



Accelerating innovation in Vietnam

Qualcomm Vietnam Innovation Challenge 2020 Program

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Qualcomm Technology Licensing
Qualcomm Incorporated

Leading mobile innovation for over 30 years

Digitized mobile communications



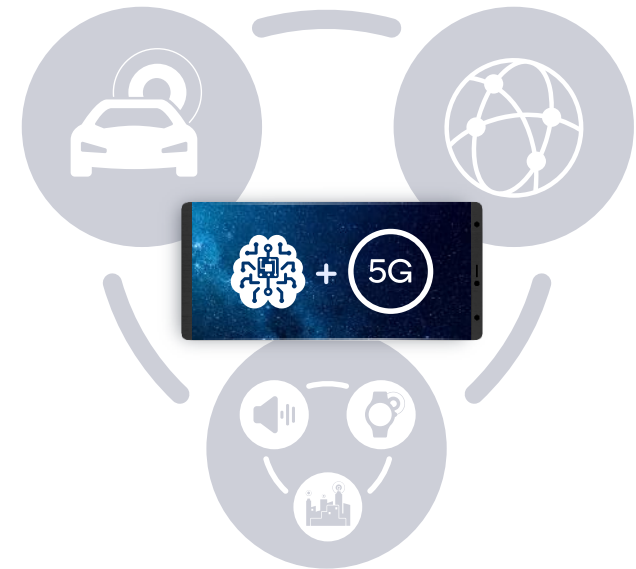
Analog to digital

Redefined computing



Desktop to smartphones

Transforming industries



Connecting virtually everything

Transforming how the world connects, computes and communicates

The R&D Engine

Inventing breakthrough technologies that fuel innovation

\$60 billion

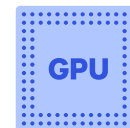
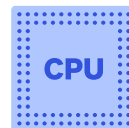
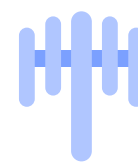
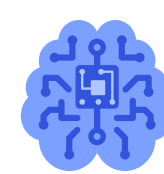
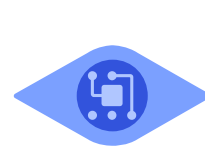
cumulative investment in R&D

140,000+

Patents and patent applications

Qualcomm R&D data as of Q4 FY19

SEP and Non-SEPs covering 3G, 4G and 5G and other technologies



Healthy IP societies drive innovation and economic growth



39%

more likely to attract
foreign investment



75%

More innovative
outputs



53%

more likely to experience
increased R&D activity



67%

higher probability of
workers employed in tech

Source: Global Intellectual Property Center report, "UP: Unlimited Potential, The GIPC International IP Index, 3rd Edition", March 2019

Innovation drives economic growth and improves quality of life

“Developing an innovation start-up ecosystem has been one of the top focuses of the Vietnamese government in recent years... We strongly support this initiative [Qualcomm Vietnam Innovation Challenge] to create a platform for people and startups with innovative ideas in Vietnam”. Vice Minister of Science and Technology Tran Van Tung



The logo is centered within a large, dark blue circle. The circle is surrounded by a ring of six white icons: a brain with circuitry, a city skyline, a circular flow diagram, a smartwatch, a person wearing a VR headset, and a brain with circuitry.

Qualcomm

Vietnam Innovation Challenge

Accelerating innovation in Vietnam's startup ecosystem

Identifying and nurturing innovative Vietnamese startups

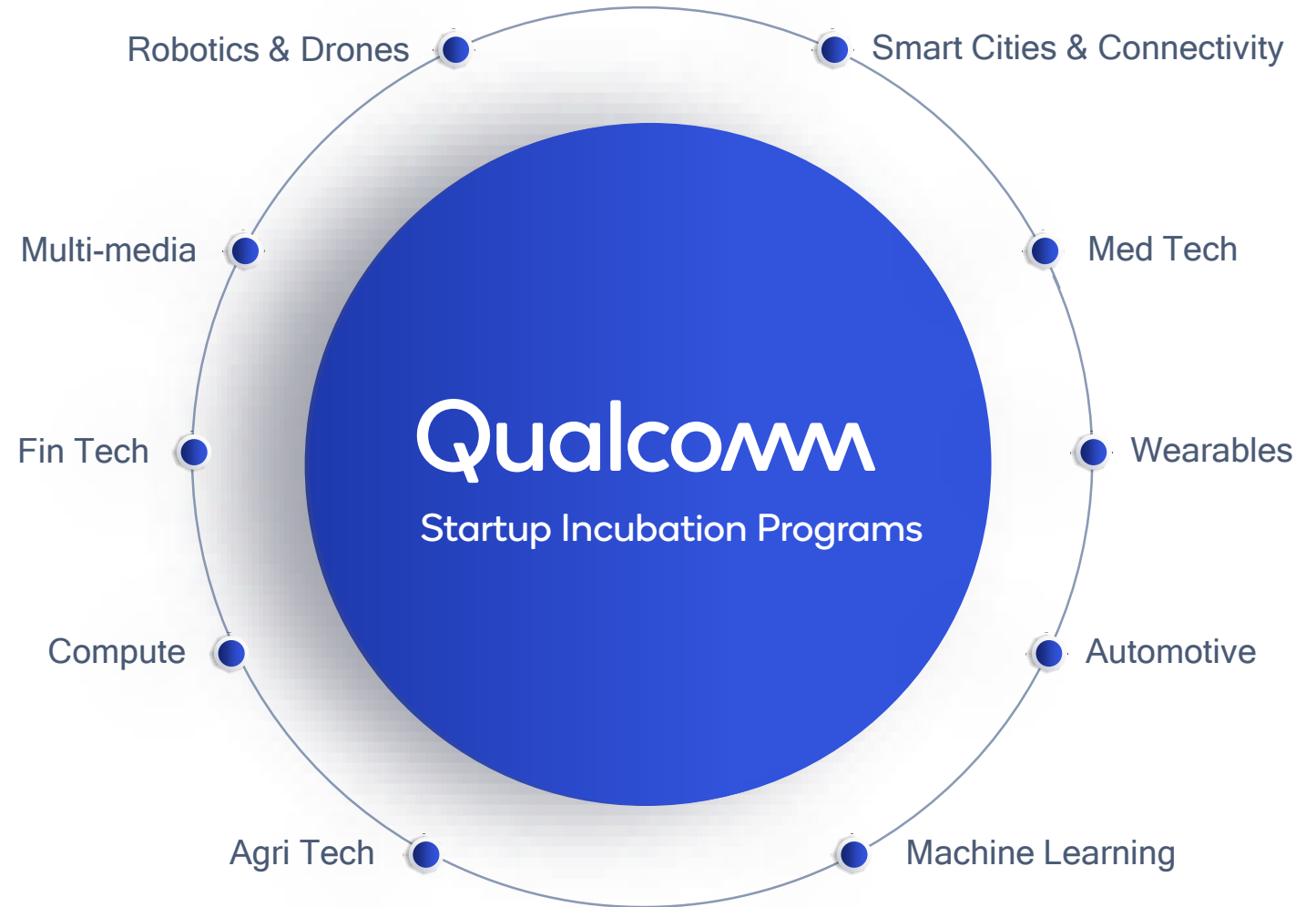
Improving opportunities through our unique expertise

Helping Vietnam transform to an innovation-driven economy

Proven Results

2016 to 2019

- 1,234 applications
- 59 incubated
- 7 Series A funded
- 78 patents filed
- 18 commercial products



Benefits for shortlisted startups

Valuable incubation support to accelerate and enable long-term success



Technical and
R&D support



Business
coaching and
mentoring



Publicity with
Qualcomm

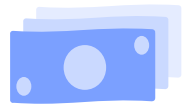


IP awareness
Training



Patent filing
incentives

Up to \$5k incentive
per startup



Incubation grants
and prize money

\$10k incubation grant
\$100k / \$75k / \$50k prize
for top 3 winners

Full details will be made available in early 2020 when roadshows commence

**\$375k in prize money
and incentives**

**Qualcomm takes no equity
or IP ownership**

QVIC 2020 Focus Areas

5G &
Cellular IoT

ML / AI

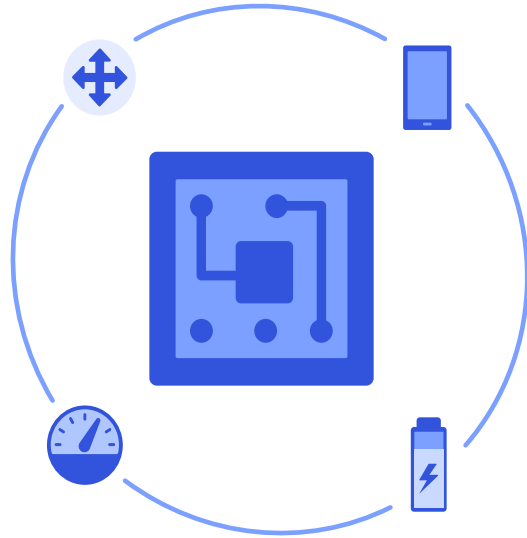
Multi-
media

Smart
City

IoT

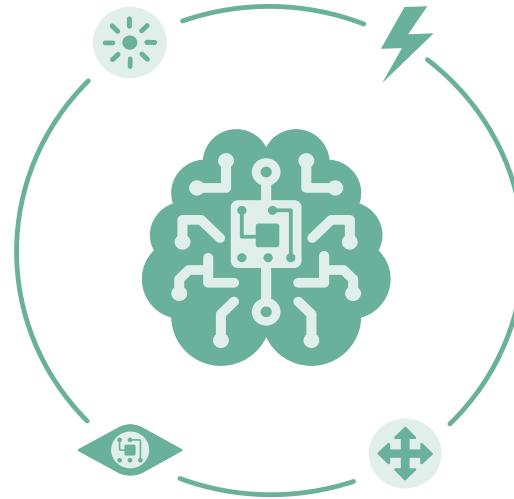
ML/AI

Example Areas of Interest



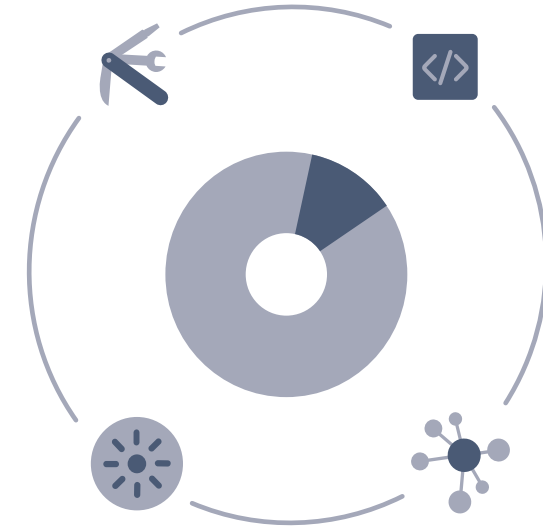
Efficient implementation

- Effectively run compute neural networks within thermal limits and ultra-low power
- Dynamically select the optimal compute block for each task in a heterogeneous computing system



Advanced algorithms

- Algorithms developed from state-of-the-art deep learning networks
- Algorithms designed for limited space and superior effectiveness



Vertical Platforms and Typical Applications

- Specific applications and services



Innovative IoT applications across different industries

Application Phase

Feb 25 to May

Shortlisting

June

Incubation

June to December

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Post QVIC

- Roadshows or webinar
HCMC & Hanoi
- Companies apply for QVIC
Online application

- Up to 10 startups
get \$10,000 each.

- Technical Support
- Business Coaching
- IP Awareness
Training
- \$5,000 patent filing
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Jury chooses Top 3

- Winner: \$100,000
- 1st Runner Up: \$75,000
- 2nd Runner Up: \$50,000

- Trade-shows,
customer
meetings, etc.

Dates are subjected to change.

Terms & Conditions apply. See details at
<https://www.qualcomm.com/company/locations/Vietnam/vietnam-innovation-challenge>

For enquiries, send email to
QVIC2020@qualcomm.com

2020 QVIC Program Overview

Dates tentative, subject to change

Selection Guidelines

Complete the online registration form to be considered for QVIC 2020

1

Based in (or have a presence in) Vietnam

2

Established and have an existing innovative product idea/concept

3

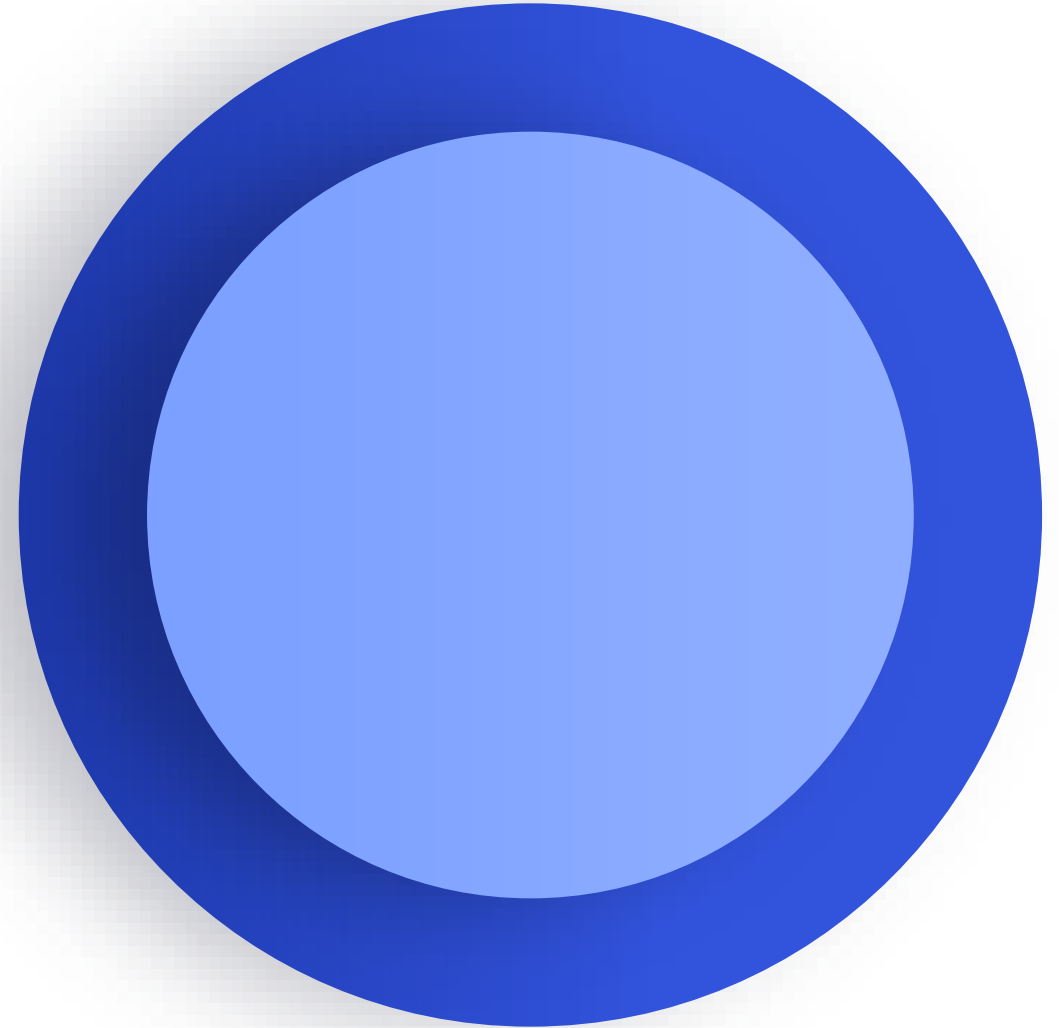
Can benefit from using Qualcomm technology and products

Incubation Overview

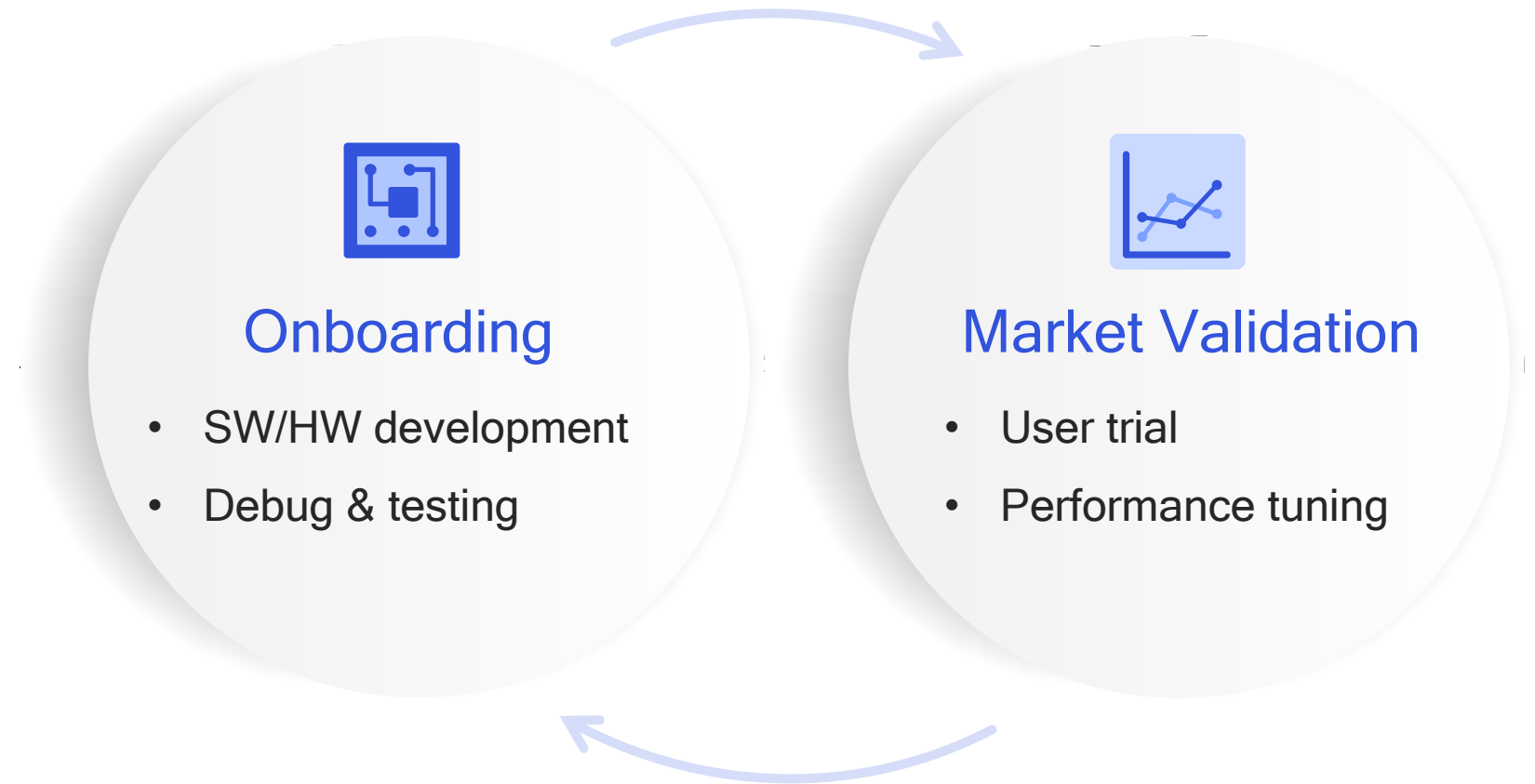
Technical Support

Business Coaching

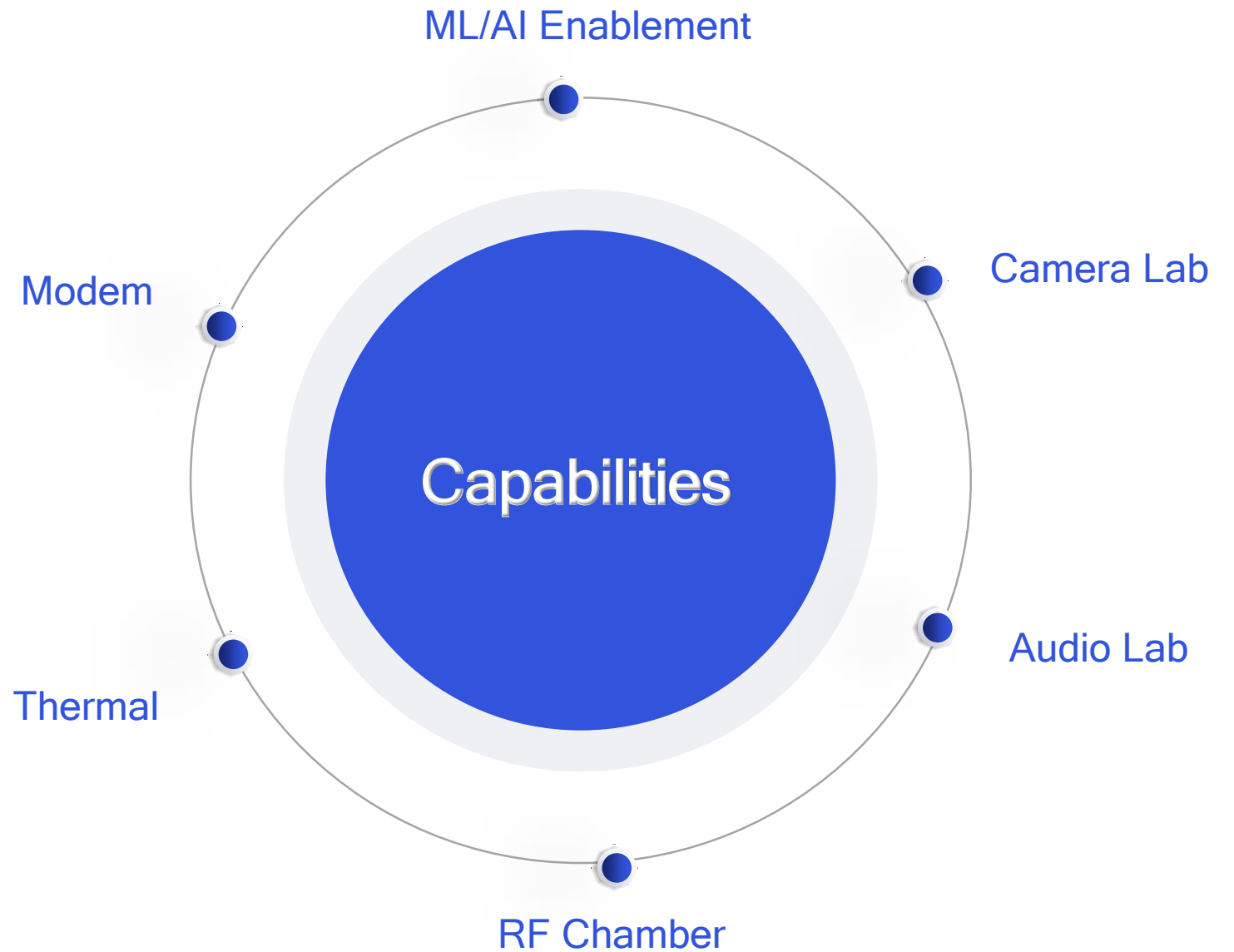
IP Awareness Education



Technical Support



Access to Qualcomm Lab in Hanoi



Business Coaching



Diagnostics

- Strength assessment
- Scalability assessment

Workshop/Webinar

- Customers: Understand your demographics/needs
- Competition: Market Validation
- Product: Design to Scale & Pricing Strategy
- Financials: Basic Economics
- Investments: The Series A Pitch

IP Awareness Education

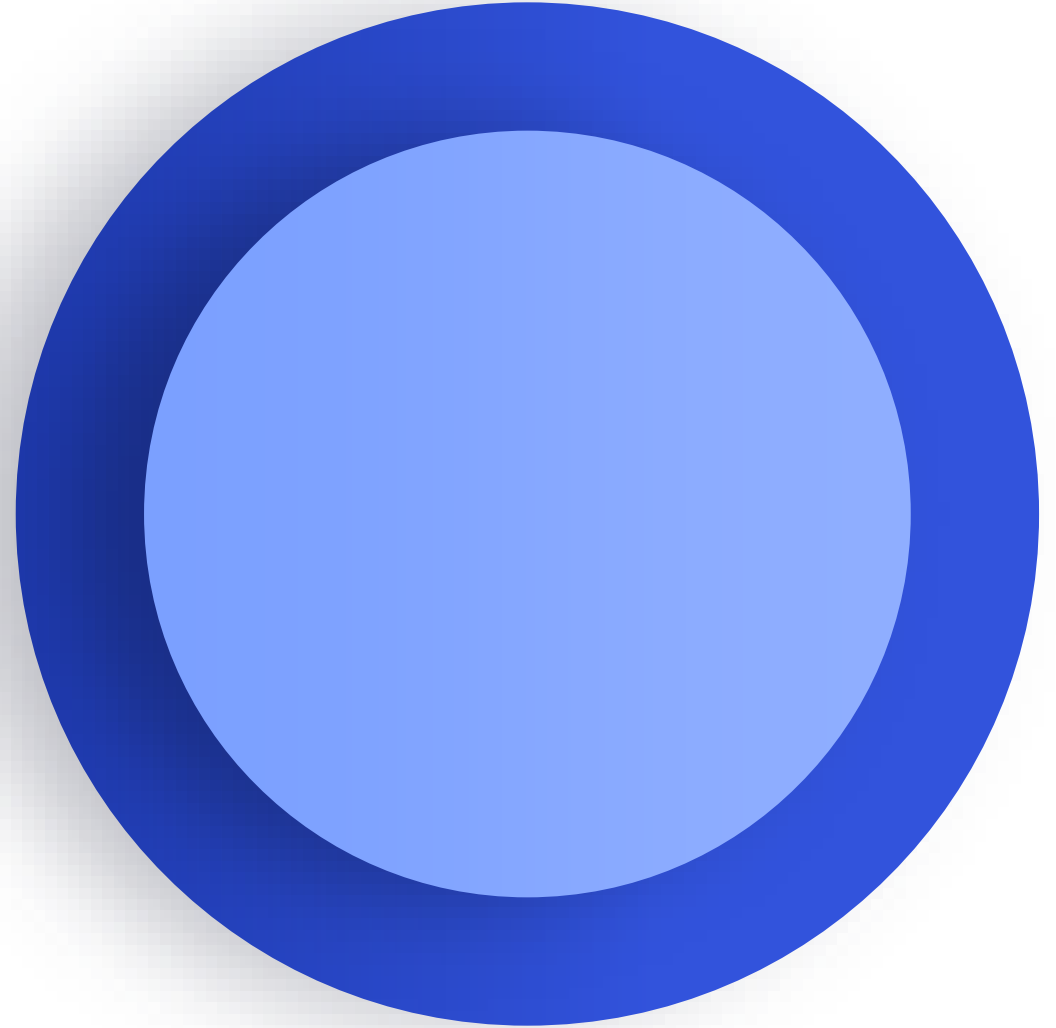


Introduction to Intellectual Property (IP) & its benefits

- Patents
- Copyrights
- Trademark
- Trade Secret

How to file a patent

Hardware & Software Platforms



Snapdragon 600 Series (SDM660/Quectel SC66)

High Tier Solution for extensive
computation applications

Application Areas

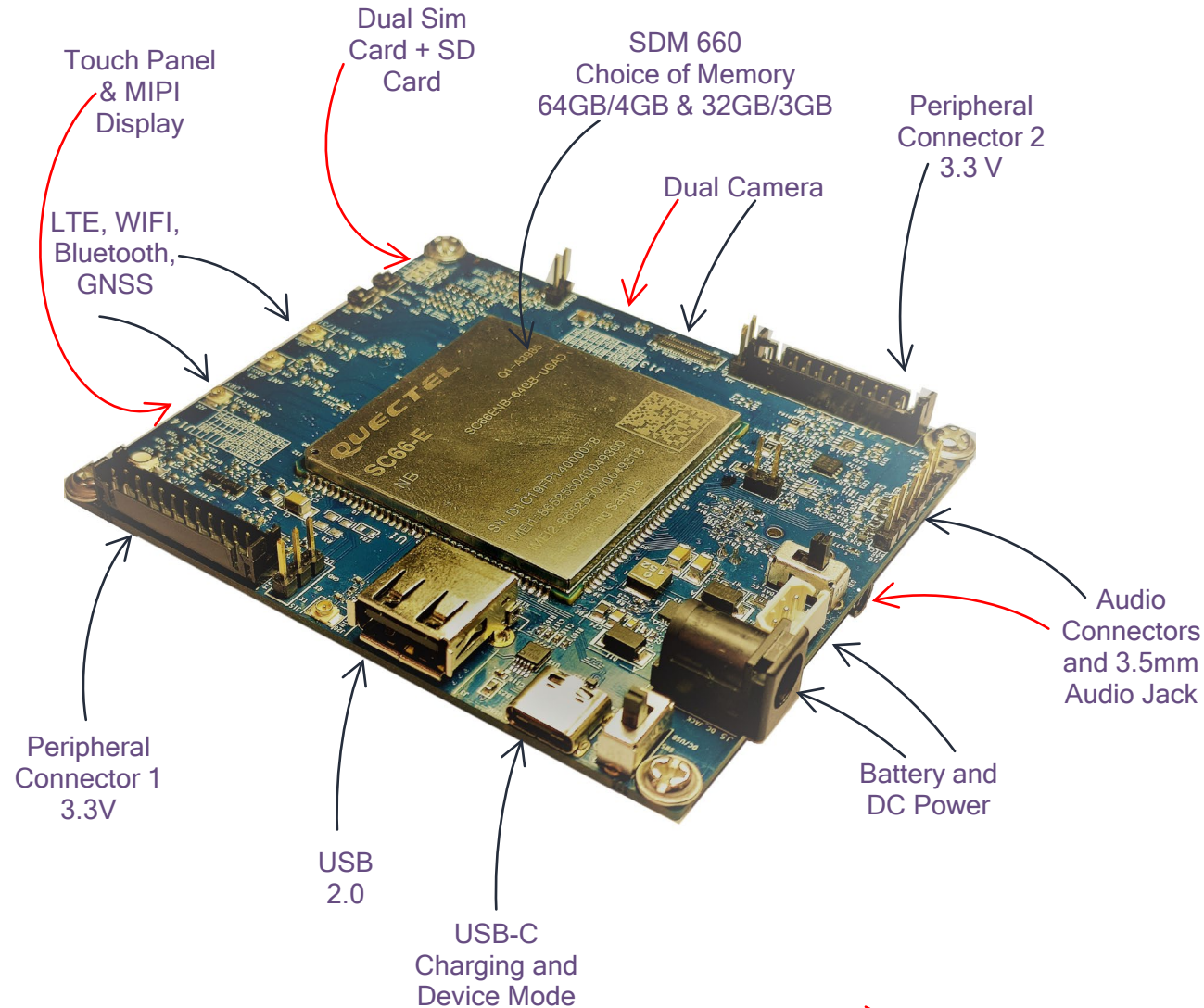
Machine Learning

Tensor Flow

High Computation needs

Dual Camera

GPU



Specifications

Android 9.0
32GB + 3GB &
64GB+4GB(optional)
SDM660(64Bit,2.2Ghz, Octacore,
Kyro 260)

Features

Cellular/WIFI/BT
Dual Camera(12MP)
Peripheral Connector at
3.3V(SPI/I2C/GPIO)
Touch Display
USB 3.0 TypeC Connector
USB 2.0 TypeA Host Connector
Dual Sim
Audio: 3.5mm Jack/Loud
Speaker/Mic/Earpiece Connector
Battery

Dimensions

80mm x 90mm

References

[Snapdragon 660 Processor](#)
[Quectel SC66 Product Specs](#)

Snapdragon 200 Series (SDM210/Quectel SC20)

Entry Tier Solution for
Smart IoT applications

Application Areas

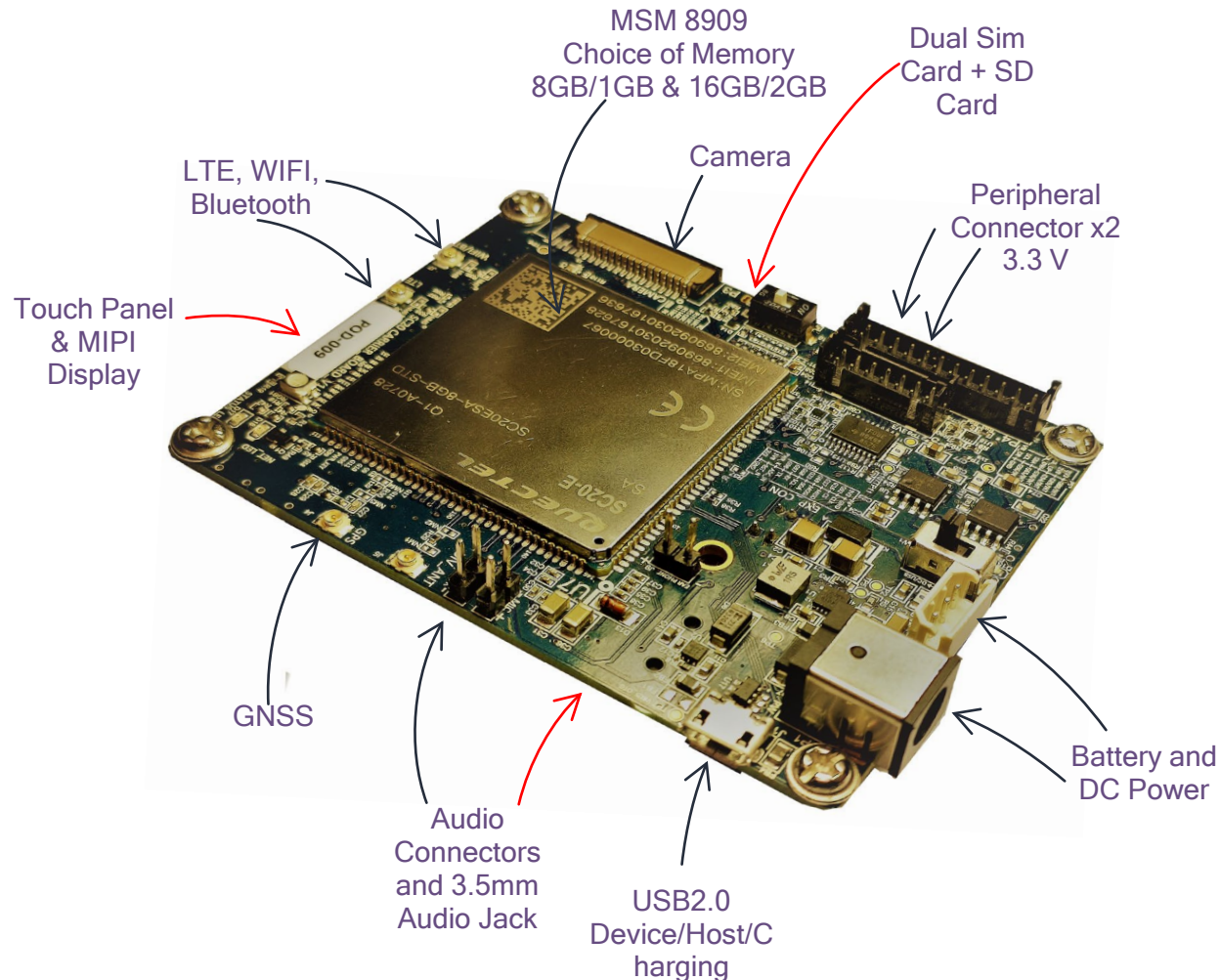
Machine Learning

Tensor Flow Lite

Gateways

Single Camera

Medical Applications



Specifications

Android 7.1/Linux
8GB + 1GB & 16GB + 2GB
MSM8909 (1.1Ghz Quadcore
Processor)

Features

Cellular/WIFI/BT
Peripheral Connector at
3.3V(SPI/I2C/GPIO)
5inch MIPI-DSI Touch Panel Display
MIPI CSI Single Camera 5MP
Debug with USB OTG port
Debug with UART port
Battery Charging with USB and DC-IN
SD Card Support
LED Indicators: Status and Net-Light
Dual Sim
Audio: 3.5mm Jack/Loud
Speaker/Mic/Earphones

Dimensions

85mm x 65mm

References

[Snapdragon 210 Processor](#)
[Quectel SC20 Product Specs](#)

MDM9207 IoT Modem (Quectel EC25)

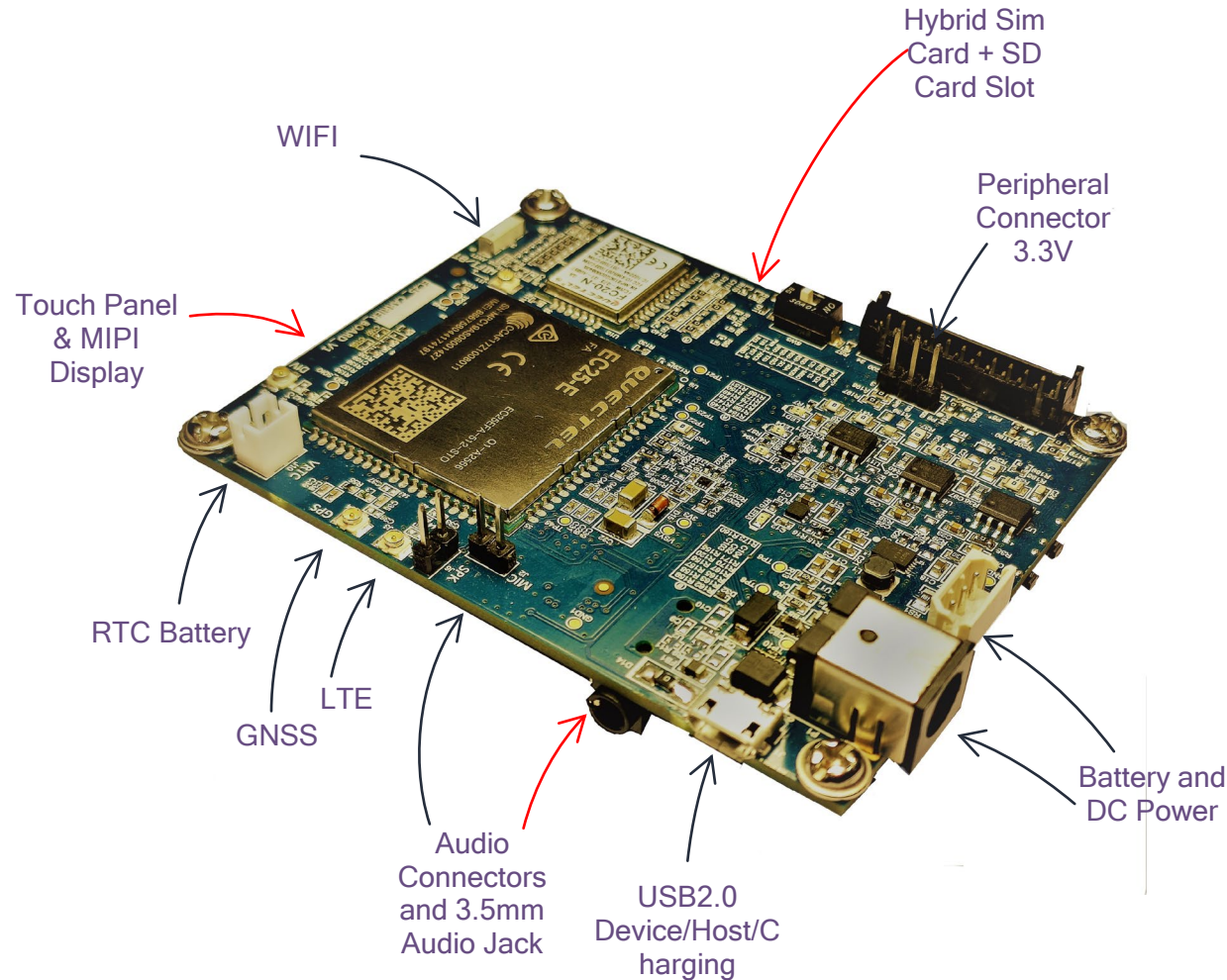
Edge Computing and LTE
Solutions

Application Areas

Gateways

Sensor Interface

Edge Computing



Specifications

Linux
MDM9207 (1.3Ghz Cortex A7
Processor)

Features

Cellular connectivity 2G, 3G, 4G
GNSS
WiFi/BT
Peripherals Connector at 3.3V(GPIO,
I2C, SPI, UART)
Debug with USB, Debug with UART
Battery Charging with USB and DC-
IN.
SD Card support
LED Indicators: Status and Net-Light
Audio: Speaker header, Headphone
jack/ Mic/Earphones

Dimensions

85mm x 65mm

References

[MDM9207 Processor](#)
[Quectel EC25 Product Specs](#)

MDM9206 IoT Modem (Quectel BG96)

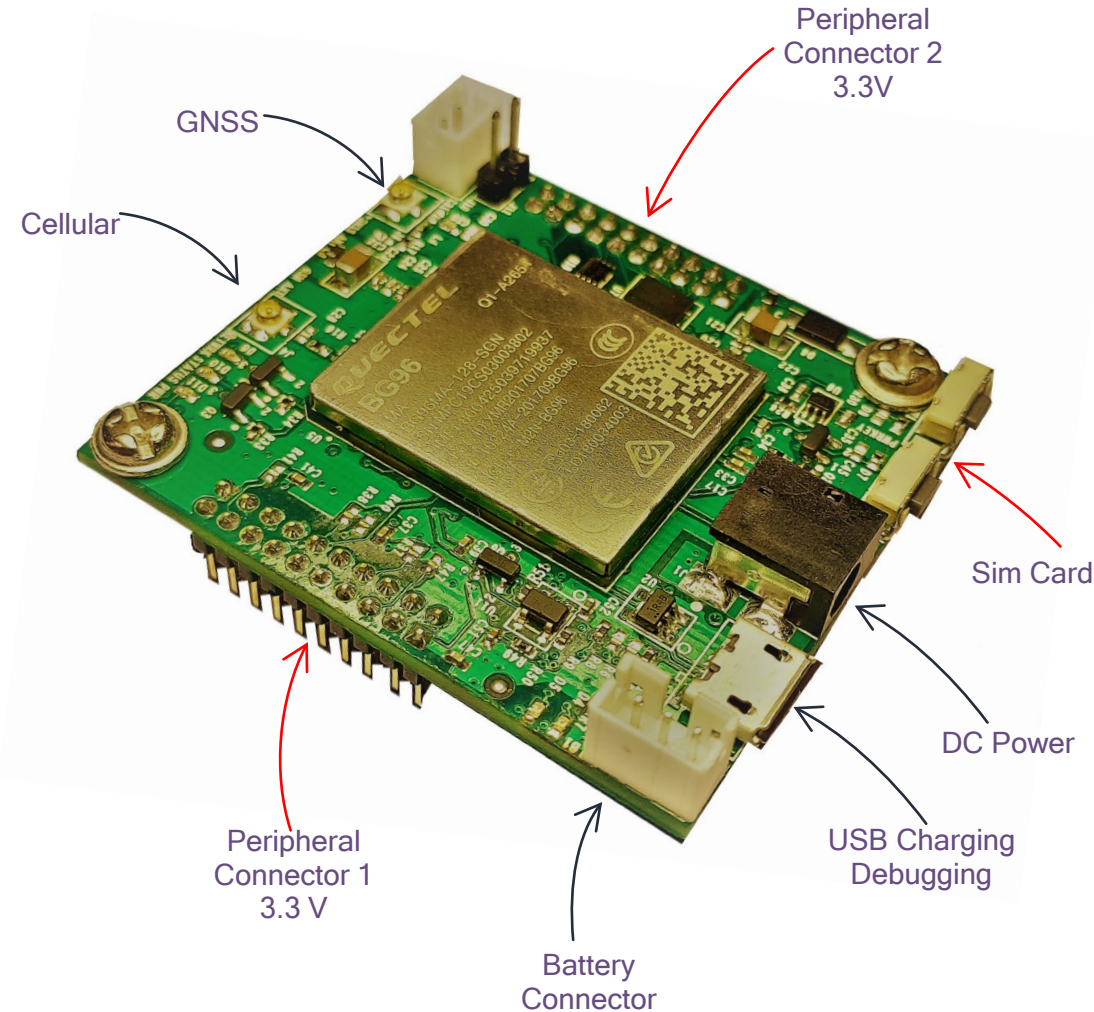
Low Power IoT Solutions
(NB-IoT/CAT-M1/GPRS)

Application Areas

Trackers

Sensor Interface

Edge Computing



Specifications

ThreadX OS
MDM9206 (1.3Ghz Cortex A7
Processor)

Features

Cellular connectivity 2G, 3G, 4G
GNSS
Peripherals Connector at 3.3V(GPIO,
I2C, SPI, UART)
Debug with USB, Debug with UART
Battery Charging with USB and DC-
IN.
Boot without battery with DC-IN or
USB.
LED Indicators: Status and Net-Light

Dimensions

85mm x 65mm

References

[MDM9206 Processor](#)
[Quectel BG96 Product Specs](#)

SD845 AI Kit

Thundercomm AI Kit is a powerful on-device AI vision-enabled edge device for developers. It is designed with Qualcomm® SDA845, a platform for developers to showcase their AI algorithms running on the edge device.



Category	Item	Description
Computing	Chipset	Qualcomm® RedDragon™ QCS605
	GPU	Adreno 630 GPU
	DSP	Hexgan 685 DSP
	ISP	Qualcomm Spectra™ 280 image sensor processor
Memory	RAM	8GB LPDDR4
	ROM	64GB UFS2.1
	SD Card	Support MicroSD Card
Camera	Built in Camera	8MP, FOV 120 degree;
	External Camera	USB3.0 camera (accessory, not included in release)
Display Support	HDMI	1x Micro HDMI, 4k Ultra HD
Audio Support	Speaker	1x speaker
	Audio out	1x Headsetout
	Microphone	1x microphone
Video	VPU	Support for HDR10, HLG, and H.265 (HEVC) 4k@60fps video capture
Wireless Connectivity	WIFI	2.4G/5G,802.11 a/b/g/n/ac 2x2 MIMO
Debug Port	Micro USB	1x Micro USB (connecting to serial port for debug purpose)
Indicator	LED	RGB Led: Power status, WIFI status, Ethernet status;
Input	Buttons	Power key/ Volume up/down key/Camera snapshot key
Sensors	9-axis sensor	Gyroscope & accelerometer & geomagnetic sensor
Power	Power charging	12v DC

AI Kit Software Support

Module	Feature
OS	Android O
AI Framework	TensorFlow, TensorFlow Lite, Caffe/Caffe2, ONNX, SNPE, Android NN
AI Algorithm SDK	Face Detection & Face Recognition & Emotion Detection & Age Detection & Gender Detection algorithm & Eye blink
	Object Detection algorithm
AI Sample Application	Face Recognition & Emotion Detection & Age Detection & Gender Detection algorithm demo
	Objection Detection algorithm demo
Camera	Support USB3.0 Camera, 1080p@30fps
	Ultra HD camera preview, recording and snapshot
	RTSP Client
Graphic	OpenGL ES3.2, OpenCL2.0 full

XR (VR/AR)

- XR and VR Tools:
 - [Snapdragon VR SDK](#) - provides developers with access to optimized, advanced VR features on Snapdragon VR devices.
- App Performance Optimization:
 - [Snapdragon Developer Tools](#) - help you optimize your applications running on Snapdragon mobile platforms. Tools include:
 - [Snapdragon Profiler](#)
 - [Snapdragon Power Optimization SDK](#)
 - [Snapdragon Heterogeneous Compute SDK](#)
 - [Snapdragon Math Libraries](#)
- Specialized Core Optimization: SDKs for specific processor cores are also available:
 - [Adreno GPU SDK](#) - excels at repeating similar computations on large quantities of data, as in graphics processing and machine learning.
 - [Adreno SDK for Vulkan](#) - provides the SDK for the Adreno GPU with an implementation of the [Vulkan](#) graphics API that runs on Snapdragon processors. Vulkan facilitates cross-platform graphics development.
 - [Hexagon DSP SDK](#) - best suited to processing digital signals from the outside world in real time, like those generated by a smartphone camera and microphone.
- Audio:
 - [3D Audio Tools](#) - create, capture, and render true-to-life immersive 3D audio experiences for VR applications.
 - [3D Audio Plugin for Unity](#) - a binaural spatial audio plugin for Unity, ideal for XR experiences and games.
- Computer Vision:
 - [FastCV Computer Vision SDK](#) - adds computer vision capabilities such as gesture, recognition, face detection, and text recognition.

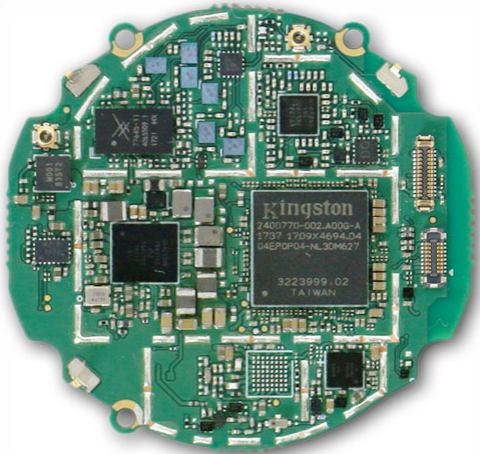
Qualcomm® Robotics RB3 Development Kit



Category	Description
Processor	SDA/SDM845
ISP	Qualcomm® Spectra 280 Image Signal Processor
Camera	Single HFR 16 MPix camera @ 60fps ZSL, Dual 16 MPix cameras @ 30fps ZSL, Single 32 MPix camera at 30fps ZSL
Video	Ultra HD Premium video capture @ 4K (3840x2160) 60fps, 10bit HDR, Rec 2020 color gamut; H.264 (AVC), H.265 (HEVC) and VP9 support; Slow motion HEVC video encoding of either HD (720p) video up to 480fps or FHD (1080p) up to 240fps
GPU	Adreno 630 GPU with support for Open GL ES 3.2 and Open CL 2.0
DSP	Hexagon 685 DSP with 3rd Gen Vector Extensions
Memory & Storage	LPDDR4x, 4x16 bit; up to 1866MHz, 8GB RAM
Wireless Connectivity	Wi-Fi integrated 802.11ac 2x2 with MU-MIMO; Tri-band Wi-Fi: 2.4 GHz and 5 GHz with Dual Band Simultaneous (DBS), Bluetooth 5.0
Audio	Qualcomm TrueWireless™ Stereo
Location	GPS, Glonass, BeiDou, Galileo, QZSS, and SBAS

TurboX™ SDW2500 SOM

SDW2500 SOM is designed for wearable devices, powered by Arm Cortex-A7 microprocessor quad cores up to 1.094 GHz, targeted to deliver a robust foundation with extended battery life, an integrated sensor hub with pre-optimized algorithms, low power location tracking, and the fifth generation 4G LTE modem, and optimized version of Android.



Target Markets



Kids Watch



Smart Watch



Earphone



Personal Stereo

Category	Item	Description
Platform	Chipset	MSM8909W
	CPU	4 x ARM Cortex-A7, Up to 1.094GHz
	GPU	Qualcomm® Adreno™ 304, 3D graphics accelerator Up to 409.6 MHz
	DSP	Q6 v5 core at up to 691.2 MHz
	OS	Android 8.1 for Wearables
	Memory and Storage	eMCP: DDR3 4Gb + eMMC 4GB
Multimedia	Display	1x MIPI-DSI 4-lane, 1.5 Gbps each, HD (720p) at 60 fps
	Camera	2 x MIPI CSIs supports up to 8MP camera
	Decode	H.264,VP8,(HEVC) H.265 : 1080p, 30fps
	Encode	H.264 BP/MP: 720p, 30 fps MPEG-4 SP/H.263 P0: WVGA, 30 fps VP8: WVGA, 30 fps
Connectivity	WiFi/BT	802.11 b/g/n ,BT 4.0 LE and earlier
	Wireless WAN	GSM/CDMA/WCDMA/TD-SCDMA/LTE
Interface	Interface	UART/I2C/SPI/UIM/USB/SDIO/DMIC/MI2S/PDM/JTAG/GPIOx113
Dimension	Size	42*42mm
System Environment	Power	5V/500mA
	Operating Temperature	-20°C ~ 70°C
	Storage Temperature	-20°C ~ 80°C
	Relative Humidity	5%~95%, non-condensing

QCC 5100 Series Bluetooth Audio SoCs

The SoC architecture supports ultra-low power performance and includes a Bluetooth 5 dual-mode radio, low-power audio and application subsystems. The platform supports features including Qualcomm® TrueWireless™ stereo, Qualcomm® aptX™ HD audio, Integrated Hybrid Active Noise Cancellation (ANC), voice UI control, and support for voice assistant through cloud services..



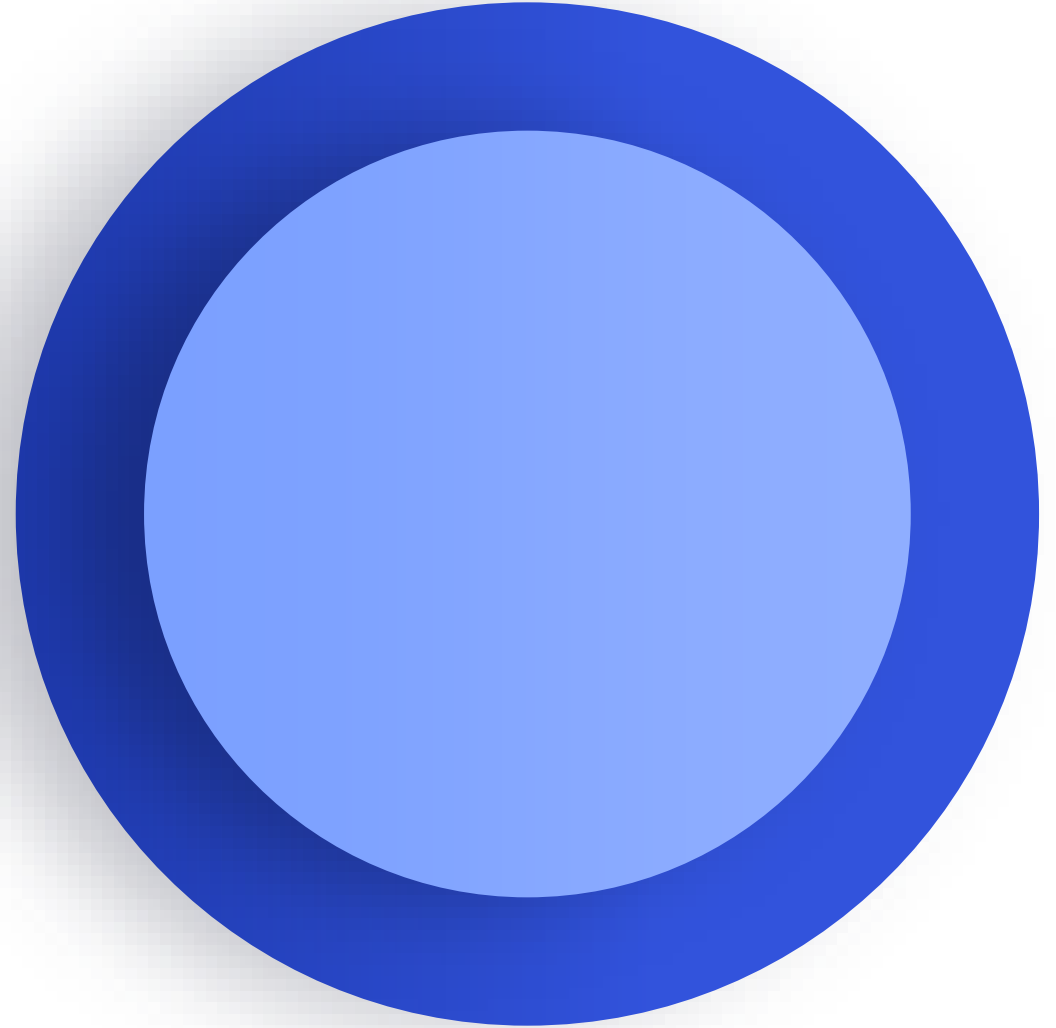
Target Application

- Bluetooth Earbuds
- Bluetooth Hearables
- Bluetooth Headphones
- Bluetooth Portable Speakers
- Bluetooth Headsets

Please contact Qualcomm to reach regional agent.

Category	Item
Bluetooth	Bluetooth 5 including 2 Mbps Bluetooth LE
	Single ended antenna connection with on-chip balun and Tx/Rx switch
Audio DSP	Dual 120MHz Kalimba audio DSP cores
	Flexible clock speed from 2MHz up to 120MHz
Application Subsystem	32-bit firmware processor
	32-bit 32/80MHz developer processor
Memory	80KB program RAM
	256KB data RAM, 5Mb ROM
Interface	Micro USB 2.0 High Speed
	UART
	2x Bit Serializers (I2C/SPI)
	SDIO
	QSPI
	NOR flash
	Up to 55x PIO
Power Management	Integrated power management unit (PMU)
	Dual switch-mode power supply (SMPS)
Battery Support	Integrated battery charger supporting internal mode
	(up to 200 mA) & external mode (up to 1.8 A)
Packaging	124-ball 6.5 x 6.5 x 1.0mm VFBGA, 0.5mm pitch

Applying for QVIC 2020



Typical Content

- Problem Statement
- Proposed Solution
- Market Potential
- Competition and Alternatives
- Intellectual Property
- Go to Market Plans
- Revenue Forecasts
- Team Overview



Application Phase

Feb 25 to May 1

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June to December

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January

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HCMC & Hanoi
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- Up to 10 startups
get \$10,000 each.

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- Business Coaching
- IP Awareness
Training
- \$5,000 patent filing
incentive

Jury chooses Top 3

- Winner: \$100,000
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- Trade-shows,
customer
meetings, etc.

Dates are subjected to change.

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Qualcomm Vietnam Innovation Challenge

Empowering the start-up
ecosystem in Vietnam



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Thank you

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