



# 2018 PRODUCT OVERVIEW



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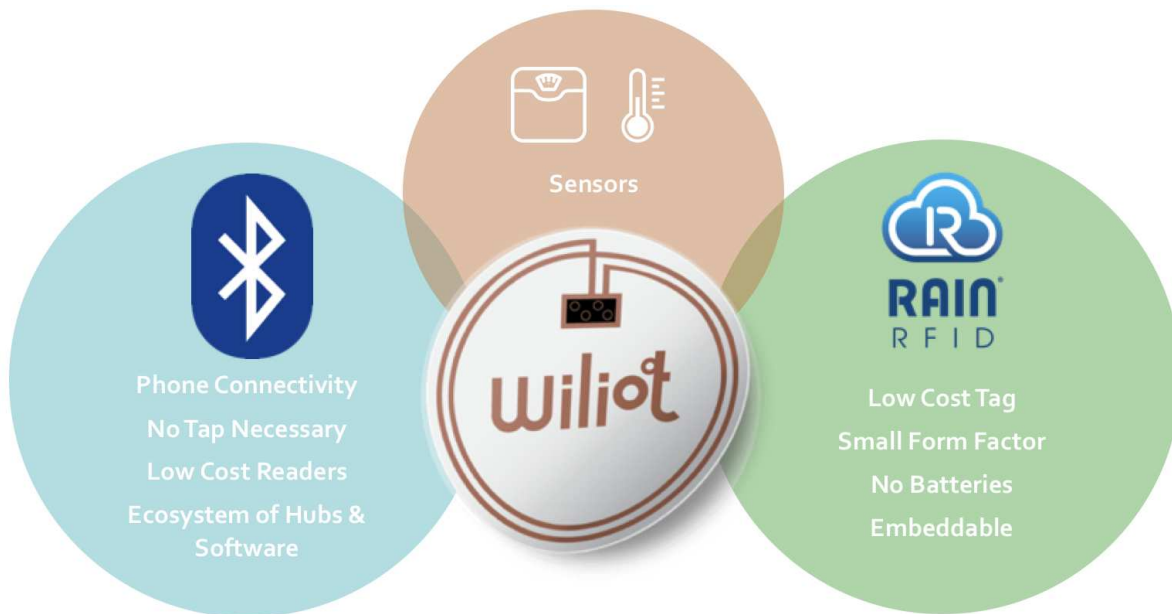


## Our Vision

We envision a world of smarter "Things" that can sell themselves and offer functionality not possible before. Apparel and pharmaceutical packaging become connected to the cloud. The Internet of Things can scale and offer real value as we understand where products are, who is using them and when they need to be replenished. Manufacturing, supply chain and inventory can be optimized. Makers of products and retailers can flourish in the face of disruption from online retailers. Anything we wear, touch or use can include sensing and connectivity, thanks to battery-free devices with an infinite lifetime.

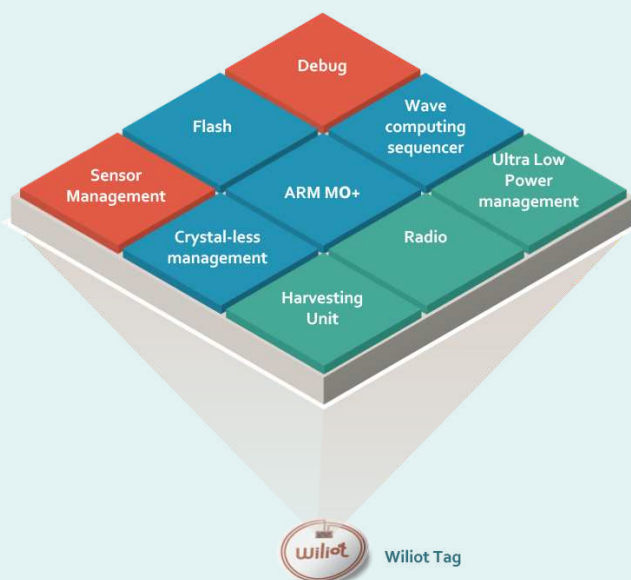


# Tag Details



## RFID and Bluetooth Converge

Wiliot was conceived from the idea of having the best of the both worlds, these two worlds being RFID and Bluetooth Low Energy. We leverage Bluetooth connectivity from pre-existing infrastructure - the Bluetooth radios built into our smartphones, those built into Wi-Fi Access points, and even now in the lighting infrastructure. But beyond the radios, Bluetooth has deep hooks into the operating systems we use everyday - enabling apps to be woken up even after they have been closed and the phone has been restarted. This connectivity is seamless and doesn't require the user to act. The advantages of RFID lie in its physical attributes. We are emulating its small form factor, embedability, and low cost qualities. The Wiliot tag will be manufactured in the same inlay as RFID chips to enable these key characteristics.



- Technology: CMOS 45 nm process
- Size: 1.92 mm x 1.92 mm
- Pinout: 16 I/Os, 0.4 mm pitch
- MCU: ARM Cortex M0+
- Memory: Flash /RAM (2 KB), ROM (64 KB)
- Sensors: Temperature, Self-weight/Interaction
- Protocol support: iBeacon, Eddystone URL & UID, Wiliot Ephemeral ID
- Debug and firmware upgrade: JTAG, wireless
- BoM: No external devices
- Default Package: Inlay
- Antenna: Printed / Etched (aluminum/copper)
- Security: AES Encryption



# Harvesting & Range

## Energy Harvesting

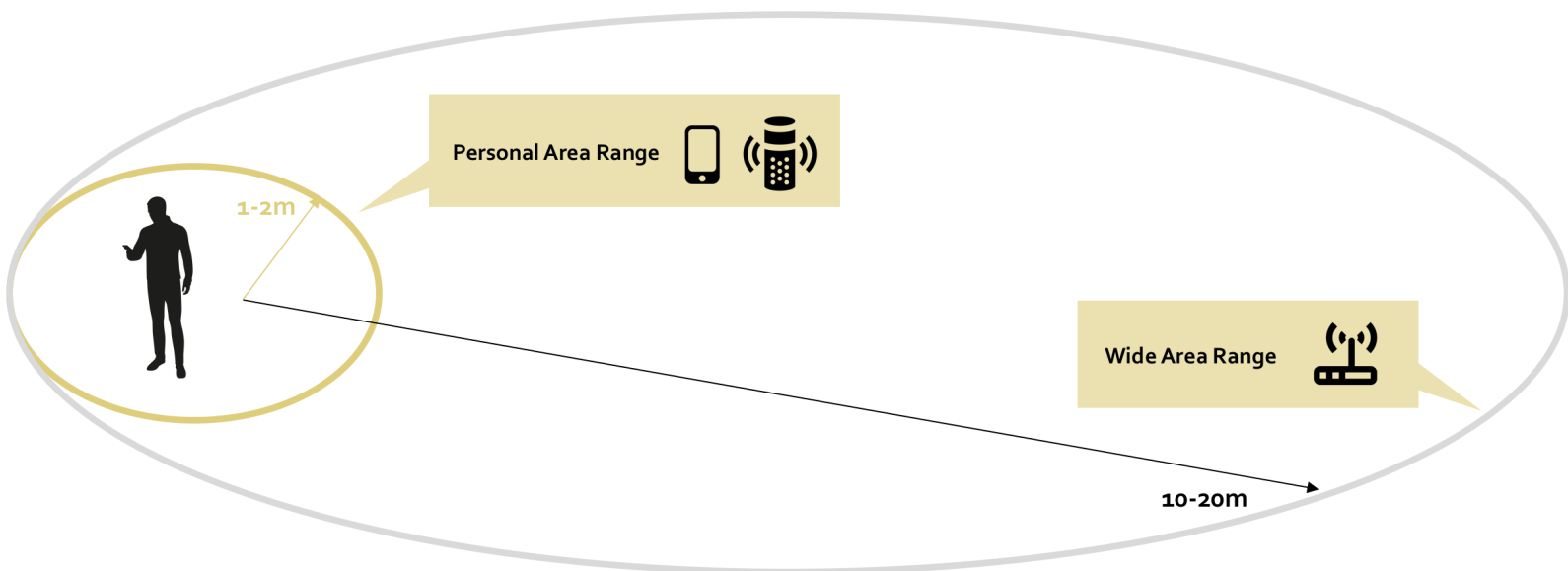
Wiliot Tags obtain energy by harvesting ambient Radio Frequency (RF) in the environment, leveraging the abundant deployments of Bluetooth and Wi-Fi. From the energy harvested, the Wiliot tag will send a standard Bluetooth advertising packet to any device with Bluetooth Low Energy capabilities - a smartphone, a smart speaker, or an access point.



## Range

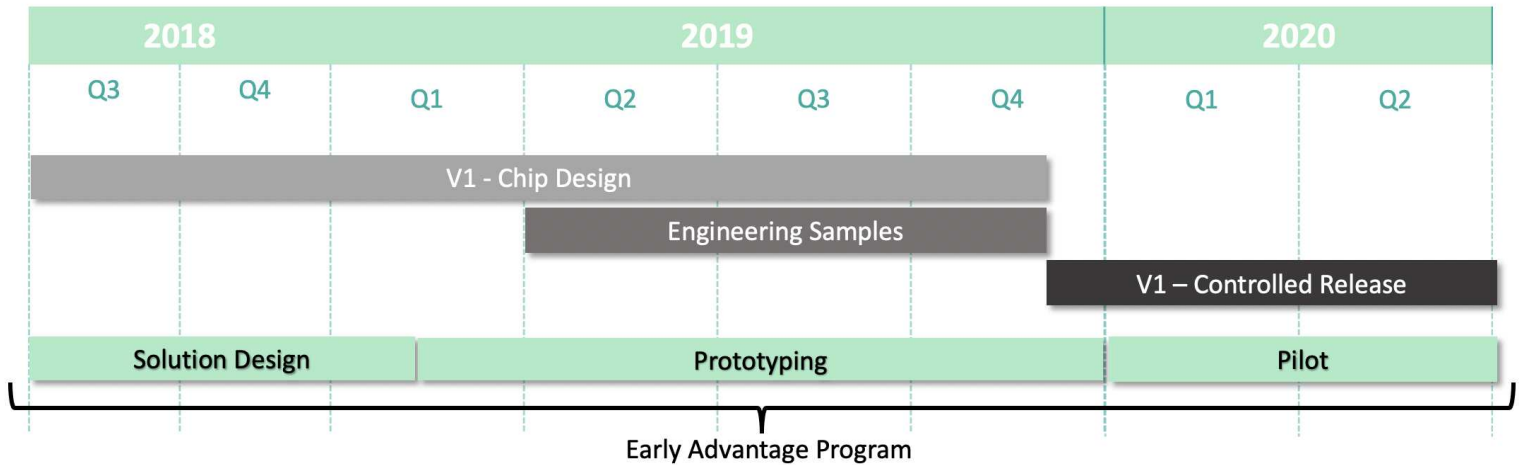
Wiliot tags can work across different ranges for a variety of applications. The first release of Wiliot technology will address the personal area space (few meters), both for energy harvesting and Bluetooth transmission. This range is optimal for smart clothing, smart packaged goods, and logistics applications. A smart phone within that range would be sufficient to energize the tag.

Wiliot has a roadmap towards a longer reach of 10-20 meters. Wiliot also plans to publish guidelines that correlate surrounding radio frequency activity to range and latency application requirements.





# Timeline



## Product Development & Release

The Wiliot battery-free Bluetooth tag is in the research and development stage. Our first test chip proved the ability to harvest very weak signals at an incredible level of sensitivity. The second and third test chips focused on the wave computing engine. This overcame the challenges of running an ARM processor on intermittent waves of power. The latest test chips will focus on connectivity of the Bluetooth radio and sensor integration.

Lab trials and proof of concepts (PoC) are scheduled to take place in 2019. We will test different use cases and share the results.

Wiliot is currently engaging customers and partners in an Early Advantage Program for the Wiliot version 1.0 product. Wiliot's early advantage participants will have the opportunity to be the first to bring this disruptive technology to their industry.

This timeline is best case scenario.  
Product development is subject to risk and change.

## Our Investors

GROVE  
VENTURES

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# Use Cases

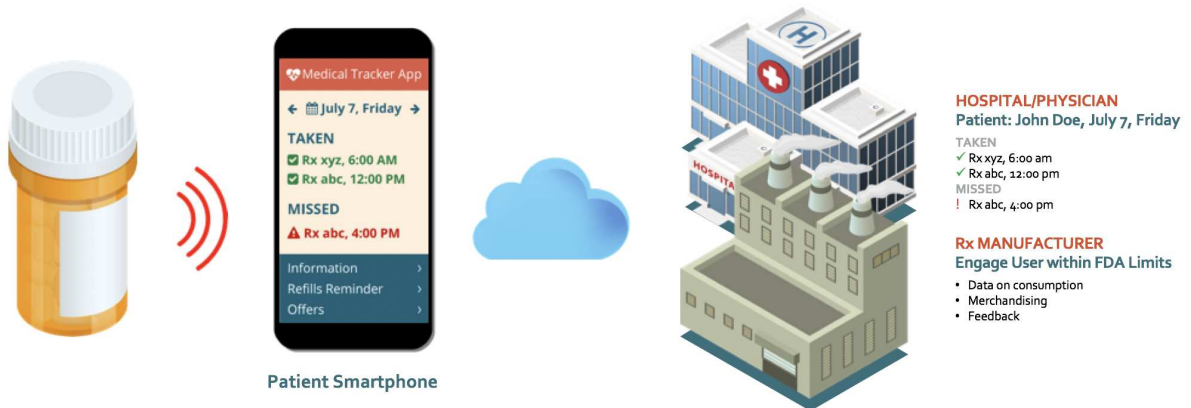
## Connected Packaging

### High Value Goods



Whether it be high end cosmetics, perfumes, or spirits, Wiliot tags and integrated sensors can add value for both the customer and retailer. Connecting the product to the user offers direct engagement with the brand and enables contextual promotions and offers. When product can be identified uniquely, brands can provide services for users to check authenticity with ease. Beyond what online retailers can achieve, this level of connectivity can offer recommendations based on actual usage of the product. With sensors integrated, usage can be measured and a subscription service can enable automatic replenishment.

### Pharma



Weight sensors integrated with a Wiliot tag on a prescription bottle can provide feedback on usage, offering great value to the patient as well as healthcare providers, and concerned family. Reminders can be sent to patients and notification can be sent to family members, ensuring the right regime is followed. This engagement data can empower doctors, brands, and manufacturers. Rather than relying on assumptions, adherence data can be correlated accurately to results. Encryption and the ability to verify authenticity can also provide patients with a peace of mind that they are receiving the intended treatment.



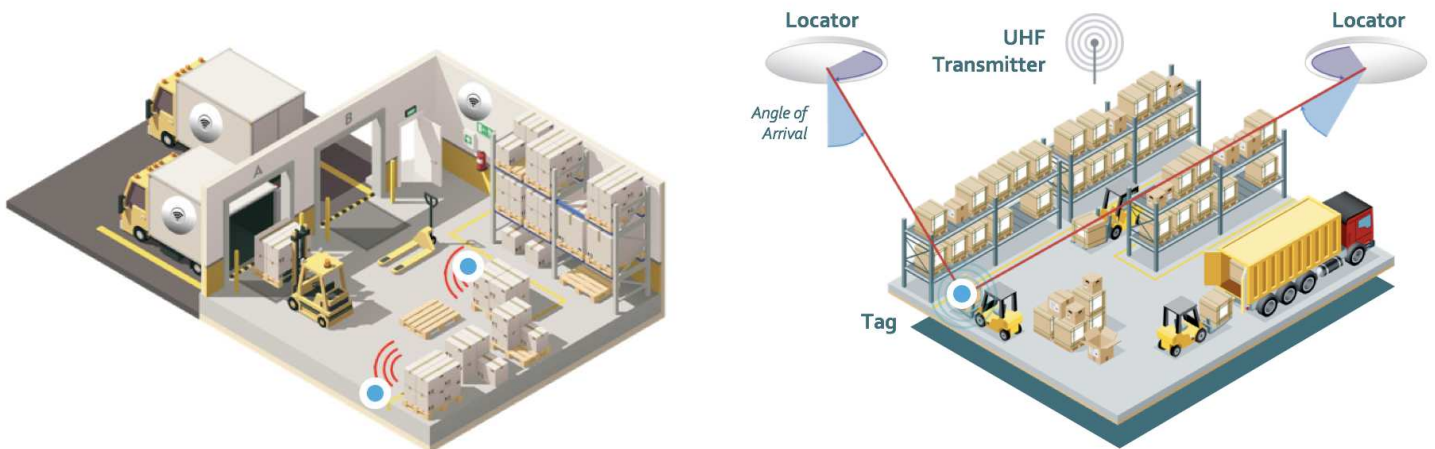
# Use Cases

## Connected Apparel



Battery-free Bluetooth tags can be beneficial when sewn into apparel. Blouses, trousers, and accessories that can be identified with a Bluetooth tag enable new types of wardrobing functions. A user could know everything that is in their closet at a given moment, when it was last worn, and potentially what to wear it with. Brands can use these features to their advantage by recommending similar products or items to complete an outfit. Connected apparel also opens up the door for integration with laundry appliances, to ensure a white shirt never turns pink again.

## Logistics & Asset Tracking



By incorporating Wiliot tags into the supply chain, packages can automatically be tracked from distribution center and through their time in delivery vehicles. With Bluetooth to 4G gateways installed into trucks and delivery vans, the items can be tracked while enroute to their next or final destination. By reducing the price and size of a traditional beacon, asset tracking with Bluetooth technology becomes scalable. High precision angle of arrival technology in combination with Wiliot tags placed on and embedded in every asset will allow real time warehouse and store level inventory control, optimized throughput, and reduce write-offs and loss.

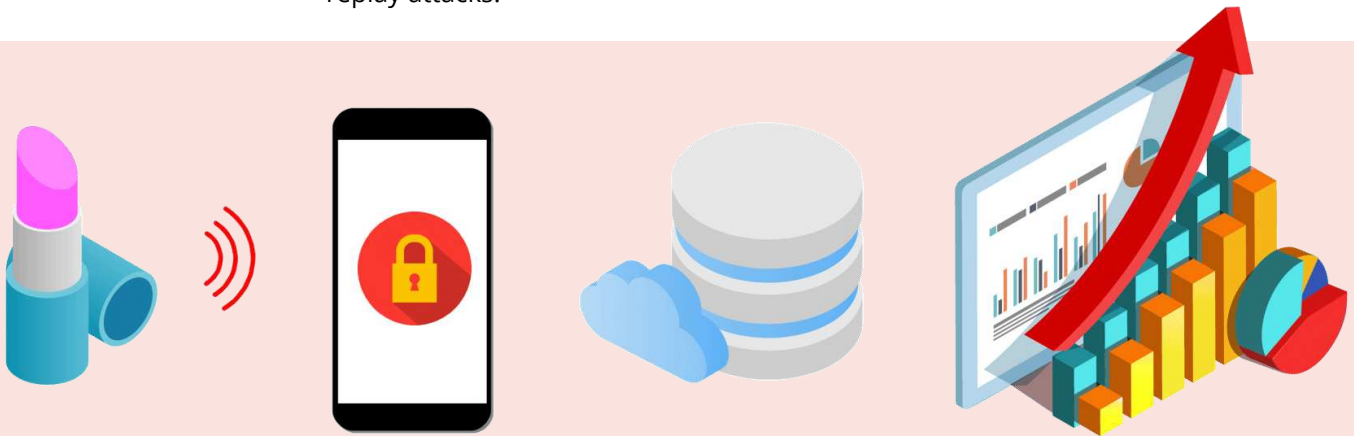




# Services

## Privacy + Access Control

Wiliot will offer an optional cloud based service plug-in. This cloud service will support virtual tags, enabling low level sensor data to be transformed into high level business triggers. Wiliot tags will measure temperature, weight, and usage. This service can be used to route the data into other enterprise platforms. Some examples of sensor data our tags will produce are an item has been picked up, opened, needs to be refilled, etc. We offer digital identity verification, data authentication, privacy, and protection from replay attacks.



## Wiliot Consulting & Early Advantage Program

Wiliot is inviting select customers to be a part of an Early Advantage Program. Limited to twenty participants, members of the program will have secured their allocation of the first release of the product to be shipped in 2019. This consulting engagement will consist of direct

support and access to Wiliot's specialist knowledge and partners. Wiliot is currently engaging with customers and partners to begin this process of interlocking in the product planning process to ensure the right features are available.



Early Advantage Program



Design



Prototype &  
Prepare



Pilot