## Alpine Parking

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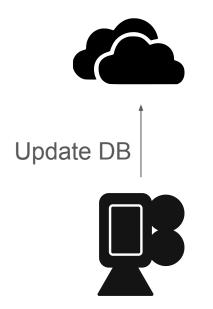
#### Structure

- Key Idea
- AWS Services
- Workflow
- Lambdas
- Frontend
- DEMO
- Costs

# Key Idea Free spaces?



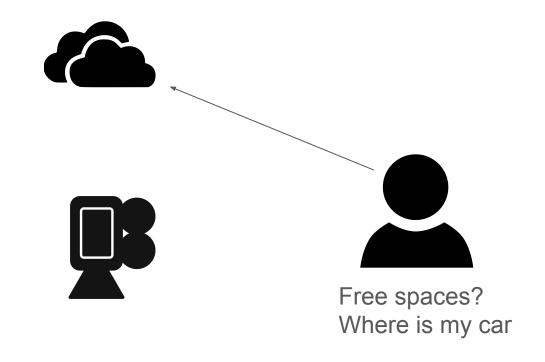
### Key Idea



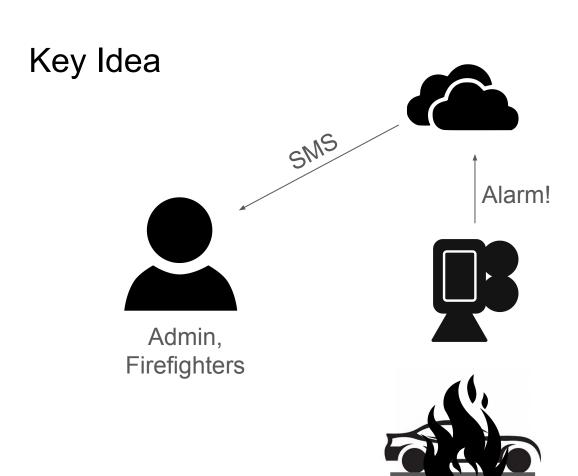


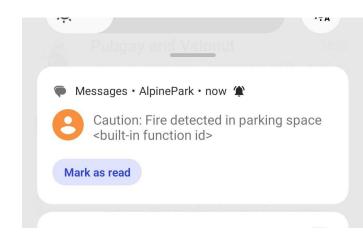


#### Key Idea









#### **AWS Services**

Lambda Functions

Step functions

Api Gateway

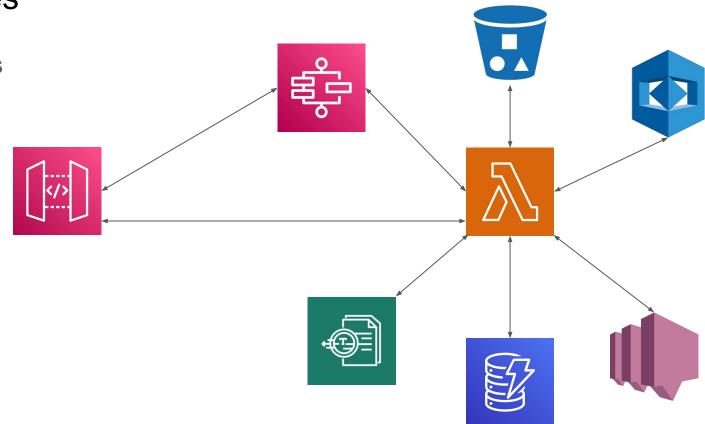
DynamoDB

S3 bucket

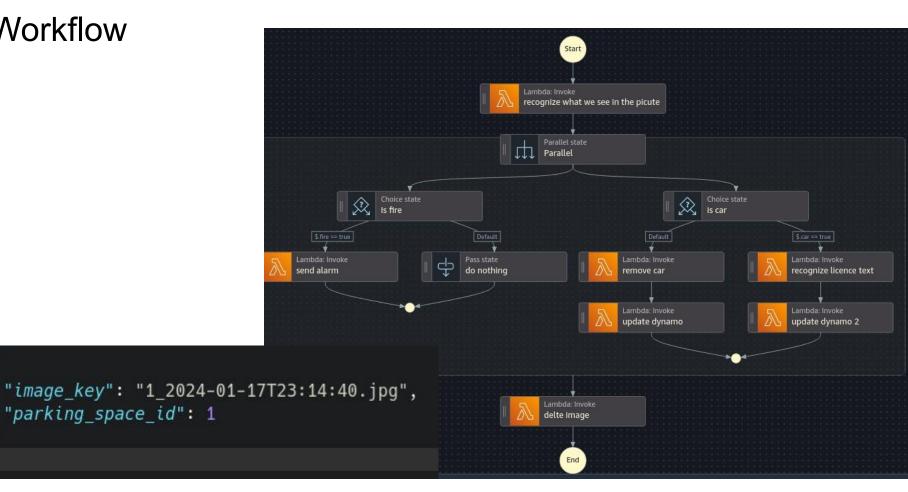
**AWS** Rekognition

**Textract** 

SNS



#### Workflow



#### Lambdas

boto3 lib

nice integration of services

```
bucket = 'verteiltesystemeparkingsystem'
fire words = ['fire', 'flames']
car_words = ['car', "license plate", "vehicle", "transportation"]
def lambda handler(event, context):
    s3 = boto3.client('s3')
    rekognition = boto3.client('rekognition')
    key = event['image_key']
    parking_space_id = event['parking_space_id']
    obj = s3.get_object(Bucket=bucket, Key=key)
    image = obj['Body'].read()
    response = rekognition.detect_labels(Image={'Bytes': image})
    fire = False
    car = False
    labels = []
    for label in response['Labels']: --
    output = {
        "image_key": key,
        "parking space id": parking space id,
        "car": car,
        "fire": fire,
        "rekognition result": labels
    return output
```

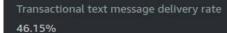
#### **Frontend**

- AngularJS Hello World like 200 mb
  - => let's learn a new lightweight framework
- Alpine JS
- Material Design Lite



```
<div x-data="{is0pen : false}">
   <button @click="is0pen=!is0pen">Show/Hide</button>
   <h1 x-show="is0pen">Alpine Tutorial</h1>
</div>
<div x-data="{ inputValue : '' }" >
   <input type="text" x-model=inputValue />
   </div>
```





Transactional text messages



#### **▲** Important

Because Amazon SNS is a distributed system, it stops sending SMS messages within minutes if the spending quota is exceeded. During this period, if you continue to send SMS messages, you might incur costs that exceed your quota.

We set the spending quota for all new accounts at \$1.00 (USD) per month. This quota is intended to let you test the message-sending capabilities of Amazon SNS. To request an increase to the SMS spending quota for your account, open a quota increase case in the AWS Support Center.

#### Costs: car in parking spot

- Assumptions: 1 Parking space
- Critical Path: \$0,001505851 per Execution
- \$1,505851 per 1000 Executions

- Assumption: 100 Parking spaces
- \$150,5851 per 1000 Executions
- Optimization is possible:
  - More parking spaces per camera
  - Motion detection per parking space



#### Costs: case of fire

- Assumptions: 1 Parking space
- Critical Path: \$0,000406351 per Execution
- \$0,406351 per 1000 Executions

- Assumption: 100 Parking spaces
- \$40,6351 per 1000 Executions
- Optimization is possible:
  - More parking spaces per camera
  - Motion detection per parking space



Thank you for your attention