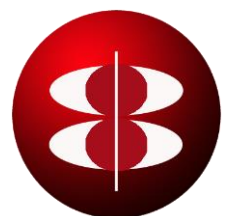# Embedded Analytics, Intelligent Apps & AI Automation

Instructor: Mike Ferguson
Duration: 1 Day

OVERVIEW

Although analytics in many organisations is well established, it is still the case that perhaps no more than 25% of employees make use of reports and dashboards from BI tools with even fewer using machine learning models or AI. There is still a long way to go if companies are to realise the promise of using ML and AI to automatically prevent problems, seize opportunities and continually optimise business processes in everyday business operations.

The vision that many executives have is to make use of BI, ML and AI to increase the level of automation and to enable everyone in the company to contribute towards improving business performance. They want to create an 'always on' data and AI-driven intelligent business where BI and machine learning models are deployed right across the business so that every person, and every application, in the enterprise is able to leverage the right insights at the right-time in every activity to help them contribute to the overall performance of the business. Therefore, it should be possible to *embed* BI and machine learning models into operational business processes to guide and drive decisions and actions in everyday business operations. It should also be possible to automate more using self-learning AI. This would move organisations towards creating *intelligent applications*, and utilising *AI driven automation* for right-time business process optimisation and decision management. This includes embedding analytics into all customer facing applications and websites to enable a personalised customer experience as well as partners and suppliers being guided by BI, alerts, and recommendations. The objective is to move towards automated, self-learning, AI-driven business operations.

To make this possible requires:
- Trusted and compliant data
- BI web services to integrate BI into operational business processes
- JavaScript to embed BI into websites
- Developing and deploying machine learning models (ML) for use in automatic real-time scoring and analysis
- Real-time monitoring of operational events to detect exceptions and opportunities as they happen
- On-demand and event driven data integration for real-time analytics
- On-demand and event driven reporting

- Rules engines to make automatic decisions and take automatic actions
- Using prescriptive machine learning models for automated alerts
- Using prescriptive machine learning models for live recommendations
- Reward oriented re-enforcement learning
- Guided analytics
- Dynamically guided smart processes
- Data governance for trusted data
- Live dashboards and scorecards for situational awareness
- Dynamic event-driven budgeting and planning

This one-day seminar shows how you can embed BI, ML and AI-automation into applications and processes to make your company data and AI-driven. The purpose is to achieve 'always on' business optimisation, dynamic planning by automating, guiding, and empowering employees, business partners, suppliers, and customers to make better decisions to improve business performance. It provides a roadmap and methodology to creating the *right-time intelligent enterprise* by taking an in-depth look at the technologies and methodologies needed to make it happen.

AUDIENCE

This seminar is intended for business and IT professionals responsible for information delivery, business integration and leveraging BI, ML and AI in operational environments. It assumes that you have already built analytical systems and are now looking to leverage insights produced in everyday operations.

LEARNING OBJECTIVES

Attendees will learn how to justify, architect, and integrate AI, machine learning models and business intelligence into operational business processes and applications as part of a coordinated program to improve business performance. They will learn how to use automatic real-time event processing to monitor operational events as they happen to detect problems, identify opportunities, and drive and guide business operations. They will learn how to create intelligent apps and how to use AI to automate tasks. Attendees will also understand how to use real-time data integration, on-demand decision services, prescriptive machine learning models as a service, BI web services, queries, real-time decision engines, enterprise alerting and business process automation to put analytics to work in driving every-day business operations.

MODULE 1: AN INTRODUCTION TO DATA-DRIVEN BUSINESS OPTIMISATION

This session looks at how embedded analytics, machine learning and AI-automation can help companies improve efficiency and effectiveness of decision making in operational business processes. It looks at the business benefits of embedded analytics, intelligent apps, and AI automation, where businesses want to utilise these capabilities in core applications and processes at what is needed to make it possible.

- What do we mean by embedded analytics and intelligent apps?
- What is AI automation and what can it do?
- Business benefits – Why use embedded analytics, event-driven prescriptive machine learning models, and AI-automation?
- How can it help optimise business and improve effectiveness?
- Examples and case studies of using embedded analytics, intelligent apps, and AI automation in practice, e.g., IoT analytics, fraud detection, personalising the customer experience, supply chain optimisation
- What's needed to get started?
- Key mistakes and how to avoid them

MODULE 2: TECHNOLOGIES AND TOOLS FOR THE DATA-DRIVEN INTELLIGENT ENTERPRISE

This session looks at the technology components to consider when implementing embedded analytics, intelligent apps, and AI-automation

- BI as a service for on-demand insights
- Predictive ML model services for on-demand scoring
- Prescriptive ML model services for on-demand recommendations
- MLOps for ML model management
- AI Automation tools
  - Process mining
  - Robotic Process Automation
  - AI-driven orchestration, e.g., IBM Watson Orchestrate
- Using machine-learning models embedded in databases
- Augmented analysis for assisted rapid problem identification
- Embedding machine learning models and BI services into operational applications to create intelligent apps
- Scalable messaging e.g., Kafka, AWS Kinesis, Azure Event Hubs, Solace,
- Streaming analytics pipelines on real-time data

- Event driven data integration
- Event-driven prescriptive ML for automated actions
- Using real-time data and ML for situational awareness dashboards
- Decision / rules engines for automated decision management
- Automated Action services
- Pushing alerts and recommendations to mobile workers
- The role of business integration technologies such as REST, GraphQL, Enterprise Service Bus and Business process management
- Low code / no-code automation using ML and tools like Microsoft PowerAutomate

MODULE 3: ARCHITECTURES AND METHODOLOGIES FOR CREATING THE SMART ENTERPRISE

This session looks at the architecture options for integrating analytics and ML into applications and implementing event processing for operational decision management. It also looks at the pros and cons of these options and at methodologies for doing it.

- Embedding analytics and ML – why a single approach is not enough
- A methodology to successfully implement embedded analytics and ML
- Understanding user communities, roles, and the applications they use
- Understanding business processes, process events and external events
- Right-time operational analytics requirements - Who needs what BI, ML and AI automation and when?
- Integration options for internal and external exploitation of right-time intelligence, prescriptive analytics, and automation
  - Integrating real-time insights into dashboards and planning
  - Using on-demand analytical and automated decision services in a SOA
  - Integrating BI, ML, and automation with business process management (BPM) software
  - Automatic decision services
  - AI-driven orchestration and actions
  - Edge computing – Real-time analytics at the edge
- The implications of right-time embedded analytics and ML on existing analytical systems

- Pros and cons of different options
- Identifying the best architecture option for role-based business optimisation

MODULE 4: EMBEDDING ANALYTICS AND AI INTO OPERATIONAL APPLICATIONS AND PROCESSES

This session looks at why embedding analytics in applications and process and introducing automation is becoming mission critical to reducing costs and improving efficiency. It looks in how to create intelligent apps and processes by invoking analytical ML and AI services from applications and business process management software. It focuses on how to use orchestration to leverage analytics, ML and AI automation and how to monitor cost and efficiency of business processes.

- Integrating BI, ML and AI into operational applications and business processes using on-demand web services
- Automating human tasks using AI-driven robotic process automation and intelligent document processing
- The power of human and AI-driven orchestration
- Automation building blocks
- The AI-driven automation process
- Human and AI-driven decision and action automation
- Monitoring operational business processes
    - Change Data Capture
    - Using event-driven data integration and in-memory data
    - Streaming analytics
    - Using predictive models for automated analysis, scoring and pattern detection
    - Using rules engines for automated decision management
    - Data streaming technologies –
        - Amazon Kinesis, Azure Event Hubs and IoT Hubs, Google Cloud Pub/Sub, Kafka, Solace
    - Streaming analytics technologies
        - Google Cloud DataFlow, IBM Streams, Kafka Streams, SAS Stream Processing, Spark Streaming, Striim, Ververica Apache Flink, VoltDB
- Deploying ML models at the edge to monitor IoT devices and optimise processes
- Optimising operational processes using prescriptive analytics and live recommendations

MODULE 5: USING EMBEDDED ANALYTICS, INTELLIGENT APPS AND AI AUTOMATION IN CRM AND SUPPLY CHAIN OPERATIONS

This session looks at how to create 'intelligent apps and processes in front-office and back-office business operations. It discusses how right-time analytics, ML and AI can be leveraged across all customer touchpoints for targeted and personalised customer marketing, sales, and service and for improving customer retention and satisfaction while lowering cost. It also looks at how to optimise supply chain operations using prescriptive analytics for alerting and automated actions

- Building a customer data platform (CDP) for single view of the customer
- The customer intelligent front office - using embedded BI, ML and AI-Automation to improve marketing, sales, and service
- Leveraging automated analysis for alerting and recommendations to guide front-office operations
- Integrating analytics and ML with multi-channel campaign management systems
- Using operational BI, ML, and decision automation to support a mobile sales force
- AI-driven Chatbots in customer service
- Acting on insights from mobile devices
- Using real-time and prescriptive analytics in fraud detection
- Continuous monitoring of supply chain performance and operational cost
- Automating supply chain optimisation using demand intelligence
- Right-time alerting in supply chain operations

MODULE 6: ACTIVE DYNAMIC PLANNING AND MANAGEMENT FOR CONTINUOUS OPTIMISATION

This session shows how business integration software can be used to integrate BI, ML and AU automation services with business planning to dynamically manage business performance at strategic and operational levels

- Integrating prescriptive analytics and on-demand operational BI into planning scorecards with KPIs for live alerts and operational performance monitoring
- AI-assisted dynamic planning - taking action to solve operational business problems as they happen to keep your business optimised

PRESENTER

Mike Ferguson is Managing Director of Intelligent Business Strategies Limited. As an independent IT industry analyst and consultant, he specialises in BI / analytics and data management. With over 40 years of IT experience, Mike has consulted for dozens of companies on BI/Analytics, data strategy, technology selection, data architecture, and data management. Mike is also conference chairman of Big Data LDN, the fastest growing data and analytics conference in Europe. He has spoken at events all over the world and written numerous articles. Formerly he was a principal and co-founder of Codd and Date Europe Limited – the inventors of the Relational Model, a Chief Architect at Teradata on the Teradata DBMS. He teaches popular master classes in Data Warehouse Modernisation, Big Data Architecture & Technology, Centralised Data Governance of a Distributed Data Landscape, Practical Guidelines for Implementing a Data Mesh (Data Catalog, Data Fabric, Data Products, Data Marketplace), Real-Time Analytics, Embedded Analytics, Intelligent Apps & AI Automation, Migrating your Data Warehouse to the Cloud, Modern Data Architecture and Data Virtualisation & the Logical Data Warehouse.

ONSITE TRAINING

All training can be given as onsite education, tailored to your company's requirements. For further details please contact us at training@intelligentbusiness.biz