

Artificial intelligence and expert systems applications in new product development—a survey

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The authors review and categorize the research in applications of artificial intelligence (AI) and expert systems (ES) in new product development (NPD) activities. A brief overview of NPD process and AI is presented. This is followed by a literature survey in regard to AI and ES applications in NPD, which revealed twenty four articles (twenty two applications) in the 1990–1997 period. The applications are categorized into five areas: expert decision support systems for NPD project evaluation, knowledge-based systems (KBS) for product and process design, KBS for QFD, AI support for conceptual design and AI support for group decision making in concurrent engineering. Brief review of each application is provided. The articles are also grouped by NPD stages and seven NPD core elements (competencies and abilities). Further research areas are pointed out.

Keywords: Artificial intelligence, expert systems, knowledge-based systems, new product development

1. Introduction

Artificial intelligence (AI), as a discipline, has grown enormously during the past decade. AI applications today span the realm of manufacturing, consumer products, finance, management and medicine. Implementation of the appropriate AI technique in an application is often a must to stay competitive. Truly profitable AI techniques are often kept secret. Expert systems (ES) and knowledge-based systems (KBS) applications have been prolific, impacting many areas of decision making in industries, especially in manufacturing like scheduling, production planning, plant layout, advanced manufacturing processes, purchasing and materials.

Today's manufacturing organizations compete not only on the factory floor, but also in the product development arena (Abegglen and Stalk, 1985; Stalk, 1988; Nonaka and Takeuchi, 1995). A competitive advantage can be built through superior manufac-

turing but sustaining it over time requires skills in developing a continual stream of new products. Shorter product life cycle, more demanding customers, and globalization of market make new products not just desirable for a company, but mandatory (Kuczmarski, 1988). Not only is product development becoming more central to meeting the increasingly specialized demands of customers, it can also have a powerful impact on manufacturing productivity and quality. For example, setup times are determined not only by process design, but also by product design. 70–80% of the cost of the product is determined during the design stage. The same is true for product quality. Poor product design causes many defects on the production floor (van Dierdonck, 1990). Product development also absorbs a huge amount of money. The development of Ford Escort, Chrysler LH, and Chrysler Neon is reportedly to have cost their companies \$5 billion, \$1.5 billion and \$1.3 billion respectively. While maintaining or improving product

Business Intelligence Manuals

David Loshin



Business Intelligence Manuals:

Business Intelligence David Loshin, 2012-11-27 *Business Intelligence The Savvy Managers Guide Second Edition* discusses the objectives and practices for designing and deploying a business intelligence BI program It looks at the basics of a BI program from the value of information and the mechanics of planning for success to data model infrastructure data preparation data analysis integration knowledge discovery and the actual use of discovered knowledge Organized into 21 chapters this book begins with an overview of the kind of knowledge that can be exposed and exploited through the use of BI It then proceeds with a discussion of information use in the context of how value is created within an organization how BI can improve the ways of doing business and organizational preparedness for exploiting the results of a BI program It also looks at some of the critical factors to be taken into account in the planning and execution of a successful BI program In addition the reader is introduced to considerations for developing the BI roadmap the platforms for analysis such as data warehouses and the concepts of business metadata Other chapters focus on data preparation and data discovery the business rules approach and data mining techniques and predictive analytics Finally emerging technologies such as text analytics and sentiment analysis are considered This book will be valuable to data management and BI professionals including senior and middle level managers Chief Information Officers and Chief Data Officers senior business executives and business staff members database or software engineers and business analysts Guides managers through developing administering or simply understanding business intelligence technology Keeps pace with the changes in best practices tools methods and processes used to transform an organization s data into actionable knowledge Contains a handy quick reference to technologies and terminology

Business Intelligence David Loshin, 2003 *Business Intelligence* describes the basic architectural components of a business intelligence environment ranging from traditional topics such as business process modeling data modeling and more modern topics such as business rule systems data profiling information compliance and data quality data warehousing and data mining This book progresses through a logical sequence starting with data model infrastructure then data preparation followed by data analysis integration knowledge discovery and finally the actual use of discovered knowledge The book contains a quick reference guide for business intelligence terminology *Business Intelligence* is part of Morgan Kaufmann s *Savvy Manager s Guide* series Provides clear explanations without technical jargon followed by in depth descriptions Articulates the business value of new technology while providing relevant introductory technical background Contains a handy quick reference to technologies and terminologies Guides managers through developing administering or simply understanding business intelligence technology Bridges the business technical gap Is Web enhanced Companion sites to the book and series provide value added information links discussions and more

The Business Intelligence Team Handbook Robert Hatton, 2014-12-12 *Building Business Intelligence* BI into your organization is a challenge Part of that challenge is that a successful implementation will involve both technical and business people *The Business Intelligence Team*

Handbook provides common ground for all members of an effective BI team Technical team members will gain perspective into reasons the organization wants to analyze data and business people will have a concise overview into how the technical folk are organizing a solution True success with BI means building BI into your organizational culture The Business Intelligence Team Handbook can be the reference for that cultural change Having this common point of reference for everyone involved with understanding how your organization works will help make the change possible The Business Intelligence Team Handbook has information covering How to identify ROI for a BI project Identifying specific questions Converting specific questions to a BI design How double entry accounting impacts analytics A sample project narrative to provide big picture perspective Important BI tools such as databases query and presentation tools How to collect and organize data Extract Transform Load Pitfalls we should all learn from other s mistakes How to think about analytic data things you re analyzing and how you describe them How to structure analytic data focused on a popular technique the star schema The relationship between data structure and how it s queried Different ways to present information Business Intelligence culture However you pursue your Business Intelligence goals make sure that the entire team has a common foundation

Managing Enterprise Business Intelligence: A Comprehensive Guide 2025 Saurabhkumar Sumatprakash Gandhi, Prof (Dr) Moparthi Nageswara Rao, PREFACE In the rapidly evolving digital landscape data has become one of the most valuable assets for organizations With vast amounts of information being generated every second businesses are under constant pressure to transform this data into actionable insights that drive decision making strategy and innovation Business Intelligence BI is at the forefront of this transformation enabling organizations to harness the power of their data and convert it into meaningful real time insights The role of BI within enterprises has grown significantly over the past few decades evolving from simple reporting tools to complex integrated platforms capable of advanced analytics machine learning and predictive modeling However as organizations continue to scale and their data ecosystems grow more complex effectively managing enterprise BI systems has become a critical challenge This book Managing Enterprise Business Intelligence A Comprehensive Guide aims to provide readers with a thorough understanding of how to design implement and manage a successful enterprise BI strategy It is designed for business leaders IT professionals data analysts and BI managers who are seeking to navigate the challenges of managing BI systems at an enterprise level Whether you are in the initial stages of adopting BI or looking to optimize an existing system this book provides both the foundational knowledge and advanced strategies necessary for success The first part of this book explores the fundamental concepts of Business Intelligence including data integration data governance and the several types of BI tools and technologies available It delves into how BI fits into the broader context of enterprise data management and how to align BI strategies with organizational goals With BI being a critical driver of organizational decision making it is crucial that businesses understand how to effectively leverage these tools to maximize value As we move further into the book we dive deep into the practicalities of managing an

enterprise BI environment We examine the organizational aspects of BI management including the roles of BI teams collaboration across departments and fostering a data driven culture Building a strong data governance framework is also crucial as it ensures the quality consistency and security of the data being used for decision making This section addresses the importance of data stewardship and compliance which is particularly critical in today s regulatory landscape Next we turn our attention to technology and infrastructure From data warehousing and ETL Extract Transform Load processes to cloud based BI solutions and real time analytics we cover the technologies that support BI platforms and the steps involved in integrating and managing these tools within an organization s infrastructure The rapid adoption of cloud computing and big data technologies has redefined how businesses manage and process large volumes of data This book discusses how to evaluate and implement the right mix of on premises and cloud based solutions and how to scale BI environments to meet the growing needs of enterprise users We also address the challenges of user adoption and training which are often barriers to the successful implementation of BI solutions We discuss best practices for engaging users across all levels of the organization and ensuring that BI tools are used effectively to inform decisions Additionally we explore how organizations can foster a culture that encourages data literacy and empowers individuals at all levels to leverage BI for strategic insights Finally this book covers advanced BI topics such as AI driven analytics predictive and prescriptive modeling and the integration of BI with machine learning and data science As enterprises continue to evolve and their data environments become more sophisticated the ability to incorporate advanced analytics and integrate BI with broader enterprise technologies will be key to gaining a competitive advantage The objective of this book is not only to provide practical guidance for managing BI at an enterprise level but also to give readers a strategic understanding of how BI impacts organizational performance Whether you oversee a BI department a data management team or a business unit you will find actionable insights that will help you drive the adoption and success of your BI initiatives In an era where data is the new oil managing enterprise business intelligence is more critical than ever This guide offers both a roadmap and practical solutions to empower businesses to unlock the full potential of their data and transform it into insights that lead to better decision making improved efficiency and sustainable growth Welcome to a journey of mastering enterprise Business Intelligence unlocking its true potential and transforming the way your organization uses data to stay competitive in the digital age

Authors The Shortcut Guide to Achieving Business Intelligence in Midsize Companies Don Jones,2009 Business Intelligence Strategy John Boyer,Bill Frank,Brian Green,Tracy Harris,Kay Van De Vanter,2010 Geared toward IT management and business executives seeking to excel in business intelligence initiatives this practical guide explores creating business alignment strategies that help prioritize business requirements build organizational and cultural strategies increase IT efficiency and promote user adoption Business intelligence together with business analytics and performance management eliminates information overload by organizing the massive amounts of information available in the modern

enterprise Addressing the challenges of business intelligence operations this resource supports the goal of better business decision making and identifying unrealized opportunities Each chapter includes a checklist of recommended approaches and a strategy overview template

SAP Business Intelligence Quick Start Guide Vinay Singh, 2019-02-27 Designing and deploying solutions using the SAP BusinessObjects Business Intelligence platform 4 2 Key Features Get up and running with the SAP BusinessObjects Business Intelligence platform Perform effective data analysis and visualization for actionable insights Enhance your BI strategy by creating different types of reports and dashboards using SAP BusinessObjects Book Description The SAP BusinessObjects Business Intelligence platform is a powerful reporting and analysis tool This book is the ideal introduction to the SAP BusinessObjects Business Intelligence platform introducing you to its data visualization visual analytics reporting and dashboarding capabilities The book starts with an overview of the BI platform and various data sources for reporting Then we move on to looking at data visualization analysis reporting and analytics using BusinessObjects Business Intelligence tools You will learn about the features associated with reporting scheduling and distribution and learn how to deploy the platform Toward the end you will learn about the strategies and factors that should be considered during deployment By the end you will be confident working with the SAP BusinessObjects Business Intelligence platform to deliver better insights for more effective decision making What you will learn Work with various tools to create interactive data visualization and analysis Query report and analyze with SAP Business Objects Web Intelligence Create a report in SAP Crystal Reports for Enterprise Visualize and manipulate data using an SAP Lumira Storyboard Deep dive into the workings of the SAP predictive analytics tool Deploy and configure SAP BO Intelligence platform 4 2 Who this book is for This book is for Business Intelligence professionals and existing SAP ecosystem users who want to perform effective Business Intelligence using SAP BusinessObjects

Oracle Business Intelligence and Essbase Solutions Guide Rosendo Abellera, Lakshman Bulusu, 2016-11-30 This book highlights the practical aspects of using Oracle Essbase and Oracle Business Intelligence Enterprise Edition OBIEE as a comprehensive BI solution It explains the key steps involved in Oracle Essbase and OBIEE implementations Using case studies the book covers Oracle Essbase for analytical BI and data integration using OBIEE for operational BI including presentation services and BI Publisher for real time reporting services Self service BI in terms of VLDB scalability high performance stability long lasting and ease of use that saves time effort and costs while maximizing ROI

Business Intelligence David Loshin, 2012-10-17 This completely updated best seller is a must read for anyone who wants an understanding of business intelligence business management disciplines data warehousing and how all of the pieces work together

Learn Power BI Greg Deckler, 2019-09-13 Solve business challenges with Microsoft Power BI s advanced visualization and data analysis techniques Key Features Create effective storytelling reports by implementing simple to intermediate Power BI features Develop powerful analytical models to extract key insights for changing business needs Build publish and share impressive dashboards for your organization Book Description To

succeed in today's transforming business world organizations need business intelligence capabilities to make smarter decisions faster than ever before This Power BI book is an entry level guide that will get you up and running with data modeling visualization and analytical techniques from scratch You'll find this book handy if you want to get well versed with the extensive Power BI ecosystem You'll start by covering the basics of business intelligence and installing Power BI You'll then learn the wide range of Power BI features to unlock business insights As you progress the book will take you through how to use Power Query to ingest cleanse and shape your data and use Power BI DAX to create simple to complex calculations You'll also be able to add a variety of interactive visualizations to your reports to bring your data to life Finally you'll gain hands on experience in creating visually stunning reports that speak to business decision makers and see how you can securely share these reports and collaborate with others By the end of this book you'll be ready to create simple yet effective BI reports and dashboards using the latest features of Power BI What you will learn

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- Use the Query Editor to import and transform data
- Perform simple and complex DAX calculations to enhance analysis
- Discover business insights and tell a story with your data using Power BI
- Explore data and learn to manage datasets dataflows and data gateways
- Use workspaces to collaborate with others and publish your reports

Who this book is for If you're an IT manager data analyst or BI user new to using Power BI for solving business intelligence problems this book is for you You'll also find this book useful if you want to migrate from other BI tools to create powerful and interactive dashboards No experience of working with Power BI is expected

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Table of Contents Business Intelligence Manuals

1. Understanding the eBook Business Intelligence Manuals
 - The Rise of Digital Reading Business Intelligence Manuals
 - Advantages of eBooks Over Traditional Books
2. Identifying Business Intelligence Manuals
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Business Intelligence Manuals
 - User-Friendly Interface
4. Exploring eBook Recommendations from Business Intelligence Manuals
 - Personalized Recommendations
 - Business Intelligence Manuals User Reviews and Ratings
 - Business Intelligence Manuals and Bestseller Lists
5. Accessing Business Intelligence Manuals Free and Paid eBooks

- Business Intelligence Manuals Public Domain eBooks
- Business Intelligence Manuals eBook Subscription Services
- Business Intelligence Manuals Budget-Friendly Options
- 6. Navigating Business Intelligence Manuals eBook Formats
 - ePub, PDF, MOBI, and More
 - Business Intelligence Manuals Compatibility with Devices
 - Business Intelligence Manuals Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Business Intelligence Manuals
 - Highlighting and Note-Taking Business Intelligence Manuals
 - Interactive Elements Business Intelligence Manuals
- 8. Staying Engaged with Business Intelligence Manuals
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Business Intelligence Manuals
- 9. Balancing eBooks and Physical Books Business Intelligence Manuals
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Business Intelligence Manuals
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Business Intelligence Manuals
 - Setting Reading Goals Business Intelligence Manuals
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Business Intelligence Manuals
 - Fact-Checking eBook Content of Business Intelligence Manuals
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development

- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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