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How Reference Design Can Accelerate Responsive IoT Strategy for OEMs

By [Stéphane Dejean](#) - January 26, 2018

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The Internet of Things' rapid growth is putting pressure on OEMs and electronic-device designers on two fronts. There is demand to lower device costs and speed product launch, at the same time customers expect end-devices with more embedded innovation, new features and shorter conception and design cycles.

These pressures converge on designers and manufacturers at the same time that design complexities for supporting state-of-the-art connectivity technology are greater than ever.

One solution: off-the-shelf reference designs and production-ready bills of material that can dramatically simplify and accelerate time to market from concept to finished product, cutting development time by more than six months and overall costs by up to 30 percent. In addition, these reference designs – technical blueprints of systems – ensure design robustness, reliability and flexibility over time to support evolving capabilities.

Consider the development of a connected battery- powered end-device for the IoT. Which portion of the system do you design in-house and which do you buy off-the-shelf? Designing and building the entire system yourself a priori gives you complete control and maximum design flexibility. But you must accurately anticipate the requested effort and estimate the total cost of development to meet an ambitious and successful product-launch that hits the targeted timing.

New connected devices must be delivered at the right time to maximize their differentiating service concept, support disruptive business models or improve customer experience. Once the goal is identified, the challenge is to make sure that internal resources will be able to meet that deadline, and support design of the best solution. OEMs might be best served by focusing on their core expertise, e.g. designing the best global end-user experience, rather than on connectivity. Outsourcing that key part of the total solution improves the odds of success, and reduces development costs.

Hidden costs of going it alone also may include:

- Design risk: putting a badly designed product on the market not only raises customer-support costs, but also weakens customer experience and brand quality perception.
- Project cost increases: underestimating long-term sustaining costs and delays in conception, design, test, validation, certification, evolution...
- Lack of relevant hardware, software and radio expertise: this impacts technical decisions to maximize radio performance, security, sensor integration, energy consumption, antenna selection, embedded connectivity design, flexible modularity...
- Lack of knowledge for specification compliance and certification processes: CE, FCC, ETSI, IEEE, LoRa Alliance.

Reference Design for LoRaWAN and Other IoT Protocols

Kerlink's reference design offers device designers, OEMs and others an out-of-the-box set of documentation and step-by-step directions for quickly conceiving and producing IoT connected devices that offer high performance and resilience, low energy consumption, optimized radio performance, robustness and reliability.

These features are based on the latest industry specifications and standards and are well suited for LoRaWANTM and other IoT protocols. It also includes a benchmark module and a reference test bed developed by Kerlink with all the interfaces and capacities to be adjusted according to specific needs.



Stéphane Dejean, Chief Marketing Officer, Kerlink

Because Kerlink also offers connected end-devices and network gateways, and has already deployed more than 70,000 of them across Europe, and in India, New Zealand, South America and the U.S., we understand the challenges designers face beyond simply choosing a chip and using standard industry reference designs, during both design and operations phases.

That experience keeps Kerlink's reference design truly flexible to evolve along with the expanding and demanding market for IoT end devices, including the initial blueprint, bills of material and expert guidance.

This complete solution provides:

- Reduced time to market, fewer risks and less complexity to ease integration and speed launch of commercial products with embedded state-of-the-art connectivity design.
- Optimized investment and reduced design costs so resources can be focused on end-customer experience and vertical application business models.
- A single source for proven, secure and scalable, ready-to-use IoT connectivity design resources, expert guidance and lifetime support.
- Developed, approved, documented and extensively tested technical blueprints and design packages for connected end-devices.
- End-device radio robustness and targeted performance specifications for competitive differentiation and enhanced customer experience and satisfaction.
- Expert support to quickly solve hardware design challenges like battery capacity, antenna selection or form-factor optimization.
- Compliance of firmware handling, such as security and testing with the LoRa

Alliance™ latest specification, LoRaWAN 1.1, local parameters and back-end interfaces.

- Anticipated compatibility and access to device remote-management tools to ensure hassle-free scalable maintenance, updates and configuration of devices.

Kerlink's reference design is baseline design. You can tailor it to the particular requirements of your activity, processes, solutions, capacity, timeline and business model. By their nature, reference designs evolve over time to reflect the proven best practices and experiences of market participants who implement and leverage the same design, making them continually more optimized and relevant.

Typical concrete use cases already cover energy meters, asset-and-equipment tracking modules, environment monitoring and facility management. OEMs and electronic-device designers targeting both the B2B and the B2C markets can successfully leverage Kerlink reference design to quickly benefit from the IoT opportunity.

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Stéphane Dejean works with Kerlink as its Chief Marketing Officer - he brings to Kerlink more than 14 years of M2M and Internet of Things strategic, product and operational marketing experience with companies ranging from startups to large multinationals.