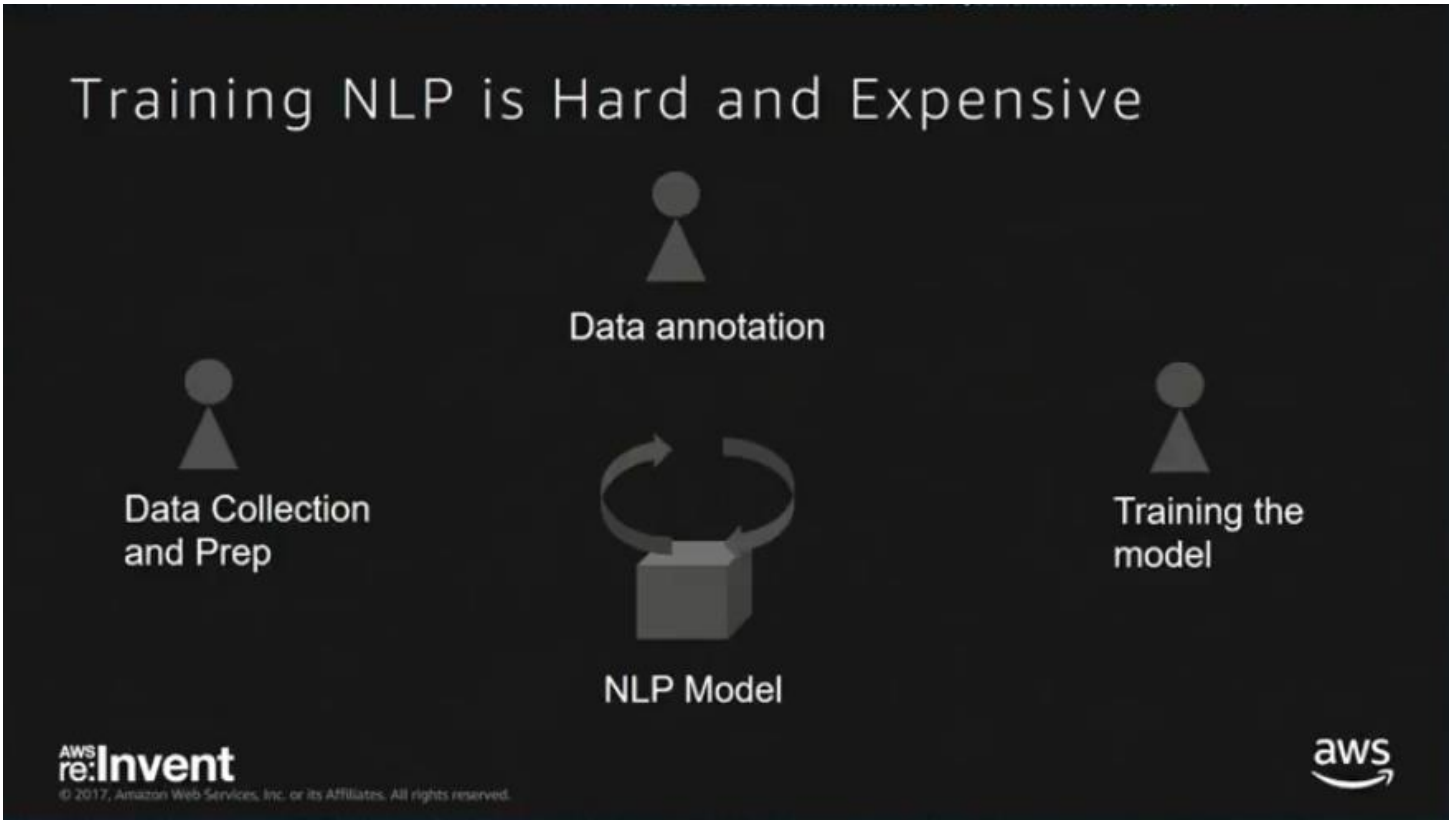
The need for ***Natural Language Processing (NLP)*** is gaining more importance as the amount of unstructured text data doubles every 18 months and customers are looking to extend their existing analytics workloads to include natural language capabilities. Historically, this data had been prohibitively expensive to store and early manual processing evolved into rule-based systems, which were expensive to operate and inflexible. In this session we will show you how you can address this problem using ***DeepInsight***.

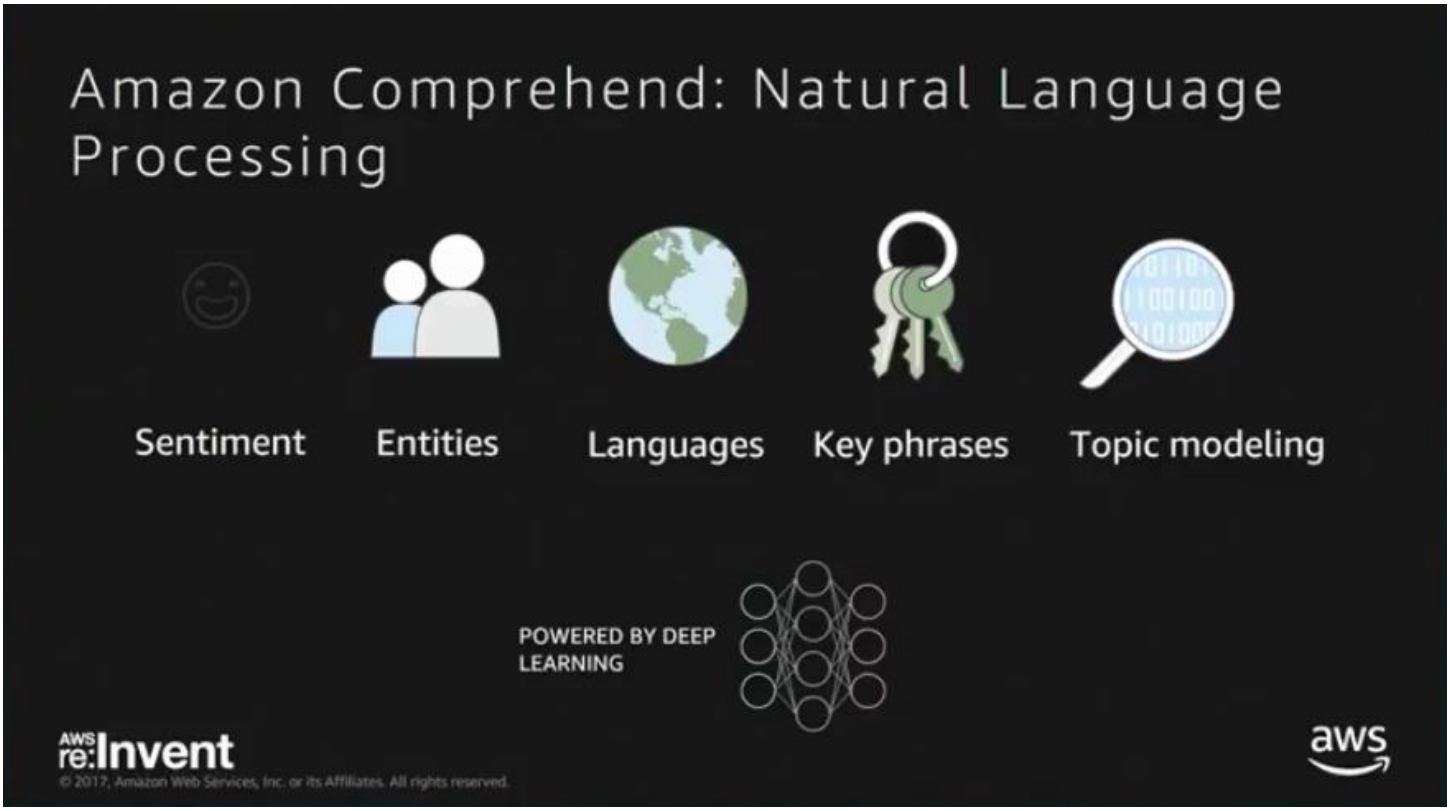
Text Analytics at Scale

- AWS Platform value
- Amazon S3 Data Lakes
- Scalable, pay for what you use, analytics

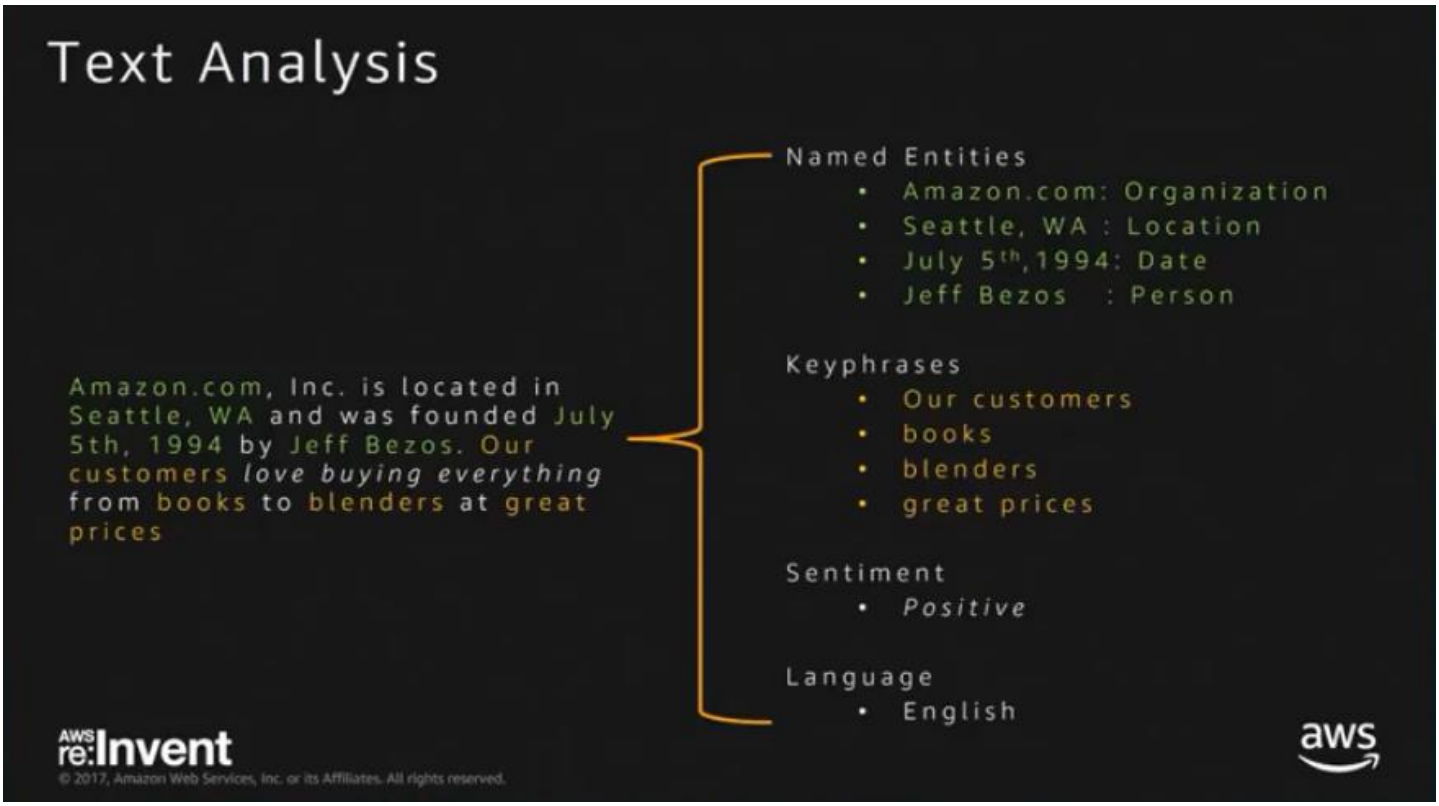
Training NLP is Hard and Expensive



This is what the AWS Comprehend team does for you instead of you having to build a team for doing the same things.



It is a fully managed service that is constantly being trained for you. There are 5 main parts to this service as listed above. It uses up to 100 languages and exposed with easy to use APIs.



These APIs are separated into 4 parts, ***Text Analytics***, ***Key Phrases***, ***Sentiments*** and ***Language***.

Topic Modeling

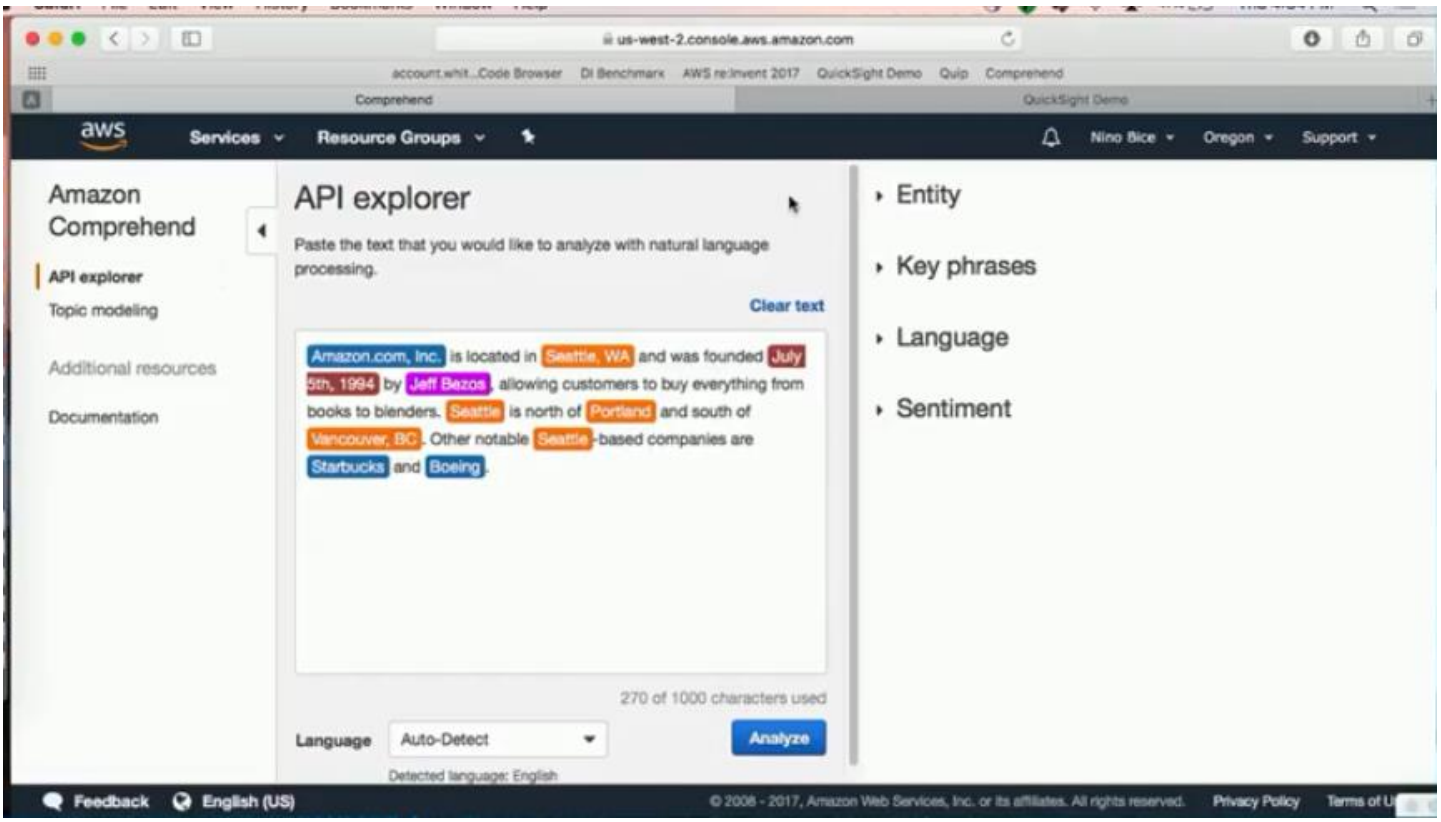
Keywords Topic Groups

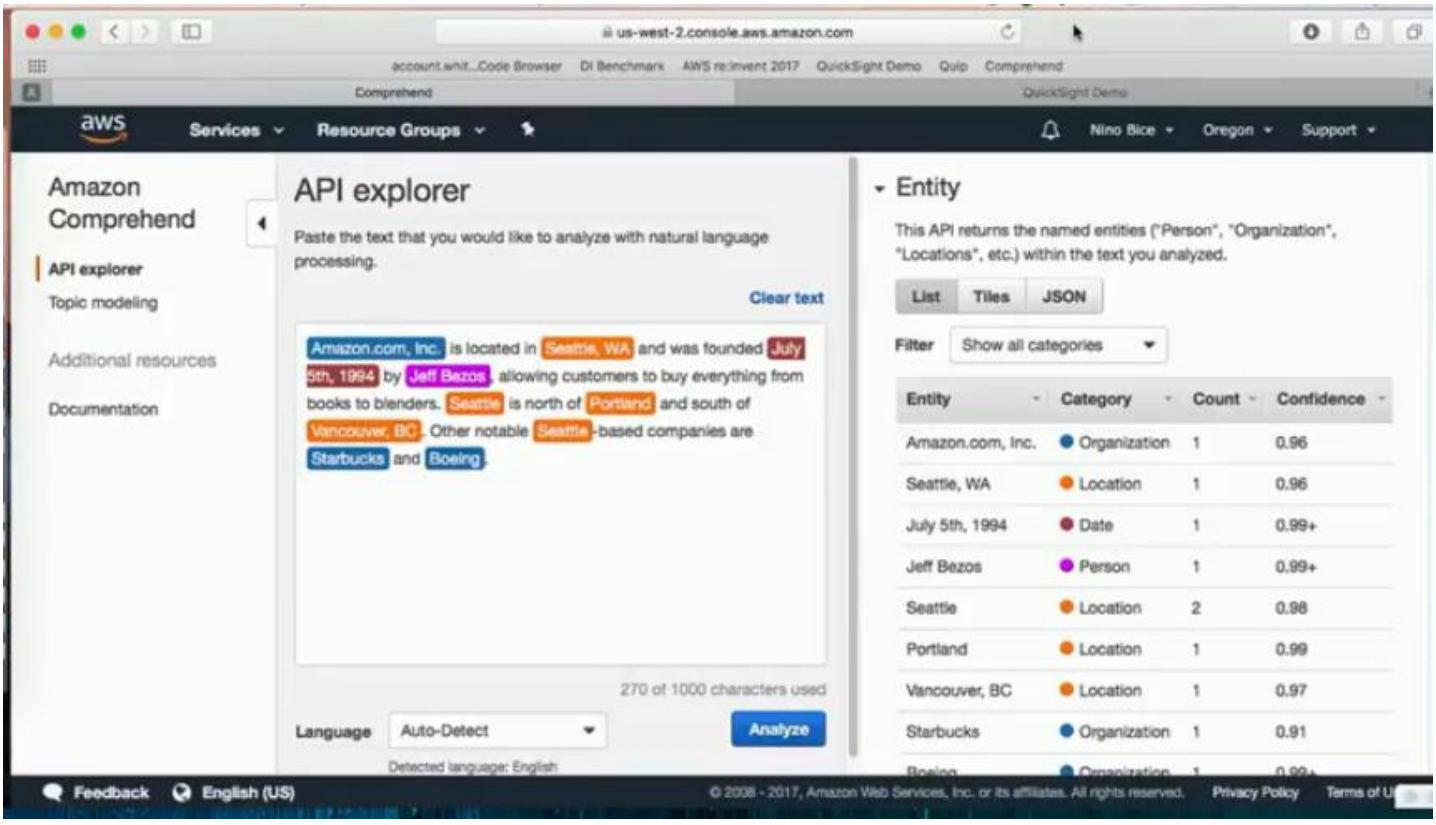
Topic	Term	Weight
0	Washington	.89
1	Silicon Valley	.67
2	Roasting	.91

Document Relationship to Topics

Document	Topic	Proportion
Doc.txt	0	.89
Doc.txt	1	.67
Doc.txt	2	.91

This can be used by pointing to a S3 bucket as the document source and give it a job name before clicking ‘Run’. AWS Comprehend will make 2 views when running the job, the first is the ***Keywords Topics*** groups (the topics are buckets of words with terms and their weights), and the ***Document Relationship to Topics***.

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Resource Groups
Nino Bice
Oregon
Support
Amazon Comprehend
API explorer
Topic modeling
Additional resources
Documentation
API explorer
Paste the text that you would like to analyze with natural language processing.
Clear text
Amazon.com, Inc. is located in Seattle, WA and was founded July 5th, 1994 by Jeff Bezos, allowing customers to buy everything from books to blenders. Seattle is north of Portland and south of Vancouver, BC. Other notable Seattle-based companies are Starbucks and Boeing.
270 of 1000 characters used
Language
Auto-Detect
Analyze
Detected language: English
Entity
This API returns the named entities ("Person", "Organization", "Locations", etc.) within the text you analyzed.
List
Tiles
JSON
Filter
Show all categories
Entity
Category
Count
Confidence
Amazon.com, Inc.
Organization
1
0.96
Seattle, WA
Location
1
0.96
July 5th, 1994
Date
1
0.99+
Jeff Bezos
Person
1
0.99+
Seattle
Location
2
0.98
Portland
Location
1
0.99
Vancouver, BC
Location
1
0.97
Starbucks
Organization
1
0.91
Feedback
English (US)
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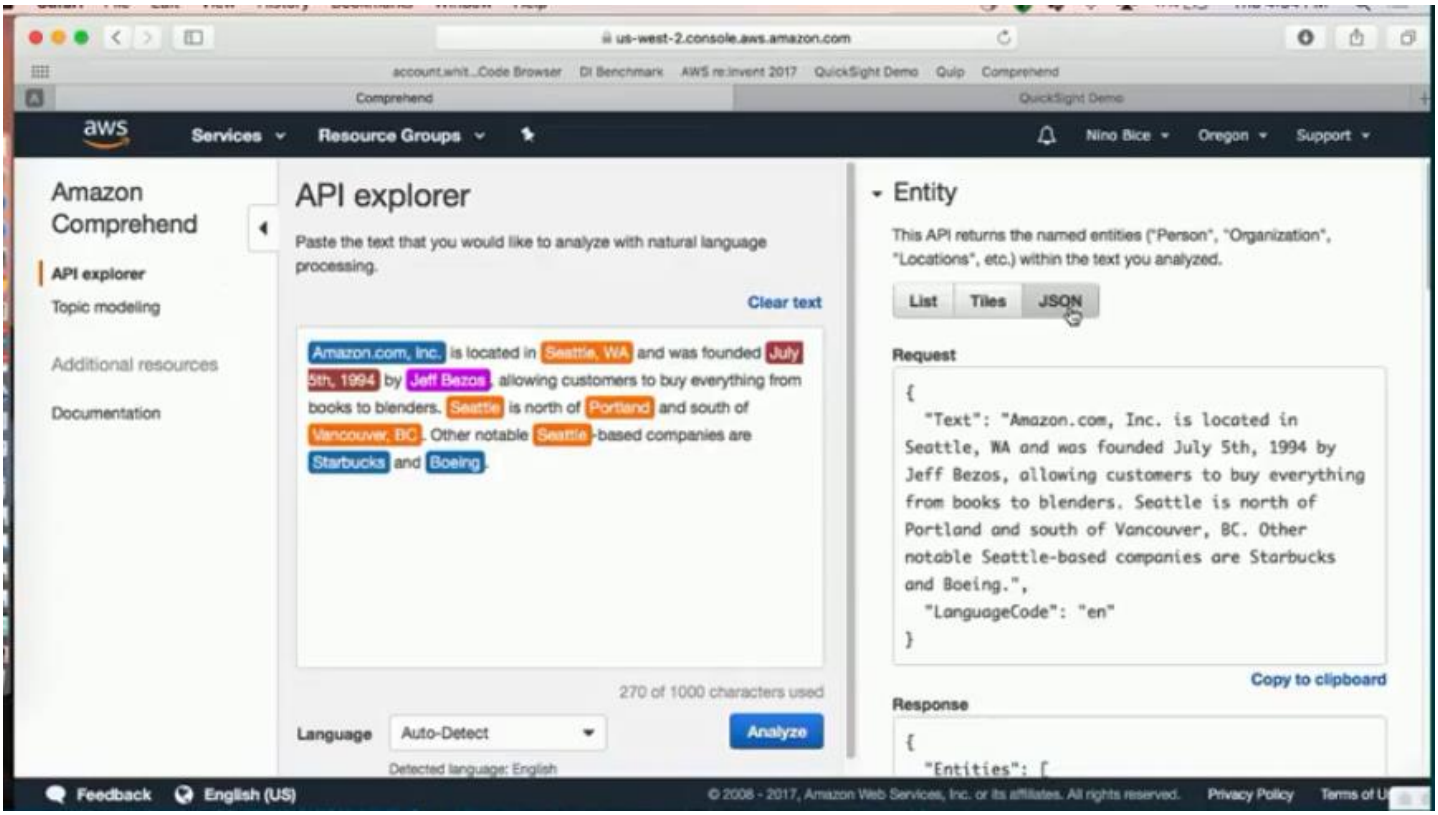
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Clear text
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270 of 1000 characters used
Language
Auto-Detect
Analyze
Detected language: English
Entity
This API returns the named entities ("Person", "Organization", "Locations", etc.) within the text you analyzed.
List
Tiles
JSON
Request
{
"Text": "Amazon.com, Inc. is located in Seattle, WA and was founded July 5th, 1994 by Jeff Bezos, allowing customers to buy everything from books to blenders. Seattle is north of Portland and south of Vancouver, BC. Other notable Seattle-based companies are Starbucks and Boeing.",
"LanguageCode": "en"
}
Copy to clipboard
Response
{
"Entities": [
Feedback
English (US)
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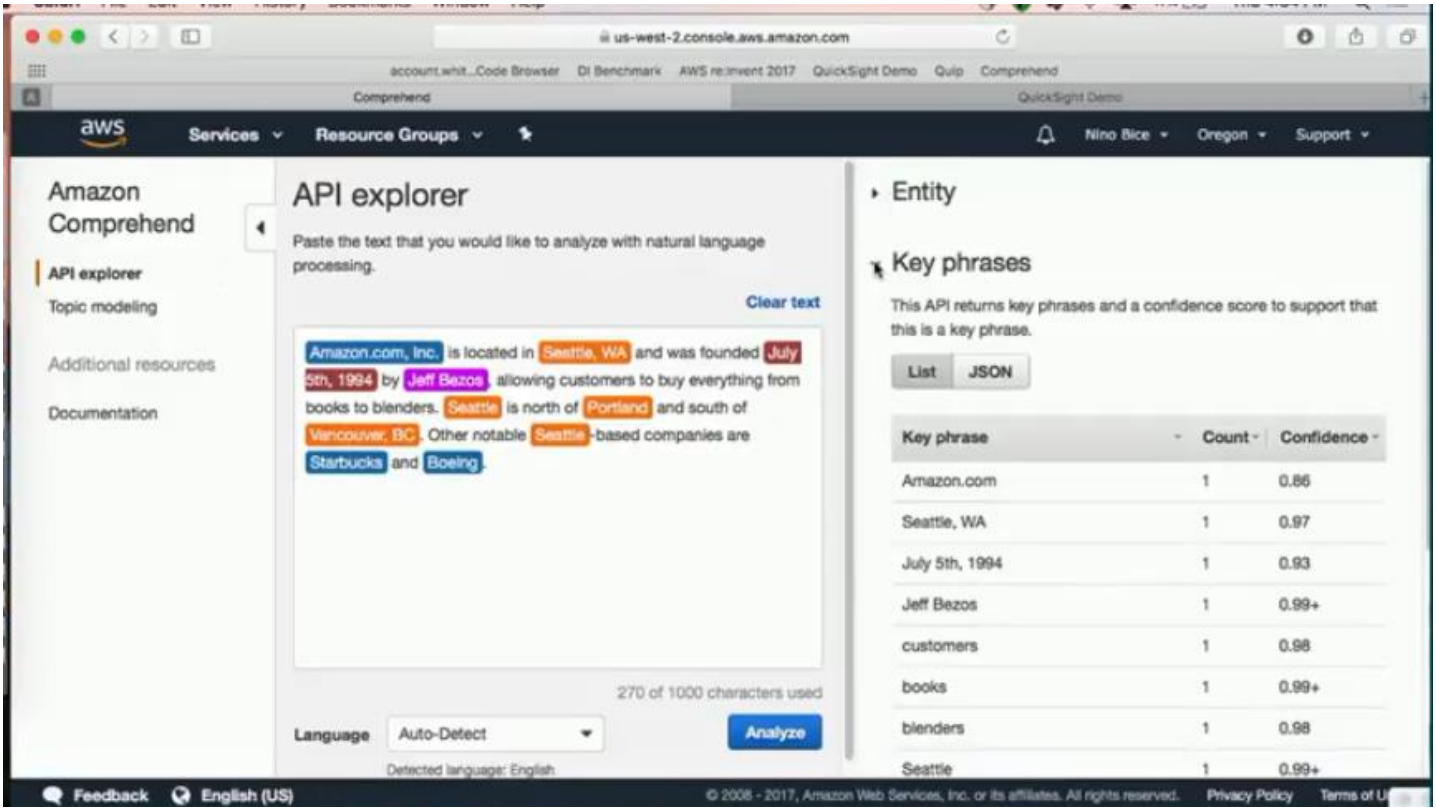
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Paste the text that you would like to analyze with natural language processing.
Clear text
Amazon.com, Inc. is located in Seattle, WA and was founded July 5th, 1994 by Jeff Bezos, allowing customers to buy everything from books to blenders. Seattle is north of Portland and south of Vancouver, BC. Other notable Seattle-based companies are Starbucks and Boeing.
270 of 1000 characters used
Language
Auto-Detect
Analyze
Detected language: English
Entity
Key phrases
This API returns key phrases and a confidence score to support that this is a key phrase.
List
JSON
Key phrase
Count
Confidence
Amazon.com 1 0.86
Seattle, WA 1 0.97
July 5th, 1994 1 0.93
Jeff Bezos 1 0.99+
customers 1 0.98
books 1 0.99+
blenders 1 0.98
Seattle 1 0.99+
Feedback
English (US)
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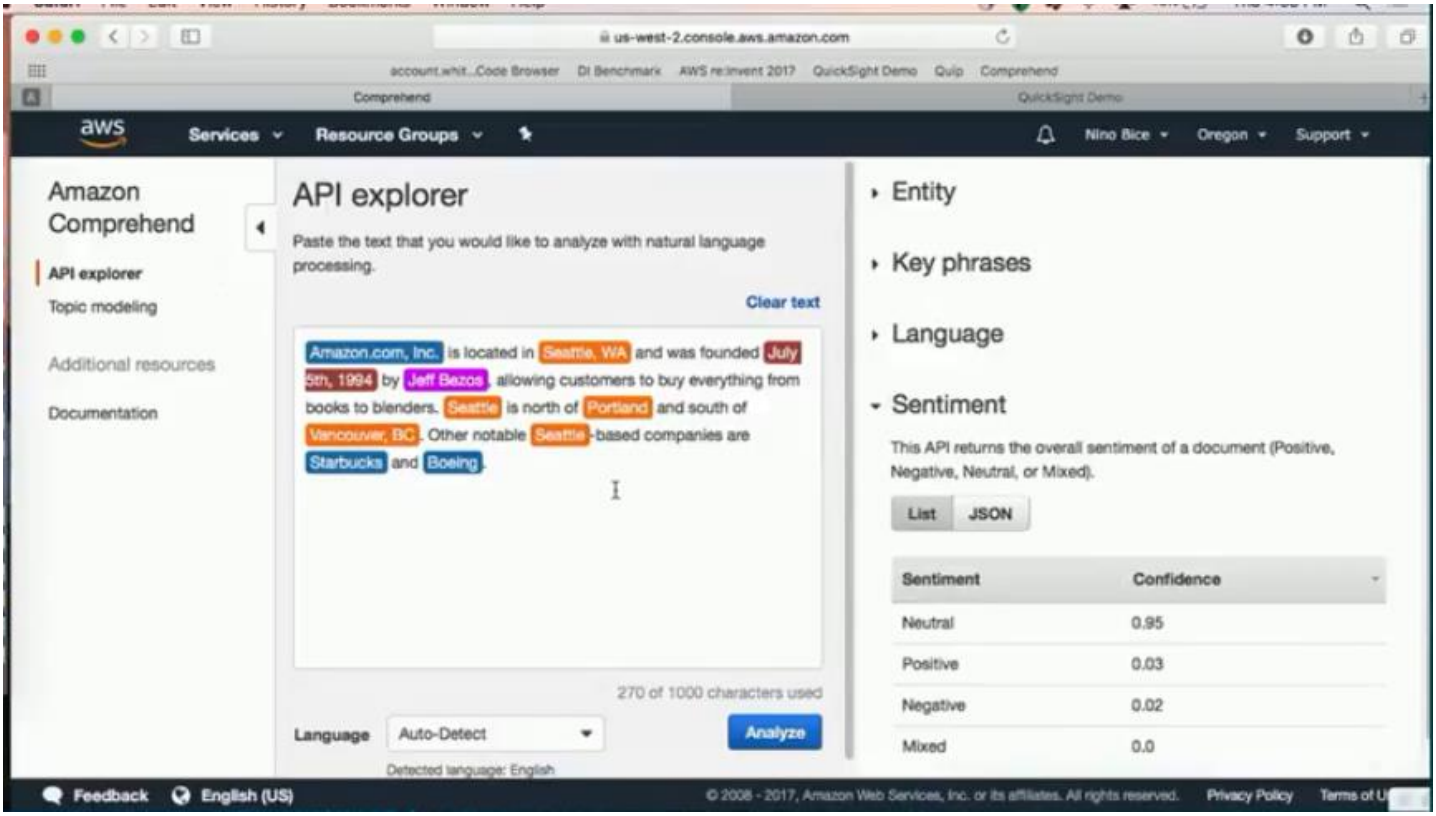
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Paste the text that you would like to analyze with natural language processing.
Clear text
Amazon.com, Inc. is located in Seattle, WA and was founded July 5th, 1994 by Jeff Bezos, allowing customers to buy everything from books to blenders. Seattle is north of Portland and south of Vancouver, BC. Other notable Seattle-based companies are Starbucks and Boeing.
270 of 1000 characters used
Language
Auto-Detect
Analyze
Detected language: English
Entity
Key phrases
Language
Sentiment
This API returns the overall sentiment of a document (Positive, Negative, Neutral, or Mixed).
List
JSON
Sentiment
Confidence
Neutral 0.95
Positive 0.03
Negative 0.02
Mixed 0.0
Feedback
English (US)
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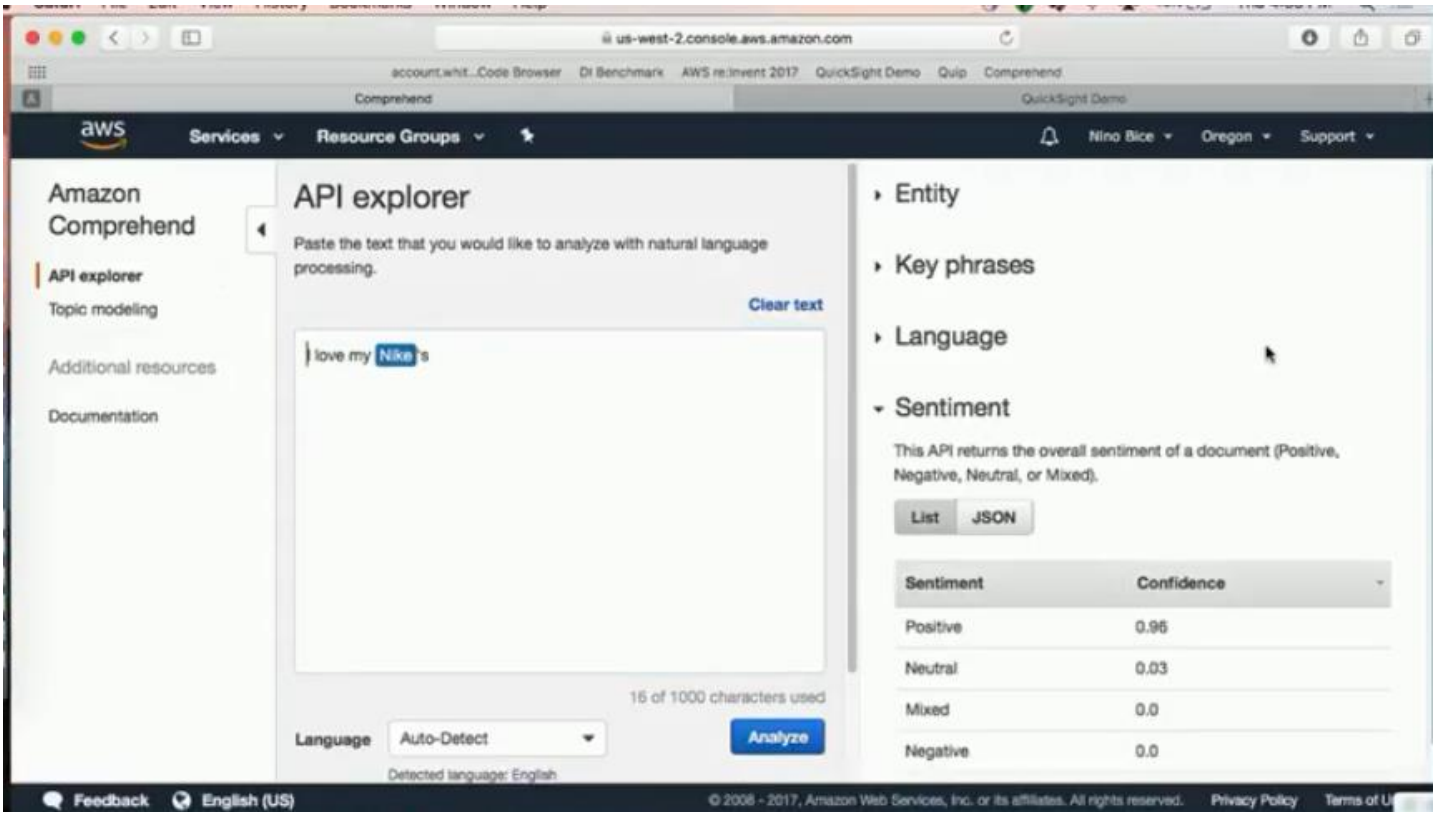
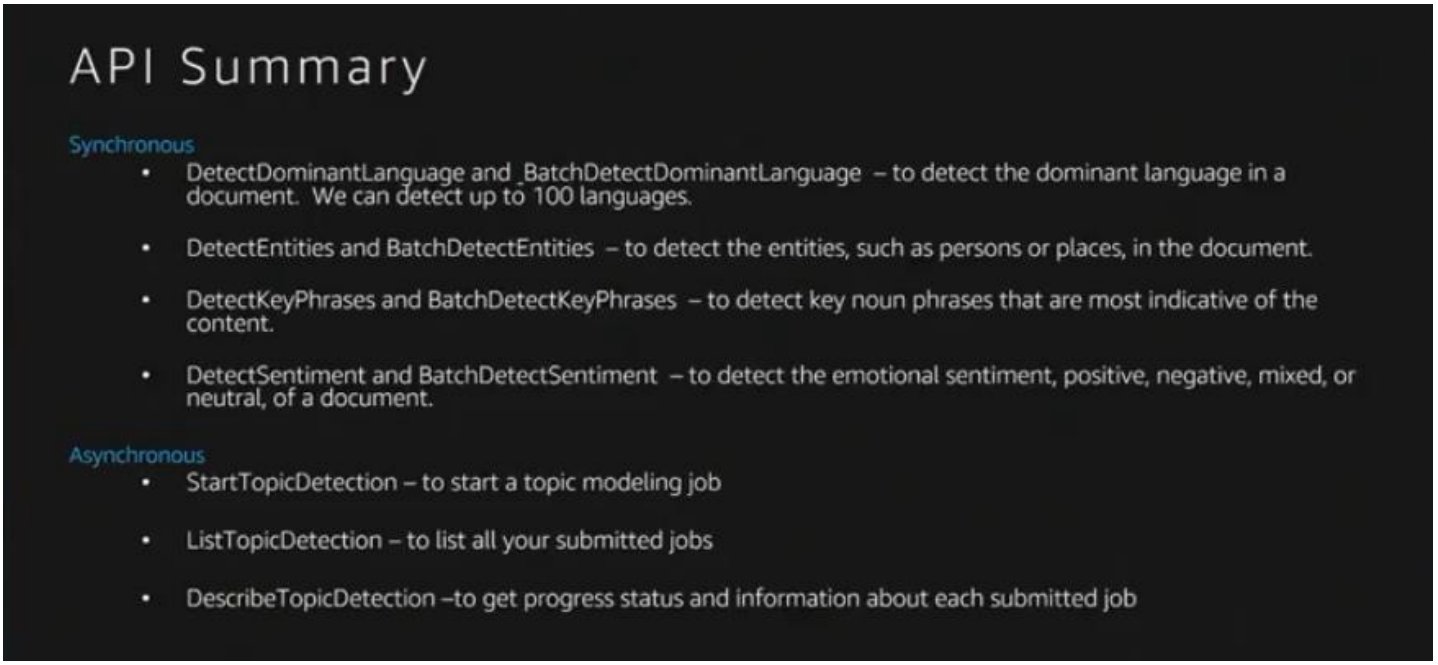


It does sentiment analysis on text as seen above



The AWS Comprehend SDK is now available and the CLI also works. The APIs are grouped into Synchronous and Asynchronous (for batch jobs) APIs.

Synchronous APIs

```
{
    "Languages": [
        {
            "LanguageCode": "string",
            "Score": number
        }
    ]
}
```

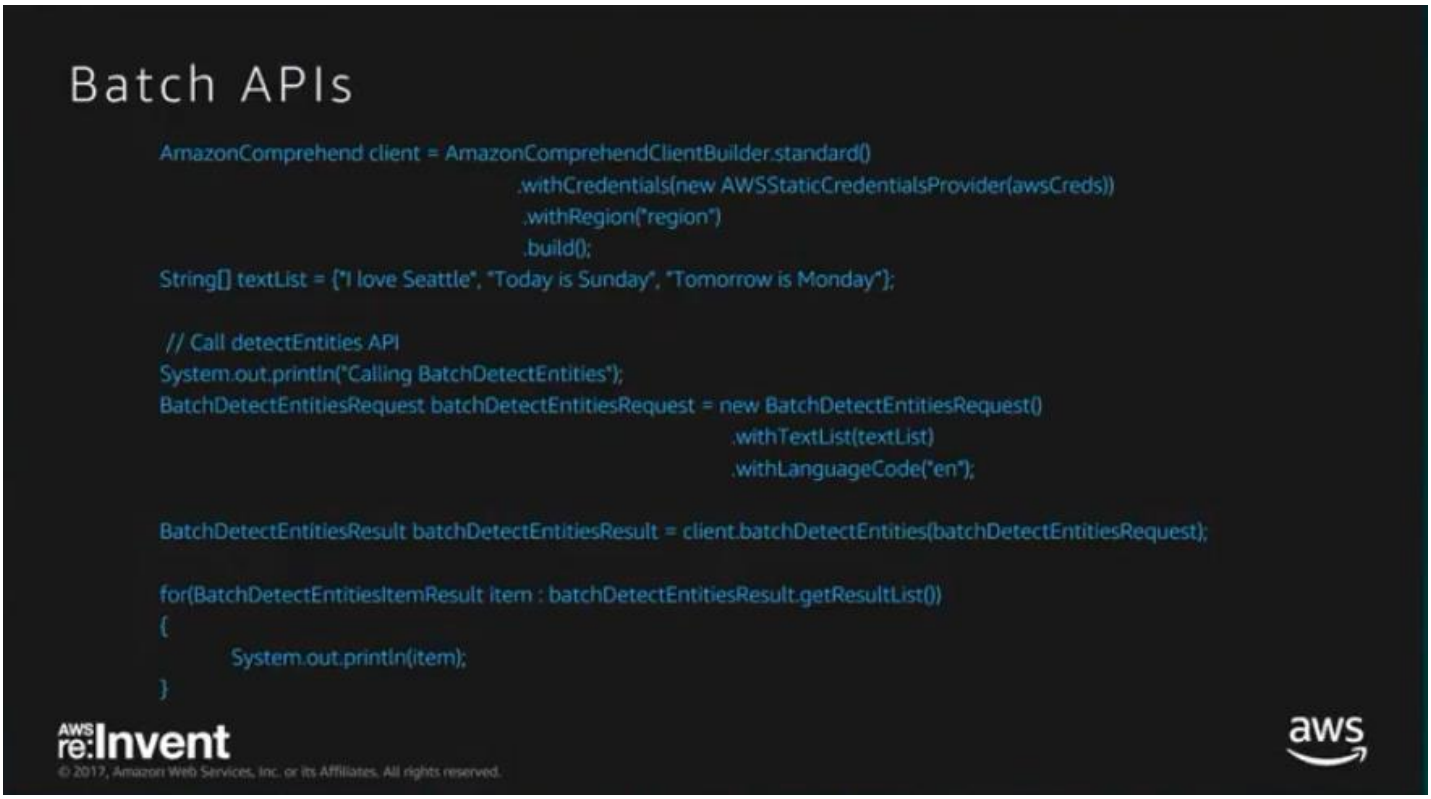
```
{
    "Entities": [
        {
            "BeginOffset": number,
            "EndOffset": number,
            "Score": number,
            "Text": "string",
            "Type": "string"
        }
    ]
}
```

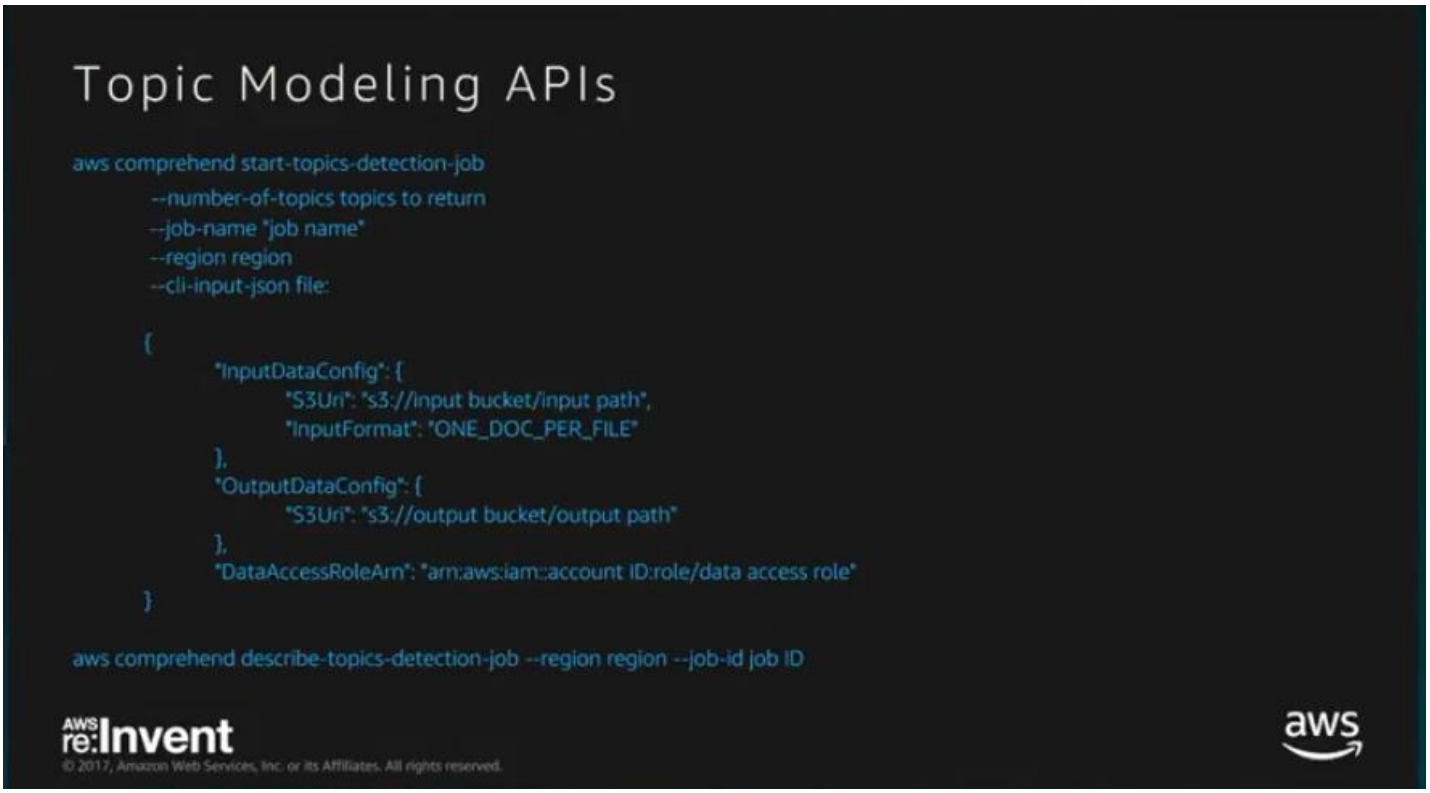
This is a typical response of the Language and Entities APIs.

Synchronous APIs

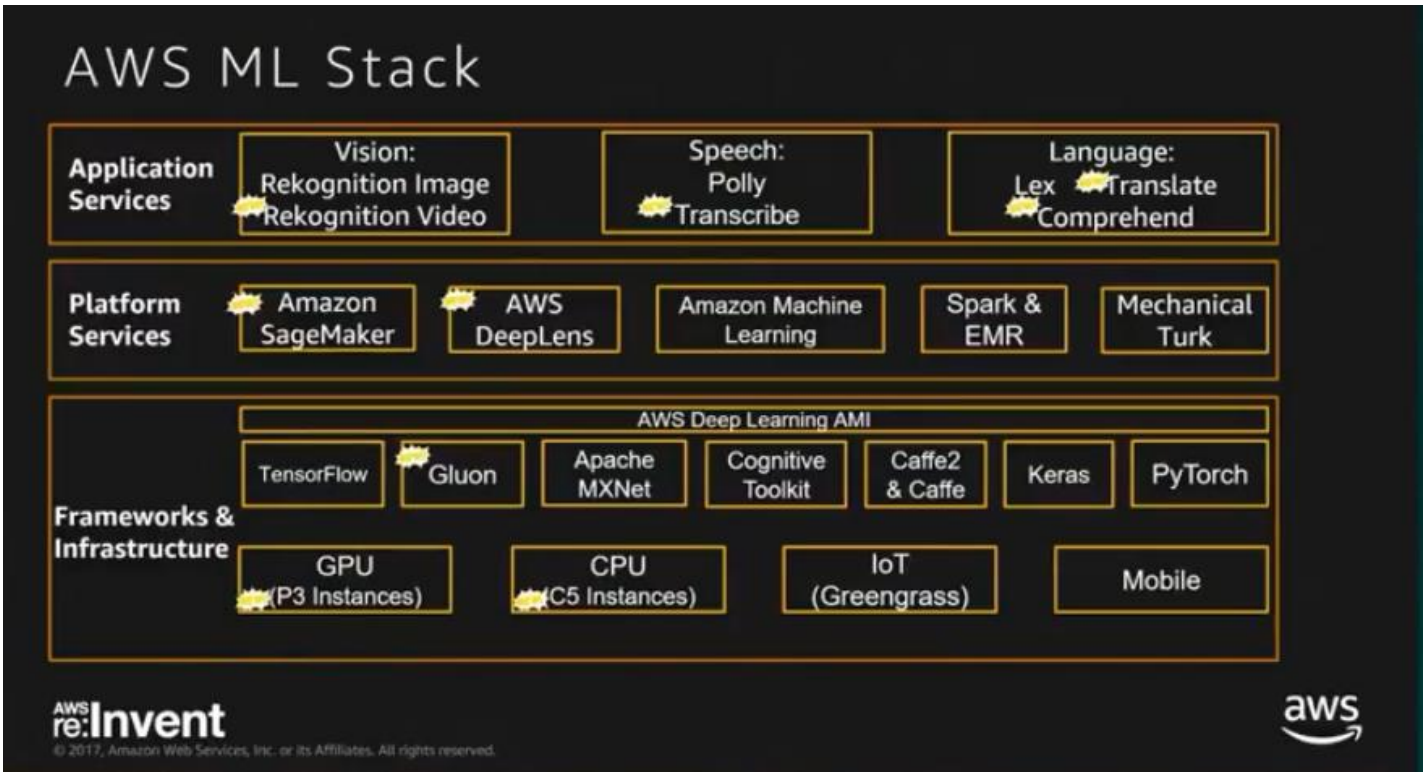
```
import boto3
import json
comprehend = boto3.client(service_name='comprehend', region_name='region')
text = "It is raining today in Seattle"
print('Calling DetectEntities')
print(
    • json.dumps(
        • comprehend.detect_entities(Text=text, LanguageCode='en'),
        • sort_keys=True, indent=4)
    • )
print('End of DetectEntities\n')
```

The Batch APIs gives the option to provide multiple requests synchronously and get back response with the results for all the individual requests, you can then iterate through the result list to get individual results. You can also get partial results via polling.





This is a CLI example for the topic modelling API in a synchronous manner, you can specify a job name, S3 URI for your bucket so that you can refer to the job later using the job-id handler.



These are continuously trained ML models made available for you.

Common Use Cases

Voice of Customer Analytics

Analyzing what customer are saying about your brand, products and services

Semantic Search

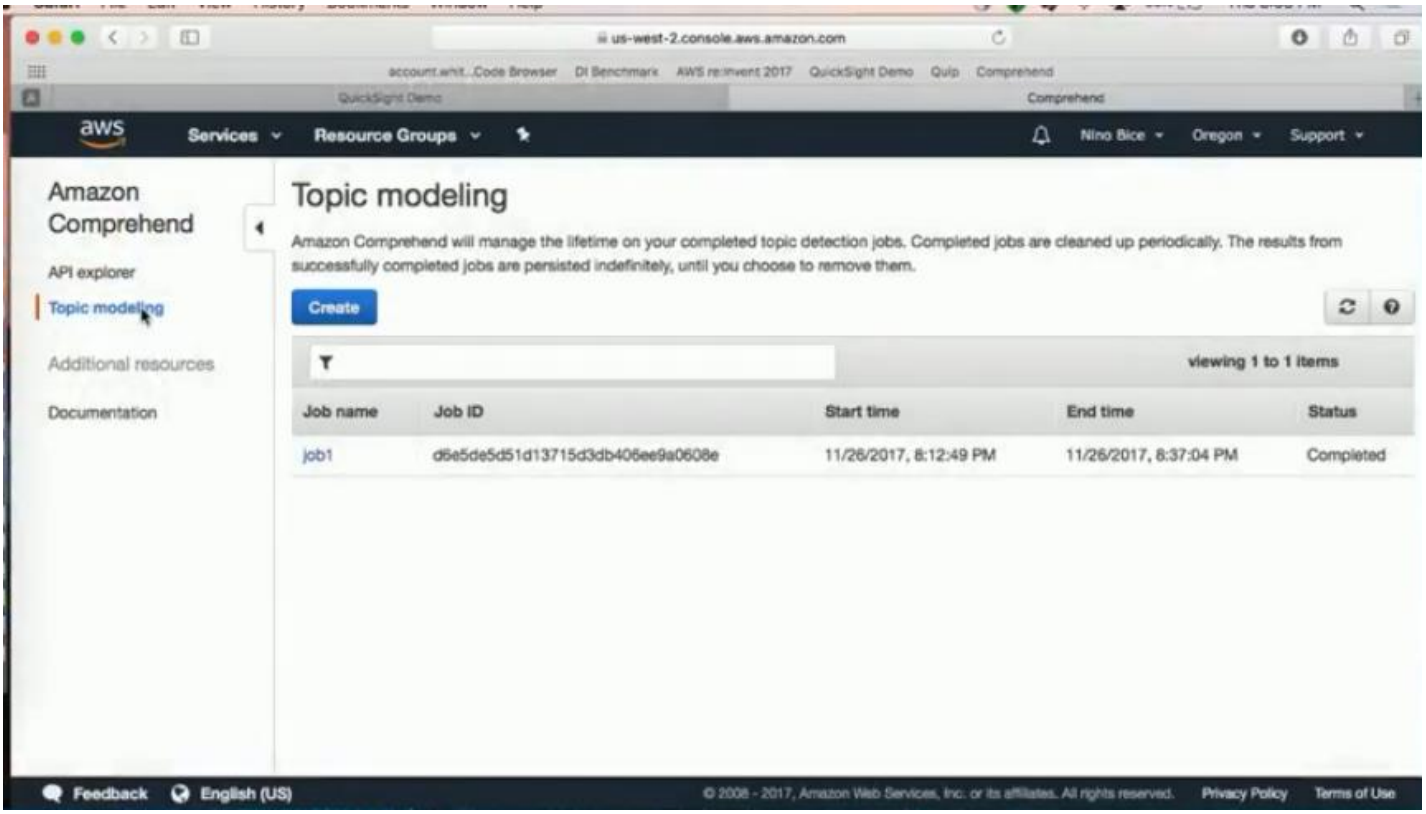
Making search smarter by searching on keyphrase, sentiment and topic

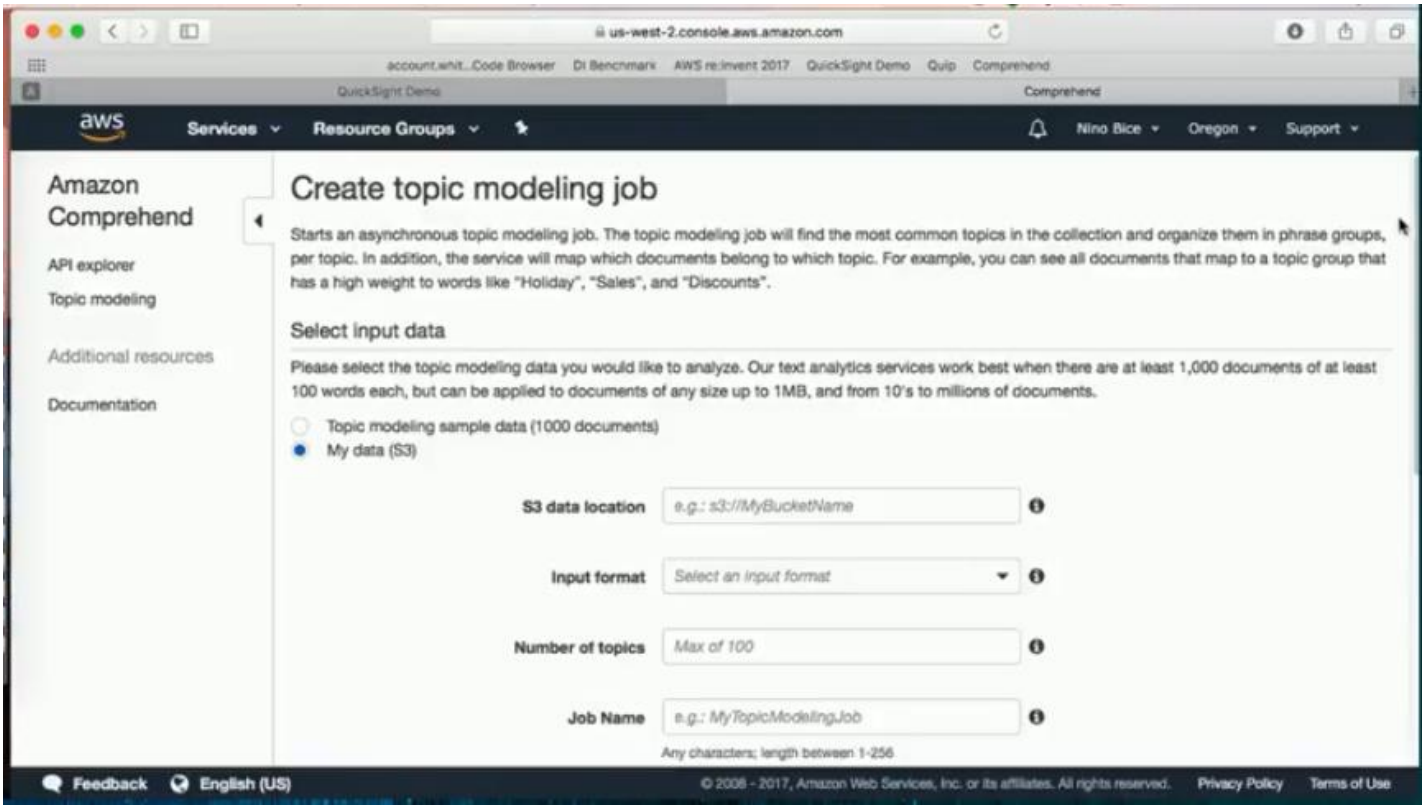
Knowledge Management/Discovery

Organizing documents, categorizing by topic and personalizing experiences

AWS re:Invent

aws

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Create topic modeling job
Starts an asynchronous topic modeling job. The topic modeling job will find the most common topics in the collection and organize them in phrase groups, per topic. In addition, the service will map which documents belong to which topic. For example, you can see all documents that map to a topic group that has a high weight to words like "Holiday", "Sales", and "Discounts".
Select input data
Please select the topic modeling data you would like to analyze. Our text analytics services work best when there are at least 1,000 documents of at least 100 words each, but can be applied to documents of any size up to 1MB, and from 10's to millions of documents.
Topic modeling sample data (1000 documents)
My data (S3)
S3 data location
e.g.: s3://MyBucketName
Input format
Select an input format
Number of topics
Max of 100
Job Name
e.g.: MyTopicModelingJob
Any characters; length between 1-256
Feedback
English (US)
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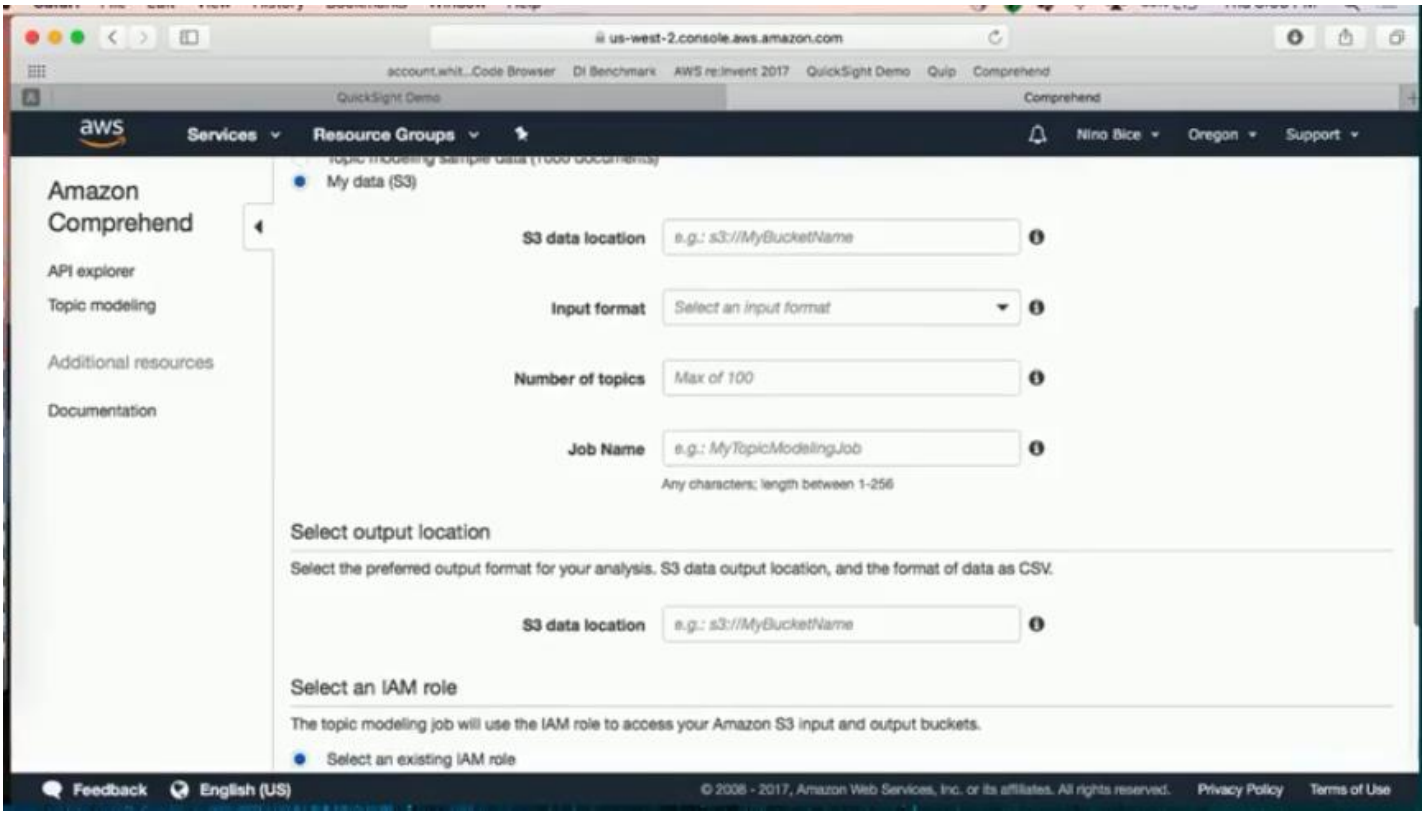
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Additional resources
Documentation
My data (S3)
S3 data location
e.g.: s3://MyBucketName
Input format
Select an input format
Number of topics
Max of 100
Job Name
e.g.: MyTopicModelingJob
Any characters; length between 1-256
Select output location
Select the preferred output format for your analysis. S3 data output location, and the format of data as CSV.
S3 data location
e.g.: s3://MyBucketName
Select an IAM role
The topic modeling job will use the IAM role to access your Amazon S3 input and output buckets.
Select an existing IAM role
Feedback
English (US)
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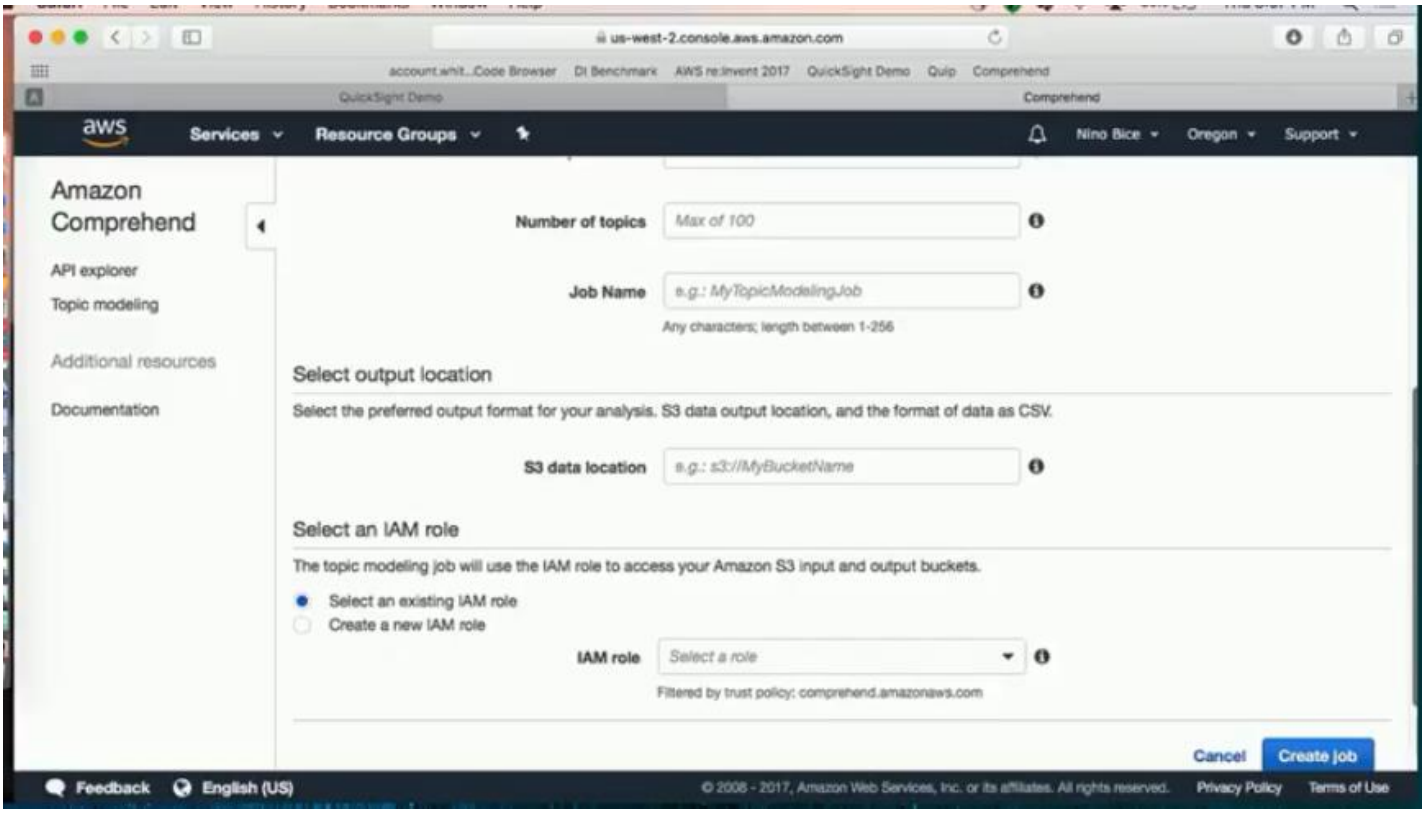
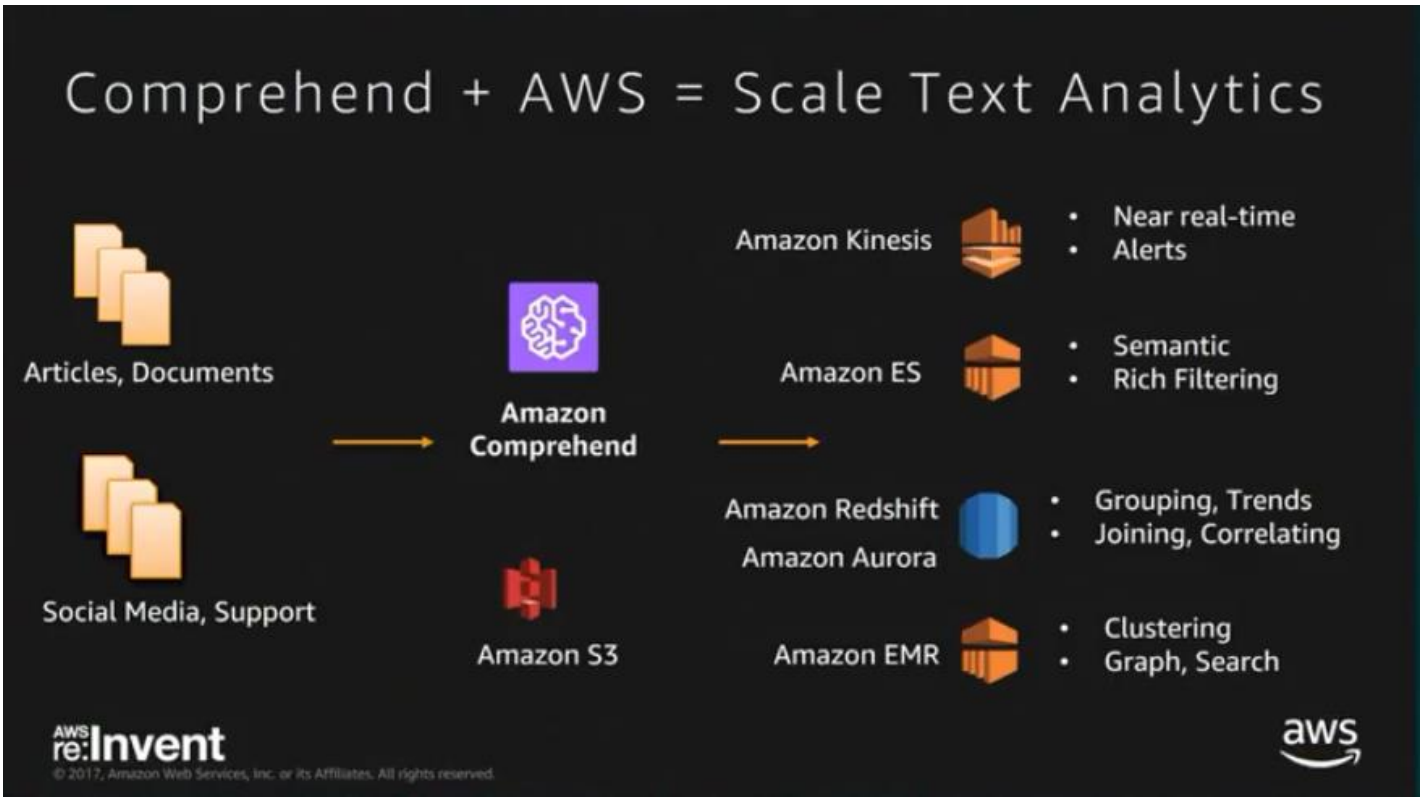


This is all you need for doing topic modelling on a corpus in a S3 bucket.



Elementum: Make.Things.Better.

Supply Chain Management

- Fortune 100 clients
- Provide a real-time-end-to-end platform that unifies procurement, logistics, manufacturing, and inventory operations.
- Our Product Graph digitally maps the $25T global product economy.
- Enable manufacturers to make smarter decisions, anticipate disruptions, and quickly rally your teams to take corrective action, converting volatility into opportunity.

Operational Excellence

- ***Drive revenue growth***
  - Deliver the right products on-time
  - Proactively recommend alternative when needed (natural disasters, strikes, etc)
- ***Increase free cash***
  - Reduce Time to Market
  - Monitor actual performance vs SLAs

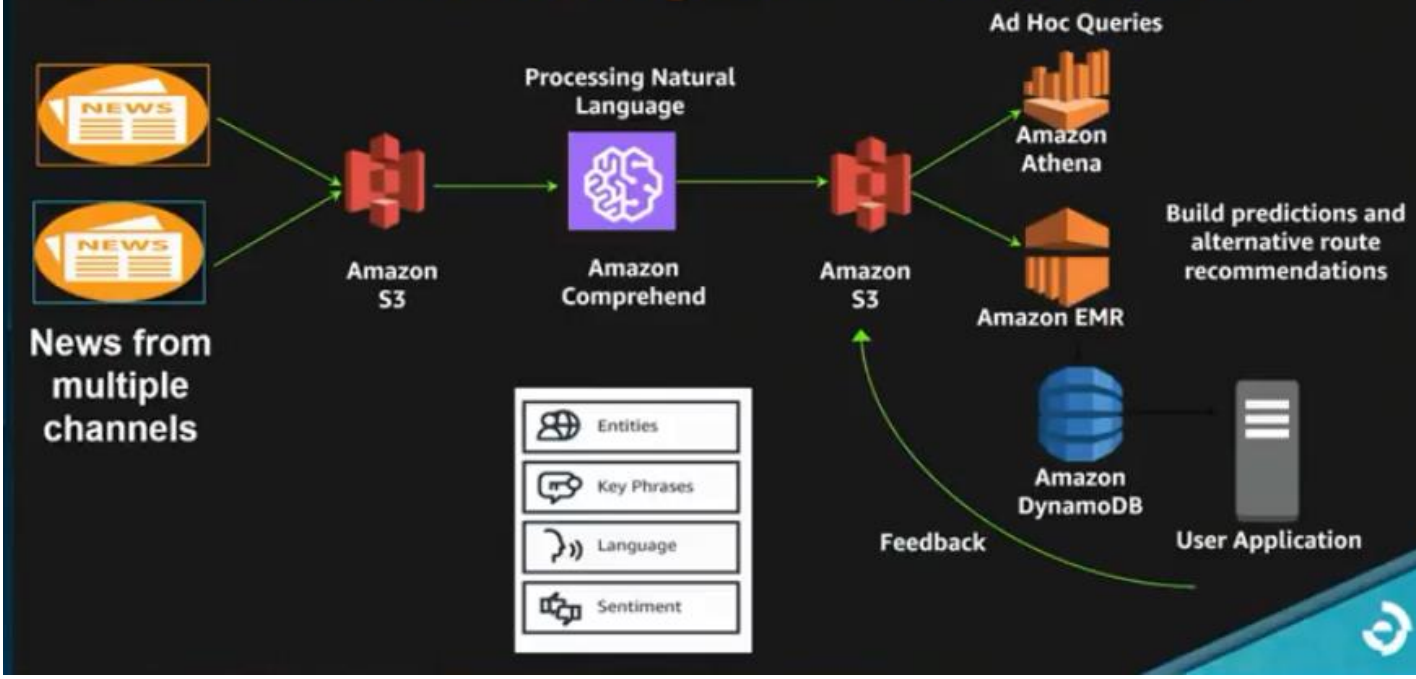
News Feed Analysis & Requirements

- Global Supply Chain requires local language translation
- Disaster Aware System – Build proactive recommendation alternatives when needed (I.E. natural disasters, strikes, geo-political, etc)
- Operational Excellence
- Business Continuity
- Build continuous supply-chain workflow

Amazon Comprehend

- Discover meaning and relationships in text from numerous sources
- Identify topics in a collection of text
- Continually learning, always improving
- Easy organization and categorization of documents by topic for easier discovery, ability to personalize content recommendations for readers by recommending other articles related to the same topic.
- Fully managed and continuously trained service

News Feed Analysis - Workflow



Launch Customer: Infor

infor

Infor is an enterprise software provider and strategic technology partner for more than 90,000 organizations worldwide.

Our software is purpose-built for specific industries, providing complete suites that are designed to support progress – for individuals, businesses, and the world.

Customers and innovation at the core

176 new products in the last 12 months	6,431 new integrations in the last 12 months	6,259 new features in the last 12 months	8,500 customers in the Infor Cloud	71m users in the Infor Cloud
16,335 Infor employees	20 offices added across 15 countries in the last 12 months	1,870 Partners in the eco-system	10,000+ hours of training content available	14,000+ people who took Infor training in the last 12 months

INFOR TECHNOLOGY SUITE

Infor OS

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Portal
In-context
Homepages
Search
Chat
Documents (IDM)

iPAAS
Process integration
Activity Monitoring
Workflow
API gateway
Orchestration
Mapping
Mediation

SECURITY
Single Sign On
Users / Roles
Groups
Auditing / Monitoring
Risk & Compliancy
Insights

DATA MGMT
Data Lake
Graph
Data Catalogue
Data Services APIs
Data Pipelines
Archiving

PAAS
Dev Framework
Composite Apps
Soho UX Library
Reports
Extensibility

COLEMAN A.I.
Digital Assistant
Automated Skills
Contextual A.I.
Image recognition
A.I. PaaS

IOT
IoT Portal
Connectors
Embedded EAM
Analytics

LOCALIZATIONS
Electronic Messages
Reports
Tax Engine
eAccounting
Financial Controller
Submission Portal

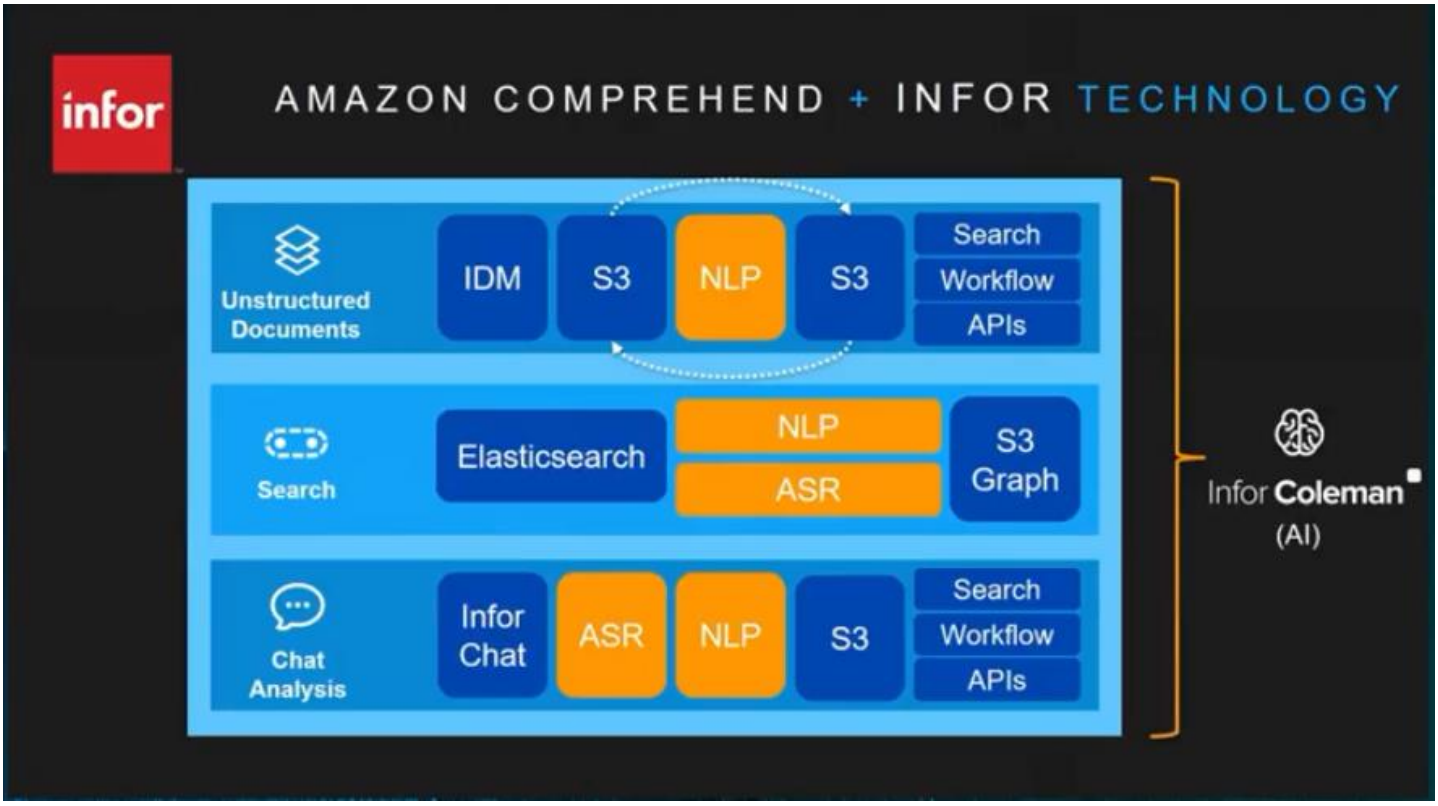
AMAZON COMPREHEND + INFOR TECHNOLOGY

Infor OS

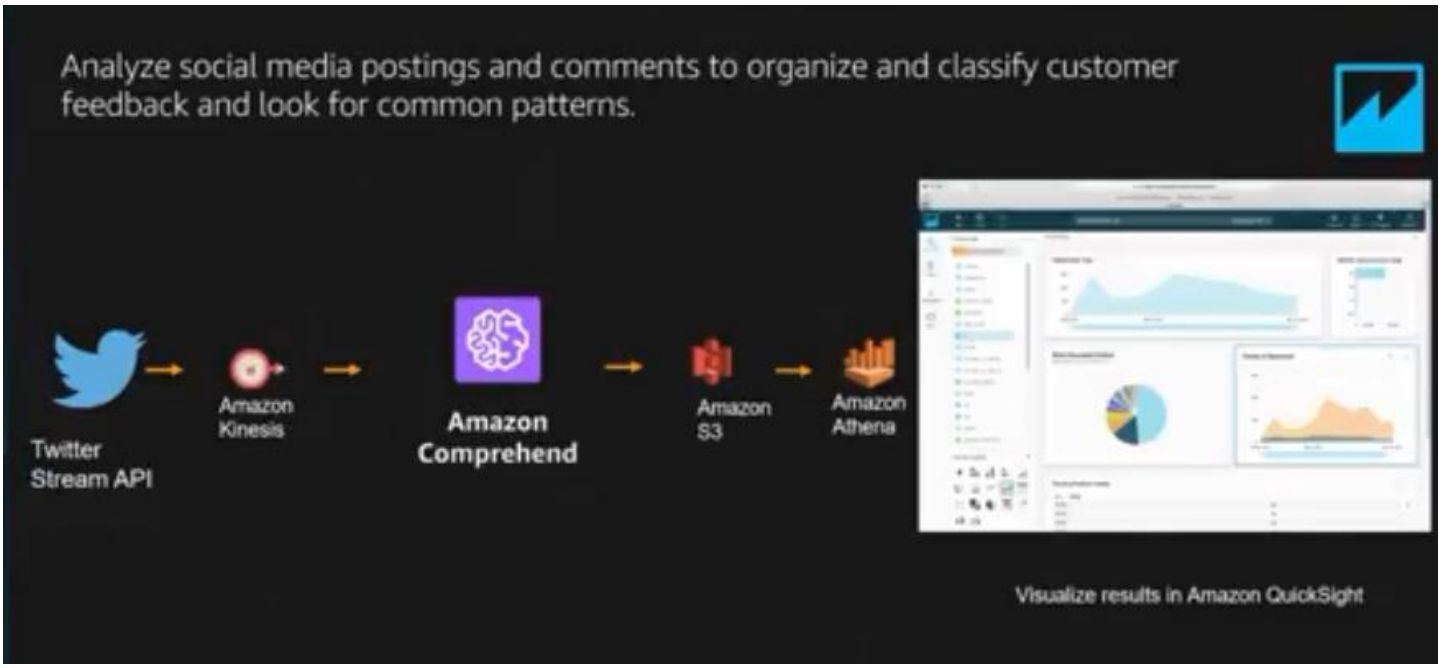
Unstructured Documents
Ability to extract sentiment and entity relationships in documents to automatically create actions and provide refined search capabilities

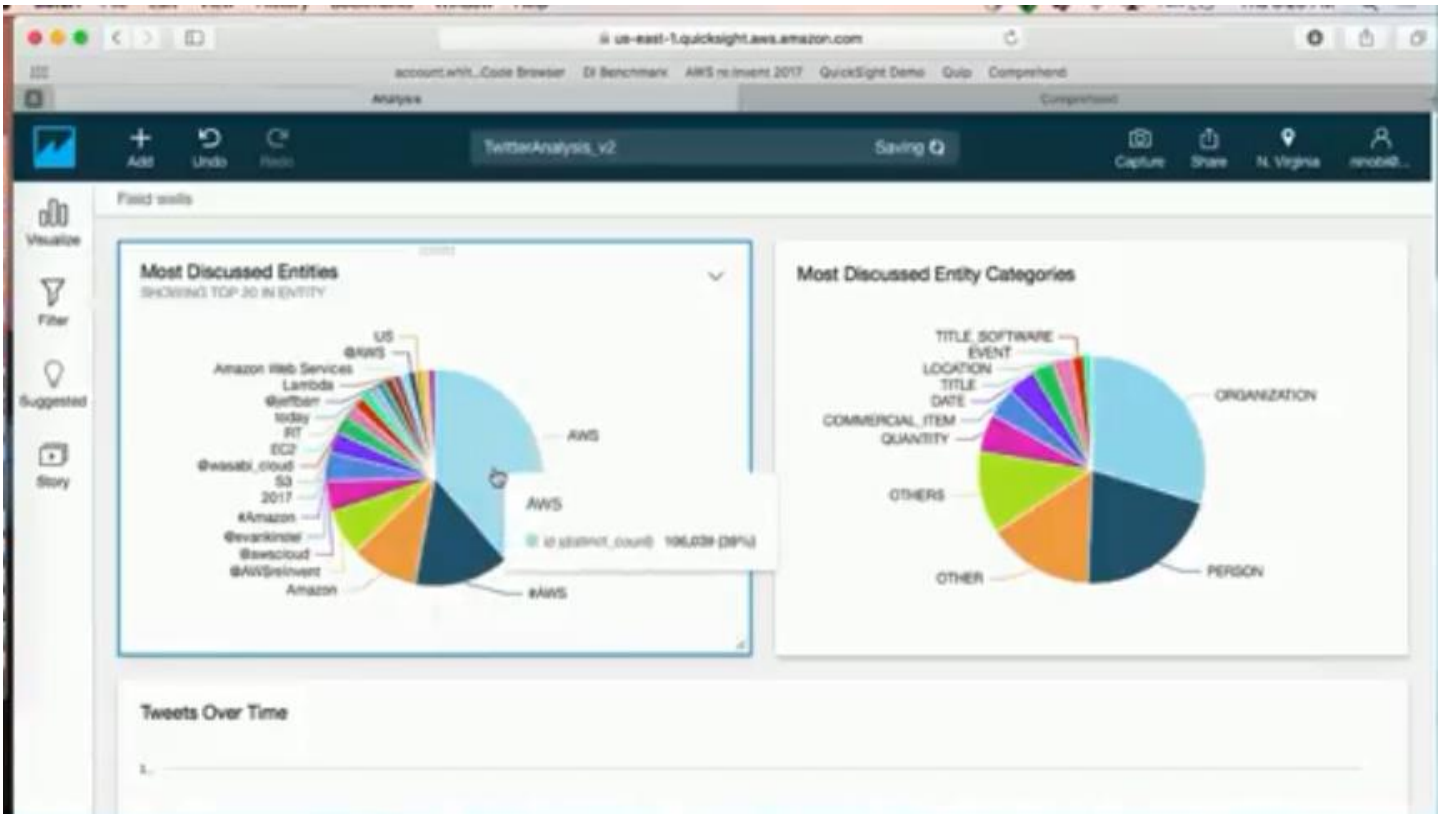
Search
Ability to accept search requests in natural language and create relationships to entities in order to generate more accurate search queries and to automatically link to Digital Assistant skills

Chat Analysis
Ability to transcribe and analyze text and voice conversations to create contextual minutes and tasks, while capturing unstructured knowledge



You can use AWS Comprehend search via spoken words by extracting keywords and meaning from written or spoken text so that you can use that to search your database or ElasticSearch instead of using keywords or Product ID as traditionally done.

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Capture
Share
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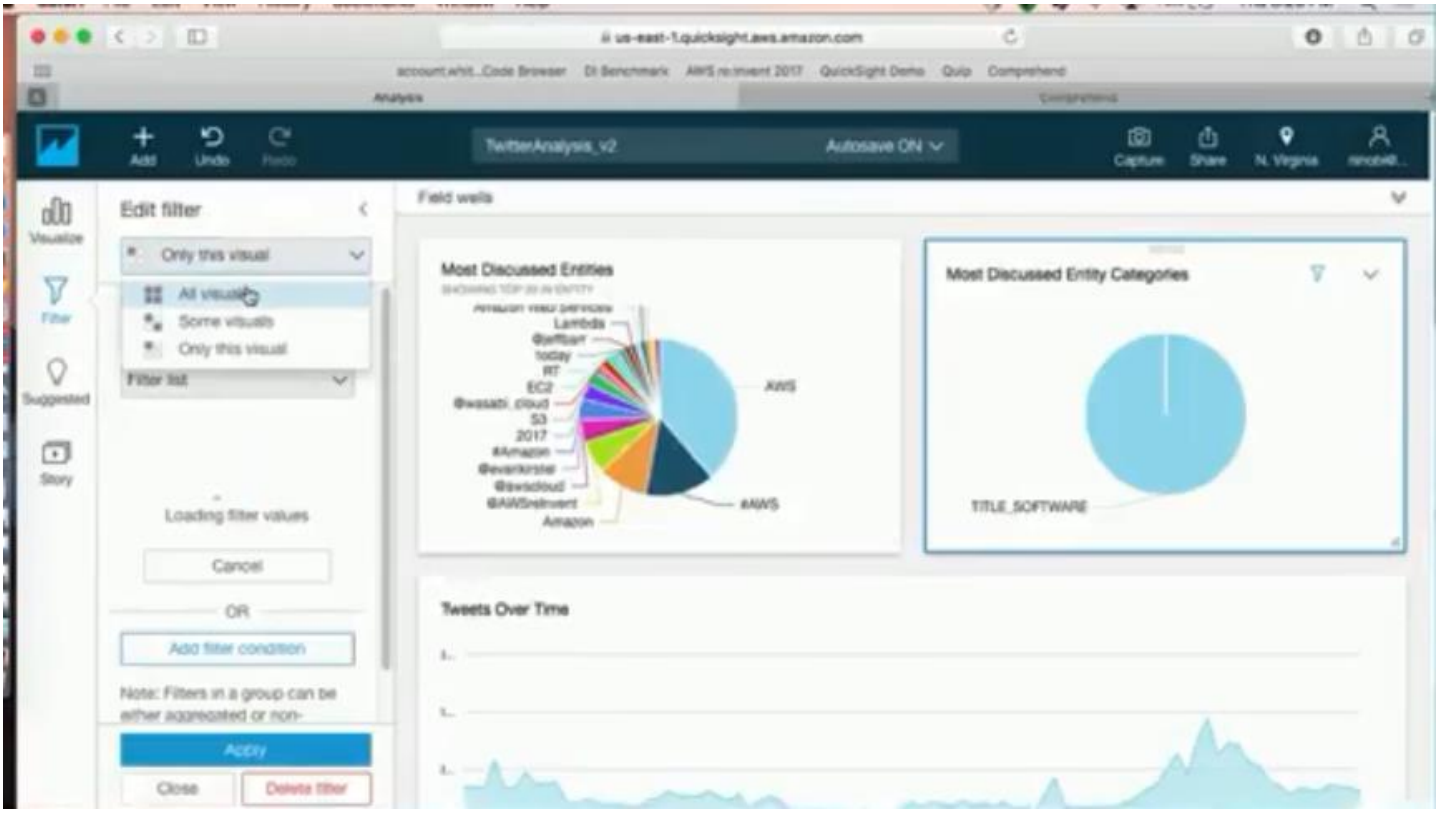
Suggested
Story
Most Discussed Entities
Most Discussed Entity Categories
AWS
Amazon
ORGANIZATION
PERSON
OTHER
OTHERS
Tweets Over Time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Share
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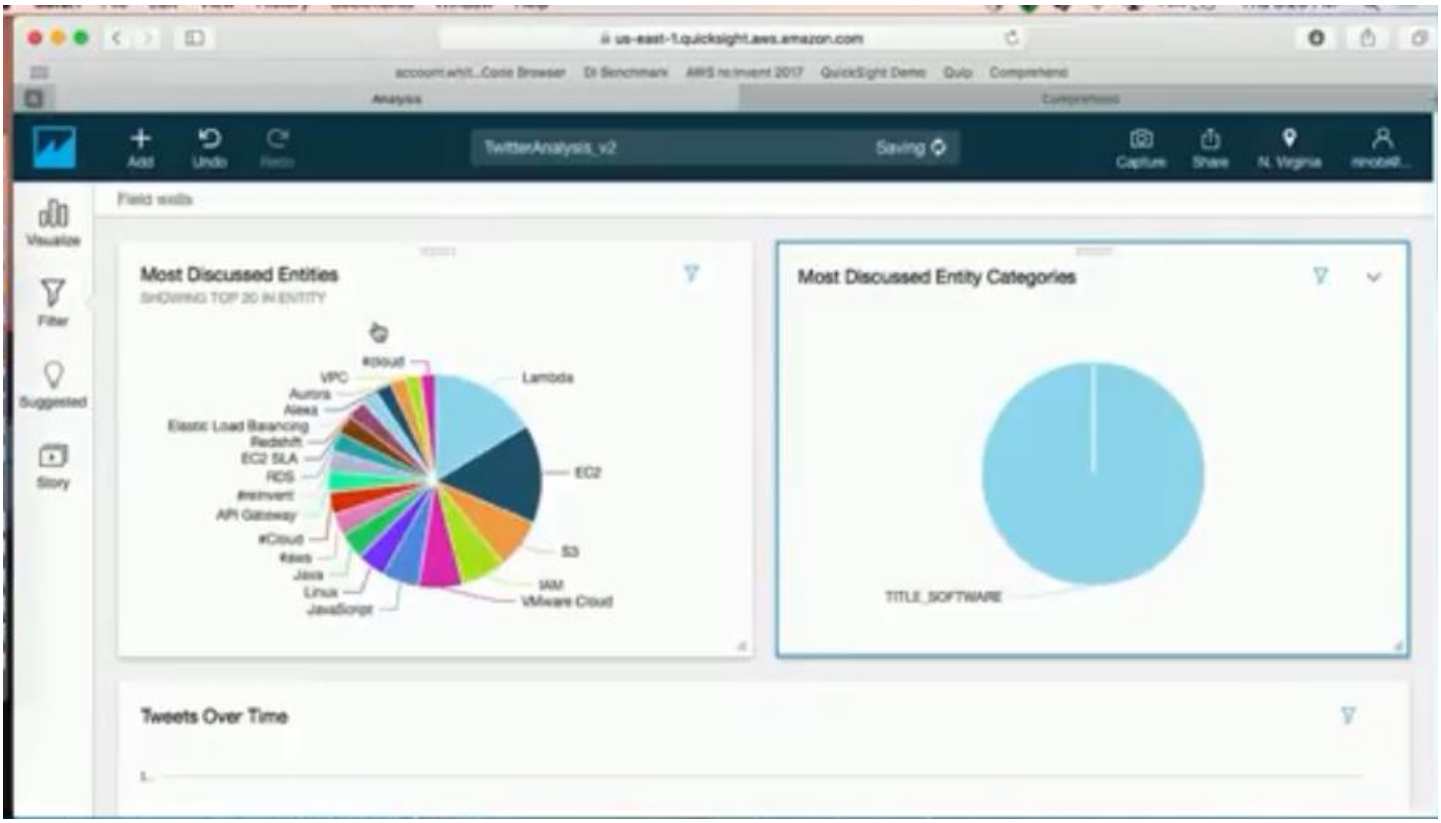
Filter
Suggested
Story
Edit filter
Only this visual
All visuals
Some visuals
Only this visual
Filter list
Loading filter values
Cancel
OR
Add filter condition
Apply
Close
Delete filter
Most Discussed Entities
Most Discussed Entity Categories
AWS
Amazon
TITLE_SOFTWARE
Tweets Over Time



We are using AWS Translate to pull in tweets from many languages and running analytics over all the results.


Thank you
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