Paper ID: 59221
oral

IAF SPACE OPERATIONS SYMPOSIUM (B6)
Ground Operations - Systems and Solutions (1)

Author: Mr. Markus Töpfer
German Aerospace Center (DLR), Berlin, Germany

Dr. Rolf Kozlowski
DLR (German Aerospace Center), Germany

OPENVOCS - AN OPEN AND FLEXIBLE MISSION CONTROL CONFERENCING SYSTEM

Abstract

Openvocs is a development of the German Space Operations Center for a Mission Control Room Conferencing System, with a main development goal of an open system core, which implements all Space Mission specific capabilities, while providing open interconnection capabilities as well as system extensions. Interoperability, flexibility and customizability are key design aspects. Traditional systems in this field are turnkey based vendor implementations, mostly with hardware based and static provisioning of user and conference endpoints. Openvocs is software based and enables custom system implementations and installations of different sizes, as well as instant system scaling on both, user side (amount of operator positions), and system core (amount of conference provision). A major design goal of openvocs is the provision of communication capabilities with an entry borders as low as possible. It is realized by using standard web technologies like Web Realtime Communication (WebRTC) for media transmission and a simple custom messaging protocol for signaling based on JSON. This approach enables any current web browser as communication endpoint. Furthermore low entry barriers are set within the software stack itself. All required communication protocols are implemented in line with Internet RFCs for the standards in use, and a very small amount of external software dependencies. The stack is opensource and licensed with Apache Version 2, which allows the use within turnkey based vender implementations, as well as opensource based implementations. Interoperability of system components is guarded by the definition of communication protocols and type of message exchange. Every system component uses a defined communication protocol (API) to provide a defined part of the overall system functionality (e.g. mixing some media endpoints) Openvocs enables different kinds of system architectures and implementations. Within this paper we will show how this platform works, compare used technology and technical stack with the traditional approaches and showcase security related interconnection topics at software, network, protocol and administrative system layers. Openvocs is a project to define, standardize, implement and provide a fully open communications and collaboration platform customized for Space Mission Control Room Conferencing. It will be part of DLR GSOC operational control rooms by the end of 2020.