Project Design Phase-II

Technology Stack (Architecture & Stack)

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| Team ID | PNT2022TMID18532 |
| Project Name | Estimate The Crop Yield Using Data Analytics |

Technical Architecture:

Review

of

data

by

the

Sensor

/

AI

/

GPS

tracking

Technology

used

Data

visualization

and dashboard

creation

Amount

of

crop

yield

User

data

Collection

of

data

Landscape

Climate/

Rainfall

IBM Cognos

Analytics

Table 1 : Components & Technologies:

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Component | Description | Technology |
| 1. | User Interface | How user interacts with the application e.g. Web UI, Mobile App, Chatbot etc. | HTML, CSS, JavaScript / Angular Js / React Js etc. |
| 2. | Predict climate resiliently | Absorb climatic changes and the factors affecting or contributing to the crop yield. | AI, IoT and blockchain |
| 3. | Pesticide management | Management and usage of proper pesticides that contribute to the higher production of crops | IoT and conventional pesticides |
| 4. | Farm management | Absorbing and implementing the decisions involved in organizing and operating a farm for maximum production and profit | Farm automation |
| 5. | Database | A database is a collection of inter-related information or data stored electronically in a computer system | MySQL, PostgreSQL, Big Query |
| 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. | Data API | Data APIs within the IBM Environmental  Intelligence Suite tap into the breadth and depth of climate, environmental and weather data to provide current and forecasted conditions, and seasonal and sub-seasonal forecasts. | IBM Weather API, etc. |
| 9. | Power API | It allows external applications to connect and interact with Power data, which is solar and meteorological data from satellite observations. | NASA APIs |
| 10. | Infrastructure (Server / Cloud) | Application Deployment on Local System / Cloud Local Server Configuration:  Cloud Server Configuration:l | Local, Cloud Foundry, Kubernetes, etc. |

Table 2: Application Characteristics:

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Characteristics | Description | Technology |
| 1. | Open-Source Frameworks | A software wherein original source code is made freely available and may be redistributed and modified according to the user requirement. | Apache Spark and Hadoop |
| 2. | Security Implementations | User must be logged in with their credentials in order to view information about any concepts. | e.g. SHA-256, Encryptions, IAM Controls, OWASP etc. |
| 3. | Scalable Architecture | A 3-tier architecture wherein application gets data from various sources, manipulates it, stores them in IBM Cloud and visualize them through IBM Cognos. | IBM Cloud, IBM Cognos |
| 4. | Availability | The application being developed is made available to all users(farmers). | Cognos Analytics |
| 5. | Performance | Multiple technologies and services that will improve the usability in agricultural activities | Robots, IoT Agriculture sensors. |