

# WebRTC-based multimedia real-time communication service from GÉANT portfolio

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realization

Videoconferencing technologies in GÉANT portfolio



# WebRTC video-conferencing facilities for research, educational and art societies

*Videoconferencing technologies in GÉANT portfolio* 





GÉANT is a fundamental element of European e-infrastructure, delivering the pan-European GÉANT network for scientific excellence, research, education and innovation.

Through its integrated catalogue of connectivity, collaboration and identity services, GÉANT provides users with highly reliable, unconstrained access to computing, analysis, storage, applications and other resources, to ensure that Europe remains at the forefront of research.

### *Videoconferencing technologies in GÉANT portfolio*





• Polish NREN, Poznań, 300+ employees active research and development center for new generation networking, media, scientific applications, visualisation, grids, clouds, digital libraries, cyber security



- partner of numerous national and international projects
- operator of the national research network in Poland PIONIER
- represents Poland in numerous organisations and associations, including RIPE NCC and is a partner in such activities as GÉANT, Internet2, CineGrid, NEM, etc



# WebCRTC

- web-based RTC technology
- set of communications protocols and application programming interfaces
- enables real-time communication over peer-to-peer connections
- browsers can request real-time information from browsers of other users
- applications: video conferencing, file transfer, chat, or desktop sharing without the need of either internal or external plugins







#### Goals:

- develop technical infrastructure and components for open WebRTC services,
- provide common, open-source service for research, educational and art societies,
- simplify real-time communication and introduce web browser based tools (no additional software or plugins!)



#### Provide a complete solution to end user, in particular to:

- make easy to use WebRTC desktop videoconferencing service, available to all R&E and art users
- establish a GÉANT STUN/TURN infrastructure to support WebRTC technology (to overcome firewall and NAT traversal problems)
- establish WebRTC core infrastructure monitoring service and testing engines for users





#### 8 NRENs directly involved in development and pilot phase:



#### **Cooperation:**







#### **Current status**

- VC software for remote collaboration (live demo)
  - direct, peer-to-peer communication up to 8 participants (mesh)
  - centralized, multi-site version for more users (SFU based)
  - functional extensions (desktop sharing, chat,...)
  - available as a service and as on-prem solution
- server nodes for firewall / NAT locations support
  - 10 locations in EU and Asia
  - US and Australia coming soon
- essential monitoring of nodes



#### **Features:**

- Resolution tested: up to 4K
- Latency: similar to H.323, optimalization to be checked
- Very easy to use (click to connect), simple interface
- Video codecs: VP8, VP9, H.264, HEVC/H.265, AV1 development
- Audio codecs: Opus, iSAC, iLBC
- Free open source
- Very ubiquitous (most browsers)
- High availability potential



#### **Features:**

- Cloud and on prem
- Platform independent (Win / iOS / Linux / Android / ...)
- Echo cancellation on / off
- easy multipoint (mesh and SFU)
- NAT / Firewall traversal
- multi-channel (AV + data)
- moderate bandwidth requirements (up to 20Mbit/s for 4K)





### **Potential scopes of collaboration:**

- common scenarios
- common testing
- common infrastructure
- share your needs and ideas

#### Please help us with testing, we will support your nodes





# **High quality ready solution**















# 4K WebRTC

### Software

- Windows 10, Linux
- Firefox, Chrome, Opera

### Hardware

- PC workstation (2x XEON E5-2687w)
- 4K ready graphics card (Nvidia 980GTX, M4000)
- 4K Blackmagic Studio Camera
- 4K Blackmagic DeckLink 4K Extreme capture card







### 8K WebRTC

### 8K ready?

• testing... answer soon









### 8K ready?

• testing... answer soon



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# Thank you!

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