

MOBILE SOFTWARE TOOL BASED ON Web-RTC

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Abstract: The need for interaction and collaboration between people with ultimate goal for achieving common goals has existed from the earliest times of humanity. As technology evolved, so did the development of communication and collaboration tools. The rapid development of computer systems and the Internet, the basic tools to support collaboration have been replaced by new - electronic tools for communication and collaboration. Today the existence of cloud systems, mobile devices and the Internet of Things (Internet of Things - IoT), is key to a complete change in the way we interact and collaborate. In accordance with the requirements of modern society, there are tools that enable communication and exchange of information and content in real time, contributing to more efficient, effective and cheaper cooperation between teams that are geo-location dispersed on the planet. In this context, new software tools for collaboration contribute to major changes in many social sectors, for example in education, administration, industry, medicine, services and especially customer support, etc. Today, collaboration software tools can be classified into two categories: Asynchronous collaboration tools - these tools allow participants to collaborate on tasks in different time periods and from different locations; and Synchronous collaboration tools - these tools allow participants to collaborate in real time, whether they are in the same location or dispersed in different locations. Recognizing the needs from the realization of simple and flexible synchronous collaboration tools, the main goal of this paper is to study the existing synchronous collaboration tools and to offer an architecture of alternative mobile synchronous tool based on WebRTC (Web Real-Time Communication), which will minimize the use of system resources on mobile devices. A prototype has been developed for this research a mobile application that implements real-time audio and video communication based on WebRTC and it is used to study the most appropriate technology for signaling and data transmission. Research was conducted through a case study on the quality of experience (Quality of Experience) and the Quality of Service of this type of tool, and the possibilities for its application as a tool for widespread customer support.

Keywords: audio and video conferencing, real time, Covid-19 pandemic, distance education, communication, customer support

1. INTRODUCTION

Not so long ago real-time communication came down to a phone call. Today in the field of real-time communication is the most widely used WebRTC technology. The dynamism of the world we live in requires continuous development and upgrading of ways of collaboration. We are constantly working on improving the old ones, as well as developing new technologies for connection, communication and collaboration.^[1,2] Achieving various goals, individual and/or social, emphasizes the need and inclination towards the necessary establishment of communication and realization of cooperation. Some of us prefer e-mail for communication, others prefer phone or video conferencing, still others face-to-face meetings, or a combination of more.^[4] In general, we can separate two ways of communication: synchronous - communication in the same time period, ie. in real time; and asynchronous - communication in different time periods. For the both ways, location (in time zone) is not particularly important.

2. METHODS AND RESULTS

The most modern tools for creating mobile (portable) applications were used in the preparation of this paper. Proper selection of test groups and their division is of great importance. In order to obtain results that are credible and most closely reflect the reality in a unit of time, a questionnaire (survey) was created to which respondents answered with short answers. The questionnaire consists of 10 questions, which are aimed at evaluating the application itself and the overall concept of using a mobile solution for synchronous communication, both in everyday life and in times of crisis such as the global epidemic caused by the Corona virus.^[3,8]



Fig.1. The logo of WebRTC mobile application

In the test scenarios, 30 respondents were called who tested the need and functionality of this type of application, namely: whether it is easy to manage, whether there is a user-intuitive interaction, the advantages and disadvantages of it. The respondents are divided into two age groups, from 18 to 50 years, and over 50 years. Over 90% of the respondents from the first age group recommend it and would gladly use it again, while the respondents from the second age group, due to the nature and biology of their age, would use it only in the most necessary cases.^[2,9] A large part of the total number of respondents over the age of 18, were part of the educational process, ie students, assistants and professors, who expressed particular interest in using the mobile application WebRTC in today's viral conditions, as the most favorable model for distance education.

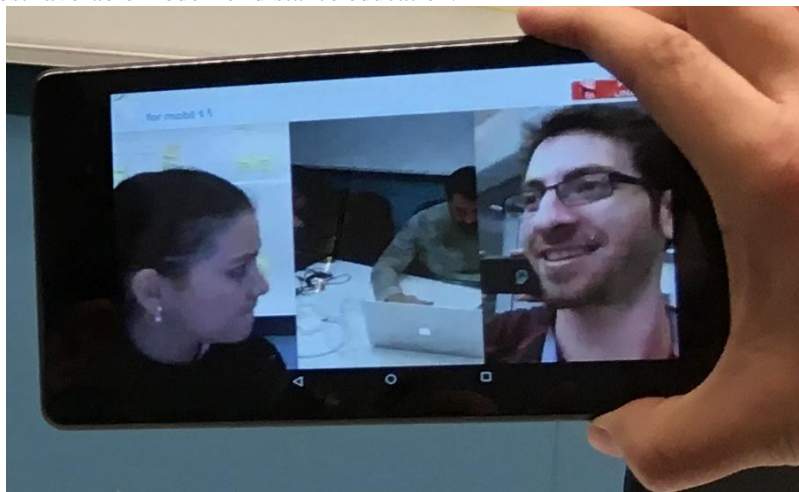


Fig.2. Fig.2. Successful testing of WebRTC as a mobile application

Education should be a solid pillar in a society on which its future largely depends. Given this, we are faced with changed conditions in our daily work, education and progress. In this period of crisis, first of all health, but also socio-economic, the ability to follow teaching remotely is of great importance. In addition, in order to avoid the undesirable negative consequences in the overall educational process of the students, the educational staff should be able to continue the planned program in the upcoming school year, ie academic year.^[6] With small adjustments, to protect against possible infection with Covid-19, everyone involved can contribute using advanced software technologies such as the WebRTC application.^[7,9]

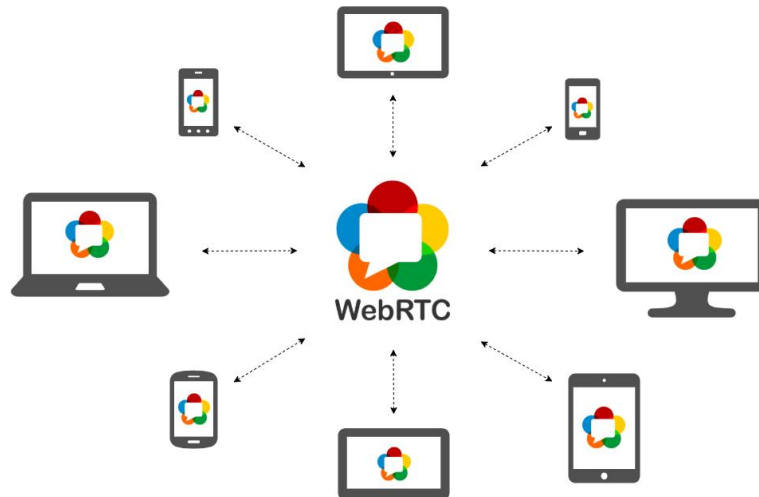


Fig.3. Unlimited interaction and communication between participants

Modern society cannot be imagined to function normally without easy and fast access to a mobile device, which at the same time has a constant internet connection.^[5] Technology can enable all this to meet our daily needs, of course, if the right strategy and direction for the use of resources is prepared, but not the abuse of them.

3. CONCLUSION

If we start from the last 6 months, it can be concluded that communication between people must not be interrupted, although the whole world is exposed to isolation as a result of Covid-19. In this regard, the WebRTC mobile application is the new way to more efficient education, in order to overcome the current challenges.

4. PURPOSE

Mobile applications (WebRTC), are readily available and should be used to facilitate and enhance distance education as well as the functioning of the entire modern society.

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