1.6 GUIDELINES FOR DATA WAREHOUSE IMPLEMENTATION

Implementation steps

1. Requirements analysis and capacity planning: In other projects, the first step in data warehousing involves defining enterprise needs, defining architecture, carrying out capacity planning and selecting the hardware and software tools. This step will involve consulting senior management as well as the various stakeholders.

2. Hardware integration: Once the hardware and software have been selected, they need to be put together by integrating the servers, the storage devices and the client software tools.

3. Modelling: Modelling is a major step that involves designing the warehouse schema and views. This may involve using a modelling tool if the data warehouse is complex.

4. Physical modelling: For the data warehouse to perform efficiently, physical modelling is required. This involves designing the physical data warehouse organization, data placement, data partitioning, deciding on access methods and indexing.

5. Sources: The data for the data warehouse is likely to come from a number of data sources. This step involves identifying and connecting the sources using gateways, ODBC drives or other wrappers.

6. ETL: The data from the source systems will need to go through an ETL process. The step of designing and implementing the ETL process may involve identifying a suitable ETL tool vendor and purchasing and implementing the tool. This may include customizing the tool to suit the needs of the enterprise.

7. Populate the data warehouse: Once the ETL tools have been agreed upon, testing the tools will be required, perhaps using a staging area. Once everything is working satisfactorily, the ETL tools may be used in populating the warehouse given the schema and view definitions.

8. User applications: For the data warehouse to be useful there must be end-user applications. This step involves designing and implementing applications required by the end users.

9. Roll-out the warehouse and applications: Once the data warehouse has been populated and the end-user applications tested, the warehouse system and the applications may be rolled out for the user community to use.

Implementation Guidelines
1. **Build incrementally:** Data warehouses must be built incrementally. Generally it is recommended that a data mart may first be built with one particular project in mind and once it is implemented a number of other sections of the enterprise may also wish to implement similar systems. An enterprise data warehouse can then be implemented in an iterative manner allowing all data marts to extract information from the data warehouse. Data warehouse modelling itself is an iterative methodology as users become familiar with the technology and are then able to understand and express their requirements more clearly.

2. **Need a champion:** A data warehouse project must have a champion who is willing to carry out considerable research into expected costs and benefits of the project. Data warehousing projects require inputs from many units in an enterprise and therefore need to be driven by someone who is capable of interaction with people in the enterprise and can actively persuade colleagues. Without the cooperation of other units, the data model for the warehouse and the data required to populate the warehouse may be more complicated than they need to be. Studies have shown that having a champion can help adoption and success of data warehousing projects.

3. **Senior management support:** A data warehouse project must be fully supported by the senior management. Given the resource intensive nature of such projects and the time they can take to implement, a warehouse project calls for a sustained commitment from senior management. This can sometimes be difficult since it may be hard to quantify the benefits of data warehouse technology and the managers may consider it a cost without any explicit return on investment. Data warehousing project studies show that top management support is essential for the success of a data warehousing project.

4. **Ensure quality:** Only data that has been cleaned and is of a quality that is understood by the organization should be loaded in the data warehouse. The data quality in the source systems is not always high and often little effort is made to improve data quality in the source systems. Improved data quality, when recognized by senior managers and stakeholders, is likely to lead to improved Support for a data warehouse project.

5. **Corporate strategy:** A data warehouse project must fit with corporate strategy and business objectives. The objectives of the project must be clearly defined before the start of the project. Given the importance of senior management support for a data warehousing project, the fitness of the project with the corporate strategy is essential.
6. **Business plan:** The financial costs (hardware, software, and peopleware), expected benefits and a project plan (including an ETL plan) for a data warehouse project must be clearly outlined and understood by all stakeholders. Without such understanding, rumors about expenditure and benefits can become the only source of information, undermining the project.

7. **Training:** A data warehouse project must not overlook data warehouse training requirements. For a data warehouse project to be successful, the users must be trained to use the warehouse and to understand its capabilities. Training of users and professional development of the project team may also be required since data warehousing is a complex task and the skills of the project team are critical to the success of the project.

8. **Adaptability:** The project should build in adaptability so that changes may be made to the data warehouse if and when required. Like any system, a data warehouse will need to change, as needs of an enterprise change. Furthermore, once the data warehouse is operational, new applications using the data warehouse are almost certain to be proposed. The system should be able to support such new applications.

9. **Joint management:** The project must be managed by both IT and business professionals in the enterprise. To ensure good communication with the stakeholders and that the project is focused on assisting the enterprise’s business, business professionals must be involved in the project along with technical professionals.