NSW SBIR Hyperlocal Navigation Challenge Q&A Transcript

Topic: Application process

How many feasibility studies will be funded?
Live answered at 48:15.
There is no set number that will be funded, it will depend on the number and the quality of the applications that are received.

Is the webinar recorded? Can it be shared later?
Yes, a recording of the webinar is available on the NSW SBIR Program website.

Topic: Current Transport for NSW approach

Do the locations utilise a BIM system that is kept up to date (for auto generating maps or 3D representations of the locations)?
Live answered at 32:00: Those systems do exist and there have been highly detailed and highly accurate 3D maps of those stations we have access to that are not necessarily publicly available. In terms of the frequency in which they're kept up to date we would have to take that question on notice and get back to you. You may be able to get access to additional systems and data that aren't publicly available – that is something we'd need to consider as part of the proposal and determine what options can be provided.
Additional information: We know we have Central Station mapped but not all stations are currently mapped, and we would want the solution to work regardless of if we (TfNSW) had a model of the station.

Does the department currently use any wayfinding content management platforms? If so, what is it and would we have access to an API form that platform?
There is no current wayfinding content management platform.

Do you have a standard wireless access point in use across the network (e.g. Cisco Merkai or HPE Aruba)?
No, this is very unlikely as each agency (Sydney Trains, each of the bus operators, ferry operators) would use their own and were purchased via different projects.

What is the gap between the tech that already exists and the solution NSW hope to achieve in this challenge?
There is currently no technology in place on the Transport for NSW network that we are aware of that can provide the solution. We are seeking a solution of a network of X ("beacons" or otherwise) and the data that it can generate with some sort of data management system to provide data for our platforms and 3rd platforms to access to provide a hyperlocal navigation system (and other use cases!)

Topic: Solution Requirements

Will the solution be able to cover the whole range of public transport services, or should it focus on one specific service like a large metro station?
Live answered at 30:43: Ideally the solution will work across all of our network, so train, bus, ferry, light rail and metro services.

To what extent do you want the system to provide guidance for mixed modal trips, i.e. Taxi/Uber assist to a station or bus hub?
Live answered at 56:50: It is really just meant to provide as much guidance as possible about what is where. Imagine what kind of data you would require to have the granular information to be able to provide exact information about how to get from the light rail platform to the taxi stand and into a cab. That's what we're after.

Is there a list of the key interchanges?
Live answered at 31:25: The key interchanges are the city ones, so Town Hall, Central, Circular Quay, Parramatta and Strathfield.

What is Australia's view with reference to China BeiDou GPS system. Is this a national threat or any reason that our solution could be terminated due to national security?
Live answered at 25:55: We are unaware of the Commonwealth government's position on that system. Any proposed solution would need to comply with Australian government laws and regulation relating to national security, defence and cybersecurity. GPS is unlikely to provide the accuracy necessary for this solution particularly because the solution must be functional inside buildings and underground.

Would you consider options that don't necessarily use Bluetooth and Bluetooth beacons?
Live answered at 33:35: Yes, we would consider it. During our formulation of this particular challenge we were careful not to indicate that we wanted any particular technology because we know that technology has moved beyond Bluetooth. We are open to hear what other technology is available, it just needs to meet the other criteria. Ideally the technology we're looking for is something that would still be very useful in 2 to 6 years' time.

I think Bluetooth beacons will struggle to get 30cm accuracy. Is there any other technology you know of that will provide this level of accuracy? Or alternatively how important is the 30cm use-case?
Live answered 43:45: We are not necessarily tied down to Bluetooth and this may be correct, however 30cm is the level of accuracy we're trying to obtain.

The localisation accuracy is ideally within 30cm. What is the maximum acceptable localisation error?
Please detail any known accuracy issues (and mitigation strategy) in your submission. If the technology does not exist we do not want to preclude any solution pitched.

Regarding the technologies that will be used for the solution, are you willing to consider using some emerging technologies, such as AI image processing, object detection etc?
Live answered 34:58: Definitely. One thing to consider though is getting access to existing systems such as CCTV is not guaranteed in any way. The system really needs to be enclosed within itself so

that it's not reliant on using our current CCTV systems. Privacy considerations around camera technology must also be taken into account.

We are looking at an outcome which offers this information in 20 languages. It mentioned it in the challenge documentation, but how important is that from your point of view?
Live answered 44:37: It's not necessary but is one of the potential solutions.

Will it be acceptable that a device required to be purchased by a user to enable them access to the hyperlocal function, or does the potential solution need to solely rely on a mobile app?
Live answered 46:16: We'd prefer it to be able to be used on generic devices such as mobile phones, so keep that in mind when considering other bespoke technologies.

Regarding cost-effectiveness, are these devices going to be covered under the NDIS or some other scheme? Or are they intended to be commercial products?
We're looking for solutions that will get the broadest reach in terms of customer base that is able to use the solution, whereas individual devices are looking from a personal perspective.

If our system is so good with respect to privacy that there will be no user location data generated by the system at all, will that count against the solution?
Live answered 48:43: What we're really after is the data on the location of the device – the Bluetooth Beacon or equivalent – not the location of people. Aggregate data is definitely secondary – if you have an amazing system that doesn't actually create any aggregate data that we can use then that is not a deal breaker.

Is it mainly for indoor like environment or indoor and outdoor?
Live answered 50:53: It is both indoor and outdoor as it is transport and we want to cover the interchanges. In theory there is already some capability to use GPS to provide outdoor navigation, but there's nothing for indoor at the moment so that is the focus. We don't want people to have to switch technologies when they go from indoors to outdoors – we want a seamless solution for our customers.

Will the solution include the ongoing maintenance of the mapping in the environments?
No, it is expected the solution provided will be the technology. It is assumed there will be handover of the mapping process and data maintenance back to Transport for NSW after Phase 3 of the program.

How much does the project need to understand about the user requirements of a vision impaired audience (and others) before identifying an appropriate technical solution?
The user requirements of a vision impaired audience is a use case of the data. The key to the project is the implementation of the technology, platform and the data being generated.

Are you seeking a technology-based solution that solely addresses the challenge, or would products and services that include benefits that indirectly address the challenge requirements be acceptable?
Should a solution that meets the criteria (including scalability, cost and updates etc) be available please do provide it as a submission.

For emergency or on demand services, is there a simple SMS text that we can use based on US GPS?

We are unsure of this question. We have emergency services and on demand services (buses etc) which are part of the network SMS text messages do not play into this problem space.

Is your priority on gathering mapping/wayfinding data or on an end user experience (e.g. apps) for users to make use of this data?
It is the data and the system to manage the data we are seeking. We are aware of existing products (apps) which can take in data such as this to help customers with vision impairment. We expect greater customer outcomes for being able to provide the data beyond customers with vision impairment.

Are TfNSW looking for a technology strategy to implement and maintain the infrastructure hardware or will this be outsourced?
We are open to either option.

If the project is successful, do you think we can roll it out to the rest of the networks, or only for the specific locations?
Live answered 59:05: Sure – the whole reason for the challenge is to prove that it can be successful in our key stations and then roll it out further where we can. Commercial agreements come after that point in terms of an ongoing agreement or partnership.

If we think of three layers: 1 the instruments that collect the data; 2 the layer that locates the individual in the image; 3 the app that communicates with the individual. Do you want 1 & 2 not 3?
Yes, sort of. We imagine (but don't want to limit the innovative space!) a network of beacons and points in a 3D space that is mapped. This data is somehow transmitted to a person at an interchange. This person is likely to be using a mobile device to "get" this information which provides them with the ability to navigate in this space. Whilst you could deliver all the components, we are mainly interested in the data… as we believe that the app space will be covered by existing apps.

Confirming the deliverable that you are after, is it not the app, only the infrastructure and the data that comes out of that?
Yes, this is correct.

Topic: Access to data

This project is expected to integrate highly accurate maps and wayfinding capabilities. Will you provide the highly accurate maps or we need to create it?
Live answered at 38:14: The maps we have are limited. You'll see on the Open Data Hub what we have published. Ideally the solution will be self-contained where the map and the data is provided as part of the solution.

Could we reuse the Bluetooth beacon data deployed in the station to develop the solution?
Live answered at 36:28: There is no longer a Bluetooth network anymore. We can definitely share what maps we had back then and where we placed the beacons.

For the beacons, is that something that TfNSW will provide and install for the successful parties?

Live answered at 42:22: No. The challenge we're giving you is to come up with the technology and the network. You provide us data and we will host and maintain the data, but we want you to come up with the solution. We don't need you to come up with the app necessarily, we're really after the data that will come from the network. We also require the means for us to be able to update that network as soon as changes are required.

Would access be available for 3d datasets, or lidar or other scans/models of key locations?
Live answered at 45:33: We do not have that level of information.

Does our technology need to provide the data for out of order bathrooms/escalators or is there already an API for that which we need to implement?
Live answered 40:12: There is data available on the Open Data Hub for all of our facilities as well as timetables including in real-time.

To create a LiDAR map, or other 3D map from an indoor station, will Transport for NSW allow this to happen, and are there special permits required to gather this data ourselves?
We will be able to organise access for this.

Is there possibility to integrate with other existing infrastructure (e.g. LoRaWAN networks used by local councils)?
We can assist in liaising with local councils but we are not across the current implementations (and their coverage).

Topic: Previous Transport for NSW trials

Could you elaborate on the OpenStreetMap mapping of Chatswood? Who was the previous person/company who came from the US for this?
Live answered at 36:57: When you look at Chatswood on OpenStreetMap it's a lot more detailed than the other stations due to the company that mapped it 2016 as part of an accessibility-focused challenge.
Additional information: The company was Mentz

What were the main blockers from the previous trials with Bluetooth? What prevented them from going on to roll out within other stations?
Live answered at 39:15: They were trials only, so the authority we had to do them was limited to rolling them out as trials. We were asked to remove those beacons after the trial.

In reference to the previous BLE trials, can we get their findings? Why didn't they work, and how are things different this time?
Live answered at 40:52: One of the reasons was blocking in terms of infrastructure – if there's a crowd in the station the signal would be blocked by putting it in your back pocket and the signal wasn't accurate to that granular level we needed. If it's off by 50cm it could be quite dangerous, particularly for people with vision impairment.

Regarding trials already done (e.g. wayfindr), are there any resources available for us to access?
Live answered at 50:06: There will be maps of where the beacons where placed.