SWARA

CHALLENGING RESULTS

An assistive speech synthesis system:

Innovative solution for the Romanian language incorporating several state of the art modules.

Audio Databank:

A valuable resource with a functionality that is not limited to the scope of the present project.

Predictive text input:

Generic approach which will be customized for the typing specifics of speech-impaired persons (e.g. vowel elision).

Speaker adaptation:

Improvement of the adaptation techniques through the increase in speaker similarity and the speed of adaptation.

Application design:

State-of-the-art architecture adaptable to future changes in technologies and devices and providing the same user experience across devices and platforms.

Psychological and social impact:

The technology is rooted in the patients' needs and requirements evaluated by a highly specialized team of psychologists and medical practitioners. The social impact of the synthetic voices accompanied with gestures and human presence is expected to improve the quality of life.

THE CONSORTIUM

Project Coordinator

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SWARA

Mobile System for Rehabilitative Vocal Assistance of Surgical Aphonia

PN-II-T-PCCA-2013-1660
2014 - 2016

http://speech.utcluj.ro/swara

OBJECTIVES

Personalised Speech Synthesis system

- deliver a technology that enables assistive speech synthesis for speech-impaired persons

- create personalized synthetic voices by using state of the art speaker adaptation method

- select and transform a synthetic voice from an available speech databank

Fast and efficient text input

- develop the algorithms to increase the speed of text input using text prediction for the Romanian language

- create language models adapted to the usage context and to the needs of the impaired persons

- develop use-case scenarios for context aware fast text input into the speech synthesis engine

Portable technologies

- deliver a cloud-based text to speech synthesis web service accessible from everywhere and from any device

- smart interface to access the cloud-based speech synthesis from mobile devices

- enable the access of the patients to the use of their personalized synthetic voices
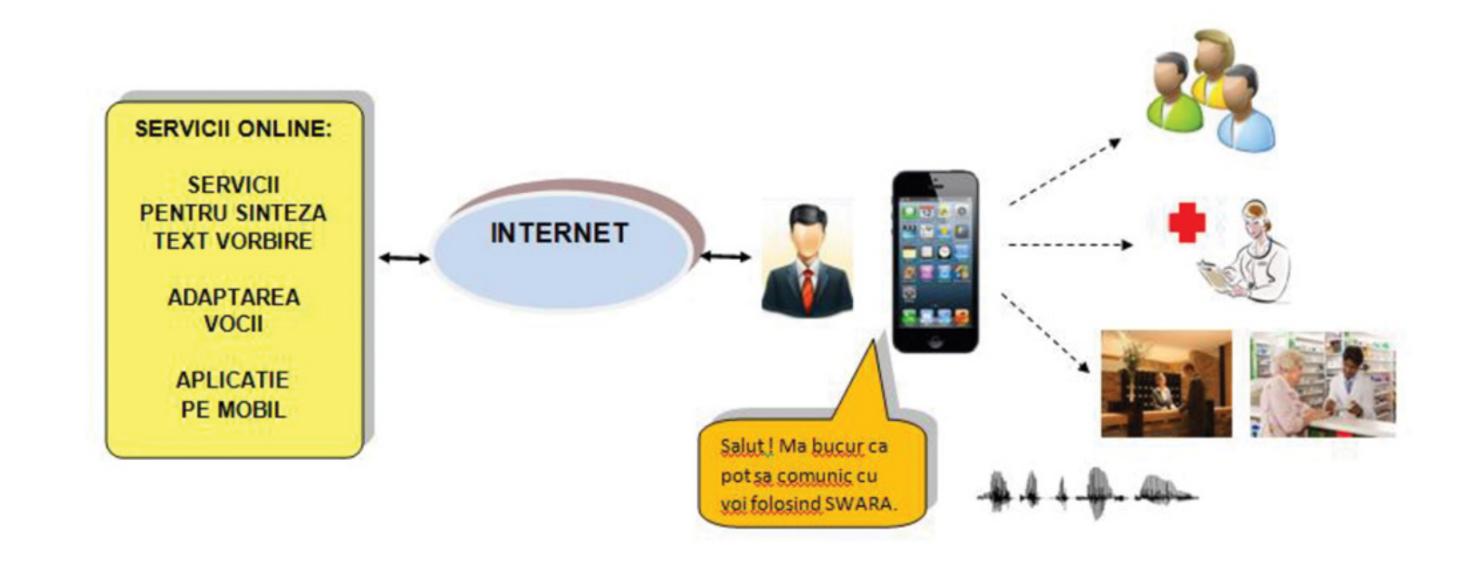
USAGE SCENARIOS

SWARA will provide:

- a portable speech synthesis technology,

- a context-aware and user-adapted faste text,

- a set of customized voices,

- an easy to use assistive speech synthesis

for a special category of users:

- laryngectomized patients,

- patients with aphasia (aphasia is a communication disorder that affects a person's ability to process and use language),

- deaf and dumb people.

The system will assist the patients to better communicate with the family, the doctor, or in their daily life activities using a speech synthesis technology.

ACTIVITIES

High Quality Text-to-Speech Synthesis System

- a complex front end processor
- an optimized speech signal synthesis engine
- generic synthetic voices of professional speakers

Evaluation of Synthetic Voices in Social Interaction

- evaluation of the social impact of the synthetic voices
- naturalness and intelligibility in the human presence
- evaluation of the improvement of the quality of life

Audio Donor Databank

- create a speech data bank from many individuals
- collect video recording for possible lip reading options
- aggregate the annotated text, speech and video data

Smart Assistive Text Prediction

- fast text prediction of the patient input
- multiple words or sentences prediction
- models for context dependent text prediction

Adaptive Speech Synthesis

- create eigen-voices using the audio databank
- new models for speaker adaptation
- offline personalization of the desired voice

Cloud-based speech Synthesis Web-Services

- develop a cloud-based platform for speech synthesis
- code optimization for near real time synthesis
- enable the wide access from mobile devices

Dissemination and Exploitation

- dissemination and demos activities with the users
- publication of scientific materials
- exploitation plans by the industrial partner