



# Data Warehouse & Business Intelligence

Presented by BI&A Practice



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### References

Statistics mentioned in the business case are based on Hexaware's project experience.

#### Industry reference:

[www.bloorresearch.com/technology/test-data-management/](http://www.bloorresearch.com/technology/test-data-management/)  
[www.it-director.com/technology/applications/paper.php?paper=927](http://www.it-director.com/technology/applications/paper.php?paper=927)



## 1. Introduction

Data Warehousing – the technology domain for Business Intelligence solutions is complex from an implementation standpoint because of the Develop – Support (Growth-Sustain) cycle followed concurrently. Every enterprise wide BI system continuously evolves over a period of time with new functionality getting added for every release.

But what makes BI unique & complex is that the user-centricity of the DW system cannot be compromised which is a more difficult endeavor than compared to other systems that are more technology-centric.

The solution to this vexing problem in development & maintenance of large data warehouses lies in the adaptation of Agile Frameworks. Agile development is a software development approach that "cycles" through the different phases, from gathering requirements to delivering functionality into a working release, having place-holders for thorough impact analysis & fool-proof regression testing techniques.

## 2. Subject Clarity

Data Warehousing / Business Intelligence outsourcing is at the cross-roads. There is immense potential for outsourced data warehousing solutions as it provides true value-addition for the company that is able to manage its enterprise wide DW implementations through a system integrator in an onsite-offshore model.

The Agile frameworks (Extreme Programming & MSF) have been in vogue for the past 2-3 years but its applicability to Data Warehousing is quite limited. Hexaware's approach of delivering DW/BI solutions using this methodology in an outsourced scenario is quite unique and original and can be extended to cover complex analytical / data mining systems.

The Agile process for DW maintenance has been successfully implemented by Hexaware for customers. This process definition enables Agile methodology to be extended and applied across other DW maintenance projects as well.

Agile development is a software development approach that "cycles" through the development phases, from gathering requirements to delivering functionality into a working release.

The ultimate goal of any bottom-up development project should be to roll out new data mart functionality on a regular and rapid basis with a high degree of conformance to what was already there. By adopting specific practices from MSF and XP, we can facilitate the bottom-up, frequent release approach and, even more importantly, change our project team culture and associated behaviors to create better, more customer-focused applications than with the traditional waterfall approach.

Some of the salient points are:

- Shared vision & small teams working on a specific functionality
- Make frequent releases - Agile development strives to deliver small units of functionality that make good business sense
- Relentlessly manage scope - Meeting a fixed release schedule will not happen unless the resource triangle is actively managed. The resource triangle is the three-way combination of requirements, time and resources. Any change to one leg of the triangle (misunderstood requirement, less time or fewer people) requires a corresponding change to at least one other leg
- Create a multi-release framework - Agile development stresses that there must be a master plan and a supporting architecture. Use releases to add more customer functionality, not constantly rework what was done in the past

## 3. Technology Proposition

There are many choices available for implementing DW development & support solutions. The options range from the time-tested "waterfall model" to "Iterative Development models" to "Hybrid methodologies".



## 4. Different Types of Approach

Data warehousing implementation methodologies can be one of the following:

- Waterfall Model
- Spiral Development Model
- Iterative Development Model
- Agile Methodology

Criteria	Waterfall	Spiral	Iterative	Agile
Alignment with system Vision	X	X	X	✓
Rapid Development	X	✓	✓	✓
Scope management	X	X	X	✓
Accommodating graceful modifications	X	X	✓	✓
Planning for Future – Scalability	X	X	X	✓

Agile Frameworks provide the best value for managing the Data warehouse implementations as they satisfy the key criteria given above.

To ensure smooth process flow the following necessities need to be ensured:

- Business Functionality needs to be added incrementally to DW / Datamarts
- New functionality that gets added should be based on iterative development, as the turn-around times are extremely aggressive
- Business users have almost zero tolerance for errors as analytical systems affect critical business decisions
- Since the DW evolves over a period of time, the complexity of impact analysis & regression testing increases exponentially over time to ensure conformance to what is already there

## 5. Case Study

Client is one of the largest IT service providers in the US with revenues exceeding 6-Billion USD on a yearly basis. The Enterprise Data warehouse serves as the intelligence repository for 50 different applications, ranging from Sales Pipeline Management, Project Accounting, Accounts Payables, Accounts Receivables, Profitability Management and a host of other data intensive applications. The Data warehouse modeled on the Kimball methodology has many fact tables surrounded by conformed dimensions & reference data. Hexaware is currently managing the Corporate IT Business Intelligence environment and at a tactical level has to ensure that the Data warehouse provides the right answers to the questions posed by business users and at the same time ensure that new datamarts & subject areas gets added into the BI environment. The development of new subject areas and maintenance of existing subject areas across these 50 applications are managed by adopting Agile methodologies

## 6. Process Implemented and Customization

Situation

The assumption is that the basic structure of an enterprise wide data warehouse is already in place. The challenge is to add more functionality over a period of time and also ensure conformance to existing processes & standards.

Phases – Activities-Deliverables

The critical steps in application of Agile Methodology to DW in the situation described above are:



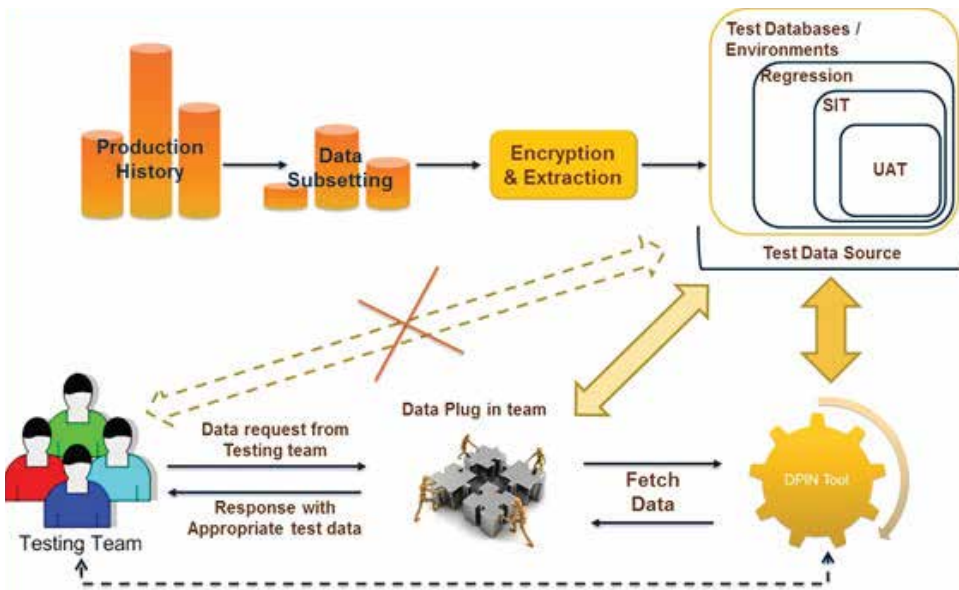


Figure 2: DPN Tool in the System

### Limitations of Tool:

Like any tool, DPIN tool has certain limitations where test data is necessary to customize the fetched data and supply the proper set of data for execution

### Conclusion:

There could be a robust test data management strategy shouldering the test data requirements for critical projects where large volume of test cases execution involved for each cycle. But still, human errors contribute around 30% of defects using improper data. Hence, instead of teams directly working with the test databases, usage of interface tools like the DPIN tool secures data manipulations and nullifies human error in data identification process. This ensures accuracy in fetching the right data. In addition, if the test data management team follows quality procedures and optimizes data usage, an approximate 30% of TDM effort and additional execution downtime effort could be saved. On an average, this solution and the optimization practice put together reduces testing budget by 10% for large engagements.

### About Hexaware

Hexaware is the fastest growing next-generation provider of IT, BPO and consulting services. Our focus lies on taking a leadership position in helping our clients attain customer intimacy as their competitive advantage. Our digital offerings have helped our clients achieve operational excellence and customer delight by 'Powering Man Machine Collaboration.' We are now on a journey of metamorphosing the experiences of our customer's customers by leveraging our industry-leading delivery and execution model, built around the strategy— 'Automate Everything, Cloudify Everything, Transform Customer Experiences.'

We serve customers in Banking, Financial Services, Capital Markets, Healthcare, Insurance, Manufacturing, Retail, Education, Telecom, Professional Services (Tax, Audit, Accounting and Legal), Travel, Transportation and Logistics. We deliver highly evolved services in Rapid Application prototyping, development and deployment; Build, Migrate and Run cloud solutions; Automation-based Application support; Enterprise Solutions for digitizing the back-office; Customer Experience Transformation; Business Intelligence & Analytics; Digital Assurance (Testing); Infrastructure Management Services; and Business Process Services.

Hexaware services customers in over two dozen languages, from every major time zone and every major regulatory zone. Our goal is to be the first IT services company in the world to have a 50% digital workforce.

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