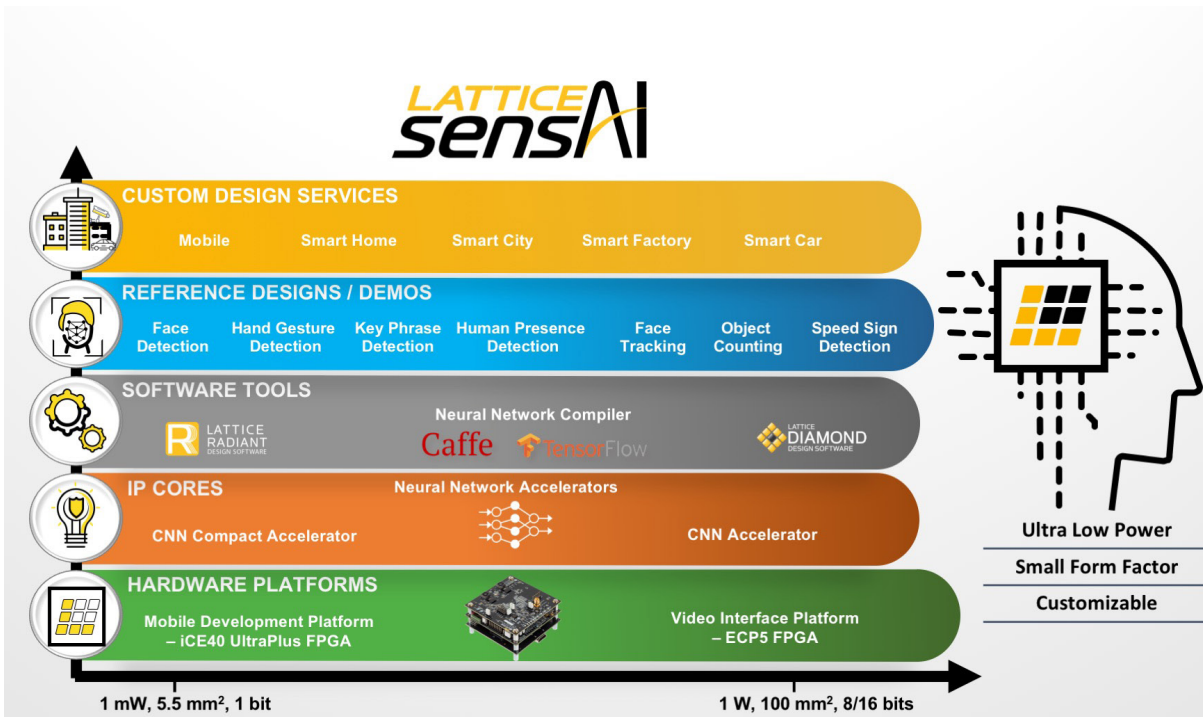


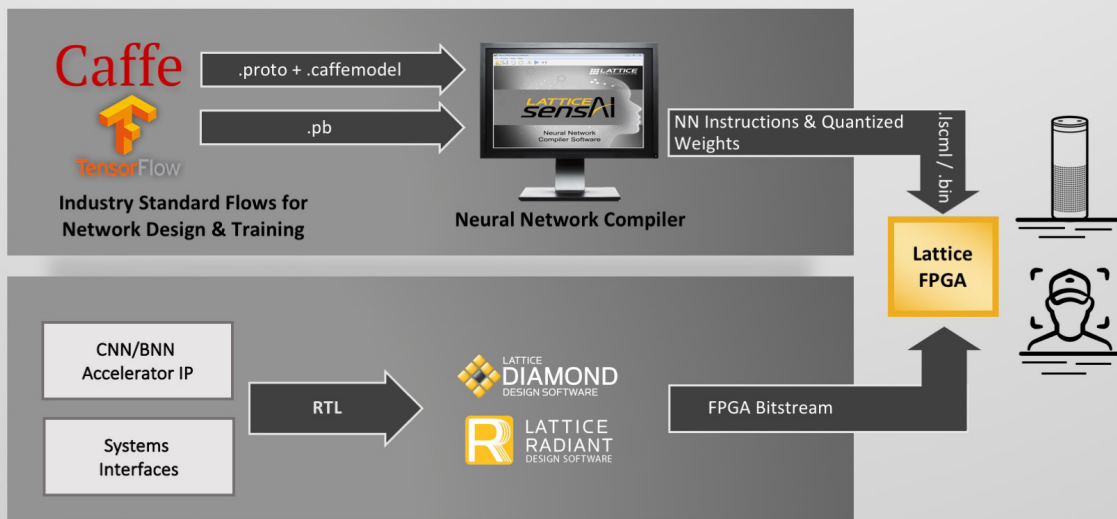
# Ultra-Low Power Lattice sensAI™ Stack

## Accelerate Integration of Flexible Inferencing at the Edge

With solutions optimized for ultra-low power consumption (under 1 mW–1 W), small package size (5.5 mm<sup>2</sup>–100 mm<sup>2</sup>), interface flexibility (MIPI CSI-2, LVDS, GigE, etc.), and high-volume pricing, the Lattice sensAI stack accelerates integration of scalable, always-on, on-device AI.



Complete technology stack for ultra low power flexible inferencing



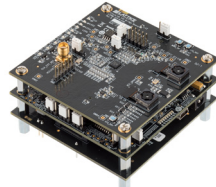
Rapid design space exploration - Performance vs Power vs Accuracy tradeoffs

## Lattice sensAI Hardware Platforms



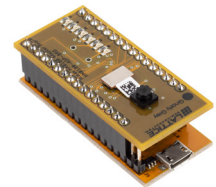
### ■ Mobile Development Platform (MDP)

- Key Features:
  - iCE40 UltraPlus™ FPGA consuming few mWs of power consumption
  - Includes image sensor, microphones, compass/pressure/gyro sensors, etc.



### ■ Video Interface Platform (VIP)

- Key Features:
  - ECP5™ FPGA consuming under 1 W of power consumption
  - Supports MIPI CSI-2, eDP, HDMI®, GigE Vision, USB 3, etc.



### ■ HiMax HM01B0 UPduino Shield

- Key Features:
  - A complete development kit for implementing Artificial Intelligence (AI) using vision and sound as sensory inputs
  - iCE40 UltraPlus FPGA based Upduino 2.0 board and HiMax image sensor module

## Lattice sensAI IP Cores

IP Core	OPN	Key Features
CNN Compact Accelerator	NA	Optimized for iCE40 UltraPlus FPGA
CNN Accelerator	CNN-ACCEL-E5-U	Optimized for ECP5 FPGA, supports variable quantization

## Lattice sensAI Software Tools

Software Tool	Key Features
Neural Network Compiler	Supports Caffe and TensorFlow. No prior RTL experience required

## Lattice sensAI Reference Designs and Demos

Reference Design/Demo	Supported FPGA, HW Platform	Power Consumption
Face Detection	iCE40 UltraPlus, iCE40 UltraPlus Mobile Development Platform	< 1 mW
Key Phrase Detection	iCE40 UltraPlus, iCE40 UltraPlus Mobile Development Platform	< 5 mW
Face Tracking	ECP5, Video Interface Platform	< 1 W
Object Counting	ECP5, Video Interface Platform	< 1 W
Speed Sign Detection	ECP5, Video Interface Platform	< 1 W
Human Presence Detection	iCE40 UltraPlus/HiMax HM01B0 UPduino Shield	< 5 mW
Human Presence Detection	ECP5, Video Interface Platform	< 1 W
Hand Gesture Detection	iCE40 UltraPlus/HiMax HM01B0 UPduino Shield	< 5 mW

## Lattice sensAI Stack Custom Design Services

Have custom AI solution needs? The senseAI stack includes an ecosystem of select, global design service partners that can deliver custom solutions for a range of end-applications, including mobile, smart home, smart city, smart factory, and smart cars. Please contact your local sales representative to request more information.

