterprise-wide performance management, are creating significant demand for improved process visibility, integrated financial reporting, customer and supplier analytics, and greater intelligence in enterprise applications."

Business Intelligence – Breaking Through The Boundaries of Tactical BI
Butler Group, September 2005. www.butlergroup.com

Performing that analysis, for most enterprises, requires a data warehouse or a smaller-scale data mart: essentially, a separate version of the data that can be queried independently of the main transactional systems. So far, so good – except that the classic approach taken by most companies, encouraged by their relational database vendors, is to use the same technology for the analysis database as for the main transactional systems.

This approach is incompatible with fast, flexible, consolidated decision-making. Instead of a single consolidated view of operations across all of the systems in every department, you end up with different data warehouses running alongside different transactional systems across your organisation.

Why the technology matters

A typical business today stores ten times more data than in 2000. Gartner Group estimates that storage requirements will have increased by a factor of 30 by 2012. This has important implications for decision-making because, when companies try to build data warehouses from traditional relational databases, they create almost insurmountable problems when trying to analyse the massive volumes of data generated by the entire business.

There are sound technical reasons for this. In essence, it is because a data warehouse built on relational technology is usually several times the size of the databases it draws its information from, owing to the need not just to import the source data but to store all of the indices and aggregated views required for the analysis.

As already discussed, such a database is designed for transaction throughput, not for the rigours of analytics. As a result, it there is a huge drop in performance when you try to use relational technology to generate intelligence on the performance of your business as a whole. It is the chief reason why most reports take hours, or even days, for an IT department to run.

These performance issues were not evident five or ten years ago, when data volumes were a fraction of the size they are today. To some extent they may not be evident to a senior business manager: you request a report by a specific deadline, and the report arrives on time. All too often, however, this relies on frantic behind-the-scenes activity, late nights and weekend working, just to deliver analysis that is the bread and butter of a senior decision-maker's role.

Common restrictions

These performance issues also create restrictions on the number and type of users able to perform analysis. Because it takes so long to analyse large volumes of data, and involves such hands-on IT support, most companies have to restrict the number of users able to perform analysis on a regular basis. Perhaps it's just the finance department, and line of business heads. Perhaps it's just a handful of business intelligence specialists.

What's more, the complexities of analysis in a data-rich environment place further restrictions on the types of queries you can run. You're often limited to a handful of standard reports, and ad-hoc analysis takes days to set up. The end result is that employees don't have access to the intelligence they need to perform more effectively.

Some types of intelligence are not particularly time-dependent: analysis of historical sales data, or customer satisfaction, does not really need to be done in real time. There is a growing need, however, for up-to-the-minute analysis of many aspects of your business. Product cycles are shorter. Supply chains are more agile, and disintermediation has an increasing impact on product and service industries alike. Customer churn is greater, and everyone wants more for less.

The question for senior management to ask is not 'am I happy with our ability to hit reporting deadlines', but 'are people in this organisation able to make proactive decisions when they need to make them?'

Throw more money at it?

These performance issues can be addressed, to some extent, by tuning your database to respond to specific queries. That's why a good database administration team can add so much value to a company. However, as growth of the data in your transaction systems continues unabated, tuning reaches an upper limit of effectiveness. Bottlenecks occur. Backup and upgrade times are lengthened. For complex analysis of very large volumes of data, it can actually be impossible to run a report: the system simply cannot cope, or cannot deliver results in the timeframe required.

A typical response is simply to throw more hardware at the problem: to add more storage, more servers, more bandwidth to the data warehouse as a whole.

"...until recently the way to deal with this rising amount of stored data seemed to be simple – keep adding hardware, so that the storage limit could be increased. However, this approach has not worked – all that has happened is that organisations have dug deeper and deeper holes into which their data can fall and be lost."

Managing the storage of information
Butler Group, January 2005. www.butlergroup.com

Does that solve the issue? The simple answer is no. In the end, all it does is help you capture more data, and increase maintenance and storage costs. More disks, more servers, more IT staff. Bigger facilities to keep it all in.

An analogy

Think of it in terms of a car. You start with a basic model that, with regular maintenance, will get four people from point A to point B fairly reliably. But what do you do when you need to transport five people? Perhaps you can do something to increase the seating capacity. What if you need to get there faster? Maybe you can tune the engine. But what if twelve people need transport?

Obviously, you wouldn't buy another couple of cars and bolt them onto the first one. That, in effect, is what you're doing by continuously adding capacity to business intelligence systems that aren't designed for the job you want them to do. Now, not only do you need a bigger garage to store all of these vehicles, but you spend more on maintenance and tuning – and you still don't have the flexibility to give everybody what they want. What you need is something designed for what you're trying to achieve.

Agile enterprises are agile decision-makers

Having to wait hours or days for intelligence on your company's performance does not create an agile organisation that can respond quickly to change. Agility is further affected when a company is restricted by its business intelligence systems in what it can ask. That's a typical scenario in most organisations. Queries either take so long to perform as to be useless for providing an up-to-the-minute view of business performance, or are so complex (or require analysis of such a large volume of data) as to be impractical.

Gartner describes agility as "the ability of an organization to sense environmental change and respond efficiently and effectively to that change". Sensing and responding in real time, across a complex distributed organisation, is impossible: even light takes some time to arrive. Near real-time, however, is not only desirable but perfectly achievable for analysis of trends that demand an immediate response.

"...real-time data warehousing can deliver breakthrough business results in customer recommendations, brand development, inventory forecasting, and market dynamics"

Get Ready For Real-Time Data Warehousing
Forrester, January 2005. www.forrester.com

Such applications of business intelligence include analysis of customer history during a call; fraud detection; forecasting; demand analysis; and loyalty schemes.

Why senior executives should care about data warehouses

This paper began by stating that decision-making has to change, and that it is too important an issue for senior managers not to take a lead. That's because the single most important group of decision-makers in a company, and therefore the most important beneficiaries of corporate intelligence, are board-level executives. And yet these are likely to be the furthest removed from users least exposed to effective business intelligence tools.

"The ability to gain better insight into operations should be at the top of the agenda for every board of directors... these days, in the words of the old adage, 'it's not what you do, it's the way that you do it', that really counts... this means understanding what is happening within your organisation, at a detailed level, and having an agile control mechanism that allows you to constantly improve these processes"

Business Intelligence – Breaking Through The Boundaries of Tactical BI
Butler Group, September 2005. www.butlergroup.com

If you start asking these questions of your IT department, it's likely they will push back. That's ok. It's perfectly understandable when the limitations of traditional relational data warehouses mean that queries have to be restricted, monitored and controlled to maintain anything like reasonable performance.

CONCLUSION

Albert Einstein said, 'we can't solve problems by using the same kind of thinking we used when we created them'. He may well have said the same about trying to manage the data explosion using the same technology that causes it.

If you get anything like the reporting service you expect, it's probably due to the dedication and hard work of your IT staff – staff that could spend their time on more valuable activities than how they are going to accommodate a new dimension to the report or whether the whole thing is going to fall over next time the year-end results are due. And yet that is their accepted 'wisdom' too: it's just the way it is in IT, and it's natural to maintain the status quo rather than rock the boat by suggesting a radical change. But change is just what's required.

It's time to change the accepted notion of what constitutes 'business intelligence' – and that's a decision that can only come from the top. It requires the guidance and leadership of senior managers with a unique perspective of the

bigger picture. With a view of the whole of the business, and those areas where agility and innovation are crippled by a lack of insight and sluggish performance. With an understanding of the importance of intelligence not just for a handful of specialists, but for a wide range of employees across every business function. With the influence to cut through the complexity of technology and vendors with a laser-like focus on what really matters: optimising business performance through more agile decision-making.

BACKGROUND NOTES

Putting intelligence back into your business

There is a solution. One that has been used by companies all over the world to generate staggering cost and time savings, and open up entirely new possibilities for analysis that makes a significant difference to the bottom line. A business intelligence system that has the performance to deliver near real-time analysis even of the largest data stores – from a few gigabytes to hundreds of terabytes of information. It's called Sybase IQ.

"Sybase IQ installations will normally offer orders of magnitude improvements in query performance (especially where those queries are complex or require large table scans) while requiring fewer hardware resources. In other words, it provides much better performance for less money."

Sybase IQ evaluation, Bloor Research white paper 2005. www.sybase.co.uk/iq

Where does Sybase IQ fit?

Sybase IQ seamlessly replaces the reporting part of your database – from a single datamart for one department, right up to an enterprise-wide data warehouse. It's transparent to users, who keep all their normal reporting applications and query tools, but it provides an analysis engine with the performance to deliver results in near real-time – even for ad-hoc queries of enormous quantities of data.

SYBASE IQ: KEY FACTS

- **Agile decision-making:** unlike other data management platforms, Sybase IQ has been designed from the ground up for blazingly fast, enterprise-wide reporting and decision support. It copes effortlessly with truly massive quantities of data – hundreds of terabytes – which gives you the ability to analyse your operations in entirely new ways.
- **Immediate response to complex questions:** with Sybase IQ, your reporting applications can provide ad-hoc analysis up to 100 times faster than when they were querying a traditional relational database. That's because Sybase IQ has patented technology that only reads the database columns needed to answer a query, instead of reading data from millions of rows. Ad-hoc queries that took hours can now take minutes: queries that took minutes can now take seconds.
- **Reduced storage costs:** at the same time, this unique design enables Sybase IQ users to make enormous reductions in the storage space required for a data warehouse – even for the largest data stores. Independent tests have confirmed that Sybase IQ will reduce storage by up to 80%. This generates a corresponding saving in storage hardware required.
- **Reduced server hardware costs:** Sybase IQ is also far more scalable – from tens to thousands of users – and because it is optimally designed for analytical processing, requires considerably less expensive server hardware to achieve incredible results.
- **Reduced IT maintenance costs:** Sybase IQ's incredible performance means it does not require the time-consuming tuning and maintenance needed for a relational data warehouse.
- **Optimised but non-disruptive:** while it looks like a relational database, and is queried using the same standard language as a relational database, Sybase IQ's architecture is designed and optimised for analytics, not transactions.

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