SHARP: A MODEL FOR DATA WAREHOUSE PROJECT MANAGEMENT
Diana D. Cruz*
Executive Summary

SHARP is the acronym given to the data warehousing (DW) project in San Mateo. It stands for San Mateo Human Services Agency Analytical Reporting Project.

Data warehouse project management is a fast rising discipline, but despite its rapid growth, there is little expertise in this field. The success or failure of data warehousing depends upon the effectiveness of its project management.

SHARP-DW is successful because:

- It is on time
- It is within budget
- Its deliverables are of good quality, and
- It gives users what they expect

SHARP-DW's success comes from strong management support, well-defined objective, and a reasonable work plan and scope.

Every project will face a degree of risks and a good project management anticipates this in order to mitigate its effects. Several concerns are addressed below regarding data warehouse solution.

- One of the risks anticipated is the implementation of CALWIN in 2004.
- Since DW is new, the user may decline to use the system.
- The system may have poor performance.
- Will DW replace the staff? What is there to do? These are questions in the mind of some staff that provide information system support.

CONCLUSION

A data warehouse project may be considered successful if it is on time, within budget, deliverables are of good quality, and if it gives the users what they expect. So far in Phases I and II SHARP delivered; and at time of this writing, phase III is on track.

RECOMMENDATION FOR ALAMEDA COUNTY SOCIAL SERVICES AGENCY

I recommend that Alameda County SSA use SHARP-DW as a model for its data warehouse solution because of its manifest success in implementing its DW solution.

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The increasing demand for real-time and accurate information has become more apparent now than in the past. Government agencies have been known to "mill reports" in order to serve the

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needs of various groups, both within and outside the organization. This has always been a reality that, often, agencies have been "collectors" of a number of automation systems used to generate data. Government managers are clearly aware that getting accurate information in real-time would help tremendously to streamline the decision-making process and give management strategic insight to make better-informed decisions.

WHY DATA WAREHOUSE?

The objective of the San Mateo County Human Services Agency data warehouse is *"to synthesize data from disparate systems to enable the management team to make sound business decisions based on the guidelines of Outcome-Based Management (OBM)* ". (Please see illustration at end.) OBM requires data to provide answers to the following measures:

- What/How Much We Do – Number. Example: Measure the number of participants using One-Stop Works Centers

- How Well We Do It – Percent. Example: Measure the percent of One-Stop Works participants in training and/or educational programs

- Is Anyone Better Off - Number and Percent. Example: Measure the percent of One Stop Works participants employed in jobs with benefits 6 months after hire.[1]

There is no doubt that data is available. The question is how can data be extracted and used effectively and efficiently in light of the numerous existing automation systems, some of which have seen better days. To address this issue, San Mateo County Human Services Agency has decided to implement the data warehouse solution. The goals of data warehouse are to provide:

- a high level of data integrity,
- easy accessibility of data to end users, and
- a standard definition of measures to provide a common perspective to users when reading the results of the measurements.

There are currently 20 statewide and local discreet automation systems used in providing services and benefits to the community. These systems are a source of data for the agency. In order to facilitate data extraction, report generation and performance measures, a data warehouse solution that puts information together in a logical manner becomes necessary.

DW PROCESS –TECHNOLOGY OR OPERATION?

Technology is a critical component of data warehousing, but it is naive to believe that it is different than an operational system. The success or failure of data warehousing is in the attention given to good project management.

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[1] County of San Mateo, Outcome-Based Management, Templates with Instructions Program and Budget, Rev 11/06/01

SHARP, or San Mateo Human Services Agency Analytical Reporting Project is the data warehouse solution that started its development in February 2001. SHARP has shown the marks of a successful data warehouse project because:

- It is on time
- It is within budget
- Deliverables are of good quality
- Gives users what they expect

DW PROJECT MANAGEMENT

How does a data warehouse project become successful? SHARP manifests the marks of a good DW project management:

- Strong management support
- Well-defined objective
- Scope defined in the beginning of each phase
- Well-developed plan
- Good documentation

STRONG MANAGEMENT SUPPORT

A strong collaboration between the county manager, ISD, and the agency provided a solid support to the DW project in terms of adequate budget to hire good people, acquire the right hardware and contractors, and choose the right products and tools. The San Mateo Human Services Agency (agency) saw the importance of developing foundational support for the DW project by getting through the issues with the county information services department (ISD). With the acceptance of a DW solution, the agency and the county ISD worked together in planning for the development of the DW.

Through the collaborative efforts of the agency and ISD, a preliminary analysis was launched to define the DW requirements.

WELL-DEFINED OBJECTIVE

The DW solution remains focused on its objective throughout the various stages of its development. This results in energy focused on goals, clarified priorities, and streamlined strategy.

A significant difference in the SHARP DW process compared to other counties is the time spent on the back end of the DW process. Another county made a mistake of "dumping" data from different sources into the data warehouse and let the questions come in at the front end, making the user puzzle over numerous data "look alikes"; therefore, querying becomes a trial and error process. Spending time and effort at the back end prevents this.

To reiterate, the objective of data warehousing is to provide data extracted from diverse sources, translated into a common data model and merged with existing data. Inconsistencies and differences are eliminated and resolved at the back end of the process to make it easy for the execution of user query.

CLEARLY DEFINED SCOPE

Scope is a written understanding between the agency and the data warehouse consulting group. Defining the scope in the beginning of the project delineates accountabilities. It also provides the basis for the success or failure of the project. Defining the scope provides a list of what to include or exclude in the DW development. A change process is set in place to avoid scope creep, small changes that creep up that the schedule can no longer keep up with the additional requirements.

The primary parties in the DW solution are the consulting group and the agency.

The scope of the consulting group is:

- Requirements definition, analysis, design, development and implementation of DW; and
- Knowledge transfer to agency staff

The scope of the agency (ISD) is to provide management and technical support.

A good project management also defines scope agreements between the users and the developers. In order to keep within the timeframe and budget, a change control process is included so that any changes to the scope previously agreed upon are resolved at the proper time to avoid costly errors and miscommunications. Communications are strong among the stakeholders and DW team. Review points are visited regularly.

WELL-DEVELOPED PLAN

A roadmap is developed that sets the duration, assignments and tasks, and delivery dates for the DW project.

SHARP DW is developed in incremental stages. This makes the project manageable so that deliver-ables are completed in pieces and delivery times are reasonably paced. Each phase has its own workplan. Scope of the project is well prioritized. For each phase, deliverables are set out in terms of OBM measures, standard and ad hoc reports, and the systems (sources of data) to be addressed.

SHARP-DW work plan is reasonably designed to avoid 12-hour daily work for the staff to keep a healthy and balanced team.

The benefits of having a well-developed plan are an accurate budget, reasonable work plan, keeping a healthy and balanced team, and knowledge transfer.

DOCUMENTATION

A key to the success of DW project management is documentation. It keeps memories fresh from sessions with stakeholders on scope agreements for business questions or performance measures. Complete documentation also serves as basis for data validation. Throughout each phase of the DW process, SHARP shows its strength in documentation.

Documentation starts from the beginning:

- When the project initiation document is prepared,
- During the requirements sessions when business reports and performance measures are clarified and defined, and
- During the technical session when the data architecture is confirmed.

A useful documentation tool is the metadata. Metadata is a set of data that contains information about the location of data sources, a dictionary-like description of the data being used, data type and other information such as author and product number. This allows for flexibility when changes are necessary. It comes after the requirements session is completed, and keeps track of the definition of data stored in the data warehouse.

WHERE IS SHARP AT THIS POINT?

At the completion of Phases I and II, DW has addressed and converted into 103 business questions:

- 38 Outcome Based Management (OBM) measures
- 44 Business Systems Group (BSG) reports

For Phase III, 39 OBM measures, 67 regular BSG reports, 8 Family-to-Family measures and 3 Phase II modifications are addressed. Phases I and II inte-grated data from the CDS and CWS, then JTA plus expansion of CDS and CWS, and in phase III, SMART, SMP, and GIS. Phase III is expected to roll out to endusers in the August 2002.

TECHNOLOGY AND KNOWLEDGE TRANSFER

Knowledge transfer is accomplished. The San Mateo DW staff has, on its own, .completed Phases II and III while the consultant takes an advisory role.

In Phase I of SHARP, the project consultant took a more active role in the project implementation. A condition in the contract with the consultant is knowledge transfer with the agency objective to be totally involved in every step of the DW process. This condition is successfully achieved so that the agency and ISD staffs are totally involved and the consultant is taking an advisory role in the progressing phases of the DW implementation.

CHALLENGES

Several challenges are anticipated in the DW process. Plans are being made as well to face these challenges.

One of the risks anticipated is the implementation of CALWIN in 2004. The agency takes a risk pursuing SHARP, even with the anticipated implementation of CALWIN, which will replace CDS, a system source included in phase I of DW. The concern is whether CALWIN will use the same elements as CDS or not. If not, CALWIN may be another phase in the SHARP-DW.

Since DW is new, the user may decline to use the system. In SHARP, the user is involved, from the beginning, in every step of the process, including conversion of business reports or performance measures into business questions, source data selection, data validation (through user testing), query tool selection and user training.

The system may have poor performance. This is avoided by spending time and effort in the back-end of the design, to ensure good database design to make the query simple for the end-user.

A strong help desk also keeps user frustration levels low. Competent and trained database administrators must be in place to keep track of what is wrong and take corrective action. "Ready made" queries or canned reports have been determined and made available in SHARP to minimize ad hoc report requests.

Will DW replace the staff? What is there to do? These are questions in the mind of some staff that provide information system support. The results of the survey and interview defined the requirements of the agency.

RECOMMENDATION FOR ALAMEDA COUNTY SOCIAL SERVICES AGENCY

Data warehouse project management is a fast rising discipline. Despite this rapid growth, there is little expertise in data warehouse project management. The development and implementation of *SHARP-DW* is a good model for learning about data warehouse project management.

The success or failure of data warehouse lies in the effectiveness of its project management. Data warehouse projects can be considered successful if they are:

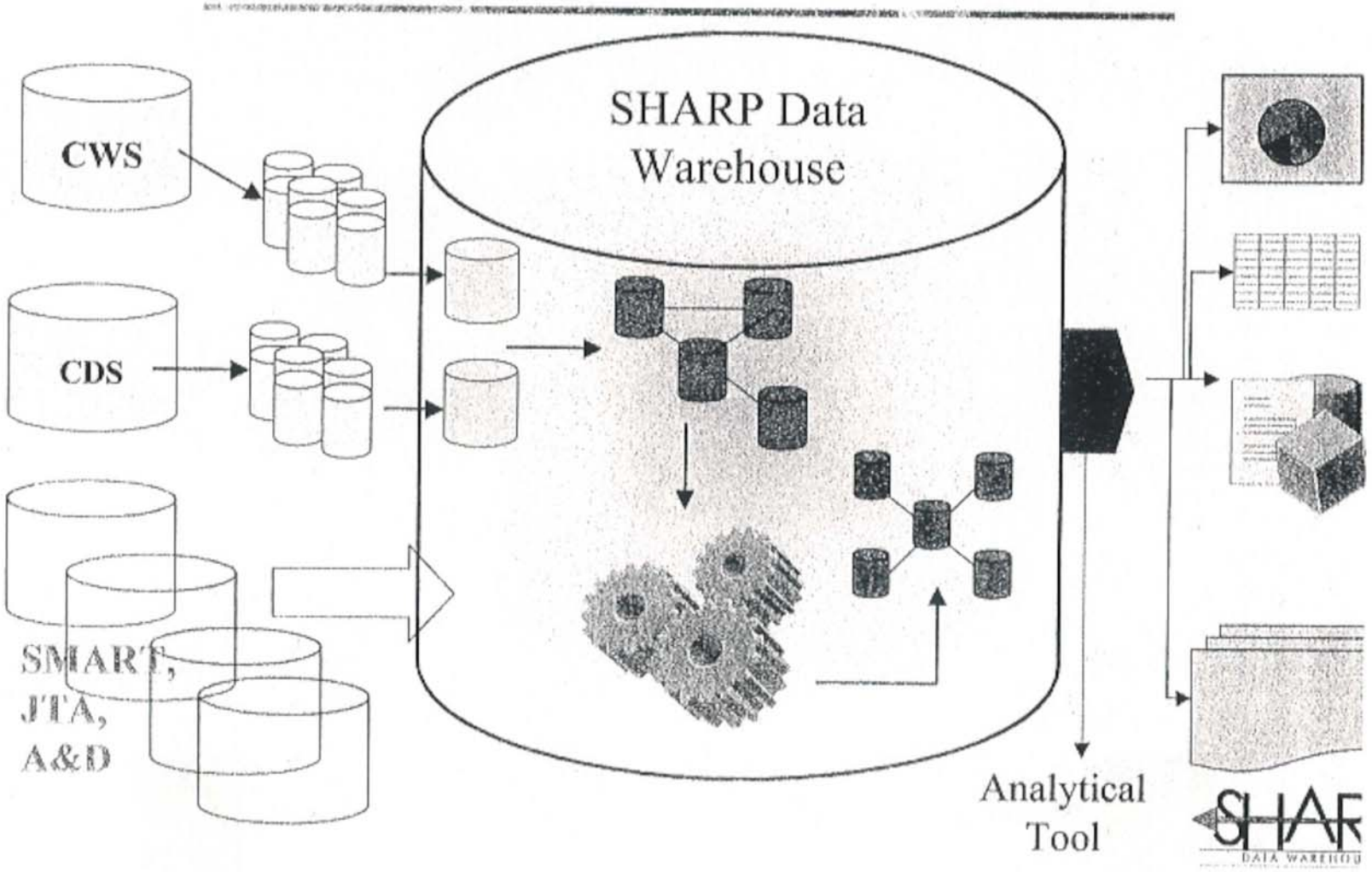
- On time
- Within budget
- Deliverables are of good quality, and
- Give users what they expect

Alameda County Social Services Agency is planning its own data warehouse solution. I recommend that the county learn from SHARP's expertise in data warehouse management, since the projects that will succeed are those that have good project management.

ACKNOWLEDGEMENTS

Many thanks to San Mateo County Human Services Agency for their hospitality. The Orientation day hosted by Madelyn Martin, Deputy Director, gave me some insight about why some things are done in certain ways. Special thanks to my host, Kathryn Ciamarro, for allowing her Business Systems Group staff to lend their precious time (and office space) for my use. I am amazed at how Amy Kaiser, So Lau, Nga Do, and Praveen Singh keep their sense of humor despite the tons of business questions they deal with. To Martha Doherty for sharing her OBM expertise. Hats off to Harshmander Singh of Deloitte Consulting for sharing his insights in the DW project management. A special salute to Clansa Simon, ISD Project Manager who can stay gracious while sticking to the scope. Special thanks to Don Edwards, Alameda County SSA IT director, for his thoughts about the data warehousing solution. Most of all, I am grateful to Alameda County SSA management for giving me the opportunity to learn through BASSC.

Concept of Data Warehouse



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