

## Miniaturised 5G ready Personal Location Device – FAQ document 05/12/22

OpTech Co-Creation Space

Number	Question	Answer
1	We have identified a collaborator that produces a product that hits 95% of the requirements of the challenge document... everything but the 5G connectivity. 5G connectivity is on their roadmap but is scheduled for Q4 2023.	We are always interested to hear of products we can add to our tool kit. For this work we are specifically interested in 5G solutions, but if it is clear the route to a 5G solution we will certainly consider it.
2	Within 5G there are three different flavours for implementation, i.e., purely cellular PLD, NB-IoT based or LTE-M. Which one of these if any is a preference for the challenge?	We want to use standard (i.e. non-IoT) 5G as we are preparing for more 5G roll-outs globally. As such, although we are interested to hear about NB-IoT and LTE-M solutions, we want to use 5G cellular.
3	The 5G modules currently available in the market are not unobtrusive, e.g., purely a modem is typically several cm in width and height. It will be challenging to make this a wearable device. Can we use a BLE beacon which uses your phone to relay the location.	One of our requirements is that the mobile device is off-network until activated. This rules out a smartphone solution. Size we know will be difficult, but we will work together to ensure managing trade-offs.
4	How open are you to considering the 3G/4G modems where miniaturization is a bit more mature than 5G?	We already have 3G and 4G solutions. Our primary requirement is 5G.
5	There is a supply chain issue with electronic components at the moment, unless a design is ready in the first 4 weeks, getting a practically demonstrable prototype in 12 weeks will be challenging. Are you looking to co-create designs in 12 weeks with demonstrations as a follow on?	We will be flexible with timing if lead times become an issue. We're looking for proofs of concept in 12 weeks, not deployable products.
6	Would you provide support for testing devices outside the UK and do you have a SIM partner in mind who supports global mobility, or do you want an eSim solution?	We do not have a SIM partner in mind. We tend to use local carriers as appropriate. Where practical we can assist with overseas testing, but we cannot commit to providing any support at this stage.
7	Does the device need to be compliant with other localization technologies e.g., BAIDU?	We are open to any localisation method, including non-GNSS. We have not specified that the solution has to use any GNSS (GPS, GLONASS, Galileo, etc.).

8	Do you have a document specifying the messaging protocol and security requirements for the PLD communications link with the dedicated monitoring station that you can release please?	We have no specific format. Our intention is to see what the solution can do, and integrate it with our own back-end systems. We would expect IP data messages using some normal format (such as XML, JSON, etc.)
9	Can you advise of the budget available for the 12 week sprint and also please could you outline what are the eligible costs that would be funded?	Approximately £50K, with a bit of wiggle room.
10	On the PLD what audio standard do you want for voice comms, is this a standard 3GPP voice codec or Opus ?	For the PLD application there is no core requirement for voice comms.
11	Is the voice call set up 3GPP, VoIP or SIP?	For the PLD application there is no core requirement for voice comms.
12	Due to resource limitations and time frames, how far in the future can we propose a start date? i.e. can we start next financial year or show a split in the project for the FY?	We of course want to start a project as soon as possible, but being realistic we happy to start at any point in the first quarter of 2023. We are also happy bridging financial years.
13	We have partners with products similar to that being requested, however innovation is required through design, would this therefore score low on "is it innovative?" due to there not being a solution as of yet?	We fully expect that this Challenge has been at least partially solved by industry, so we are happy with this approach.
14	The challenge description said that you are looking to poll the device location even when it is not activated. However, this will be contrary to push model where device transmits only when button is pressed? This will have energy implications so want to understand what is key priority?	We do not want to be able to locate the device when it has not been activated. Once it has been activated we are open to being able to query its location. We understand this will reduce battery life and will train operators not to continuously request locations.
15	Do you class Cat-M1 and NB-Iot as 5G ?	Correct. We are interested in global coverage as 5G rolls out. We are seeing low support of IoT bearers at the moment.
16	Why use a systems dependant on a local 5G coverage. What's wrong with a PLB using satellites	We already have satellite-based solutions. This is specifically for 5G.
17	5G splits into a few different technologies dependent on bandwidth. Are we talking about low bandwidth 5G usage e.g. for simple location telemetry	Correct. We only need low-bandwidth comms.
18	Does it's true application need to be disguised	No. We presently carry overt PLDs. There's no need for this to be different.
19	When you say 5G, are we talking about sub-6GHz band?	Yes. We are looking for a product that will work on typical 5G networks
20	Is a display or UI required apart from a button?	Firstly, the activation method does not have to be a button. We are open to ideas. Secondly, whilst it would be nice to know when the PLD has been

		activated, and possibly things like battery charge level, these aren't essential.
21	What is the operation temperature?	Typical commercial product. In the order of -10 to +50 degrees C. If it could work up to +70C (being left in the sun on a car dashboard all day) that would be even better but not essential
22	What is the specified IP Rating?	Good enough to be left in a pocket. We're not specifying an IP rating at this point, but it doesn't have to be waterproof.
21	Are you looking for eSim based device, i.e. you do not have to change sims etc. Are you also looking for Over-the-air configuration capabilities?	We're open to options, but there are no requirements for eSIMS or OTA configuration.
22	If no 5G service is available , you want to be connectable at 4G 3G or 2G or similar	If possible, that would be a good feature, but it is beyond the scope of this piece of work
23	Do you want to avoid accidental activation with a cover over the switch?	There is no firm requirement for a switch cover, but steps should be taken to minimise accidental activation. This can be a long press duration. This level of detail can be worked through within the project sprints.
24	Any Bill of Materials cost target?	No. Obviously the more expensive it is the less likely we will adopt it.
25	Will this be deployed as a service or do you already have an arrangement with a global telco	We don't have an arrangement with a TelCo; we usually use local service providers
26	Are you looking for a supplier to partner with longer term, or is this just for a finished product delivery? Also, is the 12 week period for integration of a finished product, or are you interested in developing a proof of concept?	12 weeks is for the proof of concept. This piece of work is for a product, but we are always interested in building relationships in the longer term.
27	Would you be able to discuss your current solution and architecture with successful bids to inform the design process?	We will work closely with the winning bid during the project sprints, but we believe that our current solutions is unlikely to help on this occasion.
28	How many proposals are you hoping to award?	It depends on the quality, but typically we fund multiple proposals if we see value in them.
29	What about security the data, authentication and encryption ?	We're open to suggestions. As this is a report-by-exception solution (i.e. not routinely sending locations) we are less concerned about things like encryption. If you are planning on using encryption, something like AES-256 CBC is a minimum.

30	Any restriction to the source of modem.	Not explicitly. We would want assurance that the modem is from a reputable source.
31	could the POC be some design CAD for possible solutions, functional evaluation boards, or both?	We are interested in solving our problem. If you have a great solution, but it's at the CAD/prototyping stage, we will be interested, but we will potentially be more interested in a simpler solution that is more tangible.