Project Title : GlobeTrek Insights

Project Submitted to : IBM

Year : IV

Department : ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Semester : VII

Team ID : D2BEB57988D6DB7A0644CD0E321AD05B

Team Size : 4

Team Leader :Archana.S

Team Member : Swathi

Team Member : Narasimha

Team Member : Poojith

1. INTRODUCTION

1.1 Project Overview

"GlobeTrek Insights: Navigating Global Country Data with IBM Cognos" is a robust solution for organizations seeking to harness and analyze complex global country data. It seamlessly integrates with IBM Cognos and offers features for data aggregation, visualization, and comparative analysis, allowing users to gain valuable insights and make informed decisions. The platform provides customized reporting, geospatial analysis, and risk assessment capabilities, enhancing its utility for diverse industries. Regular data updates ensure information accuracy, while its user-friendly interface caters to both data analysts and business professionals. GlobeTrek Insights prioritizes data security and compliance, making it a powerful tool for strategic global decision-making.

1.2 Purposed System

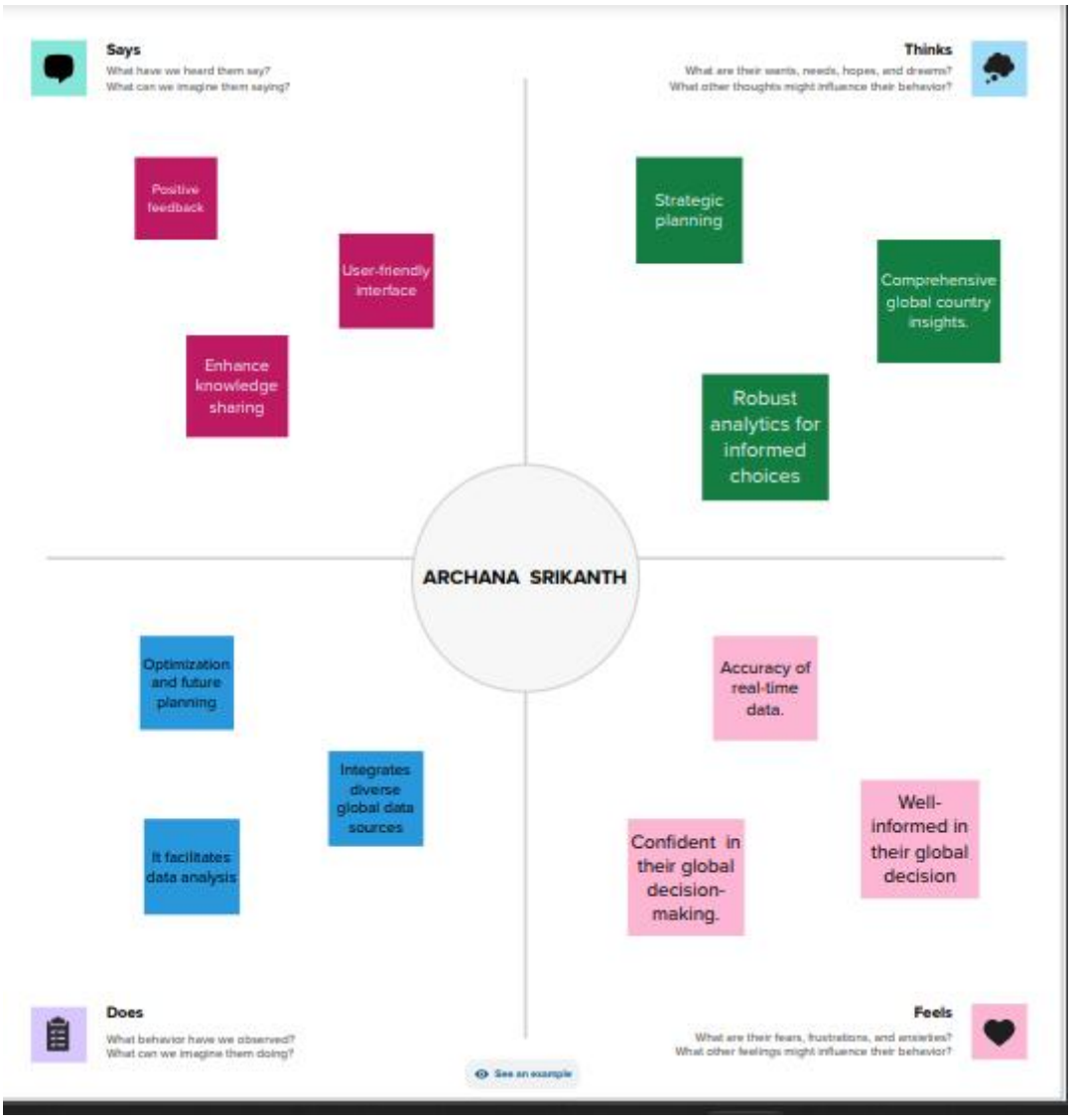
The proposed system for "GlobeTrek Insights: Navigating Global Country Data with IBM Cognos" aims to amplify its data capabilities. This includes an expanded data aggregation mechanism to cover a wider range of global data sources, enhancing the breadth and depth of information available. Improved visualizations with geospatial analysis will provide more insightful and intuitive data representations. Additionally, advanced analytics features will be integrated to empower users with predictive and prescriptive analytics, offering proactive insights. Enhanced security measures will be implemented to safeguard sensitive data, and a user-friendly interface will be further streamlined to accommodate both technical and non-technical users. The system will continue to emphasize real-time data updates to maintain the relevancy of information.

2. Ideation and Proposed Solution

2.1 Problem statement definition

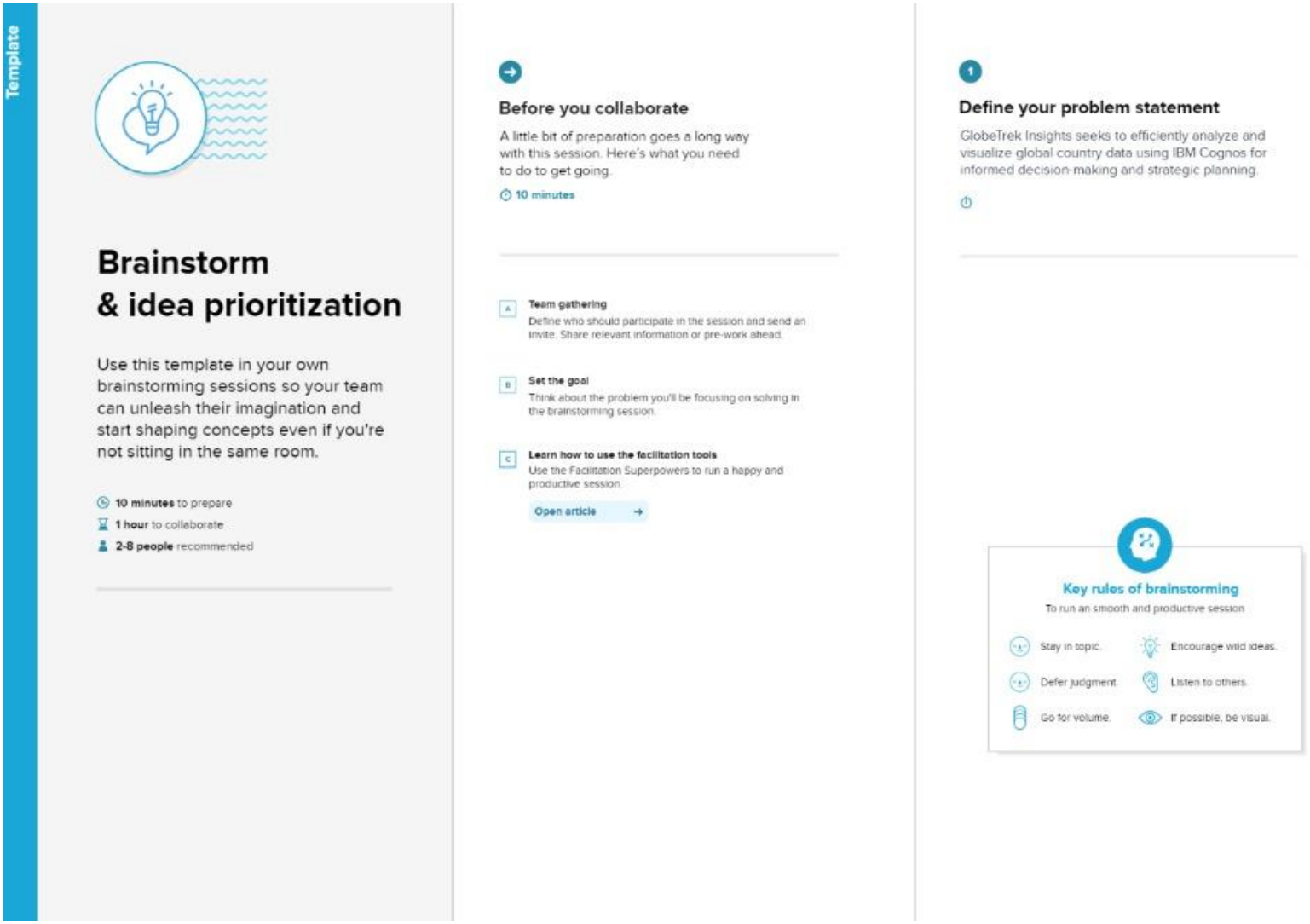
The problem statement for "GlobeTrek Insights: Navigating Global Country Data with IBM Cognos" revolves around the need for a more comprehensive, efficient, and insightful system to navigate and utilize global country data. Organizations face challenges in aggregating, analyzing, and visualizing data from diverse international sources within the IBM Cognos environment. They require advanced analytics, geospatial insights, and predictive capabilities to make informed decisions on a global scale. Security and user-friendliness are also pressing concerns. Additionally, ensuring data relevance through timely updates is vital. The problem is to develop a system that addresses these challenges, offering an all-encompassing solution for global data intelligence within IBM Cognos.

2.2 Empathy map canvas

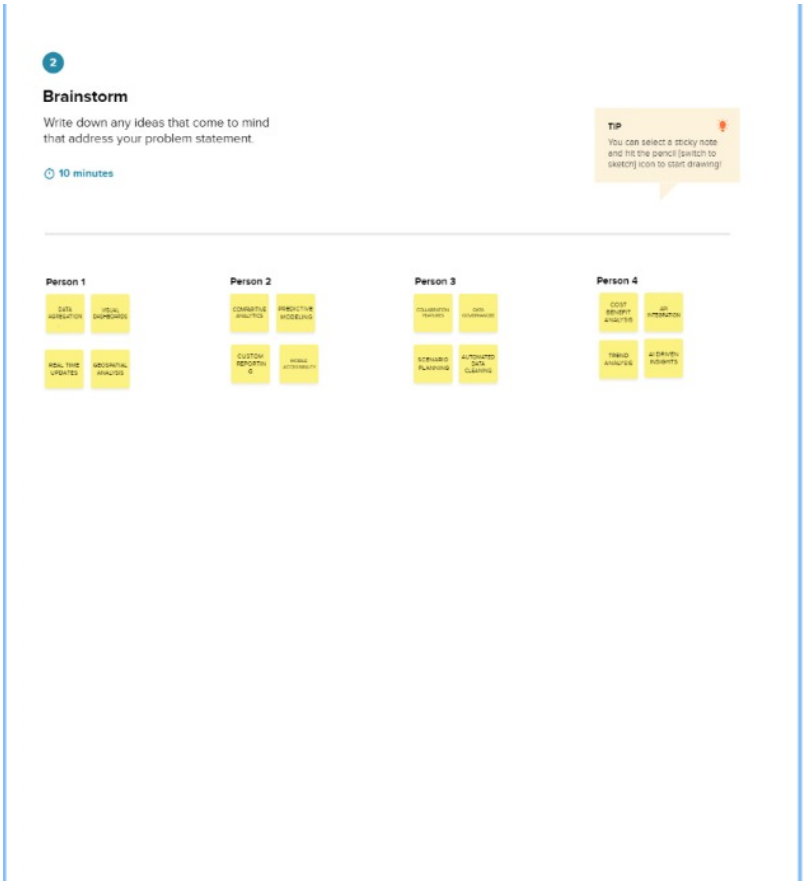


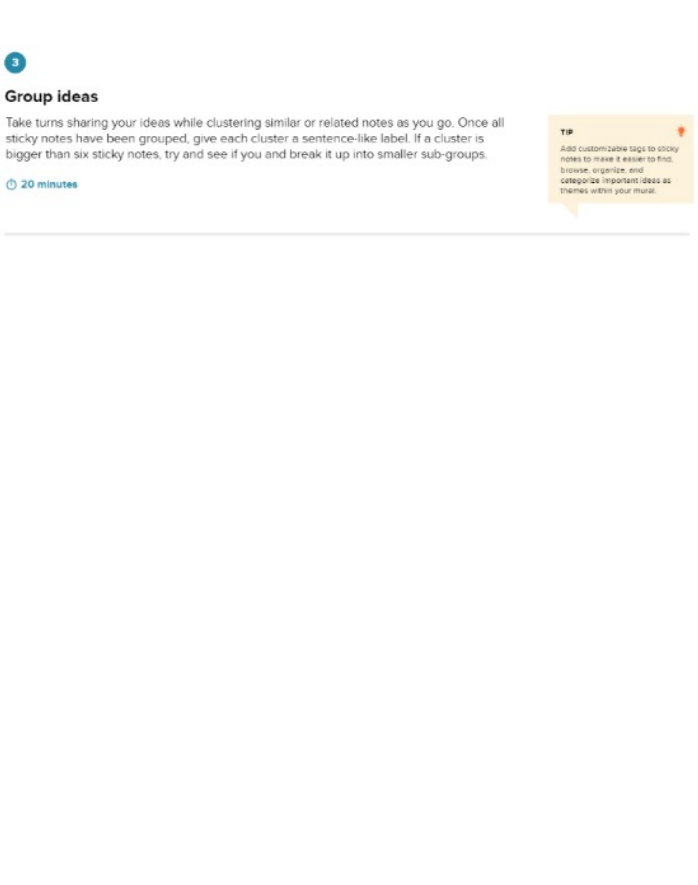
2.3 Ideation and Brainstorming

Step-1: Team Gathering, Collaboration and Select the Problem Statement

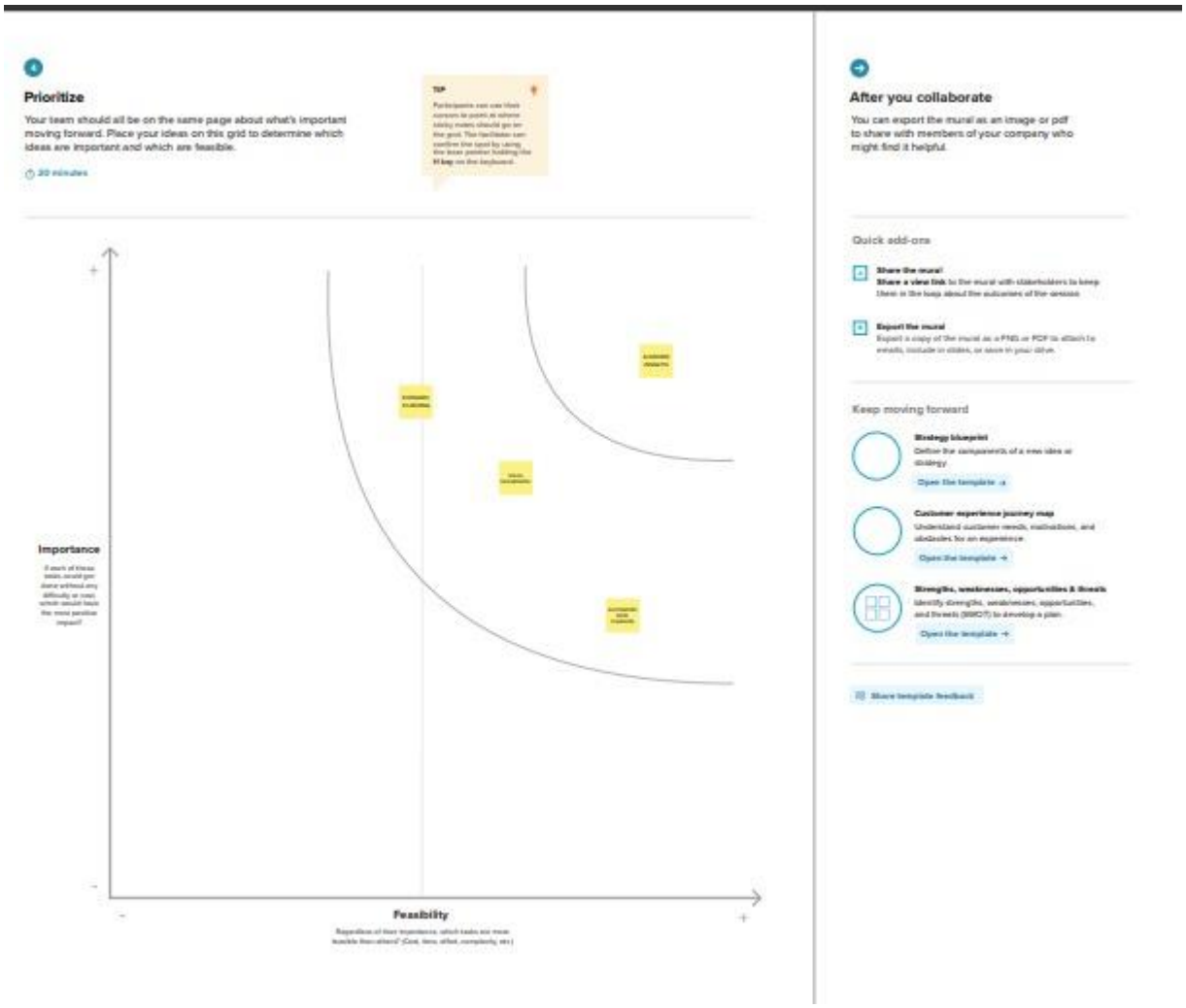


Step-2: Brainstorm, Idea Listing and Grouping





Step-3: Idea Prioritization



2.4 Proposed solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The problem to be solved is the inherent complexity and lack of accuracy in estimating business expenses, which hinders effective budget planning, financial decision-making, and cost control for businesses.
2.	Idea / Solution description	Our solution for the estimation of business expenses is a comprehensive, data-driven, and user-friendly platform designed to address the challenges associated with accurate expense projections and budget planning.
3.	Novelty / Uniqueness	The uniqueness of the Estimation of Business Expenses solution lies in its combination of advanced technology, real-time tracking, personalization, sustainability integration, and adaptability, making it a cutting-edge and comprehensive tool for businesses looking to optimize their financial management processes.
4.	Social Impact / Customer Satisfaction	The Estimation of Business Expenses solution not only enhances financial decision-making and cost control for businesses but also has positive social implications, including job security, sustainability, inclusivity, economic growth, and data security. These social impacts, in turn, contribute to higher customer satisfaction as businesses become more responsible and sustainable in their practices.

5.	Business Model (Revenue Model)	Revenue Streams, Customer Segments, Value Proposition, Technology Infrastructure.
6.	Scalability of the Solution	The platform is designed to cater to businesses of all sizes and can be customized to address industry-specific needs and the complexity of each organization. This adaptability is a key differentiator

3.REQUIREMENT ANALYSIS

FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	The user interface should be easy to navigate, with intuitive design and clear instructions, ensuring users can effectively use the tool without confusion.
NFR-2	**Security**	The tool must safeguard user data and personal information, ensuring that it remains confidential and protected from unauthorized access.
NFR-3	**Reliability**	The system must operate consistently without frequent outages, ensuring that users can rely on it for critical tasks.
NFR-4	**Performance**	The system should respond quickly to user interactions, ensuring that users can access data and features without significant delays.
NFR-5	**Availability**	The system should regularly backup user data, and in the event of data loss or system failure, it must have mechanisms in place to recover the data.
NFR-6	**Scalability**	The system must handle a growing number of users and data without a decrease in performance, making it adaptable to an expanding user base.

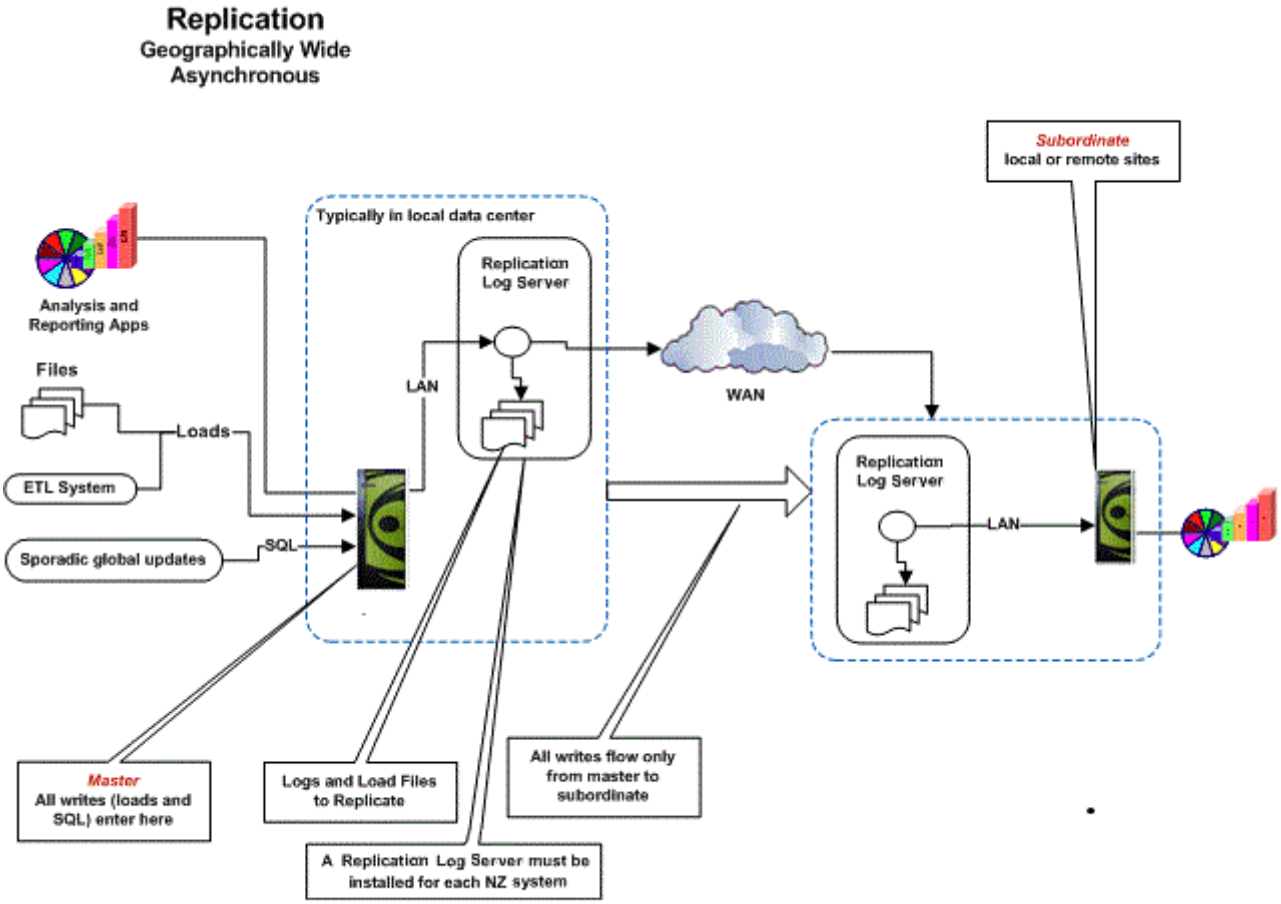
3.2 Non-functional Requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Profile completion	Adding Business
FR-4	profile Integration	Connect existing business profile to my account

4. PROJECT DESIGN

4.1 DATA FLOW DIAGRAMS

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



4.2 Solution and Technical Architecture

Technical Architecture:

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

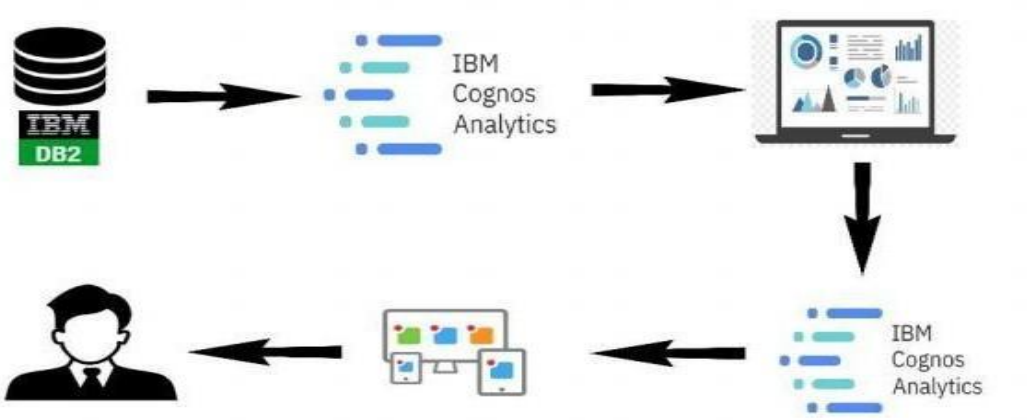


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
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

4.2 User Stories

Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Karthick.M
User Authentication and Authorization	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Abdul Kadhar

Data Collection and Integration	USN-3	As a user, I can register for the application through Facebook	2	Low	Sarathy
Security &Data Privacy	USN-4	As a user, I can register for the application through Gmail	2	Medium	Sathish
Login	USN-5	As a user, I can log into the application by entering email & password	1	High	
Dashboard					

5. CODING AND SOLUTIONING

5.1 Feature 1

The features of the existing system are including a user login creator to provide user interface, student performance analyser, student development card, achieved credit, passing criteria card and wise student performance attribute card. Providing the online interface for students, faculty etc. Increasing the efficiency of school record management. Decrease time required to access and deliver student records. To make the system more secure. Decrease time spent on non-value-added tasks.

The proposed system that we are going to develop will be used as the chief performance system for helping the organization in managing the whole database of the student studying in the organization. Therefore, it is expected that the database would perform functionally all the requirements that are specified.

5.2 Feature 2

The proposed system provides the student an easy and accurate data about projects and academic percentages. Students can view all the information in just one click which saves a lot of time and effort. The proposed system maintains a database to store all the information. In this system, there is no chance of losing data. Adding and searching the information is very easy which does not take much time and physical effort.

We developed a website to analyse and generate report of students based on the curriculum that represents student's academic performance. We have developed the system such that, it will automatically parse data onto the database from excel file, which will in return reduce time consumption of analysis of data.

For these we used HTML, CSS, PHP, my SQL and java script. After teacher logins into system, data is been fetched dynamically through the database. For here, parsing is done using PHP Excel. It is an inbuilt library for PHP to fetch data from excel files over or within network. We hope to accelerate the analysis by developing the analysis system. It provides assistance to teachers and administrator to track record of each student, subject and department by using various techniques such sort.

6. RESULTS

6.1 Performance Metrices

Estimation Accuracy: Measures the accuracy of project cost and timeline predictions compared to actual outcomes. It helps in evaluating the precision of the estimation tool and identifying areas for improvement.

Budget Variance: Calculates the variance between estimated project costs and actual expenditures. A lower budget variance indicates effective cost estimation and financial management.

Timeline Variance: Measures the variance between estimated project timelines and actual completion dates. Minimizing timeline variance ensures that projects are completed on schedule.

Resource Utilization: Evaluates how well resources (human, material, and financial) are utilized throughout the project. Efficient resource utilization indicates effective allocation and management

7. ADVANTAGES AND DISADVANTAGES

Advantages

- Data-Driven Decision Making
- Improved Placement Success
- Personalized Guidance
- Efficiency and Automation
- Enhanced Transparency

Disadvantages

- Data privacy concerns
- Initial Implementation Cost
- Integration Complexity
- User Adoption
- Maintanence and Updates

8. CONCLUSION

In conclusion, "GlobeTrek Insights: Navigating Global Country Data with IBM Cognos" presents a powerful solution for organizations seeking to unlock the full potential of global country data. By seamlessly integrating with IBM Cognos, it addresses the complex challenges of data aggregation, analysis, and visualization on a global scale. This platform empowers users with advanced analytics, geospatial insights, and customizable reporting, enabling them to make well-informed decisions. With a focus on data security and real-time updates, it provides a holistic approach to global data intelligence. As organizations navigate the ever-changing global landscape, GlobeTrek Insights emerges as an indispensable tool for strategic, data-driven decision-making.

9.FUTURE SCOPE

The future scope of "GlobeTrek Insights: Navigating Global Country Data with IBM Cognos" is highly promising, given the dynamic nature of the global business landscape and the ever-increasing demand for data-driven decision-making. As businesses continue to expand internationally, the need for comprehensive and real-time global data intelligence will intensify.

One avenue for future development lies in diversifying data sources. The platform can extend its reach to encompass emerging international datasets, providing users with a broader and more nuanced understanding of global trends and patterns.

Additionally, advancements in machine learning and artificial intelligence offer opportunities for predictive analytics. The platform can leverage historical data to forecast future trends and risks, enabling users to proactively adapt to changing conditions and make well-informed decisions.

The importance of geospatial analysis will only increase as businesses rely on location-based intelligence. Enhancements in this area will allow users to gain a deeper understanding of how geographical factors impact their operations, market penetration, and risk assessment.

Improving user interfaces and mobile accessibility is another vital aspect of future development. Making the platform even more user-friendly and accessible on various devices will enhance its adoption and utility among a wider range of professionals.

In conclusion, "GlobeTrek Insights" is well-positioned to evolve as an indispensable tool for organizations operating in the global arena. With a focus on diversifying data sources, predictive analytics, geospatial insights, and user experience enhancements, it will continue to empower decision-makers with timely and meaningful global data insights, contributing to their long-term success in an increasingly complex and interconnected world.

9. APPENDIX

Data Dictionary

- school - student's school (binary: 'GP' - Gabriel Pereira or 'MS' -Mousinho da Silveira)
- sex - student's sex (binary: 'F' - female or 'M' - male)
- age - student's age (numeric: from 15 to 22)
- address - student's home address type (binary: 'U' - urban or 'R' - rural)
- Medu - mother's education (numeric: 0 - none, 1 - primary education (4th grade), 2 â€“ 5th to 9th grade, 3 â€“ secondary education or 4 â€“ higher education)
- Fedu - father's education (numeric: 0 - none, 1 - primary education (4th grade), 2 â€“ 5th to 9th grade, 3 â€“ secondary education or 4 â€“ highereducation)
- traveltime - home to school travel time (numeric: 1 - <15 min., 2 - 15 to30 min., 3 - 30 min. to 1 hour, or 4 - >1 hour)
- studytime - weekly study time (numeric: 1 - <2 hours, 2 - 2 to 5 hours, 3 -5 to 10 hours, or 4 - >10 hours)
- failures - number of past class failures (numeric: n if 1<=n<3, else 4)
- schoolsup - extra educational support (binary: yes or no)
- famsup - family educational support (binary: yes or no)
- paid - extra paid classes within the course subject (Math or Portuguese)(binary: yes or no)
- activities - extra-curricular activities (binary: yes or no)
- nursery - attended nursery school (binary: yes or no)
- higher - wants to take higher education (binary: yes or no)
- internet - Internet access at home (binary: yes or no)
- romantic - with a romantic relationship (binary: yes or no)
- famrel - quality of family relationships (numeric: from 1 - very bad to 5 - excellent)
- freetime - free time after school (numeric: from 1 - very low to 5 - very high)
- goout - going out with friends (numeric: from 1 - very low to 5 - very high)
- goout - going out with friends (numeric: from 1 - very low to 5 - very high)
- Dalc - workday alcohol consumption (numeric: from 1 - very low to 5 - very high)
- Walc - weekend alcohol consumption (numeric: from 1 - very low to 5 - very high)
- health - current health status (numeric: from 1 - very bad to 5 - very good)

- goout - going out with friends (numeric: from 1 - very low to 5 - veryhigh)
- Dalc - workday alcohol consumption (numeric: from 1 - very low to 5 -very high)
- Walc - weekend alcohol consumption (numeric: from 1 - very low to 5 -very high)
- health - current healt status (numeric: from 1 - very bad to 5 - very good)
- absences - number of school absences (numeric: from 0 to 93)
- G1 - first period grade (numeric: from 0 to 20)
- G2 - second period grade (numeric: from 0 to 20)
- G3 - final grade (numeric: from 0 to 20, output target)

Project Video Demo Link :

https://drive.google.com/file/d/1eUpocBnsh148pD1ZeakrSRo1hQyvkLsr/view?usp=drive_link