



AWS
re:Invent

MAC304

NEW LAUNCH! Introducing Amazon Lex

Service for Building Voice or Text Chatbots

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November 30, 2016

Amazon Lex

Why did we build Amazon Lex?

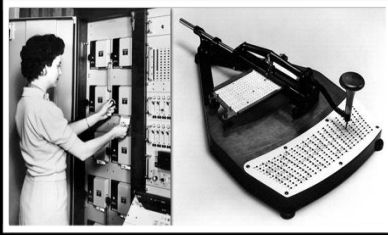
What is Amazon Lex?

How do I get started using Amazon Lex?

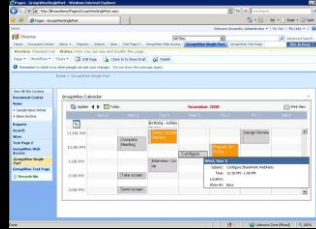
Q&A

Why Did We Build Amazon Lex?

Advent of Conversational Interactions



1st Gen:
Punch Cards & Memory Registers



2nd Gen:
Pointers & Sliders



3rd Gen:
Conversational Interfaces

Conversational Access



Natural



On-demand

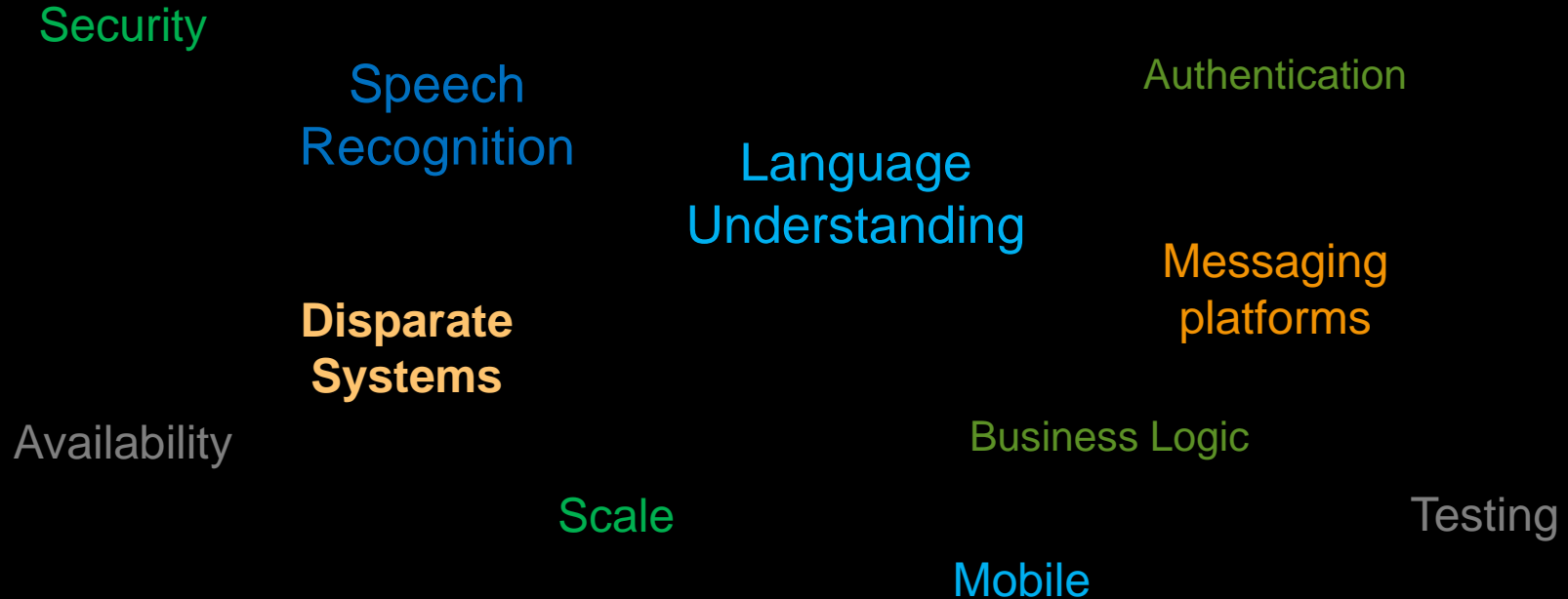


Accessible



Efficient

Developer Challenges



Conversational interfaces need to combine a large number of sophisticated algorithms and technologies

**Amazon Lex:
A new service for building
conversational interfaces
using voice and text**

Amazon Lex - Features



Text and speech language understanding: powered by the same technology as Alexa



Deployment to chat services



Designed for builders: efficient and intuitive tools to build conversations; scales automatically



Versioning and alias support



Enterprise SaaS connectors: connect to enterprise systems

Text and Speech Language Understanding

Speech
Recognition

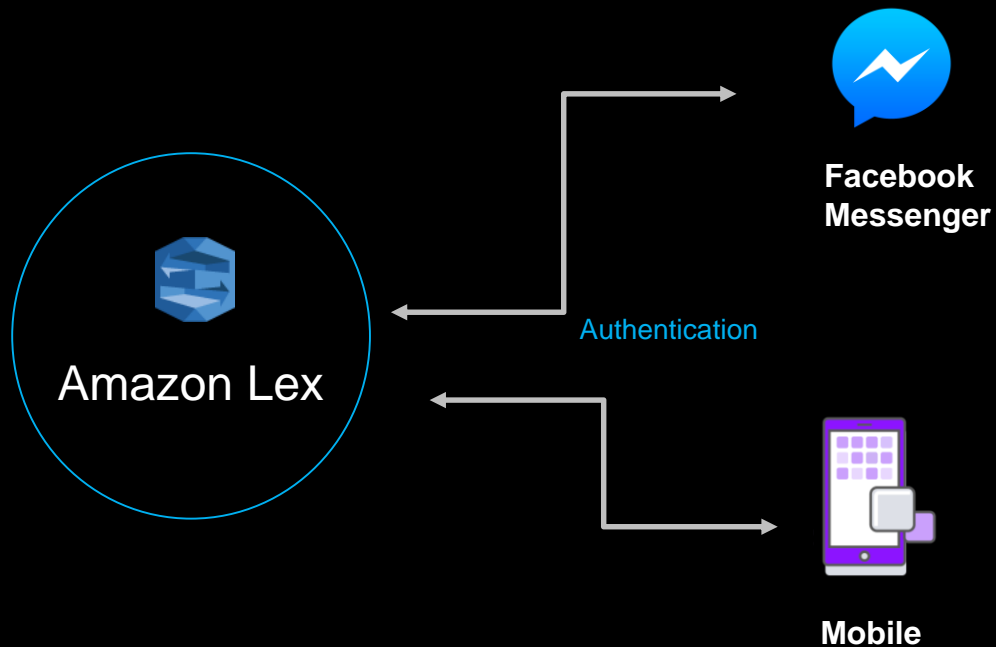


Natural Language
Understanding

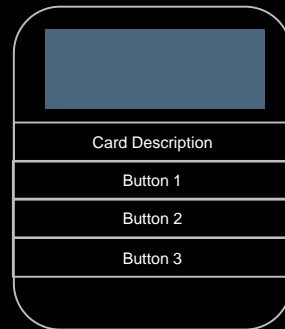
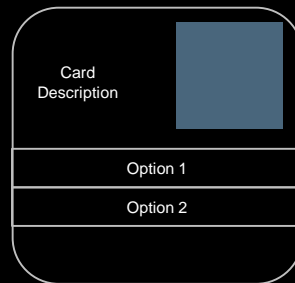
Powered by the same deep learning technology as Alexa

Deployment to Chat Services

One-click deployment



Rich Formatting



Designed for Builders

The screenshot displays the 'BookTrip' builder interface, specifically the configuration page for a 'BookHotel' intent. The interface is organized into several sections:

- Intents:** A sidebar on the left lists 'BookCar' and 'BookHotel'.
- Slot types:** A sidebar on the left lists 'Address', 'CarTypeValues', 'RoomTypeValues', and 'Error Handling'.
- Sample utterances:** A section for defining natural language examples, including:
 - e.g. I would like to book a flight.
 - Book a hotel
 - I want a make hotel reservations
 - Book a (Nights) night stay in (Location)
- Slots:** A table for defining slot types and their values:

Required	Name	Slot type	Latest
<input type="checkbox"/>	e.g. Location	e.g. AMAZON.CITY	Latest
<input checked="" type="checkbox"/>	Location	AMAZON.US_CITY	Latest
<input checked="" type="checkbox"/>	CheckinDate	AMAZON.DATE	Built-in
<input checked="" type="checkbox"/>	Nights	AMAZON.NUMBER	Built-in
<input checked="" type="checkbox"/>	RoomType	RoomTypeValues	Latest
<input type="checkbox"/>	StreetAddress	Address	Latest
- Options:** A section for defining options, including:
 - Initialization and validation code hook
 - Confirmation prompt
 - Confirm: Okay, I have you down for a (Nights) night stay in (Location) starting (CheckinDate). Shall I book the reservation?
 - Cancel (if the user says "no"): Okay, I have cancelled your reservation in progress.
- Fulfillment:** A section for defining fulfillment, including:
 - AWS Lambda function (selected) or Return parameters to client
 - BookStayFunction
 - Goodbye message
 - Follow-up message: I have booked your reservation, can I help you with anything else?
 - Cancel (if the user says "no"): Thanks for booking with us, have a great day!

On the right side, there is a 'Test Bot' window showing a conversation flow:

- User: I want to book a hotel
- Bot: What city will you be travelling to?
- User: Seattle
- Bot: What day do you want to check in?
- User: 30th November
- Bot: How many nights will you be staying?
- User: Clear

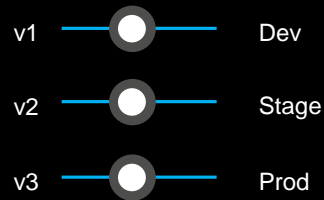
Efficient and intuitive tools to build conversations

Versioning and Alias Support



- Supported for Intents, Slots, and Bots
- Enables multi-developer environment
- Rollback to previous versions

Versioning



- Deploy different aliases to different platforms
- Run different stacks for dev, stage and prod environments
- Target different user groups with different aliases

Alias

AWS Mobile Hub Integration

Authenticate users



Synchronize data



Analyze user behavior



Track retention



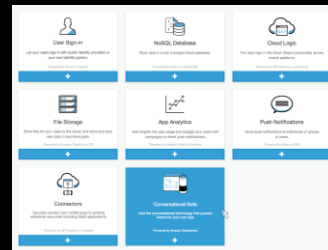
Store and share media



Conversational Bots

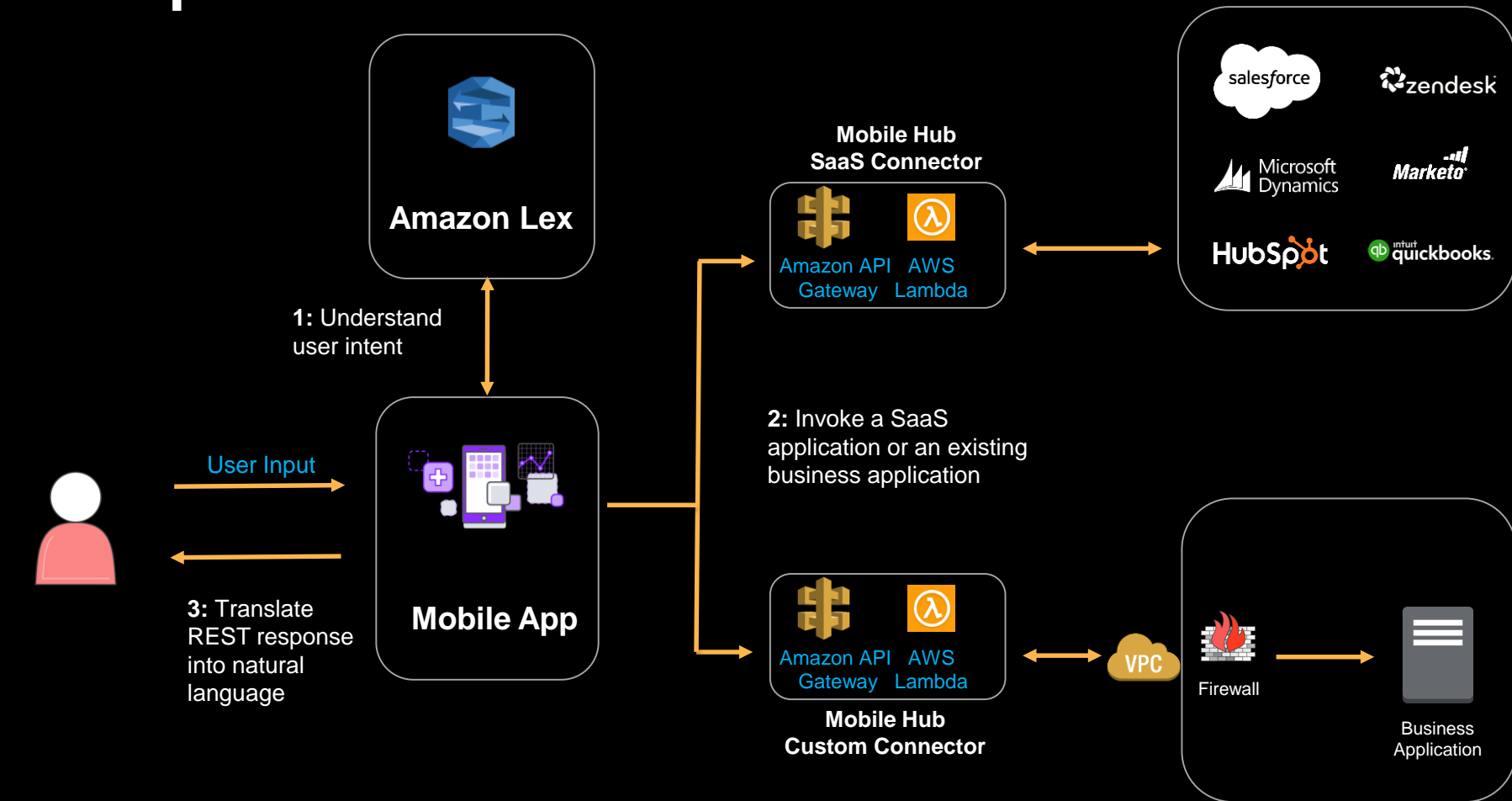


Lex



More

Enterprise SaaS Connectors with Mobile Hub



Amazon Lex – Use Cases



Informational Bots

Chatbots for everyday consumer requests

- News updates
- Weather information
- Game scores



Application Bots

Build powerful interfaces to mobile applications

- Book tickets
- Order food
- Manage bank accounts



Enterprise Productivity Bots

Streamline enterprise work activities and improve efficiencies

- Check sales numbers
- Marketing performance
- Inventory status



Internet of Things (IoT) Bots

Enable conversational interfaces for device interactions

- Wearables
- Appliances
- Auto

Amazon Lex Benefits



Easy to use



High quality text and speech language understanding



Seamlessly deploy and scale



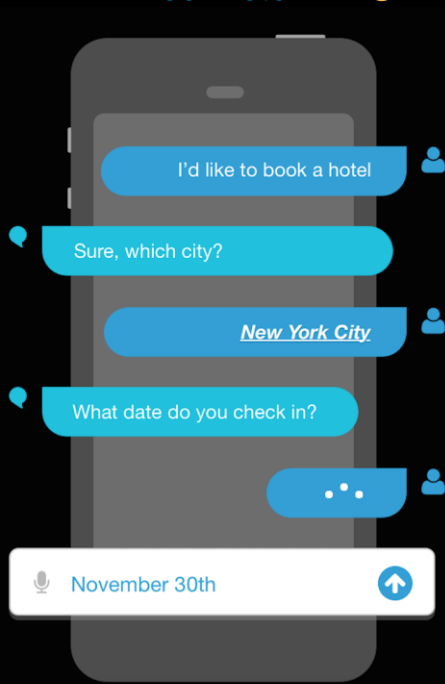
Built-in integration with the AWS platform



Cost effective

Lex Bot Structure

BookHotel



Intents

An Intent performs an action in response to natural language user input

Utterances

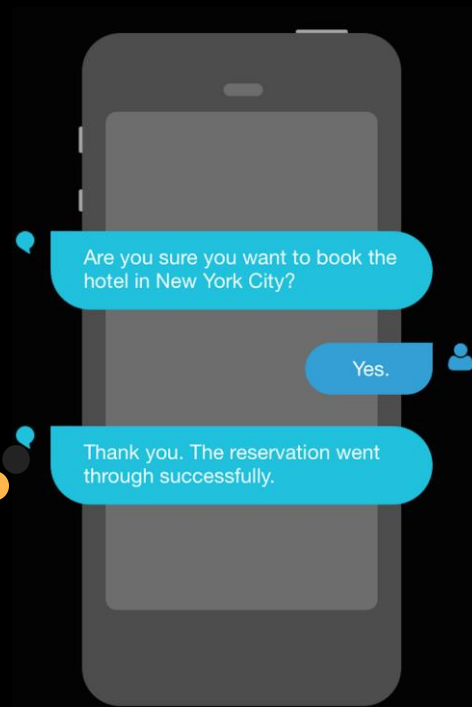
Spoken or typed phrases that invoke your intent

Slots

Slots are input data required to fulfill the intent

Fulfillment

Fulfillment mechanism for your intent



Utterances

I'd like to book a hotel

I want to make my hotel reservations

Can you help me book my hotel?

I want to book a hotel in New York City

Slots

Slot	Type	Values
Destination	City	New York City, Seattle, London, ...
CheckIn	Date	Valid dates
CheckOut	Date	Valid dates

Slot Elicitation

I'd like to book a hotel

Sure what city do you want to book?

New York City

City
New York City

What date do you check in?

Nov 30th

Check In
11/30/2016

Fulfillment



Intents and slots passed to
AWS Lambda function for
business logic
implementation.

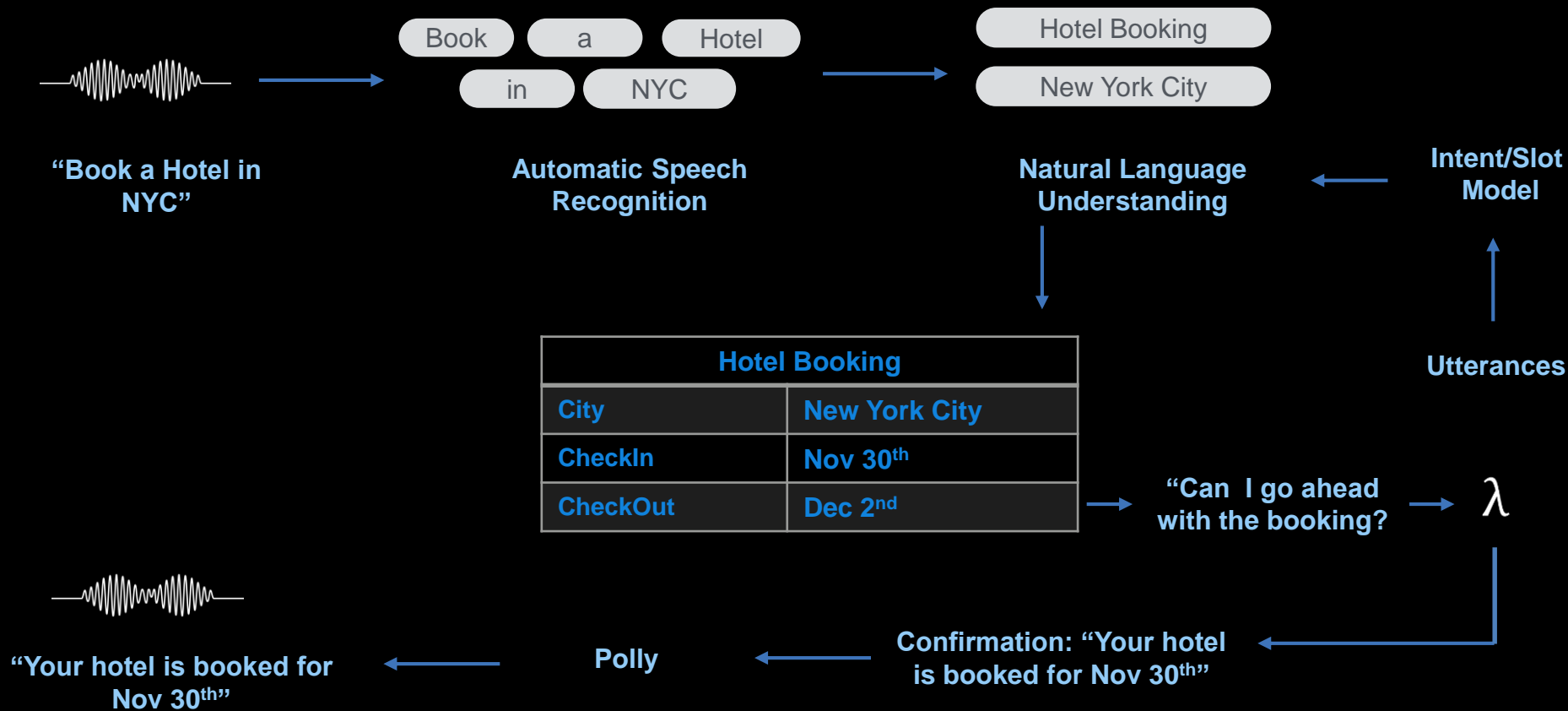
**AWS Lambda
Integration**



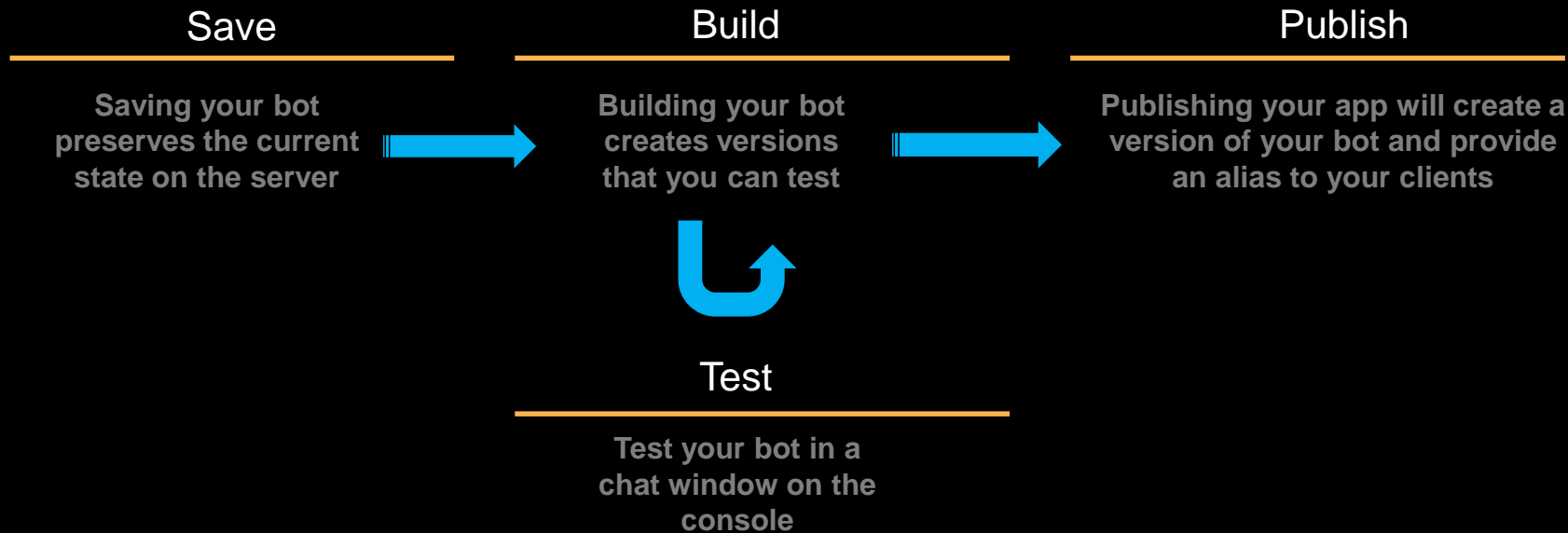
User input parsed to derive
intents and slot values.
Output returned to client for
further processing.

**Return to
Client**

“Book a Hotel”



Save, Build, and Publish



Monitoring



Missed Utterance Count



Latency



Traffic

Monitor your bot

Customer Testimonials: Capital One

“As a heavy user of AWS, Amazon Lex’s seamless integration with other AWS services like AWS Lambda and AWS DynamoDB is really appealing.”



“A highly scalable solution, it also offers potential to speed time to market for a new generation of voice and text interactions such as our recently launched Capital One skill for Alexa.”

Customer Testimonials: HubSpot

“HubSpot's GrowthBot is an all-in-one chatbot which helps marketers and sales people be more productive by providing access to relevant data and services using a conversational interface. With GrowthBot, marketers can get help creating content, researching competitors, and monitoring their analytics.”



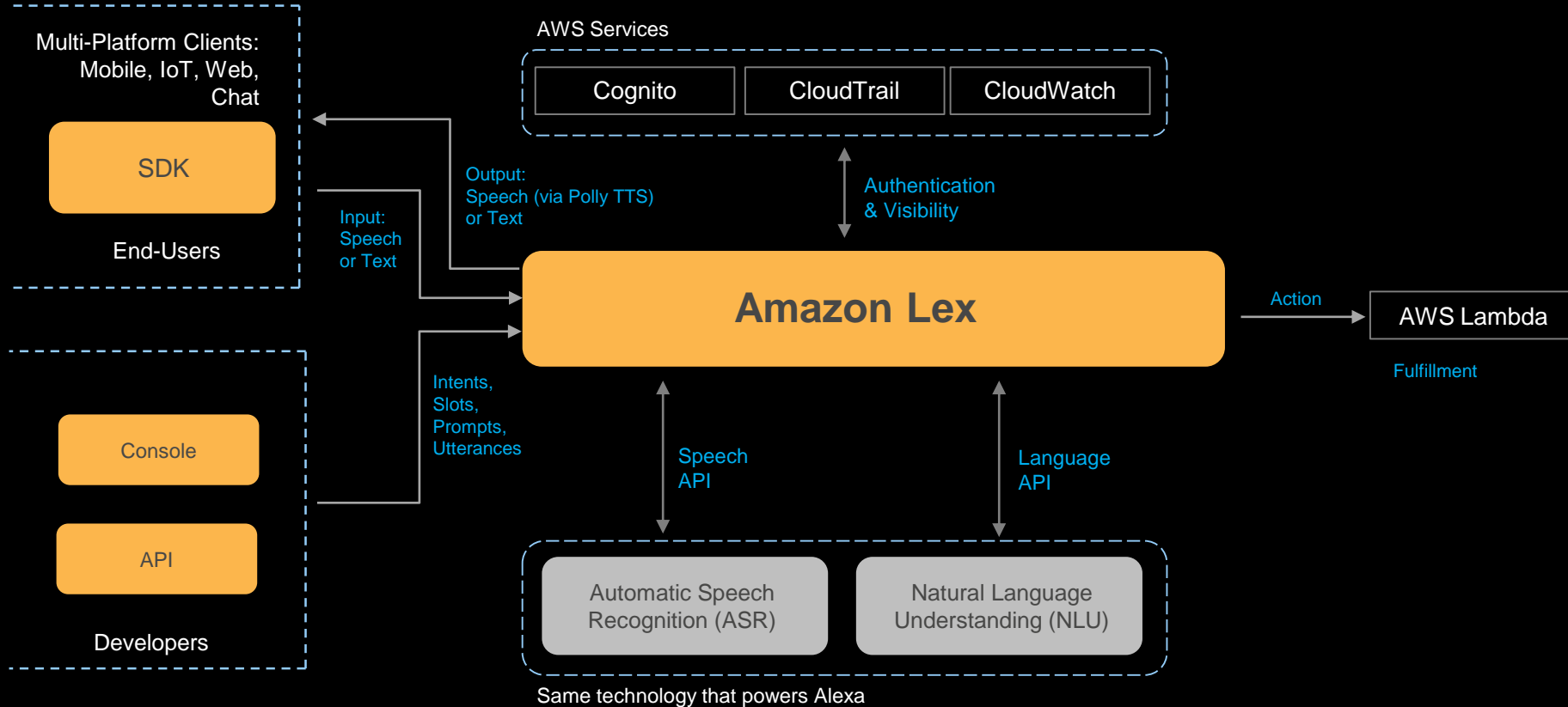
“Through Amazon's Lex, we're adding sophisticated natural language processing capabilities that helps GrowthBot provide a more intuitive UI for our users. Amazon Lex lets us take advantage of advanced A.I. and machine learning without having to code the algorithms ourselves.”

Amazon Lex Pricing

	<u>Text</u>	<u>Speech</u>
Price per 1000 requests	\$0.75	\$4.00
Free Tier* (requests per month)	10,000	5,000

*Available for the first year upon sign-up to new Amazon Lex customers

Amazon Lex - Technology



How Do I Get Started Using Amazon Lex?

Register for the Preview @

<https://aws.amazon.com/lex>



Sign-up & whitelist

The screenshot displays the Amazon Lex website. At the top, the Amazon Lex logo is shown, followed by a description: "Amazon Lex is a service for building conversational interfaces using voice and text. With Lex, the same deep learning engine that powers Alexa is now available to any developer, enabling you to bring sophisticated, natural language chatbots to your new and existing applications." Below this is a "Get started" button and a link to the "Getting started guide". The page is divided into three sections, each with an icon and a title:

- High Quality Deep Learning Technologies**: Powered by the same technology as Alexa, Lex provides both automatic speech recognition (ASR) and natural language understanding (NLU) technologies to create a
- Seamlessly Deploy and Scale**: You can build, test, and deploy your chatbots directly from the AWS Management Console. Lex allows you to easily publish your voice or text chatbots, so you can access them from mobile apps, web apps, and multiple chat
- Built-in Integration with the AWS Platform**: Amazon Lex has native interoperability with several AWS services such as Amazon Cognito, AWS Lambda, Amazon DynamoDB, Amazon CloudWatch, and AWS Mobile Hub.

Build your first bot!

Q & A



AWS
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Thank you!



**Remember to complete
your evaluations!**