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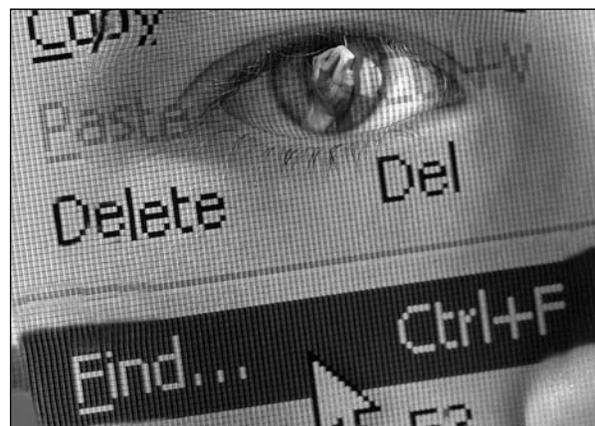
In Pursuit of the Truth

by Robert J. LaLonde

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Many data warehouse (DW) projects start with the best of intentions, that is, to get at the Truth of what is going on in an organization. However, success has been a mixed bag and popular belief is that many fail. They fail for a number of reasons: the database is nothing but pure data and includes no calculated items for insurance analytical processing, operation and use of the DW become too costly, and users cannot generate adequate useful information. A DW that does not become a true cross-organizational tool serving the executive, financial, actuarial, underwriting, claims, operations and reinsurance units will fail, too. In an insurance oriented DW, significant business knowledge is required. This should be built into the design beforehand rather than relying on users to generate business rules when building reports.



Often the initial objective is to build analysis and reporting to support the sales and marketing function. Not much thought is given to applying the concept to support analytics that relate to policyholders and insureds. This is another recipe for failure.

"Can you explain why we did not make plan?"

The prime question asked at the executive level, which drives straight to the department level is, "Can you explain why we did not make plan?" This one question will send actuarial, accounting, IT and executive resources into an around-the-clock crash-study to answer it. A DW with a database philosophy lacking an insurance business model will not in itself be able to help answer the question.

An insurance business model is not just a single model. It really represents a number of separate models. For example, a source-of-earnings model is needed to analyze actual-experience-to-expected. An underwriting model is needed to analyze the underwriting process. A Long-Term Care (LTC) model is needed to analyze the ins and outs of the LTC business since it has unique multi-status properties.

A data warehouse is a means to an end and it can be the tool that can help in the quest for Truth. Ideally, the end should be a cross-organizational reporting and analysis tool that can be used by all departments in a company, consolidating business rules, easing communication and understanding between functions.

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Reporting and Analysis Issues

Many companies struggle to obtain the Truth with their reporting and analysis. Many installations can access some of the “Truths” about their operations, but this approach creates many problems, namely:

- **Department Exclusivity.** Department heads want their own reporting expressly for their needs because of their own priorities and budget needs. Each department has its own favorite data source.
- **Lack of Coordination.** The reporting for one department is never related to the reporting of another department.
- **Lack of Intelligent Design.** Although a company is overwhelmed with data, too little information is extracted and analyzed in a useful way.
- **Reporting Inconsistency.** Many of the reports do not tie together because they are not based upon data from the same source files that can lead to management confusion and lack of credibility. Users make data grabs from different and disparate data sources. Measures, data fields and metrics will have the same words, but will be computed differently between departments.
- **Lack of Analytical Controls.** Extensive use of Excel and Access, although sounding like a cheap solution to reporting, actually promotes different calculation methods because no one person maintains the data.
- **Reliance on Manual Labor.** The effort to prepare reports is mostly manual and inherently expensive because of the extensive aggregation and reconciliation process.
- **Timeliness.** By the time the data is analyzed, the next month or quarter has arrived.

What is the Truth? The Truth represents a concept of reporting what actually happened to a company. This concept of Truth applies to the requirement that running a report today as of a prior date should produce exactly the same numbers that would have been produced had the report been run at that prior date. This principle of reporting stability is fundamental to data warehousing. Insurance business presents some challenges to this, such as restatement of reserves, late reporting of claims and changes due to subsequent events.

A DW will help you find the Truth, but only if the DW incorporates a proper business data

model. A DW connected with a usable data model and a good analytical tool for reporting and drill-through functionality can eliminate the shortcomings listed above.

Best-of-Breed DW design will eliminate those faults listed above.

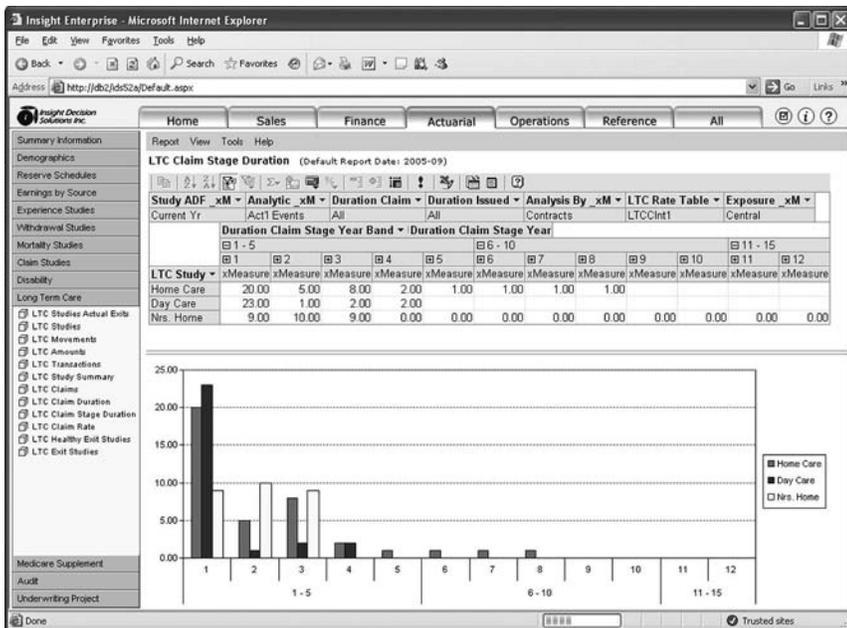
- **Department Consistency.** Department heads can still have their own reports, but the underlying data comes from one centralized database. Now, reports built by a department will agree and intersect with another department’s reports.
- **Reporting Consistency.** The multiple data grabs from different and disparate data sources are no longer needed. Reporting will have consistently defined measures, data fields and metrics. And, if the data model is open, then everyone will be able to see how the metric is computed.
- **Control of Reporting Tools.** Excel and Access reporting is replaced by the pivot table functionality of the querying tool built into the DW.
- **Savings due to Automation.** Huge savings can be realized by eliminating all the manual effort to produce the same report over and over again.
- **Immediacy.** Answers to difficult analysis will arrive instantly.
- **Intelligent Design.** Lastly, everyone will be working from a data file that is cleansed and represents the Truth, so everyone’s credibility is no longer at risk.

“Best-of-breed tools will result in the best system.”

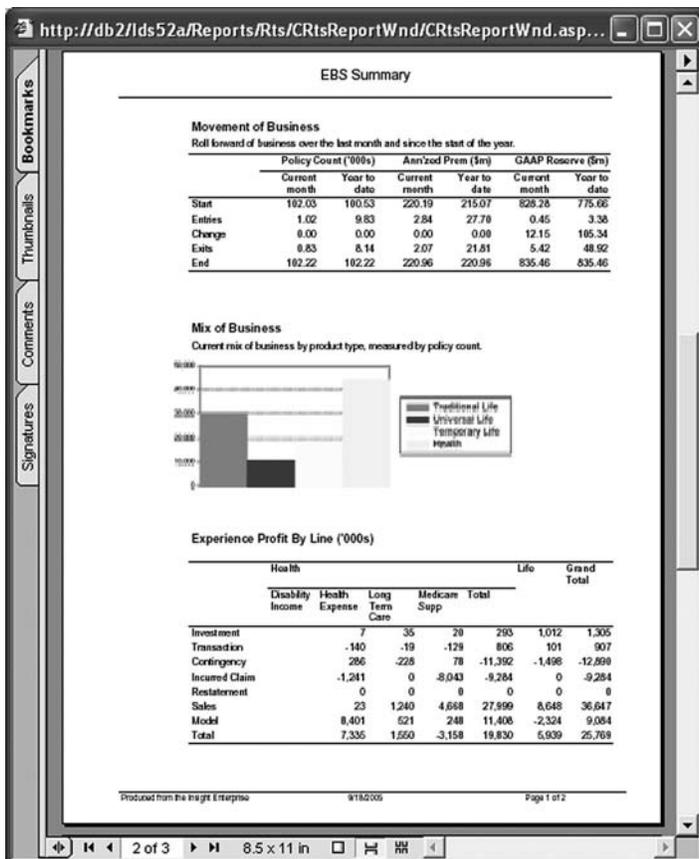
The first area of failure typically comes from the project being led by IT requirements and the search for the best-of-breed tools to build a DW. Buying the best-of-breed DW, ETL (extract, transform and load) tool, analytical tool, reporting tool, and so on, will not do much good if deployed with no business model behind it. A business model suited for your business means it should include all the pertinent information for informed decision-making specific for an insurance company *and* the analytical applications associated with that data.

What is the truth? The truth represents a concept of reporting what actually happened to a company.

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A pivot interface is critical for users who wish to restructure analytics, while executives often prefer reports formatted for printing.



“IT will take care of the data model.”

Some DWs are built without much thought about how the business will be analyzed. For example, executives will want to see lapse rates by agent. Financial people will want to see source of earnings and compare their actual earnings to expected earnings. Actuaries will be interested in actual-to-expected metrics relative to pricing assumptions. Sales and marketing will want to see agent performance. If the design of the DW is such that it expects the end user to build the specialized applications with the data, then the design is at risk for failure. This DW does not have the necessary data to do the analysis or the data must be again off-loaded to a data mart where the analysis is carried out. A single integrated design is critical for consistency. For example, sales and marketing analysis of persistency rates by agents should be related to product lapse rates presented by actuarial.

The DW should include core insurance functionality such as movement (including health transitions for LTC) studies, source of earnings studies, experience studies, underwriting lag time studies, claim runoff, agent productivity and so on. Just putting transactions into a DW and using a query tool will not do the trick.

The DW will include transactions, but it should also include any calculated measures or pieces of information such as exposures, assumptions relating to expected experience, and relationships between information. Consider an experience study; analysts will want to look at the results as rates, exposures, events and actual-to-expected ratios. They will want to slice and dice this information based on experience they see and wish to explore. This will involve looking at it by gender, duration, band, geographical area, this month to last month or this quarter to a comparable quarter last year—views that cannot be predicted in advance. Conventional experience study systems require another run to get each slice of information because it has to build the entire computation for each study, including the parameters that define the view.

A properly deployed DW means providing one source for analysis and data. This requires the loaded data to have one, and only one, meaning. The objective is to eliminate multiple definitions for premium, commission or other data items that may have slightly different meanings within disparate systems. A properly deployed DW should allow an analyst to slice and dice analysis

and drill-through to the underlying data. For example, if five policies terminated last month, which ones were they? If three policies went from receiving nursing benefits to receiving home health care benefits, it would be nice to know which ones they were.

“Do you need valuation system results?”

Most DW installations will include data from the available systems in the company. These range from multiple administrative systems to claims, commission, agent, CRM, general ledger, accounting and valuation. This last item, valuation, is vital because of the need to query and reconcile reserve movements. Most DW installations at companies do not even consider linking to the valuation system because of not knowing what to do with the data.

Companies who write LTC business have all the reporting requirements of a regular life insurance company. The fact that an LTC policy can offer different levels of benefits and exist in many different statuses (active, various claiming states, terminated, etc.) imposes some special reporting requirements.

Insurance people like to look at results at a point in time, over a period of time. Most importantly, we also want to look at events based on internal policy time such as duration since issue, duration since claiming or event duration since entering a certain claim stage. In addition, we might want to know how many policies are in a certain claiming status, how many are in their first, second, or nth month and so on. These statuses and the transition between statuses is the cornerstone of LTC analysis and leads us to the need for some temporal functionality.

“I’m not interested in this detail right now.”

You might be thinking, “I’m not interested in this detail right now,” but a good DW will be structured for the questions that might be asked and questions that may arise from the answers received from questions. Too often managers ask questions and don’t get the answers they expect or are not consistent with information from other business areas. The answers need further investigation. The ability to respond to these problems is the greatest asset of a well-designed DW as they provide the greatest insight to the company’s operations; unfortunately it is also the most



Pocket PC delivery of a DW.

‘Information at your fingertips’ should be true when you are away from your PC, perhaps in meetings.

common failing of a poorly designed system. Clearly this is only possible with an enterprise solution designed at a level of granularity beyond your current business questions.

A common DW mistake is selecting a perceived best-of-breed technology over addressing the data model. Delivery of information is important. In today’s world Web delivery is a standard, as is a range of delivery methods incorporating pivots, statistical analysis and formatted reports. The tools used should be proven to work together and proven for the demands placed on them by the nature of the business and the data model. Finally, the delivery tool should accommodate a wide range of users from executives through to actuaries. Compared with other industries, actuaries should be thought of as super-power users, and not as easy to satisfy as many of the tool vendors believe.

You really can have it all: readily available and relevant information derived from consistent and understood data. Getting at the Truth requires a good DW design and an appropriate business data model. Add a powerful and flexible Web-based analytical interface to get at the data and success in the pursuit of Truth will happen. ✱



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