Ecma/TC53/2018/006
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Ecma TC53
“Smart wearable systems and sensor-based devices”

An introduction for TC39
July 2018

What is TC53?

- New Technical Committee (TC) in Ecma International
- Charter
    1. Standard APIs for JavaScript applications on wearable devices
        - Use the power of the JavaScript language and benefits of extensive JavaScript communities to help accelerate, open, and improve wearable application development
    2. Common interchange formats for sensor data
    3. Communication from device-to-device and from device-to-cloud
- Still in formative phase defining concrete work items

What isn’t TC53?

- Not a new version of the JavaScript language
    - Standard compliant, modern JavaScript
    - Not a revisit of ECMAScript Compact Profile (ECMA-327)
- Not a new platform
    - Instead, suite of application layer modules designed to be hosted by a variety of hardware and software platforms
- Not designed from scratch
    - Build on experience and APIs from existing relevant work, e.g. W3C Generic Sensor, Moddable SDK, Johnny-Five, etc.
- Not another communication protocol
    - Adopt and adapt existing protocols

Why TC53?

- Wearable devices becoming increasingly independent
    - Will not continue to be a peripheral to a more capable device
- Companies building these devices generally not in a position to design, implement, promulgate, maintain, and support their own APIs
- Open standards provide a foundation for silicon providers to support, for manufacturers to deploy, and for independent application developers to build on
- Many devices could benefit from JavaScript but cannot host full capabilities of a modern web runtime

Create a path for open app market in wearables

- Today
  - Software fragmentation to support diverse hardware
  - Most software is proprietary – fragile, expensive to create and update
  - Most devices entirely closed to third party software
- Goal
  - Open standards shared in common across diverse hardware
  - More software is open – more robust, easier to create and update
  - User freedom to control their devices by installing (and uninstalling) apps

Wearables are different

Reality	Possible TC53 requirement
Battery powered	Energy aware APIs
Continuous innovation in use of sensors	Framework to easily integrate new sensor capabilities
Communication using many kinds of radios BLE, Wi-Fi, LTE, Zigbee, etc.	Cannot assume TCP/IP communications
Displays – variety of sizes, shapes, resolutions, and capabilities	Web, desktop, and mobile rendering models not always available
Resource constrained – much less RAM, ROM, and CPU power than mobile and desktop	Small, expandable APIs designed for efficiency
Diversity of silicon – no dominant providers	Instruction set and OS/RTOS independent

Candidate API modules

- Sensors
- Actuators
- Energy management
- Displays
- Security
- Storage
- Communications
  - Wi-Fi
  - BLE
  - LTE
- Privacy

Who should participate in TC53?

- Organizations with following interests and experience are encouraged:
  - Wearable product companies
  - Sensor vendors
  - Energy-aware software developers
  - Experts in relevant connectivity methods
  - Programmers building scripted apps for constrained environments
  - Designers of portable APIs for embedded devices
  - Users
- Outside experts are welcome – Ecma membership not required at this stage

When is TC53?

- First meeting is October 15 and 16, 2018
    - Boston, hosted by Bocoup
- Agenda
    - More precisely define scope
    - Survey existing APIs that may be relevant
    - Set initial priorities
    - Organizational matters

Relationship to TC39

- TC53 intends to build on the work of TC39
- Issues related to JavaScript language on constrained target devices will be brought to TC39 to address
- TC53 welcomes participation of TC39 members, particularly to ensure consistent JavaScript API and module design

Interested? Inspired?

- TC53 charter
  - http://ecma-international.org/memento/tc53.htm
- TC53 activities
  - https://ecma-international.org/memento/tc53-m.htm
- Contact any of us with suggestions, to learn more, or to participate
  - Chair: Peter Hoddie – peter@moddable.com
  - Vice-Chair: Jory Burson – jory@bocoup.com
  - Secretary: Patrick Luthi – pl@ecma-international.org

End