



SYSTEM PLATFORMS FOR ENERGY EFFICIENT DESIGN SPEED

IP PLATFORM BRIEF

DOLPHIN
DESIGN

SPEED is the response to energy efficiency challenges for AIoT systems

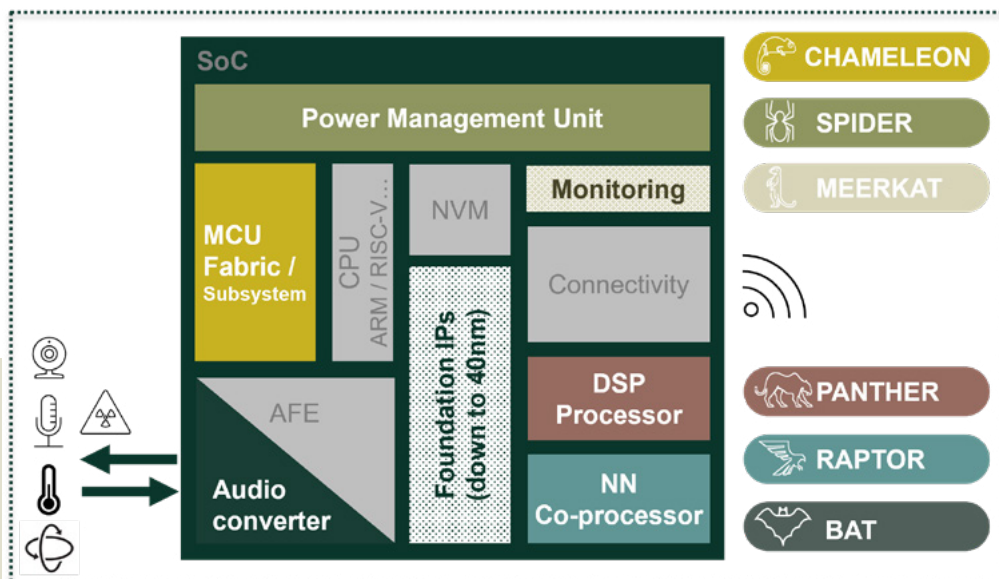
APPLICATIONS

- Image and activity analysis
- Audio (keyword spotting)
- People and face detection
- Smart sensors
- Gesture recognition
- Augmented and virtual reality
- Industry 4.0
- Smart cities

SPEED (System Platforms for Energy Efficient Design) is a turnkey offering of IP platforms to cost-effectively design energy efficient SoCs for smart devices. SPEED IP platforms allow any IC designer to achieve performance levels at constant energy consumption that were previously only accessible through cloud or GPU-based systems

SPEED offering consists in 5 IP platforms: BAT for audio processing, SPIDER for power management, CHAMELEON for MCU subsystems, RAPTOR for neural processing unit, and PANTHER for multi-core DSPs.

SPEED IP platforms functionality and performances can be demonstrated on our 22nm VEP test-chip



TECHNOLOGY FOR BETTER FUTURE

By 2030, 24B of IoT devices will be battery powered and 5B batteries will be replaced every year (15M units per day!). The exponential growth of needs for greater device interoperability, predictability and performances is challenged by the global need for more energy frugality.

The solution to deal with data deluge, while preventing the increase of power consumed by data centers, is known as Edge AI. This solution consists in transferring most of the processing intelligence from the cloud to the sensor or close to it. It translates into an unprecedented need to increase performances of «smart sensors» or «smart devices» by a factor of 1,000 at constant energy consumption.

With its SPEED IP platforms, Dolphin Design is positioned as THE provider of solutions for Edge AI System-on-Chip designers. We enable our customers to do much more with less energy resulting in major benefits on environment.





KEY BENEFITS

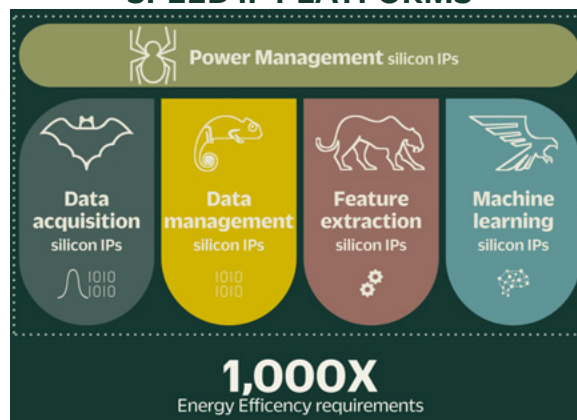
To support the rollout of energy efficient SoCs, SPEED IP platforms are constantly enhanced and enriched.

Here is a preview of new additions for 2022:

- SPIDER: Single Inductance Multiple Output DC/DC converter
- BAT: audio DAC with inductorless Class-D amp for earphones
- CHAMELEON: main security features to support secured systems
- PANTHER: feature extraction upfront of the neural network inference
- RAPTOR: Increased scalability (up to 128MAC/cycle) with Improved energy-efficiency



SPEED IP PLATFORMS



KEY FEATURES

- >110 ULPMark-PP score in 22nm node
- 3x less energy for Signal Processing compared to state-of-the art DSP
- Near-memory computing CNN accelerator up to 128MAC/cycle
- Adaptive Voltage and Body Bias IP
- In-chip margin monitoring

SPEED is a turnkey solution which combines analog/mixed signal and digital IPs to enable highly energy-efficient AI-enabled Systems-on-Chips.

HIGHLY COMBINABLE

SPEED IP platforms may be licensed stand-alone or all together. Each IP block part of a given SPEED IP platform is designed to be efficiently interconnected with IP blocks from other SPEED IP platforms. E.g. audio converters part of BAT are proposed fully integrated into CHAMELEON MCU subsystem to store data in memory autonomously, i.e. without a CPU.

COMPREHENSIVE OFFERING TAILORED FOR EACH SoC

Each design platform incorporates a comprehensive set of silicon IPs that have been duly verified to streamline the cost-effective design of energy-efficient SoCs. Silicon IPs are delivered as ready-to-use blocks, provided configured or user-configurable based on SoC requirements. Out-of-the box SoC integration is made possible through a complete and consistent set of deliverables (HW/SW) for standard design flows.

