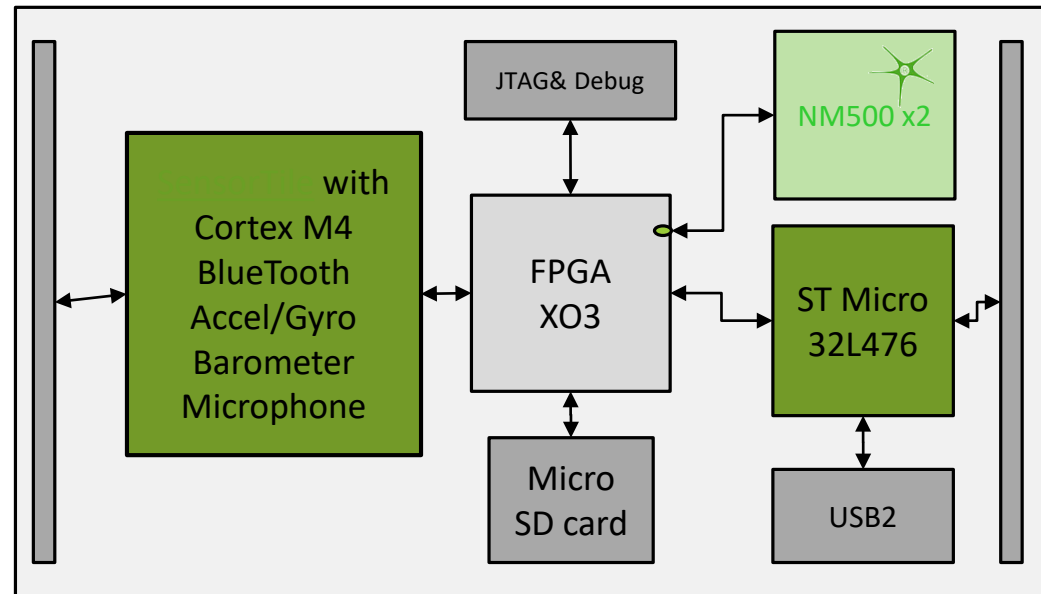


NeuroTile

- SensorTile with Always-On monitoring and life-long learning
- Replacement for Intel Curie



Multi-purpose intelligence

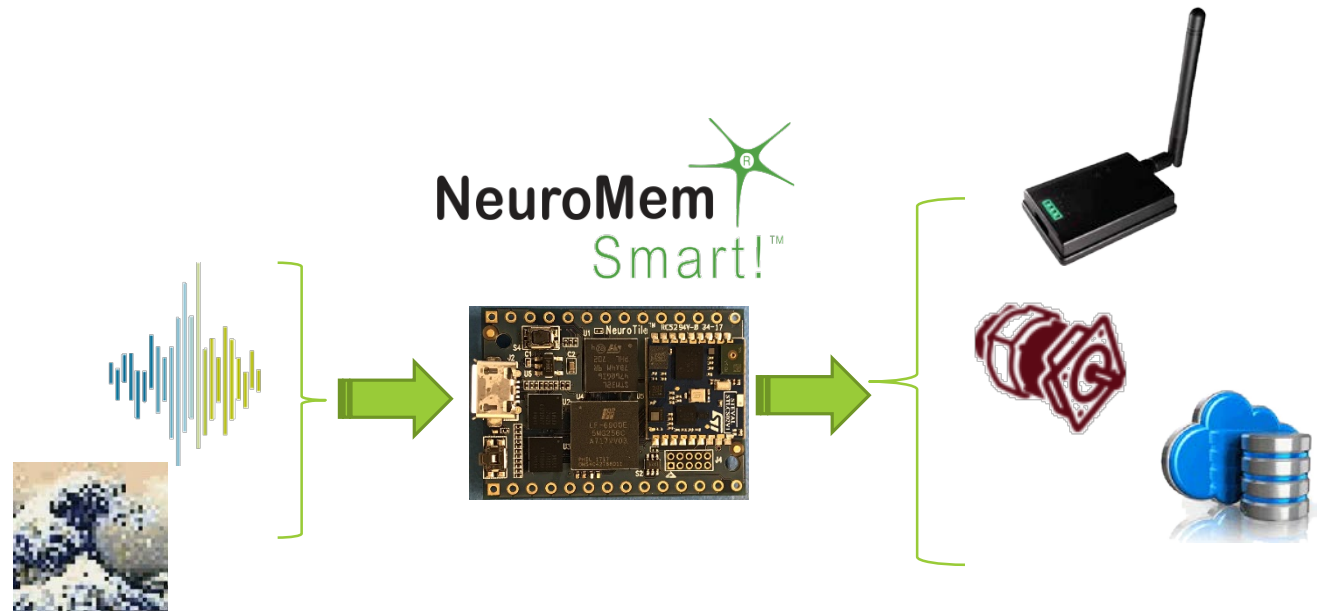
Always ON Monitoring

Selective recording and/or transmission based on recognition made by the neurons

Identify

Classify

Detect novelty



Trainable adaptive intelligence

Learn by examples

- Radial Basis Function

Training on-line or off-line

Life long learning

Knowledge traceability

Knowledge portability



Practical Intelligence

IOT

Smart Things

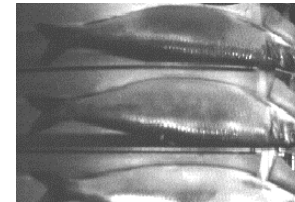
Wearables

Home applications

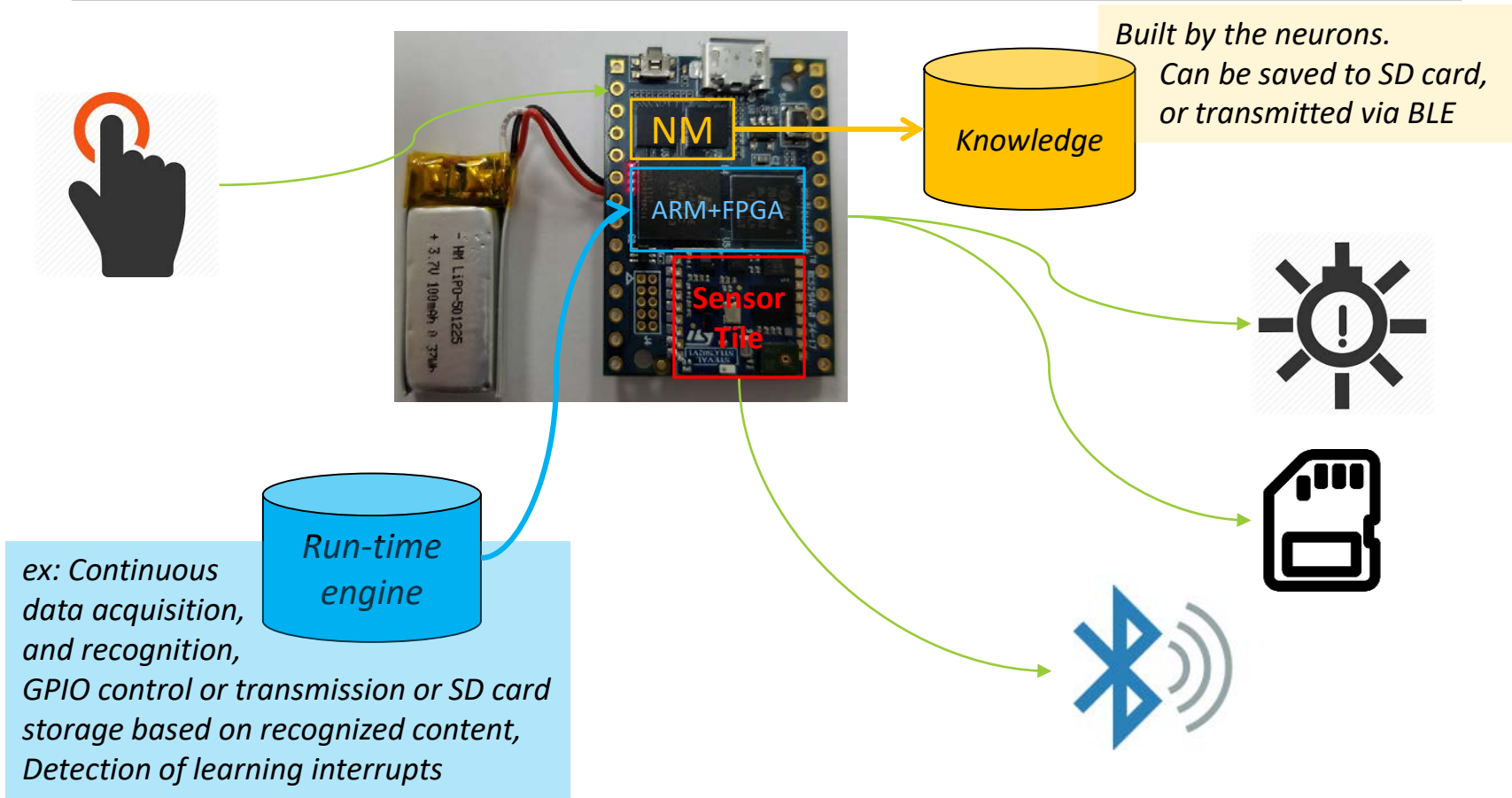
Building automation

Industrial maintenance

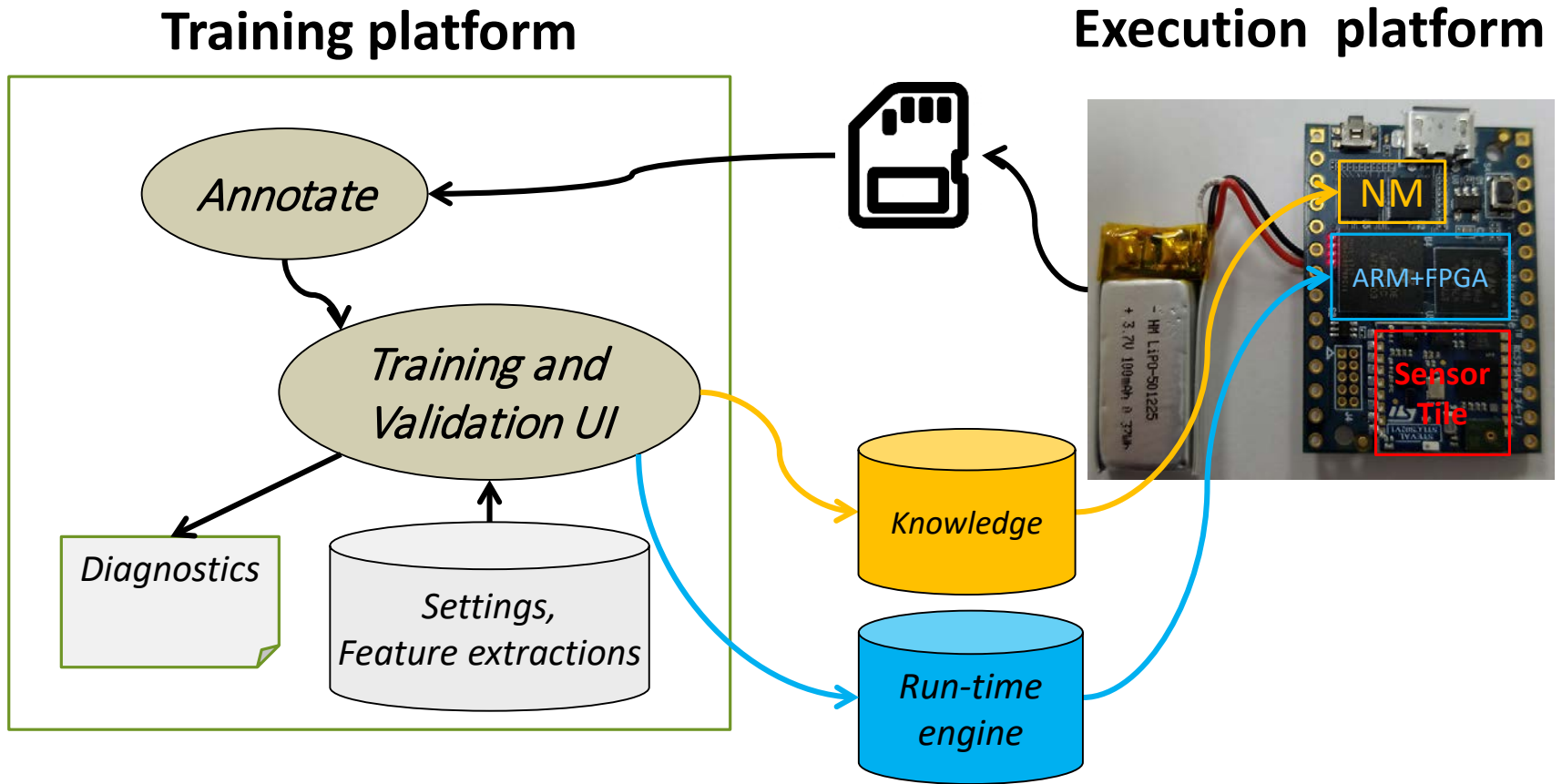
Automotive, ADAS



Application deployment w/ live training



Application deployment w/ off-line training



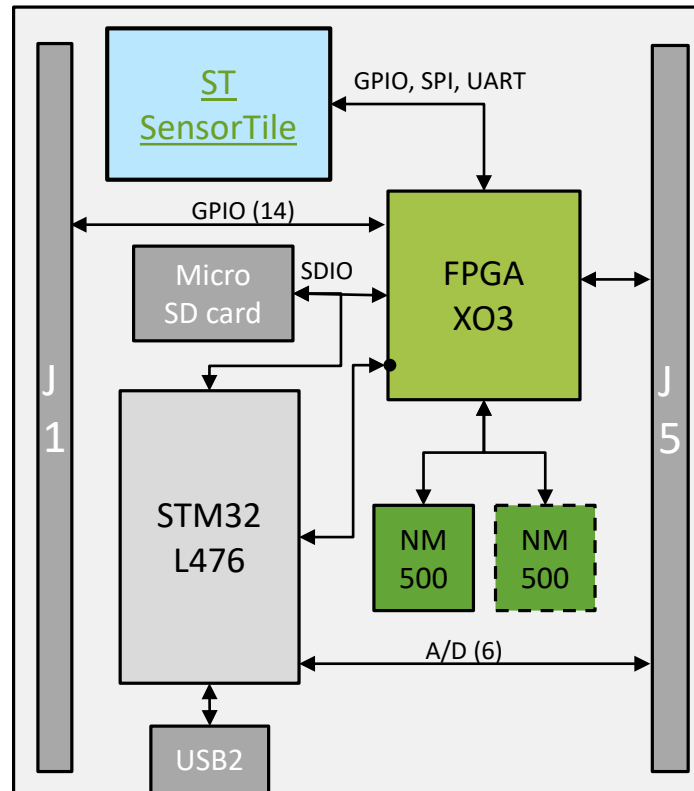
NeuroTile block diagram

SensorTile:

- STM32L476 (Cortex M4)
- BlueNRG-MS
- MP34DT04 (audio MEM)
- LSM6DSH or LSM6DSM (Accel+Gyro)
- LSM303AGR (Accel+Mag)
- STM32L476 (slave)

STM32L476:

- Master controller (Cortex M4)
- Access to SD card
- Reconfigure FPGA
- Interface to FPGA and indirectly the SensorTile and GPIO



J1 & J5:

- Arduino compatible

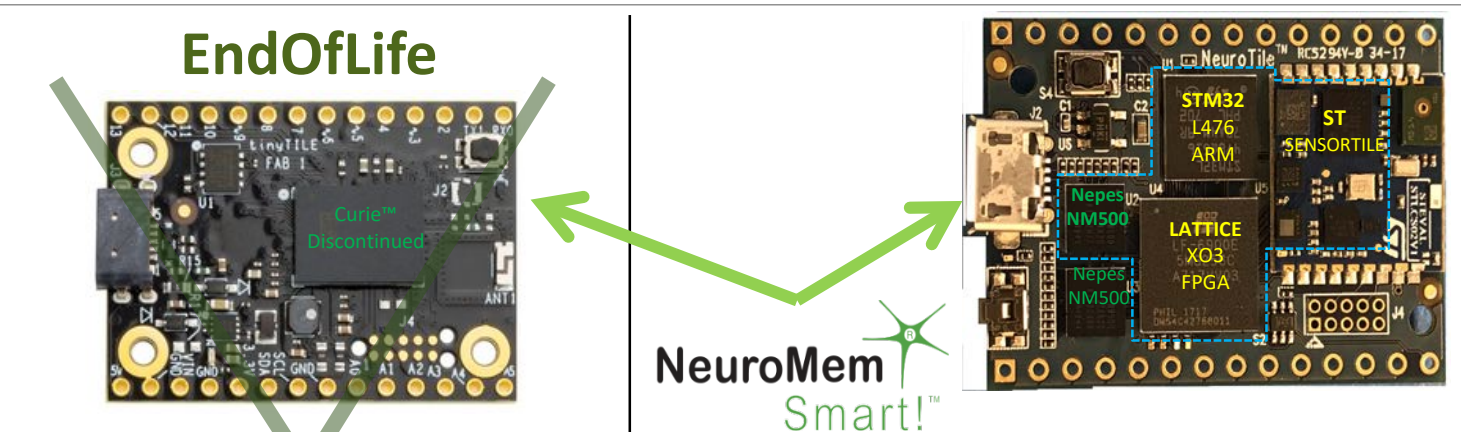
FPGA:

- Interface to SensorTile (calibration, streaming on/off, BLE control)
- Pass-thru signals to STM32 master
- Intercept signals for feature extraction
- Broadcast feature vectors to NeuroMem network for learning or recognition

NeuroMem network: (1512 neurons):

- Learn patterns
- Recognize patterns
- Build knowledge
- Save/Restore knowledge

NeuroTile vs Intel Curie



	Intel TinyTile	NeuroTile
Mems	3D accelero, 3 D Gyro	3D accelero, 3D Gyro, 3D magnetometer, barometer, microphone
MCU	8086 CISC (high power)	STM32 ARM CORTEX M4 RISC (low power), Lattice FPGA
AI unit	128 neurons (128 bytes)	Up to 1152 neurons (256 bytes)
Re. media	none	SD Card on the back
LBT	Nordic	ST Blue NRG1
IDE	Arduino	Arduino, ST Starter Firmware, BlueMicrosystem
API	CurieNeurons® by GV	NeuroTile Lib by GV