

POLAR IT SERVICES

Business Intelligence Project Methodology

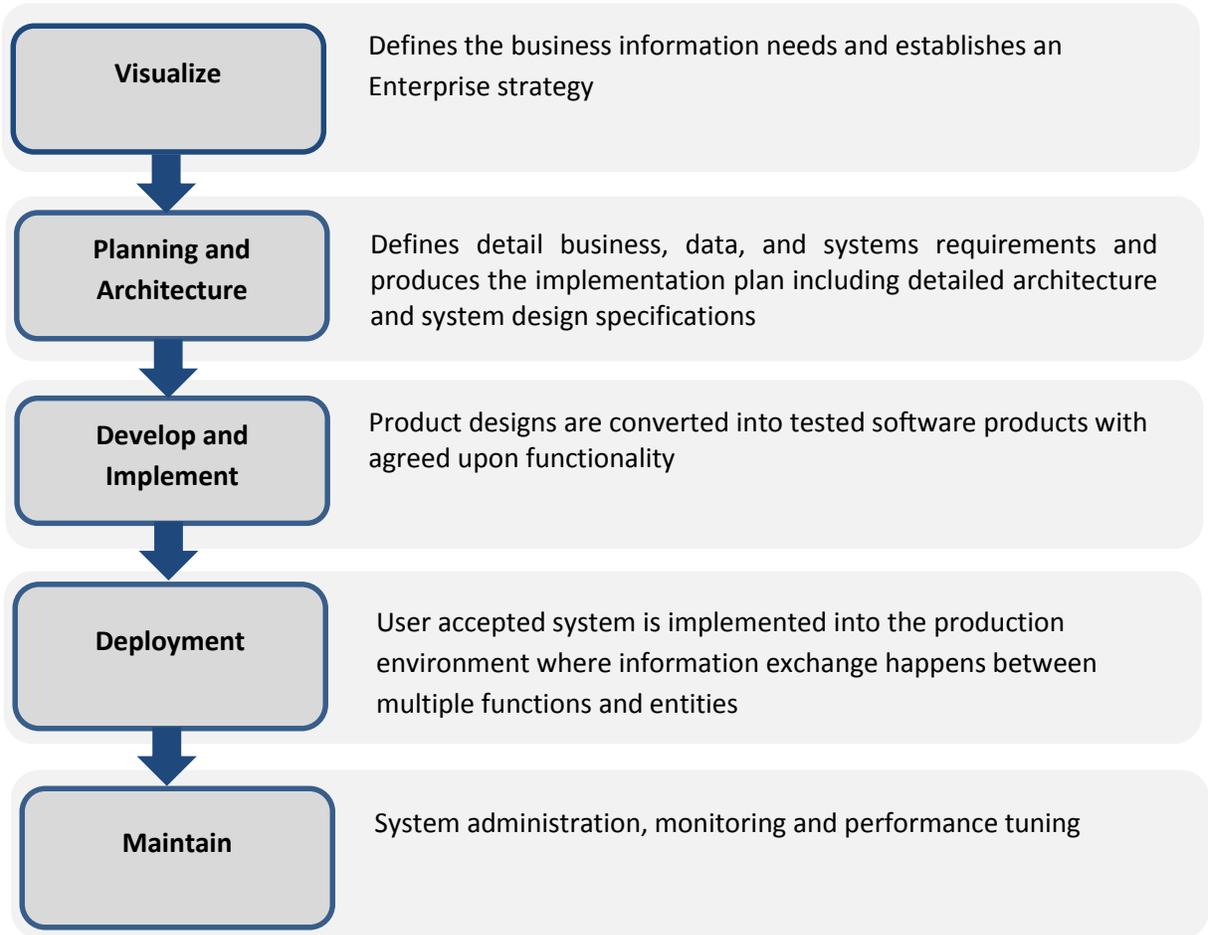
Table of Contents

- 1. Overview..... 2
- 2. Visualize 3
- 3. Planning and Architecture 4
 - 3.1 Define Requirements 4
 - 3.1.1 Define Attributes 4
 - 3.1.2 Define Measures..... 5
 - 3.1.3 Identify the Granularity or the level of analysis..... 5
 - 3.2 Analyze Source systems and Technical Environment 5
 - 3.2.1 Analyze Source Systems and Identify Gaps 5
 - 3.2.2 Analyze Technical Environment 5
 - 3.3 Design Solution Architecture 5
 - 3.3.1 Overall System Architecture 6
 - 3.3.2 Data Architecture 6
 - 3.3.3 ETL Architecture 6
 - 3.3.4 BI Application Architecture 6
- 4. Develop and Implement..... 7
 - 4.1 Build Infrastructure 7
 - 4.2 Database Development..... 7
 - 4.3 ETL Development..... 8
 - 4.4 Develop BI Applications 8
 - 4.5 System Test..... 8
 - 4.6 UAT 9
 - 4.7 Documentation..... 9
- 5. Deployment 10
 - 5.1 Deployment Readiness 10
 - 5.2 Production deployment 10
- 6. Maintain 11
 - 6.1 Administration and Monitoring..... 11
 - 6.2 Performance Tuning..... 11

1. Overview

Polar’s BI Methodology supports organizations in developing enterprise business intelligence strategies to be able to enhance the performance by increasing the insight into the organization’s information.

Organizations develop business intelligence solutions to satisfy the needs of departments, which could result in multiple data marts, duplication of effort and without “single version of truth”. Polar’s BI methodology helps in guiding organizations to establish robust business intelligence platforms based on industry best practices and recommended steps.



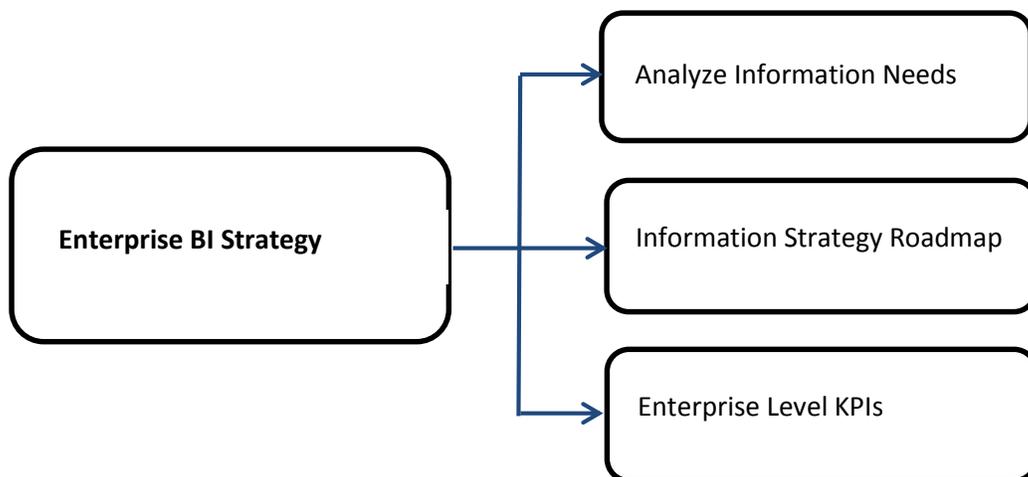
2. Visualize

Visualize is the first phase which helps organizations define information needs to help in the development of applications with available technology to process the data.

The output of the visualize phase is an Enterprise Business Intelligence Strategy that establishes a roadmap focused on incremental support of organizations' information needs.

Objectives:

- Analyze information needs
- Information Strategy Roadmap
- Enterprise level KPIs



2.1 Analyze information needs

This phase involves analyzing the existing data, environments and infrastructure. It is the starting point and also ensures that the capabilities and benefits of the existing system will be incorporated into the new system.

It is accomplished by conducting various workshops, interviews, meetings with the stakeholders, existing users and potential users of the system. It provides a vision that guides the architects to design the system that satisfies the technical requirements without impacting the existing level of analysis.

2.2 Information Strategy Roadmap

Analysis of the overall business and technical requirements will be the input to create an overall vision of the business intelligence initiative. It is one of the critical steps that captures all the key components and establishes a strategic view of the entire process.

It provides a conceptual view of how the data will integrate to support the organization's current information needs and also future needs of the organization in the longer term.

2.3 Enterprise level KPIs

Polar's team analyzes the organizations measures that help understand and improve performance of the organization as a whole, as well as performance of each department and individual within the department.

3. Planning and Architecture

Based on the steps in the Visualize phase, the planning and architecture phase defines detail business, data, and systems requirements and produces the implementation plan including detailed architecture and system design specifications.

Objectives:

- Define requirements
- Analysis of source system and technical environment
- Design Solution Architecture

3.1 Define Requirements

For a business intelligence project's business requirements, organizations just indulge in listing the business questions and analyzing the existing systems. But for the project to succeed, Polar recommends that the data to support each requirement should also be listed which captures all levels of analysis. This process reduces the risk and defines proper scope of the project.

Defining requirements activities include analysis of requirements, technical environment, and gap analysis. These activities set up an understanding between the sponsor and the project team about requirement definitions, their priorities, and their implementation orders.

3.1.1 Define Attributes

Identify the dimensions by reviewing all the business questions. For each dimension, decompose it into more detail by identifying and defining all of the attributes (and the data elements) to include within each dimension. For example, for Geography dimension, we may identify, and provide definitions for, the following attributes: City, State, Geographic Region, and Country.

3.1.2 Define Measures

Identify measures by reviewing all the business questions. For each metric, capture the business rule used to derive it. In some cases, different departments within an organization derive these business rules differently. For example, in a retail organization, marketing may measure the Gross Margin based on the sales and cost dollar amount. Merchandise department may also include freight amount to calculate margin. Across organizations business rules differ and each form of the calculation needs to be captured.

3.1.3 Identify the Granularity or the level of analysis

The attributes and metrics are identified to answer each business question. For example, to answer the question, "What is sales amount by Item, City, and Day?", we need to capture levels: Sales Amount, Item ID, Item Description, City, State, Region, Day, Month, and Year. The level of analysis for each measure is necessary for data analysis, design and implementation.

3.2 Analyze Source systems and Technical Environment

3.2.1 Analyze Source Systems and Identify Gaps

Analysis of source systems allows identification of gaps based on the organization's data requirements. Based on the findings, communication needs to be initiated to set expectations or re-define scope to obtain the missing data elements.

3.2.2 Analyze Technical Environment

Capture hardware and software components of all the existing systems that will be affected by the solution, including the network, platform details and information transfer among them.

3.3 Design Solution Architecture

Design specifications activities include Solution Architecture and detailed System Design. This process creates an architectural layout – detail specifications for hardware configuration and software development.

The various components include – data architecture, ETL architecture and BI application architecture.

3.3.1 Overall System Architecture

System architecture specification contains the technical view of the overall process. The technical details of the data sources, ETL tools, BI tools are all listed and depicted in the form of an architecture diagram. The process of data flow from various sources through the ETL tools into the database and BI applications is formulated and defined along with the software and hardware details.

3.3.2 Data Architecture

Based on the input from the Information strategy roadmap, detailed requirements and source system analysis the conceptual and logical data base designs are developed. The data model is designed based on the BI requirements and integration of data from disparate data sources.

After thorough review of security, performance and BI requirements the physical data model is designed.

3.3.3 ETL Architecture

Data landing zones, Staging area and Source to target mappings are defined in this phase. The design process includes – logic to extract data from data sources, data transformations that are necessary to load data into the data model and logic to load data into the target data model.

Bulk inserts, parallel executions, incremental loads and data quality strategies are all included in this design.

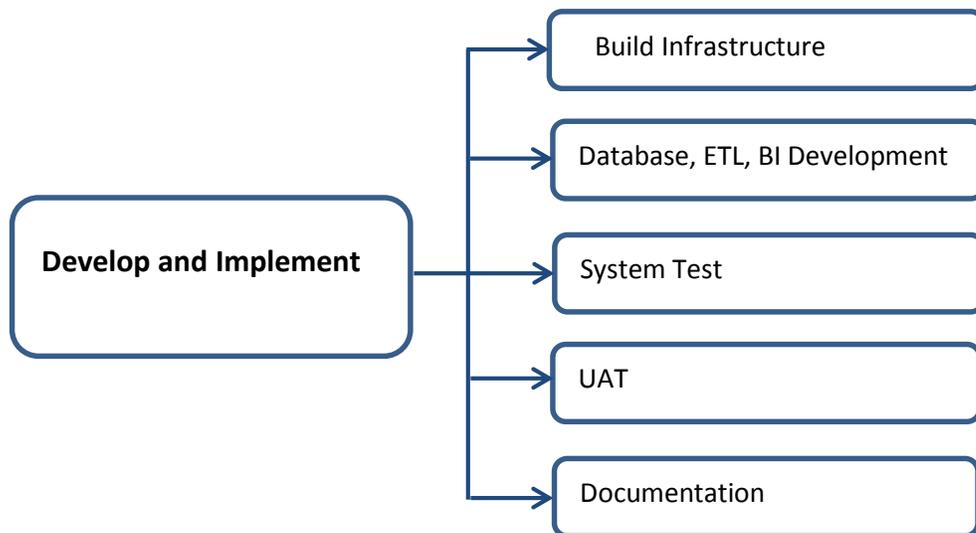
3.3.4 BI Application Architecture

The application design includes dashboard, reports and adhoc reports design process. This process captures the navigation between the screens, format and naming conventions of the attributes, metrics and the granularity of each object. It also includes the end-user security implementation design.

4. Develop and Implement

During this phase Polar’s specialized consultants – Administrators, Architect, Developers, Testers convert product designs into completely tested software products with agreed upon functionality and facilitates user training for the initial deployment.

Data is populated into the defined data structures through ETL processes and BI applications access the data for user’s analysis.



4.1 Build Infrastructure

Based on the specifications listed in the planning and architecture phase, the environments for development, test, UAT and production are established. Depending on the priorities, the system and database administrators set up the environment on an incremental basis. Procedures and protocols to set up additional environments, upgrades, and system administration are set up to streamline the interaction between various teams.

4.2 Database Development

The data warehouse which is a physical database will be developed after the conceptual and logical data model are designed and reviewed. The semantic layer which is required for end-user analysis is the final goal of database development. The semantic layer which comprises of Fact and Dimension tables along with aggregates tables are database structures that are developed for optimal usage by the BI tool. The ETL populates the staging and target tables.

The database administrator takes into consideration and performance - loading and querying, security, indexing, partitioning during database development as per the database design and requirements document.

4.3 ETL Development

Source data is extracted, cleansed and loaded into the data warehouse. Data is extracted from multiple sources and transformed into consistent formats to be loaded into the data warehouse.

Data from multiple sources is extracted into an extraction layer which is a landing zone of all source data. The data from extraction layer is then cleansed (transformed) loaded into the staging tables prior to loading the target tables in the data warehouse. The staging tables are used to join various sources of data and define relationship between entities prior to loading the target tables.

Maintenance of Data Quality is one of the main tasks throughout this process, to ensure that consistent data is continuously populated into the data warehouse.

4.4 Develop BI Applications

The end users access data in the data warehouse using BI applications. BI metadata which involves – Attributes, Metrics, Reports, and Dashboards will be developed using the BI tool recommendations and best practices. The metadata needs to be defined and designed for end users to understand and use with minimal training. The data should be presented in a consumable format even for users with basic knowledge and training, which drives more interest within the user community and be able to adapt to new technology.

4.5 System Test

All aspects of the system are thoroughly tested during this phase. Adhoc reports executed against the database are tested with data retrieved directly from source systems. The performance of ETL, BI applications is tested and monitored with varying loads on the whole system. The test results are captured and measured against the acceptance criteria.

4.6 UAT

UAT Phase determines if the system meets the requirements and supports their organization's business need. The UAT script is designed for the users to follow, to be able to test and document all aspects of the system. It is cyclic process where the users log and re-test the fixed issues. When the test results meets the users acceptance criteria, the UAT phase will formally be signed-off. A traceability matrix which ties the business and technical requirements with the UAT test scripts and results will help users get familiarized and utilize the system.

4.7 Documentation

System documentation provides details of all the components - ETL, Database, Business Intelligence applications. It is a comprehensive document that could be used by new team members to understand the technical details of the whole system and serves as the system manual. The system documentation includes overview of the system architecture, data flow diagrams, security details, data models - conceptual, logical, and physical.

5. Deployment

During this phase the functional and user accepted systems are implemented into the customer's production environment where information exchange happens between multiple functions and entities. It involves migrating the database structures and components, ETL process, BI metadata into the production system. Interaction between various teams to accomplish the system deployment is vital, so dependencies are identified and a defined communication plan is put in place.

5.1 Deployment Readiness

This phase gathers the readiness of the users, processes, applications, and infrastructure. The contents and output of the previous phases are reviewed and opinion of the stake holders is sought to move forward and rollout the new system.

The deployment plan is prepared and shared with all parties involved including the initial set of users. The plan contains production support details, protocols, issue logging mechanism and dates of deployment of various phases. The plan is fine-tuned based on the feedback from all the teams involved and is finalized.

5.2 Production deployment

This task involves actual implementation. The tasks are executed as per the defined plan and various aspects of the system are periodically validated after each intermediate task. Depending on the level of users, it is a recommended practice for all end users to attend a training class to understand the advantages of the new system and how it can improve the current level of analysis.

All entities of the systems are thoroughly checked for correctness and accuracy after deployment in production environment. The production environment is monitored constantly and checked if all components are in accordance with the baseline requirements.

6. Maintain

After the production roll out, the system will need proper maintenance for consistent delivery. This process includes system administration, monitoring and performance tuning.

6.1 Administration and Monitoring

System administration involves access to new users; edit the privileges of the existing users, migrations between various environments. It also involves monitoring the hardware performance and deploying upgrades.

The system administrators need to have a proper communication plan to intimate the users regarding the system availability during maintenance mode.

6.2 Performance Tuning

The system is continuously monitored and prospects for performance tuning are identified. The changes are implemented in development environment, tested in test environment and deployed to production. System tuning involves various components of the whole system – Hardware, Database settings, SQL by ETL to retrieve and load data, SQL by BI application to retrieve data, network.