Technical White Paper

Tackle the Challenges of IoT Application Development with the Seeed Studio BeagleBone Green Wireless Board

Nick Lethaby

The Internet of Things (IoT) has rapidly emerged as a major driver of innovation and attracted a broad swathe of developers from both the internet application and traditional embedded device spaces. Because IoT applications often involve new and untested product concepts, the market for such products is uncertain. As a result, it is critical to use a development approach that enables rapid prototyping and early user acceptance testing. If the product concept proves successful, a fast ramp to market is then needed to ward off copycat competition.

The traditional embedded development would first require a custom hardware prototype to be designed and built before any user trials could be done. This represents a major time and expense for companies that have hardware design capability, especially as the board will need to augment a processor or microcontroller (MCU) with wireless connectivity and sensors. If you're an internet application developer, it's a show-stopper because you probably don't have access to hardware developers. While evaluation boards can help get you started, it is often hard or impossible to customize them for your specific end application, and they are readily available for deployment in large-scale user trials that might involve hundreds of users.

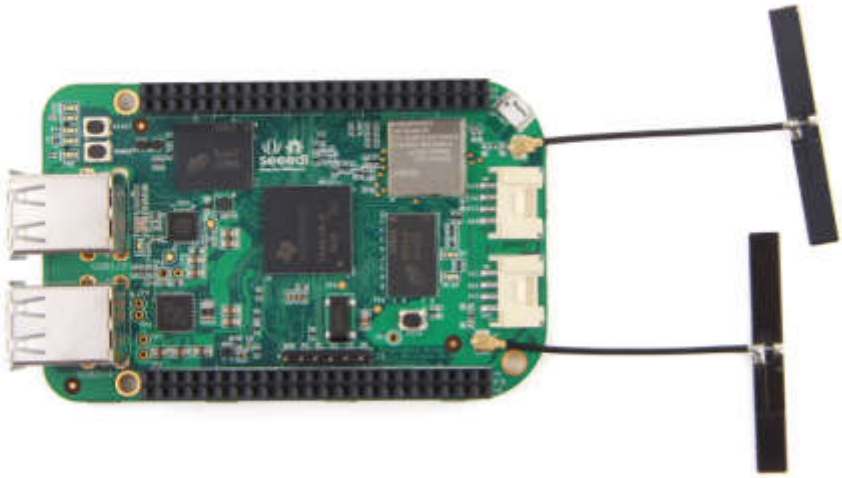

Figure 1-1.

Seeed Studio's BeagleBone Green Wireless combines the necessary technology and business model to eliminate many of the hurdles faced by IoT developers. The Seeed Studio BeagleBone Green Wireless adds Wi-Fi® and *Bluetooth*® on-board, providing essential wireless connectivity at a low cost by eliminating the need to add a cape or dongle. To enable easy application-specific customization, the Seeed Studio BeagleBone Green Wireless contains two Grove connectors, which allow you to simply snap in your sensor of choice from

Copyright © 2023 Texas Instruments Incorporated

the large family of Grove sensors. Instead of wasting time, effort and expense on hardware prototypes, you can instantly create custom sensor nodes to prototype your IoT application in real life.

The 1-GHz Sitara™ AM3358 processor, the heart of the Seeed Studio BeagleBone Green Wireless, offers a perfect “Goldilocks” performance-to-power ratio for IoT endpoints or low-cost gateways. It has the performance to efficiently run embedded Linux®, which opens up a wide choice of IoT service connectivity, and its low power means you won’t need to worry about your temperature sensor getting bad readings!

Once you have a working prototype, BeagleBone’s proven open-source hardware business model enables you to quickly move to larger scale deployment. Many IoT applications require a significant number of prototypes for adequate feasibility testing. The low cost of the Seeed Studio BeagleBone Green Wireless makes it practical to deploy the standard board for large scale feasibility testing or even low-volume production products. You don’t need to commit to a customized board design until you have proven your idea works on a real-world scale. The Seeed Studio BeagleBone Green Wireless’ open-source hardware enables your hardware design team or partner to quickly create a cost-optimized version, without having to design from scratch. Want to cost-optimize your board, but don’t have access to hardware design or manufacturing resources? No problem! Seeed Studio offers design and manufacturing services to allow you to quickly scale to higher volumes.

Learn more about AM3358 processors and Seeed Studio BeagleBone Green Wireless here:

- Learn more about Seeed Studio BeagleBone Green Wireless
- Learn more about GROVE sensors
- Learn more about AM3358 processors
- Start developing with AM3358 processors

Copyright © 2023 Texas Instruments Incorporated

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2023, Texas Instruments Incorporated