

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	8BBAC712F66ACA4828C4187FC79B6FAB
Project Name	Leveraging Data Analysis for Optimal Marketing Campaign Success
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

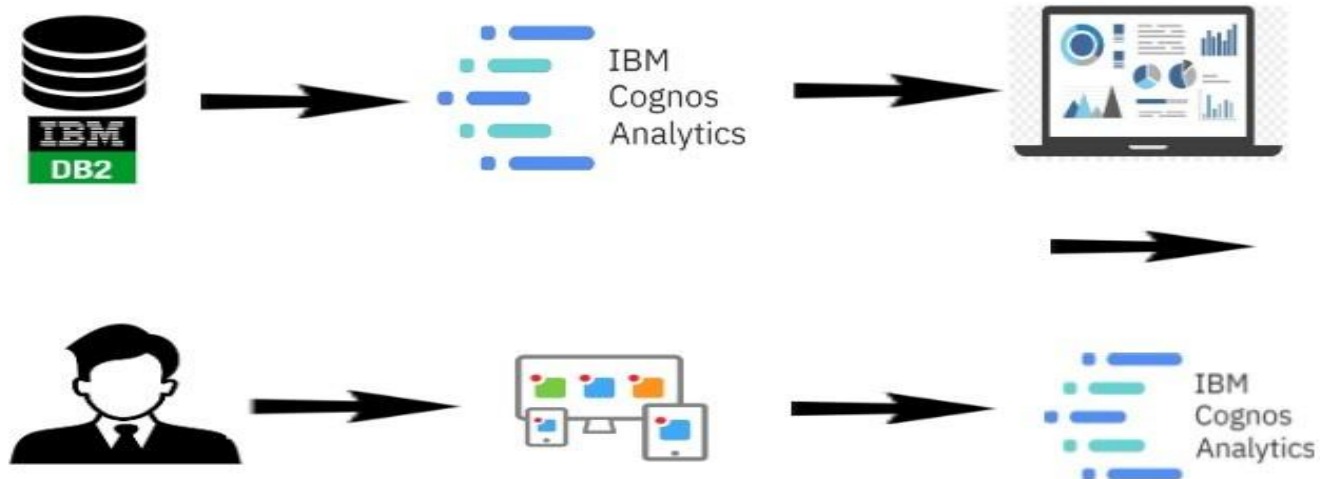


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	Data Collection	Gathering and aggregating data from various sources, including website analytics, social media, customer databases, and third-party tools.	Web scraping, API integrations, data connectors
2	Data Storage	Storing collected data securely and efficiently for analysis.	Relational databases (e.g., MySQL), NoSQL databases (e.g., MongoDB), Data Warehouses (e.g., Amazon Redshift)
3	ETL (Extract, Transform, Load)	Processing and preparing data for analysis, including data cleaning, transformation, and loading into a data repository.	Apache Nifi, Apache Spark, Talend
4	Data Analysis	Analyzing data to extract insights, trends, and patterns that can inform marketing strategies.	Python (pandas, NumPy), R, SQL
5	Data Visualization	Creating visual representations of data to make insights more accessible to stakeholders.	Tableau, Power BI, Matplotlib, D3.js
6	Predictive Analytics	Using machine learning and statistical models to predict customer behavior and optimize marketing efforts.	Python (scikit-learn, TensorFlow), R, Jupyter Notebook
7	A/B Testing	Conducting controlled experiments to compare the performance of different marketing messages, visuals, or strategies.	A/B testing platforms (e.g., Optimizely), Custom scripts
8	Customer Segmentation	Dividing the customer base into distinct groups based on demographics, behavior, or preferences.	Machine learning clustering algorithms, customer segmentation tools
9	Marketing Automation	Automating marketing processes, such as email campaigns, based on user behavior and data triggers.	Marketing automation platforms (e.g., HubSpot, Marketo), Custom scripting
10	Social Media Monitoring	Monitoring social media platforms for customer sentiment, feedback, and brand mentions.	Social listening tools (e.g., Brandwatch, Hootsuite), sentiment analysis libraries
11	CRM Integration	Integrating with Customer Relationship Management systems to better understand and serve customers.	CRM software (e.g., Salesforce, Zoho), API integrations

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Scalability	The ability of the application to handle a growing volume of data and users as marketing campaigns expand.	Cloud computing (e.g., AWS, Azure, GCP), Horizontal scaling, Load balancing
2	Real-time Analysis	The capability to provide insights and make data-driven decisions in real-time as marketing events occur.	Stream processing platforms (e.g., Apache Kafka, Apache Flink), Real-time dashboards
3	Data Security	Ensuring the protection of sensitive customer data and compliance with data privacy regulations (e.g., GDPR).	Data encryption (TLS, SSL), Access controls, Compliance management software

S.No	Characteristics	Description	Technology
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

References:

<https://c4model.com/>

<https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>