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# Energy Optimisation Using the EnTICe Energy Harvesting Testbed with Cloud Access

Eoin Ahern, Prateek Asthana, Mario Costanza, John Flannery, Mike Hayes
Tyndall National Institute

**ABSTRACT:** ***The first revision of the EnTICe Energy Harvesting Testbed is a utilisation of Commercial Off-the-Shelf (COTS) parts to develop a user-configurable Bluetooth Wireless Sensor Network. The first Testbed is powered by solar photo-voltaic cells, in further revisions other energy sources such as vibrational, thermal and RF will be explored. The Testbed gives the User access to a multi-node network and allows them to vary parameters such as Transmission Rate, Sleep Interval, what sensors are used for information, and how that information is sent.***

The aim of the Testbed is to provide a platform for innovative experimentation at both Network and Node level for the optimisation of the overall and individual (each node's) energy footprint. Helping to give a better understanding of where energy is lost and can be saved.

The EnTICe Energy Harvesting Testbed now has access via remote cloud access to control the Network as well as receiving information back including sensor data and Energy Information (Ambient Light Level/Voltage across Storage Device).

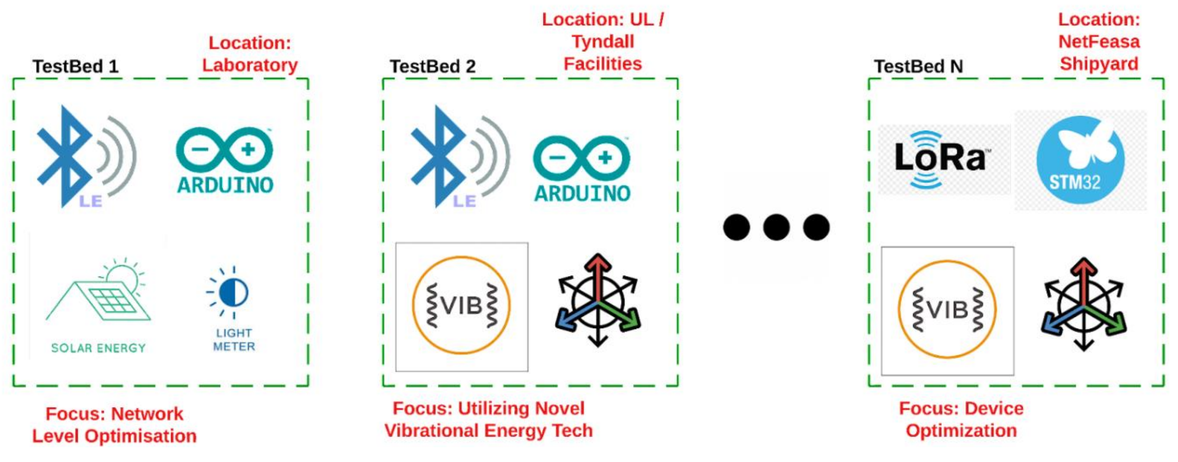


*Figure 1: Testbed Iterations*

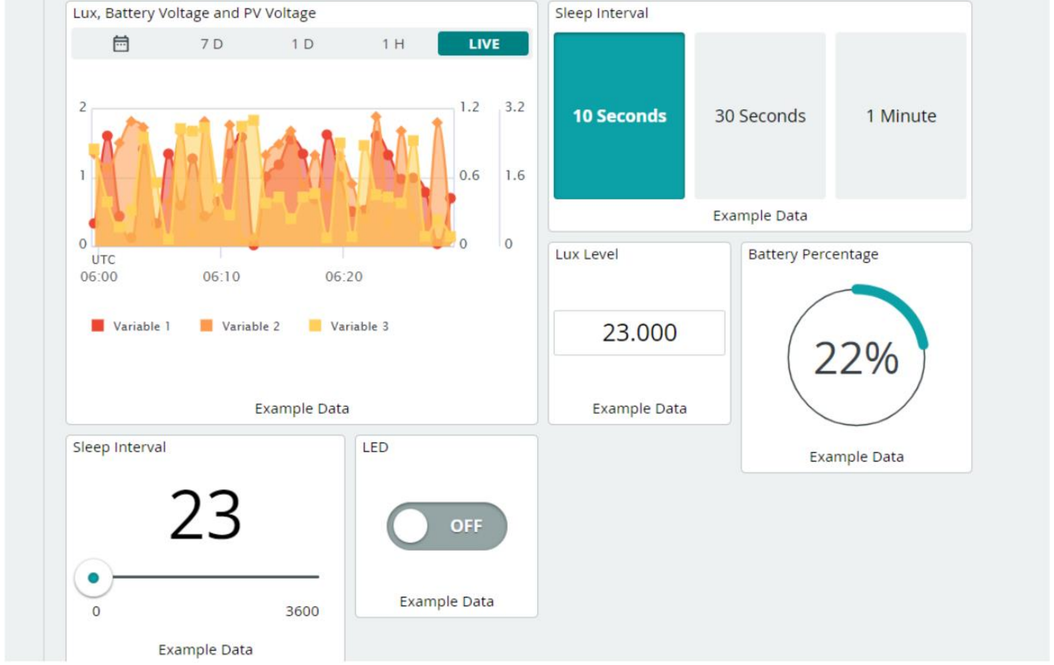


*Figure 2: Cloud User Interface*

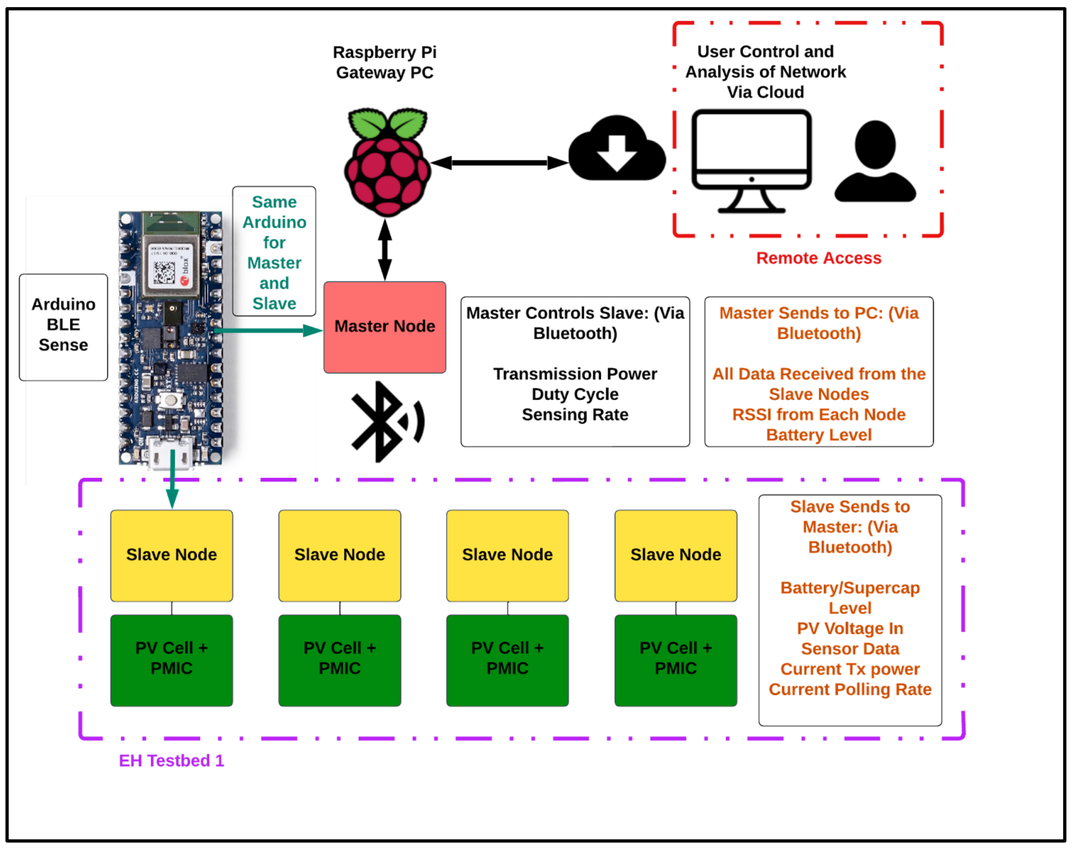


*Figure 4: EH Testbed 1 Flow Chart*

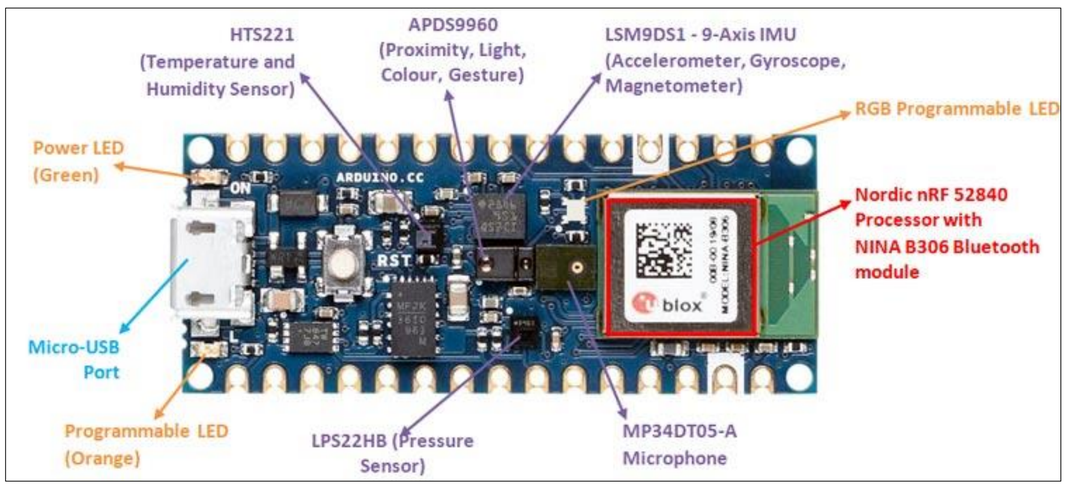


*Figure 3: Off-the Shelf Arduino BLE Sense Device Capabilities*

**Conclusion:** **The project will expand to various different Energy Harvesting Testbeds that are multi-node and multi-gateway systems.**
**A key enabling technology for EnTICe is a WSN battery life/energy harvesting simulation model being developed by Tyndall in associated EU projects Energy ECS and LoLiPoP IoT with other projects to follow.**

**Collaborations initiated with TCD, UL, NUIM & SETU.**