Problem Statement

In most school WhatsApp groups, crucial messages like exam schedules, early closures, holidays or PTMs often get buried in hundreds of casual chats. Parents and Students may miss critical information that directly affect their routines.

With just a few AWS services – S3, Lambda, Bedrock, developed a scalable and intelligent pipeline that transforms unstructured chat noise into insightful school notifications.

This is a POC, and the solution can be developed to read messages from a WhatsApp Group in real time or **Microsoft teams** in real time and extract key announcements using Generative AI and **Amazon Quicksight** can be used for Visualization.

Ethical Note

1. Do not use for commercial purpose without WhatsApp approval
2. Avoid storing sensitive information
3. Ensure all have agreed
4. Do it only for your own groups

Tech Stack

1. Amazon S3 for WhatsApp txt chat files (raw input)
2. Amazon S3 - Store output in JSON format after post-processing
3. Amazon Lambda for parsing raw data and process LLM response and saves output to S3 bucket
4. Use Amazon Bedrock for extracting key messages

Step 1

1. Create S3 Buckets
    a. school-chat-uploads for WhatsApp .txt uploads
    b. school-chat-insights – for storing structured results
    c. If you need to access via web/app uncheck all public access (Optional)
    d. Enable versioning if required (optional)

Name	AWS Region	IAM Access Analyzer	Creation date
school-chat-insights	US East (N. Virginia) us-east-1	View analyzer for us-east-1	June 11, 2025, 12:24:23 (UTC+05:30)
school-chats-uploads	US East (N. Virginia) us-east-1	View analyzer for us-east-1	June 11, 2025, 12:23:59 (UTC+05:30)

Step 2

1. Create a Lambda Function
2. Select Runtime as Python
3. Provide a meaningful name like **WhatsAppChatProcessor**
4. Create an IAM role with the necessary permissions
    a. S3 ReadOnlyAccess
    b. S3 FullAccess to write output
    c. AmazonBedRock Full access or minimum permissions to invoke
5. Create a Function
6. Provide a meaningful name. I will use the same name **WhatsAppChatProcessor**
7. Select the IAM role from the drop down
8. Create a function
9. In the Code Source, Enter the Python Code
10. Add the trigger
11. Trigger Configuration will be S3
12. Select the Bucket Name for upload
13. The Event type will be put
14. Select the recursive invocation and click on Add

Step 3

1. Enable Amazon Bedrock Anthropic Claude 2.1
2. Make a note of the model Id
3. Replace the model Id in the Lambda function
4. Deploy the lambda function

Step 4

1. After deploying, test the event
2. Go to Test section
3. Create a new event
4. Provide an event name
5. Select template as Hello World
6. In the Event Json enter the following code
7. Click on Test

Event JSON

```
1  {
2    "Records": [
3      {
4        "s3": {
5          "bucket": {
6            "name": "school-chats-uploads"
7          },
8          "object": {
9            "key": "WhatsApp Chat with [redacted].txt"
10         }
11       }
12     }
13   ]
14 }
15
```

8. If you encounter an error Timeout, then in the lambda function – **General Configuration change the timeout to 15 sec or more if needed**.
9. If you get a max_token error then refer the document
   a. **https://docs.aws.amazon.com/bedrock/latest/userguide/model-parameters-anthropic-claude-text-completion.html**

Step 5

1. In the insights folder you will find the json extract .

2. Below is the extract of Whatsapp Text Messages Uploaded

```
11/06/25, 12:40 - Messages to yourself are end-to-end encrypted. No one else, not even WhatsApp, can read, listen to, or share them. Learn more.
11/06/25, 12:40 - Appu: School exam on 1st July
11/06/25, 12:41 - Appu: School function on Saturday
11/06/25, 12:41 - Appu: 🎉
11/06/25, 12:41 - Appu: 🎉
11/06/25, 12:53 - Appu: Teacher: Tomorrow the school will close at 1:30 PM due to staff meeting.
11/06/25, 12:53 - Appu: Parent: Thank you!
11/06/25, 12:53 - Appu: Teacher: History class test on Monday.
```

3. This is the python code what messages to extract

```
Extract messages related to: school closure, tests, holidays, PTM, early dismissals, exams.
```

4. This is the output in json format

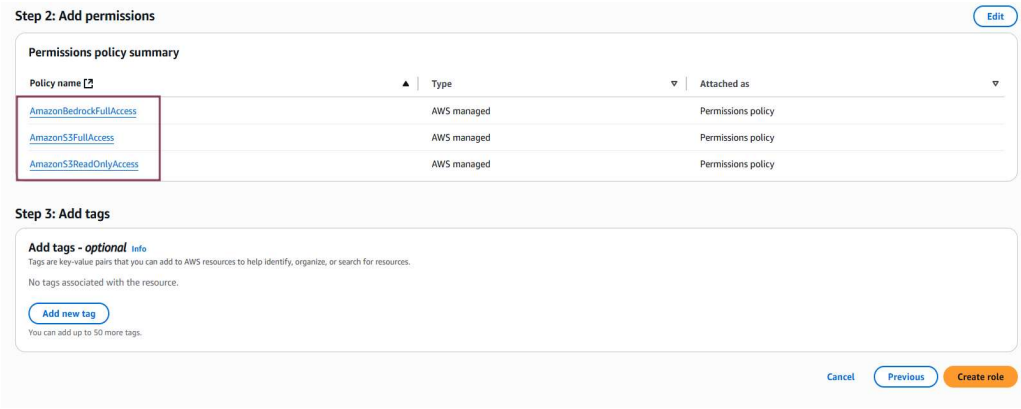
```
Here are the key school-related announcements I extracted from the messages:

[
  {
    "date": null,
    "type": "exam",
    "message": "School exam on 1st July"
  },
  {
    "date": null,
    "type": "early_dismissal",
    "message": "Tomorrow the school will close at 1:30 PM due to staff meeting."
  },
  {
    "date": null,
    "type": "test",
    "message": "History class test on Monday."
  }
]
```

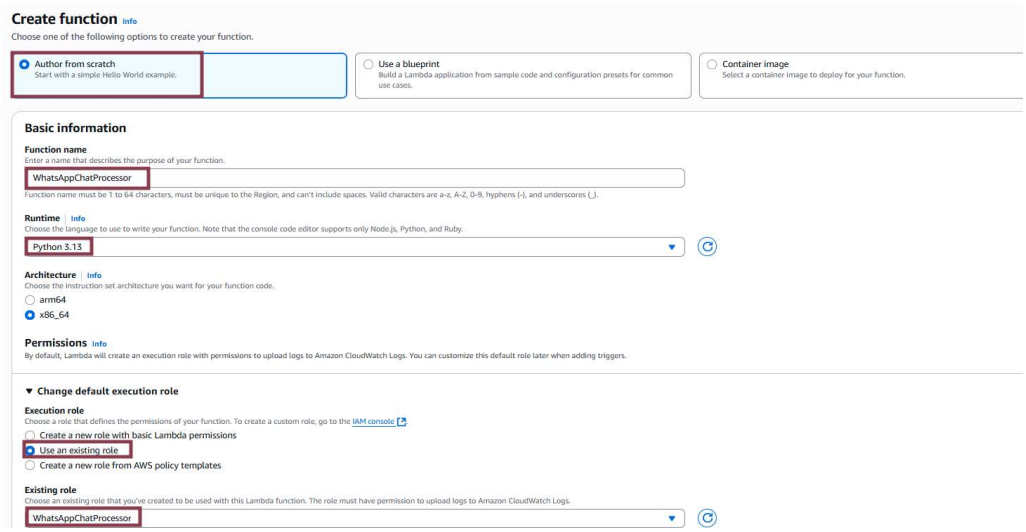
5. I haven’t coded to extract the dates or infer the timestamps and date you will find Null in the above output.

1. IAM Role Creation

2. IAM Role Creation - Permissions



3. Lambda Function



4. **Lambda Function – Python Code**

lambda_function.py

```python
import boto3
import re
import json

bedrock = boto3.client("bedrock-runtime", region_name="us-east-1")
s3 = boto3.client("s3")

def extract_messages(content):
    messages = []
    lines = content.splitlines()
    for line in lines:
        match = re.match(r'^(\d{1,2}/\d{1,2}/\d{2,4}), (\d{1,2}:\d{2}) - (.*?): (.*)', line)
        if match:
            date, time, sender, message = match.groups()
            messages.append(message)
    return messages

```

5. Add a Trigger – When uploading the WhatsApp.txt