LITHIUM-ION BATTERY RECYCLING PRIZE

A Public Document

U.S. DEPARTMENT OF ENERGY

Team Name:	Lithium-Ion Battery Internet of Things (LIBIoT)
Primary Submitter Name:	Dimitri Grivas
City and State:	Albany, NY
Member Names (including partners and affiliates):	Dimitri Grivas, Eric Miller, Jeremy Vaitas, Nancy Grivas, Harry Efstathiadis, Seiichiro Higashiya, Matthew Chebuske
Submission Title:	Innovative Battery Collection System by LIBIoT
Submission Track:	Track 1: Collection

Concept

- Project will focus on the implementation of Internet of Things (IoT) and data analytics methodologies into the process of battery collection and recycling as a whole
- Two components:
  - Development of a mobile device app to inform consumers of recycling procedures and facilitate collection
  - Development of RFID enabled, individual battery databases and/or sensor systems, capable of being scanned using mobile devices

Approach

- RFID tags, containing data regarding the materials of a battery, will be directly applied to individual batteries
  - It will be attached either by the collection agency or by battery manufacturers
- RFID tagging will allow for unique IDs for all batteries
- RFID tags may be read by mobile device, allowing consumers to scan battery using corollary app and relay information to collection agency
  - App will inform consumer of recycling methods available for a specific battery, including drop-off, mail-in, or pickup methods, depending on the battery
- Easily accessible material data will aide in safe transport, safe storage, and optimal yield recycling

Potential Impact

- App will act as an accessible means of consumers learning about the recycling process, as well as an intuitive way to discover methods of recycle
- The app will also aide collection agencies, allowing them to improve safety by knowing the exact compositions and relevant safety precautions of transported batteries
- Unique battery IDs will allow for tracking of recycling efficiency
- Integrated material data will allow recyclers to deal with batteries on individual basis, increasing yield
- Optimize the safety-economy relation of the recycling process
- Improve protection of the environment