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Low-power electronic dice

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Moving beyond proof-of-concept

A fully operational alpha prototype with custom hardware, firware, and enclosure. No dev kits.

Ultra-low power consumption

1.75uA while idle
7.12mA while constantly transmitting

Very small module size

Compact PCB (14x14mm), fits dice-sized designs from 17mm per side.

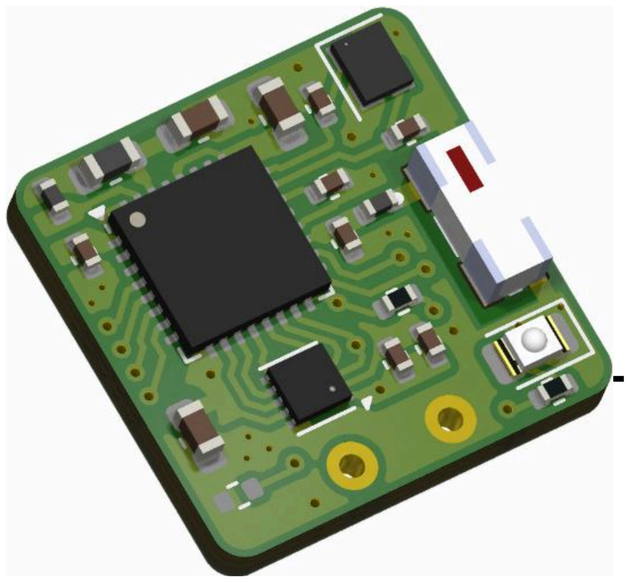

Figure 1: Playing dice PCB

Low-power wireless communication

Utilizes Bluetooth Low Energy with an energy-optimized communication scheme.

Battery-less passive solution

Hybrid super-capacitor that charges quickly and lasts long.

Customizable dice shape

Sleeves can change the look or number of sides the dice has.

Firmware made with Zephyr

Including custom accelerometer libary.

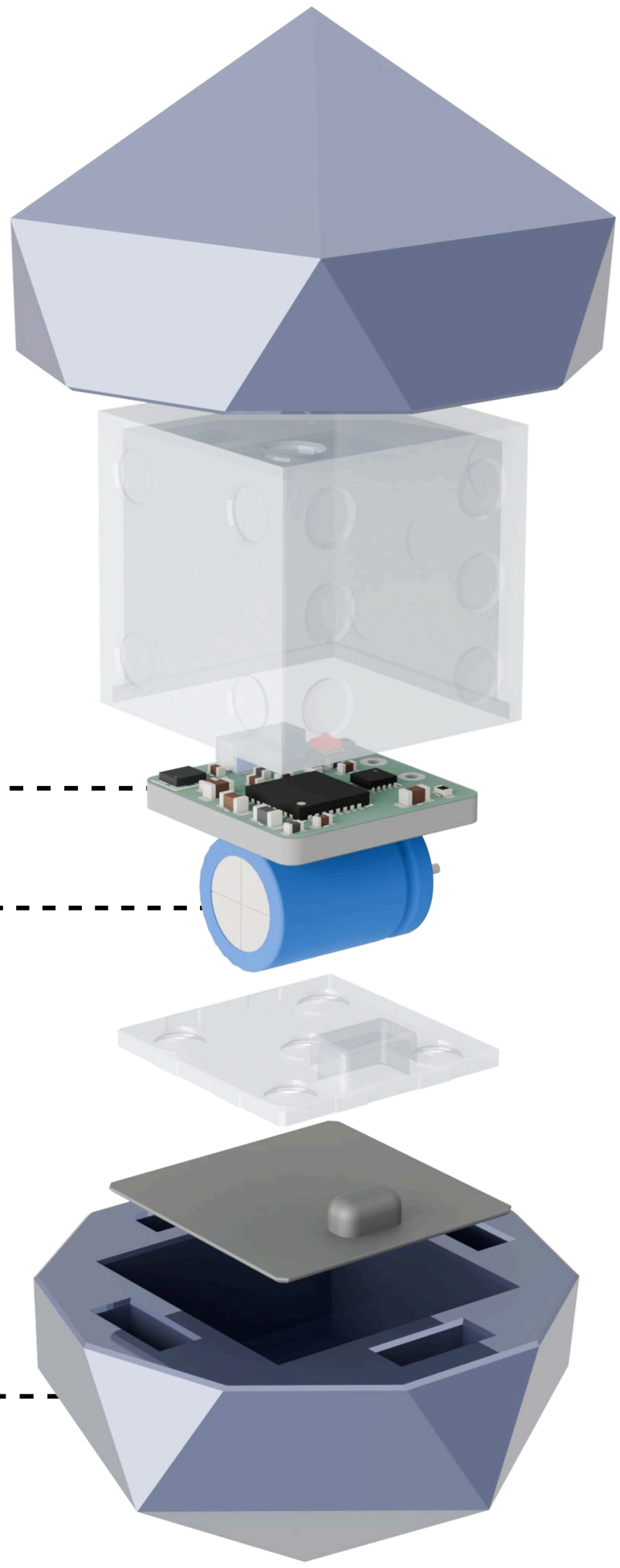

Figure 5: Playing dice assembly with 20-sided sleeve

Accesories

Charging dock

With compact form-factor that connects to the dice via pogo-pins and presses the dice down with lid to keep the connection secure.

Easy to 3D print and customize

No supports required, only heat insert and magnets are necessary.

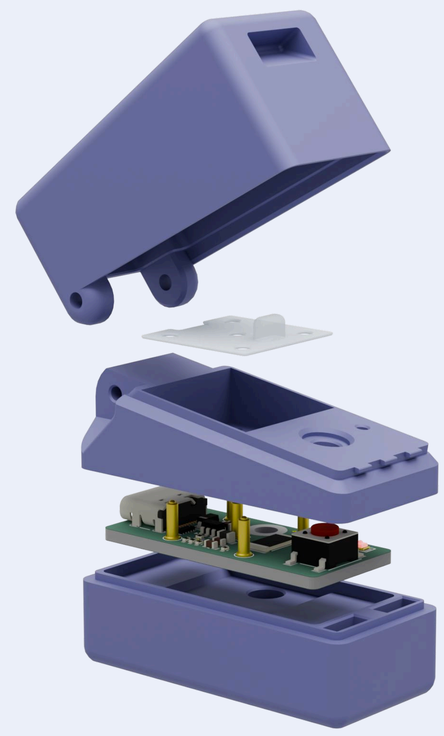

Figure 2: Assembly of charging dock

Programming adapter

Support for development with pogo-pin connected programmer.

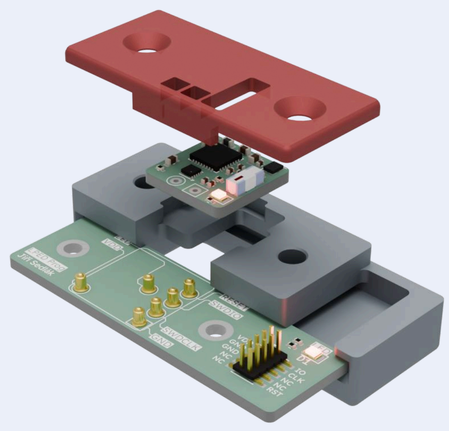

Figure 6: Programming adapter assembly

Companion application

Extensive dice configuration

Parameters can be customized to users liking, including blinking on landing, error blinking, name and currently selected profile.

Support for multiple profiles

Each dice can hold up to 10 dice profiles, that defines the sensitivity and sides.

Up to 60 sides per profile

Side profile tells the dice what number corresponds to physical position of the dice.

Figure 3: Settings of a dice profile

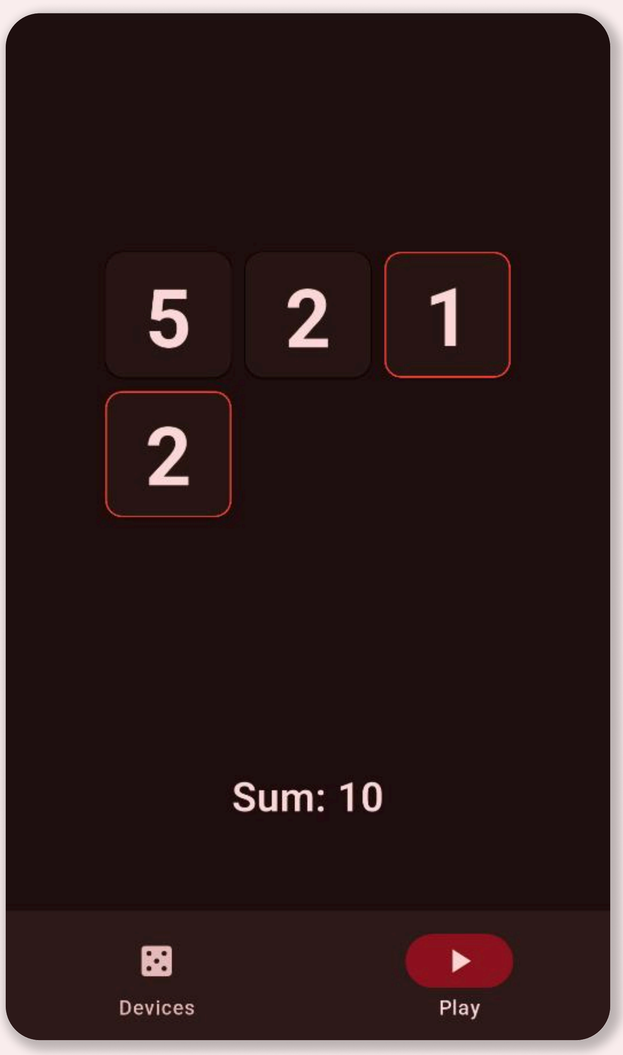

Figure 4: Playing screen

Real-time dice updates

The app will let the user know when a dice is low on power, when it starts moving and when it lands on a number.

Responsive sum

The on-screen sum automatically updates as dice send in numbers. Any dice can be exluded from the sum or hidden completely.

Mobile application written in Flutter