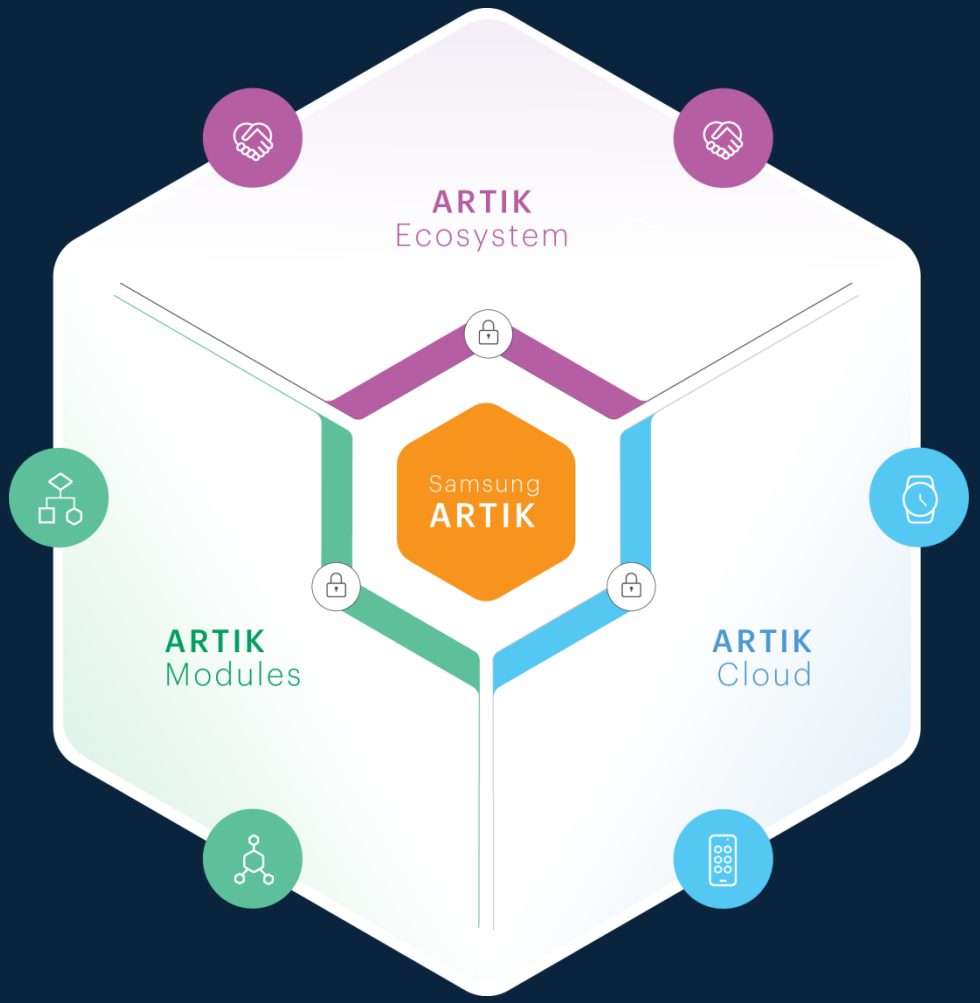
SAMSUNG

Ashish Sethi | Strategic Business Development EMEA,
ARTIK

Accelerating Time to Market with an Open, Integrated, End to End Platform for IoT

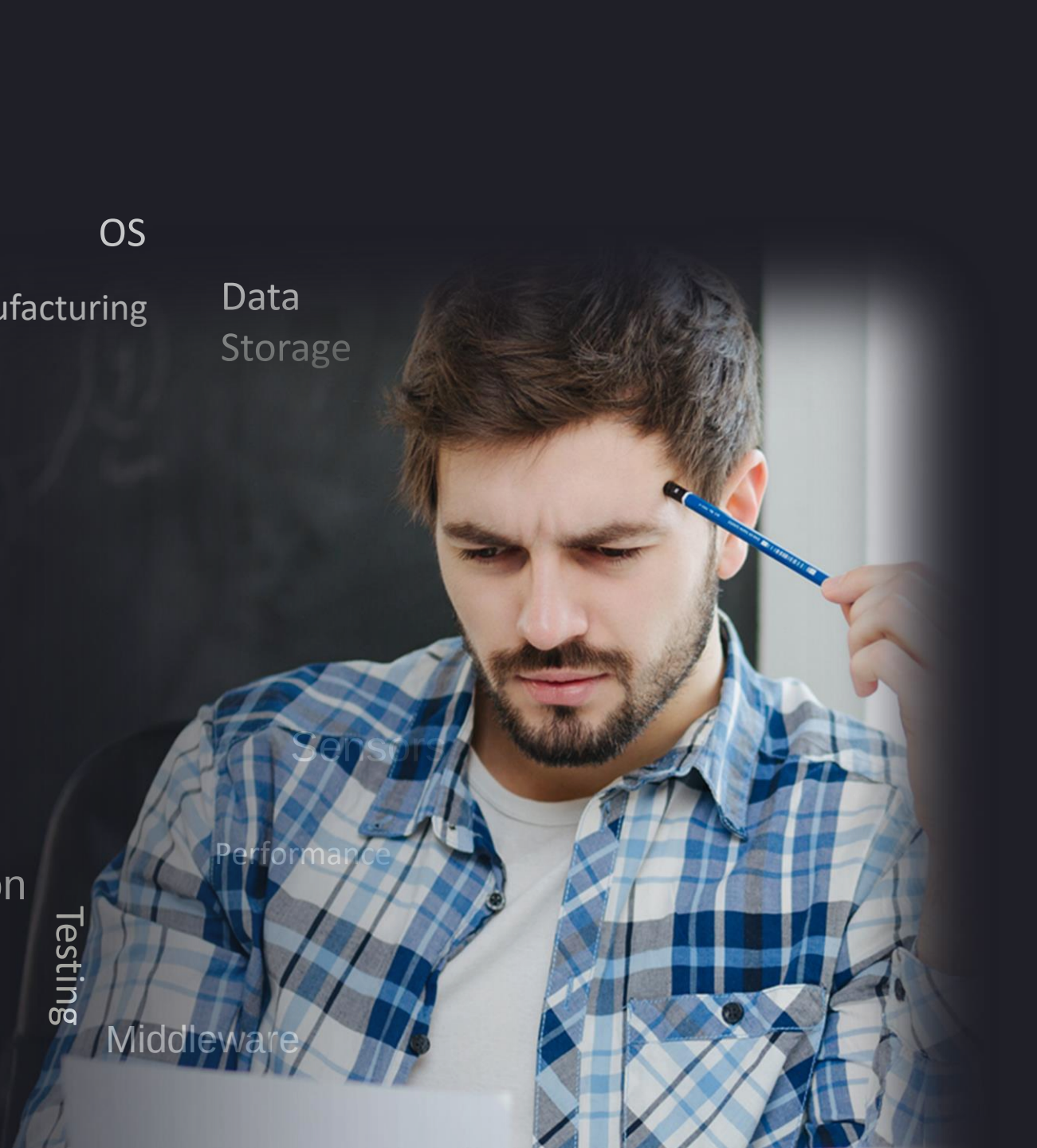
GETTING BUSINESS VALUE OUT OF IoT

- Reduce Costs
- Increase Productivity
- Grow Revenue

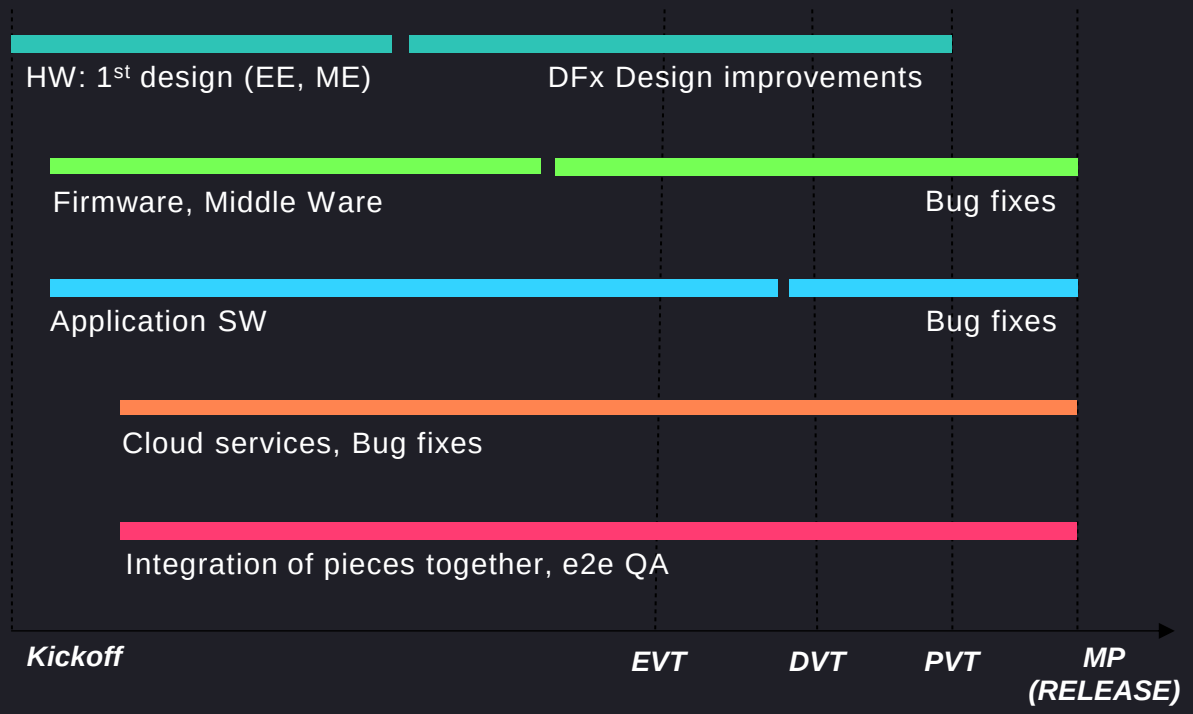

ARTIK
Ecosystem
Samsung
ARTIK
ARTIK
Modules
ARTIK
Cloud

Challenges
Building For IOT

Power Management
OS
Manufacturing
Data Storage
Cloud Services
Voice
OnBoarding
OTA Device Mgmt
Hub
Radios
Drivers
Open Source
APIs/Frameworks
Partners
Security
Tools
Silicon
SDKs
Cloud Infrastructure
Testing
Device Interoperability
Video
Protocols
Middleware
APIs/IDE



24+
MONTHS
Develop a Product for IoT



ARTIK LOWERS COSTS
FASTER TIME TO MARKET

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Think. Develop. Create.

RUSHUP

The ARTIK product accelerator

Developed by Fae++ innovationthroughdesign

Powered by Samsung ARTIK™

Christian Raineri
Nov. 2016

Electronica 2016 Munich

Product presentation

R&D Development process

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1. Needs → Idea
2. Feasability → **Prototype**
3. Industrialization → **Engineering sample**
4. Validation → Product

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Evaluation board & help from market…

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…***FOR STEP 1 ONLY!***

A lot of open hardware and evaluation board that are PROTOTYPE ACCELERATOR ***but***, how to move fast to product also?

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RUSHUP: PRODUCT ACCELARTORS

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RUSHUP creates PRODUCT ACCELERATORS and is the answer when makers, developers and high mix low volume industry want to turn on in a fast way the idea in a product!

RUSHUP

Introducing Samsung ARTIK: Complete end to end IoT platform

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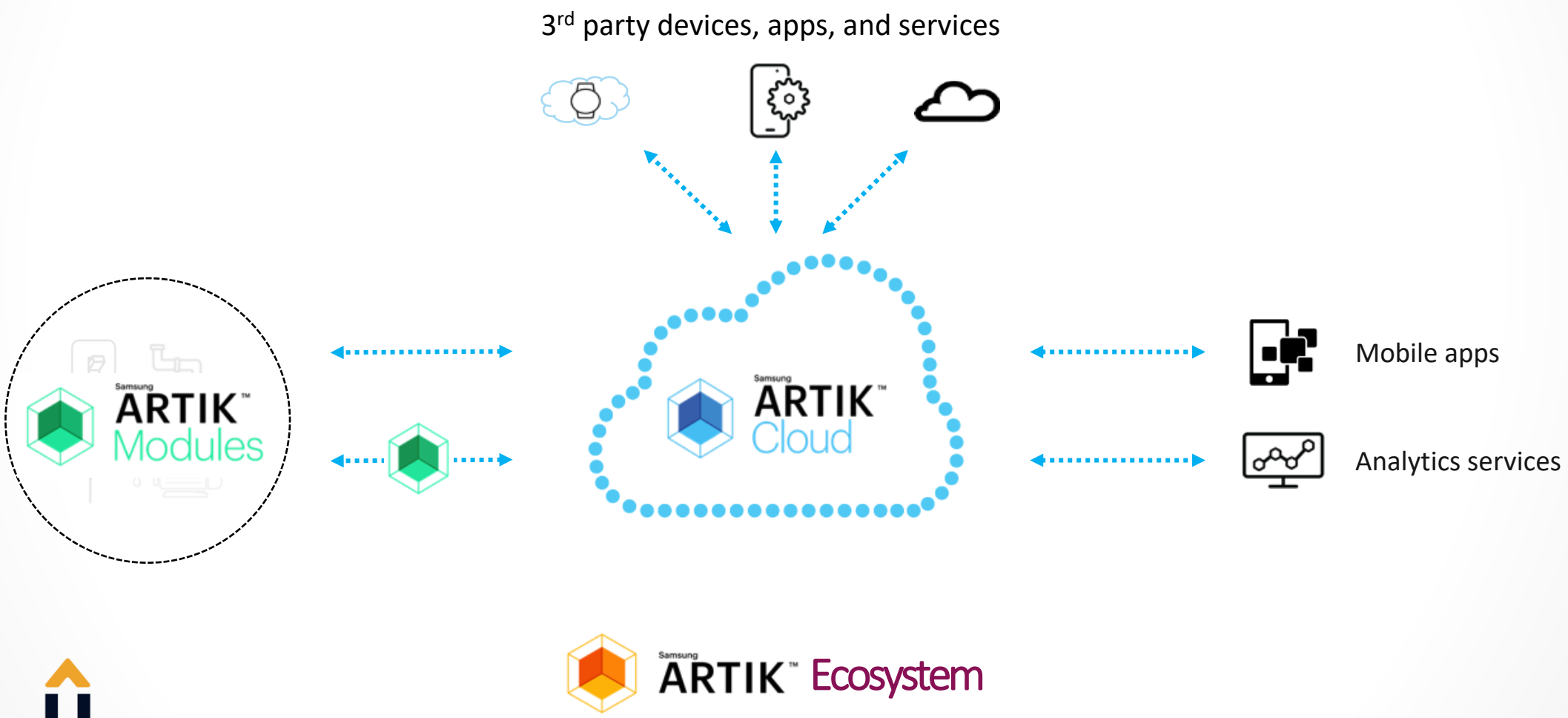
Samsung ARTIK™

Modules + IoT Cloud + Security + Ecosystem

Speed up the delivery of secure, interoperable, and intelligent IoT products and services

RUSHUP

Samsung ARTIK IoT Platform



ARTIK MODULES

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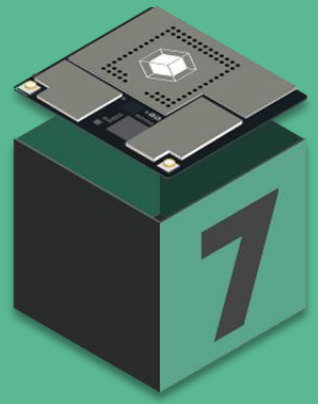
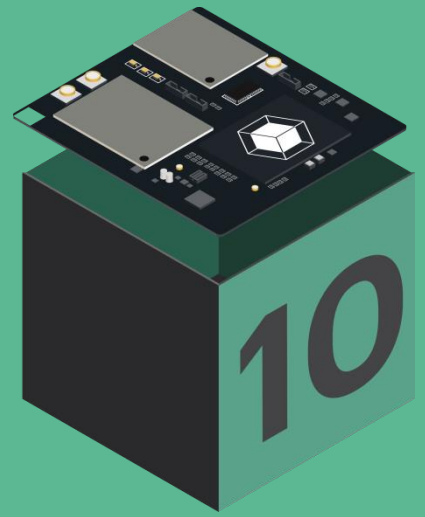
ARTIK 0

ARTIK 5



ARTIK 7



ARTIK 10

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Processor + Memory + Radios + Security

Samsung ARTIK Ecosystems

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KITRA BOARD: THE ARTIK FOOTPRINT

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ADVANCED IoT & WEARABLE PLATFORM

Super integrated General Purpose IoT platform (only 40x40mm)

- Dual computational system (real time & high speed processing)
- Fully configurable for different market sectors (from low level control to high speed processing)
- Usable from makers to professional engineers with different technical approach
- KITRA-COM pre-loaded in MCU (simple for Linux developer and simple for firmware programmers)
- Customer & market oriented design

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ARTIK 520 ACCELERATOR!

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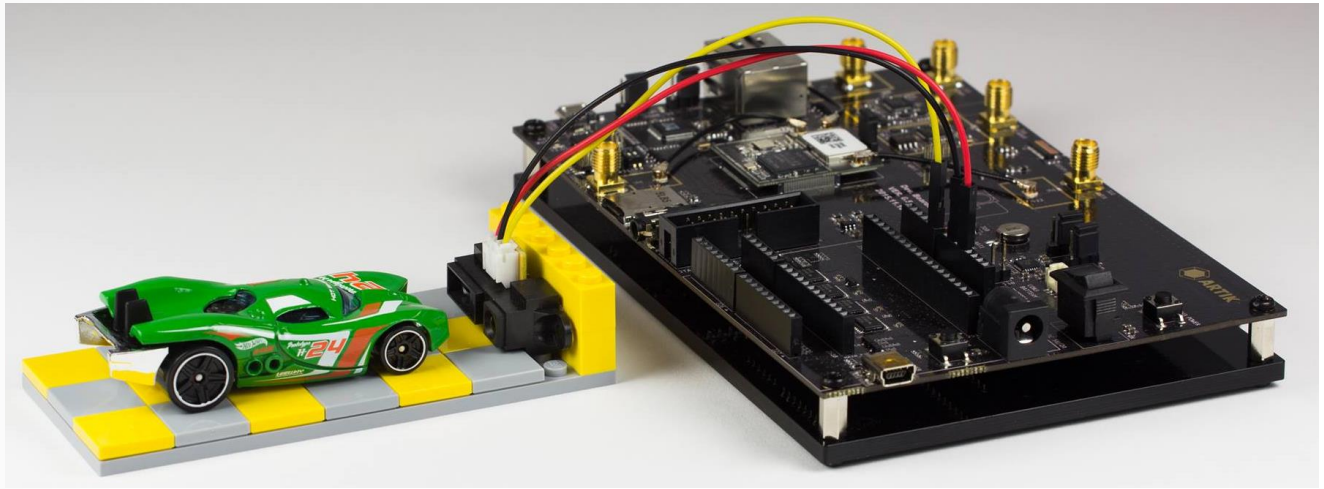

Idea → Product

Prototype

Engineering Sample

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The board

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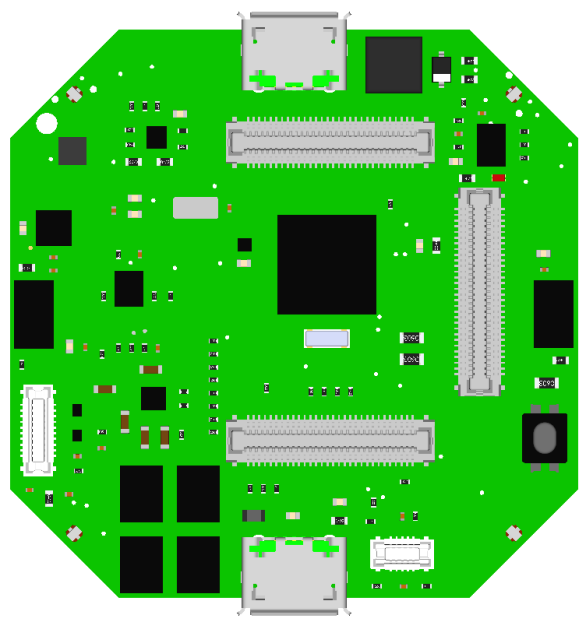
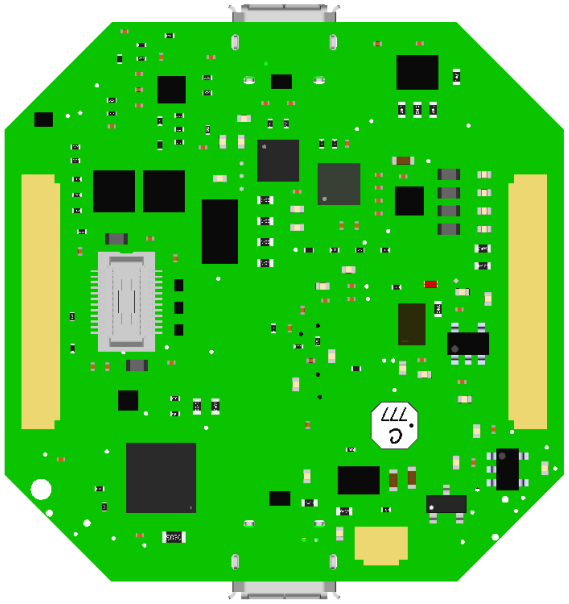
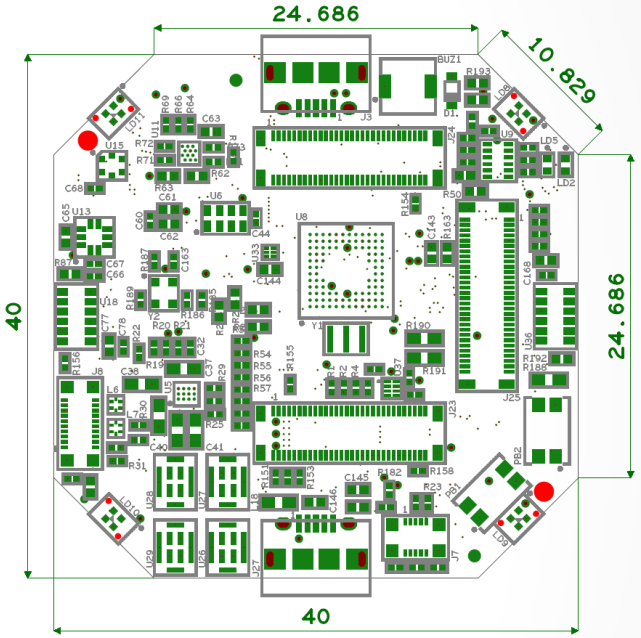


TOP

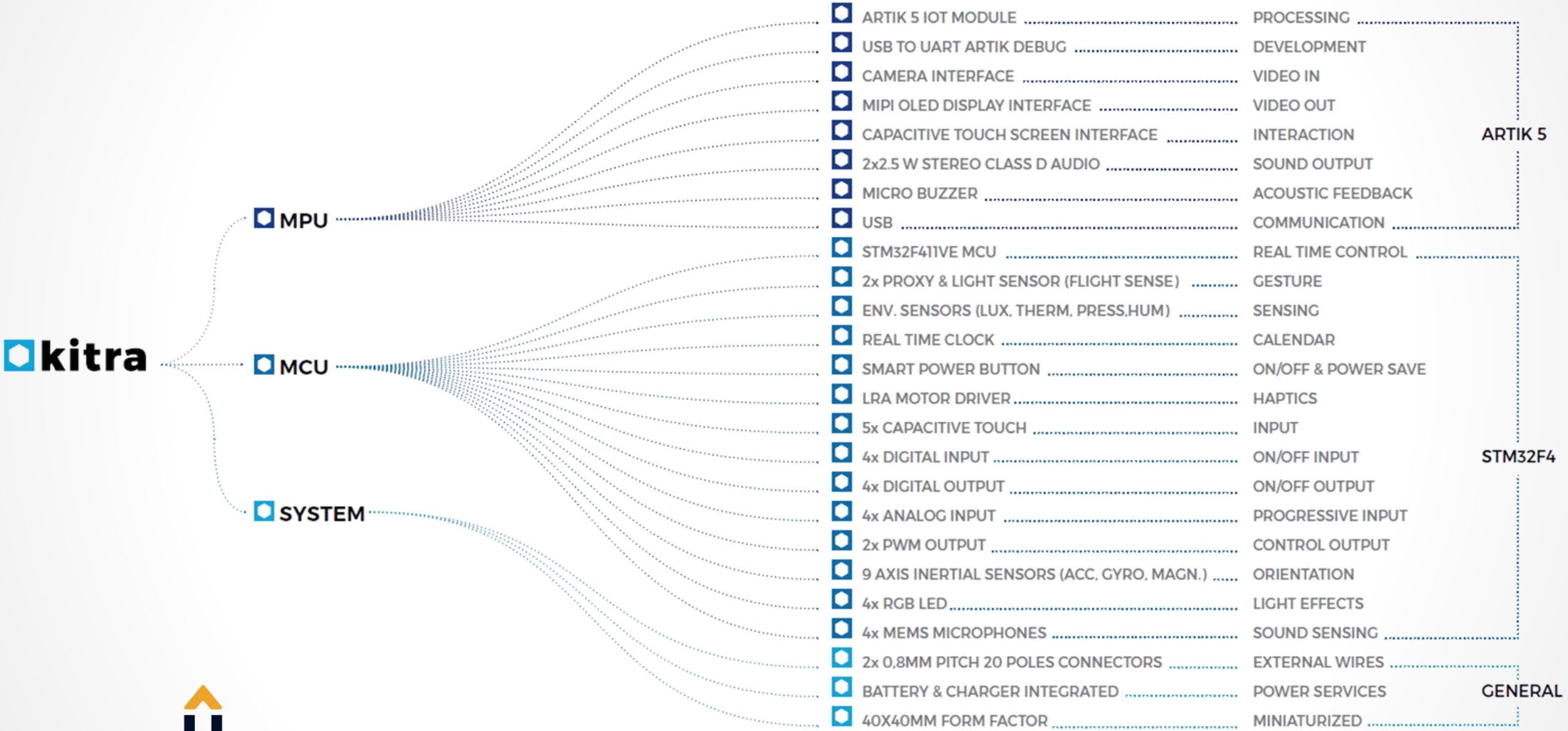


BOT



MECH

RUSHUP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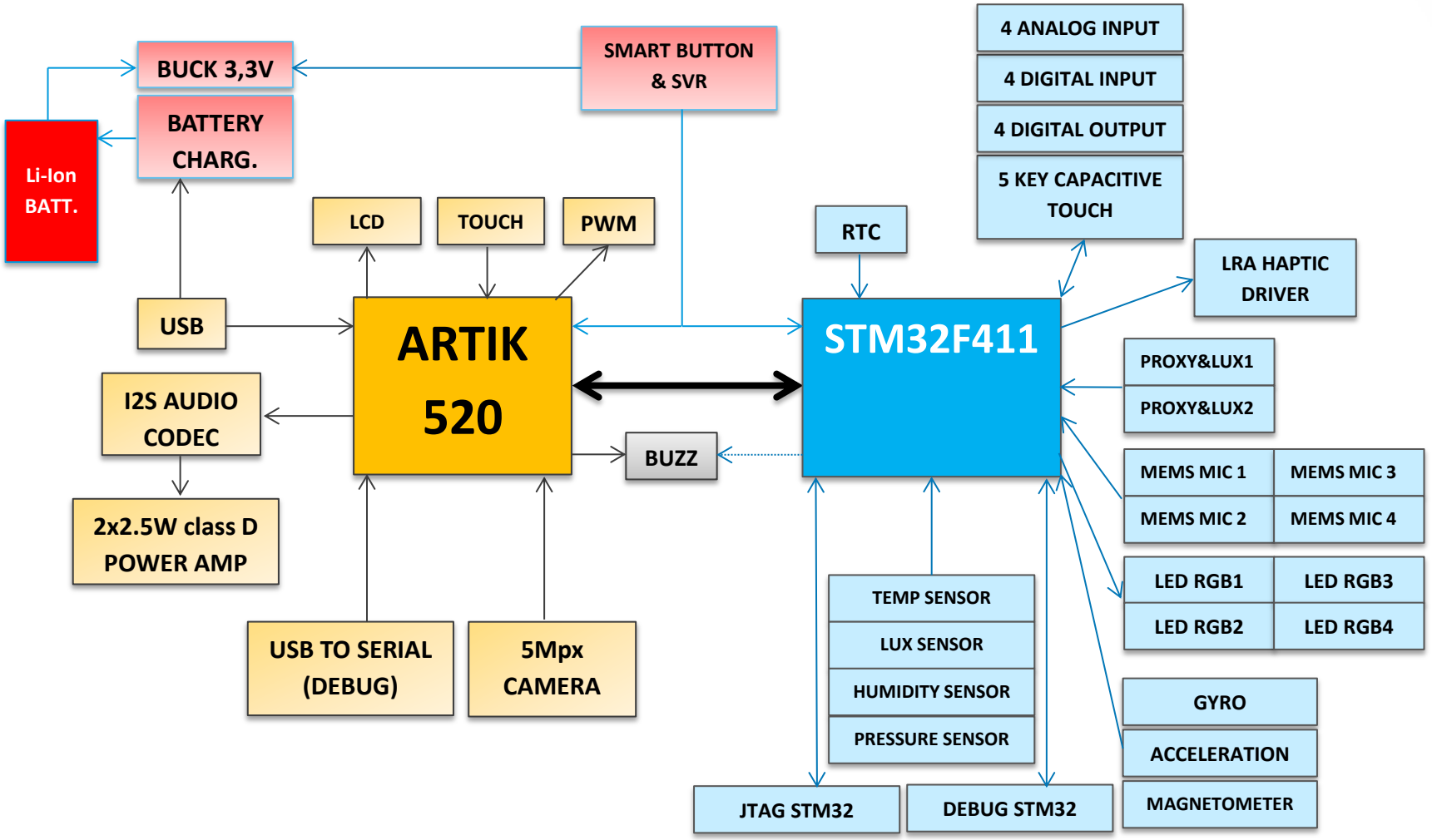
MPU
MCU
SYSTEM
ARTIK 5 IOT MODULE
USB TO UART ARTIK DEBUG
CAMERA INTERFACE
MIPI OLED DISPLAY INTERFACE
CAPACITIVE TOUCH SCREEN INTERFACE
2x2.5 W STEREO CLASS D AUDIO
MICRO BUZZER
USB
STM32F411VE MCU
2x PROXY & LIGHT SENSOR (FLIGHT SENSE)
ENV. SENSORS (LUX, THERM, PRESS,HUM)
REAL TIME CLOCK
SMART POWER BUTTON
LRA MOTOR DRIVER
5x CAPACITIVE TOUCH
4x DIGITAL INPUT
4x DIGITAL OUTPUT
4x ANALOG INPUT
2x PWM OUTPUT
9 AXIS INERTIAL SENSORS (ACC, GYRO, MAGN.)
4x RGB LED
4x MEMS MICROPHONES
2x 0,8MM PITCH 20 POLES CONNECTORS
BATTERY & CHARGER INTEGRATED
40X40MM FORM FACTOR
PROCESSING
DEVELOPMENT
VIDEO IN
VIDEO OUT
INTERACTION
SOUND OUTPUT
ACOUSTIC FEEDBACK
COMMUNICATION
REAL TIME CONTROL
GESTURE
SENSING
CALENDAR
ON/OFF & POWER SAVE
HAPTICS
INPUT
ON/OFF INPUT
ON/OFF OUTPUT
PROGRESSIVE INPUT
CONTROL OUTPUT
ORIENTATION
LIGHT EFFECTS
SOUND SENSING
EXTERNAL WIRES
POWER SERVICES
MINIATURIZED
ARTIK 5
STM32F4
GENERAL

RUSHUP

KITRA: HW block diagram



HIGH LEVEL COMPUTING

REAL TIME COMPUTING

HW FEATURES: high level computing

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SAMSUNG ARTIK 520 IoT MODULE

- *CPU Exynos dual core Cortex-A7*
- *GPU Mali-400 MP2 Core, Scalers and JPEG accelerator*
- *Wi-Fi IEEE802,11b/g/n/ac*
- *Bluetooth 4.0+LE*
- *Zigbee*
- *Secure element*
- *4GB eMMC*
- *Camera: 2-Lane MIPI CSI, up to 3MP@30fps, H.264 codec supports 720p@30fps*
- *Display: 2-Lane MIPI DSI v1.01r11, Up to qHD 960x540@24bpp*
- *Audio:1-channel PCM and 1-channel 24-bit I2S audio interface*

SGTL5000 I2S AUDIO CODEC
2 x 2,5W CLASS D POWER AMPLIFIER
MIPI connector for CAMERA (e.g. LV-OV5640-MIPI-AF)
MIPI connector for LCD (e.g. PA320320A or X163QLN01)
Capacitive touch screen connector
PWM buzzer
One USB OTG for communication & battery charger
One USB to UART converter integrated for Artik 520 monitor & debug

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HW FEATURES: real time compuing

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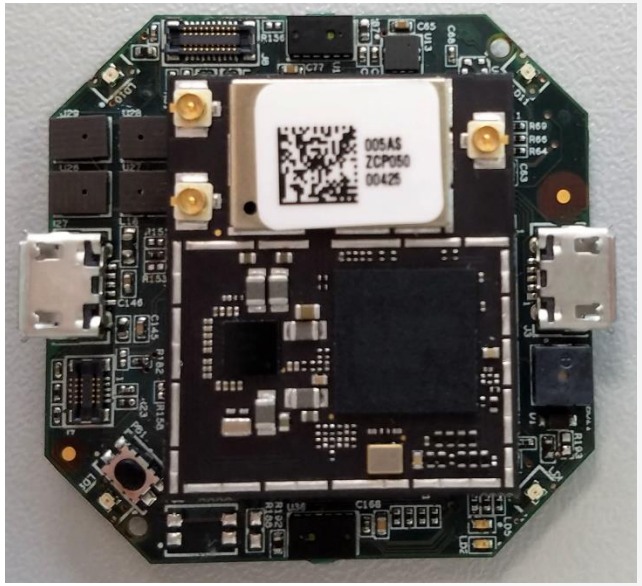
STM32F411 Cortex-M4 100MHz clock, 512kB FLASH, 128kB SRAM
4 analog input 12bit resolution with internal 10k pull down
4 buffered digital ouput push-pull with PWM alternate function
4 buffered digital input push-pull
5 capacitive input touch channels
Low power serial real time clock with alarm
Haptic driver for LRA and ERM motor with built-in waveforms library
1 Proximity and ambient light sensors (proxy up to 400mm)
1 flight sense long range proximity sensors (proxy up to 2000mm)
4 MEMS omnidirectional microphones (source localization and beamforming)
9-axys IMU (3-axys GYRO+3-axys ACC.+3-axys MAGN.)
Environmental sensors : temperature, humidity, pressure, LUX.
4 RGB LED with digital constant current sink driver with individual PWM
Expansion connectors for GPIO, audio speakers, capacitive touch, haptic motor, I2C & UART buses and JTAG for development & debug of MCU (for FW Developers
Lithium battery charger & smart power button with supervisor functions



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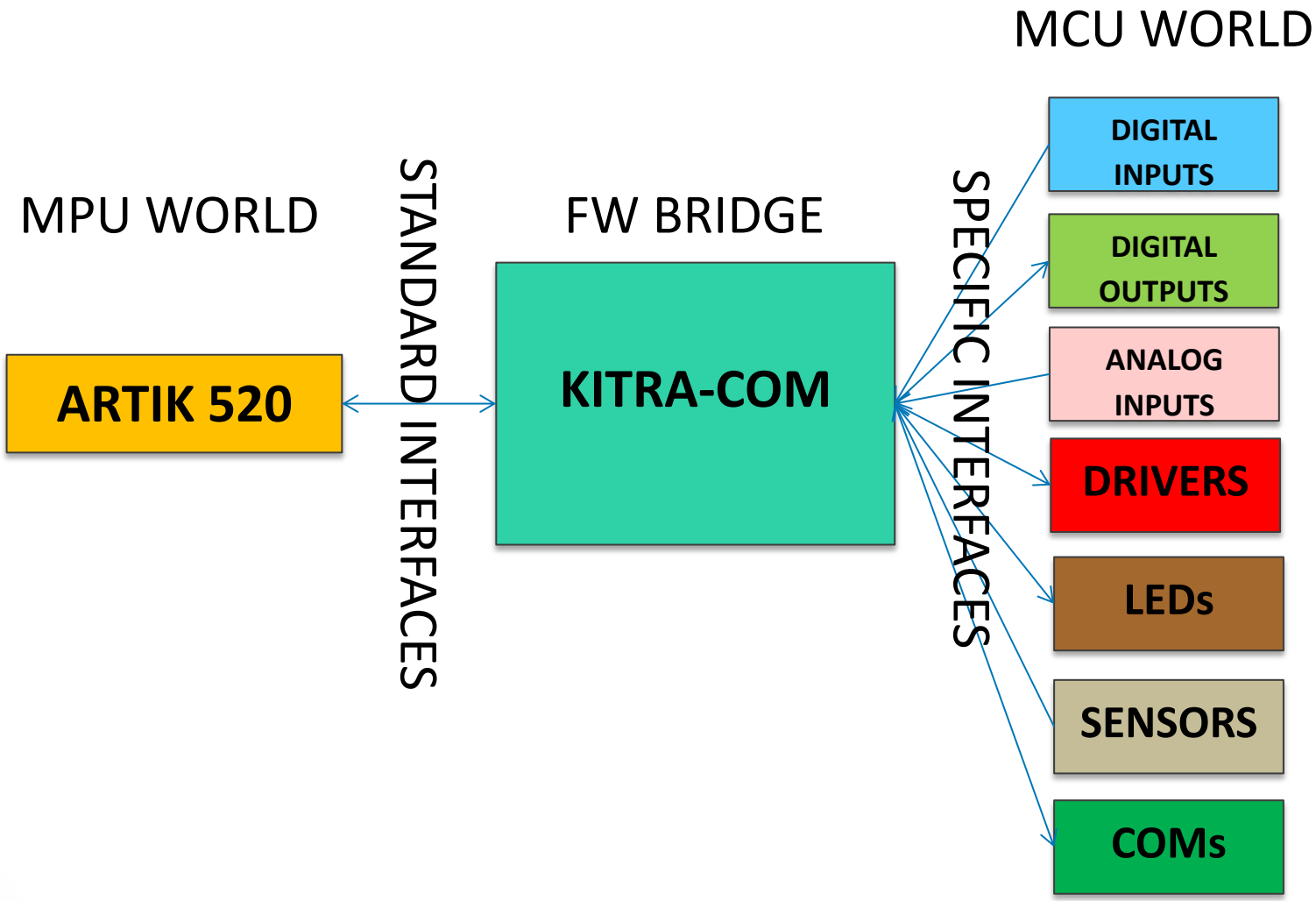
KITRA-COM: REAL TIME MODERATOR



KITRA-COM: SOFTWARE ACCELERATOR

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- ARTIK5 developer do not need to develop firmware on STM32 but only send and receive serial messages to and from the real time sections

- Only 1 Linux driver (UART) instead of more than 15 (difficult to find) drivers.

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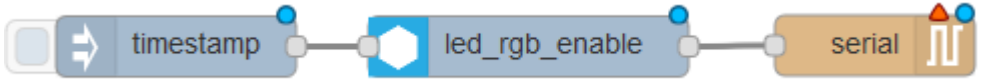
KITRA: FAST DEVELOPMENT



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IoT APPLICATION IN MINUTES:

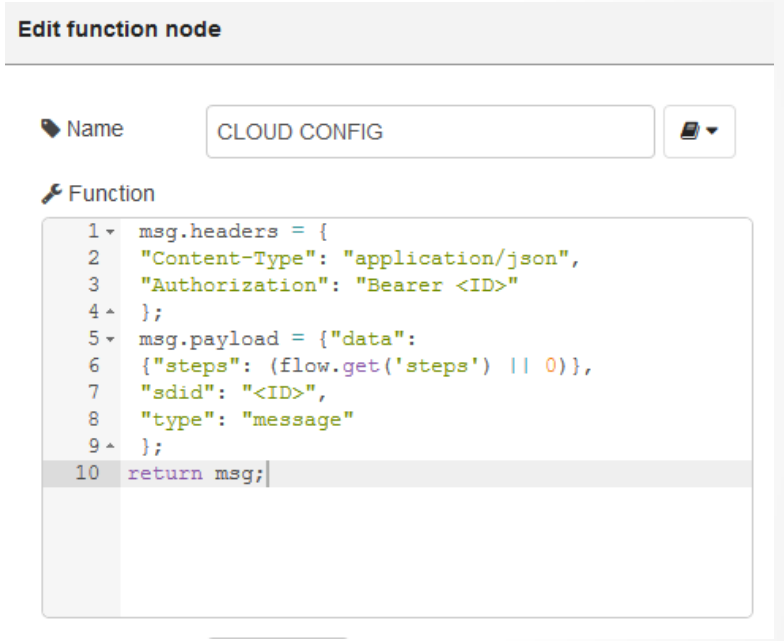
- ✓ Node-RED KITRA-COM distribution ready!
- ✓ Arduino KITRA library ready!
- ✓ Resin.io (makes it simple to deploy, update, and maintain code running on remote devices).

HIGH LEVEL COMPUTING (ARTIK 520 DEVELOPMENT)

- *OS*: Fedora
- *Development Environment*: Node-RED, Arduino® IDE, C, C++, Java, JavaScript, Python

REAL TIME EMBEDDED (not needed thanks to KITRA-COM)

- KITRA-COM: unique serial connection, simple read/write serial protocol
- Standard embedded STM32 C/C++ compilers & tools (Ecliplse, IAR, Keil, Atollic….)



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Thanks & demo

RushUp: Product accelerators!

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