Say hello to Thingy:53

Nordic Tech Webinar

Robin M Saltnes – Product Marketing Engineer

July 6th 2022

Today's host

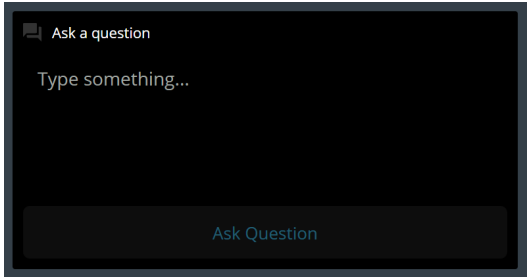
Robin M Saltnes

Product Marketing Engineer

NORDIC SEMICONDUCTOR

Practicalities

- Duration: about 60 minutes
- Questions are encouraged!
  - Please type questions in the top of the right sidebar
  - All questions are anonymous
  - Try to keep them relevant to the topic
  - We will answer towards the end
- The chat is not anonymous, and do not use for questions
- Go to DevZone if you have more questions
- A recording of the webinar will be available together with the presentation at webinars.nordicsemi.com

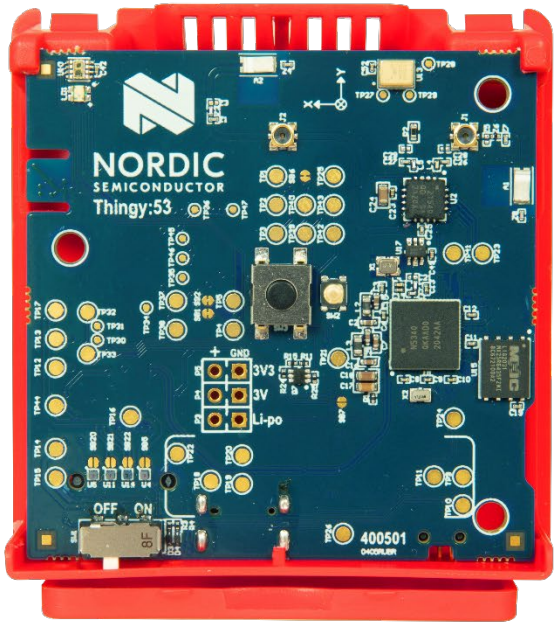


{ DevZone

Content

- Hardware overview
  - nRF5340 SoC
  - nRF21540 RF FEM
  - nPM1100 PMIC
  - sensors
- Apps overview
- Live demo
- Q&A

First look



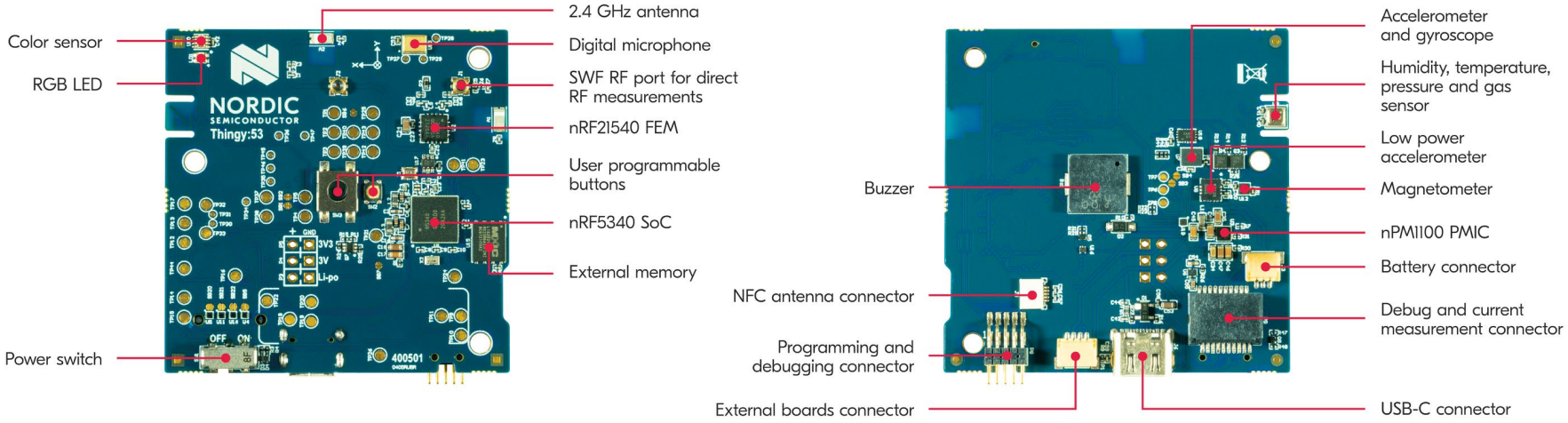
What is Nordic Thingy:53

- Prototyping platform integrating
  - nRF5340 SoC
  - nRF21540 RF FEM
  - nPM1100 PMIC
- Multiprotocol wireless connectivity
  - Bluetooth LE, Bluetooth mesh, Matter
- Internal battery and a wide variety of sensors and interfaces
- Fully supported by the nRF Connect SDK

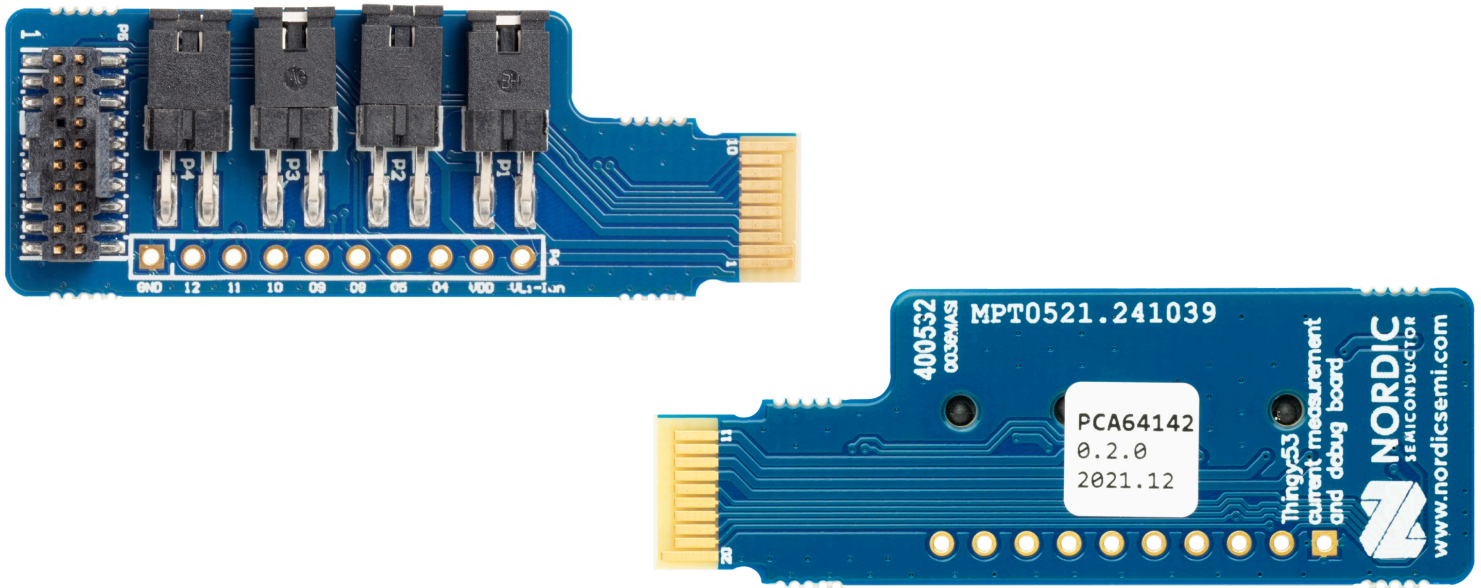
Connect anything

- Easier to access with redeisgned outer casing for the Thingy:53
- USB-C for charging/programming
- Qwiic/Stemma/Groove 4-pin JST for accesory devices
- Programmer port
- Debug and current measurement port

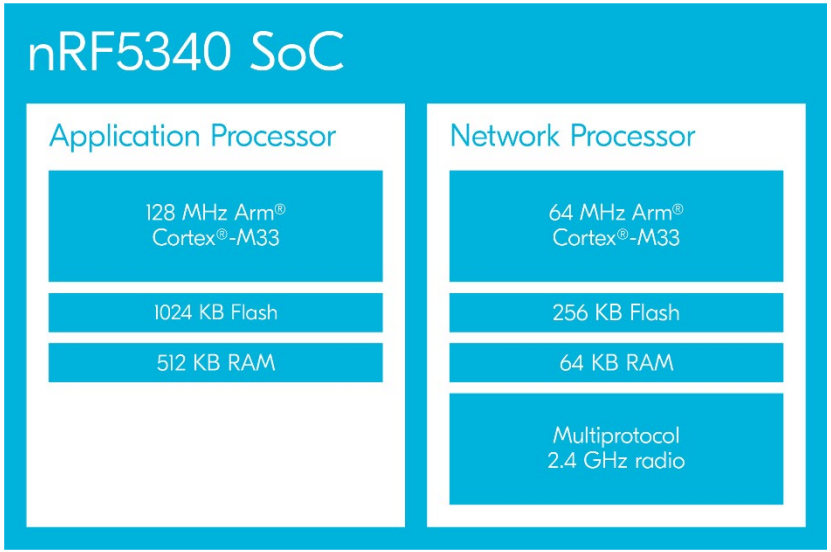
Thingy:53 hardware overview



Debug- and current measurement board

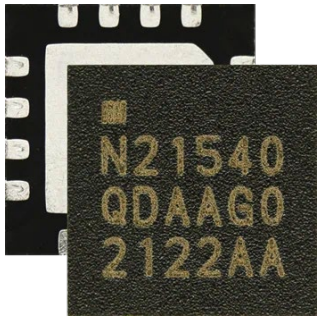


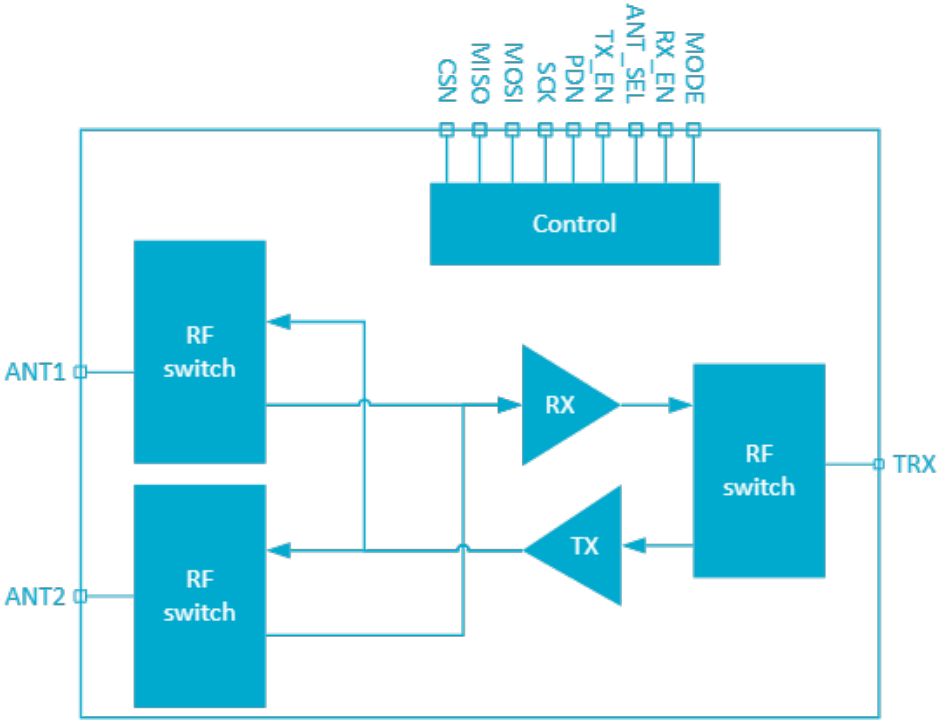
Powering innovation – nRF5340 SoC



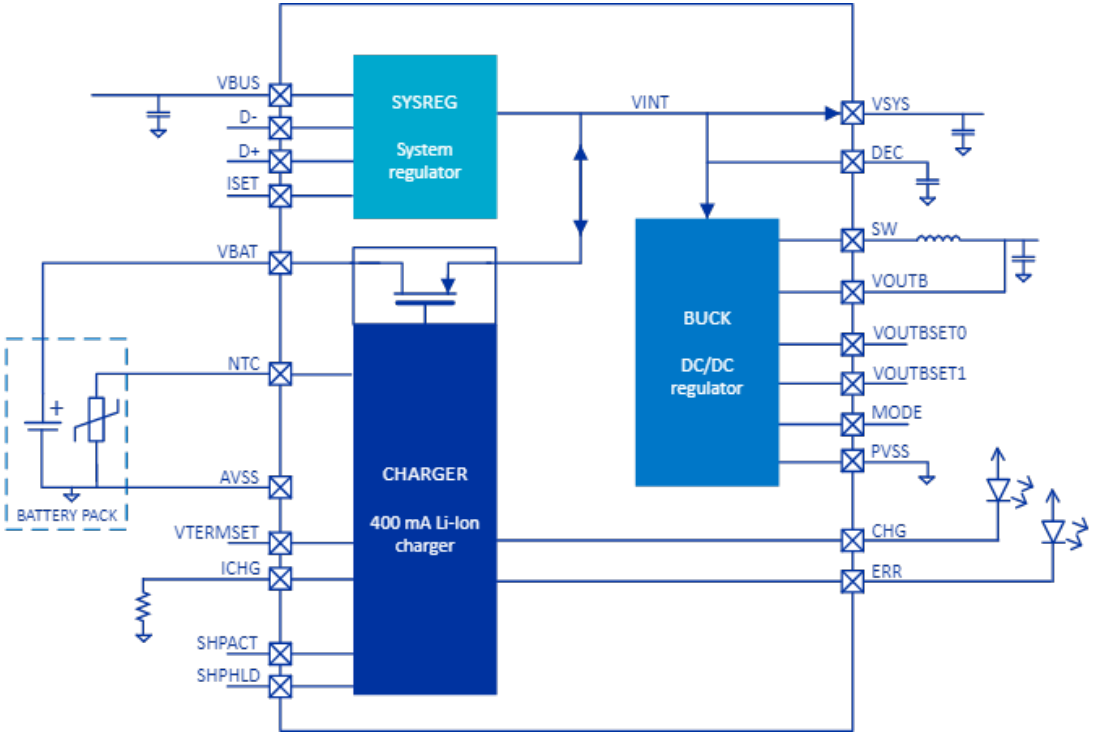
- High-performance application processor
- Fully programmable, ultra-low power network processor
- Multiprotocol radio
  - Bluetooth LE, Bluetooth mesh, Thread, Zigbee, NFC, 2.4 GHz proprietary
  - Thread and Bluetooth LE enables developing for Matter

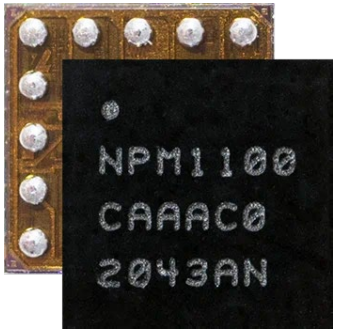
Range extender – nRF21540 RF FEM

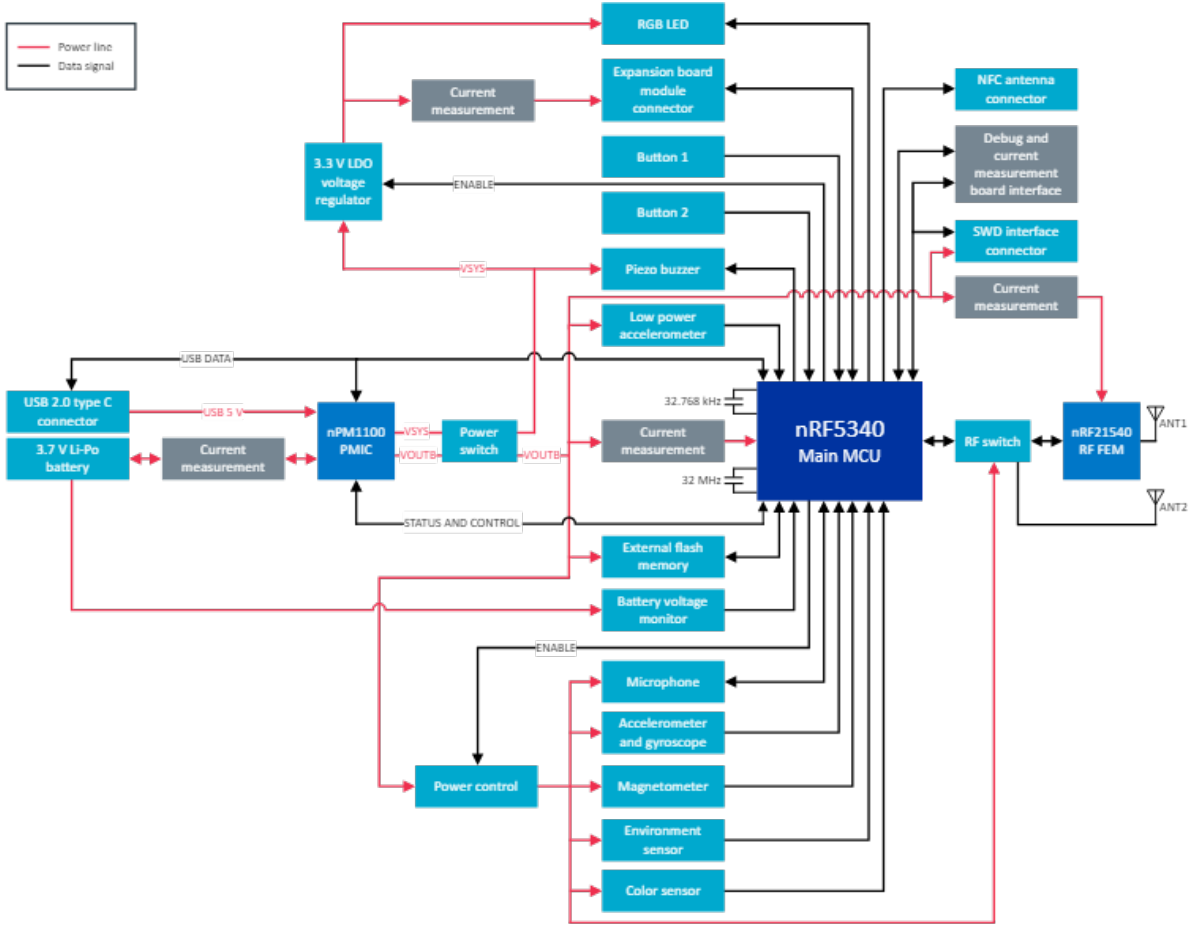




Power management – nPM1100 PMIC







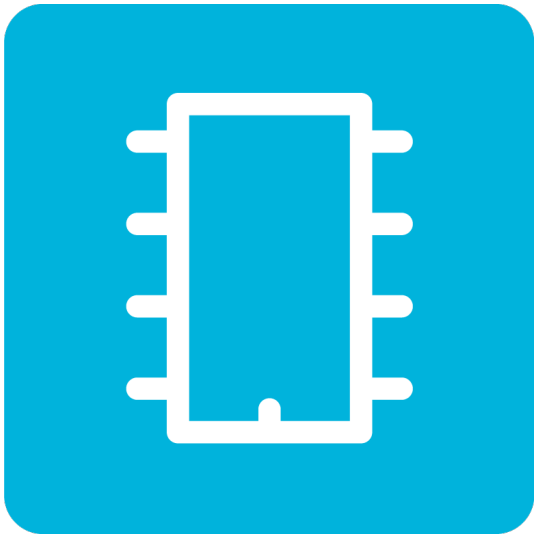
Sensor hardware

Vendor	Device	Function
Bosch	BME688	Temperature
		Humidity
		Pressure
		Gas
Bosch	BMI270	Inertial measurement unit (IMU)
Bosch	BMM150	Magnetometer
Analog Devices	ADXL362	Low-power accelerometer
ROHM	BH1749	Color and light sensor
Vesper MEMS	VM3011	Digital MEMS microphone

Two new apps

nRF Edge Impulse

nRF Programmer



nRF Edge Impulse app

Embedded machine learning

Every Thingy:53 ships pre-loaded with firmware

Integration with Edge Impulse Studio

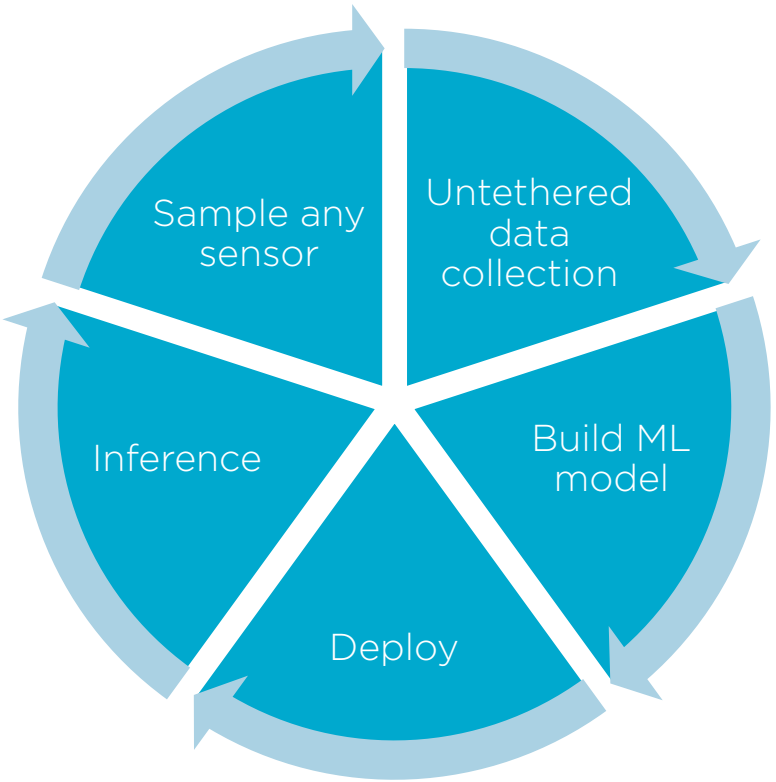
Data collection

Running ML models

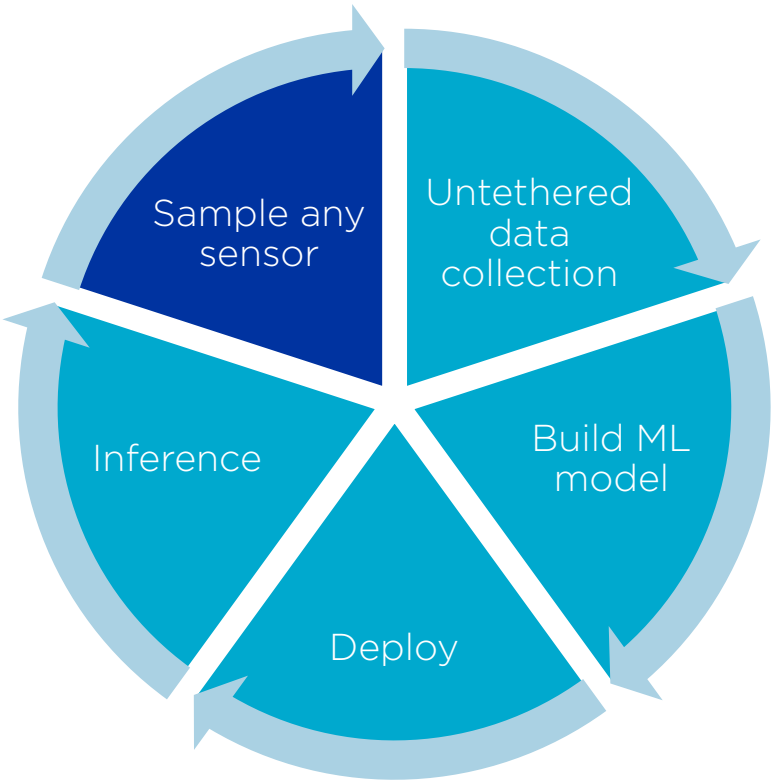
Rapid ML prototyping with Thingy:53

- Ideal for rapid embedded ML prototyping
- Integrates seamlessly with Edge Impulse Studio
- Thingy:53 for both data collection and running trained ML models
- OTA DFU for ML models through the app
- Wake-on-event sensors

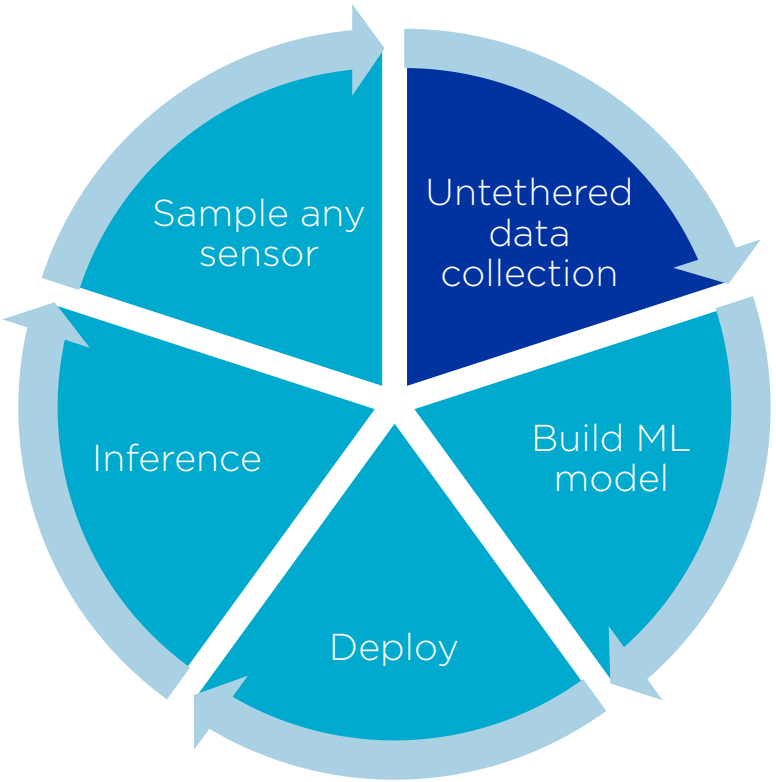
Rapid embedded ML prototyping



Rapid embedded ML prototyping



Rapid embedded ML prototyping



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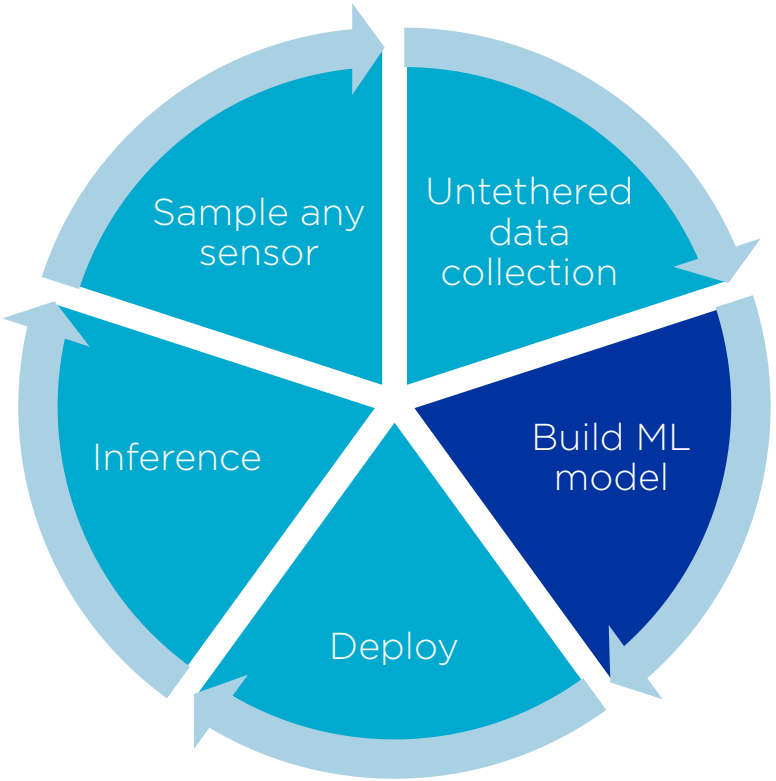
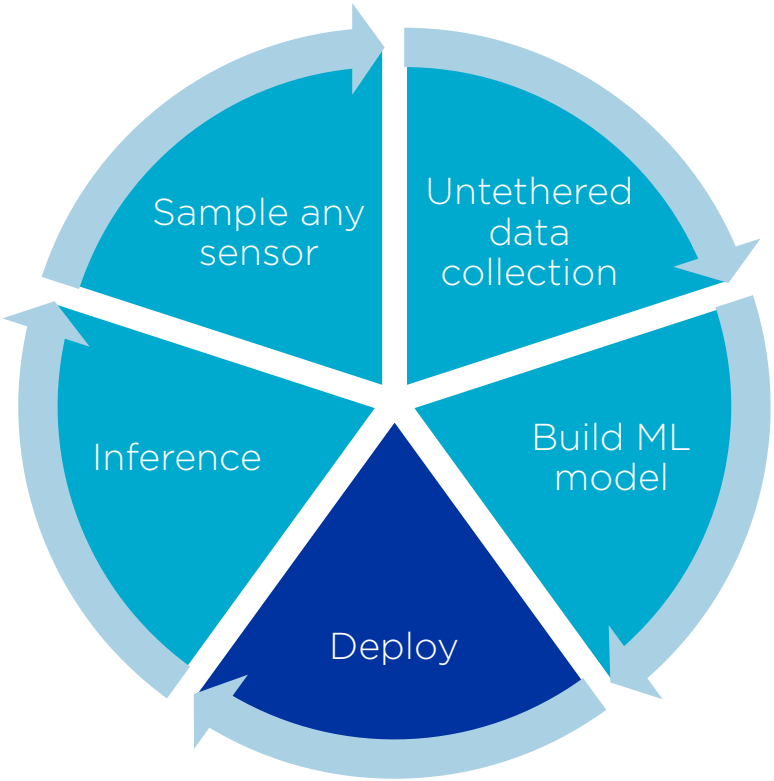
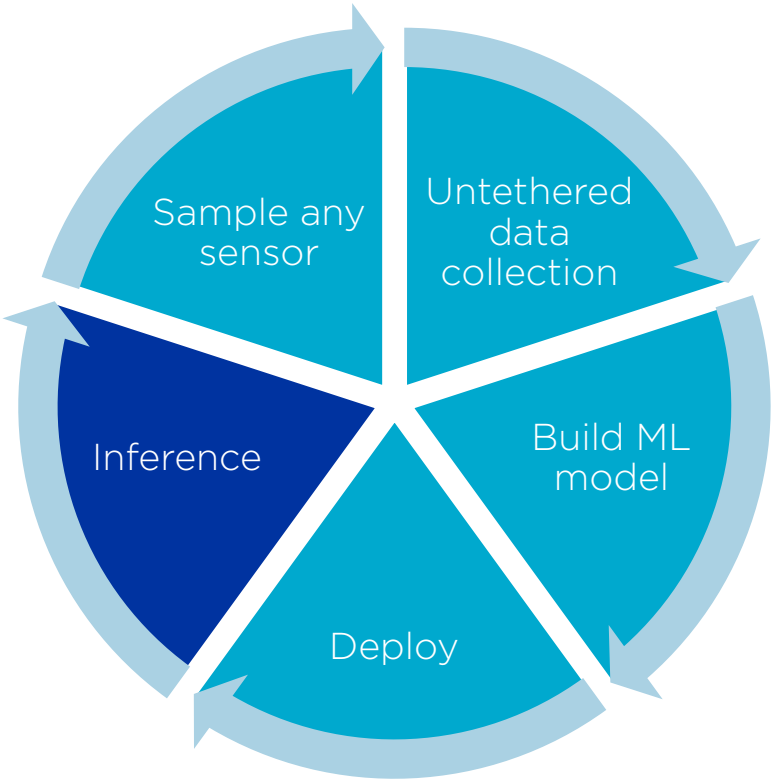


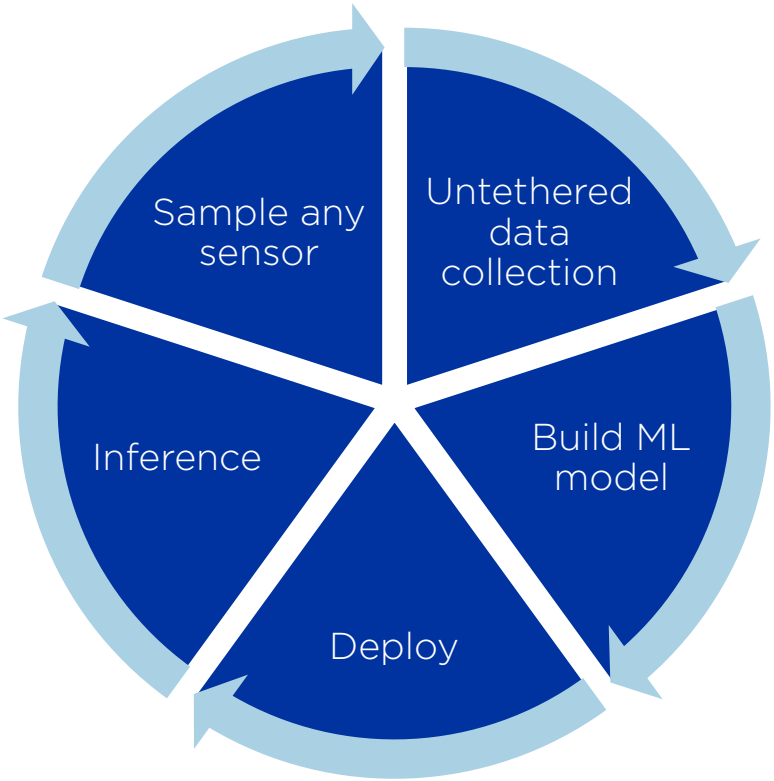
Rapid embedded ML prototyping



Rapid embedded ML prototyping



Rapid embedded ML prototyping



nRF Edge Impulse demo

Unboxing, data collection and inferencing

nRF Programmer app

- Over-the-air DFU
- Update firmware without connecting to a PC or programmer
- Update without having direct physical access to the device
- Works with pre-compiled Thingy:53 firmware samples from nRF Connect SDK
- Planned support for custom firmware in the future

Existing sample firmware

- Edge Impulse firmware
- Peripheral LBS
- Peripheral UART
- nRF Machine learning
- Mesh: light
- Mesh: light switch
- Mesh: light fixture
- Mesh: sensor server
- Matter weather station
- Zigbee weather station

Custom development in the nRF Connect SDK

- For making custom firmware the nRF Connect SDK v2.0.0 and later is the supported SDKs
- Will be included in the nRF Connect Fundamentals course
- Hardware driver support for sensors
- Many existing compatible firmware samples
- Flash firmware with an external debugger (devkit), through USB-C (MCUboot), or OTA DFU.

Summary

- Processing power for edge computing and embedded ML
- New connectors for external hardware
- Improved accessibility for power button and connectors
- Two new apps
- Supported in nRF Connect SDK v2.0.0

Q&A

Register for upcoming Nordic Tech Webinars

webinars.nordicsemi.com

Consider participating in the Thingy:53 competition

https://www.hackster.io/contests/smarter-sustainable-world