



ISRC Notes - April 1998

Data Warehousing: A Managerial Perspective

Based on a presentation by Dr. Barbara Haley

The April 1998 ISRC seminar provided a managerial perspective on Data Warehousing. Dr. Barbara Haley of the McIntire School of Commerce at the University of Virginia shared her research that has examined over 100 firms working on Data Warehousing implementation. The audience of well over 50 contributed to the presentation with lively commentary and discussion. The key points from the seminar are highlighted below.

Introduction and Overview

The Data Warehousing market is one that is rapidly growing today. It is estimated that over \$2 billion per year is being expended on DW technologies with that number forecasted to be almost \$6 billion by the year 2000. At the same time it has been estimated that over 50% of DW projects fail to be successfully implemented. Based on her review of well over 100 organizations around the world who had implemented large scale DW projects Haley provided an overview of the process to be followed in developing DW projects, outlined lessons learned and suggested some best practices that are likely to lead to successful DW projects.

The DW process was broken down into four key stages: determining business need, gaining management approval, managing implementation, and post implementation evaluation. As is the case with most large-scale information system projects, the technical challenges, while complex, are manageable and it is the organizational factors that often prove to be the stumbling points. Some detailed issues to be considered at each step in this process are outlined in the sections which follow.

Understanding Business Need

This is a critical, though sometimes overlooked, aspect of a successful DW project. Because DW projects often involve the development of infrastructure that allows for the use of information to aid in analysis and decision making, tying the DW project to a specific need and enumerating specific benefits up front can prove problematic. Internal drivers for most DW projects include:

- better access to information
- better, more accurate information
- need for a single, integrated source of data

Projects can often be described as being either *data driven* or *project driven* in terms of their underlying business need. Data driven projects are most often cross functional spanning organizational units and provide the values of integrated information that can be used to take the business in new directions. Project driven DW's typically start from a specific business need, most often within a single organizational unit. These may be projects that are more likely data marts and are targeted at a specific business process, function or problem. Project driven approaches may yield quick payoffs but will also tend to be narrower in scope and have less upside potential for the organization.



Business need is often best articulated by a project champion with a strong stake in the DW project. For project driven applications these champions may come from a specific business unit. For a data driven warehouse the champion might come from the IT group. While these champions may be important in getting the project off the ground, the nature of DW projects are such that the champions are often not around to see the project through. Thus, while an important part of getting a project 'jump-started', they are not as crucial to the ultimate success of the implementation as we might typically believe.

The identification of need can be facilitated by looking for a critical area of the business where an information shortage is hampering the operation of the business. For example, the IRS examined the area of tax compliance and discovered they had no effective way to categorize or segment the groups of people who did not pay their taxes. By developing a compliance warehouse the IRS has been able to target profiles for individuals in non-compliance with tax regulations. This has helped to identify strategies to deal with non-compliance and to test the effectiveness of changes in collection policies. As an alternative to identifying a single critical business dimension an organization might use a process to allow ideas to 'bubble up' from around the organization to identify important areas of need. British Columbia Telephone (BC Tel) did just that to identify key business needs that might be satisfied by a DW. They did this by asking people across the organization, *If you "knew something you don't today" or "had access to information you don't currently have"*

- ◆ What business opportunity could you create?
- ◆ How much revenue would it generate?

By looking for common themes among the responses they are able to identify promising areas for DW implementation.

Once business needs have been identified, convincing people of that need is a key to success. It is important to show, in a concrete way, how a business need is being met by the DW project and what the payoff is from meeting that need.

Project Approval and ROI

Getting a systems project approved is still in large measure based on demonstrating a return on the project investment. DW projects are no exception. At the same time, since a DW is largely an infrastructure project, getting to ROI is no easy task. To further complicate the matter data warehouses are often large, multi million dollar efforts. Some post hoc studies of data warehousing implementations suggest that the ROI is, in fact, enormous. One study reported an **average** ROI over 400%, a number so high it is actually unbelievable in many organizations.

Among the tactics that might help to gain project approval are to develop a prototype that results in a 'quick hit' and shows demonstrable benefits for the DW. Benefits of a full implementation can then be extrapolated from the prototype. Another tactic is to find a problem that is 'causing pain' to the organization and find a way to focus on the information needed to

reduce that pain. A business may be more likely to take a risk in an area where much is at stake and ready solutions are not at hand. The IRS compliance example illustrates this idea quite nicely.

No matter how well project benefits might be documented, resistance to DW initiatives is still common. This resistance comes from three sources: functional areas concerned about cost and lack of definable business needs, from senior managers who are concerned about the real costs and payoffs of the project and from the IT group itself who may resist the project due to perceived loss of power and because they lack the skills and knowledge to carry out the project.

To overcome resistance it is important to make the case for the DW as solid as possible. This can be done in part by taking the BC Tel approach an extra step. A DW project at The National Institute of Health demonstrates an approach for enumerating benefits in the context of business need. This starts by asking individuals to list 5 concrete actions they can take to increase their performance at work, to then identify what information is needed to drive these actions and have the individuals assess the value of that information to them. Using such a bottom-up approach it is possible to identify specific value for a DW initiative.

Whatever approach is employed it is critical that DW projects be tied to concrete, demonstrable, and realistic benefits that are quantifiable to the organization. To find the areas where such benefits might most likely arise, it is helpful to target areas of pain in the organization where individuals may have many questions, but few answers. By identifying a key area of business need and demonstrating the value of a DW in meeting that need the approval process should be facilitated. Further, implementation will be eased by having a cooperative and motivated management and user community willing to invest time and energy in the project.

Managing the Implementation Process.

Project approval is an important step in getting a DW initiative underway. Implementation management is then critical to delivering on the promised benefits. While there are clearly technical challenges associated with DW implementations, the key factors in successful implementation are most often related to organizational and project factors. Critical organizational factors include management support for the project and the allocation of adequate resources to get the job done. At the project level developing team skills and fostering user participation are essential to DW success. Planning approaches and a prototype development approach appear to be of secondary importance to successful implementation. Overall, technological infrastructure appears to be much less of a factor in determining the success of the project. This is not to say that infrastructure is not important, rather it is a necessary condition for an implementation to succeed. Projects that do not get infrastructure right will never get off the ground, those that do have a chance at a successful project. The degree of success will be determined, in large measure, by project management and organizational factors.

As always, implementation success is not simply a technical consideration. Understanding the factors that drive usage are also important. That means keeping a focus on the business need and the user community. Building a data warehouse is no guarantee it will be utilized and utilization is a necessary condition to derive business benefits from the warehouse. This means

user involvement and participation throughout the implementation process is key. This involvement is maintained, in part, by keeping the attention of senior management. Their continued interest in the DW initiative will have a motivating effect on others in the organization. Communication with the users is also critical. Those communication channels might involve a variety of groups including a senior management team, project steering committee, a project planning committee and work groups that include user representation. These might be supplemented by wider communications channels such as newsletters and conferences which get the word out and develop interest and enthusiasm for the project.

Success at implementation is just a first step. The real benefits of a DW come through it's operation. Those benefits must be tracked during the post implementation period as the technology is integrated with other applications, diffused through the organization and infused into the work processes at the managerial and operational level.

Post Implementation Evaluation

As noted earlier, some studies of DW implementations show levels of ROI that seem too high to actually be credible. When asked organizations will often site typical benefits such as:

- ◆ Time savings for both IS to get information to users and for users to be able to act on that information.
- ◆ More and better quality information which facilitates better decision making
- ◆ Improved business processes
- ◆ Support for strategic business objectives

Even time savings can be dramatic. Take the example of a quality analyst who has to examine 20,000 service call tickets a month. The ad hoc systems to perform the analysis meant that the analyst spent most of his time processing data. With the warehouse in place, data handling is now done in a matter of minutes and far more time is spent on data analysis, with access to far better information. This permits problems to be readily identified even when they are infrequent in nature. In some cases, problems that arise only once in 10,000 incidents can be handled in an economic fashion. In one case, identifying and correcting such a problem resulted in a \$35,000 per month saving to the organization. In such instances it is easy to see post hoc how ROI's of 400% can be identified. The DW replaces data handling with analysis, supposition with facts and puts information in place in a timely fashion. The potential cumulative effect of integrated organizational information is indeed significant.

Summary:

Realizing the benefits of a data warehouse is dependent on linking it to applications that can be used to facilitate better decision making, implement streamlined business processes and drive more intelligent decision making to the front lines of the organization. Getting to that point is not simply a technological challenge. The critical path includes the business needs and business value of the data warehouse project.

Keeping business need firmly in mind, demonstrating the value of the DW in solving that business need and then motivating people in the business the stick with the project are critical to ultimate success. The technical problems, while challenging are not the critical barriers to successful implementation of the project.

For Additional Information:
articles

Web sites

www.commerce.virginia.edu/bhaley - presenter Barbara Haley's research site that provides information on her DW projects.

www.dw-institute.com - the web site for the data warehousing institute with information on publications, conferences and organizations involved in data warehousing.

www.datawarehousing.org - the data warehousing knowledge center, a source for information on DW technologies.

www.datawarehousing.com - a compendium of DW resources available on the web.