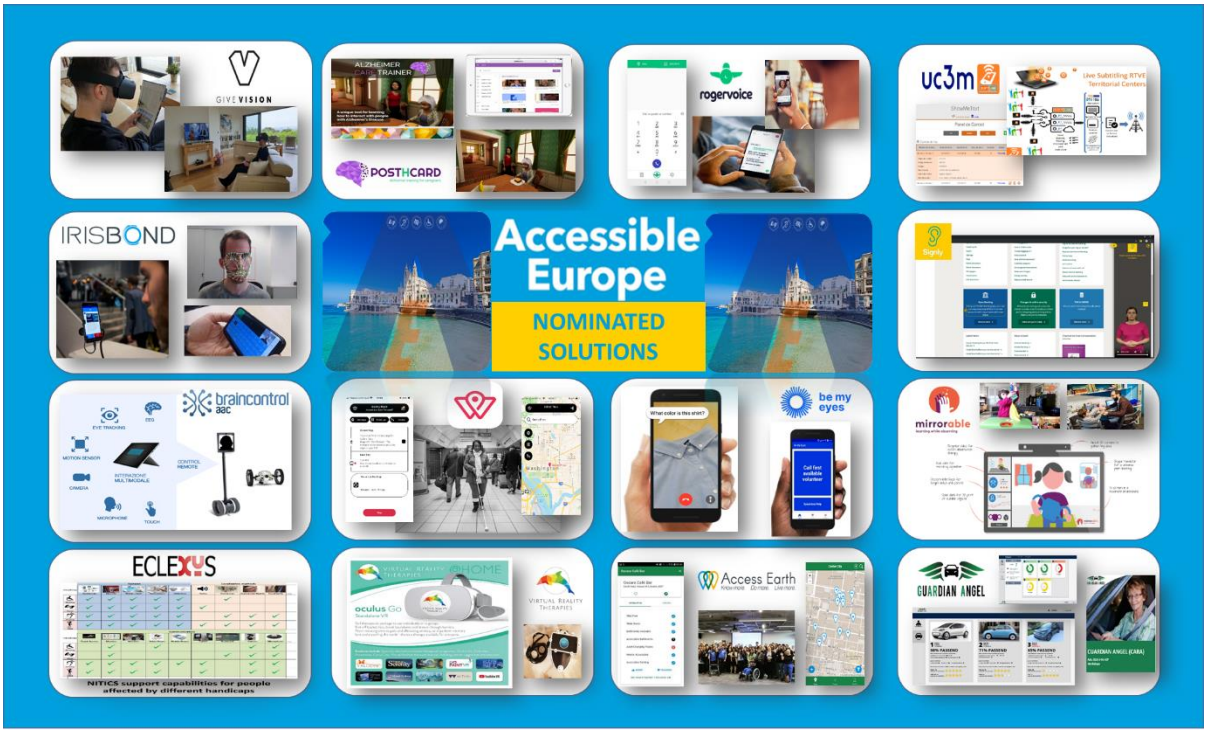
ACCESSIBLE EUROPE 2019 NOMINATED SOLUTIONS



REGIONAL COMPETITION ON INNOVATIVE DIGITAL SOLUTIONS FOR ACCESSIBLE EUROPE

® *ITU November 2019*

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CARA Consortium

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INTRODUCTION

The Regional Competition for Accessible Europe is the new mechanism for supporting Europe region in strengthening ICT-centric innovation ecosystem focusing on ICT accessibility. All participants of this competition, providing innovative digital solutions for Accessible Europe, will benefit for the Curation Programme to be launched at Accessible Europe forum in December.

Following the success of the 2018 edition, the International Telecommunication Union and the European Commission have joined efforts to organise the second edition of **"Accessible Europe: ICT 4 ALL"**. The ITU-EC Forum for Europe will be hosted by Aġenzija Sapport of the Government of Malta in St. Julian's, Malta, from 4-6 December 2019. As an integral part of this Forum, a **Regional Competition for Innovative Digital Solutions for an Accessible Europe** took place **from 1 August to 15 October 2019**.

The Competition sought solutions from individuals and teams across the private, public, non-profit and academic sectors that addressed the needs of persons with vision, hearing, speech, cognitive and physical disabilities. In particular, the Competition expected **new concepts of digital applications or interfaces** designed to remove barriers, helping People with Disabilities (PwDs) live a more independent life, participate in cultural events or political processes, benefit from education or entertainment, or obtain a job.

As a result of the Call for Competition, ITU received 81 submissions from 17 different countries in the Region, representing a 80% growth in submissions on a yearly basis. The projects were reviewed by an independent Evaluation Committee composed by **experts from European disability associations** who responded to our open Call for Evaluators.



Delegates gathered on 24 and 25 October 2019 at ITU headquarters in Geneva where they spent time working together to identify **3 Nominated candidates for each category, which are reported in this document.** This meeting was coordinated by **ITU Office for Europe** and benefitted from additional input from **Telecommunication Development Bureau as well as Telecommunication Standardization Bureau** of ITU.

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The 5 categories include the following:

- Persons who are deaf or hard of hearing;
- Persons with visual impairments;
- Persons with speech impairments;
- Persons with cognitive and intellectual disabilities;
- Persons with physical disabilities.



Nominated candidates are invited to participate at Accessible Europe, from 4 to 6 December where pitching opportunities and a place for exhibiting solutions will be granted for the three days of the conference (https://www.itu.int/go/Accessible-Europe-19). In the evening of **4 December**, an **Awards Ceremony** will take place where **winners and runner ups for each category will be announced and awards will be handed before an audience comprising a wide range of experts and interested stakeholders.**

ITU thanks ZeroProject and Agenzija Sapport for support given to this Regional Competition wich providing accessibility features during the process and supporting the Awards Ceremony to be held in Malta on 4 December 2019.



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International Telecommunication Union

CATEGORY 1 - PERSONS WHO ARE DEAF OR HARD OF HEARING

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Rogervoice

Information

Country: France

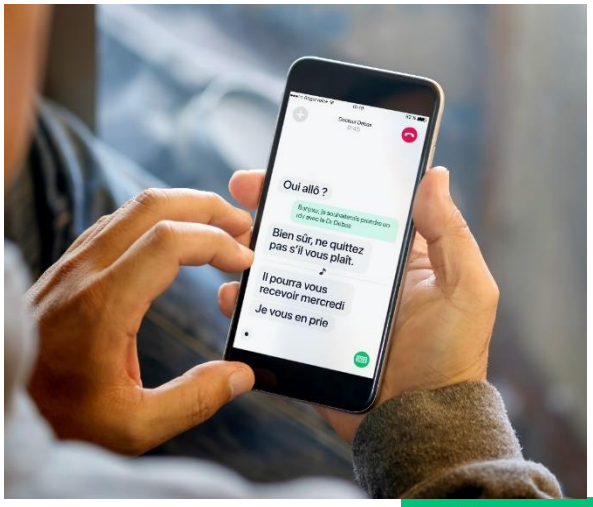
Solution: AI Captioned Calls

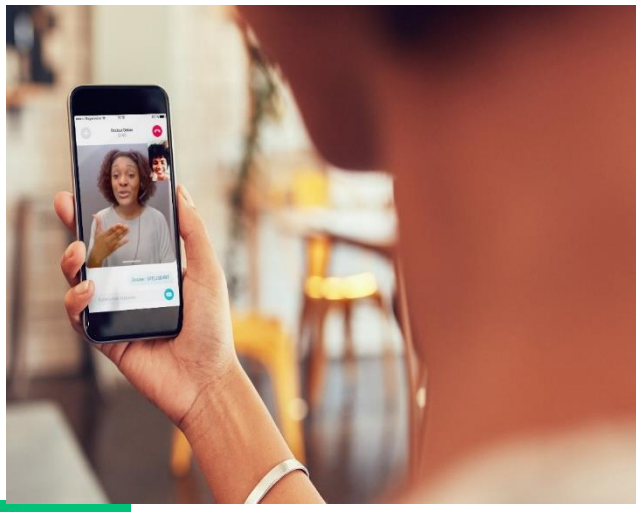
Website: https://rogervoice.com

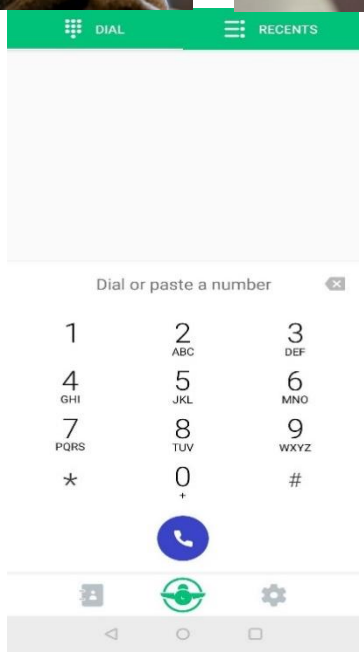
Social Media: https://twitter.com/rogervoice

Product readily available for use.

Images







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Components Description

Rogervoice is an all-in-one telecommunications platform and mobile application that integrates state-of-the-art accessibility solutions. Our platform follows norms recommended by ITU-T T.140 for telecommunications accessibility. We also follow the norms recommended within ETSI and specifically ES 202 975 for relay services. Rogervoice goes beyond this by using voice recognition technology that is augmented by human editors, in real-time, thereby combining the speed (>1000 wpm) with the accuracy (going from 95% to 98%). Our architecture combines open-source based and proprietary technology to provide a customized and specialized service. We have cracked the usual telecommunications architecture in order to insert accessibility features in advance of market standards.

The whole service is presented to users via mobile and web interfaces. These interfaces have been wholly designed using iterative-feedback and agile development methodologies. Users can download the apps on Android and iOS platforms, for free. The experience is not unlike Skype : users register a phone number as caller-ID, and are able to make outgoing calls to any number. Users can also opt to receive calls, with a call-routing mechanism. Any phone number worldwide is made accessible, 24 hours à day, 7 days a week.

We go beyond transcription services and provide video-relay services, including recruiting training staffing and supervision, for cued speech and sign language. We thus have fully vertical integration for a turn-key solution, from interface to backend to call-center management, able to deploy anywhere quickly and efficiently.

Use Cases Description

For too long deaf and hard of hearing persons have had to rely on outdated, slow, cumbersome, and expensive systems. In the USA, the annual budget for phone relay systems tops 1 billion dollars. Rogervoice is changing that model. We provide France's relay service, and want to continue with other European countries. Today, we've added video-relay services in cued speech and sign language. We're compatible with braille keyboards for deafblind persons. And have the requisite interface for persons with speech difficulties (aphasia, stuttering).

Rogervoice changes the game by harnessing the latest in design, user experience, technology, and customer care. Our platform rests on open-source components that have been customized and optimized for a very specific use-case, enabling calls to be transcribed (also-known-as captioned or subtitled) in real-time, at the fastest rate ever seen, thanks to advanced voice recognition capabilities. Our high-fidelity systems ensure the top ratio in terms of transcription accuracy, matching world-class performance levels claiming over 95% accuracy.

We operate worldwide, in over 200 languages. Our users span Europe, the Americas, Africa, and Asia. There is simply no other service that provides an easy answer to the question asked

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by deaf persons anywhere anytime : "can I make a call right now, in my choice of language?" Rogervoice has done it.

Our main partners are the French Telecoms Federation (FFTelecoms), the two main mobile platform providers (Apple and Google), the AI for Impact collective (France), Bpifrance, and the different French associations for deaf and hard-of-hearing persons. The founder of Rogervoice has profound hearing loss (>80%) and has studied at UC Berkeley and Sciences Po Paris before embarking on a career in telecommunications. For 5 years now, he relies on his own Rogervoice app to run his business calls and lead by example.

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Universidad Carlos III de Madrid / RTVE

Information

Country: España

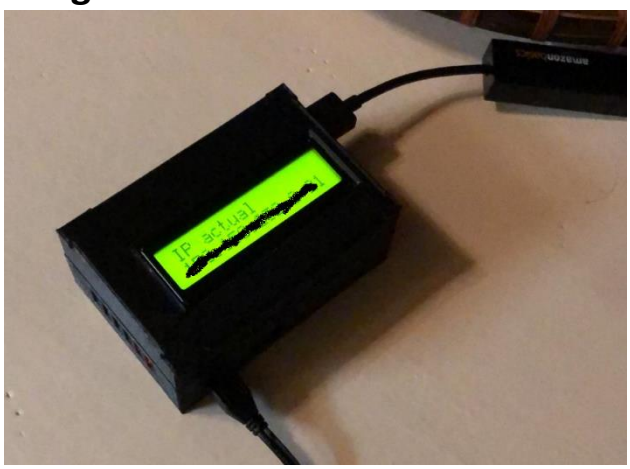
Solution: ShowMeText: Cloud-based Massive Automatic Subtitling (Captioning) Generation System

Website: http://softlabweb.softlab.uc3m.es/softlab/index.html

Social Media: @softlabuc3m

Product in final development stage, with prototype for testing.

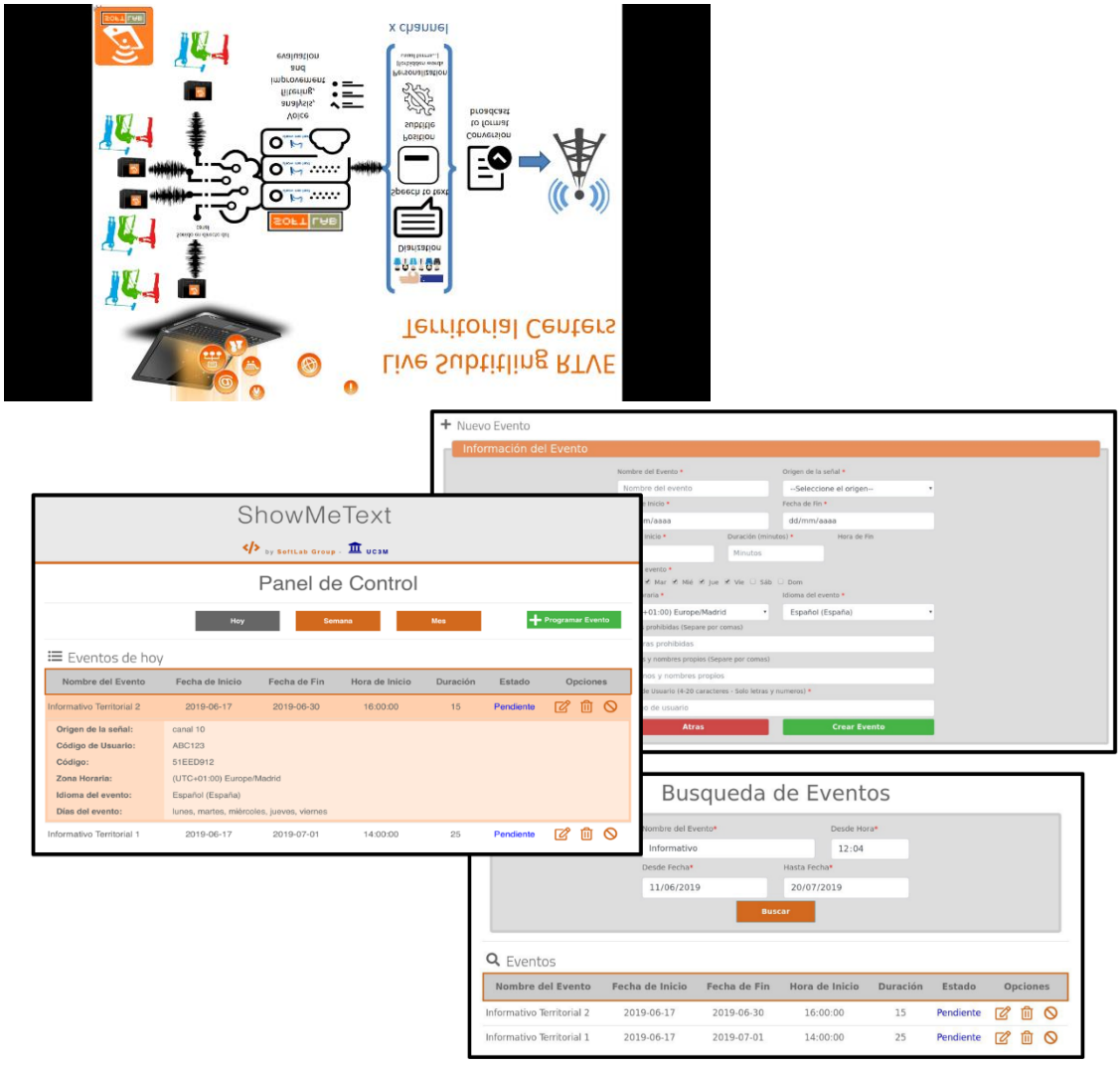
Images







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Components Description

The first module of the system picks us the media, that is, receives the input signal to be subtitled (the term subtitle will be used as the European equivalent of closed caption) and sends it for speech recognition (currently available in Spanish, English, French, Portuguese and Italian) This task faces some challenges, as depending on the source provider, the input signal may be provided through different interfaces: digital or analogue, balanced or unbalanced, wired or wireless, and so on. In addition, the input signal must be encrypted in order to prevent it from being maliciously modified and thus avoid undesired consequences.

ShowMeText makes use of a device that picks up the live audio, sends it over the internet to a private cloud and is then used to recognize certain signals such as the program header or tuning to start the subtitling process. This allows to support potential delays or advances in the beginning of the programs due to unforeseen modifications in the previous programming. Once detected the subtitling start time, the whole estimated duration of the program will be subtitled. The system uses audio improvement algorithms to eliminate noise and background

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music and thus perform better quality subtitling. It also uses multiple commercial speech recognizers, improving accuracy by mixing their results using artificial intelligence and machine learning algorithms.

The system gets trained periodically by using examples from the Internet and programs already subtitled, in such a way that it acquires greater accuracy over time, since more information is available for training and validation. Once generated, subtitles are then post-processed: they are diarizated (the process of partitioning an audio stream with multiple speakers into homogeneous segments associated with each individual speaker), then placed in a window that is carefully embedded into the screen so that it does not sit on top of other texts on screen, numbers in text format are converted into figures, etc. Captions can be delivered in multiple ways; in the case of the European DTT model, it is done through data streams based on the MPEG-TS standard. In total, two flows are delivered, a main one and a backup.

The TS stream bit rate is constant so that it can be processed by as many decoders as possible. It is possible to select the maximum and minimum bit rates the TS can acquire, and also to generate live subtitles as per the EIA-708 and to display them on the internet. Once finished the live subtitling session, a transcript is made available for download in various formats including SRT, STL EBU, and TXT. In addition, ShowMeText´s platform includes functionalities such as keeping customers updated about their subtitling service consumption levels through periodic status reports based on models, in which all available records regarding the contracted channels and programmes are turned over, allowing for data analysis.

Use Cases Description

Due to compliance with legal obligations, it has become increasingly common to include automatically - generated Subtitling in the process of signal distribution. Although there are encoders that allow for automatic generation of good quality subtitles, it is necessary to use fully cloud-based systems that allow for an increase in subtitles quality through automatic learning techniques.

The system implemented in RTVE (Radio Televisión Española, the largest public broadcaster in Spain) addresses the need to simultaneously subtitle 11 regional news programs. The impossibility of bringing together 11 stenotypists or 11 re-speakers simultaneously to do manual subtitling for these live news programs led RTVE to use the proposed cloud-based live subtitling system. The current alternative option is to use an encoder to generates the subtitles in each location they are produced, that involves the added difficulty of installing equipment in each of the geographically-dispersed locations and then to insert of the subtitles into the broadcast data stream instead of into the header. This option also limits the possibility of adapting to future changes and improvements in technology. This is a clear use case of a Software as a Service (SaaS) system that demonstrates how two key features of good automatic subtitling (high accuracy and low latency) are provided to perfectly serve the needs

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of all audiences (in particular those of deaf and hard-of-hearing people), improving latency times as compared to re-speaking while maintaining same levels of accuracy as stenotype.

In the case of RTVE, a system architecture has been implemented and successfully tested that allows the audio to be collected from all 11 eleven channels respectively located in 11 different broadcast centers, transcribed and coded into the cloud-based DVB-SUB Transport Stream (TS) and sent directly to the RTVE headend. The start of the subtitle broadcast can be done either by programming it in a web environment or by detecting the program header from the audio, thus preventing the CC of previous programs from appearing. The system architecture follows a parameterizable and scalable scheme which can support a large number of simultaneous subtitle transmissions without affecting the quality or speed of the subtitle of each broadcast. In addition, it is possible to set resources aside to dedicate them exclusively to one or more specific transmissions (e.g. one subtitle is more important than another), or to rapidly increase subtitle resources as the number of transmissions increases considerably.

The subtitling process feeds back to the recognizer, so that the more emissions the subtitle system generates, the more accurate it will become in future emissions. The audio from the regional centers is individually sent to cloud servers that transcribe it into text. Non-owner recognition systems are used to do this, allowing the user to choose the one that best adapts to the characteristics of the audio, the speakers and the sound in general. Proper names and acronyms are recognized, even if they belong to languages other than the one used in the broadcast. The subtitle contain punctuation marks (commas, full stops and interrogations, among others) based on both the speaker's tone and the context, which increases their quality.Our implementation of the presented system, ShowMeText, uses a three-window interface. The first window has a red background and presents text segments that have already been sent and thus can’t be edited anymore. The second window, with a yellow background, includes segments that can still be edited, but will be sent soon. Lastly, a transparent window presents all text that is still safe to edit because it is yet far from its edition time limit. ShowMeText currently implements three standards for subtitles:

- NewFor: simple protocol for teletext-based subtitles. It was implemented and tested as a fallback alternative to DVB Captions protocol for the CC of RTVE’s La 1 channel in Madrid.
- DVB Subtitles: protocol specified in DVB standards. Subtitles are transmitted inside a Packetized Elementary Stream (PES), as part of a MPEG-TS container. For compatibility reasons, subtitles are coded as a low-resolution bitmap, allowing for dynamic font selection, complex color schemas and an unlimited array of charsets.
- EIA-708: The subtitles generated are added to the television plot. This system is currently being used by several USA TV networks under the same cloud model.

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Signly

Information

Country: United Kingdom

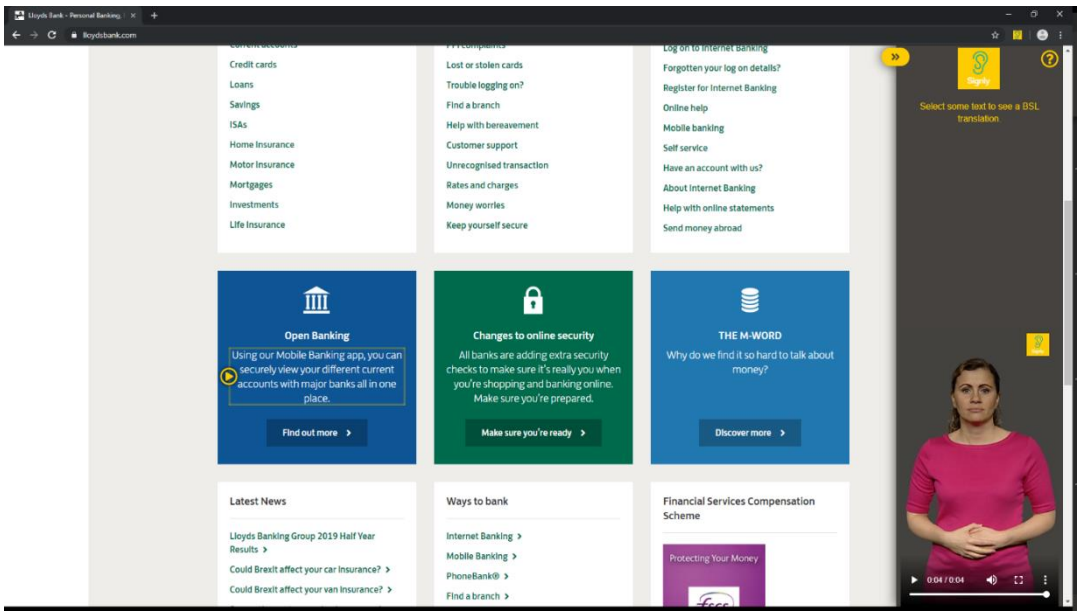
Solution: Signly browser extension

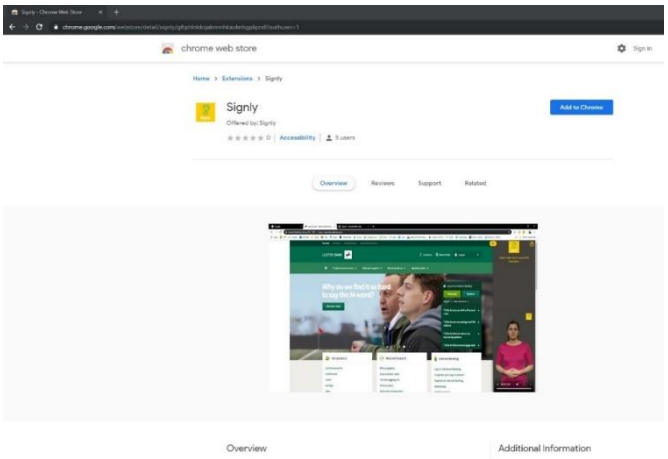
Website: http://signly-website-dev.uksouth.cloudapp.azure.com/

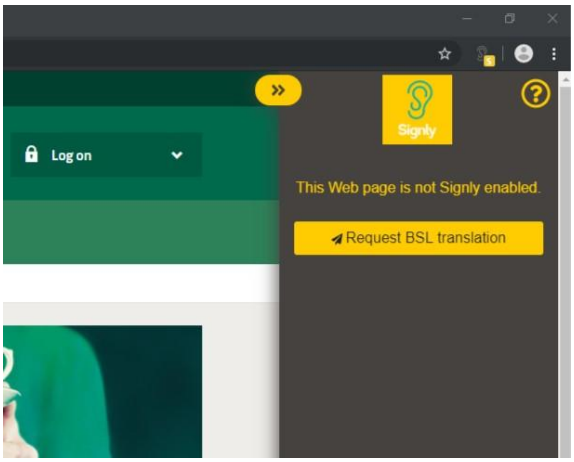
Social Media: https://www.facebook.com/SignlyApp/

Product readily available for use.

Images







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Components Description

Please note that we'd like to keep this idea confidential until after launch in October so our partner, Lloyds Bank can check content with their legal team. Hope this is OK. Sign Language as a Service (SLaaS) Signly browser extension adds functionality to the Chrome web browser. The extension is free to the user. For translation of online content, organisations and companies can subscribe to the Signly web service. The Signly browser extension gives users the option of clicking an interactive logo to be shown a BSL interpretation of the material currently on their screen.

If a signed version of a specific page is not already available, users can then select 'Request Signed Content'. This message is immediately forwarded to the service provider, who can approve the request. The Signly team will then create and upload the content, and the user will receive a notification when the new content can be viewed. Signly hope that SLaaS will be rolled into the W3C standard in due course

Use Cases Description

FAST FACTS: Deaf people who communicate using sign language often consider it to be their first language. Hearing citizens native (spoken) language could be a Deaf person's second language. Educational provision for Deaf children is sometimes lacking so lower literacy may result (as low as 8/9 years old). Combining these factors means essential content in written form can be incomprehensible A European shortage of interpreters (1:75) doesn't help.

PROBLEM: Deaf people are often excluded from access to essential content. Organisations don't always know the best way to break down barriers and realise their ambition to be Deaf-friendly. It's difficult to know what to do and how to do it. But organisations must provide equal access. Ignoring this is risky and there could be penalties for opting out. Plus there's a social and financial 'cost of doing nothing'. It's easy to forget that just because it's written doesn't mean it's understood. Barriers like this can result in Deaf customers being disadvantaged or feeling like second class citizens.

CURRENT: Some organisations offer a blend of the following:

Face-to-face interpreting, Video Relay Service (VRS), Others rely on written text Ad hoc methods - drawing, lipreading or the customer's friends and relatives to help Deaf awareness training Saying it loudly or more slowly. Online, nothing has been done to make webpages Deaf-friendly.

SOLUTION: Wouldn't it be great if you could get a sign language translation of any and every webpage? It could positively transform Deaf people's lives. That's what Signly Browser Extension does. Users click the extension to request translation of a page. Signly serves up pre-recorded, broadcast quality signed content, signed by real people, in-browser. The extension keeps the BSL and English synced.

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Signly allows Deaf customers to self-serve, making access to sign language easy – an integrated part of the way an organisation does business. Users choose the best channel for them to access sign language. Corporates now have more ways to fulfil their passion for inclusion, removing barriers so Deaf customers get the same level of service as everyone else. Signly unlocks a world of online content to the Deaf community - health, finance, education, safety - the list is endless. This idea is a world first. Whilst much work has been done to create signing avatars (please see http://wfdeaf.org/news/resources/wfd-wasli-statement-use-signing-avatars/), Signly uses real translators.

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International Telecommunication Union

CATEGORY 2 - PERSONS WITH VISUAL IMPAIRMENTS

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Be My Eyes

Information

Country: Denmark

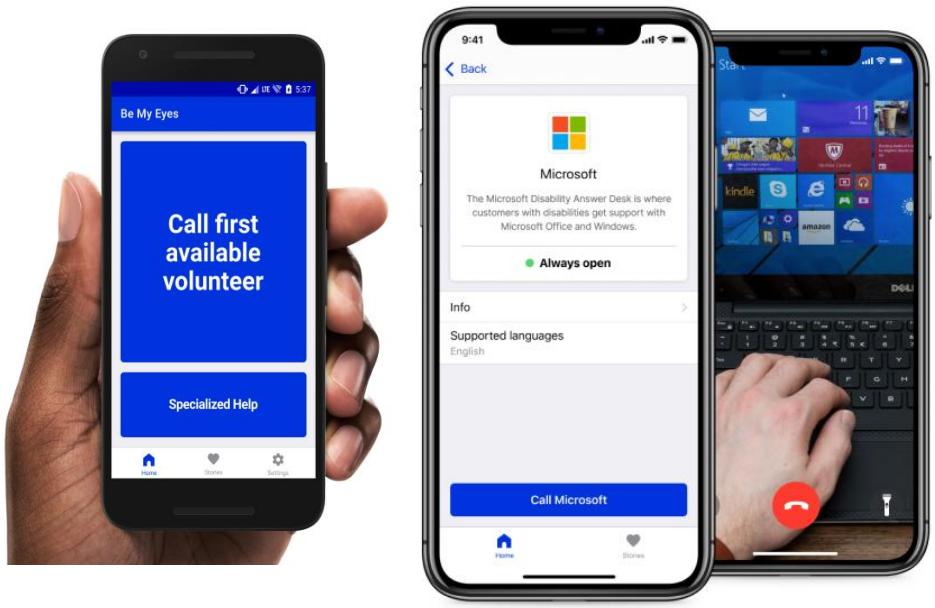
Solution: Be My Eyes App

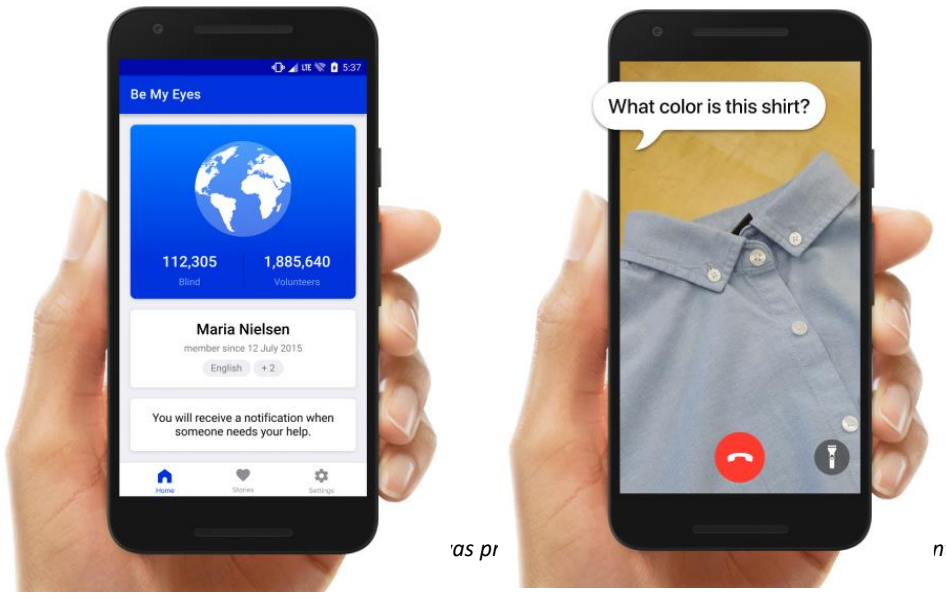
Website: https://www.bemyeyes.com

Social Media: https://www.facebook.com/bemyeyesapp/

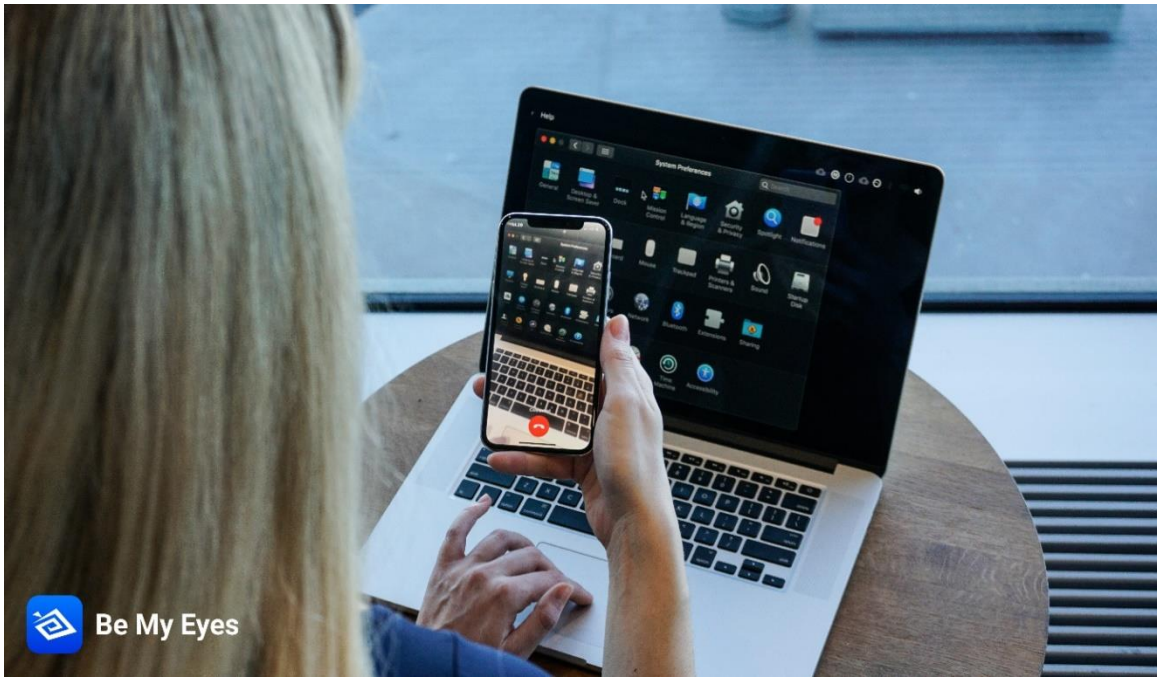
Product readily available for use.

Images





F 'as pr ntable for the information c



Components Description

Be My Eyes is a software application developed for iOS and Android devices. The native mobile applications communicates via HTTPS to a web api server, hosted on a Platform as a Service provider. Be My Eyes utilizes the blind or low-vision user's rear-facing camera to initiate a video call with either a volunteer or a company representative. The video call technology is integrated into a simple interface that is easy to navigate and is fully accessible with all accessibility features. The video connection is made through the WebRTC standard using an internet connection, either Wi-Fi or mobile data.

After download, the user has to go through a simple registration procedure, signing up as either a blind/low-vision user or a sighted volunteer. After completing registration, the blind or low-vision user has two main options on the home screen, "Call first available volunteer" and "Specialized Help". "Call first available volunteer", will connect the user to a sighted volunteer. The user will automatically be matched with a volunteer speaking the same language. The matching algorithm will also take the timezone into consideration, as volunteers are only contacted during their daytime hours in their local time zone (8 am - 9 pm).

The volunteer will receive a notification from Be My Eyes on their device and when answered, they will be connected to the caller. The call consists of a one-way video connection and a two-way audio connection, meaning that Be My Eyes will use the microphone of both parties, but only the camera of the blind or low-vision user, giving the volunteer access to the feed from the blind/low-vision user's camera. Through the Specialized Help feature, blind and low-vision users can connect to company agents at our partner companies. The call in itself works

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like a call to a volunteer, but will be picked up by an agent at a call center. A desk-top version for company agents is in development.

Use Cases Description

Be My Eyes is an app for iOS and Android that enables blind and low-vision individuals to lead more independent lives. The app works by connecting blind and low-vision users with sighted volunteers and company representatives through a live video connection. If a blind or low-vision user needs sighted assistance or customer support, they can connect with a sighted volunteer or company representative through the app. Through the video connection from the blind or low-vision user's phone, the volunteer or company representative can supply visual assistance or accessible customer support.

Be My Eyes consists of 3 target groups, blind and low-vision users, sighted volunteers, and company agents. The blind and low-vision users are the main target group of the app, they can use it to request sighted assistance. When requesting assistance, the user selects whether they want to be connected to a volunteer, who can help with general tasks, or one of the partnering companies, who can give support related to their products or services.

The sighted volunteers can sign up to help through the app if they want to lend their eyes to the blind and low-vision users. When a blind or low-vision user requests assistance from a volunteer through the app, a notification will be sent to a group of randomly selected volunteers, and the first volunteer to answer the notification will be connected. Volunteers receive calls as they go about their daily lives, and if they are busy, another volunteer will pick up the call. The company agents are representatives of Be My Eyes' partner companies that use the Be My Eyes platform to offer accessible customer support to their blind and low-vision customers.

Through the Specialized Help menu, blind and low-vision Be My Eyes users can connect to partner companies for assistance with that company's product or services. Depending on location, blind or low-vision Be My Eyes users can connect with the following companies for technical or customer support; Microsoft (tech), Google (tech), Lloyds Bank (banking), Halifax (banking), Bank of Scotland (banking), Herbal Essences (haircare), Pantene (haircare), and Clearblue (pregnancy and fertility tests).

Everyday, people with sight loss have to deal with situations where they experience accessibility issues. It can be anything from small things, such as reading an expiry date or making sure their clothes match, to big problems, such as a computer breaking down or navigating an unfamiliar environment. Because of this, vision impaired people have had to rely on sighted people around them to help them complete such tasks, taking away from their independence. Blind or low-vision individuals would often have to rely on the same people over and over, as well as oftentimes having to wait until someone sighted was around to be able to complete the task.

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The Be My Eyes founder, Hans Jørgen Wiberg, who is vision impaired himself, was inspired to create Be My Eyes when he learned that a lot of people with a vision impairment used video calling services, such as Skype and Facetime, to call friends or family members when they needed sighted assistance. Even though you didn't need to have someone sighted around, you would still have to select someone to call, which ultimately meant that you as a blind or low-vision individual would still rely on a few selected people. Hans Jørgen believed that it would be possible to gather a network of sighted volunteers who would want to be of assistance through a video call.

Be My Eyes was the first platform of its kind to combine the technology of video calls with a network of volunteers. Be My Eyes is also the first platform to offer accessible video customer support specifically developed for people with sight loss. As opposed to other accessibility tools that usually cost a significant amount of money, Be My Eyes is a free service that works on a common device that many people already own; a smartphone. Blind and low-vision Be My Eyes users can request assistance at any time of the day, in more than 180 languages worldwide. More than 150,000 blind or low-vision users have signed up for Be My Eyes, and they are assisted by the more than 2.8 million volunteers in the community.

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Waymap

Information

Country: UK

Solution: Audio-based wayfinding and navigation, indoor and out

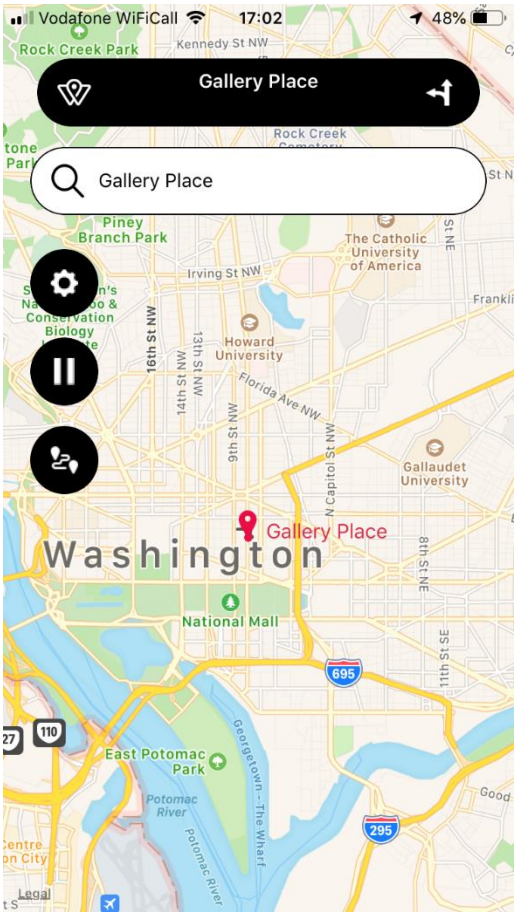
Website: www.waymap.org

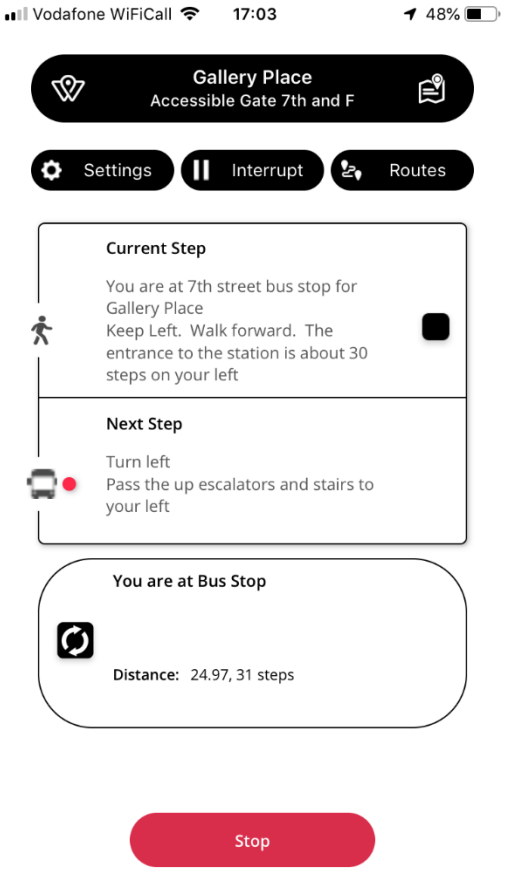
Social Media: N/A

Product readily available for use.

Images







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Components Description

Waymap's wayfinding and navigation offering is designed from the group up specifically to deliver to the ITU F921 standard. For the end user, it is an App on their phone that guides them around. For the venue, it is a platform that serves their maps and live facility data feeds securely and supports services such as emergency response, guided tours and post visit analysis.

Waymap is based on a breakthrough in indoor location technology that reduces the need for bluetooth infrastructure whilst at the same time, increasing the accuracy of location to meet the ITU standard. No bluetooth only solution is accurate enough to do this in public spaces, especially large open areas busy with people.

Typically, Waymap sees a 10 to 30-fold reduction in the number of bluetooth beacons required. The technology is also high resilient and continues to provide good guidance even when the installed infrastructure fails (vandalism, theft and poor maintenance are common). The technology also delivers real-time and reliable 'heading' as well as location, meaning that instructions and POI information are simpler, clearer and more relevant.

Waymap's app is designed for the best user experience. It is explicitly 'hands-free' and 'heads-up'. The App remains in the hip pocket (or belt) and delivers audio instruction through the user's headphones. All routing is both dynamic and adaptive. Dynamic in they a user can route to anywhere and from anywhere. Adaptive in that the route is automatically recalculated should they go off route for whatever reason. Routes also take into account the mobility requirements of the user (and their guide dog) allowing them to avoid stairs and escalators and also whether to 'shoreline' around the edges of a space or to go direct straight across the middle.

Once the maps are loaded into the App, it will continue to work everywhere - with or without mobile coverage. The same personalised App will work in every location and venue that Waymap support - the user does not need to fire up a different App each time they walk into a new location. The app is focused on users with vision impairment. It also supports users with cognitive and mobility impairments as well as any person simply wanting local information in their own language. Indeed, Waymap is a fully immersive audio-based augmented reality - designed for the vision impaired, but accessible to anyone.

Use Cases Description

Waymap is focused on users with vision impairment and assisting them in getting around the built environment and transport networks. Half of all those who suffer vision impairment almost never leave their home without the assistance of another person. Most of those that do limit themselves to 3 or 4 routes that they know well. This cuts them off from friends and

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society around them. Our aim is to provide them with the free tool on their mobile phone that gets them out and about independently and with confidence.

Waymap also supports users with cognitive and mobility impairments as well as any person simply wanting local information in their own language. Indeed, Waymap is a fully immersive audio-based augmented reality - designed for the vision impaired, but accessible to anyone. Waymap's app is designed for the best user experience. It is explicitly 'hands-free' and 'heads-up'.

The App remains in the hip pocket (or belt) and delivers audio instruction through the user's headphones. No other solution enables the user in this way. All routing is both dynamic and adaptive. Dynamic in they a user can route to anywhere and from anywhere. Adaptive in that the route is automatically recalculated should they go off route for whatever reason. Routes also take into account the mobility requirements of the user (and their guide dog) allowing them to avoid stairs and escalators and also whether to 'shoreline' around the edges of a space or to go direct straight across the middle.

Waymap is based on a breakthrough in indoor location technology that reduces the need for bluetooth infrastructure whilst at the same time, increasing the accuracy of location to meet the ITU standard. No other mobile phone based technology is able to do this. GPS is inaccurate in urban environments and indoor spaces. No bluetooth only solution delivers the accuracy required of the ITU standards, especially in large open areas busy with people. Wifi, magnetic field and cell network heat-mapping all deliver worse accuracy.

None of these solutions provide heading information and the compass on the phone can not be relied upon in buildings, especially railway stations and modern structures with lots of steel. Typically, Waymap sees a 10 to 30-fold reduction in the number of bluetooth beacons required. The technology is also high resilient and continues to provide good guidance even when the installed infrastructure fails (vandalism, theft and poor maintenance are common). The technology also delivers real-time and reliable 'heading' as well as location, meaning that instructions and POI information are simpler, clearer and more relevant.

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GiveVision

Information

Country: United Kingdom

Solution: New generation of low vision aids

Website: https://www.givevision.net/

Social Media: @givevision_net

Product readily available for use.

Images











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Components Description

At GiveVision, we work on wearables that can enhance people's remaining vision as well as enabling them to do more daily living static activities. Our first device is formed of a headset, a phone that acts as a screen and a remote control to operate the device. The kit is registered as a class 1 medical device. People say it is like a portable CCTV. We have developed an augmented reality application in-house which uses image processing techniques to alter the image people look at in order to help them see better.

The main functions are the control over the zoom, the contrasts, and the light exposure. We use Android phones and we have tested different image quality and stabilisation to find the one where people have the best experience. We also have tested more than 20 headsets to find one that covers necessary requirements such as comfort and quality of the lenses. As 50% of our testers are over 65 years old, we've designed an easy to use UI. The remote control has 4 buttons. A kit can be customised by us before being deployed and a setup mode enables further customisation in addition to the main functions listed above.

Use Cases Description

Our solution is a wearable headset that can be used to magnify close-up or far-away objects, change the contrast or apply custom filters to whatever is in front of them. People use it for a wide number of activities. At home, to read food labels, to look for something on the floor, to watch TV, to play music, to garden etc. At work, to read documentation, to follow presentations, to work on the computer, to go to a conference, etc. 65% of our users have reported that they could do activities with SightPlus that they couldn't do before with another tool and without assistance.

The direct outcomes of enabling those people to use their remaining sight is a significant reduction in the amount of assistance they would otherwise need, greater quality of life, reduced risk of depression, return to work and return to full inclusion in family life.

- John says: “It’s amazing. The device means that I can play music again, and even my neighbours have been telling me how much they enjoy hearing me play. It’s small things like this that have really given me back my independence.” goo.gl/Q5ER3V
- Charlie and his mother: "We've not had the headset for long at all but immediately it started to change our lives." goo.gl/pMFutj
- "She was like a child in a sweetie shop as she sat in the window admiring the floral decorations, then she suddenly noticed her new shoes, which she hadn't really seen properly, and spent the next twenty minutes just admiring peoples shoes." Sue, talking about her 87 year-old mother and their visit to a flower festival in Belgium.

Our direct competitors have yet to produce devices with better visual performance and level of personalisation.

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International Telecommunication Union

CATEGORY 3 - PERSONS WITH SPEECH IMPAIRMENTS

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Irisbond

Information

Country: SPAIN

Solution: IrisGo

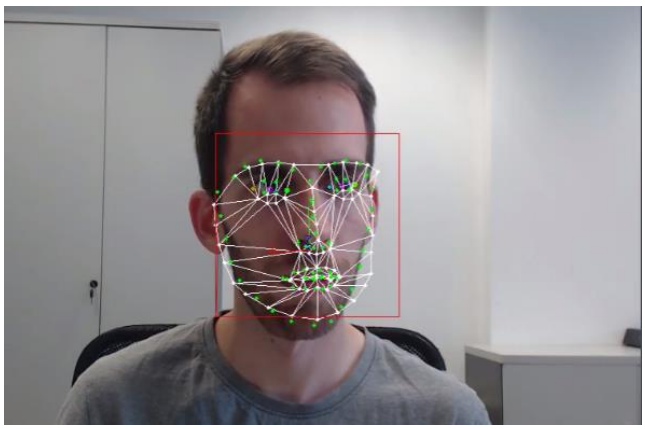
Website: www.irisbond.com

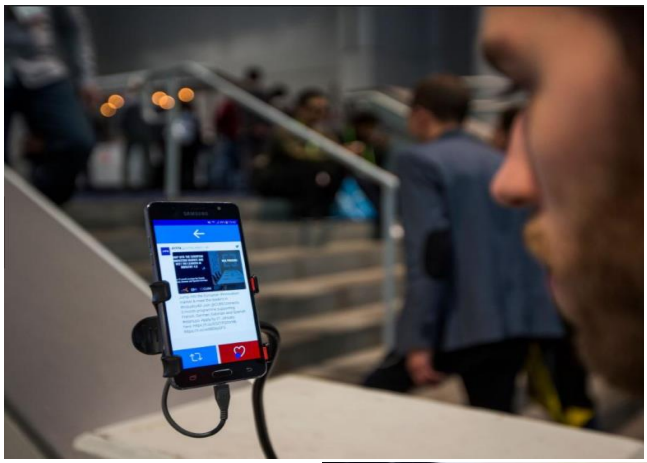
Social Media: https://www.linkedin.com/company/irisbond

Product in final development stage, with prototype for testing.

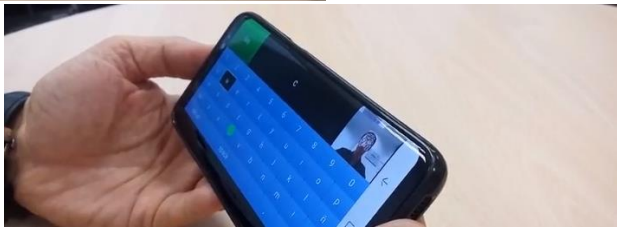
Images











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Components Description

IRISGO is the new generation of eye-tracking technology that allows the user to control a device (with a high level of precision) using an embedded webcam of the device (mobile, tablet, PC or laptop), without the need for any additional hardware such as expensive infrared lights. IRISBOND´s advanced software algorithms interpret the eye gaze of the user in order to provide intuitive and hands-free access to information and control over a screen. The current IRISGO version works on PC Windows (from Vista onwards) and has been designed to function on a multiplatform used on Mac, iOS and Android.

IRISGO combines face tracking and eye tracking algorithms, with a large part of image processing and deep learning. The main stages are: detection of the face, detection of characteristic landmarks of the face, adjustment of a three-dimensional model, cut of the eye zone and estimation of the vector of gaze:

a) Facial tracking, detection, and recognition: The 3D facial tracking technique using machine learning paradigms capable of inferring 3D facial orientations from a simple 2D image, which allows for the automatic initialization of the positioning of a 3D facial model both in its shape adjustment as well as in its expression. Various facial control points are used as well as the textures in the regions between them to generate facial models of shape and appearance adaptable to different positions, with the greatest independence from ambient lighting.
b) Gaze detection and tracking: we have developed a tracking technique that follows the facial position and orientation to locate the two ends of each eye and the regions for the local search of the iris centres using techniques based on isotopic curves and adaptive threshold segmentation.People with disabilities can surf the web, write and send emails, connect with their friends on social media, study, work and navigate on their smartphones and tablets using their eyes.

Also, “no hardware” leads to significant cost savings and much quicker and easier setup. As a result, users can move and control the computer mouse with their eyes only without the need of further hardware, and thus access all applications a modern computer offers. It is a complete solution consisting of a software and service and it enables customers to communicate, be more independent, also with high lighting conditions, and in some cases study even work, improving thus their self-esteem, mood and quality of life.

Use Cases Description

IRISBOND facilitates the communication and access to a computer, as well as mental well-being and social development, including inclusion into work and education. This innovative and easy-to-afford technology can change the lives of AAC patients and their families, as well, as it makes their lives easier to handle. The unique selling points of IRISGO compared to current alternatives are the following:

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- Maintenance free (software-only), no annual maintenance fee, no weeks waiting for repairs,
- Mobility is welcome (easier transport for the user). Easy-to-deliver (value-chain logistic).
- Multi platform and multi device. Everybody can use it “everywhere” (even outdoors) with an embedded camera (smartphone, tablets….).
- Easy-to-use. No IT knowledge is required.
- Payment per use (SaaS).
- Improved performance. Better accuracy than alternatives and cost-efficiency (others are too expensive for an average citizen). It even works wearing glasses or contact lenses.
- Affordable cost. Currently, people living with severe disabilities pay x16 times more average The primary target market of IrisGo consists of those suffering from ALS and other diseases (cerebral palsy, brain damage, spinal cord injury...).

Patients with severe paralysis: As mentioned above, there are millions of people who are severely paralyzed. According to extrapolated statistics, almost 50,000 persons suffer from ALS in the European Union and about 8,000 Europeans are diagnosed with ALS each year. These patients suffer from lack of autonomy, complete dependence on relatives or assistants, the inability to perform the most basic daily activities or to speak or communicate otherwise. As a result, these patients also suffer from mental health problems (low self-esteem, feeling useless...). Some also struggle financially as in most cases, they cannot work and their healthcare expenses are high. By allowing them to communicate, IrisGo enables these patients to connect with society and, in some cases, even to return to the workplace. Irisbond not only facilitates the communication and access to a computer, but also relevant aspects, such as mental well-being and social development, including inclusion into work and education.

Children: Furthermore, target customers also include children for who it is crucial to receive speech therapy and a special educator that accompanies them in their use of Irisbond. IrisGo and additional learning tools can help children to learn how to read and write.

Patients with partial paralysis: Those who suffer partial paralysis and can communicate are interested primarily in computer access and environmental control products.

Families of people with disabilities: Not only patients can benefit from the IrisGo technology. This innovative and easy-to-afford technology can change the lives of these patients’ families, as well, as it makes their lives easier to handle. Family members are able to understand and communicate better with their family members. Furthermore, caregivers have the possibility of understanding what their patients’ need and adjust their services. The technology allows users to send emails and communicate with family members.

Irisbond technology has already impacted lives, and our current customers are waiting anxiously our new disruptive solution IrisGo:

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"Even though ALS has broken and weakened my voice, it hasn't silenced it. Thanks to tech innovations like Irisbond, I cannot be silenced, I stay connected with the world and I can carry on fighting the illness"

Fernando Mogena Jiménez, suffering from ALS.

"*The program is amazing! It's the best thing that has happened to me since I was diagnosed with ALS. I can now communicate with everyone, most importantly with my daughters."*
Maria José García

"Irisbond is a life-saver. Having a technology like this means I can overcome all obstacles! I can do everything: buy a plane ticket for my daughter, send WhatsApp messages, and go out with my wife."

Francisco Otero, ALS

"My Mom and my teacher set up a classroom in my house where I'm learning to read, write and do Math using Irisbond with different games and apps. I can finally play and have fun with my classmates."

Gema Canales suffering from cerebral palsy

"The company is very reliable and provides an excellent service. They are very sensitive and caring and that's really important to me. Irisbond has been helping me to reinvent myself"
Horacio Fritzler, ALS

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Liquidweb srl

Information

Country: Italy

Solution: Braincontrol

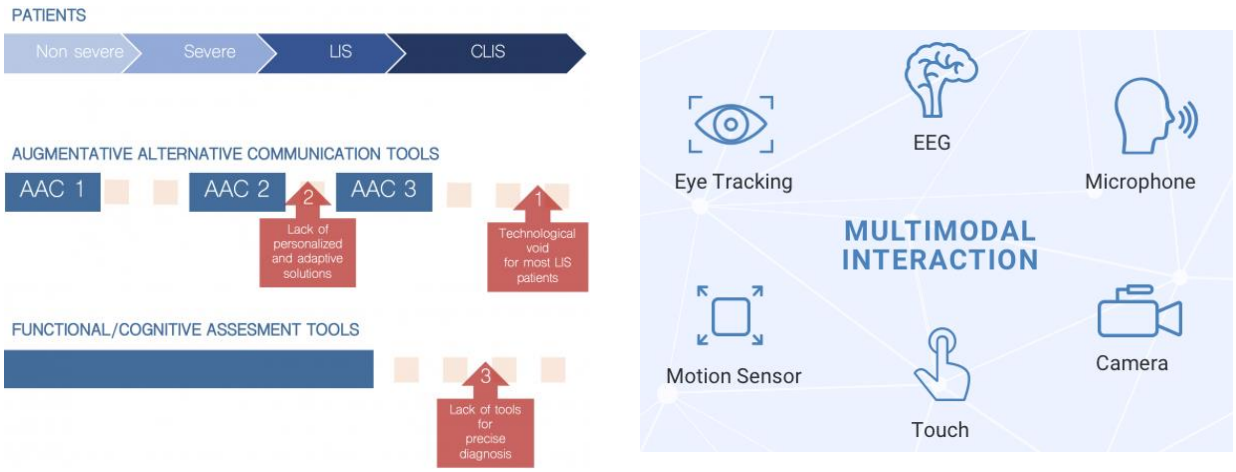
Website: https://www.braincontrol.com/en/

Social Media: https://www.facebook.com/BraincontrolAAC/

Product readily available for use.

Images





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Components Description

BrainControl is a framework for human-machine interaction through bio-feedback (brain electrical signals, movements,gestures, gaze, etc.). Application of the BrainControl technology targets the medical sector (assistive technologies, diagnostics and rehabilitation) and in the future, also, IoT and Robotics (automotive, industrial, home/office). This first released product is our MVP, BrainControl BCI AAC, a disruptive medical device CE Class I assisting severe disabled people to easily communicate and interact with others and their environment in their everyday activities with their mind (non-invasive Brain-Computer Interface). The MVP target application is the medical market for assistive technologies.

It allows controlling a user interface on a tablet PC with several functionalities as sentence finder, virtual keyboard and advanced communicator features.

It acts as a “mental joystick” usable by anyone. It only requires complete cognitive skills (sight is not required) and the desire to use thoughts related to movement.

It does not require physical movement, making it usable for people with severe disabilities.

From the end user perspective who receives the kit that includes a tablet pc with BrainControl software installed and a commercial EEG headset, the user, assisted remotely by a trainer, starts the training sessions with the possibility to interact through imagined movements controlling the BrainControl UI.

Technologically, the core innovation of the system is a classifier of signal pattern coming from wearable biometric sensors based on a Machine Learning technology for the customization and prediction of the specific needs of each patient. It allows advanced communication and entertainment (web browsing, interaction via sms, social networks,e-mail, web radio), home automation (lighting, alarms, temperature) and robotics (humanoid robots and exoskeletons). Some of these functionalities are already implemented, others need to be further improved. Unlike traditional assistive technologies, the BrainControl core platform can be configured to meet the specific needs of individual users on their disease progression.

Use Cases Description

Worldwide, there are more than 140 million people affected by paralysis, 20 million “completely unable to move” because affected by tetraplegia, and 3 million with LIS/CLIS (Complete Locked-in Syndrome). People suffering from severe disabilities have problems to communicate via the normally available channels (voice, writing,signs) due to motor degeneration or brain damage. Those problems to communicate, decrease their autonomy, independence and other daily life activities.

As disabled people have specific requirements for their home environment and its functionalities, their demands increase and change with growing age - especially when their health status starts to worsen- and they experience the evolution of the impairment. An

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important aspect for all people having the need to be supported in their daily-life-activities is to remain integrated into social life despite their age and existing disabilities. Even if there have been several advances in the field of assistive technologies (AT) and human-computer interaction (HCI), there are still some unsolved pains for the people affected by paralysis and for their caregivers:

Technological void for most locked-in patients, those who cannot use eye-tracking systems or other assistive technologies available on the market; lack of personalized and adaptive interfaces meeting user's needs, which change in the undetermined-unknown way as the disease evolves.

The existing solutions only cover one or two interaction mechanisms (i.e. addressing only eye tracking or voice recognition) or a multimodal approach based on predefined discrete output from sensors but none of them offers adaptive multimodal interfaces that can manage analogue output of the sensors and adapt the interaction, making it difficult a customization to various types of disability. In addition, each patient may suffer different changes in his/her disability making those solutions to be obsolete in a very short period; lack of tools to support caregivers, hospitals and national health systems to assist these patients at affordable costs, added value care services and accurate tools for diagnosis; lack of tools to support relatives and informal caregivers to attend the patients, improving also their quality of life and working towards improving patient's social integration and access to digital services.

Since the number of people with severe disabilities is increasing yearly, the demand for solutions to help them to keep or increase their autonomy and quality of life is also increasing. All of them, together with their formal and informal caregivers, are willing to find easy to use and cost-effective solutions that help them with daily activities and social interaction.

Nowadays with the new technological advances, the market demands a paradigm shift towards horizontal and multimodal solutions that allow any person with light or severe neurological disorder to overcome severe physical and communicative disabilities. The technological challenge is to build a "smart" multimodal platform applying Artificial Intelligence (AI)/machine learning (ML) that provides a cost-effective and adaptive solution to overcome the current limitation of the available assistive technologies.

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International Telecommunication Union

CATEGORY 4 - PERSONS WITH COGNITIVE OR INTELLECTUAL DISABILITIES

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University Hospitals of Geneva

Information

Country: Switzerland

Solution: POSTHCARD

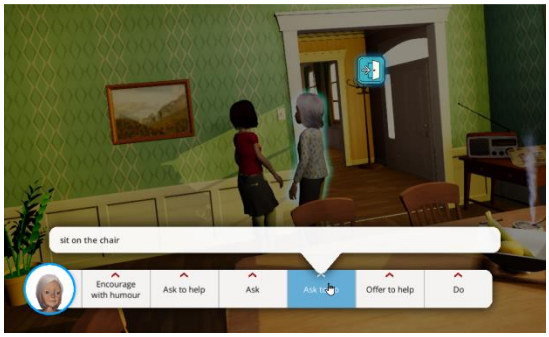
Website: www.hcuge.ch

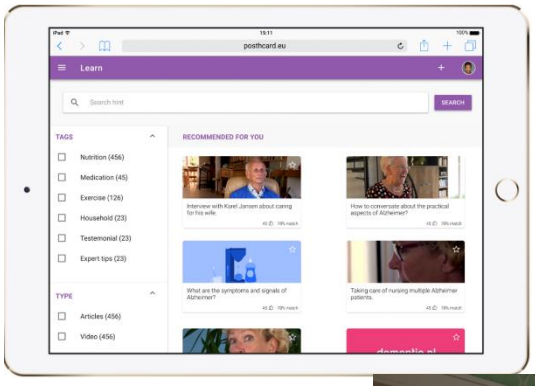
Social Media: N/A

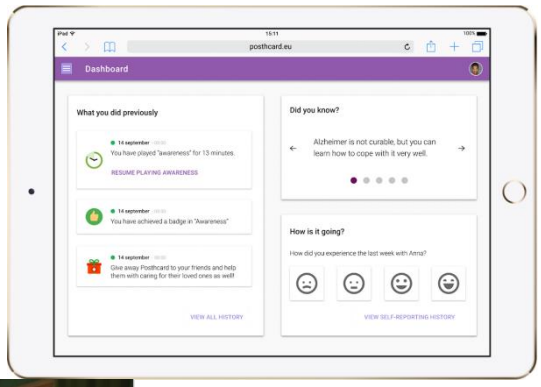
Product in final development stage, with prototype for testing.

Images











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Components Description

The platform core consists of a simulation engaging player into a unique experience where he will be able to experiment various situations of the daily living with a patient suffering from Alzheimer disease. In this simulation the player plays its own role and must interact with a patient suffering from Alzheimer disease to achieve successfully a selection of activities of daily living (eating, personal hygiene…).

To interact with the patient, the player is proposed with a set of choices not only reflecting different actions to perform but more importantly reflecting different way of communicating these actions. Therefore, two actions aiming at the same goal (for instance, asking the patient to sit on the chair) can be expressed on very different way (using humour, being directive…) and have very different results. In this sense the simulation teach the player that it is more his attitude than the action itself that matter in interacting with patients suffering from Alzheimer disease.

The simulation is unique due to the fact that it is entirely personalized on the specific context of the player. Indeed, based on literature and user research we have constructed theoretical models of the caregiver-patient interaction. This theoretical model is based on the one side on the neuropsychiatric symptoms (wandering, aggression, apathy…) whose suffer the patient as well as the main attitude of the caregiver. The parameters automatically set depending on the response of the user to a tailored questionnaire). This theoretical model has been the basic element to nourish narrative engine that will create a unique interaction experience during the game. Moreover, based on literature and user research we have prepared a set of narrative actions that are used in a specific context to trigger a particular feedback from the user.

As a result depending if we perform an adequate or inadequate action (which can depend on the neuropsychiatric symptoms) we will influence the state of the patient that will more or less cooperate with the player. Again this reaction will influence the action capability of the player. All the actions of the player are analysed in order to provide a trainer feedback that will highlight the mistake of the player. The simulation itself is built on Unity and the narrative engine is developed in Java with the use of Drools to implement the rules mechanisms. This game is integrated in a larger platform that provide several services to the users such as an information centre containing independent knowledge, tips and tricks from patient organisations. Also it contains a forum where caregiver can share experience with their peers.

Use Cases Description

Caring for patients with Alzheimer disease can be an exhausting duty. It is estimated that approximatively 44 million people live worldwide with Alzheimer disease. The prevalence of Alzheimer disease doubles every five year beyond the age of 65. It is estimated that one to four family members act as caregiver for each individual with Alzheimer disease. Compared to caregivers of people without dementia, caregivers of people with Alzheimer disease

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present substantial emotional financial and physical difficulties. The constant modification of the patient behaviour due to the illness, the unpredictability of the behaviour, as well as the uniqueness of each situation makes it very difficult to adopt a single strategy and requires constant adaptation. As a consequence, caregivers get often exhausted, psychologically and physically.

Several interventions exist to teach professional and informal caregivers how to deal with daily life situations, but most of them provide generic strategies that are complicated to transfer in the real life setting of the caregivers Based on this limitation we have developed a personalized simulation aiming at practicing realistic problematic situations that caregivers encounter in their daily life. Indeed, practicing complex situation in a safe and less emotionally engaging environment is a good way to be prepared to experience similar situations in real life with a lower level of stress. Also having a simulation allow to practice interaction and to test a broad range of strategies without the risk of deteriorating the relationship with the patient you care for.

Main use case concerns the training of professional and informal caregiver. If you're a professional caregivers in contact with Alzheimer patient it is hard to know how to adapt to every situations. Thanks to the platform, you can recreate a situation as close as the one you encounter and play it with your peer or rely to the advices given by the platform to improve you skills. You can also imagine to use the platform to train new caregivers through a curriculum that will prepare the trainee to deal with the situations that they will encounter in their work. If you are an informal caregiver the tool can be used as a support tool to deal with problematic situations you encounter in your daily interaction. You can for instance you can discuss these situations with people from association that can understand more easily what you're experiencing and support you more efficiently. Obviously you can practice the simulation on your own and benefits from all the other services offered on the platform to improve you interpersonal skills. For instance you can search through the information centre to read about the disease or exchange your experience on the platform directly with other people experiencing similar situations through the forum.

Benefits are both for the patient and the caregivers. By improving their skills and by learning to deal with difficult situation the caregivers will reduce their level of burden and will improve their relationship with the patient. As a result informal caregivers will be less likely to suffer from exhaustion that could lead them to renounce to care for their relative. The benefits will therefore be shared by the patient himself since he will be cared for in a more serene environment and is likely to stay at home longer.

As explained earlier, the simulation is built on a unique narrative technology that allow a strong level of personalisation and the fact that each experience is unique based on the characteristics of the player and the one of the patient. This particularities make the platform very ahead of other competitors that rely often on very specific situation that do not reflect the particularities of the situations lived by the user.

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ECLEXYS SAGL

Information

Country: Switzerland

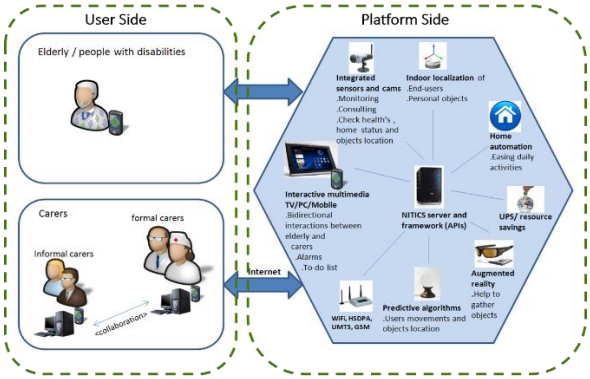
Solution: Networked InfrasTructure for Innovative home Care Solutions (NITICS)

Website: www.aal-europe.eu/projects/nitics

Social Media: N/A

Product readily available for use.

Images



NITICS System Architecture



The NITICS gateway

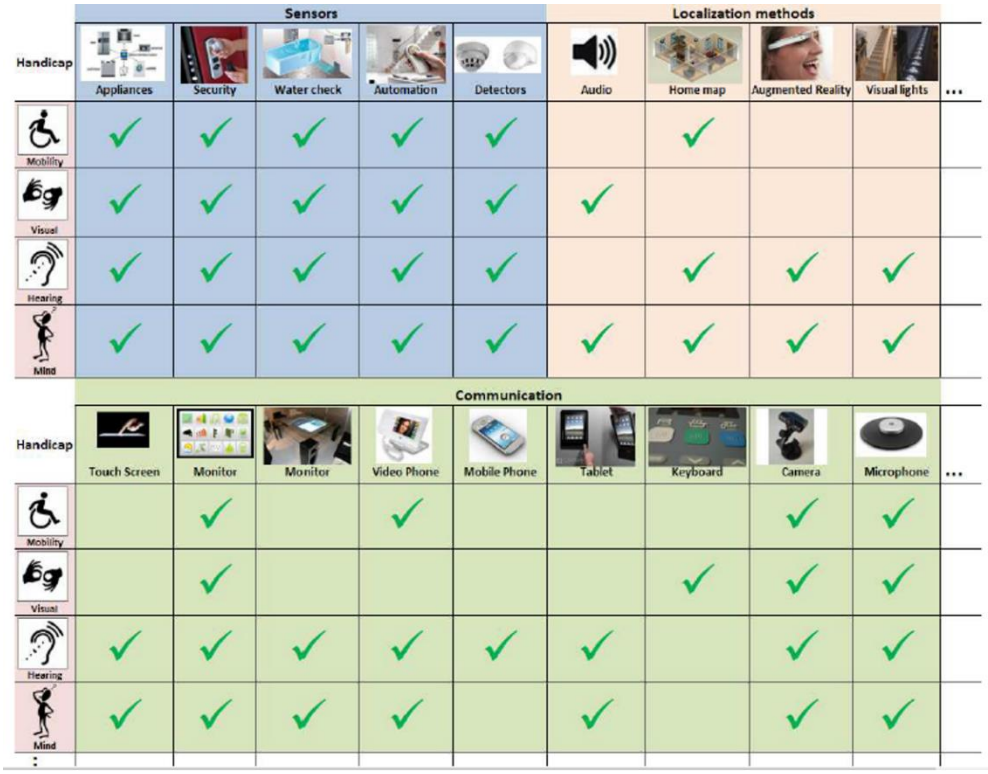


Dashboard of medical sensors installed in a NITICS network



NITICS device categories

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NITICS support capabilities for people affected by different handicaps

Components Description

The quality of life of elderly persons does not rely on the combination of health and environmental parameters detecting their interaction with the surrounding ambient.

NITICS seeks therefore the wellbeing of such persons affected by mild cognitive dementia, cardiologic problems and diabetes not only by collecting medical data, but also by providing support in daily life along with ICT-enabled social counsel.

NITICS goes beyond common ICT systems in Telemedicine and Active Assisted Living because:

- it unifies the collection of data from sensors exploiting different transmission protocols;
- - it merges the physiological measurements with localization and context-awareness;
- - it processes large volumes of data through new approaches based on “big data” methods.

A key driver of NITICS has been the use of low-cost sensors and electronic devices, allowing easy adoption by national health services. The system is made of the following components:

1) SENSORS AND OTHER ICT AIDING SOLUTIONS

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Sensors can be medical (e.g. blood pressure monitors), domotic (e.g. gas detectors) and positioning (indoor and outdoor, also by GPS/GNSS). NITICS exploits Web/IP cameras for activity monitoring, distributed home automation devices to make daily activities easier, and augmented reality to assist elderly and disabled people in their daily life.

2) CONTROL, COMMUNICATION AND CAREGIVERS SUPPORT INFRASTRUCTURE

It includes graphical user interfaces, control centers, databases and handheld user terminals etc.; secure transmission and storage of data meet GDPR rules. NITICS provides easy tools for human contacts (TV/PC/Touch Screen with an audio/video link to doctors/caregivers/family members) and useful services, like a to-do-list of the day on the TV screen, computer or smartphone.

3) SOFTWARE AND DATA SCIENCE APPROACHES

They are used to simplify the data analysis, reducing the workload of caregivers. NITICS offers behavioral analysis/prediction using a cognitive engine based on machine learning algorithms, AI and statistics to obtain information about the health status of the end-users, detect changes/anomalies, and help them in their daily routine. The system is context-sensitive, and adapts its models to the user's needs.

4) TRAINING AND FORMATION

Supplying e-learning and tutorials to all caregivers on care and devices, to boost collaboration and complementarities between them. Also encouraging elderly to come up with own application ideas to make their everyday life easy.

Use Cases Description

Being able to concentrate data from a variety of sensors, NITICS offers for the first time a real solution to caregivers assisting elderly persons affected by mild dementia, cardiologic illnesses or diabetes. NITICS leverages on a network where information from medical and domotic sensors is synergically used and enhanced by AI techniques to ensure the wellbeing of its clients and to preemptively address risk situations.

Users belong to a constituency of home-dwelling elders which begin being affected by certain mental problems and/or age-related illnesses, but still value the possibility of living in their homes if support to daily activities and immediate protection/assistance in case of incidents can be provided. The NITICS infrastructure, tested in several field trials, has shown to be suited for this task.

NITICS use cases can be categorized according to the situation and the environment as follows:

(a) Normal situation:

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In normal conditions, the elderly person is tracked to the extent of where she/he is. Caregivers want to know if the elderly person is active and his home environment is safe. The standard tasks are:

- Localize and track, measure, collect and analyze the relevant parameters, including anomaly checking;
- Provide feedback to the elderly person about his activities, send photos, movie clips and engage him/her in chats with some of his relatives.
- Help the elderly person in finding objects forgotten around (a typical drawback of mild dementia).
- Enable access to computer or mobile phone technologies and services (interaction, social networking, gaming, access to news and information) for the more skilled (and interested).
- Allow informal caregivers to contribute by sharing their time and providing support.
- Provide feedback and reminders about his daily routine and dues (timely meals, taking medication, light indoors exercises as prescribed by the doctor).
- Detection of behavioral changes and prevention of abnormal conditions, thanks to the AI capabilities of NITICS.
- House conditions' check (performed by the caregivers): windows'/doors' status, domestic appliances in the kitchen, electrical circuit breaker, gas and water, central heating, burglar alarm system.

(b) Emergency situation:

Emergencies such as accidentally falling down or fainting, unusual measurements of body parameters, high sugar level, or if the person remains still for a long time could be detected. Wandering outdoor is also another problem addressed and solved. In case of these kind of emergencies, many services can be invoked:

- Automatic calls to the caregiver, relatives, or even to an ambulance if the situation is critical.
- Informing the neighbors (easiest and fastest assistance).
- Sending the video of the place and the person if possible (depends on availability of infrastructure) through automatic calling.
- Start sending all the measurements of the body parameters that could be measured. The caregiver could also localize remotely the end-user inside his house with a map of the house displayed on his screen, and could establish audio-communication directly to the localized room using a button and thus help the user more quickly. This solution can be carried out with the consensus by the end user to invade his privacy.

It is remarkable that, along with the simplification of domotic/medical monitoring, NITICS allows the optimization of the caregivers' workload, enabling the provider of professional

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services to exploit better his resources and allowing informal caregivers (relative, volunteers, friends etc.) to offer their valuable services in the most comfortable way.

NITICS underwent, during its development and afterwards, a steady broadening of its scope:

- Several Pilots were successfully carried out in France, Romania and Slovenia during the project (closed in 2016) and aroused interest of local Health Service administrations
- After the official end of the project the infrastructure was improved taking it from technology readiness level (TRL) 4 (prototype) to (product).
- Preliminary CE certification was carried out in 2017. In 2018, new fitness devices were added, allowing indoor and outdoor localization.
- Algorithms for wandering detection were developed and improved, exploiting new methods for extended data collection.
- Porting of NITICS database to “big data”, cloud-oriented infrastructure has been finalized.
- Provision for analysis of data by advanced statistics and machine learning algorithms has been integrated.
- A final version the gateway with improved security, anti-tampering and privacy modules was accomplished by end of 2018.

Extended pilot runs have been carried out in Q4 2018 adding user groups from Poland; in Q2 2019 also partners from Hungary and Switzerland have been included.

At present, an extensive campaign is ongoing in all the above-mentioned end-user countries. The local testbeds are routinely used also for the presentation of the technology to new potential stakeholders.

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VR therapies

Information

Country: England

Solution: VR therapies including hydrotherapy

Website: www.VRtherapies.co.uk

Social Media: www.twitter.com/vrtherapiesltd
www.fb.com/vrtherapies
www.youtube.com/channel/UC86OcFVkLU179JM1s7BpU

Product in final development stage, with prototype for testing.

Images











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Components Description

VR therapies is an innovative and new social enterprise, created for kids with special-needs & adults with disabilities.Through the magic of VR, I get to take those too poorly to walk swimming with dolphins, children undergoing chemotherapy to explore space… Sharing these experiences with them as a Nurse has been amazing. Therapeutic VR is the use of virtual reality technology for psychological and/or physical therapy. Those receiving VR therapy navigate through different environments, which can be anything from the middle of the ocean, to different galaxies. It is only limited by our imagination. This should be available to everyone – not just those already in the hospital, rich, or physically-able.. but those who would benefit most, yet currently are the least likely to access it.

We have had amazing support from a number of charities and healthcare units across the UK, testing individual and group sessions using the amazing world of VR. The benefits were immediately apparent as people forgot their pain, breathed easier and smiled more… I currently work with charities such as Age UK and day centres, as well as private sessions with the local community, offering a variety of sessions for individuals and groups, as well as a pop-up & drop-in service.

Sessions and content have been devised collaboratively by the work of many healthcare professionals ranging from special needs, nursing, palliative care, physiotherapy, neuroscientists and more, as well as organisations such as the NHS, Age UK, University of Northampton, Innovate UK and the Knowledge-Transfer Network. I have developed a VR therapies package which can be used at home individually or within care homes as well as training for staff to run their own therapeutic sessions. VR is not yet inclusive for all and I want to reduce this digital divide. This provides an on-demand therapy, accessed when and where you want it. We currently use Oculus Go as this is both portable, easier to use for learning disabilities or dementia etc., and only has one controller (which is ideal for those who have had strokes or one sided weakness). We have also developed a training package to help more healthcare professionals to provide these therapies.

In 2020, we will be opening the very first VR therapies centre in the UK (as far as I know, the world). Combining hydrotherapy with VR so it truly feels like you're swimming with dolphins and providing truly therapeutic VR experiences which are fully accessible and inclusive.

Use Cases Description

We are the first and only social enterprise who provide VR therapies for kids with special needs and adults with disabilities. We take those too poorly to walk swimming with dolphins, children undergoing chemotherapy to explore space… Swimming with dolphins is on most people's bucket lists, a truly uplifting and serotonin-boosting therapy. VR brings this experience which most people will never access, with all the benefits – a drug-free medicine with no side effects for you or the dolphin. VR provides immersive environments which can

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be similar to the real world or imaginary, creating an experience that is not possible in ordinary physical reality.

The environment can be anything from the middle of the ocean to different galaxies or worlds. It is only limited by our imagination. We pride ourselves on ensuring fully accessible experiences, regardless of disabilities or age. From reducing chronic pain and alleviating anxiety, trips down memory lane and travelling the world… the experiences and therapies are endless. Sharing these experiences with them as a Nurse has been amazing. The benefits are immediately apparent as people forget their pain, breathe easier and smile more. Medical VR is already available in hospitals and has shown amazing results. However, the latest medical and therapeutic advances are inaccessible to the very children and adults they are designed for. They should not have to wait till they are already in the hospital to receive the benefits, nor it be only for the rich or physically able. We want to change this.

According to the DLF, 1/20 children are disabled, with the most common disabilities being behavioural, learning disabilities, and respiratory/coronary disabilities. In just my town alone, there are 30,000 children with disabilities. With the number of service cuts, therapies as simple yet effective like hydrotherapy, have become increasingly difficult to access. Sadly, these cuts to services not only impact physical health but also mental health. Northampton is now significantly higher - nearly 3 times higher, for hospital admissions for mental health conditions in children aged 0-17. The current services are not meeting their needs, nor the adults with disabilities. It's not just mental health either. Effective, long proven physical therapies are also reducing. With only a few private hydrotherapy pools in Northampton, there is a severe lack of access and funding for those unable to afford private physiotherapy. Frustratingly, even swimming pools are ridiculously hard to access -- we have no local pools have more than one hoist! The difficulties in accessing established therapies is hard enough, but despite medical VR having such amazing results and benefits, it once again remains elusive to most.

Financial restraints, accessibility issues and support to utilise these experiences are sadly failing many people with disabilities. I am determined to change this. I have developed a VR therapies package which can be used at home individually or within care homes as well as training for staff to run their own therapeutic sessions. VR is not yet inclusive for all and I want to reduce this digital divide. This provides an on-demand therapy, accessed when and where you want it. We ensure a person-centred therapeutic experience which truly engages and improves both physical and mental wellbeing. There are lesser-known benefits such as improving social inclusion through the ability to meet with families wherever they are in the world, reducing cognitive decline and improving mobility - therefore reducing the risk of falls (which is currently forcing many into care homes with our ageing population). I have created a full training package so healthcare.

In 2020, we will be opening the very first VR therapies centre in the UK (as far as I know, the world). Combining hydrotherapy with VR so it truly feels like you're swimming with dolphins and providing truly therapeutic VR experiences which are fully accessible and inclusive. I am

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working with the University of Northampton to develop our own therapies and VR content, which are specially made for learning disabilities, special needs and physical disabilities. As a social enterprise with a strong ethical code, we are passionate about hiring people with disabilities for full-time work – not just token positions – as well as train and educate about technology and therapy design. VR therapies also have 4 social objectives based on the SMART principles which focus on mental health improvement and service accessibility. By comparing our own data alongside regional statistics & individual feedback from the community themselves – we will be able to measure the impact VR therapies is having on the quality of life, mental health and emotional development of our community. I have already won the Innovation Award and the Great British Entrepreneur for Good Award as there is truly nothing like this available, despite the evidence, research and benefits proven.

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CATEGORY 5 - PERSONS WITH PHYSICAL DISABILITIES

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Access Earth

Information

Country: Ireland

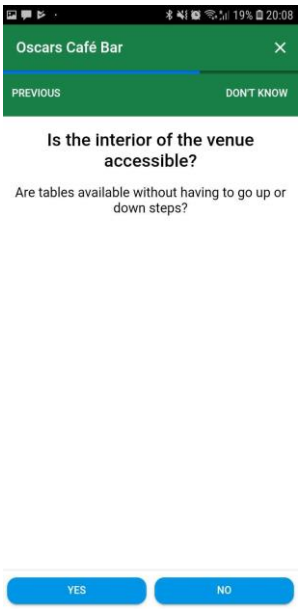
Solution: Access Earth

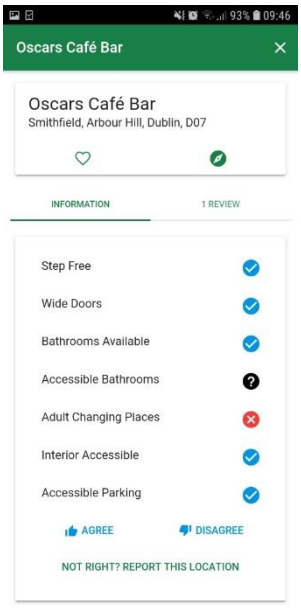
Website: http://access.earth/

Social Media: https://twitter.com/access_earth?lang=en

Product readily available for use.

Images











Components Description

Access Earth aggregates, distributes and curates the world's accessibility information for those living with any form accessibility need. Presently, the Access Earth database can be made use of and contributed to by using the web and mobile application available in the App Store and Google Play Store. Data is currently gathered manually with users, partners and organisations ensuring that accurate accessibility information is updated and clearly portrayed on the Access Earth map. Users can see the rating of a given location - a pub, restaurant, hotel, etc. - and if it has already been rated can use that information to plan their trip. Users may also 'Agree' or 'Disagree' with such information if they believe it to be out of date or inaccurate.

An algorithm is used to ensure that each users opinion contributes to the review but does not override it completely without verified user backings. If a venue is not rated, users may simply

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answer a series of 'Yes' or 'No' questions to easily provide that information back to other users of the app. We have over 100,000 places rated worldwide and over 10,000 registered users.

The data gathered this way is analysed and leased out to organisations and government bodies so they can better communicate to their respective constituents and make improvements based on the analytics provided. Access Earth provide this information as a dashboard to paying organisations - sports stadiums, large MNCs, local governments, etc. - so they can better accommodate and include the 15% of people in the world living with a disability.

Accessibility information is gathered across the world in multiple different ways using multiple different formats. Access Earth is not seeking to replace all this information but to ensure that it all exists in one place and in a homogenized and simple to interpret format. This is why we are also working on an AI solution that will enable the aggregation of this data from across the internet - third party websites, TripAdvisor, Facebook and other forums. We are supported by Microsoft in their AI for Good and AI for Accessibility programs which have awarded the Azure credits and engineering support and guidance to bring these ideas to reality.

Use Cases Description

There are a multitude of ways in which our solution can be applied. For the purposes of this application we are going to focus on the three main and most impactful use cases: End-User (individual with accessibility needs), Local Governments, Sports Clubs (stadiums and conference centres).

There are a multitude of ways in which our solution can be applied. For the purposes of this application we are going to focus on the three main and most impactful use cases: End-User (individual with accessibility needs), Local Governments, Sports Clubs (stadiums and conference centres). End-User (individual with accessibility needs) Travelling and getting around, even with the best of planning, can be a cumbersome task for someone moving through life a disability.

The need for accessibility information is clear - 65% of individuals with an accessibility need don't spend money on leisure or travel due to a lack of accessibility information. By supplying that information in a coherent way and displaying it in the same format no matter where you go in the world, takes away a large amount of the burden of looking for such information and the fear of not knowing it. Users can simply download the Access Earth app or look at the web application in their browser and find the information they need.

Not only can they see this data, but they can also provide their own feedback and experiences. This creates a community-driven platform that can not only give insight, but also a voice to those who want to share their experiences on a medium wherein which it won't get lost in the noise like TripAdvisor or Google or Facebook. We find that people who have accessibility

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needs are much more focused on where they can go, not where they can't. Instead of browsing several sites or threads on forums for some insight on whether a hotel or a cafe can accommodate you, go somewhere that has already looked and already knows the answer.

Local Governments Accessibility can be a tough topic to manage and address correctly. Often government bodies have limited resources and time to focus on the problems they wish to solve. With Access Earth, decisions around infrastructure change, capital improvement plans or even policy don't have to be made on the basis of someones best guess or the loudest person in the room. We can provide up to date analytics and reporting that can not only guide but also back up the decisions being made. This information can be generated quickly for a given area and ensures that the right things to change for a community are highlighted and addressed. Access Earth can also use its API to feed into any website and provide accessibility information for a town, city or county without diluting their brand or efforts. This information can be used for both people already a part of the community or for those travelling to the area.

The accessible tourism industry is worth over $8tn worldwide and by highlighting the accessibility of key venues and excursions, government bodies can stand to generate more revenue and wealth in their area. We have also found that multiple local governments gather accessibility data in different ways that often materialise as large files, spreadsheets or hard to navigate websites. By using a digital solution they can remain up to date on their information and cut the costs in gathering a lot of this data.

Sports Clubs/Stadiums By understanding the accessibility of the area or city a stadium resides in, they are better able to facilitate fans with accessibility needs. Currently, hosting fans with accessibility needs - especially away fans - clubs run into problems surrounding a multitude of questions that are asked to them. Places to go nearby, places to go inside the stadium, where to park, etc. Access Earth can gather and supply this information in an easy to navigate way and simply feed this data into the platform that the fans already use, be it an app or a website. This enables fans to stay within the designated clubs application and ensures that the branding of the club is not diluted. Sport is the great equalizer and we've found this to be a common trend among the sports clubs we've engaged to date. Being able to provide the best experience for fans with accessibility needs not only means repeat business but also means you're creating a more inclusive environment for everyone to enjoy the match they came to see.

Innovation: Access Earth can not only help those with accessibility needs in their everyday lives but utilise the vast amounts of data we acquire to make serious, positive change in the world. The use of data analytics is not new but providing a database of the worlds accessibility information and leasing that out to organisations and governments is an ambitious endeavour that has not yet been successfully attempted. Equality is everyone's dollar being worth the same, meaning that everyone should have the opportunities to spend their money and time in the way they want - not in the way that they are told they can. We wish to remove the barriers to accessibility information and have it all exist in one place. We are not seeking to

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replace the information that has already been gathered in the world but to aggregate it and curate it for the people who need it most. The environment is quite often what creates the disability so we want everyone to have the option to find the right environment. Data is one of the most valuable things in the world and we're fortunate to be able to use it to create more wealth in the world in tandem with a massive social impact.

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Fightthestroke (FTS)

Information

Country: Italia

Solution: Mirrorable

Website: http://mirrorable.org/

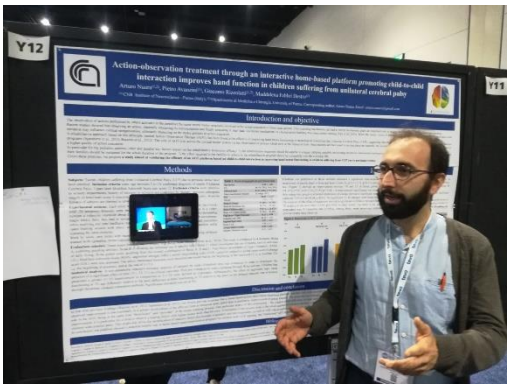
Social Media: FB/LN/TW/IG

Product in final development stage, with prototype for testing.

Images











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Components Description

MirrorAble is the first Action Observation Treatment (AOT), home-based, online platform aimed at improving limbs motor function in Unilateral Cerebral Palsy sufferers. Scientific background: AOT is a rehabilitation strategy for motor-impaired people based on the discovery of Mirror Neurons, a special group of neurons present in monkeys and humans which fire both when performing an action and when observing an individual performing the same action.

MirrorAble is a platform accessible from any computer and webcam whereby goal-oriented rehabilitation exercises are proposed to patients in the engaging content form of courses, e.g. 'How to become a magician'. The patient watches the course leader (e.g. the magician) performing the movements which are specific to the motor function to be recovered. The patient is asked to imagine what he/she has just seen, before practicing in front of the camera. An advanced machine learning algorithm recognises body movements and delivers positive and rewarding feedback on the use of the paretic limb as well as recording data for use by healthcare professionals.

Subsequently, through the innovative patient matching algorithm, the patient connects remotely to another patient with a similar disability and degree of disability (e.g. same hand motor impairment) and the peers exercise together. An exclusive Emotion Telemetry System is able to record the patients' emotions and tailoring the exercise program accordingly, minimizing stress and taking advantage of the maximal brain plasticity occurring during empathy to obtain the highest motor recovery of the affected limb.

Use Cases Description

Challenge: Wordlwide, 17M children affected by Cerebral Palsy are still searching for effective and proven rehabilitation strategies. Traditional rehabilitation approaches are useless and expensive, lack of sound evidence and they are hospital-dependant.

Product: MirrorAble is the first platform for Neurorehabilitation making use of the scientifically proven Action-Observation-Treatment strategy and Mirror Neurons activation with unique features and effective motor recovery outcomes.

Value proposition: Rehabilitation of motor impairment through MirrorAble results in +26% motor recovery, 100% patient compliance, +50% patient engagement and +10% family engagement.

Market size: MirrorAble is positioned in the Telerehabilitation Systems market which is part of the larger Neurorehabilitation Devices market. The telerehabilitation market is expected to reach €387M by the end of 2024, growing at a CAGR of 19.6%.

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Users/Customers: Clients for MirrorAble are hospitals as well as main rehabilitation centres. First targeted users are children affected by CP followed by people affected by other motor-impairments such as stroke, Parkinson's disease, orthopaedic traumas.

Business model and commercialisation: B2B business model with a subscription fee, including the telerehabilitation platform, data analysis and storage services. Initially, the company will target Italy, Spain and the UK; followed by Germany, France, Switzerland and Austria. Once established, FTS will expand across Europe and globally.

Company: FTS is an italian neurorehabilitation social enterprise based in Milan, Italy, with the mission of bringing effective and evidence-based rehabilitation to the motor-impaired. The company has so far raised over €500k from private investors as well as a €44k grant in cloud services, and successfully trialled the alfa version of MirrorAble with 20 families of children with Cerebral Palsy. The team retains a strong representation of women and people under 35.

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CARA Consortium

Information

Country: Belgium

Solution: CuARdian Angel

Website: https://www.cuardian-angel.eu/

Social Media: N/A

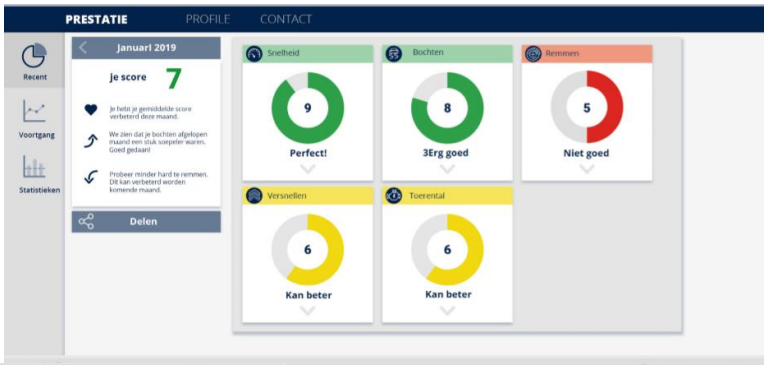
Product in final development stage, with prototype for testing.

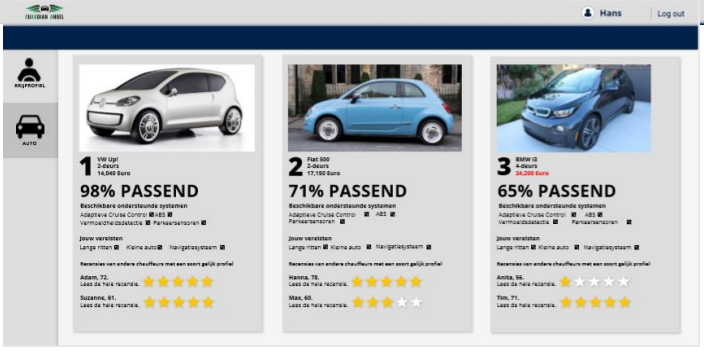
Images











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Components Description

A central platform (CARA) is to be created which interfaces with primary end-users. The main interface for the platform is an (accessible) website which provides information on the services, its purposes, etc. but who also allows en-user to initiate in a self-test of their (driving) behaviour and relevant faculties. The primary ingress step makes use of a questionnaire / survey to gather information of existing driver skills, etc. This can be completed by objective driving style monitoring (through dongle, OBD-port in-vehicle, etc.). The purpose of such a self-test is the initiation of an awareness-raising process. After all, without awareness of the (potential) problem, chances are low that remediation or supporting actions are taken (by the end-user).

This central platform is further linked to a number of services which focus on practical limitations or barriers which are commonly identified by end-users. Such services can serve as a preventive road safety measure which serve more as a confirmation of current good driving behaviour (i.e. the analysis of current driving behaviour, the indication of good and not-so-good behaviour, but also the presentation of clear handholds for drivers who wish to improve or maintain good behaviour). In addition, such services can also provide solutions for problem situations: both micro-behaviour (speed choice, lane swerving and between-vehicle distance maintenance, etc) as macro-behaviour (navigation-based avoidance of difficult / intensive infrastructure) can be addressed.

The central element, independent of the type of service within the CARA platform, is that drivers receive personalized support for specific issues that become apparent from the (individual) drivers' analysis. Although such personalized solutions are often accepted and used in different settings related to ageing, this solution is often overseen within a mobility and road safety context. CARA aims to change this.

CARA II, the planned follow-up project, focused on the effective development of the CARA platform, the associated services, and the parallel development of the business models. Further information on this project can be provided on demand.

The planned components are akin to those who are already commonly used in the automotive sector: data-gathering is mostly planned through the use of OBD, Dongle-devices or smart-devices (automated). Driving behaviour analysis happens (most commonly) off-line but edge-computing may be possible already (similar to the sensors used in current semi-autonomous driving solutions). Driver feedback components depend on the specific driver needs. General driver behaviour feedback is presented (after the driving task is finished, preferentially on a regular basis) through an end-user sensitive dashboard. Navigation advice can be provided through regular navigation assisting devices. etc.

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Use Cases Description

The primary end-user group are car drivers aged 55 and more. The CuARdian Angel II (CARA II) consortium strongly believes that keeping Europe's ageing population mobile, active and independent is important for a sustainable society. Elderly mobility is paramount for their health, social networks and independent social engagement. Furthermore, prolonging elderly independence reduces societal costs and potentially raises personal prosperity.

In the first CARA project (CARA I) our consortium identified relevant needs that are experienced by ageing drivers as well as possible gains and wishes for primary, secondary and tertiary end-users . Through large-scale surveys, in-depth interviews and end-user workshops, valuable insights were gained. With age, driving experience increases, but 'fitness-to-drive' tends to deteriorate, as motoric, sensory and cognitive skills decline. And though so-called Advanced Driver Assistance Systems (ADAS) can offer a mitigating solution, they may also make driving more complex if they are not designed with aging users in mind. CARA-II solves this problem with an aftermarket ADAS that is highly personalised, and specifically designed with the needs of ageing end-users in mind.

Some example scenarios: Gerda is a 74-year-old pensioner who lives in the city together with her husband. Although she stopped working, she has a very active life, and her car is an important means of transport for her to maintain this active lifestyle. Driving is essential for her daily activities. She uses the car for groceries and takes her husband to medical appointments. She also used her car to go on excursions with her husband, visit family and friends, and occasionally drives to her voluntary work. With many years of experience, she considers herself to be a good, safe and relaxed driver. Currently, this is where Gerda's story ends. Depending on the country where she lives, she may (or may not) be confronted with mandatory fitness-to-drive tests as she grows older and suddenly face the prospect of losing her driving license. In some countries, she will continue to drive without receiving any guidance on how she can cope with an ever-evolving driving context.

For most ageing drivers, the story however doesn't end well: a sudden confrontation with personal limits (i.e. fitness-to-drive) or unpleasant driving experience will trigger a sudden loss of mobility. With CARA-II, we want to change Gerda's story. We want her to remain mobile safely for a longer period of time and we want her to experience the benefits of what modern technology has to offer.

The story continues … When Gerda comes across the CARA-website, the 'self test' piques her interest. As she reflects on her driving skills, she realises that they are not as good as she assumed. She proceeds to check out different services that the CARA Platform offers. She gets interested in CARA MyCoach, a product that provides her with insight and feedback on her driving behaviour. She also likes the method of payment – a small monthly fee, and a deposit for the device, which she can send back anytime.

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She wonders how she'll be evaluated. She orders the product, easily installs it in her car and starts driving. After driving for a while, she checks her CARA Platform page. There, she finds out that her general score is good, but that she could improve on lane keeping. Here, she scores lower than most people of her age. This motivates her to improve, using the personal coaching offered via the MyCoach system. Every two weeks, she checks her scores. She proudly shares her results with friends and family.

Her daughter also visits the CARA-website and notice that there's another product which may help Gerda: the CARA MyRoad app. She buys it for her mother as she was complaining about how complex and stressful the road was when she comes to visit and wants to find a solution. The CARA MyRoad app will help her mother identify these along her trips and start provide her with alternative routes. Similar scenarios can be written for a multitude of persons. It doesn't matter whether it's Hans, a very active 71 year-old single pensioner who lives in the city suburbs, Armand, a recently retired school principle who remains strongly connected to his former work, or Erika, who recently lost her husband and how has to cope with daily groceries in a rural area without many (public) service.

The CARA platform offers solutions to Gerda, Hans, Armand and Erika. In fact, the CARA platform aims to provide solutions to even more persons, not necessarily only the ageing persons. We believe that similar solutions may be applicable to different end-user groups who are in particular vulnerable to accessibility problems (i.e. persons with physical disabilities). The possible use of ADAS to support an ageing population in their drive task has been identified for quite some time. ADAS was recognized to have the potential to address either directly or indirectly the specific declines in perceptual, cognitive and physical performance by enabling a reduction in driver workload. At the same time, the importance for integrating design concepts which properly handle ageing is an established fact. Indeed, this is one of the cornerstones embedded in the AAL programme.

Yet, until now hardly any vehicle technology has been designed for aging end-users, as confirmed during CARA I. Neither is any other study involved with the use of modern technology and regular personal support in supporting the driving skills of seniors. The CARA I project has collected strong evidence and support to conclude that such concepts would be marketable within feasible business models but finished before such products could be developed. Other market products are, for example the use of traditional ADAS systems (often limited to opt-in buy-in usage and very often with limited HMI for ageing road users), traditional driving instructor sessions (often considered to pricy and very irregular, limited quality control), fitness to drive evaluations or medical check-ups (which are often associated to late interventions in case of acute illness or very limited face validity), etc. Such methods are in first instance a reflection of the current very limited knowledge on the potential of clear mitigation activities towards ageing drivers.

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