



Global
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Africa

ktn-uk.org/programme/africa #KTNGlobalAllianceAfrica

Hinckley Recycling Battery Innovation Challenges - Live Launch and Virtual Tour



Agenda

Welcome & Introductions

- Hinckley Recycling
- IUK KTN and Global Alliance Africa
- Innovation Challenge Process
- Challenge 1 – Second Life Batteries
- Challenge 2 – Battery Inventory System
- Application Information
- Q&A Session
- Closing Remarks

Lunch



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Housekeeping

- The Information Session will last 1.5 hours (excluding lunch)
- Physical attendees – please ask your questions at the end of the session
- Virtual attendees - please use Zoom chat for submitting your questions
- This session will be recorded and shared later

Innovate UK KTN

www.ktn-uk.org



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Positive Change Commitments

Positive Change

We create diverse connections to drive positive change

Deep Expertise

We have wide-ranging expertise and convene the expertise of others

Powerful Connections

We drive powerful connections with businesses at the heart of what we do

Future Shaping

We shape the innovation communities of the future

Our People

We provide an exceptional place of work for our exceptional people

We will collaborate globally to create valuable international connections for innovators.

We will extend our activity beyond economic prosperity to also deliver sustainable societal & environmental benefit.

OUR STRATEGIC PRIORITIES

OUR NETWORK

**TRULY
CROSS-CUTTING
NETWORK**

**+40K
UNIQUE
ORGANISATIONS**

**90%
SMES**

**+273K
INNOVATORS
IN THE UK**

**OVER 30
COUNTRIES**

SECTORS

We create diverse **connections** in the following sectors and areas of focus to drive **positive change**

- AgriFood
- Biotechnology
- Chemistry
- Creative Industries
- Design
- Digital
- Electronics
- Energy
- Geospatial
- Health
- Industrial Maths
- Infrastructure
- Manufacturing
- Materials
- Photonics
- Quantum
- Robotics and AI
- Security and Defence
- Sensors
- Space
- Transport
- Water

CROSS-CUTTING AREAS

**GLOBAL
INNOVATION**

**DIVERSITY
AND
INCLUSION**

PLACE

NET ZERO

**ADOPTION
AND
DIFFUSION**

Impact to innovation



66%

Introduced by
KTN go on to
collaborate



42%

Reach outcomes
faster by 1-2
years



60%

Increased
investment in
R&D as a direct
result from KTN
engagement



£100m

Per year
increased
investment in
R&D

A New Approach to Africa



“With a shared passion for entrepreneurship, technology and innovation, now is the time for UK companies to strengthen their partnerships with Africa to boost jobs and drive prosperity both at home and overseas...

The challenges facing Africa are not Africa's alone. It is the world's interest to see these jobs created.”

UK Government, August 2018



Building UK-Africa Partnership through...



Local to Global

Open Innovation

Place-Based Innovation



Access to Funding

Collaborative R&D Funding

Strengthening the Investment Pipeline



Connected Innovation

Global Innovation Network

Deep Expertise

* Manufacturing & Materials | Transport & Mobility | AgriFood | Health | Climate Technologies | Digital Economy *

* Sector coverage subject to funding level & project priorities



Innovation Exchange (iX)



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Local Empowerment Through Collaboration

Innovation Exchange is a KTN programme specially designed to introduce company with technical challenges to innovators who are already working on the solutions.

Sector Technical Challenges

Large organisations, OEMS and Local Authorities have:

- Confidential challenges to solve with no time to explore markets
- Low exposure to companies outside the traditional industry supply chain



Innovative solutions *from other* sectors

Solution providers find it difficult to:

- Open the right doors at a large org, OEM or local authority
- Prove the value proposition of products
- Understand customer's time constraints

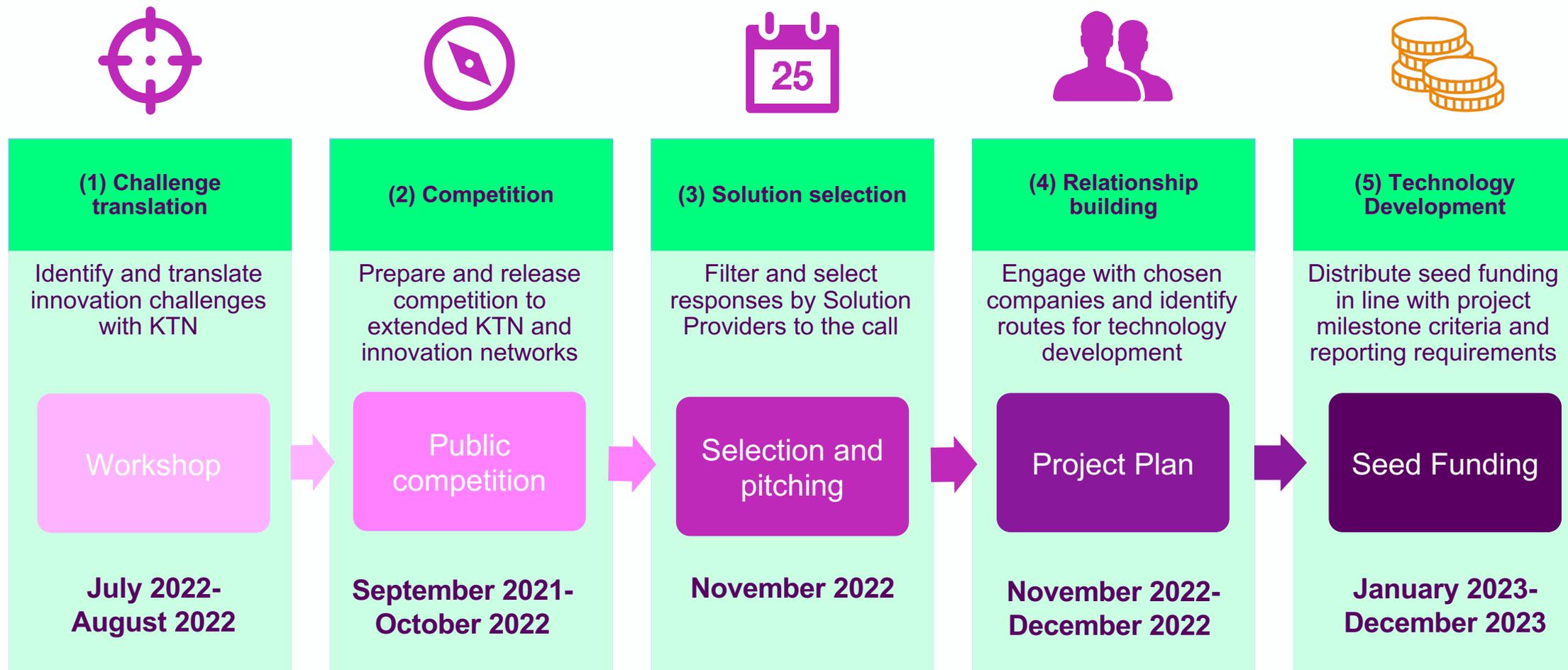
Challenge owners



Previous Challenge Holders



KTN Innovation Exchange Process



Benefits for Challenge Holders

Supply chain strengthening

It helps build a route for greater and more diverse innovation content in supply chains

Quick and simple exposure to new technologies and markets

KTN delivers technology solutions from areas to which challenge holders do not normally have exposure and markets that are usually unavailable to SMEs (both in- and cross-sector)

Time efficient

It requires little time commitment, with the bulk of the resource and time provided by GAA

Expertise at no charge

We are fully funded by the UK government and there is no charge to you for our professional services

Optional disclosure

Challenge holder involvement can be made confidential if required

**Companies using this project
have said,**

***“It is surprisingly simple and
very interesting; it has delivered
a varied range of Technologies”***

Benefits for Solution Providers

Immediate access to large business

Successful applicants will be given the opportunity to pitch their solution to the Challenge Holder

Ongoing collaboration on project

The selected Solution Provider/s will collaborate with the Challenge Holder and gain access to local facilities, eg: farmland to carry out trials for piloting the solution

Seed Funding provision

Up to GBP 25,000 seed funding to work on the solution for this specific challenge in collaboration with the Challenge Holder

Pitching and development support

Support from KTN and mentoring from our development partners throughout the challenge process

Raising your profile

Make new connections and invitation to attend or present at future IUK KTN events

Criteria for Challenge Owners

The Company/Organisation is a **large organisation** with turnover of GBP £5m+ to ensure appropriate resourcing to support development

The Company/Organisation has a real and **tangible challenge** that would benefit from cross-sector solutions

The benefits of addressing the challenge go beyond direct economic benefits to the Company/Organisation and accelerate innovations that **drive positive social and/or environmental impact**

The Company/Organisation's challenge addresses at least 1 of the 17 UN **Sustainable Development Goals (SDGs)**

The **Company/Organisation's reputation** and/or activities do not pose a reputational risk for KTN/FCDO/IUK

Global Alliance Africa Open Innovation Challenges FY21/22

- **Kenya**

- **Flamingo Horticulture**

- False Codling Moth detection
 - False Codling Moth control

- **WEEE Centre**

- CRT recycling – new products
 - CRT recycling – energy reduction

- **South Africa**

- **Unilever**

- Plastic packaging reuse for online retail
 - Plastic packaging reuse for small traders



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KTN Global Alliance Africa

Rapidly find Innovative Solutions to Circular Economy Challenges

We are looking for Kenya, Nigeria and South Africa based companies wanting to find rapid innovative solutions to their industry challenges.

Deadline to apply: 14 September 2021

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KTN Global Alliance Africa

Rapidly find Innovative Solutions to AgriFood Challenges in Kenya

We are looking for large* Kenya-based companies from the AgriFood Sector wanting to find rapid innovative solutions to their industry challenges.

Deadline to apply: 30 August 2021.

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Global Alliance Africa Open Innovation Challenges FY22/23

• Kenya

- Prevent crop damage by birds
- Reduce post-harvest waste
- SME data analysis TBC

• Nigeria

- Battery second life challenge
- Battery inventory system challenge
- Food processing challenges TBC

• South Africa

- WTR drying challenge
- WTR beneficiation challenge
- Hazardous materials challenges TBC



Global Alliance Africa is looking for
Innovative Solutions to AgriFood Challenges in Africa



Global Alliance Africa is supporting a large agri-based manufacturing company to find innovative solutions to prevent crop damage caused by migrating birds

What is Global Alliance Africa?

Global Alliance Africa is a 6-year project, funded by UK Aid, that aims to promote job creation, inclusive growth and poverty reduction through knowledge transfer, skills building and opportunities to support businesses and innovations deliver scalable impact.

Through the Innovation Exchange programme we support innovation transfer by matching industry challenges to innovative companies from other sectors. We do this by putting large businesses with technical needs in contact with companies who have the right solutions for faster development of novel solutions.

Submit your Solution
Deadline to apply 8 July 2022
Visit our website to view the challenge and submit your solution.
[SUBMIT NOW](#)

Connecting for Positive Change
KTN-UK.org/programme/africa



Global Alliance Africa is looking for
Innovative Solutions to AgriFood Challenges in Africa



Global Alliance Africa is supporting a large agri-based manufacturing company to find affordable and easy to maintain solutions for Sorghum grain threshing (and other grains).

What is Global Alliance Africa?

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Through the Innovation Exchange programme we support innovation transfer by matching industry challenges to innovative companies from other sectors. We do this by putting large businesses with technical needs in contact with companies who have the right solutions for faster development of novel solutions.

The Challenge

East Africa traditionally has a structure of small farms over large areas of land where farmers grow a wide variety of food and industrial crops. Most of the farm operations are being carried out by hand. Crops are harvested manually, dried and threshed on the farm before being transported for sale.

This post-harvest grain handling leads to an estimated 20-30% yield loss, affecting farmers' revenue and livelihood. This innovation challenge is looking for versatile pieces of mobile equipment that may be used by farmers to improve this situation.

A large agri-based manufacturing company is launching this challenge to look for novel solutions to minimise the loss of grain during the threshing process.

Submit your Solution
Deadline to apply 8 July 2022
Visit our website to view the challenge and submit your solution.
[SUBMIT NOW](#)

Connecting for Positive Change
KTN-UK.org/programme/africa

Innovation Challenges Comms Plans

KTN Platforms

Our innovation websites will feature the challenge and provide an easy application interface

KTN Networks

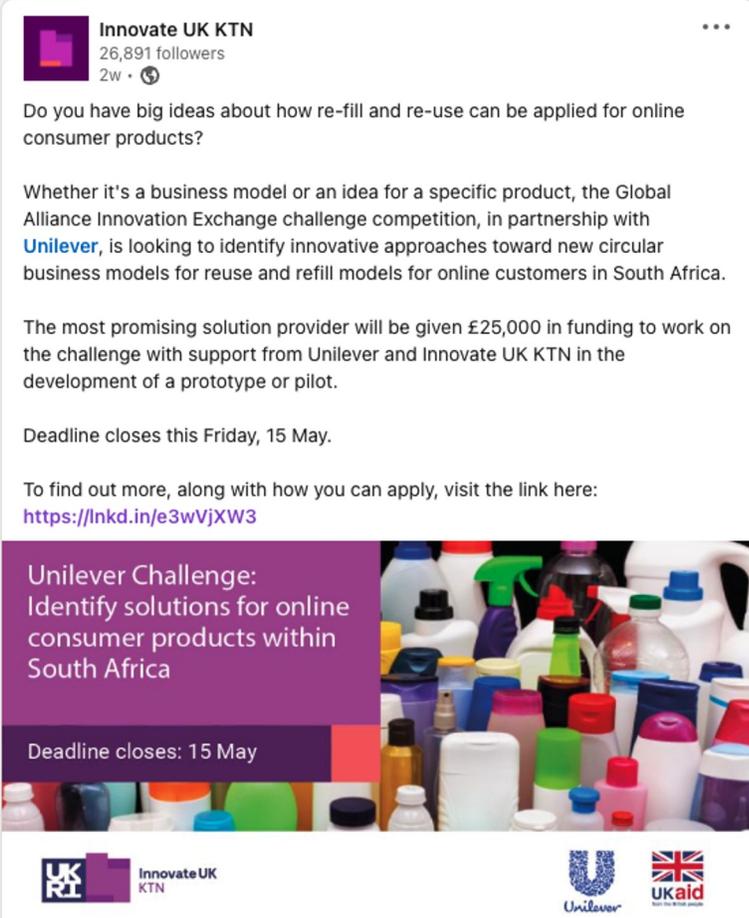
Our technical experts will share the challenge with their industry sector networks and invite specific innovators to participate

Social Media

We will run ad campaigns about the challenge across Twitter, LinkedIn and other relevant media

Local Comms Teams

Our local comms teams will promote across relevant professional networks and innovation ecosystem networks



Innovate UK KTN
26,891 followers
2w · 🌐

Do you have big ideas about how re-fill and re-use can be applied for online consumer products?

Whether it's a business model or an idea for a specific product, the Global Alliance Innovation Exchange challenge competition, in partnership with [Unilever](#), is looking to identify innovative approaches toward new circular business models for reuse and refill models for online customers in South Africa.

The most promising solution provider will be given £25,000 in funding to work on the challenge with support from Unilever and Innovate UK KTN in the development of a prototype or pilot.

Deadline closes this Friday, 15 May.

To find out more, along with how you can apply, visit the link here:
<https://lnkd.in/e3wVjXW3>

Unilever Challenge:
Identify solutions for online consumer products within South Africa

Deadline closes: 15 May



Hinckley Group Battery Innovation Challenges



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Background

Hinckley Group, a Nigerian electronic waste recycling company, is responsible for processing a wide variety of waste streams, one of the most complex of which is lithium batteries. These batteries require careful recycling at the end of their first working lives. Due to transport and health & safety issues, sustainable local solutions must be found.

Hinckley receives thousands of batteries a month. Initial work with partners in terms of recovering, testing, and categorising these batteries has been promising in determining their suitability for second life applications. These recovered batteries often retain >60% of their original capacity, giving readings of 80 to 110 ohms.



**Innovative Solutions for Second Life
Batteries – focussing on roadside kiosks,
light or cooling provision and personal
mobility**



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Challenge

Hinckley Group is actively looking for innovative solutions for **second life opportunities for their used Lithium-Ion batteries**. They believe there are many **innovative entrepreneurs requiring Lithium-Ion cells**, whose biggest problem is the procurement cost and availability. Hinckley Group is especially looking to work with local entrepreneurs to solve this challenge.

Hinckley Group are particularly interested in:

- Providing power in **unusual/bespoke battery configurations** for people who can't source the configuration they require
- Providing **cheaper power** for the identified sectors for users who cannot afford to buy new batteries on the open market.

Challenge

The informal retail sector, such as roadside kiosks

These act as community hubs providing a range of services such as charging phones, POS cash machines and chilling food and beverages. Many rely on small petrol generators for power, which create noise and pollution. Other kiosks have small solar arrays which are effective but typically expensive to purchase, difficult to maintain and often inefficient at night.

Local Mobility, such as scooters and e-bikes

Mobility devices have higher power requirements, however when operated in “assist mode” the battery provides additional power rather than total power. Hence the lesser importance of high capacity. Solutions should consider repurposing old batteries in new configurations that are currently unavailable.

Challenge

Light Provision for homes and businesses

Lighting is a universal requirement and there are various means available depending on income and location. Hinckley Group would be interested in solutions that help to store power for lighting requirements, either supplying energy directly or indirectly via charging other elements.

Cooling Provision for homes and businesses

Cooling is important for personal comfort and for safe transport and storage of foods. Hinckley Group would be interested in solutions that help to create or extend the cold chain into useful areas, or to reduce the current cost of operations.

Target Audiences

We anticipate solutions may come from, but are not limited to, the following sectors:

- Renewables, eg: solar
- electronics
- engineering
- power solutions
- mobile energy
- telecoms
- retailers & merchandisers

Functional Requirements

Informal Retail - provide power for: electronic machines, lights, fans, charging phones, any additional uses required (25+ kiosks in 2023 pilot and 50+ in 2024)

Local Mobility - additional power for personal transport devices such as: scooters, e-bikes, wheelchairs (25+ devices in 2023 pilot and 50+ in 2024)

Light Provision - light provision related to: domestic light, commercial light, mobile lighting, event lighting

Cooling Provision - cooling provision related to: domestic cooling, commercial cooling, mobile cooling, event cooling

Technical Requirements

- The new configurations/products/services will be **tested in the Hinckley Group workshop**
- Certification of products by the **Standards Organisation of Nigeria** will be required after the trial run
- Prototypes must be **easily scalable** to 100+ units initially and then 1,000+ units

Operating Conditions

- Solution must provide power for **12 hours minimum** (daytime)
- Power availability **24/7** would be preferable (day and night)
- Solution should extend the lifetime of batteries by **3 years**
- Solution must be able to operate in **hot temperature**
- Solution must be able to operate during **rainy season**
- Solution must be **non-polluting**
- The batteries array would be stacked using technology that allows **interchangeable cells**



Battery Inventory System – Track, Trace and Report on Lithium Ion Batteries



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Challenge

Hinckley Group is actively looking for innovative solutions to be able **to track, trace and report on the condition of Lithium-Ion batteries** (and other batteries). They require a tracking system that will **code individual batteries for circular usage**. They will need to track, trace and report on batteries' condition to be able to decide which can be reused, and for what use, and which must be recycled or destroyed.

Hinckley Group is open to a **wide range of solutions**, from mechanical or electromagnetic solutions to Digital Ledger Technology such as blockchain or other beneficial technology. About 60% of these cells will have a useful second life and the purpose of this challenge is the building of a robust inventory process to manage the lifecycle of these cells.

Challenge

A. Providing a physical labelling solution using barcodes/QR codes

It is envisaged that each cell will have an easily accessible code whose details can be automatically input into digital data fields. Automation is preferable to reduce the chances of human error.

B. Providing a software solution for battery inventory management

Currently there is a basic inventory web solution, but this is not suitable for the quality and quantity of data required. Hinckley Group needs a bespoke system for their particular needs. It should be something that the workshop teams can easily use for inputting data whilst tearing down systems. This should be something quite simple allowing for various levels of staff competency.

Target Audiences

We anticipate solutions may come from, but are not limited to, the following sectors:

- Renewables, eg: solar
- Electronics & engineering
- power solutions & mobile energy
- Digital economy & AI

The solution will be deployed in these places:

- Hinckley Group battery workshop
- Logistics partners systems
- Customers premises
- Resellers premises

Functional Requirements

Hinckley envisages the processing of **400+ individual cells per day initially**. Each of these will have its data recorded and tracked including:

- Processing date
- Number of historic battery cycles
- Capacity remaining
- Other SON tests required in line with ISO 17025 (including test equipment calibration data)
- Overall physical condition of cell to be recorded
- Number of previous users
- Expected lifespan
- Info on what battery was used for previously

Technical Requirements

- The physical element will be applied in the Hinckley Group workshop and must be a **quick and simple process**
- The software must allow for a **range of competencies** within users.
- The software must allow for **usage across a range of devices** including laptops, tablets, phones and scanners
- The system must register **readings on first pass** with minimal downtime between passes
- Software must work **offline and online** hosted on Hinckley's cloud server
- Barcodes (or other labels) must fit **18650 and 26650 battery types**

Operating Conditions

- Any coding applied must be robust and **remain associated with the battery throughout its life**
- Not be significantly damaged by **wear and tear**
- The software must work under **normal indoor and outdoor operating conditions.**
- Not be compromised by **heat or humidity** (within reason).

Note

Challenge focus is to create a bespoke system for Hinckley's particular needs. However, integration with future global/industry initiatives such as the **Battery Passport** will be beneficial.



Application Information



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Deployment Timescale

- 29 Sep 2022: Competition Launch /Information Session/Q&A
- **11 Nov 2022: Deadline for applications**
- 25 Nov 2022: Selection and notification of finalists
- 15 Dec 2022: Pitch day (tbc)
- 20 Dec 2022: Selection of Winner (tbc)
- Jan 2023 – Feb 2023: Collaboration Discussions
- Mar 2023: Pilot programme activated

Eligibility

Applicants must be:

- **Established** businesses, start-ups, SMEs, individual entrepreneurs or academics.
- **Collaborative** solutions (Business to Business B2B and B2R&D) are valid applications. If collaborative solutions are being submitted, a single lead organisation (industrial or academic partner) needs to register the application.
- **Priority** is given to solution providers based in Nigeria, Kenya and South Africa. However, innovative solutions from the UK and RoW also welcome

Assessment

Applications will be assessed on:

- **Relevance** to the topic
- **Innovative** nature of the subject
- **Coherence** of the proposed business model
- **Feasibility**/economic viability
- **Development potential**
- **Maturity** of project/solution
- **Ease of implementation**/ability to launch project quickly
- **Suitability** for the African Market



Q&A Session



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Thank you.



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