WebRTC isn't just for (video) conference calls

Tim Panton
CTO |pipe|
@steely_glint
WebRTC

- Great for conf calls
- But also other things
Meetecho

Zero install (for users)
Semantics of IETF meeting
Complex media priorities
Miku
Privacy
Nat traversal
Bandwidth costs
Podcast Recorder

github: Pipe/PodCall

Audio only
High quality
Mobile first

Https://distributedfutu.re
Stadia

Low latency
High bitrate
Playable games
In Chrome
On an old macbook

25Mbit/s
1080p
60fps
Remote access

Nat traversal
Zero install
Security

Demo
What have we learned?

- Not just video conferences
- Not all endpoints are laptop browsers
- W3C webRTC API (SDP) isn’t ideal for all use cases
- Not all endpoints run libwebRTC
Available rtcweb impl

- Pion (GO)
- |pipe| java
- Meetecho C
- Aiortc - python
- Mediasoup javascript
- Frozen mountain C#
- Gstreamer

Benefits of open standards

Interop Hackathon at IETF 107
What is a good API?

• I don’t know.

• W3C doesn’t know x 2

• Google doesn’t know

• So... Let’s try something else....
RTCweb as a Proxy

- Existing services
- Need webRTC magic dust (NAT traversal, zero install etc)
- |pipe| agent as a configurable proxy
Obvious one

- RTP (RTSP) -> DTLS SRTP - video/audio. Etc.
- (Only complexity is encoder control)
• Web sockets

• Data channel API in browser looks like websocket so, just return one and duct typing wins ;-) 

• Proxy data over named rtcweb datachannel to agent, which opens actual local web socket.
The Magic one

- Http
- Abuse service worker
- Add iframe (because you can't have a peer connection in a service worker)
- Magic happens
What this lets us do:

- Droid pi zero
- Runs a local web service providing interface
- Websocket for motor control
- Gstreamer RTP for video
- Proxy http+ws+RTP to browser
- Drive the droid
How is that an API?

- Web page creates data channel
- Label contains a URI
- Proxy interprets the URI locally (eg ws://localhost/motor)
- Proxy verifies URI is on the permitted list
- Proxies the websocket traffic (and semantics) over the DC
- Web page hardly notices
Worth Standardising?

- Email me tim@pi.pe
- Tweet me steely_glint
- Catch me in person....
“... as simple as possible, but no simpler.”

–Albert Einstein