

Behind the Scenes: Tools & Development for VUI

Voice technology is exploding. The market will reach \$26.8B by 2025, growing 47% annually.

Consumers increasingly prefer voice search over typing. Voice assistants now operate on over 4.2 billion devices globally.

By Australian Teachers

 **by Australian Teachers**



Market Growth & Adoption

\$26.8B

Market Size

Projected value by 2025

47%

Annual Growth

Rapid expansion rate

4.2B

Devices

Voice assistants globally





Developer Portals: Amazon Alexa



Extensive Skill Library

Over 100,000 skills published worldwide



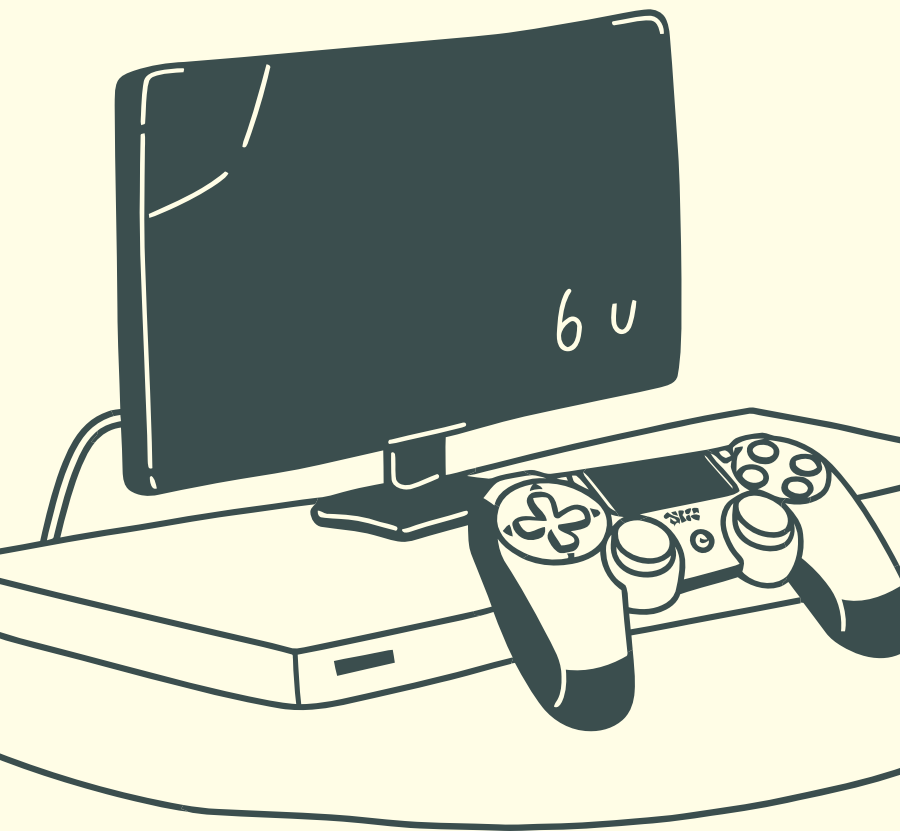
Testing Environment

Comprehensive testing simulators available



Rigorous Certification

38-point certification review process



Developer Portals: Google Actions



Language Support

Supports 30+
languages globally



Analytics Tools

Robust analytics
dashboards

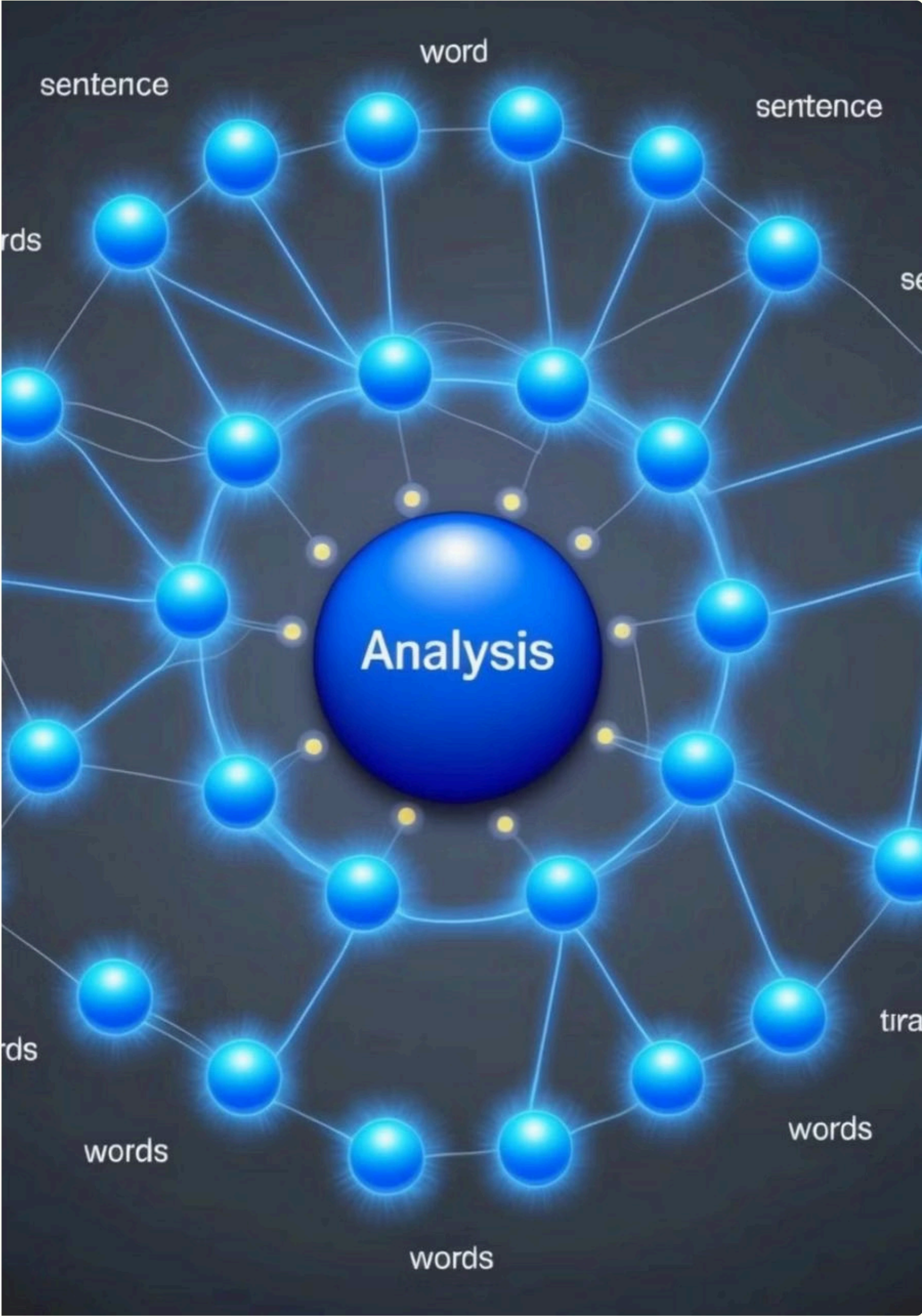


Sample Interactions

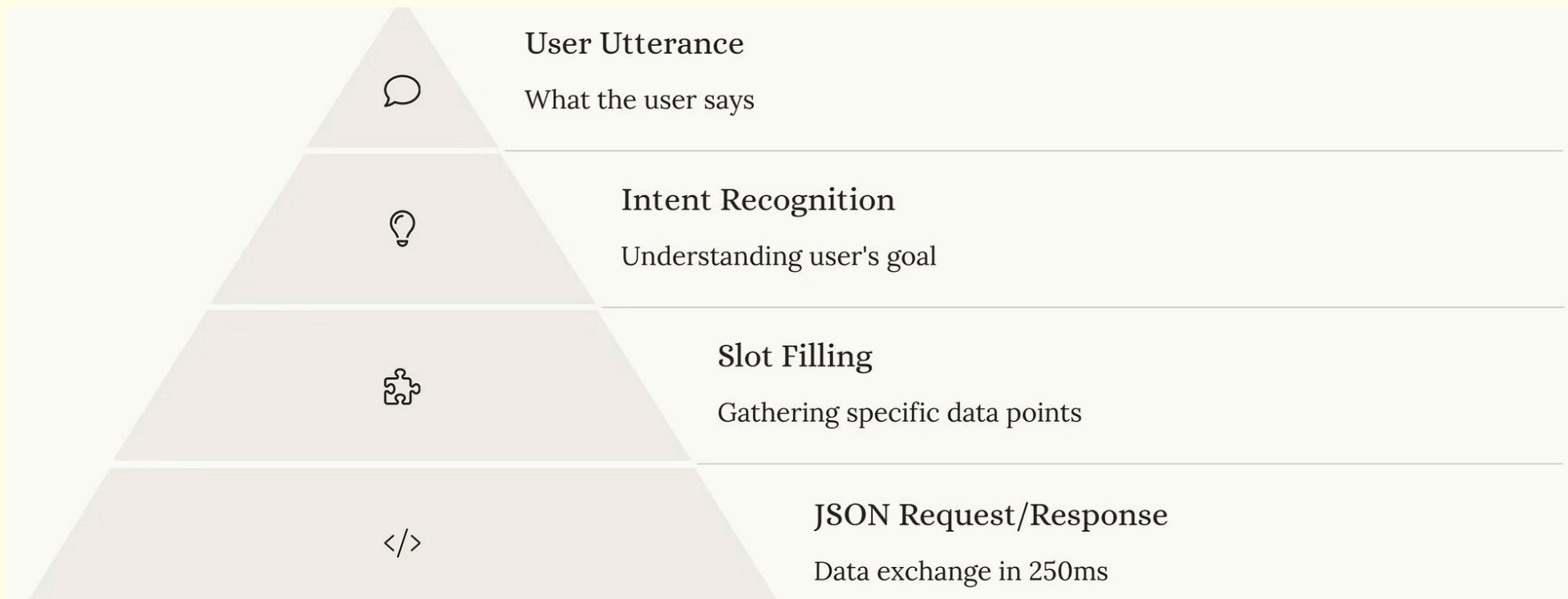
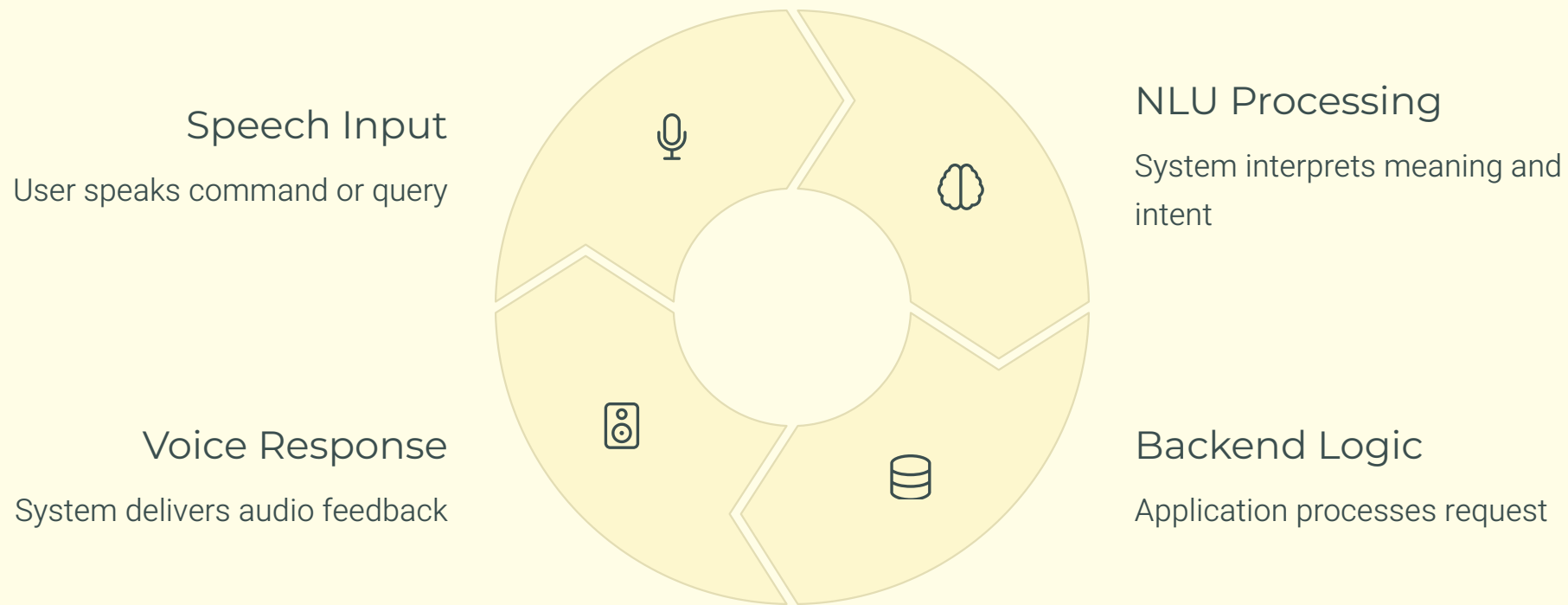
1000+ sample
interactions
available

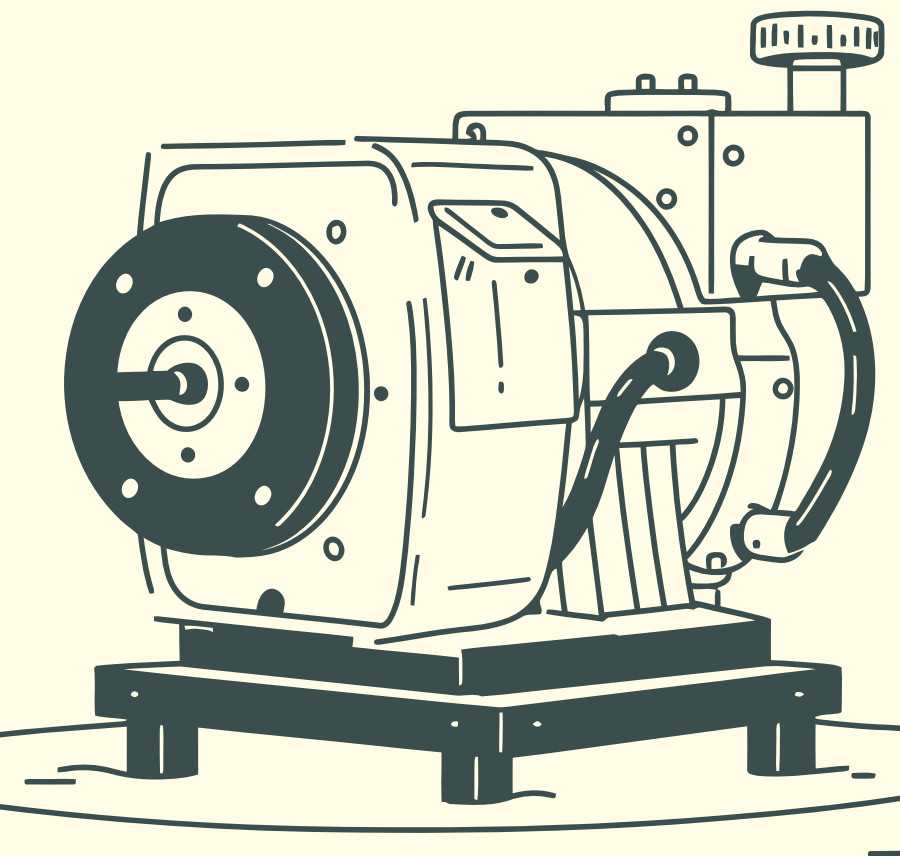
NLP/NLU in VUI Design

Intent Recognition	Entity Extraction	Context Management	Sentiment Analysis
Accuracy jumped from 72% (2018) to 95% (2023)	Utilizes advanced span-based tagging techniques	Maintains conversation flow through session variables	Detects 7 distinct emotional states in speech



Voice Interaction Models





JSON Structures for Voice Apps

Intent Schema

Defines what users can ask and how the system responds

Utterance Models

Sample phrases that map to specific intents

Response Templates

Structured output formats for consistent user experience

browser



Text-to-speech capabilities

Performance



Language Support

Web Speech API

Initialize API

Set up `SpeechRecognition` interface in browser

Capture Audio

Access microphone and process audio stream

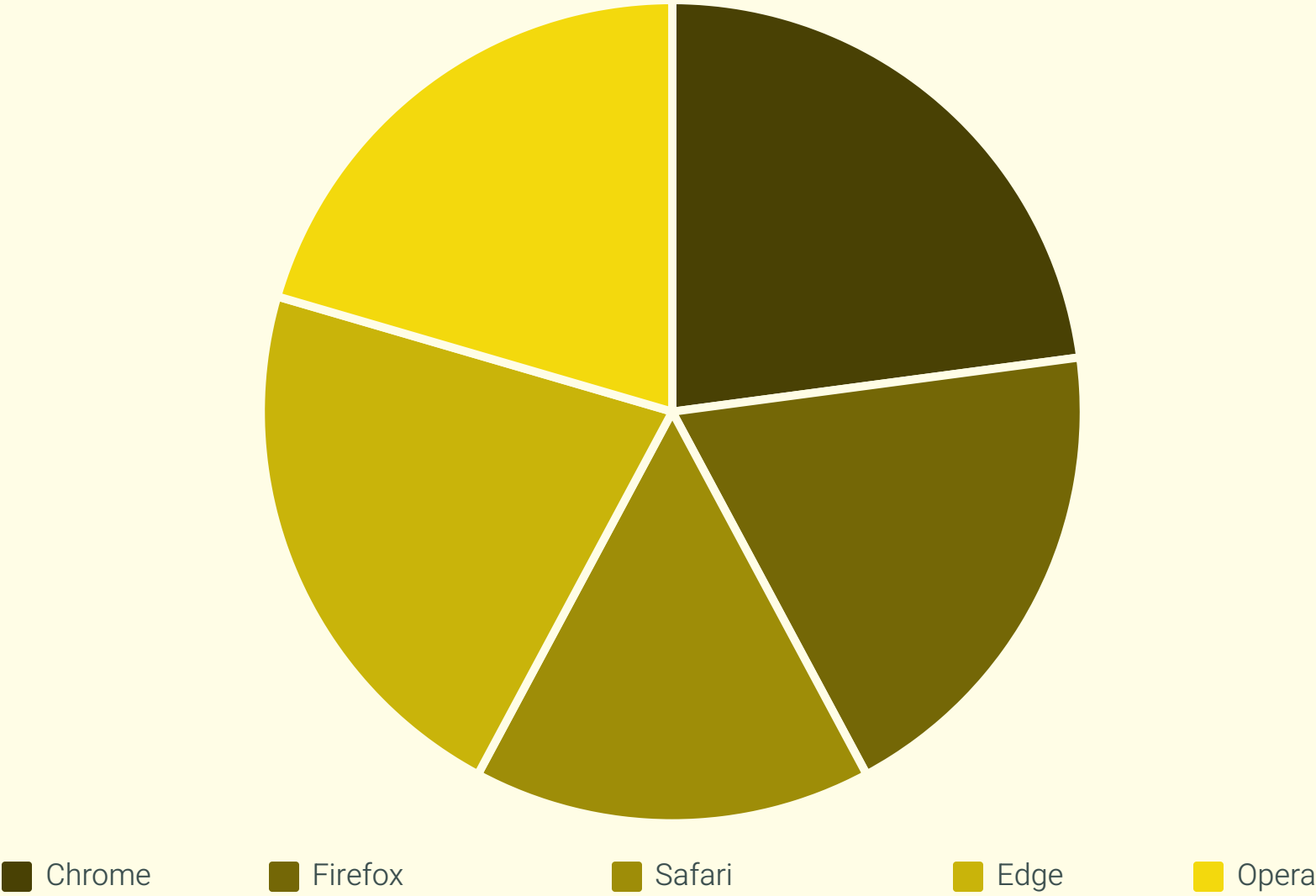
Process Results

Handle transcription and confidence scores

Generate Response

Use `SpeechSynthesis` for text-to-speech output

Voice Recognition in Browsers



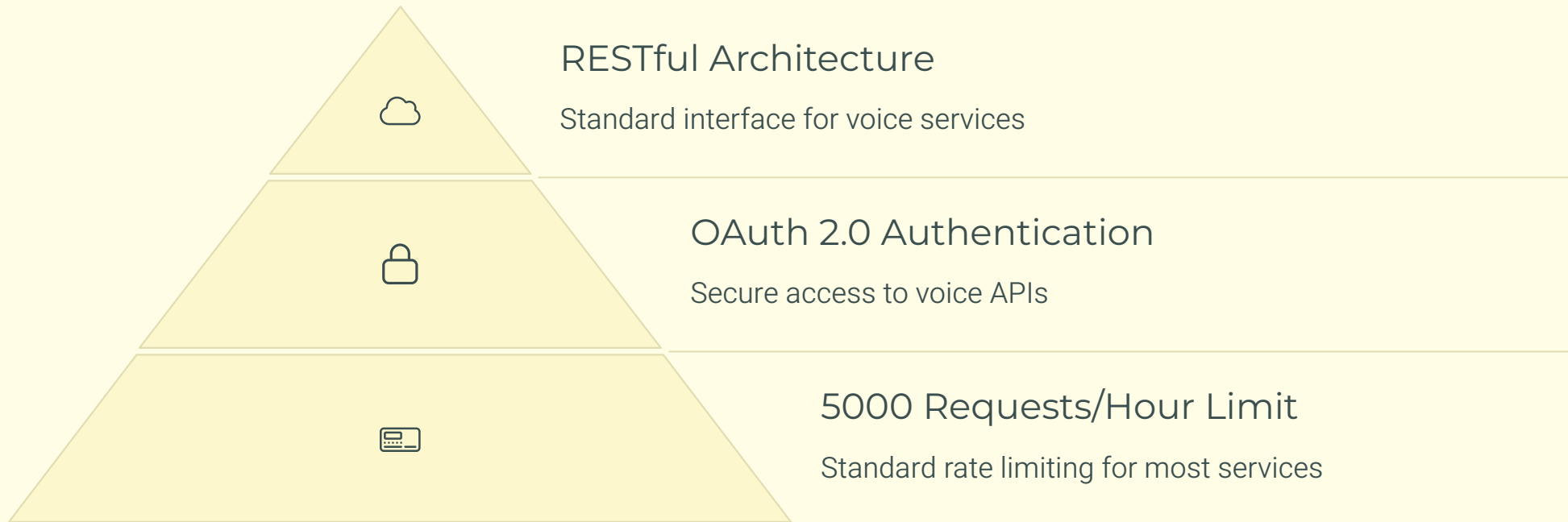
Platform SDKs



Development kits provide essential tools for voice app creation. Amazon Skills Kit and Google Assistant SDK lead the industry.

Custom wake word development enables branded voice experiences.

API Endpoints

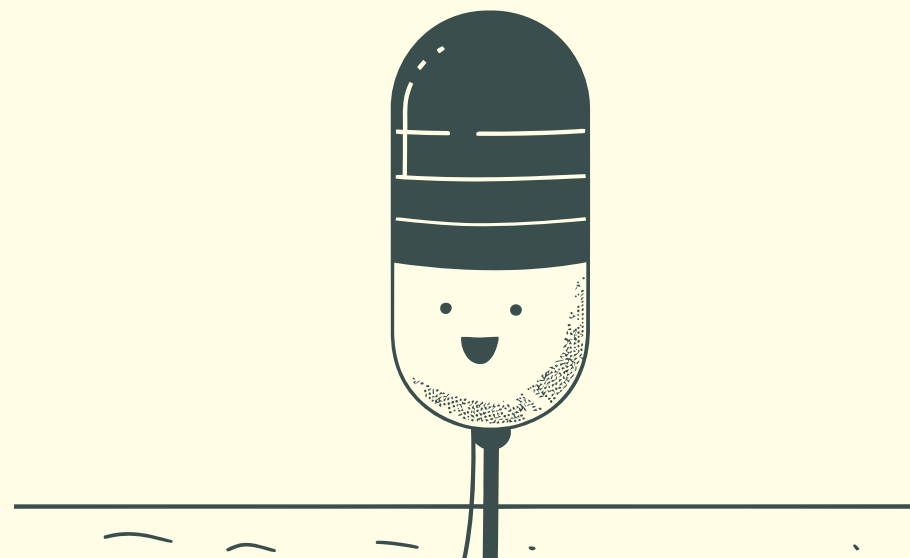


Multimodal Support



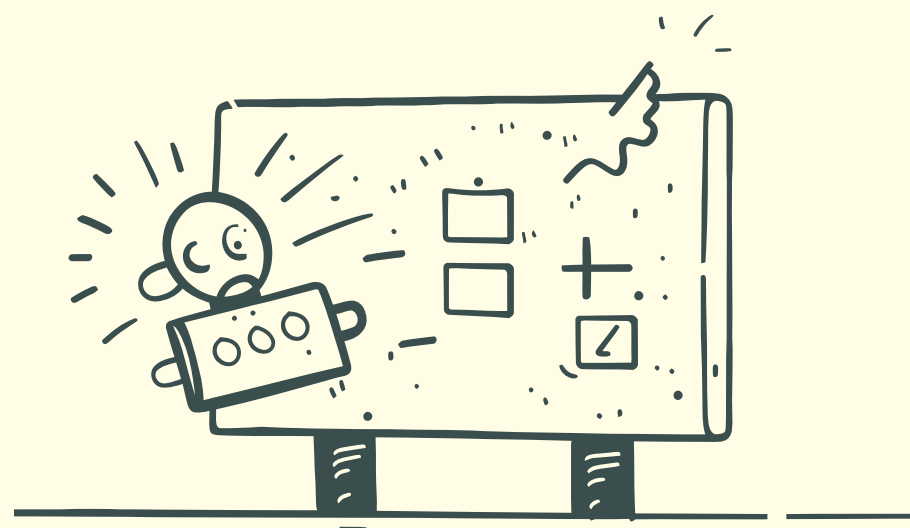
Smart Displays

Combine voice commands with visual feedback



Mobile Devices

Touch and voice interactions in portable format



Television Interfaces

Voice control for entertainment systems

Support for 8 device types with cross-platform compatibility.

Dialogflow Voice Flow



Create Intent

Add minimum 12 training phrases for accuracy



Map Entities

Define parameters for dynamic data extraction



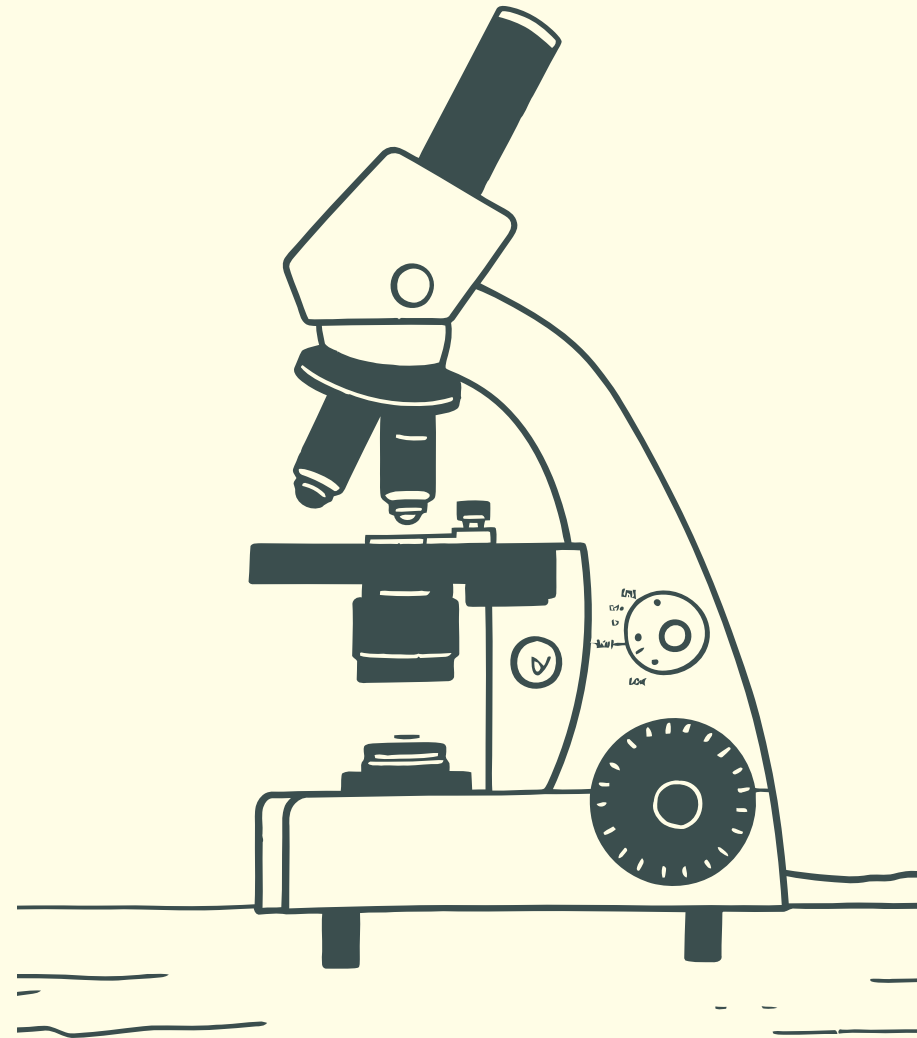
Set Up Webhook

Connect to Firebase Functions for processing



Test & Monitor

Use 5 simulator environments and track 18 key metrics



JavaScript Demo



Capture Audio

Web Audio API initialization



Process Speech

Convert to text with 97% accuracy



Handle Results

Promise-based result management

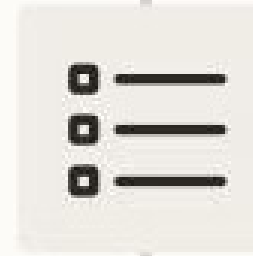


Error Handling

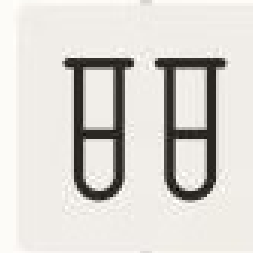
Mitigate 4 common failure scenarios

Build Interaction Model

-  Essential Intents
Create LaunchRequest, HelpIntent, and StopIntent
-  Custom Slot Types
Define 50+ vocabulary terms for your domain
-  Testing
Utilize simulation environments for verification
-  Debugging
Resolve 7 common VUI errors with built-in tools



Cus
Def



Tes
Util