

Team City i-VAST

Integrated Care System (ICS)

EXECUTIVE SUMMARY

Overview

Our team, Team **City i-VAST (Integrated – Voice Activated Service Technology)** focusses on improving the lives of vulnerable members of the city such as *elderly, disabled and visually/hearing impaired* in terms of accessing information, searching for establishments and getting directions for **Health, Safety and Local Authority Services**.

In providing above services, an innovative integrated system called **Integrated Care System (ICS)** will be used by customizing and integrating at home, in the city, and on mobile phones as one service.

Problem Definition

Today, 55% of the world' s population live in *urban areas* and according to the United Nations (UN, 2019, 68% of the world population projected to live in cities by 2050. Currently, it is estimated that 15% of this worldwide population live with *one or more disabling conditions*. Taking into account of ageing; more than 46 per cent of older persons – those aged 60 years and over—have disabilities and more than 250 million older people experience moderate to severe disability¹

Both aging population and disabled community rely heavily on social, security and health services due to increased **vulnerability, limited technical and physical engagements**. These vulnerable city residents might be **digitally excluded** and have below issues in terms of access to health, safety and local authority services:

Infrastructure Challenge

- Using some of the current source of information such as leaflets, billboards, newspapers and current technologies such websites and apps may be confusing (e.g. too many writings, complex web sites, terminologies),
- With the reduction of number of care homes, a large proportion of disabled & elderly people are living alone possibly isolated, and may not have access to personalised services,
- Using the current web and mobile apps might be physically challenging to follow due to their small device screens and dexterity

Our Innovative Solution

Cambridge dictionary defines “inclusion” as the idea that everyone should be able to use the same facilities, take part in the same activities, and enjoy the same experiences, including people who have a disability or other disadvantage. Cities will be the foundation of sustainable economic growth. Creating inclusive smart cities will therefore be an essential element of the global effort to achieve the Sustainable Development Goals (SDGs).

Our goal is transforming the City Infrastructure by **i-VAST** through providing **Health, Safety and Local Authority Services** via “one service” called **ICS**. As an innovative system, ICS aims to help and support digitally excluded vulnerable members of the society with access to information, searching establishments and (wherever relevant) and get directions in the city for;

1. Hospitals, health practices, social care services, mental health services, A&E services, pharmacies etc. **(Health Services),**
2. Fire rescue and police services etc **(Safety Services),**
3. Libraries, art galleries, theatres, bus routes and times, housing, leisure centres, recreation & amenities etc. **(Local Authority Services).**

This idea falls under “universal access” policy goal of Sustainable Mobility (Sum4All) which captures the ambition “to connect all people and communities to economic and social opportunities, taking into account the needs of different groups, including those in vulnerable situations such as the elderly, and persons with disabilities across geographical locations.” **Our primary goal is to help these disadvantaged people who live in the city, isolated and neglected.**

How does ICS work?

For example, an elderly person with mobility issues or health conditions like Parkinson’s disease will be registered to City i-VAST with unique credentials (including their voices) by the support of Local Authority. This person might be living in a care home or a retirement property.

Those people may require information about any city hospital’s x-ray services such as opening hours, transportation links and appointment availability. S/he also wants to plan her trip from her care home to the hospital. S/he will access the VAST service either through her care **home (Home Vast)** or through her mobile phone **(Mobile VAST)** with her unique ID. S/he will be able get all the information they need on the hospital’s x-ray services and how to commute both ways. As it is an

integrated system; in addition to Home Vast and Mobile VAST, there will be **City VAST Units** embedded on city smart boards available in the city centres whenever they need to use it.

During a journey from home to hospital, ICS will provide an easy to access, personalised and streamlined service experience and will make everyday life easier by providing a sense of independence and security.

Where to use it?

VAST offer three ways to address above problems. It will be used at homes, in the city and on mobile devices to make everyday life easier for people with disabilities and who are elderly.

It will be used at/in homes, in the city and on mobile devices

- 1) At home, used as “**Home Vast**” in places such as care homes, retirement properties.
- 2) In the **smart cities** installed as “**City VAST Units**” at multiple points such as on outdoor digital screens, city maps, billboards, train and bus stations,
- 3) On mobile devices downloadable Apps as “**Mobile VAST**”.

Target groups

Disabled population (blind, deaf, and physically challenged) and elderly population (limited mobility and lonely).

Key Partners

Local authorities would be the key partners as they are the primary partners with strategic access to the target groups. They also control the local services where the target group can easily be reached. Some examples are; local hospitals, library, council buildings, care homes, retirement homes, homes for disabled or those people with additional needs.

Why now?

According to the Ericson Company, Voice is the king of communication in a **5G infrastructure world**. With roll-out of 5G technology which has a rapid pace and deliver better experiences; our cities offer more reliable, ultrafast and low latency mobile connections.

Since 5G provides the features of real time interaction, high bandwidths, capacity and low latency quality; this infrastructure will be used for providing improved health, safety and local authority services for the target groups. 5G can offer greater possibilities for more accurate and timely data and faster response to meet the needs of the people.

The network infrastructure used for **VoLTE** today will also be used in our VAST to enable 5G voice through various types of use cases. By using 5G technology **Voice over 5G (Vo5G)**, can build infrastructures that will improve the lives of city residents.

Technical Background

API (Application Programming Interfaces) are technologies that allow applications to talk to one another, and they are critical to powering today's complex apps as they give organizations the ability to connect systems and share data.

Since **5G** is intended to enable the use of big data across industry sectors, individuals and businesses, **REST (Representational State Transfer) APIs** are the optimum software architecture style for both ease of programming, and of collaboration between many parties, and for flexibility in terms of being supported by multiple vendors and being adopted by multiple operators.

In our innovative solution; service exposure and **REST API will play a key role in creating our back-end health, safety and local authority services**

Our proposed **ICS will communicate** with health, safety and local authority micro services and these services will expose approved content and service information to ICS through REST APIs.

For prototype stage; mock REST services will be created for health, safety and local authority micro services and voice skills (e.g. Alexa skill) to be implemented which add the capabilities of health, safety and local authority micro services to create a personalised experience. From security point of view; **Multi-factor authentication (MFA)** will be the solution.

Financial Strategy

Telecom companies would be possible investors for this project when it is on the market. However, the main idea is providing this service free of charge for the target groups through local administrations. One of the sources of revenue for the local administrations to finance the project would be the rental fees of advertisements on city VAST units. On the other hand, the project team has not raised any capital for this idea so far.

REFERENCES

1- <https://www.un.org/development/desa/disabilities/disability-and-ageing.html>

2- <https://dictionary.cambridge.org/us/dictionary/english/inclusion>