Application Software Pack: Power Optimized Wearables User Interface for the i.MX RT595

APP-SW-PACK-POWER-OPTIMIZED-VOICE-UI
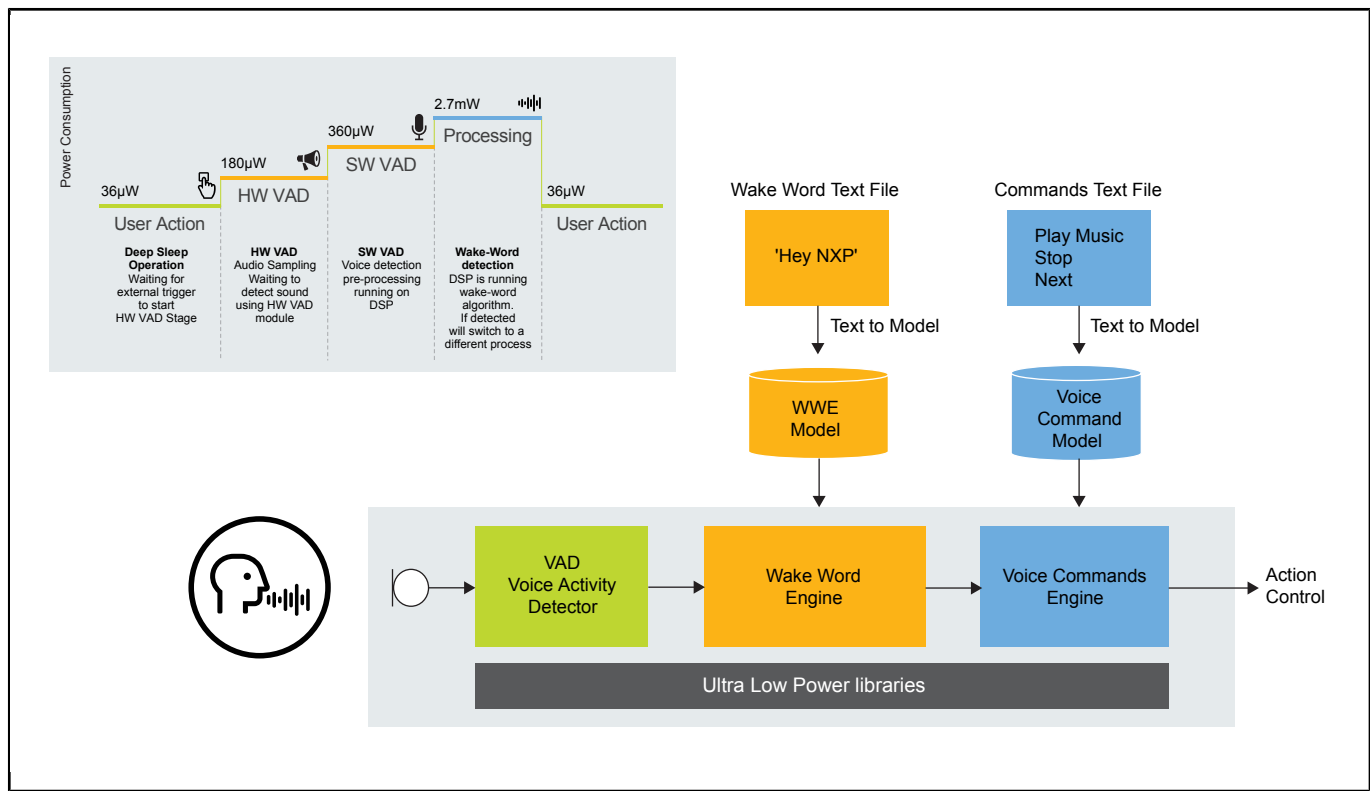
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The Power Optimized Voice User Interface Application Software Pack provides embedded developers with production quality code that implements voice wake-up and voice command recognition using the i.MX RT595 Crossover MCU.

The software shows how to acquire voice data with a single-channel digital microphone in a low power mode while the MCU remains in deep-sleep mode until there is a valid voice.
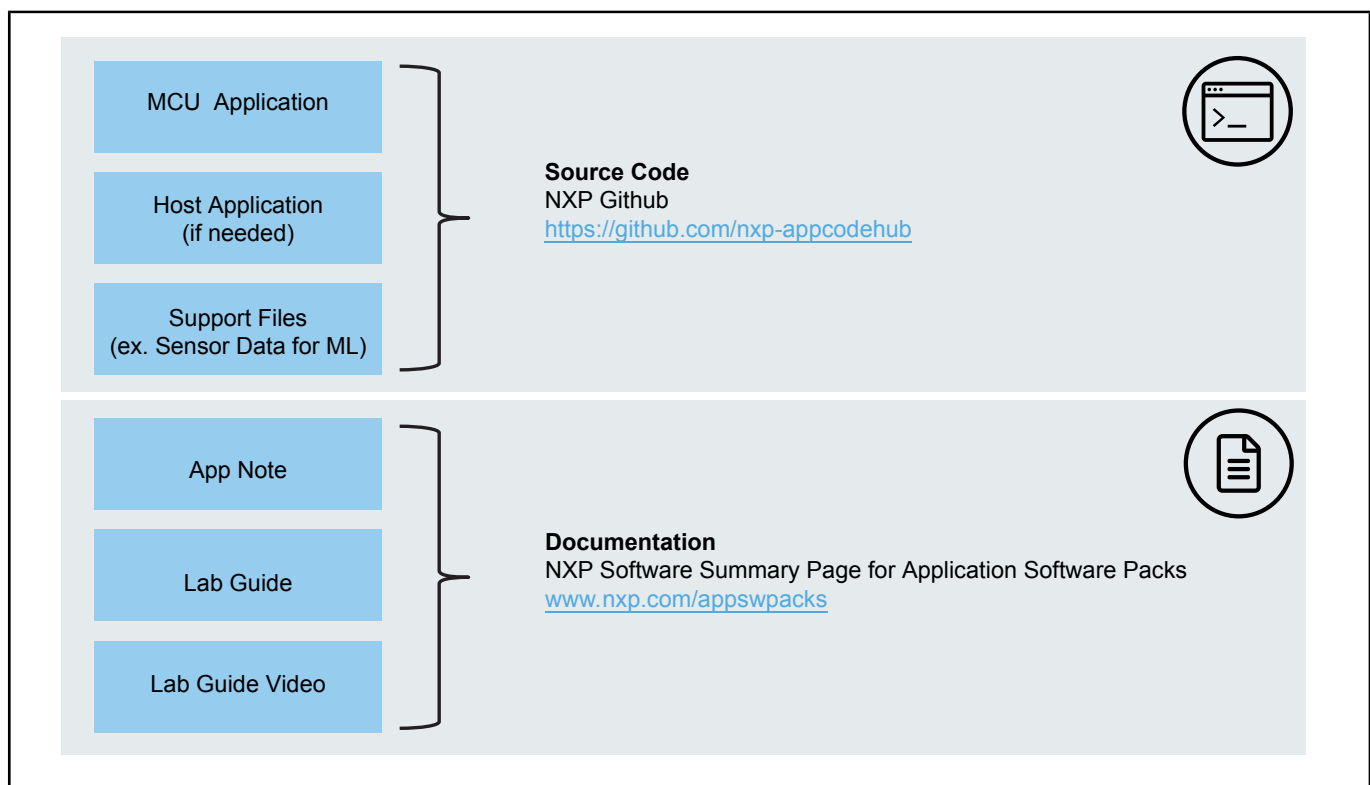
Voice intelligent technology (VIT) is used as the voice UI in this Application Software Pack. VIT provides always-on wake word detection and local commands supporting custom command definition and multiple languages.

Download this Application Software Pack and follow the steps found in the Lab Guide.

Power Optimized Voice UI Block Diagram Block Diagram

Power Consumption

2.7mW
Processing

360µW
SW VAD

180µW
HW VAD

36µW
User Action

36µW
User Action

Deep Sleep Operation
Waiting for external trigger to start HW VAD Stage

HW VAD
Audio Sampling Waiting to detect sound using HW VAD module

SW VAD
Voice detection pre-processing running on DSP

Wake-Word detection
DSP is running wake-word algorithm. If detected will switch to a different process

Wake Word Text File

'Hey NXP'

Text to Model

WWE Model

Commands Text File

Play Music
Stop
Next

Text to Model

Voice Command Model

VAD
Voice Activity Detector

Wake Word Engine

Voice Commands Engine

Action Control

Ultra Low Power libraries

Application Software Pack Collateral Block Diagram Block Diagram

MCU Application

Host Application
(if needed)

Support Files
(ex. Sensor Data for ML)

Source Code
NXP Github
https://github.com/nxp-appcodehub

App Note

Lab Guide

Lab Guide Video

Documentation
NXP Software Summary Page for Application Software Packs
www.nxp.com/appswpacks

View additional information for Application Software Pack: Power Optimized Wearables User Interface for the i.MX RT595.

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