

Project Specification

Tender details – the opportunity

Company name	Bromley Emergency Training and Research Ltd (BETAR Ltd)
Company address	<p>Training Centre: Unit 42, City Business Centre, Lower Road. London SE16 2XB</p> <p>Registered Address: 96 Arran Rd, London SE6 2NN</p>
Description of company activity/SIC code	<p>BETAR Ltd is an independent training provider. It provides short training courses, largely to doctors, to help with postgraduate training and professional examinations. Most of the training is directed towards acute and emergency medicine specialties.</p> <p>SIC 86900 – Other human health activities</p>
Objective of the proposed innovation project– this MUST involve activity that results in the development of or introduction to the market of a new product or service (max 300 words)	<p>The objective of this project is to produce physical models to be used for ultrasound training.</p> <p>The background to this is that there is a massive increase in interest in the use of ultrasound among doctors. Whereas ultrasound machines were once heavy and immobile and largely only found in x-ray departments, recent developments have produced laptop sized, portable ultrasound machines and now pocket-sized ultrasound machines.</p> <p>One area where ultrasound is particularly valuable is when a doctor needs to guide a needle into a part of the body. This may be necessary to locate a vein under the skin for a drip, to put anaesthetic around a nerve or to take a sample from a particular organ.</p> <p>Training in these skills faces a challenge. Ideally doctors would have practised in the classroom before using these techniques on patients. However this is very difficult to do at the moment. It is not possible to practice inserting needles into volunteers, and there are not good models to use instead.</p> <p>Many people have endeavoured to create suitable models, however there are challenges. Any model needs to be made from materials which look like human tissue in an ultrasound beam. It also needs to contain different materials to imitate skin, muscle, nerve, blood vessels, etc in the ultrasound</p>

	<p>beam. These materials also need to be arranged in an anatomically appropriate way. There are also further challenges as any model will be damaged by the repeated passage of needles so the model needs to be cheap to make and replacable. Recent work with 'ballistic gel' which can be re-melted and recycled, shows promise for this purpose. Such models are the objective of this project.</p>
<p>Company's current situation – existing project team and innovation project development stage (max 400 words)</p>	<p>For the last year we have been making training models with agar-agar and with gelatine. These models are easy to make, cheap and disposable. In addition objects can be embedded within the gel so that a needle can be guided towards the object using ultrasound. The major limitation of these models is that they are not life-like, as they lack anatomical detail. We have obtained a quantity of ballistic gel from North America with a range of different densities. However we have not had the staff time, thinking time and expertise to develop this gel into training models. Our plan is to start by choosing a specific training need, for example a model for fascia-iliaca block training (a method for placing anaesthetic to block pain nerves coming from a fractured hip). We would then develop a template for the model based upon the anatomy found in a 8cm cube around the desired injection site. We would then design simulations of the anatomical components in that cube made in such a way that they fit together like a three-dimensional jigsaw. Each of these anatomical components would need to be made with different additives to the gel so that they appear realistic in the ultrasound beam. The first part of this project is to identify the additives which, when added to gel, produce the best simulated muscle, nerve, skin etc in the ultrasound beam. The next part of the project is to produce moulds so that the anatomical components can be cast to the correct shape so that they all fit together within the 8cm cube shape, ready to be used.</p>
<p>Business need – what expertise and support is required from a Knowledge Base to reach the</p>	<p>We are looking for the following help from a knowledge base.</p> <ol style="list-style-type: none"> 1. To review the existing publications and commercially-available products in this area.



objective(s) above? (max 400 words)	<p>This will ensure that we are not missing other materials which could potentially be used and that we are starting from the best information available.</p> <ol style="list-style-type: none">2. To contribute to our thinking about gel additives. We need the right mix and types of additives to produce realistic tissue ultrasound appearances and ideally to be re-usable. We need to alter density and also the nature of 'internal reflections' to simulate different tissues.3. To contribute to our thinking about moulding and the creation of correct three-dimensional shapes so that human anatomy is correctly simulated.4. To contribute to our thinking about how this idea could be turned into a marketable product range. <p>In order to progress with this project we are looking to work with a Knowledge Base and a graduate employee.</p>
Please list six key words that describe your potential project, i.e. ICT, engineering, biotech etc.	Engineering, polyurethane gel, moulding, 3-D design, bio-medical engineering, medical imaging
Required timescales (if any) for Project Start and duration, and if applicable anticipated product launch date	To start as soon as possible and complete within 12-18 months.
Optional - company budget available to match fund KEEP+ grant (if known) please see 'Further details' for maximum funding amounts	£30,000
Company Contact for further information	Dr Ian Stell, Director. ian.stell@bromleyemergency.com
Required tender response date (min 20 working days from posting of advert)	28 July 2021
Responses are sought from organisations classified as Knowledge Bases, defined under the ERDF Definition of the Knowledge Base: Higher Education, Further Education and	

Research Entities which are: UK Public Sector Research Establishments, Research and Development Organisations, Research and Technology Organisations.

The Company is seeking a Knowledge Base partner to work with them to develop a project which, dependent on a successful Grant Application, will be supported by the KEEP+ ERDF project using one of the two types of intervention described below. Please also see KEEP+ website – www.keepplus.co.uk

In Stage 2, if the grant application to KEEP+ is successful, the Company requires the expertise of the Knowledge Base partner, to work with them to deliver the solution i.e. the project intervention supported by the KEEP+ grant.

Criteria for Decision making	<p>Assessment criteria are as follows</p> <ul style="list-style-type: none"> • Expertise fit 50% • Timing fit 25% • Suitability of proposed methodology 25%
Date for Contract Decision	Minimum of 20 working days from date of advertisement
Tender response templates	Please approach the company for the exact format of your response.

Further details for potential respondents

You are responding to a tender for an activity which is eligible for part funding by the European Regional Development Fund, specifically under the KEEP+ Programme.

The KEEP+ Programme aims to support SMEs to develop new products and services by fostering long term collaborative relationships between Knowledge Bases – Universities and research institutions – and SMEs who need expertise and support for innovation.

Please see KEEP+ website for further information www.keepplus.co.uk or contact the KEEP+ project team 0845 196 4207 julie.benabdeljelil@anglia.ac.uk or 0845 196 4985 kayleigh.parkes@anglia.ac.uk

KEEP+ provides maximum allowable grants for its specific types of intervention. Those intervention types and maximum grant levels are as follows;

- KEEP Knowledge Exchange Embed Partnership (typically 12 months' duration) - this intervention involves a graduate working on a mid- to long-term activity with the support of a specific academic staff member, the graduate is based within the beneficiary company - grant allowance 50% of eligible costs and £10,000 capital.
- KEEP Research and Innovation Collaboration (no fixed duration) this intervention involves an academic colleague working on a short- to long-term activity, they are based at the Knowledge Base but with regular face-to-face interaction with the



beneficiary company - grant allowance 50% of eligible costs plus a strict maximum of £10,000 capital.

The following is a guide to the types of cost that you should expect to occur should your application be successful;

- KEEP Knowledge Exchange Embed Partnership (typically 12 months' duration) – project development, associate wage, academic wage, administrative support, training and travel (on the part of the knowledge base employees), minor equipment (please note there is a potential separate grant for major capital purchases), recruitment
- KEEP Research and Innovation Collaboration (no fixed duration) – project development, academic wage, administrative support, consumables (please note there is a potential separate grant for major capital purchases)