

DATA SCIENCE & BUSINESS INTELLIGENCE METHODOLOGIES

1. INTRODUCTION

Data plays a central role in decision-making. Methodologies provide structured approaches to ensure quality, efficiency, and success in Data Science and Business Intelligence (BI) projects.

We'll explore some of the most recognized methodologies:

- CRISP-DM
- IBM Master Plan
- Ralph Kimball's Approach
- GIMSI Method

2. DATA SCIENCE METHODOLOGY

CRISP-DM (CROSS INDUSTRY STANDARD PROCESS FOR DATA MINING)

The most widely used methodology for data mining and data science projects.

Phases:

1. Business Understanding - define objectives and requirements.
2. Data Understanding - collect, describe, and explore the data.
3. Data Preparation - cleaning, transforming, integrating datasets.
4. Modeling - applying machine learning/statistical models.
5. Evaluation - assess models against business goals.
6. Deployment - implement in production, monitor results.

Strengths: Iterative, flexible, domain-independent.

Use case: Predictive analytics, fraud detection, customer segmentation.

3. BUSINESS INTELLIGENCE METHODOLOGIES

IBM MASTER PLAN

Developed by IBM for large-scale BI projects. Focuses on strategic alignment between IT and business goals.

Steps:

1. Define business vision & drivers.

2. Define information needs.
3. Design information architecture.
4. Build applications & data warehouse.
5. Deploy, manage & refine.

Strengths: Strong governance, scalable, aligns BI with strategy.

Use case: Enterprise-wide BI implementation.

RALPH KIMBALL METHODOLOGY (DIMENSIONAL MODELING)

A bottom-up approach for data warehouses. Based on star schemas and dimensional modeling.

Steps:

1. Identify business process.
2. Choose grain (level of detail).
3. Identify dimensions (who, what, where, when).
4. Identify facts (measures/metrics).
5. Build star schema.

Strengths: Fast delivery, user-friendly, strong for OLAP & reporting.

Use case: Retail sales analysis, financial reporting.

GIMSI METHOD (GENERALIZED INFORMATION MANAGEMENT SYSTEM INTEGRATION)

Methodology for developing BI systems. Emphasizes user needs and iterative development.

Phases:

1. Preliminary study (identify BI needs).
2. Conceptual modeling (define business concepts).
3. Logical modeling (map to database structures).
4. Physical implementation (DW + ETL + reporting tools).
5. Deployment & evaluation.

Strengths: Structured, iterative, clear link between business needs & technical design.

Use case: Medium to large BI projects with strong data modeling needs.

4. COMPARISON

Methodology	Domain	Approach	Key Strength
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CRISP-DM	Data Science	Iterative	Flexible, domain-independent
IBM Master Plan	BI (Enterprise)	Top-down	Strategic alignment
Ralph Kimball	Data Warehousing	Bottom-up	User-friendly, fast delivery
GIMSI	BI/DW	Iterative	Strong modeling, business-driven

5. CONCLUSION

CRISP-DM is best for predictive modeling and analytics.

IBM Master Plan is ideal for enterprise-wide BI strategy.

Ralph Kimball focuses on practical dimensional modeling for warehouses.

GIMSI bridges business requirements and technical implementation.

Choosing the right methodology depends on project scope, goals, and organizational context.