Business Intelligence Smart Play

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SENIOR TECHNOLOGY LEADER

Special Expertise in Business Intelligence, Artificial Intelligence and Application Development.

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Recognized for hands-on leadership, diverse stakeholder engagement, entrepreneurship, and strategic execution.

HIGHLIGHTS

- Transformed Enterprise Business Intelligence integrated with 500+ Cloud and On-Premise sources, serving 150k+ users with technology architecture revamp, data governance and distribution, agile methodology, and DevOps. Reduced Service operation cost, reduced data risk, increase go to market strategy by 50%.
- Transformed Enterprise Learning Service with M+ users, integrated with 50+ cloud and on premise systems and learning providers with simple user experience and advance features such as recommendations, gamification.
- Design and Architected Cloud Data Engineering on GCP
- Spearheaded enterprise Artificial Intelligence production ready and R&D initiatives
  - Automated diverse panel intelligence to reduce bias in applicant hiring process
  - Realtime and Offline sentiment analysis (text, video) for conference, learning audience
  - Employee engagement analysis based of interaction with HR systems, TeamSpace and and retention strategy
  - Domain specific conversation bot on collaborative platform WebEx team
  - Simple asset identification via object identification.
  - Smart Building based on IoT: Smark Conference Check In, Conference Room personalization, Smart Lobby personalization for customer visits
- Led enterprise mobile platforms for career navigation and enterprise learning

EDUCATION

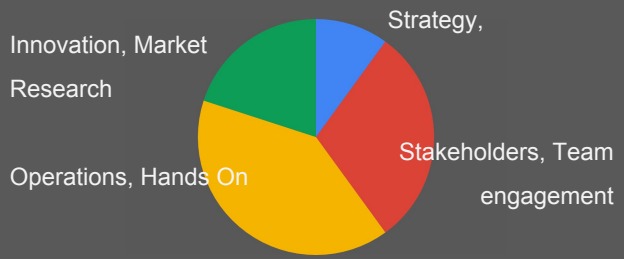
Master of Business Administration (MBA)

San Jose State University

Bachelor of Engineering (Electronics)

University of Bombay, India

TIME LEVERAGE



Business Transformation with Business Intelligence: Plan of Attack

- Business Intelligence Challenges
- Pragmatic Strategy
- Business Transformation Consideration
- Business Intelligence Capabilities
- Data Engineering Considerations
- AI Development Consideration
- Use Cases
- Technology Stack
- Use Case Implemented: Recommendation System

Business Intelligence Challenges

Provide Business Value Today - Ready for Tomorrow (Gartner)

- Source Agnostic Data
- Consistent Definition
- Data Quality and Governance
- Data Auditability, lineage

- Digitization of Data Interchange
- Simple Integration
- Data Services and Data Portal
- Reporting and Analytics
- Insightful Analytics
- Analytics Mobility

- Granular Security
- Policy and Role based Experience and Access
- Data Sovereignty
- Compliance

- Fast Time to Market
- Transformation Velocity
- Decoupling Transaction Systems
- Data Volume, Velocity, Veracity
- Elastic and Flexible
- Scale for Future

Business Intelligence Pragmatic Strategy

Pervasive Intelligence

4

Mobility, embedded analytics, analytics on edge, faster decision making locally, competitive advantage

Artificial Intelligence

3

Automate actions, unprecedented insights and speed to improve internal and customer facing processes

Advance Analytics

2

Leverage Big Data to solve difficult problem, uncover new opportunities.

Cloud Enablement

1

Agile compute and storage scalability, Technology, global accessibility, affordability, security

Transformation Considerations: Business Outcome Focused

Why to transform

- Pain Points with customer experience, Market trends
- Business Opportunities
- Innovation Themes: Speed, Cost, Easy, Aggregate, Narrow
- **Targeted Business Outcome**

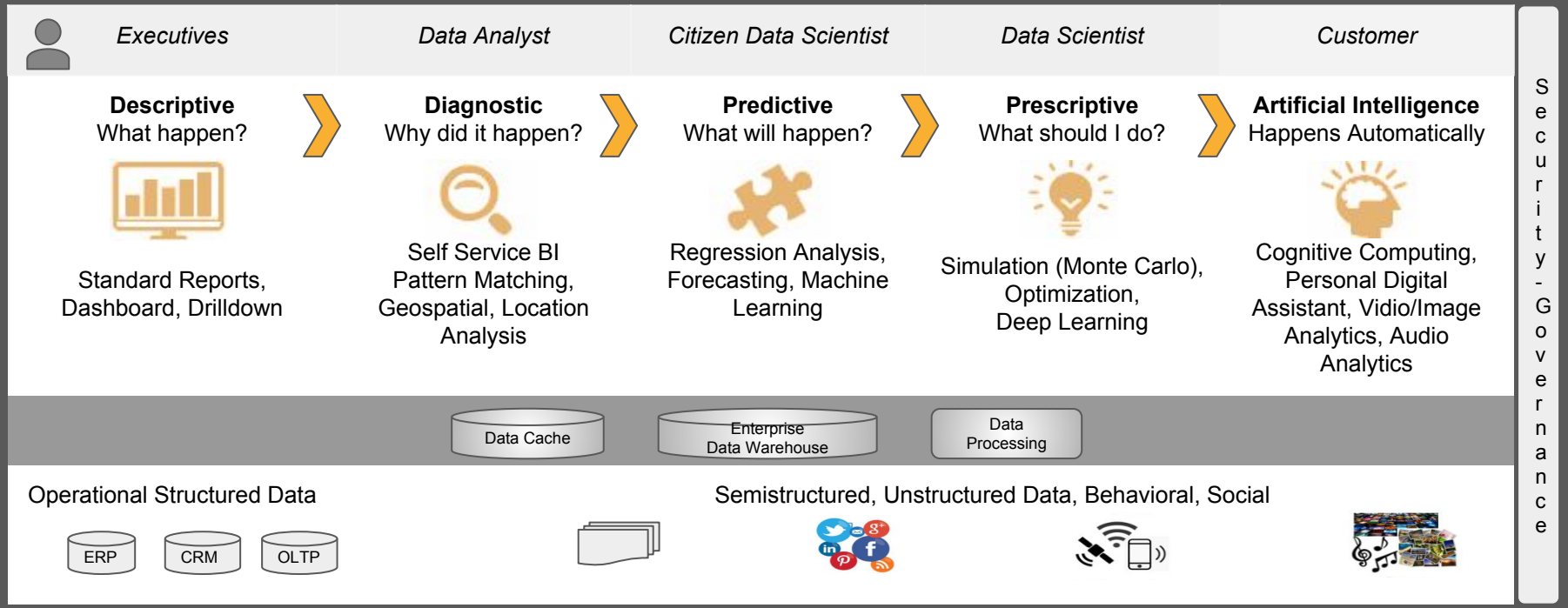
What to transform

- Identify gaps and impact to Business Process, System Architecture, Data
- Knowledge and Skill gap
- Technology trends
- Who can help - internal/ external
- Early Adopters, Startups *
- Compliance, Privacy
- **Long term and intermediate Business Outcomes**

How to transform

- Prioritized Roadmap of Analytical Capabilities: Descriptive to AI
- Leadership Buy In, Stakeholder engagement (internal / external)
- Scaled Agile, DevOps, Start Small, Fail Fast
- Data Engineering Considerations
- AI Engineering Considerations
- Measure - Adjust - Repeat

Business Intelligence Capabilities



Today: Descriptive and Diagnostic Analytics is more prevalent
Near Future: Predictive and Prescriptive will be prevalent
Future (3+ years): Augmented Analytics driven by AI will be more relevant
Source: gartner.com

Data Engineering Considerations

- **Data Format**
- **Interface**
- **Reliability**
- **Latency**
- **Security**

- **Reliability**
- **Latency**
- **Cost**

- **Flexibility**
- **Schema Design**
- **High availability/ redundancy**
- **cost**

- **Cleansing**
- **Filtering**
- **Enriching**
- **Agregatting**
- **Machine Learning**

- **Latency**
- **High availability/ redundancy**
- **Flexibility**
- **APIs**

Compute

- Cloud - PaaS, IaaS
- Hybrid Cloud
- Horizontal Scaling

Technology

- Open Source
- License, Supported
- Hybrid

Operations

- Lean, Scaled Agile
- DevOps
- Co located, Global Team
- Diversity

AI Development Considerations

Define Objective - Use Case

- Get familiar with AI
- Collaborate with domain SME to define a use case, agree on business outcome, identify problem you want to solve
- Define success criteria
- Verify availability of data
- Carry out basic data exploration
- Identify easily obtainable data

Build Data and Model

- Define model building and validation methodology
- Acquire data, determine transformation, features
- Build candidate models
- Carry out proof of concept, look out for bias problem, decide on model
- Define modeling reproduction process, with monitoring and maintenance plan
- Decide whether to continue

Production Rollout

- Define, evaluate and automate production data pipeline architecture
- Build batch/ API prediction system
- Production Rollout

Continuous Improvement

- Monitor end to end system, measure predictions, business outcome for agreed measures and performance
- Improve Continuously based on feedback back loop

Use Cases

Banking

- Loan Approval
- Fund Management
- Risk Assessment based on non fin data
- Investment Strategy
- Marketing Fin Product
- Threat Detection
- Identity Detection

Health

- Assist Medical professional in diagnostic and decision making
- Suggest treatment for common or rare conditions
- ICU assistant, anesthesia automation
- Health monitoring to prevent critical events
- Preventive suggestions based on behavioral, Lifestyle monitoring
- Pharmaceutical process analytics and personalized medicine

eCommerce

- Personalized marketing based on behavior, social, profile data
- New Product Design
- Retail demand forecasting
- Supply Chain optimization
- Automate repeat jobs - enquiries, fulfilments
- Customer Sentiment Analysis
- Fraud detection

Other Sectors

- Cyber Security
- Agriculture Robot
- Assessing crop/soil health
- Automatic computer grading
- Manage Judicial Cases
- Manage repetitive public sector task

Business Intelligence Technology Stack

Best Practice: Off the shelf product , Horizontal Scaling, Minimum Coding, Cheap, A Support System

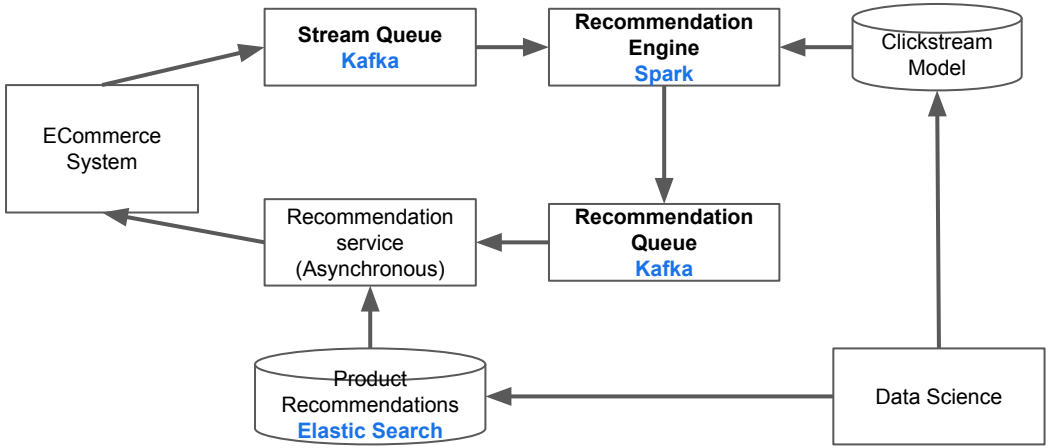
Use best of the breed products to focus on your application logic rather than scalability and redundancy.

Service	**Visualization** Tableau, MicroStrategy	**Data Clients** Web Apps, Web Services, Mobile Apps, Bots	**Data Science** Interpreters, Notebooks	
Storage	**Storage** HDFS- Hadoop Distributed File System	**NoSQL DB** Hbase, Cassandra		**Ambari** Provisioning, Managing, and Maintaining Hadoop Clusters **Zookeeper** Coordination **Yarn, MESOS** Resource Management
Process/ Integration	**Search** Solr	**ETL** Pig, Spark, Informatica	**Analytical SQL on Hadoop** Hive, Drill, Impala	**Machine Learning** Spark MLIIB, Mahout, R
Acquisition	**RDBMS Data Exchange** Sqoop, splice	**Log Collector** Flume, Kafka	**Streaming** Strome, Kafka	
Data Sources	    Structured - Semi Structured - Unstructured Data			

Use Case Implemented: Recommendation System

Problem Statement: A business wanted to recommend learning product in real time while user is browsing Learning portal. Recommend based (a) on the current learning product being viewed (b) on the clickstream during current browsing session.Real Time (within Seconds), Context Specific, Scalable

Recommendations
- Recommendation based on the learning product being viewed are static - a standard set for every learning in catalog.
- Recommendation based on click streams are dynamic. They will change as user goes through multiple pages.
- Solution should combine recommendations to give a consolidated list



Architecture Consideration - Recommendation Engine: Spark - Recommendation Service: Service combines learning and clickstream based recommendations and provide an integrated list to browser. - In Memory DB for faster data retrieval..	- Ecommerce App: Asynchronous browser thread keeps querying the recommendation service for current list and renders on the page. User moves to next page without any delays. - Data Stream: Keep batch interval high, Number of Spark partitions = Number of Kafka partitions. Kafka provides delivery and ordering guarantees, decouples publisher and subscriber thread, capable of node failure	- Recommendation Engine: Learning product based recommendation based on product to product collaborative filtering. Learning product registered together in past. In case of cold start provide most popular learning products. For new product use matrix factorization (base on old product features, New product features). - Determine infra sizing based on items in catalog, number of user traffic per sec and year.

Thanks!

Any Question or Feedback?

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Appendix List

- Additional Considerations
- Scaled Agile, DevOps for Operations Transformation
- Technology Evolution and Future Trend
- AI Evolution
- Business Intelligence Logical Architecture
- Open Source - Cloud Mapping
- BI Front Runners: Startups