VEE Wear®

Build Outstanding Smart Watches

MICROEJ®
SOFTWARE-DEFINED EVERYTHING

DISCLAIMER

VEE Wear® FOR WEARABLES

VEE Wear reference design

1

Smartphone like capability and ultralow power on any wearable

→ Ultra-long battery life, cost-efficiency

→ Sophisticated user experience (graphics, sound, sensors)

→ RTOS-based or Linux-based wearable

→ Tap into app monetization opportunities with an application store

2

Ultrafast customization

→ Baseline apps with customizable graphic assets ~1 week

→ Unlimited watch faces with FACER – typical design ~ 1day

→ Typical fitness application design - ~2 weeks

3

Extensible product through apps and partners

→ Partners for hardware, algorithms and apps

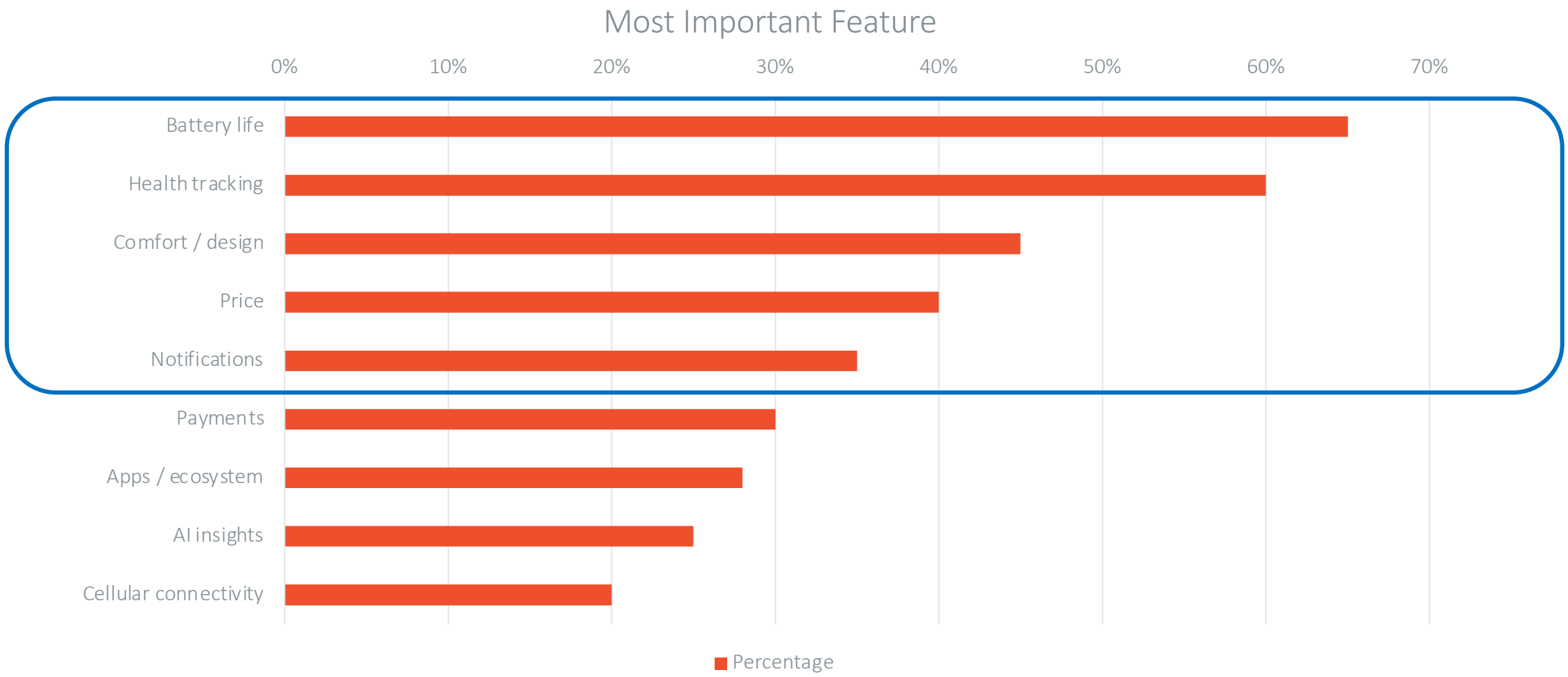
→ Create an ecosystem: app repository, app monetization, etc..

4

VEE Wear Reference Design To Accelerate Product Design

→ Real smartwatch powered by VEE Wear for low-power mid-range watch

IMPORTANT CONSUMER FACTORS IN SMART WEARABLES



https://electroiq.com/stats/smartwatch-statistics/
https://www.gminsights.com/industry-analysis/smartwatch-market

VEE Wear® SOLVES MANY PAIN POINTS

MICROEJ

1

Keep your valued software independent from ODMs

≠ Little control over current firmware features with ODM's, low innovation and only small changes.

2

Rationalize your product range development

≠ Each new hardware is like starting from scratch. New bugs between different SKU's, hard to match features, costly and time consuming to update old watches with newly developed features.

3

Avoid time-consuming full firmware updates (FOTA)

≠ FOTA should only update anything other than the watch applications. FOTA is risky and costly in time.

4

Shorten development cycle for branding

≠ Long turnaround times to provide minor UI customizations between SKU's (special edition icons or animations). Robustness and stability issues.

5

Keep software tested without hardware

≠ Can only test interfaces and apps when new firmware is pushed to an electronic device.

VEE WEAR

Complete smartwatch platform :

- Comprehensive framework for smartwatches
- Extensive sensor and health algorithms
- Complete set of turnkey Applications

Robust and optimized: Core layers thoroughly tested and maintained by MicroEJ

Customizable for your brand: You (the customer) wholly own 100% of :

- The custom UI/UX: The look, feel, and flow unique to your brand.
- Proprietary Apps: Any specialized features or logic built for your specific ecosystem.
- Creative Assets: All watch faces, icons, and brand-specific imagery.

VEE Wear® BLOCK DIAGRAM

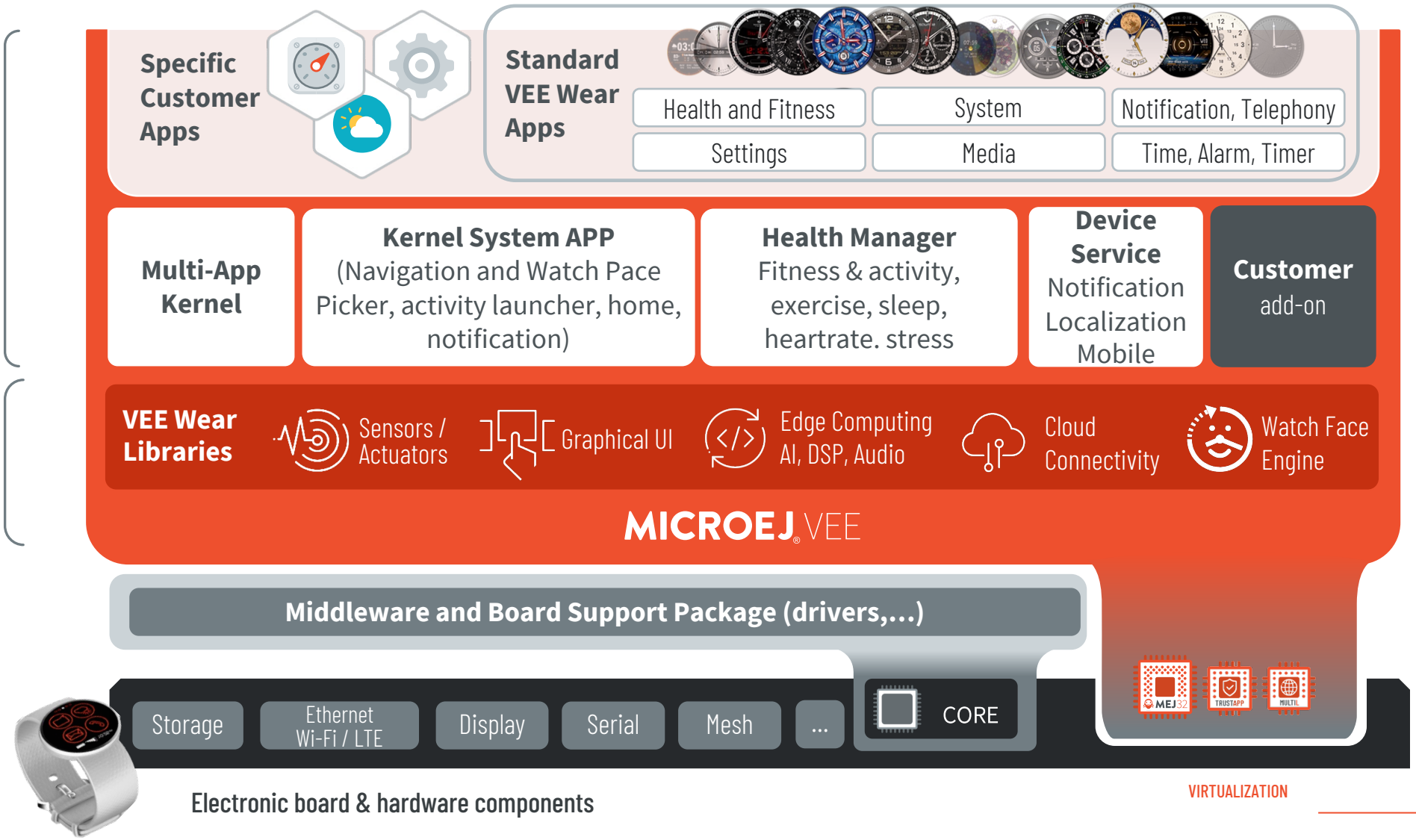
MICROEJ

VEE Wear Reference Stack a production-proven wearable stack

Low-power

fast execution

Isolation Wear (including UI and watch face engine)



WHAT IS INCLUDED IN VEE Wear®

MICROEJ

Mobile app

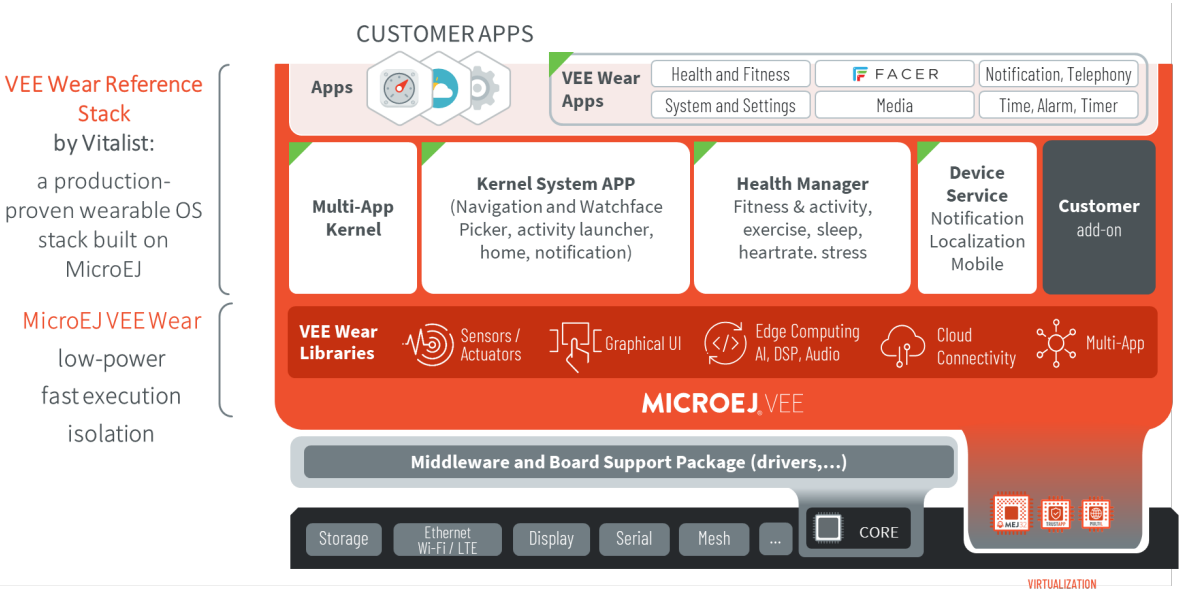
Bluetooth connection

Ref Design

Virtual Device

FACER

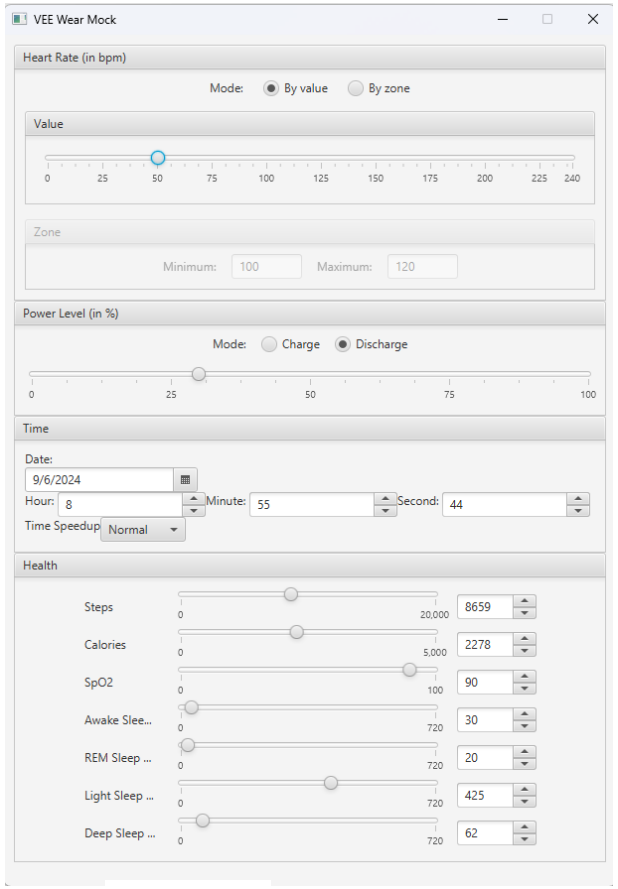
VEE Wear OS



- **VEE Wear Reference Stack**
  - Health manager
  - Device services and notifications
  - Includes Whatsapp and mail notifications
- **Smartwatch Apps**
  - Comprehensive set of production ready apps
- **Unlimited watch faces with Facer**
  - +500,000 Facer watch faces
  - Facer creator for VEE Wear
  - Facer companion (cellphone) App
- **Mobile App**
- **Smartwatch Reference Design**
- **Core components**
  - Sandboxed applications
  - Extensive libraries
  - Facer execution engine
  - Low power optimization
- **Virtual device and SDK**

VEE-WEAR SDK WITH VIRTUAL DEVICE

Virtual Wearable kit



BLE mock

Real Wearable kit

M33
Fusion F1
vector GPU
MIPI

390x390x16
1.2 inch

BLE

Reference design

REF DESIGN SPECS (TURN-KEY SOLUTION)

CORE PROCESSING & MEMORY

- Main SoC: Actions ATS3085S High-Performance Smartwatch Chipset
- Primary Storage: 4GB eMMC (High-speed storage for music/system assets)
- System Flash: 128Mbit SPI NOR Flash

DISPLAY TECHNOLOGY

- Panel Type: Ultra-Bright AMOLED
- Resolution: 466 x 466 pixels (High DPI)
- Luminance: 1000 nits Peak Brightness
- Protection: 7H Hardness Panda Glass

SENSING SUITE

- Biometrics (PPG): PixArt PAH8136 (High-precision Heart Rate & SpO2)
- Motion (IMU): STMicroelectronics LSM6DSOW (High-accuracy 6-Axis Accelerometer + Gyroscope)
- Environment: Barometric Altimeter (Pressure & Elevation tracking)

CONNECTIVITY & POSITIONING

GNSS: Airoha Single Band L1 Chipset

Support for 6 Satellite Systems: GPS, GLONASS, Galileo, BDS, QZSS, and NavIC

Bluetooth: Version 5.2 (Optimized for BLE and data throughput)

POWER & HAPTICS

Battery: 355mAh Lithium-Polymer Cell

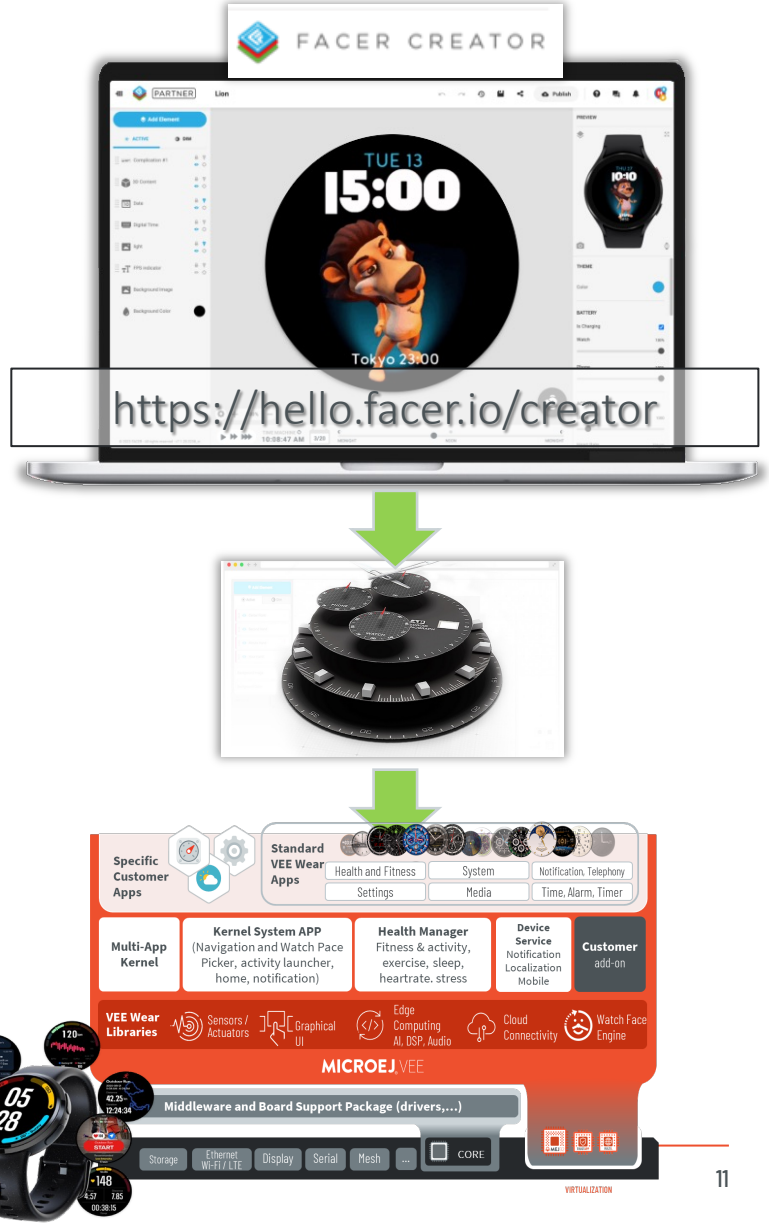
Tactile Feedback: High-Torque Rotating Mass Vibration Motor

Charging: Dedicated Magnetic POGO Pin Interface

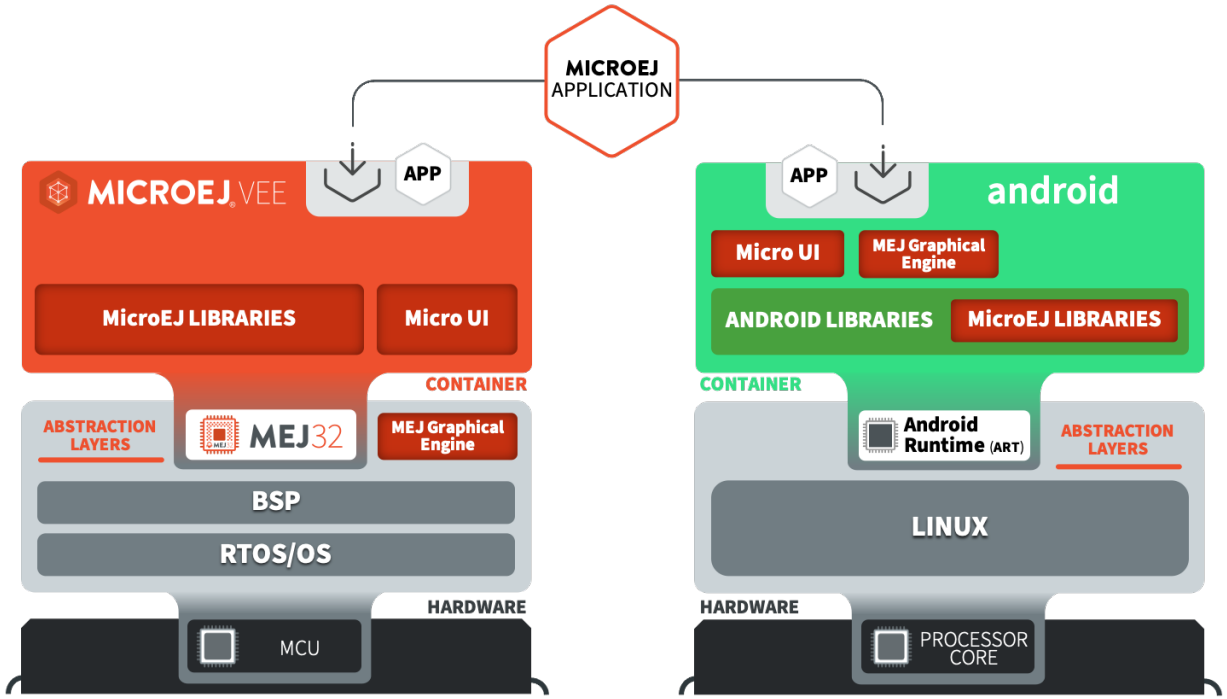
WATCH FACES: APPS WITH SPECIFIC DESIGN TOOL

VEE WEAR → +500,000 WATCH FACES APP

- Specific Disgner friendly tools: the Facer Creator
- Only a few hours to create a watch face app
  - Very nice-looking watch face app
- Designers' community : +25,000 watch faces designer ww
  - Circa +2,000 new watch faces app each week
- Built-in watch face engine

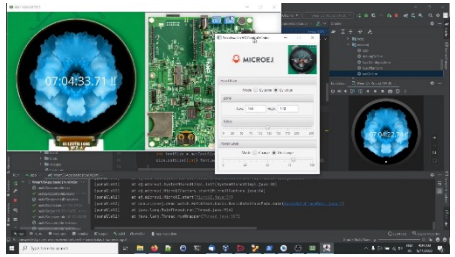


VEE WEAR AND ANDROID AOSP



Android Developer Kit

MicroEJ supports **Android Studio and Gradle**, enabling the developer experience on Android and MicroEJ. MicroEJ also support **Appium** , a popular UX test tool for Android.



Gradle appium™

Runtime: MicroEJ applications on Android

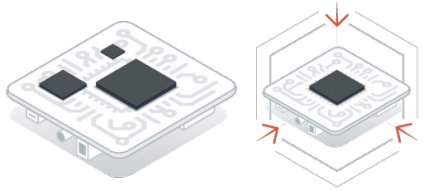
Allows MicroEJ applications and watch faces to run directly on an Android device (smartphone, watch) without having to rewrite the application

Offloading Framework to Decrease Power Usage

Distribute tasks between an Android processor and a low power MCU powered by MicroEJ to reduce energy consumption.

Derivative Products on Low-Cost Hardware

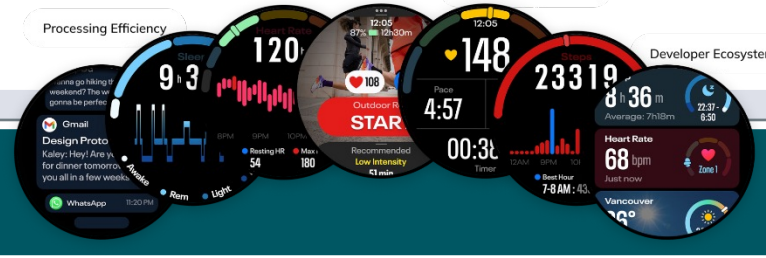
Develop derivative products based on small MCUs or low-cost MPUs that cannot support Android due to their constrained resources.



VEE WEAR BLOCK DIAGRAM

MICROEJ

Seamless Intergration | User Experience | Processing Efficiency | Battery Life Innovation | System Reliability | Developer Ecosystem



VEE Wear Apps

VEE Wear Reference Stack

VEE Wear Foundation

MICROEJ VEE

BSP

VEE Wear APPs — APPS

Kernel System APP (Navigation and Watchface Picker, activity launcher, home, notification) | Health Manager | Device Service /Notification /localization/ /Mobile | Kernel VEE Wear — VEE WEAR REFERENCE

UI/UX MWT,Widgets, MicroUI/MicroVG Fonts/Language | FACER Engine | Event Queue | File System | Ext Resource Loader | BLE | Audio | Time | GNSS GPS | MicroAI | PicoAI | TRUST App Framework — VEE WEAR FOUNDATION

MEJ32 | TRUSTAPP | MULTIL

ABLA Display, touch | ABLA EventQueue | **HEALTH BIOMETRIC ALGO** | ABLA FS | ABLA Loader RAM | ABLA BLE | ABLA KF RAM | **FOTA** — VEE PORT & BSP

BSP SDK - RTOS (Zephyr, FREERTOS) or Rich OS (Linux, Android)

Hardware

GET IN TOUCH WITH US

MICROEJ USA
Boston

MICROEJ USA
California

MICROEJ FRANCE
Nantes

MICROEJ MEXICO
Tepatitlán de Morelos

MICROEJ TUNISIA
Nabeul

MICROEJ INDIA
Bangalore

MICROEJ CANADA
Montreal

www.microej.com

developer.microej.com

MICROEJ®