AIM402-R

Extract AI-driven customer insights using Post-Call Analytics

Chris Lott (he/him)

Senior Solutions Architect
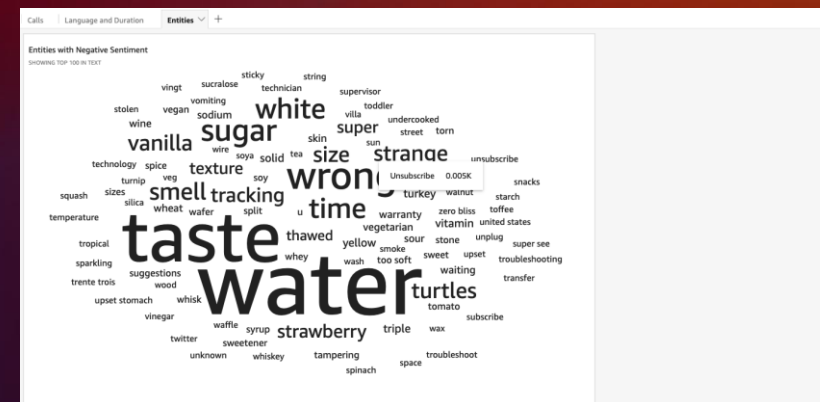Amazon Transcribe Service Team
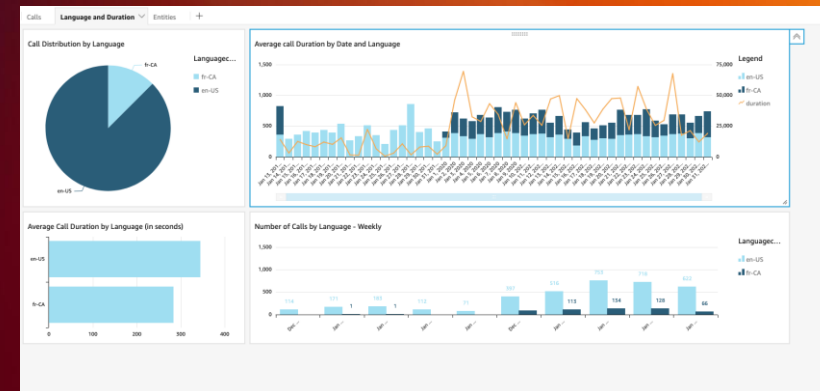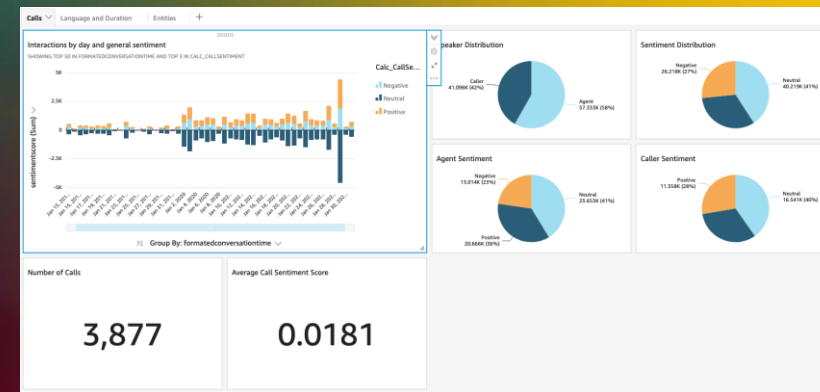Amazon Web Services

Dr. Andrew Kane (he/him)
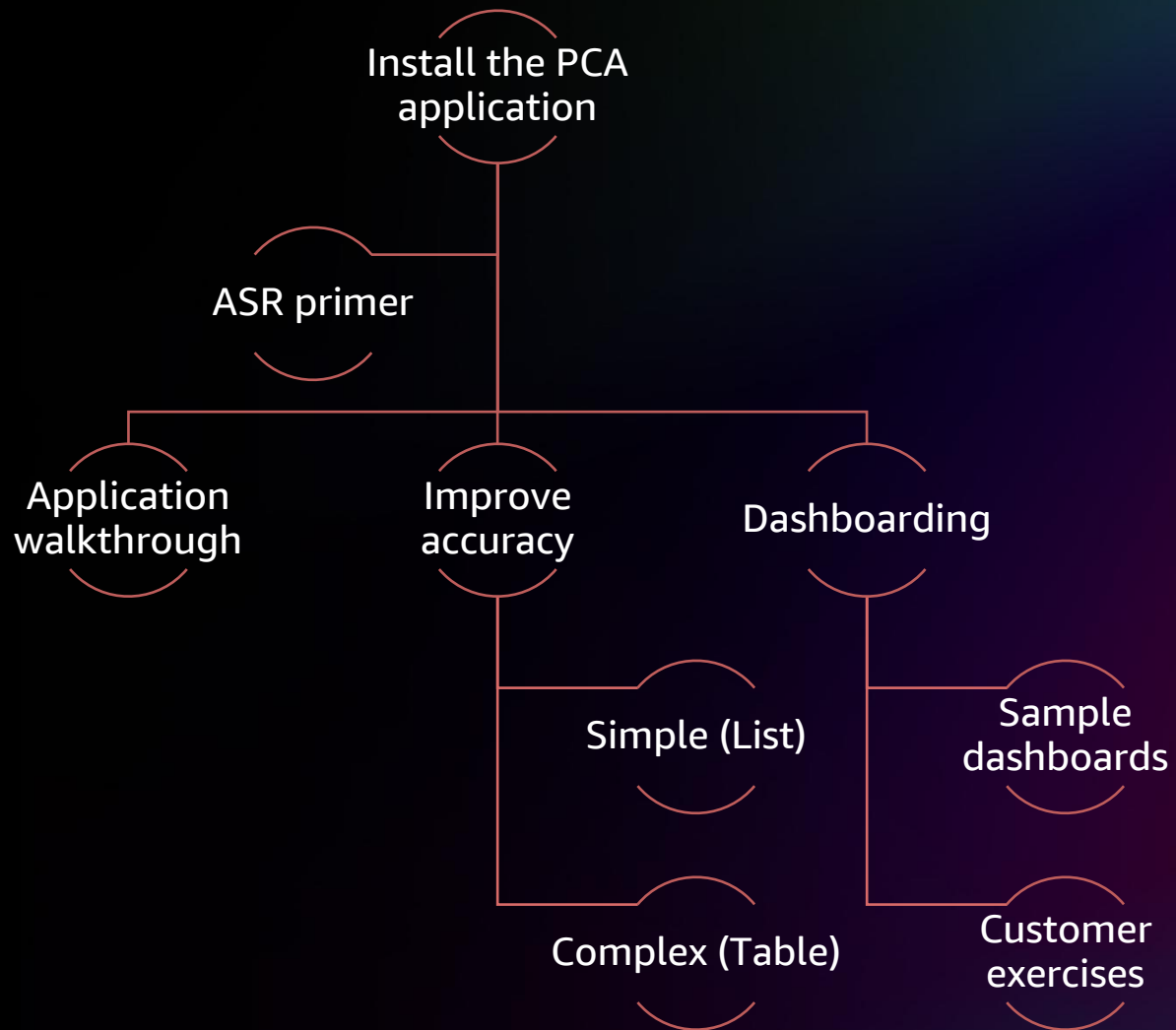
WW Tech Lead (AI Language Services)
WW Specialist Organization
Amazon Web Services

AIM402 workshop agenda

- Install the PCA application
- ASR primer
- Application walkthrough
- Improve accuracy
  - Simple (List)
  - Complex (Table)
- Dashboarding
  - Sample dashboards
  - Customer exercises

Event engine – Install
PCA application

ASR primer
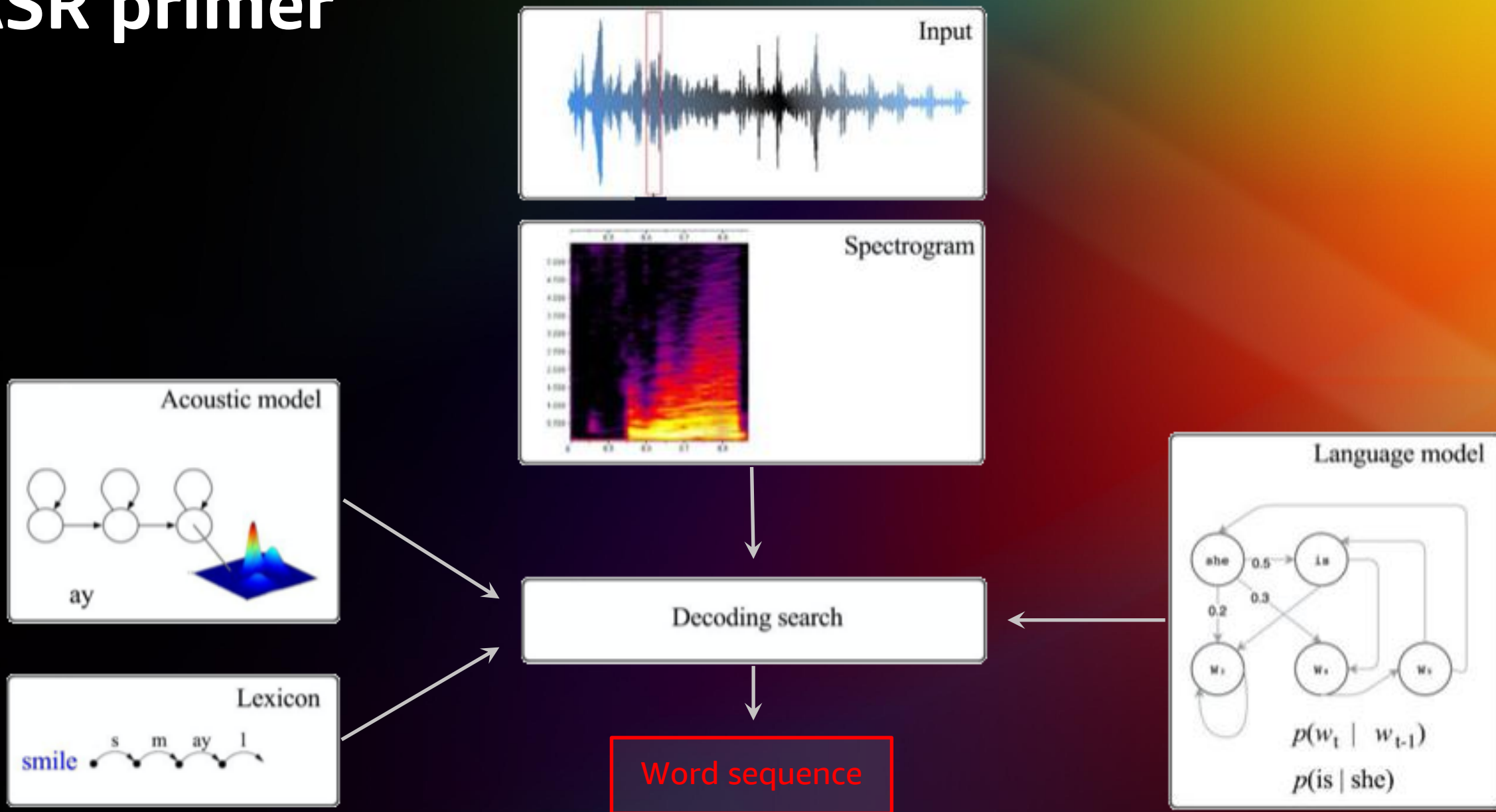
Acoustic model and language model

X = Input vectors

W = Word sequence

Acoustic model and language model

X = Input vectors
W = Word sequence

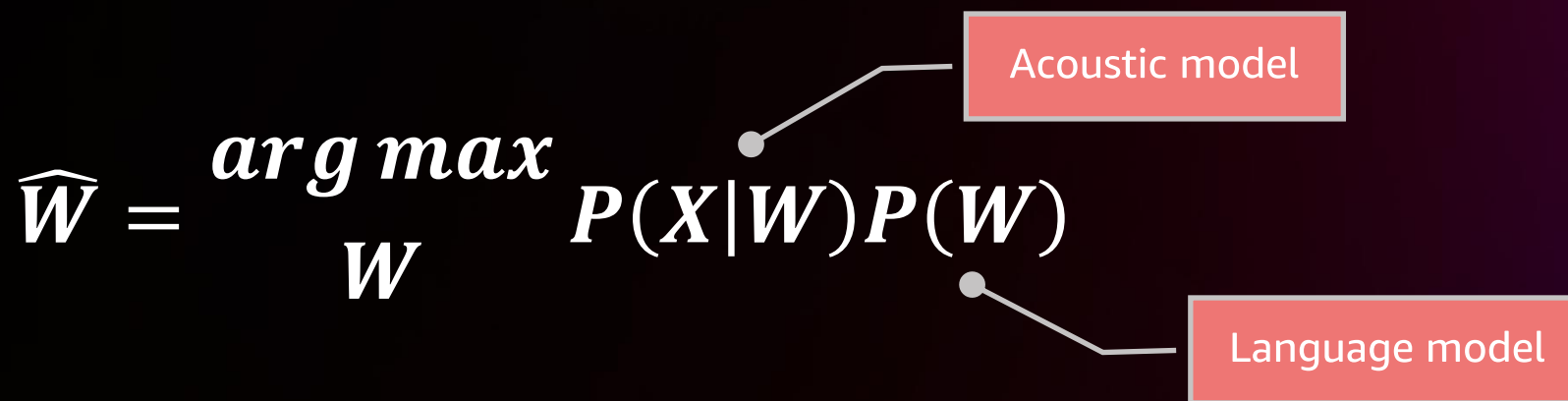$$\widehat{W} = \underset{W}{arg\,max}\, P(W|X)$$

$$\widehat{W} = \underset{W}{arg\,max}\, P(X|W)P(W)$$

Acoustic model

Language model

"Let us pray" ≠ "Lettuce spray"

Phonemes, phones and triphones

PHONEMES

"Unit of sound"
~20-60 per language

[FIVE]
- /f/   /ay/   /v/

[FOUR]
- /f/   /ow/   /r/

PHONES

"Pronunciations"
1 phoneme → n phones

/t/

$[t]rip \neq [t]ea$

TRIPHONES

"Coarticulation"
3 neighbor phonemes

- left and right context
- central

[SPEAK]
#**S**p s**P**iy p**Iy**k iy**K**#

Lexicon

$$\widehat{W} = \underset{W}{arg\,max}\ P(X|V)P(V|W)P(W)$$

Steps to prepare an ASR system

1. Train the language model P(W)

2. Create the lexicon P(V|W)

3. Train the acoustic model P(X|V)

rancher
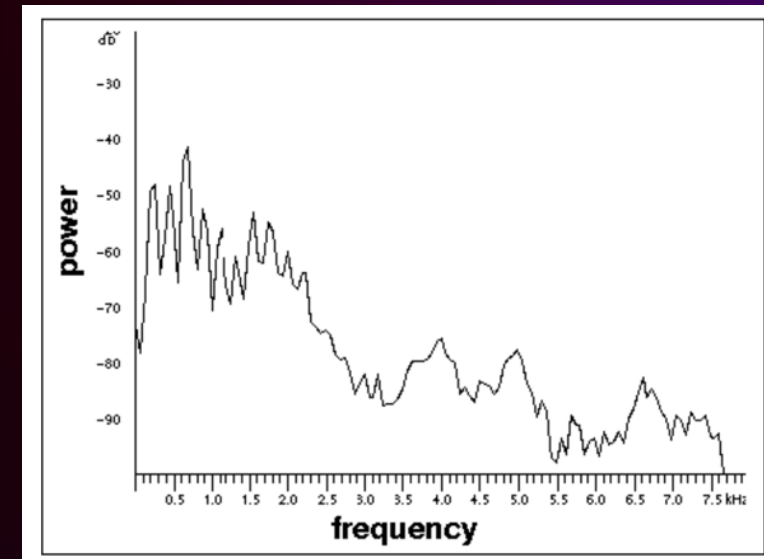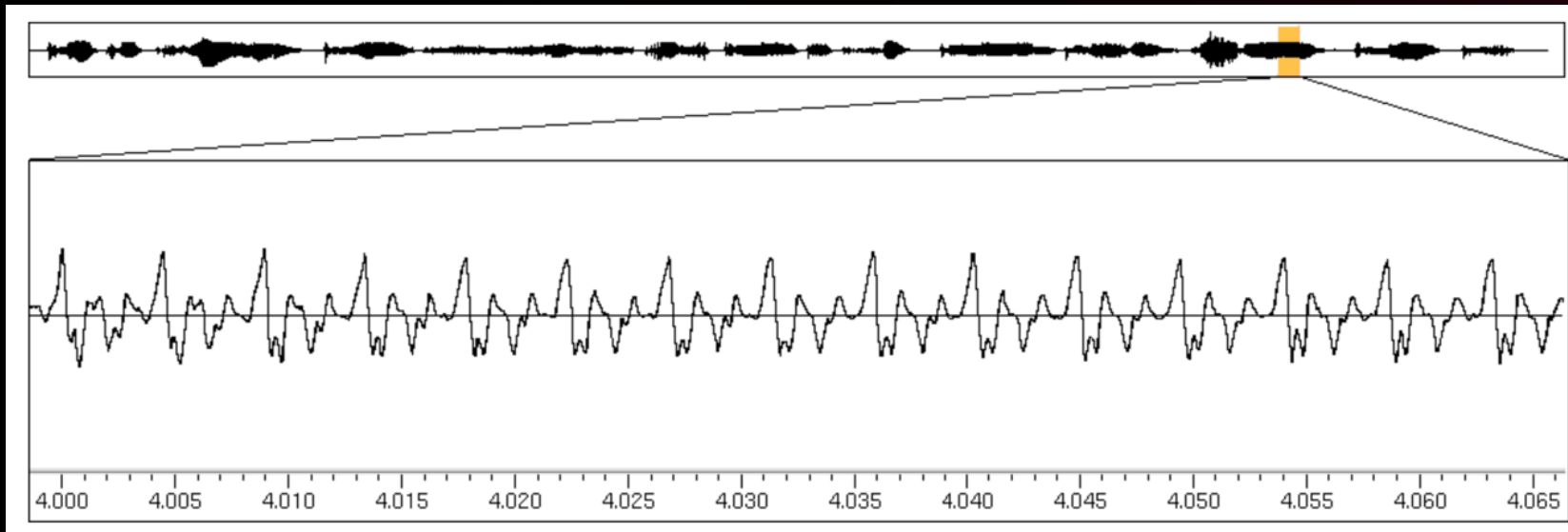- r @ n C E r

expletive
- E k s p l x t I v

cattle
- k @ t x l

Feature extraction *(1/2)*
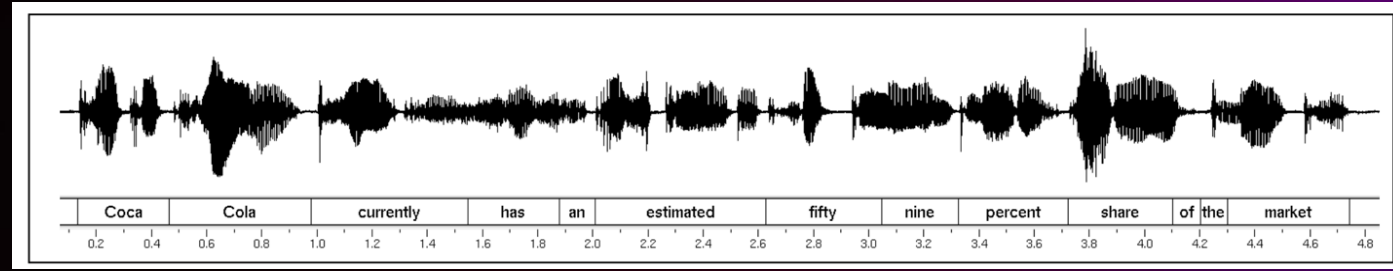
Feature extraction *(2/2)*
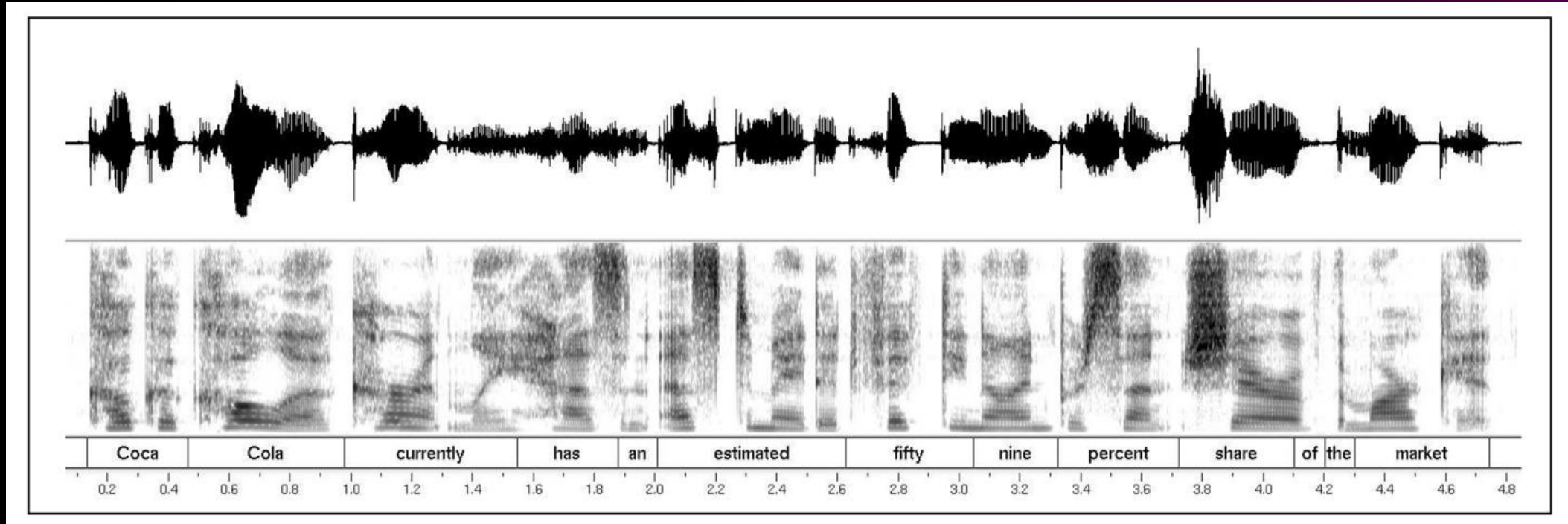
Smoothing → Power peaks → Pronunciation traits

Cepstrum (lo-freq) → MFCC (Mel-frequency cepstral coefficients)

Amazon Transcribe – Custom vocabularies

Option 1: List of phrases

- Phrase

Option 2: 4-column table

- Phrase
- Display as
    F.B.I. → FBI
- Sounds like
    Los Angeles → los-an-gel-es
- IPA pronunciation
    Los Angeles → l ɔ s æ n ʤ ə l ə s

Higher accuracy
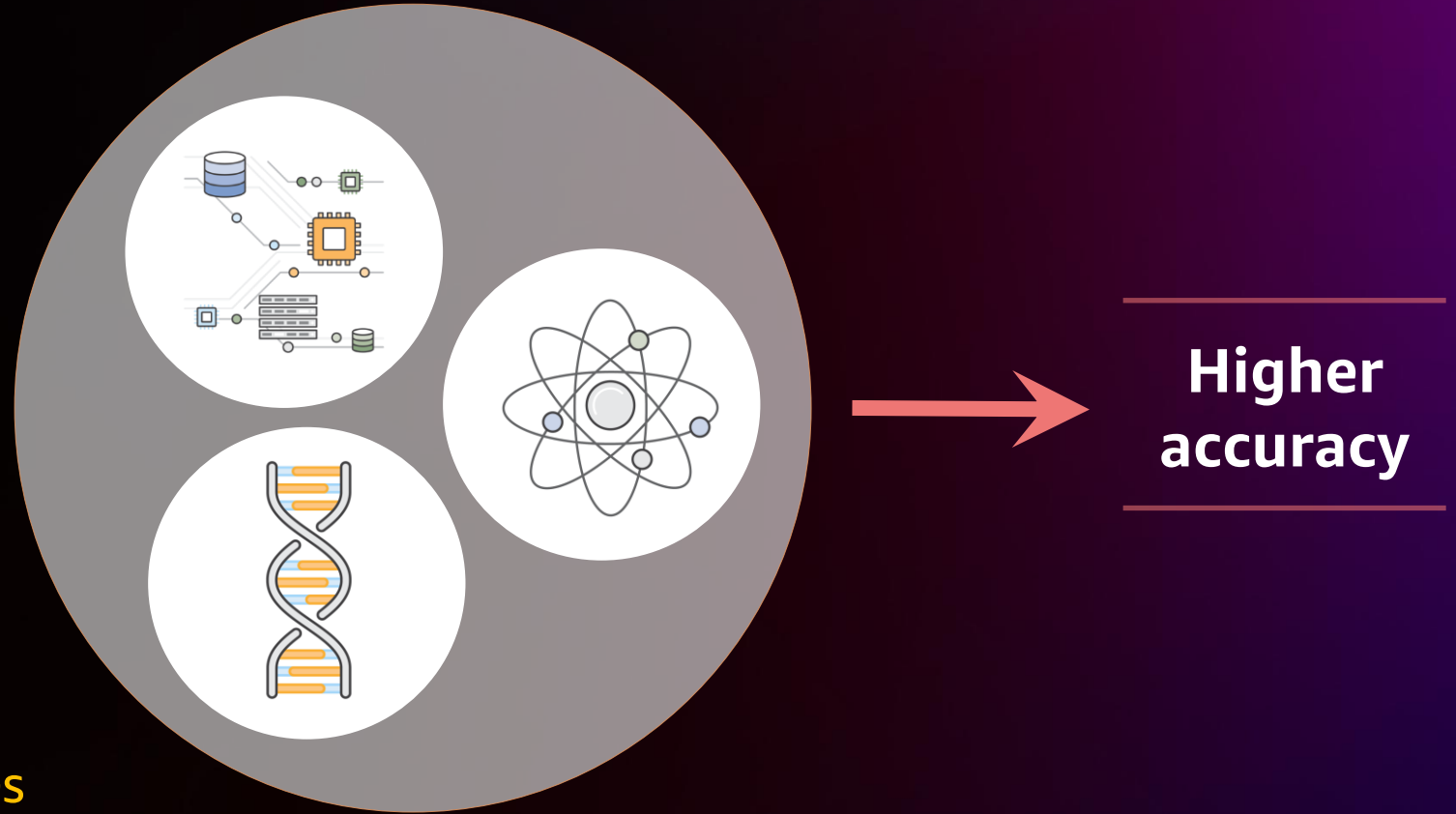
Amazon Transcribe - Custom languages

Current en_us model

S3 docs > 50k words

6-12 hours

Custom language model

Event engine – Create custom vocabularies

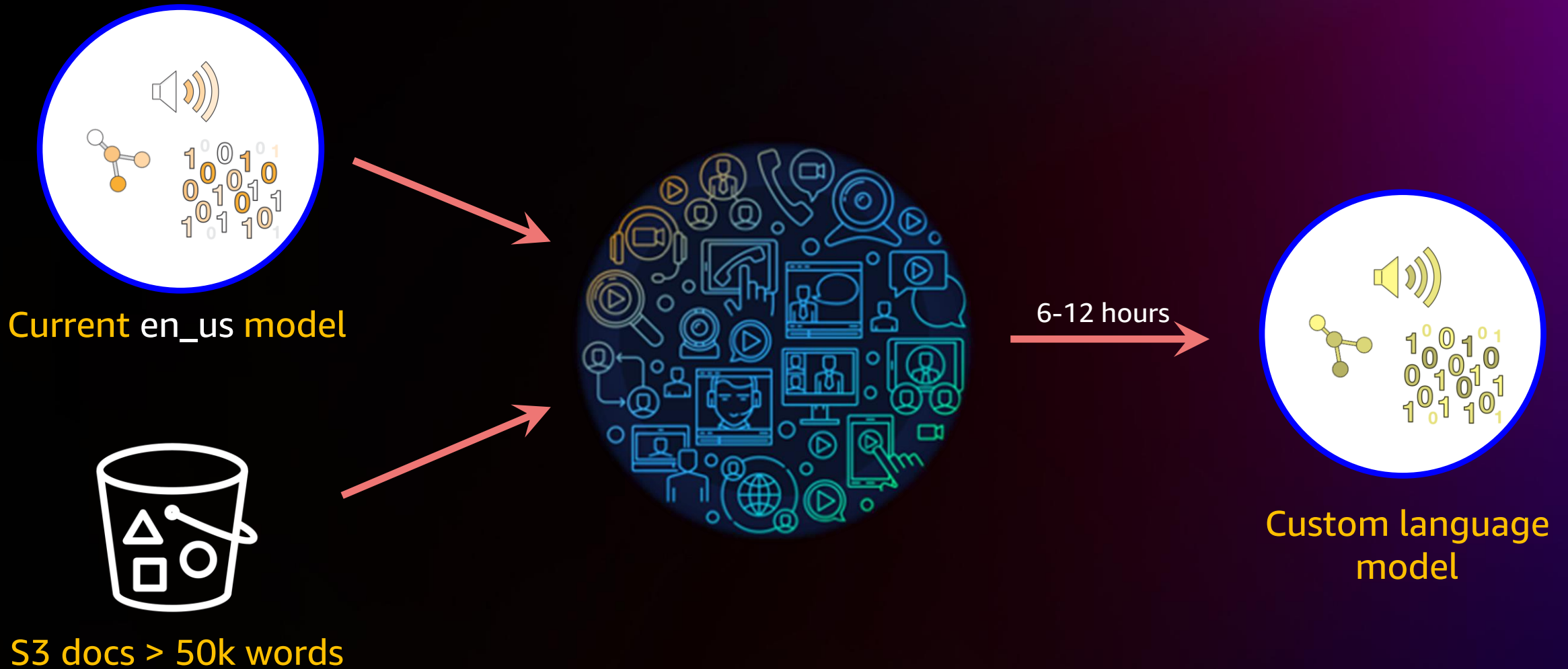# Workshop exercises

SCENARIO 1 – Contact center supervisor – Compliance validation

1. Thank you has to be spoken at the beginning of the call.
2. Which agents have negative sentiment trends?
3. Find average call duration
4. Average call duration by agent

5. Agent hold time?
6. Which agents are NOT compliant?
7. Which agents have the most interrupts?

SCENARIO 2 – Product manager – Product feedback

1. Which products are getting the most negative calls?
2. What are the reasons people are calling?

3. What percentage of calls are because of missing/stolen packages compared to wrong orders?

AWS Contact Center Intelligence sessions

ID	Session type	Time	Session title	Location
Tuesday, November 29				
AIM403	Workshop	11:45 AM - 1:45 PM	Build human-like customer experiences with conversational AI	Level 2 South, Mandalay Bay Ballroom A, Mandalay Bay
AIM332	Breakout	1:15 PM - 2:15 PM	WaFd bank delivers enhanced self-service with AWS conversational AI	Upper Level, Cristal 7, Wynn
AIM317	Chalk Talk	2:45 PM – 3:45 PM	AI-powered contact centers are key for successful organizations	Level 1, Montrachet 1, Wynn
Wednesday, November 30				
AIM307	Breakout	11:30 AM - 12:30 PM	JPMorganChase real-time agent assist for contact center productivity	Level 1, Encore Ballroom 5, Encore
AIM402	Workshop	11:30 AM - 1:30 PM	Extract AI-driven customer insights using Post-Call Analytics	Level 2 South, Mandalay Bay Ballroom L, Mandalay Bay
PEX305	Workshop	3:15 PM - 5:15 PM	AWS Contact Center Intelligence using AWS AI services	Level 1, Lafleur 2, Wynn
Thursday, December 1				
BIZ307	Workshop	2:00 PM - 4:00 PM	Use AI to live transcribe and translate multiparty video calls	Level 1 North, Islander C, Mandalay Bay

Additional resources

[Post-Call Analytics for your contact center with Amazon language AI services](#)
Blog post describing the features and architecture of the application used in this workshop

[Post-Call Analytics GitHub repository](#)
The publicly available open-source code repository for the application

[Amazon Transcribe Call Analytics documentation](#)
Public documentation on the underlying Amazon Transcribe APIs with example usage and responses

[Contact Center Intelligence Post-Call Analytics](#)
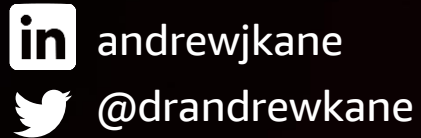See where the Post-Call Analytics application fits into AWS Contact Center Intelligence

Thank you!

Chris Lott

in clott

Dr. Andrew Kane

in andrewjkane

🐦 @drandrewkane

Please complete the session survey in the **mobile app**