Data Warehousing provides easy access to the right data at the right time to the right users so that the right business decisions can be made. The Data Warehouse Process is a prescription for identifying strategic business information, collecting it from diverse enterprise-wide sources, organizing it for instant access to all levels of users according to their specific needs and implementing the architecture that makes it all possible. The Data Warehouse process comprises the following stages:

- Business Question Assessment
- Architecture Review and Design
- Tool Selection
- Iteration
- Project Planning
- Detail Design
- Implementation
- Transition to Production
- Business Case Development
Business Case Development
The Business Case Development stage justifies the building of a Data Warehouse in response to strategic business initiatives. The case is researched and presented to develop a decision support system and a knowledge-based application architecture that supports both everyday tactical decision making and long-term business strategizing. This stage includes the following steps:

- Develop data warehouse business case
- Obtain approval and funding

Architecture Review and Design
Define the logical and physical foundation on which the Data Warehouse will be built, so that it can be designed efficiently as the dynamic, adaptable vehicle for providing users with easy access to the data they need when they need it. This stage includes the following steps:

- Review existing architectures
- Develop logical data warehouse architecture
- Develop data architecture
- Develop technical architecture
- Develop application architecture
- Develop technical architecture
- Propose data warehouse architecture

Tool Selection
Some components of the Data Warehouse may be developed, implemented and/or supported through commercial tools, which must be evaluated and selected by your team. Tool selection should be conducted systematically, with a goal to fulfilling the Data Warehouse business and technical requirements in a cost-effective way. This stage includes the following steps:

- Identify qualified vendors
- Assess tool performance
- Assess vendor performance
- Determine tool life cycle costs
- Select tools

Iteration Project Planning
The Data Warehouse is constructed iteratively, based on specific business questions to be answered by each implementation cycle. The purpose of this stage is to develop the project plan for the first (or current) project so that a single subject area-focused iteration of the Data Warehouse can be designed, built, populated and delivered. This stage includes the following steps:

- Define detailed business and technical requirements
- Refine data model and source data inventory
- Plan iteration development project
- Obtain iteration project approval and funding

Business Question Assessment
Establish the scope of the Data Warehouse and define how it will be used to satisfy business objectives, specifically, which critical “business questions” it will answer. This entails determining the business subject areas that provide the key data and prioritizing those areas into data warehouse population projects, taking into account the feasibility and cost of acquiring and using the data for each such project. This stage includes the following steps:

- Initiate business question assessment project
- Define business information requirements
- Determine data availability
- Develop high-level logical model
- Perform data quality audit
- Define population projects
- Obtain first iteration project approval and funding
Detail Design
In the Detail Design stage, the physical Data Warehouse model (database schema) is developed, the metadata is defined, and the source data inventory is updated and expanded to include all of the necessary information for the subject area implementation project. This stage includes the following steps:

- create physical data model
- design iteration
- implementation plan
- obtain design approval

Implementation
Let the building begin. Construct the programs and data repositories and test all system components, user queries and reports. Ensure that the Data Warehouse is sufficiently populated and functioning properly so that it is ready to be deployed to the user community. This stage includes the following steps:

- configure development/test environment
- prepare test data
- create and test source data programs
- load and test data
- develop refresh programs
- configure user access
- create metadata repository
- define and test queries
- conduct system testing
- implement and test support processes

Transition to Production
It’s showtime. The Data Warehouse and all associated system components must be moved from the development to the production environment and turned over to the users. Operations staff and users must be trained, and the new system must be positioned for ongoing maintenance and enhancement to ensure that it is fully available to users and meets their growing business needs. This stage includes the following steps:

- install production system
- roll out data warehouse
- implement user technical support
- establish service level agreement
- establish maintenance program
- define and test queries
Welcome to the New Century in corporate communications! The webWAVE Development Process focuses on employing Internet technology to provide development teams with a blueprint for establishing an intra-corporate communications vehicle that can streamline business processes, allow increased access to corporate information and revolutionize knowledge sharing, while reducing overall communications costs. The webWAVE Development Process comprises the following stages:

- Discover
- Design
- Implement
- Launch
Discover Web Requirements
This stage identifies the client requirements and guides the development team through defining the objectives of the web site and designing a site prototype. The requirements in turn enable the team to derive the scope and schedule of the web development project. This stage includes the following steps:

- Identify project team
- Build client wish list
- Design infrastructure
- Identify client requirements
- Establish development environment
- Set project scope and schedule

Implement Web
The requirements are set, the web design specs and prototype have been approved, and now the production web site must be built. This stage guides the development team through building, testing and quality-checking all components of the site so that it is ready for launch. In addition, the plans are set up to continually monitor and manage the site to ensure its continued success. This stage includes the following steps:

- Implement infrastructure
- Acquire reusable components
- Construct databases
- Construct programs
- Verify system construction
- Implement site plans
- Conduct quality review

Launch Web
This stage guides you through the post-development activities that can make a huge impact on the success of the web site. These activities include site promotion, feedback gathering, software distribution and post-mortem assessment. At the end of this stage, you should have launched a successful site and be ready to begin the Ongoing Development Process. This stage includes the following steps:

- Launch private web
- Review opportunities for improvement
- Begin ongoing development

Design Web
This stage guides the development team through building a web site prototype and designing the production site based on the collected requirements. At the end of this stage, every aspect of the site design will be clearly defined and documented. This stage includes the following steps:

- Design presentation layer
- Design infrastructure
- Design data layer
- Design processing layer
- Verify system design
- Develop production site plans
Is your intranet a dinosaur? A corporate intranet must keep pace with the rapidly changing, improving technology of the Internet in order to serve its business community effectively. The webWAVE Ongoing Development Process offers a structure for decision making and prioritization to facilitate the update and enhancement of a private intranet. The webWAVE Ongoing Development Process comprises the following stages:
Measure Web Performance
Management types should be well informed if they are going to be making decisions about changes to the site. This stage presents an iterative set of activities to equip managers to measure the site’s performance, security and availability to users against its original goals; review site access patterns; evaluate enhancement requests and user feedback; and make decisions to keep the site in sync with industry and technology innovations. This stage includes the following steps:

- Measure Technical Performance
- Measure Business Performance

Refresh Web
In the rapidly changing world of the Internet, there are always new and better services and ideas to employ in enhancing your own web site. Capitalize on the myriad of industry innovations to upgrade your site, using this stage as a guide. This stage includes the following steps:

- Improve Business Performance
- Improve Technical Performance

Maintain Web
Your web site might look good now, but maintenance becomes critical as time progresses. This stage guides the team through a repeatable set of activities to keep the site in good working order and populated with timely, well-designed content. This stage includes the following steps:

- Perform Content Management Tasks
- Perform System Maintenance Tasks
Value Stream Assessment is a strategic tool that can be used effectively to define technical development projects. It is a high-impact, short-term, inexpensive approach to examining an enterprise’s business strengths and weaknesses. The objective is to rapidly identify a comprehensive change solution based on “value streams,” focused sets of activities that shift the organization from conducting business driven by internal operations to conducting business driven by customer needs and “satisfiers,” within a framework that fits the capabilities of the enterprise. The value stream approach provides quick, high-impact feedback to executives about the validity of the enterprise’s business vision, management’s alignment with the vision and enterprise’s ability to achieve that vision. The Value Stream Assessment Process comprises a single stage:

perform value stream assessment
Perform Value Stream Assessment

This stage includes the following steps:

1. establish the project
2. confirm the business vision
3. confirm alignment with the vision
4. assess the value stream(s)
5. conduct the “voice of the customer”
6. conduct the “Voice of the Employee”
7. develop value stream driven solution(s)
How do you select the right application for your project from among all the available packaged applications? The Application Solution Process provides guidance in evaluating, selecting and deploying commercial, off-the-shelf application packages according to business strategies and requirements. It is ideal for those enterprises that must replace an obsolete package or system with a more cost-effective, logical and/or comprehensive solution. The Application Solution Process comprises the following stages:

1. Application solution strategy
2. Application solution evaluation
3. Application solution enablement
4. Application solution deployment
Application Solution Strategy
Assess the technical and business risks of implementing an application package, identify the qualified vendors and determine the evaluation approach for selecting the right package. This stage includes the following steps:

- determine direction
- assess business and technical risk
- identify qualified vendors
- determine evaluation approach

Application Solution Evaluation
Once you have determined which evaluation route to take, you'll need to determine project requirements and final vendor candidates. In the evaluation stage your team will analyze the performance of each package and vendor and how well each package satisfies your business needs, is supported by its vendor and fits within your technical environment. You will determine the total life cycle costs of the candidate packages and ultimately acquire the best application package. This stage includes the following steps:

- define detailed requirements
- determine finalists
- analyze package fit
- assess package performance
- assess vendor performance
- determine total life cycle costs
- acquire package

Application Solution Enablement
Now that you've selected and purchased the application package, you are ready to customize and implement it, develop the system interfaces and prepare to deploy it to the user community. This stage includes the following steps:

- conduct trial run
- establish implementation plan
- develop interfaces
- customize package
- prepare for cultural changes
- develop operations
- test package release
- build deployment package

Application Solution Deployment
Time to get the new application package up and running. Convert the data, train the users, install the system and you've gone live with the new package. This stage includes the following steps:

- perform conversions
- conduct user training
- install production system
Does your business implement effective Customer Relationship Management? The Siebel Process enables an enterprise to meet its CRM requirements through customization and implementation of the Siebel Enterprise Application package, based on its particular business requirements. It guides analysts and planners in the selection of specific Siebel functionality modules and guides developers in customizing and testing the select preconfigured components according to end-user requirements and in rolling the customized application out to the user community. The Siebel Implementation Process comprises the following stages (note: This process does not include the standard “PACE” Project Management Process, but contains its own version of embedded project management stages):

- Plan and activate
- Release planning
- Requirements definition
- Functional analysis and design
- Technical analysis and design
- Configuration
- Data migration
- Testing
- User training
- Deployment
Plan and Activate
Lay a solid foundation for your Siebel project. Develop a solid project plan which defines the scope and requirements for the project. Publicize the project, secure the human and technical resources and train the project team; then you’re ready to start the Siebel Implementation activities. This stage includes the following steps:

- **Plan project**
- **Activate project**

Requirements Definition
Employees are going to be using the new Siebel application—what do they want and need from it in order to better serve customers? Analyze existing business assets and interview managers, users and technical infrastructure teams to understand how the enterprise is structured and operates and to determine how the Siebel application can improve operations while preserving the integrity, culture and goals of the enterprise. This stage includes the following steps:

- **Plan project**
- **Activate project**

Release Planning
How does the enterprise’s management team want to implement and deploy the Siebel application? In this stage the project leaders and decision-makers convene to determine what kind of high-level functionality should be implemented in the Siebel application to meet the predefined business requirements of CRM. This stage includes the following steps:

- **Determine software requirements and scope**
- **Identify interfaces to other projects and systems**
- **Specify environments/initiate procurement**
- **Develop incremental release strategy**

Functional Analysis and Design
Analyze the enterprise’s data and functional requirements and create a design specification for customizing the preconfigured “vanilla” Siebel data and presentation objects, including extensions to the standard Siebel data objects and changes to the target Siebel database tables. This stage includes the following steps:

- **Create business object model**
- **Develop high-level screen design**
- **Identify required views, applets and reports**
- **Create business component model**
- **Refine business component model**
- **Design views, applets and reports**
- **Create and review functional specification**
Technical Analysis and Design
Identify what kind of technical architecture you’re going to need to support the users of the Siebel application, with attention to capacity planning for increasing user and transaction volumes. This stage includes the following steps:

- Define technical architecture
- Conduct Siebel technical reviews
- Document design specification and procure components
- Perform capacity planning
- Conduct Siebel technical reviews
- Document design specification and procure components
- Design migration process
- Test migration routines
- Set up development environment
- Implement database extensions
- Set up static data
- Customize Siebel business objects
- Customize Siebel presentation objects
- Create Siebel Visual Basic scripts
- Conduct quality review
- Evaluate release modification requests
- Prepare for deployment
- Determine data migration strategy
- Design migration process
- Construct migration process
- Test migration routines
- Perform and verify data load

Configuration
During the Configuration stage, the custom Siebel Enterprise Application is configured based on the functional (Design) specification. Although the design specifications have already met with user approval, it is important to involve users in the actual configuration activities as well, to ensure their satisfaction with the look and feel of the application as it is transformed from a design specification to a tangible, functional system. This stage includes the following steps:

- Set up development environment
- Initiate configuration
- Implement database extensions
- Set up static data
- Customize Siebel business objects
- Customize Siebel presentation objects
- Create Siebel Visual Basic scripts
- Conduct quality review
- Evaluate release modification requests
- Prepare for deployment

Data Migration
Your Siebel application is not much good without data for users to reference and manipulate. Data migration means moving the necessary data from source systems (both legacy and interface systems) into Siebel. This is an iterative activity that happens concurrently with the Configuration stage. This stage includes the following steps:
Testing
The purpose of this stage is to conduct user acceptance testing and system performance testing on the configured Siebel application. Develop the appropriate test plans and scenarios and execute them with user audiences. User acceptance testing should test the application for functionality and ease of use. System performance testing should test the application for overall performance, functionality, speed and capacity handling under multiple user conditions, both connected and remote. This stage includes the following steps:

- set up testing environment
- prepare testing server
- develop test plans
- conduct testing

Deployment
Endusers get their hands on the Siebel application in the Deployment stage. The system’s rollout should encompass one group of users at a time, in compliance with the release strategy. The production environment server is loaded with the control data, the interface systems are backed up, the configured application is deployed, and the support functions are set up to support the newly deployed system. This stage includes the following steps:

- set up production environment
- prepare production server
- roll out release
- prepare for next release

User Training
It is vital to the success of the new Siebel system to train business users in its operation and to train system support personnel (such as help desk staff) in system maintenance and operations and the interfaces/interactions between Siebel and other business systems. This stage includes the following steps:

- prepare for cultural changes
- create training schedule
- learn business and application
- develop training materials
- conduct user training
- evaluate learning

Control and End
Throughout your project, the goal is to meet all requirements on time and within budget. You’ll have a better chance of meeting that goal if you keep a watchful eye while controlling all stages and documenting what you’ve learned for the benefit of future projects. This stage includes the following steps:

- control project
- end project
The Distributed Application Development Process will help you harness the power of an object-oriented (OO) design approach, OO implementation tools and distributed computing technologies to build business systems based on user-friendly interfaces, tiered architectures, shared data, reusable components and incremental upgrades to functionality. Distributed computing systems are easily scalable to accommodate business growth and enable users to be productive quickly with each release. The Distributed Application Development Process comprises the following stages:
Gather Domain Requirements
Collect and define the user requirements and develop the workflow maps that will drive the application development for the selected segment of the business. This stage includes the following steps:

- Define requirements
- Develop workflow process map
- Model business requirements

Model Domain Requirements
Model the structure and interaction dynamics of the business domain and the associated requirements to be implemented by the distributed application, so that you can determine the appropriate software solutions. More detailed analysis of the business domain and subsequent development of the software increment will follow in a later stage. This stage includes the following steps:

- Create business domain dictionary
- Create behavior view
- Create concept view
- Integrate domain model
- Prioritize requirements

Establish Development Strategy
In this stage you must decide how to implement the application requirements via a series of successive software increments or releases. This stage includes the following steps:

- Explore build vs. buy options
- Establish implementation environment
- Establish release strategy
- Iterate and update domain models
Business Object Analysis
Business Object Analysis defines the scope of the software increment and models all the business objects and operations for that software increment. Analysis produces the specification model, the initial GUI prototype and the decisions regarding interfaces and exchange of data between systems, all of which drive the design of the distributed application. This stage includes the following steps:

- Define and scope software increment
- Document specification concept view
- Document specification behavior view
- Develop use case model
- Produce specification model
- Analyze object interaction
- Develop/review low fidelity prototype
- Analyze usage
- Review and iterate on specification model
- Define packages
- Perform preliminary design review

Design
In the Design stage, you design the complete distributed application. The principal design model is the implementation model, which is derived from the specification model developed during Analysis. This stage includes the following steps:

- Assess architecture
- Model business tasks
- Identify operations and services
- Develop high fidelity prototype
- Create implementation model
- Design data access layer
- Evaluate application framework architecture
- Design business object (processing) layer
- Design persistent object layer
- Design application services
- Design interfaces
- Verify system design
- Perform critical design review (CDR)
Construction
In the Construction stage, you code and build all structures and components of the application, according to a construction plan that you assemble at the start of the stage. This stage includes the following steps:

- prepare construction plan and environment
- acquire components
- generate code
- construct presentation layer
- construct business object layer
- construct persistent object layer
- construct data access layer and interfaces
- coordinate with network architecture
- construct application support layer
- prepare system for deployment

Testing
Testing activities are a required part of the development life cycle for any software product. They are performed to ensure that the customer receives a high-quality product that satisfies business requirements. This stage includes the following steps:

- develop test model
- conduct component testing
- conduct component integration testing
- conduct system testing
- conduct performance testing
- conduct usability testing
- conduct regression testing
- conduct product certification testing

Deployment
Deployment addresses the issues of getting the application into production at each user site. In distributed application development, the job is not over until the system is up and running in the user environment. This stage includes the following steps:

- document release
- develop training
- prepare deployment procedures
- deploy production system
- conduct training
“PACE” Project Management Process

Timing is everything, especially in project management. The key to a successful project is to PACE it—that is, to Plan, Activate, Control and End it the right way. A full life cycle project management process is the essential connective tissue that holds every development project together. It is the disciplined prescription for defining the project plan, schedule, budget, resources, risks, scope; for securing the resources, motivating the players and launching the project; for monitoring all project activities and deliverables against plan, tracking issues and communicating progress; and for capturing the successes and lessons learned for the next time around. The PACE Process comprises the following stages:

[ plan project ]
↓
[ activate project ]
↓
[ control project ]
↓
[ end project ]
Plan Project
This stage lays the groundwork for successfully implementing a project, through the development of a solid, detailed project plan. The plan specifies the project objectives, purpose, schedule, budget, approach, standards, deliverables, activities, costs, scope, metric estimates, risks and resources. This is the go/no-go juncture, when you obtain approval for the project and authorization from the business sponsor to proceed with the project activities. This stage includes the following steps:

- define project
- make project plan
- obtain project approval

Activate Project
You got the green light on the project plan, and now you can put the pieces in place to begin the development activities. Secure and set up your technical equipment and facilities, acquire the project team members who have the requisite skills, communicate information about the project launch to all involved parties and train your project team. This stage includes the following steps:

- equip project
- publicize project
- train project team

Control Project
Watchful control and flexible adaptation is key to successfully implementing a development project within budget and on time. You must constantly monitor the progress of the project against the project plan, identifying when the project is off track and taking corrective action and making adjustments to the plan as necessary, all the while keeping key players and sponsors well informed. It is also important to evaluate individual team members’ performance periodically and offer constructive, motivational feedback. This stage is conducted concurrently with all development activities. It is ongoing throughout the life of the project and includes the following steps:

- track project progress
- revise project plan
- assign project tasks
- motivate project participants

End Project
You have successfully deployed the new system and your project is about to come to an end. However, you have a few items to finish before you can call it a day. The End stage brings the project to an orderly conclusion and records its history in the form of metrics, success stories and lessons learned for the benefit of subsequent projects. End Project tasks archive the project materials, provide final performance evaluations to team members, report on the project’s performance, turn the project results over to the enterprise and release the project resources for use on other projects. This stage includes the following steps:

- prepare completion report
- turn over results
- release project resources