White Paper

WebRTC Promotes Cross-Platform Video Messaging, Inspiring Creative IIoT Uses

WebRTC is a real-time P2P communication technology. Besides traditional voice and video communication, WebRTC has diverse application potentials and can be used for video conferencing and IoT-related applications such as remote diagnostics and security surveillance.

The peer-to-peer (P2P) based Web Real-Time Communication (WebRTC) is an open source standard created by the World Wide Web Consortium (W3C) to support the usage of HTML5 video and audio protocols. Besides traditional P2P voice and video communication, WebRTC has diverse application potentials and can be used for video conferencing and IoT-related applications such as remote diagnostics and security surveillance.

In order to accelerate the standardization of IoT device connectivity, Intel, Microsoft, Cisco and other organizations have established the Open Connectivity Foundation (OCF) in February 2016. Various large organizations in OCF share a promising outlook for WebRTC growth and have already begun incorporating some of its specifications into the OCF standard, demonstrating the development potential of WebRTC. WebRTC is not only an indispensable element for IoT, but also leads the way for the development of real-time cross-platform video messaging applications.

WebRTC highlights that it requires no additional software or plug-ins and only a web browser is needed to stream video and audio data and share information. This overcomes the technical barriers imposed by hardware platforms and operating systems (OS) and reduces development complexities. Furthermore, with support for HTML5 and codecs such as VP8, VP9 and H.264, WebRTC allows developers to easily build real-time P2P applications for different platforms with reduced coding effort.

P2P Communication Made Easy with Web Browsers

Alex Perng, General Manager of NEXCOM's IoT Business Unit, believes

that more than 80 percent of internet data consist of unstructured data, and the voice and video data contained within will increase at a staggering rate in the future. With WebRTC standardizing video and audio transmission, development towards WebRTC is inevitable. In addition, as most current voice and video streaming applications are built on non-standard frameworks, various dividing barriers exist, creating obstacles that cloud the all things connected vision idealized by Industry 4.0 and Industrial IoT (IIoT); further exemplifying the great potential uses for WebRTC.

With a positive outlook on WebRTC, NEXCOM has collaborated with Intel for the past two years to develop the first ever client/server-based real-time video conferencing software, ToGazer, which incorporates the WebRTC P2P communication model and expands on it into a multipoint communication and collaboration platform. ToGazer can support voice and video communication, presentation uploads, desktop and file sharing, session recording and various other enterprise conferencing features.

ToGazer achieves cross-platform video conferencing in five ways. First, it utilizes the cross-platform nature of WebRTC, which allows users to conference on any device, as long as a web browser is available. Second, it modifies the P2P architecture into a client/server model to support multipoint conferencing. Third, the platform uses the server to schedule conferences, provide privacy and record sessions. Fourth, ToGazer is optimized for Intel's platform to deliver the best possible quality. Lastly, ToGazer leverages an open source architecture, which greatly lowers costs.

"Video conferencing represents a milestone for NEXCOM in the WebRTC

application development space, but conferencing is not the sole purpose," says Perng. "ToGazer originally focused more on video conferencing features. However, ever since its public introduction, many users have been creative in using it to support applications such as call center, remote education services and online radio broadcasts. Take a call center application as an example, in order to provide online call center support, operators had to install expensive VoIP handsets and adjust the network to accommodate video and audio data, which is a complicated process and difficult to maintain compared to using WebRTC-based communication with just a PC and microphone."

AR/VR Integrated WebGL Gives Birth to Innovative Industrial Applications

Perng emphasizes, "The WebRTC-based ToGazer video conferencing application is only just the beginning step. In the future a great opportunity exists for ToGazer to have a significant place in the industrial sector."

Although current industrial applications rarely involve the use of video and audio transmission, the amount of browser-based IoT applications is not a minority; even a simple ARM-based terminal device is capable of running a web browser. In addition to video and audio transmission, WebRTC can transfer plain text and data, provide cross-hardware and cross-OS support, and run independently on a browser. These characteristics and benefits all match the needs of IIoT, showing a bright future for WebRTC to flourish within the next two years.

Furthermore, most communication protocols in industrial environments lack support for video and audio transmission. As Industry 4.0 develops, the number of machine-to-machine communication and communication of devices with MES/ERP systems will grow, increasing the demand for real-time voice and video communication. In that event, businesses can simply add WebRTC protocol support into the industrial protocols to fill in the communication gap, skipping the need to modify the existing infrastructure.

Another worthy mention is that some businesses are already integrating WebGL technology into WebRTC to provide 3D image transmissions, bringing virtual reality (VR) to browsers. By combining this with augmented reality (AR) technology, controlling micro robots into hazardous working environments can be made possible to help factory operators to collect operational data from remote device, unlocking infinite industrial application possibilities.

NEXCOM

The Intelligent Systems

Founded in 1992, NEXCOM integrates its capabilities and operates six global businesses, which are IoT Automation Solutions, Intelligent Digital Security, Internet of Things, Interactive Signage Platform, Mobile Computing Solutions, and Network and Communication Solutions. NEXCOM serves its customers worldwide through its subsidiaries in five major industrial countries. Under the IoT megatrend, NEXCOM expands its offerings with solutions in emerging applications including IoT, robot, connected cars, Industry 4.0, and industrial security.

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