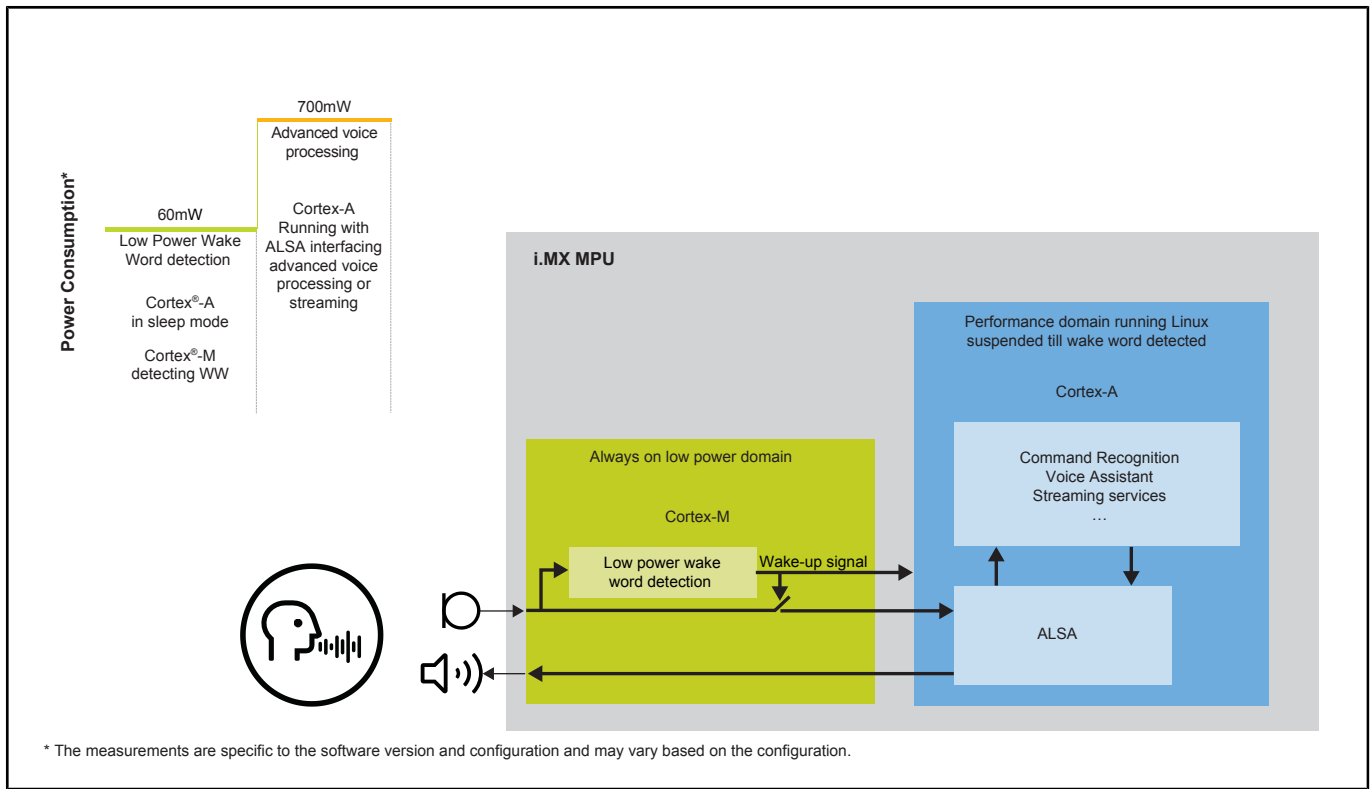# Application Software Pack: Low Power Voice UI Enablement on i.MX MPUs
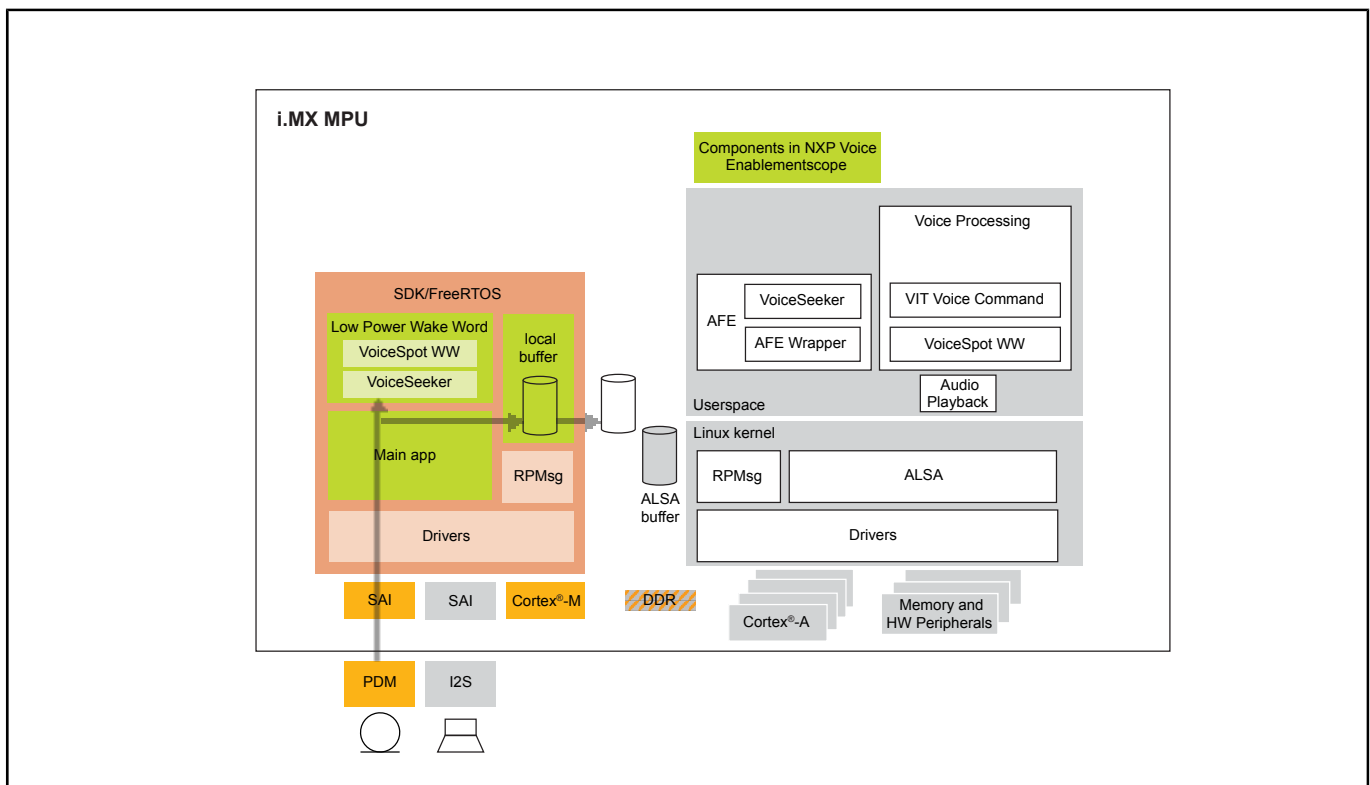
APPSWPACK-LPV-MPU

Last Updated: Aug 24, 2023

This pack deploys a Low Power Voice UI Enablement solution for i.MX 8M Mini and i.MX 8M Plus MPUs. It reduces power consumption with a Wake Word Engine designed to utilize the low power Cortex-M core. Upon wake word identification, the Cortex-M core wakes up the Cortex-A domain for better acoustic performance and advanced voice processing, reducing the power usage of traditional voice enablement solutions.
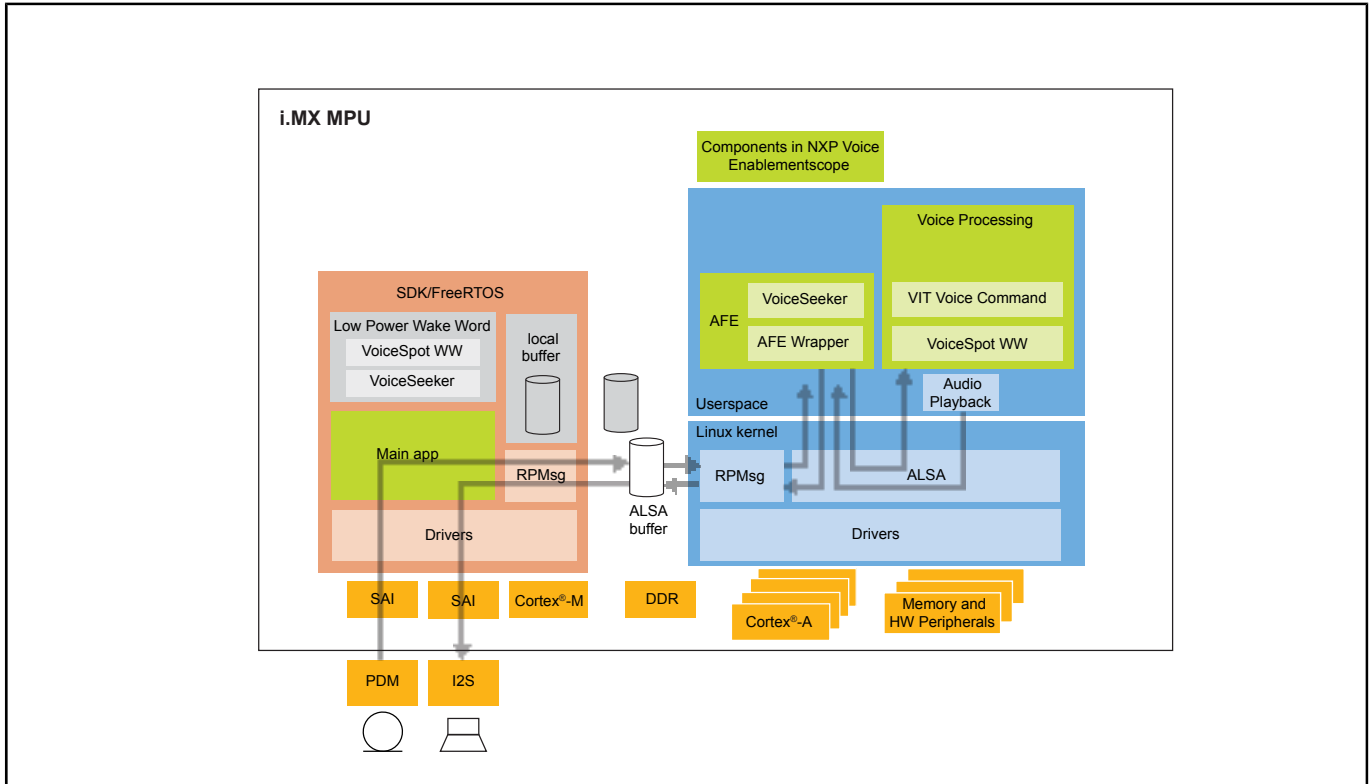
Simplified Diagram Block Diagram

Power Consumption*

60mW
Low Power Wake Word detection

Cortex®-A in sleep mode

Cortex®-M detecting WW

700mW
Advanced voice processing

Cortex-A Running with ALSA interfacing advanced voice processing or streaming

i.MX MPU

Performance domain running Linux suspended till wake word detected

Cortex-A

Command Recognition
Voice Assistant
Streaming services
…

Always on low power domain

Cortex-M

Low power wake word detection

Wake-up signal

ALSA

* The measurements are specific to the software version and configuration and may vary based on the configuration.

Low Power Wake Word Wait State Block Diagram

i.MX MPU

Components in NXP Voice Enablementscope

Voice Processing

AFE

VoiceSeeker

AFE Wrapper

VIT Voice Command

VoiceSpot WW

Userspace

Audio Playback

SDK/FreeRTOS

Low Power Wake Word

VoiceSpot WW

VoiceSeeker

local buffer

Main app

RPMsg

Drivers

Linux kernel

RPMsg

ALSA

Drivers

ALSA buffer

SAI

SAI

Cortex®-M

DDR

Cortex®-A

Memory and HW Peripherals

PDM

I2S

Full Voice Processing Mode Block Diagram

View additional information for Application Software Pack: Low Power Voice UI Enablement on i.MX MPUs.

Note: The information on this document is subject to change without notice.