Marwadi University Marwadi Chandarana Group	**Marwadi University** **Faculty of Engineering and Technology** **Department of Information and Communication Technology**
Subject: Capstone Project	**Aim: Ideation and stakeholder need analysis - Intermediate Review**
Date: 24-9-2025	**Enrolment No: 92310133004**

Ideation and Stakeholder Analysis

1. Stakeholder Identification

The project, called Attendance System Using AWS, involves several important groups of people:

- Educational Institutions (such as Universities, Schools, and Training Centres): They need a better way to manage attendance so they can replace the old, manual methods.
- Faculty and Administrators: They want automatic attendance records to save time, avoid mistakes, and follow the rules set by their institution.
- IT and Systems Teams: They need a solution that works well with the cloud, is secure, and can connect with the systems they already use.

2. Needs Analysis

From what stakeholders and industry reports say, these are the main needs:

- Automation and Accuracy: Using manual methods for tracking attendance leads to mistakes, takes too much time, and can be changed easily.
- Scalability: Schools with a lot of students need a system that can handle large amounts of data quickly and well.
- Data Security and Privacy: Student information must be kept safe as required by FERPA and GDPR rules.
- It's important to use cloud-based systems with strong encryption and control over who can access the data.
- Remote Learning Compatibility: After the pandemic, education has moved toward mixing in-person and online classes.
- Attendance systems must work well in both physical and virtual settings.
- Analytics and Reporting: School leaders need real-time dashboards and useful insights to make decisions.

3. Problem Statement

- Educational institutions do not have a system that can handle attendance in a way that is easy to scale, safe, and automatic.
- This system should be accurate, support both online and in-person learning, and offer real-time data analysis. The current ways of tracking attendance, whether done by hand or with some automation, are not efficient, often lead to mistakes, and do not meet today's standards for keeping data secure.

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4. Solution Ideation

1. AI-Powered Face Recognition Using AWS Rekognition

- Uses AWS Rekognition to identify and match faces as they happen in real time.
- Automates the process of marking attendance, which stops people from signing in for others.
- Makes sure the tracking of students is fair and clear for everyone.

2. Serverless Cloud Backend Using Python

- Python functions handle processing tasks:
  - Invoking AWS Rekognition for face detection.
  - Updating attendance records in S3.
  - Logging timestamps and generating attendance files in CSV/Excel format.
- Python enables efficient scripting of logic, integration with AWS SDK (boto3), and easy maintenance.
- Serverless design ensures **scalability, low maintenance, and cost efficiency**.

3. Secure Cloud Storage and Management

- Student images stored in **AWS S3**, attendance logs in **DynamoDB**.
- Administrators can retrieve reports without manual intervention.

5. Relevance to ICT Domain

- **AI/ML in Education:** Leverages AWS Rekognition for automated face recognition**.**
- **Serverless Computing:** Python-based functions eliminate the need for dedicated servers while maintaining scalability.
- **Cloud Security & Data Management:** AWS S3 and DynamoDB ensure secure, scalable storage and retrieval.

Impact:

- Institutions benefit from time-saving, accurate, and compliant attendance management.
- Faculty can focus on teaching rather than administrative tasks.
- Demonstrates integration of AI and serverless Python cloud architecture in an ICT context.