

Why use Application Specific Integrated Wireless?

The promise and opportunity of wireless device connectivity is enormous. Some observers have identified the “Internet of Things” and Machine to Machine Communications as being bigger and more impactful than the explosion of the internet itself. **Will your product and market be impacted? Almost certainly.**

So, you’re thinking of adding a wireless to your product. Maybe you’re considering direct Wi-Fi or cellular but, because of power usage, cost or other reasons, those are just not practical solutions and so you’re evaluating local wireless data networks.

Your next decision is typically: **“use an off-the-shelf standard or module (like Zigbee, Bluetooth, ANT, Z-wave or one of dozens of other standards) or design a proprietary system?”**

The ease of implementation of standards or modules is alluring, but the product cost and design/performance compromises are not. Ask yourself “why are there so many wireless data network standards?” Because standard are necessarily compromises, and therein lies the rub: you will not achieve a truly optimized solution. And the problem is that this leaves the door open for a competitor to do a better job. There are only two good reasons to use a module or standard: interoperability (though it’s often better attain this through a gateway); or that high product cost and performance shortfalls are acceptable (e.g. low volumes).

Powered by RFOS

- Lawn Sprinklers
- LED Lighting
- Pet Controllers
- Hygiene Monitoring
- Smart HVAC
- Tank Level Sensors
- Condition Monitors
- Shopping Carts
- Your product?



In all other cases you should consider a proprietary design.

Venture’s RFOS addresses the gap between off-the-shelf and fully custom by offering the best of both worlds.

Starting with your application requirements and RFOS’ library of building blocks, we design a solution that uses the right existing parts for the solution and then custom design only the new parts that are novel to your application. We do this right on your product’s microprocessor. You get the market beating performance and low cost that you need without the development overhead of a full custom design. And because our building blocks have been FCC approved on multiple products, certification is a breeze.

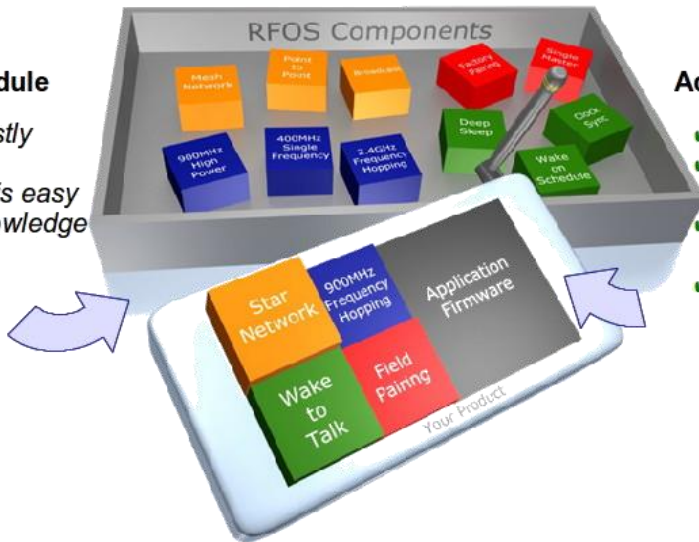
5 Myths of Zigbee

1. **Low Power** – Yes, compared with Bluetooth or wifi, but nowhere near what can be achieved.
2. **Low Cost** – Zigbee modules typically cost 5-10x a custom RF solution. Even with custom Zigbee electronics, the large software footprint adds costs.
3. **‘Easy’ low cost NRE** – fine tuning Zigbee can take almost as much effort as designing from scratch.
4. **Ad-hoc, self healing** – not “out of the box” – complex management needed.
5. **Long Range** – at a price (power, extra nodes), hampered by poor 900MHz availability.

RFOS is a complete hardware and software wireless communication solution available under license for drop-in use in your product.

Advantages of Module

- ✓ Easy and less costly to develop
- ✓ FCC certification is easy
- ✓ Requires little knowledge of RF system



Advantages of Full Custom

- ✓ Lower BoM cost
- ✓ Optimize product for cost, size, shape
- ✓ Maximum performance – radio, power
- ✓ Fully integrated into product design – lower component count, less PCB real estate

Configurable – Allows the approach for the specific application to be used.

Modular – Optimized, so the product has just what it needs with no overhead.

Customizable – When the application demands something extra, RFOS is designed to ease the additional development.

Portable – Use of the most appropriate hardware for the product specification.

Integral – RFOS and the product electronics and software are merged to provide the optimum solution (i.e. RFOS on the product micro, or the product on the RFOS micro).

Examples of “pick 'n' Mix” configuration options (not exhaustive)

Band	400 MHz	868/900	2.4GHz	High power	more.....
Spectrum	DFSS	FHSS	Single Freq.	hybrid	more.....
Waking	On ping	Deep Sleep	Scheduled	Clock sync	more.....
Network	Star	Point-point	Mesh	Broadcast	more.....
Configuration	Field Pairing	Ad-hoc	Factory	Master record	more.....
Hardware¹	TI	Atmel	Micrel	others	more.....
	Example config. 1		Example config. 2		

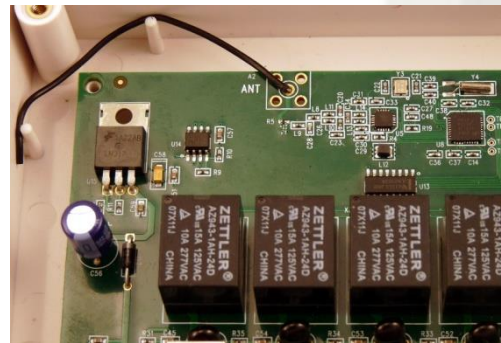
Key benefits

Here's why our clients use RFOS to develop their product

- **Easy to fully integrate** with your product means **optimized design with reduced part counts and costs.**
- **Years of existing HW and SW development,** means **reduced NRE costs and faster time to market.**
- **Proven design** with many deployed solutions means **low risk.**
- **No RF experience or programming required** to continue development means **easy hand-off.**
- **Portability** and choice of hardware platform means **optimum choices.**

Typical key features & performance (application specific)

- RF data rate: 250Kbits/second
- Reliable communication
- Data packets acknowledged for guaranteed data integrity
- Buffers utilized to support data bursts
- Full duplex data link (half duplex RF link)
- Battery life up to five years
- Range up to 1 mile (higher power versions)
- Up to 1000 foot (line of sight) with 10mw base version
- Frequency hopping spread spectrum (FHSS) or direct sequence spread spectrum (DSSS)
- 400Mhz, 900Mhz, or 2.4Ghz ISM band radio communication
- Various network topologies supported
 - 2 units (cable replacement) point to point
 - Star network (multi-point addressable)
 - Mesh network (data collection)



RFOS integrated onto an IO device

- Asynchronous topologies
- Over the air programming
- RSSI (Received Signal Strength Indicator) and advanced phase-based location
- Auto-provisioning options
- FCC Part 15.247 compliant
- Network Sniffers for commissioning & trouble-shooting

More about Venture Wireless Technologies



Companies use Venture to develop their products, where integration of optimized wireless is key,

and they are driven by speed, risk and cost.

We specialize in integrating wireless at the lowest level of a product design in order to enhance performance and optimize cost - where OTS solutions just can't deliver. Our customers typically serve the industrial, commercial and consumer markets, and cover the range from start-ups to blue-chips. Most of our developments include sensors and controllers.

We can design in most standard radios, such as Bluetooth, BLE, Zigbee, GPS, WiFi, ANT, DECT, ULE, but most of our clients need more than these can deliver and use **RFOS**.

RFOS is our modular, customizable, radio platform which can be fully embedded into a product design, allowing lower power, longer range, lower cost, unusual network topology, tougher RF environments.

- Our **RFOS** platform gets you to market faster, with less risk and for lower development cost.
- Our experienced wireless design team develops truly optimal solutions that work better and cost less.
- Our extended team allows us to take on full product development, from concept to manufacture or any part in-between.

Learn more and talk to us about joining the growing list of companies that use [Venture Wireless Technologies](#) and [RFOS](#) to add wireless capability to their products.



[Contact us](#)

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