# Tender to develop Materials in Bioelectronic Healthcare Innovation Strategy and Action Plan

# Context

Royce is seeking to comprehend the pivotal role that materials play in the emerging domain of Bioelectronic Healthcare. Our ultimate objective is to advocate for the secure and responsible utilisation of materials in order to advance this increasingly important healthcare sector. To achieve this goal, we will harness the collective expertise of the UK’s stakeholder community, in addition to our international connections, to pinpoint the existing strengths & opportunities in materials translation.

This effort will include a comprehensive assessment on the hurdles we need to overcome to transform current materials research into tangible products for uptake by global healthcare providers.

Additionally, we want to analyse potential novel materials needed for the long-term future of Bioelectronic Healthcare. In our definition of Bioelectronics in Healthcare, we maintain an inclusive approach that is not confined to any specific therapeutic domain. While historical emphasis has often been on neurological disorders, our interest spans all therapeutic applications and underscores the significant role that materials play in this context. Our scope also extends to wearables, implantables, and hybrid systems, including *in vitro* systems. In pursuit of these objectives, we are actively seeking collaboration with an organisation to formulate a strategic approach to the development of materials for Bioelectronic Healthcare.

The output of this process will be a comprehensive Strategy and Action Plan.

**Background**

Bioelectronic Healthcare is an emerging field at the intersection of biology, electronics, and medicine. It involves the development and utilisation of electronic devices, such as wearable/implantable sensors and neuromodulation devices to monitor and modulate biological processes within the human body. These devices interface with the body’s nervous system, tissues, or organs to regulate physiological functions, diagnose medical conditions and treat a variety of health issues. Bioelectronics is a rapidly growing field, and many large pharmaceutical companies are already investing millions in new technologies.

In recent years, there have been several assessments to evaluate the impact of the emerging field of neurotechnology in the United Kingdom. It is important to note that Neurotechnology does not encompass biological systems beyond the nervous system, while Bioelectronic Healthcare does. Notable among these assessments is the 2021 [‘A Transformative Roadmap for Neurotechnology in the UK’ by Innovate UK, Emerging Technologies KTN,](https://iuk.ktn-uk.org/news/a-transformative-roadmap-for-neurotechnology-in-the-uk/#:~:text=Innovation%20experts%2C%20KTN%2C%20publish%20a,the%20more%20unknowns%20we%20discover.) which identified the diverse capabilities within the UK that can foster the advancement of neurotechnology. Moreover, the Regulatory Horizons Council has taken steps to publish an [independent report on the regulation of neurotechnology](https://www.gov.uk/government/publications/regulatory-horizons-council-the-regulation-of-neurotechnology) to encourage the safe and rapid development of this technology. The Royal Society has also made significant contributions in this area, notably through events like the [Neural Interfaces Summit](https://royalsociety.org/science-events-and-lectures/2023/09/royal-society-neural-interfaces-summit-2023/) and the [iHuman report](https://royalsociety.org/topics-policy/projects/ihuman-perspective/).

These efforts lay the groundwork for international governance of neural interface technologies to accelerate responsible development in the field. However, while these assessments and initiatives provide valuable insights, they do not offer a comprehensive overview of the requirements around materials innovation needed to support the wide-ranging opportunities within the wider Bioelectronic Healthcare field. A Strategy which addresses the materials innovation aspect is crucial to fully realise the potential of Bioelectronics and its applications.

**The role of the commissioned organisation will be to undertake the following programmes of work:**

**Activity 1 - Materials In Bioelectronic Healthcare scoping and definition of current state (Months 1 to 4)**

1. **International focus:**
* Mapping International academic & third party centres of expertise with a focus on the development of materials suitable for application in the field of Bioelectronic Healthcare
* Conducting a comprehensive review of the industry landscape internationally, with an emphasis on identifying prominent companies that have either launched products in the market or are in the process of developing them
* Compiling an overview of the present utilisation of materials within these companies’ product portfolios.
* Analysing the existing challenges faced by stakeholders in the process of recognising and effectively deploying materials within their respective product portfolios. These challenges encompass a broad spectrum, ranging from the necessity of robust validation processes and regulatory compliance to the sufficiency of infrastructure and facilities. Furthermore, they extend to encompass complexities in scaling up, achieving market acceptance, clinical uptake and addressing sustainability and environmental impact concerns.
1. **National focus**
* Mapping academic & third party centres of expertise with a focus on the development of materials suitable for application in the field of Bioelectronic Healthcare
* Identification of key Clinical strength areas where the UK can collaborate to advance the development of Bioelectronic Healthcare
* Conducting a comprehensive review of the national industry landscape in the UK, with an emphasis on identifying prominent companies that have either launched products in the market or are in the process of developing them
* Compiling an overview of the present utilisation of materials within these companies’ product portfolios.
* Analysing the existing challenges faced by stakeholders in the process of recognising and effectively deploying materials within their respective product portfolios.
1. Assessment of UK related to Material Integration challenges in comparison to international findings.

**Activity 2 – Materials In Bioelectronic Healthcare scoping and definition of future opportunities (Months 1 to 4)**

* Gathering insights from stakeholders regarding their anticipated future applications of Bioelectronic Healthcare.
* Identifying existing materials with the potential to advance these envisioned applications.
* Determining the development requirements for novel and existing material systems that are essential to realise the future potential of Bioelectronic Healthcare.
* Defining the potential challenges associated with integrating these materials into product portfolios.
* Market analysis of potential opportunities for Bioelectronic healthcare over the next 30 years.

**Activity 3 – Development of Materials in Bioelectronic Healthcare Strategy, Recommendations and Action Plan (Month 5)**

This represents the primary task within this call, and the ultimate outcome will be the delivery of a finalised report and Strategic Action Plan, which builds upon the foundations laid in activities 1 & 2. It is expected that this strategy document will not exceed 50 pages in length, inclusive of infographics and images where applicable. Additionally, a 4–5-page summary document tailored for wider dissemination is anticipated.

The focus of this undertaking is directed toward fostering innovation and translating technology in alignment with national needs. While advanced material’s research is an acknowledged UK strength, there is a recognised imperative to strengthen the connection between scientific advancements and their practical application in commercial settings.

The overarching goal of this strategy is to therefore identify opportunities and catalyse actions & interventions aimed at bridging this divide, ensuring that the UK secures a leading position in the integration of advanced materials in the realm of Bioelectronic Healthcare these recommendations will serve as a catalyst, empowering our diverse range of stakeholders, from government bodies and industry players to academic, clinicians and the investment community, to not just advocate for change but to actively drive it. The report will provide clear, actionable steps to fully capitalise on the opportunities before us.

To this end, it is anticipated that the Strategy will have a strong Challenge-led element aimed at:

* Identifying key materials innovations essential for progress
* Clarifying the technology gaps and interfaces which need to be addressed.
* Formulating a set of recommendations pertaining to these gaps and interfaces
* Defining the Action Plan

**Programme management– expected duration 6 months**

The contracted party will be responsible for the following:

Our expectation is that that the appointed contractor will undertake a combination of desk research, and Market analysis

The methodology and approach will be shared in a transparent and inclusive manor, through regular meetings (fortnightly) and inclusion in the project plan.

We envisage thorough stakeholder engagement across the translation pipeline, including key research scientists, industrial companies, material suppliers, regulatory agencies, testing and certification bodies, Healthcare professionals along with government agencies and environmental & sustainability advocates, investors, funding agencies and public and community (likely in the region of 200 plus individuals).

The expectation is for the contracted party to establish and deliver a comprehensive portfolio of stakeholder engagement activities which will be defined in the project plan this can include but is not limited to: interviews with representative individuals/organisations, large and small in person, online & hybrid workshops. The specific activities and methods for stakeholder engagement will be defined in the project plan.

Any new stakeholders introduced by the contracted party, will need to have an agreed statement in communications with them, to ensure they are happy to be introduced to and remain connected to the Royce post the end of the project

Throughout all activities, maintain regular communication with Royce (Research and Business Engagement Manager and associated leadership group) by email, to provide updates, share findings, and seek clarifications as needed.

Develop and adhere to a project timeline, ensuring that each activity is completed as scheduled in the project plan.

Prepare progress reports (fortnightly), interim findings, and presentations as required by Royce. All reports, recommendations and findings will be reviewed and approved by the Royce Research & Business engagement manager and the leadership team.

To maintain a risk register outlining how emerging risks should be reported assessed and managed.

**Mid term Deliverables: (End of Month 2)**

Mid term report providing:

* A summary of projects status, highlight key achievements and any emerging issues
* Proposed adjustments or recommendations based on the work completed
* Report to include data, analysis and findings thus far
* Review of Stakeholder involvement and key data gathered

**Final Deliverables include (End of Month 5):**

* A final report that includes the strategy, recommendations, and Action Plan
* A Summary document for broader distribution
* A UK and International stakeholder map of expertise across the translational pipeline
* Annex of contributors and including clarity on their involvement in future Royce activities in this area

Work with the Royce communications and engagement team in establishing and delivering a comprehensive community engagement portfolio of events.

**Proposals:**

Organisations are encouraged to submit proposals no longer than C.3500 words, demonstration of understanding for the work being proposed, outline methodology, project plan and capability/track record. Organisations should acknowledge that the resulting outputs will predominately bear the Royce brand.

The outcomes of this strategy will be instrumental in policy discussions with the government, will serve to guide and drive academic and industry partnerships, and will form the foundation for interactions with the investment community. These outputs will play a crucial role in supporting decision making and will serve as a centre reference point to ensure prioritisation and focus in the coming decade.

A contractor will be selected by:

* Understanding of the brief
* An outline methodology & project plan for achieving the brief.
* A statement of credentials in relation to the brief including key personnel and examples of previous work
* Costs including fees and expenses (inc. VAT)
* Previous customer feedback on similar work

Please submit proposals by email to info@royce.ac.uk

Any enquiries about this tender should also be directed to info@royce.ac.uk

**Indicative Budgets: £80K**

**Proposal Evaluation** We will evaluate proposals using the following criteria:

• Understanding of the brief and proposed methodology & Project plan, 50%

• Previous experience and subject knowledge, 25%

•Value for Money, 25%

**Management and Governance**

The contract will be directly managed by the Royce Research and Business Engagement Manager or their delegate, together with a small leadership team. The ultimate Strategy will be overseen by a wider project/steering board which will consist of key stakeholders representing the UK materials Bioelectronic Healthcare research and innovation community.

**Tentative Timeline**

We envisage the project will follow this timeline, with some flexibility where necessary.

• Invitation to Tender: Friday 03rd Nov 2023

• Closing date: 23:59 hrs, Friday 24th Nov 2023

• Panel meeting: Friday 24th Nov 2023

• Appointment of Contractor: Wednesday 29th Nov 2023

• Initial Planning Meeting: Monday 04th Dec 2023