

White Paper

The Challenges of Big Data

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Andrew Swindell

Andrew Swindell is an Enterprise Architect for BHP Billiton based in Perth, Australia and is supporting a multi-year programme of work to deliver driverless trains and automation capabilities in the Pilbara. Andrew has over 25 years experience in the field of Information Technology and Architecture, published a number of white papers on Enterprise and Information Architecture topics and has successfully supported a number of country and company-wide initiatives in Australia and New Zealand. Andrew has extensive experience in the Mining, Financial Services, Utilities, Health Insurance and Tourism industries.

So you've heard and seen lots of articles recently on "Big Data" and how vendor technology can help you produce amazing results with large amounts of data available at the touch of a button. Complex algorithms can now run against large amounts of structured and unstructured data and generate instant insights, re-create customer behaviour, provide extensive reporting, analysis and transform your business.

This white paper will endeavour to outline some of the major business challenges you have in creating your data management competitive advantage. Unless you have Executive sponsorship and buy in across the company, the ability to augment and leverage your data assets will be limited.

In my last paper, I outlined the need to address and mature a number of Data Management functions before you embark on major big data initiatives. To refresh, I outlined the need to improve your Data Governance and Stewardship, Data Architecture visibility, management of Master and Reference data and of course a continual focus on Data Quality.

Without these basic disciplines in place at your company, the technology created in your company will be fraught with messy data cleansing, integration spaghetti, inaccurate insights and misunderstanding of customer behaviour. The new data management technology capabilities created over the last 3-5 years has made enormous leaps and bounds which has added fuel to the paradigm that companies really can achieve competitive advantage through management of their data assets.

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The momentum for this step change has been building for well over 10-15 years and some companies have gone as far as including “Management of Data” in their mission, values and project portfolios and specifically focussed on building internal business intelligence and analytics capabilities. Companies now realize that whatever business they are running, they need to be underpinned by strong data management practices and a clear understanding of customer behaviour and preferences.

Big Data Environments

Most of the Application environments in older major corporates have been built up over 30-40 years of development, customization and legacy applications. The challenge exists to understand what data you have, where is it, what quality is it, what transformation needs to take place to integrate and reconcile it and what environments do you already have to support taking advantage of it.

If you already have an effective consolidated Data Warehouse and Reporting environment that is planned, protected and governed according to pre-defined principles then you have a strong chance of gaining some early wins and leveraging the Big Data technology that is available.

Many specialist data management companies have recently stepped into the market opportunity to provide specific data management services where all they need is your data and they can augment that data and generate significant insights and value from the patterns that exist. These companies are thriving as corporates prefer to leverage “Big Data as a Service” rather than build whole teams of internal Information Management capability. It also enables companies to transform and get early runs on the board, prior to re-investing further in their business.

Big Data Analytics

The use of Big Data analytics can generate significant business outcomes and advantages in efficiency (reduce costs) and effectiveness (improve revenues) for your company. Using your data to analyze a range of business processes such as call center efficiency, effectiveness in generating sales, visibility of customer behaviour and usage patterns and response times all contribute significant ROI and benefits realization.

Many companies also use external data sources extensively to complete the picture of customer behaviour and combine this data with their own internal customer and process data. The role of Data Scientist and Chief Data Officer has become more prevalent in recent years as PhD trained specialists bring to life the significant value hidden in your data assets.

Of course, it is one thing to analyze your data and generate wonderful insights and another concept altogether to get that information into the

hands of your sales and service teams in a timely and relevant manner. As previously mentioned, if you have significant data quality issues with multiple classifications, poor data input processes and low governance then this will dilute the value to be generated.

The range of data available now is significant with unstructured data and data generated from social media now multiplying at enormous rates of growth. The ability to establish a customer profile based on structured and unstructured inputs in real time provides a major improvement in understanding and visibility of customer behaviour and preferences.

Your customer behaviour yesterday, last night and this morning can be collated, analysed and distributed to provide input into cross sell, retention, acquisition and satisfaction activities. This constant flow of data can overwhelm companies and it is critical to have a planned approach to the leveraging of your data.

A Realistic Approach

Each organization faces a myriad of challenges in reducing costs, increasing revenues and reducing risk. The approach to developing your Big Data response should be directly aligned and couched in addressing these strategic priorities. Following is a summary of potential opportunities for you to focus your Big Data initiatives:

- **Reducing Costs** – businesses have a range of inefficient manual and automated processes that delay and inhibit the generation of sales and services. Understanding your cost base and the process inputs is critical to identifying where opportunities may exist to optimise your business.
- **Increasing Revenues** – focusing on your customers and getting closer to the real time behaviour they display will enable your company to refine activities and develop products that generate the greatest value from your customer base
- **Reducing Risk** – the makeup of your business creates significant risks in processes, fraud and exposure in the current business environment. What was a relatively risk free build-up of business 3 years ago could now potentially be a burden that needs to be unwound with the risk profile changing based on different market conditions.

Prioritizing your big data initiatives based on their contribution to these business outcomes will enable a clear understanding of the impact and benefits to be realised. Understanding the company environment and greatest challenges will also influence which Big Data initiatives will go forward i.e. reduce costs in a downturn or increase revenues in an upswing.

Each of your Big Data initiatives should also be cognizant of building longer term capability as you can spend 2-3 years undertaking a number of tactical activities which only serve to create data everywhere and make the Data Management requirement more complex.

Data Architecture for Big Data

There is a strong argument for combining the new Big Data analytics initiatives with some of the old Data Management disciplines. I am a strong advocate for single sources of truth and maintaining a single Enterprise whole of company wide data model, often referred to as an Enterprise Information Model (EIM). The ability to encapsulate a company's key data on a page enables the story of data in your company to take shape, be communicated and widely understood.

The reason for this is to charge head long into Big Data initiatives is to potentially divorce your new environments from the old and create more spaghetti. This maybe a good thing if your existing world of data assets are a mess but if there is still significant value in your current data assets, I would caution new development that doesn't recognise these assets and is done with a clear view to a target state.

Representing your data at the level 0 / 1 layer enables the key entities to be established and also enables a clear understanding of what data exists where and in what quality. The EIM model creates visibility for all project teams, business power users and technology teams to know what data is being managed by your company, what data is available and what value can be generated from your big data initiatives.

Be mindful of not creating too much complexity in your initial Information Model as most stakeholders cannot fathom the range of entities and attributes that exist in their systems. You will run into significant communication and engagement issues if you add too much complexity into your Information Model. Figure 1 reflects how some companies address their EIM:

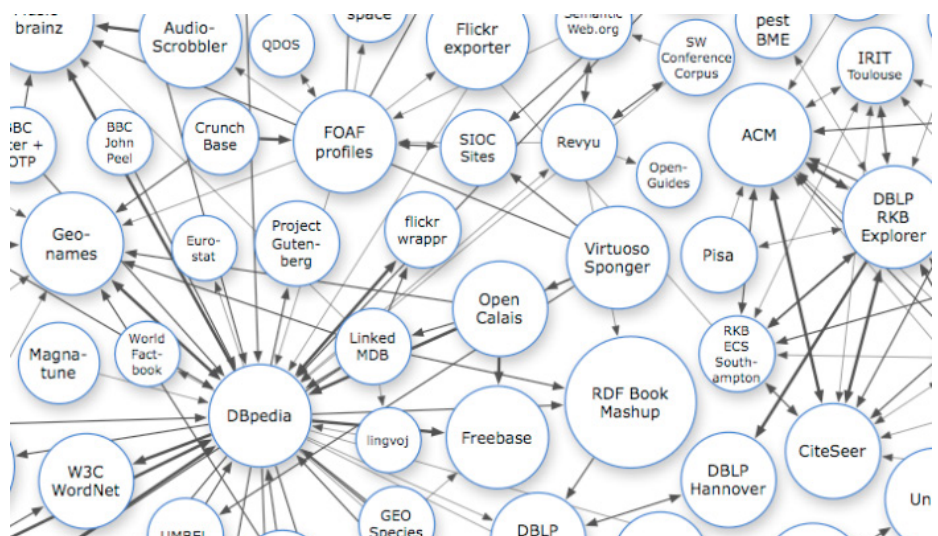


Figure 1

As you can see, it's rather overwhelming. Do you have to show every data flow, every attribute or entity to tell your story? When you are communicating with Executive stakeholders, detailed models such as these are not intuitive, nor do they reflect how they operate the business. Figure 2 is an example of an Enterprise Information Model that explains simply how data contributes to the success of the organization.

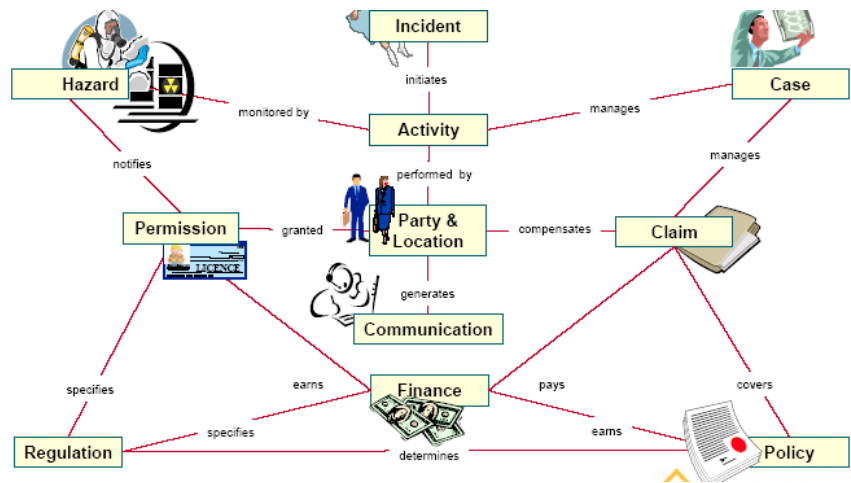


Figure 2

The model brings to life the organizational story and reflects how all the key data inputs contribute to your organization i.e. Customer, Products, Events, Financial etc. It also enables direct relationships to be established with the Business Process and Application domains that are used in your organization.

The visual created by your EIM is a critical part of your organizational DNA and supported by effective Architecture Governance, enables strong visibility and the maturing of your data asset's rather than degrading or adding complexity. It also helps position your big data initiatives based on answering what data is critical to your business.

Final Say on Big Data Challenges

Turning your data assets into information, knowledge and insight is still one of your most important objectives. Keeping it simple and couching Big Data initiatives in your strategy and business outcomes is a defining Principle for developing your data environments.

Achieving a critical mass of Business and Technology Executive stakeholder support within your organization will also bring the language of data and the recognition of its importance to the forefront of your major change programs. Modeling each stakeholder's requirements and expected outcomes will enable you to have a clear understanding of who the value is being generated for and why and reinforce your business case.

Keep your initiatives focused and "Fit for Purpose" i.e. they generate specific actionable insights that will improve your business. As for all data initiatives, early wins are critical for stakeholder appetite and support and the quicker you establish an effective Big Data environment, generate insights and place them in the hands of those who can action them, the quicker you will out run your competition.

Executing on this simple formula will future proof your organization and your job.

References:

- Why "Big Data" Is a Big Deal, Complexity and the rise of Big Data, Article by Jonathan Shaw, March 2014
- Big Data Use Cases, Link to Big Data Analytics News, <http://bigdataanalyticsnews.com/big-data-use-cases/>

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Orbus Software

3rd Floor
111 Buckingham Palace Road
London
SW1W 0SR
United Kingdom

+44 (0) 870 991 1351
enquiries@orbussoftware.com
www.orbussoftware.com

