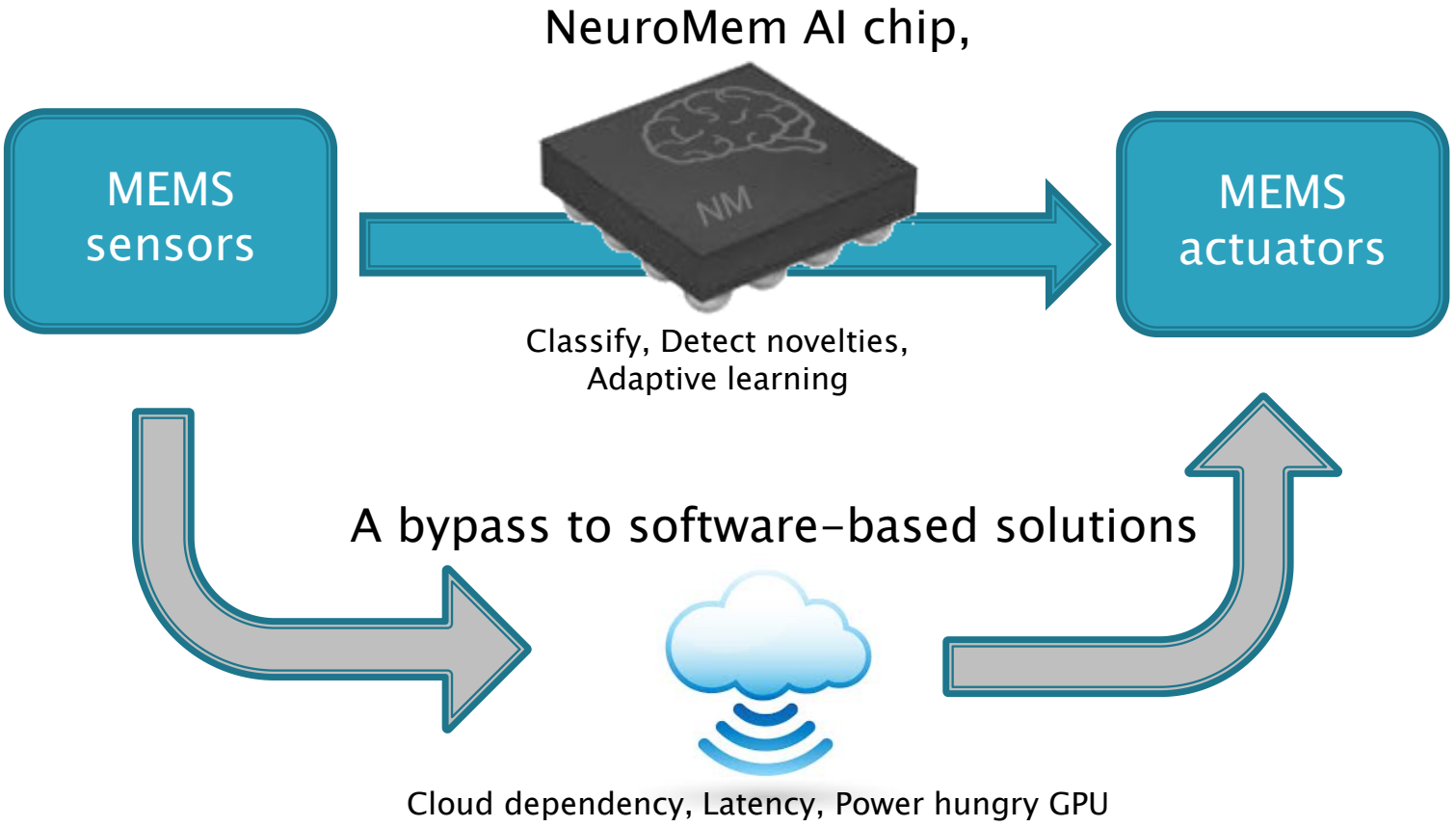
GENERALVISION

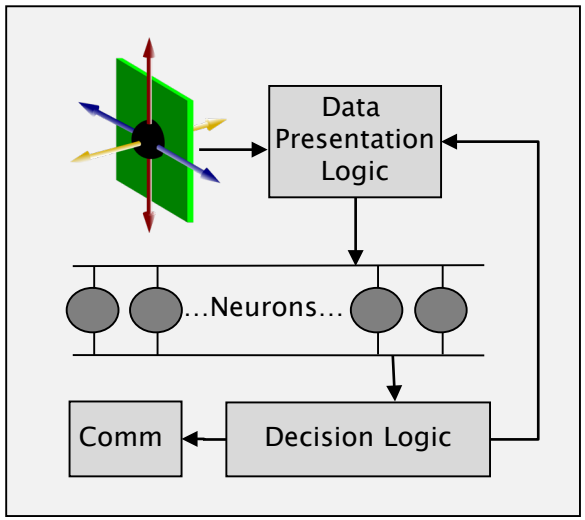
NeuroMEMS

MEMS which can learn, recognize and monitor autonomously

MEMS with built-in AI

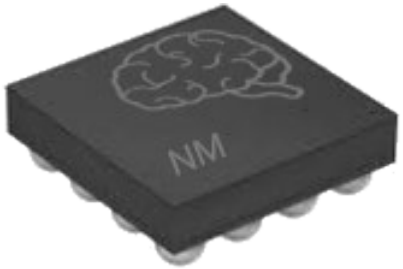


NeuroMEM block diagram



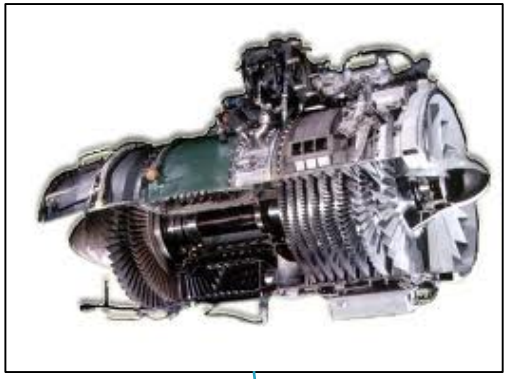
- Signals from accelerator and gyroscope are sampled,
- Assembled into a single or multiple signatures ready for the neurons
- Neurons classify the signature or report a novelty
- Neurons'responses are consolidated in temporal domain
- Decision is transmitted
- Decision is used to close loop with data presentation logic

The enabler: NeuroMem AI chip



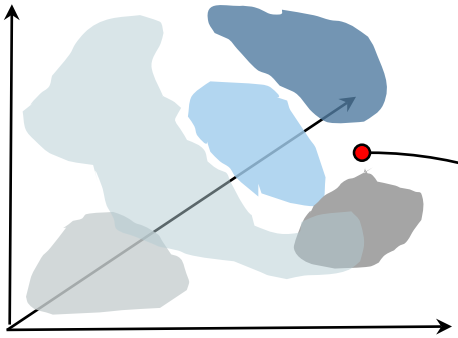
- Always-On pattern recognition
  - Classification
  - Anomaly and Novelty detection
- Capable of life long learning
  - Real-time, incremental learning
  - Add new category at any time
- Unique Performances
  - Deterministic latency (µsecs)
  - Low power consumption (Mhz clock)

NeuroMEMs for vibration monitoring and predictive maintenance



Input Stimuli
- Voltage,
- Torque,
- Temperature,
- Vibration
- and more

NeuroMem chip =
Model generator
Non linear classifier
Low-power



Output Categories

- Warm up
- Normal Vibration
- Cool down
- High Vibration
- Pulsating

Unknown!

Learning & Inference in a single chip

- Recognize by association
- Content reactive memories
- Exact and fuzzy match
- Notion of unknown
- Notion of uncertainty
- No address, No supervisor

- Learn by examples
- Adaptive model generator
- Intrinsic deduplication
- Supervised and unsupervised
- Knowledge Traceability
- Knowledge Portability

Associative Memories

Trainable ANN

Smart MEMs in Consumer and mobile devices

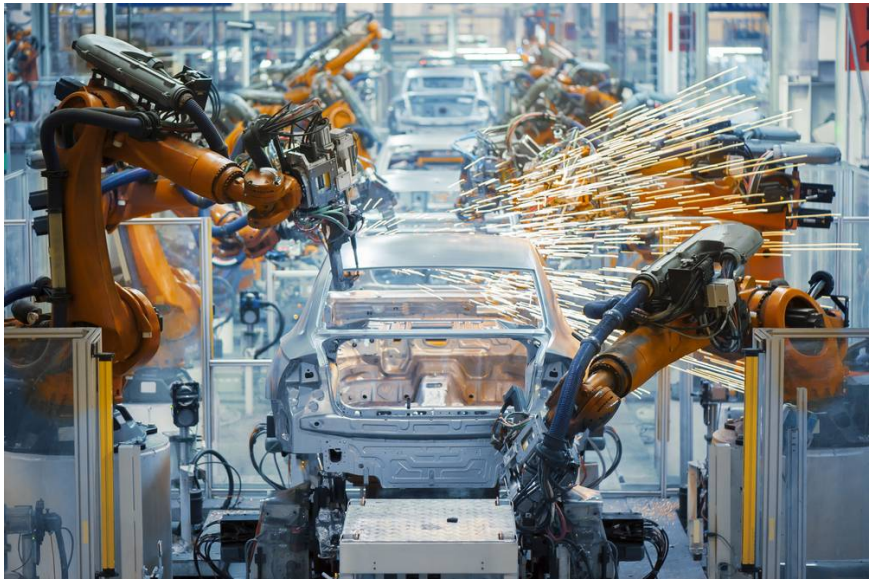
- Activity monitoring
- Gesture recognition

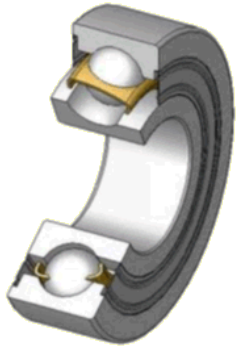
Smart MEMs in Building and Infra-Structures

- Door control
- Glass breakage detection
- Crack detection

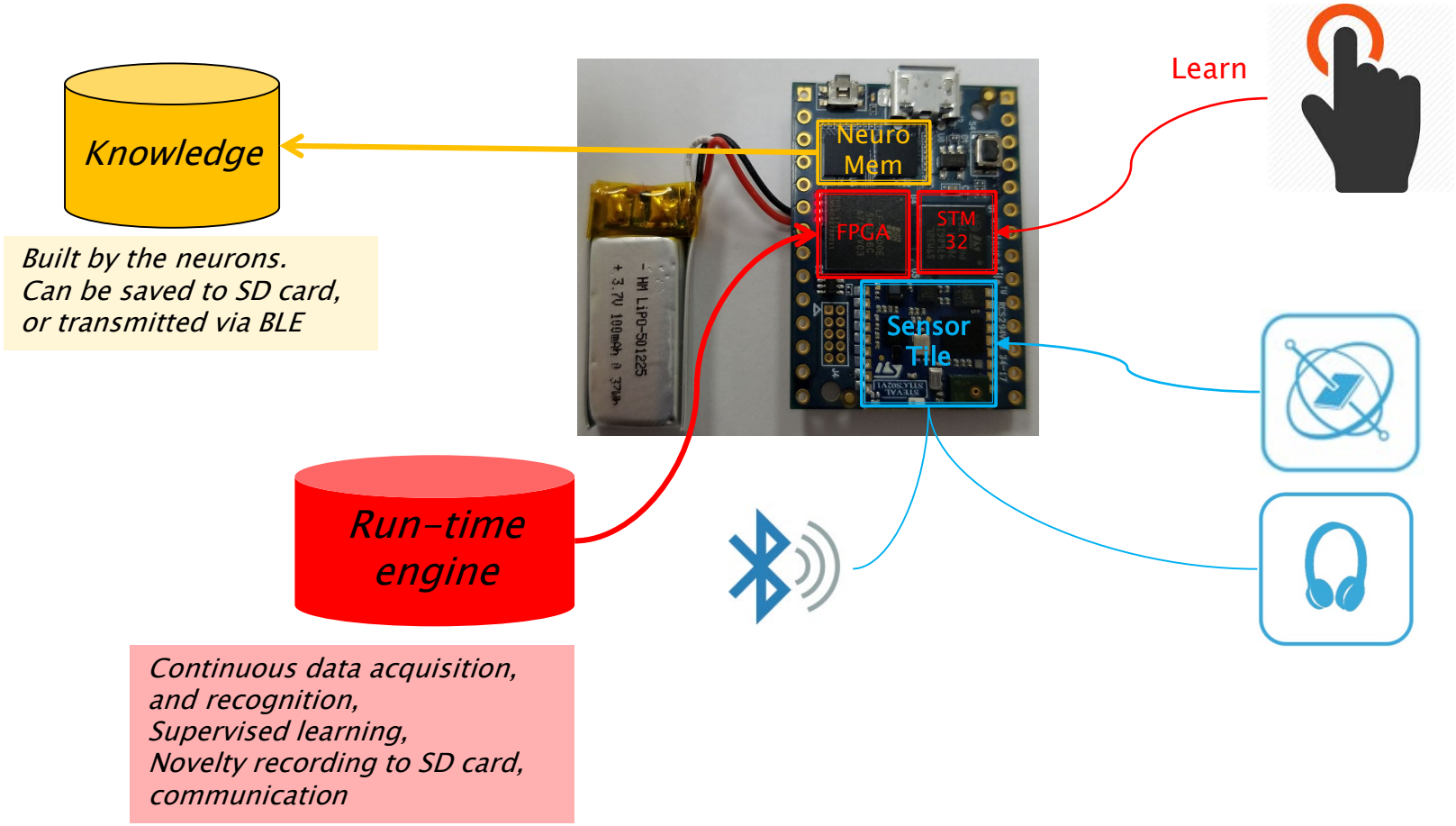
Smart MEMs in Automotive and machinery

- Ball bearing predictive maintenance
- Robot arm adaptive control

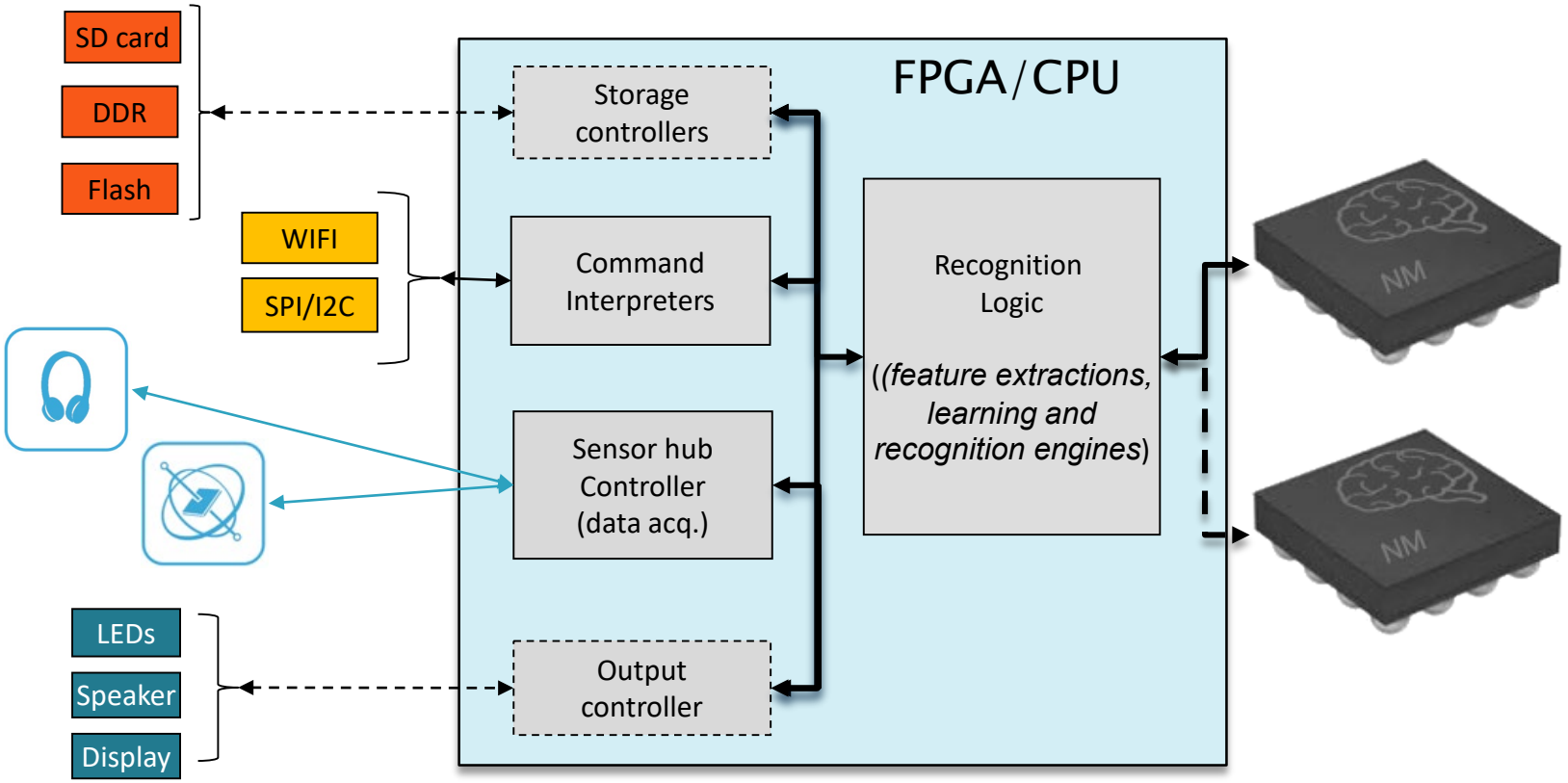




POC: NeuroTile



Gen #1: NeuroMEMs MCM



Gen #2: NeuroMEMs SOC