

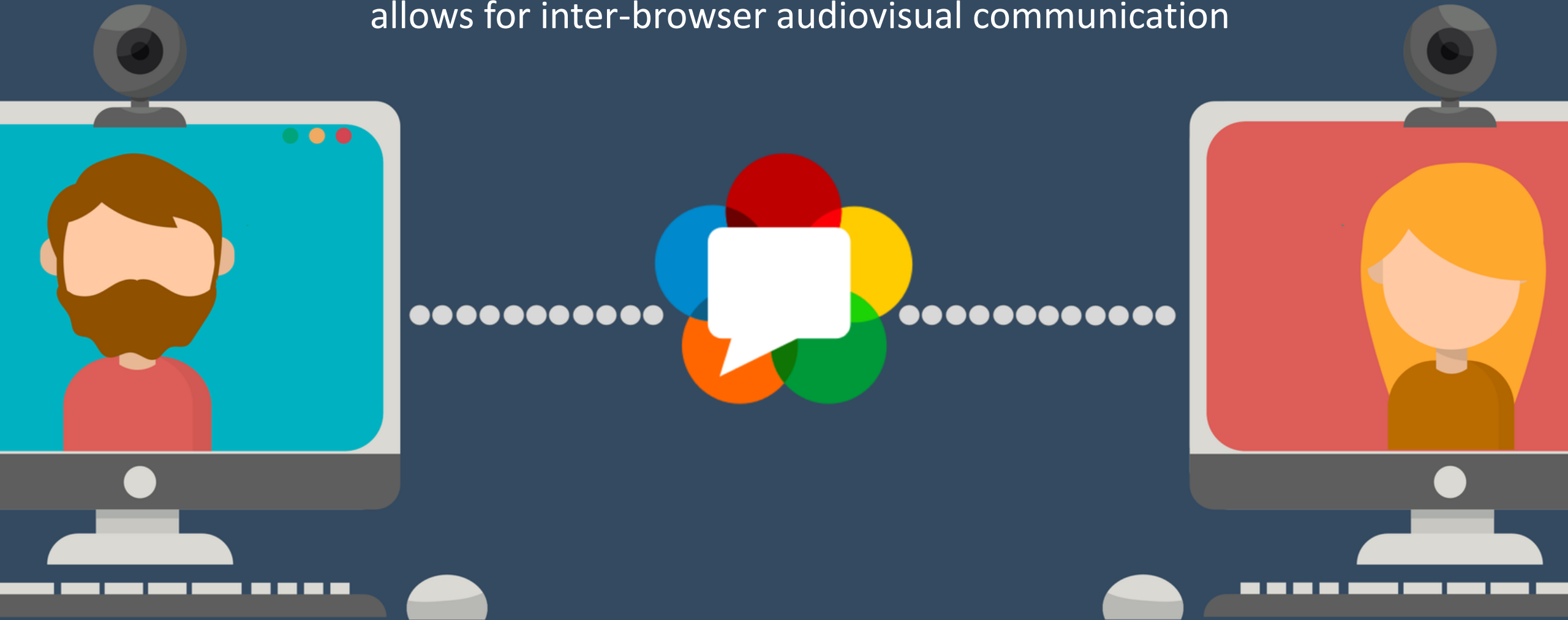
WebRTC

Final Project RSCM

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LEIM 51N

What is it?

Web Real-Time Communication is an open-source project which allows for inter-browser audiovisual communication



How did it start?

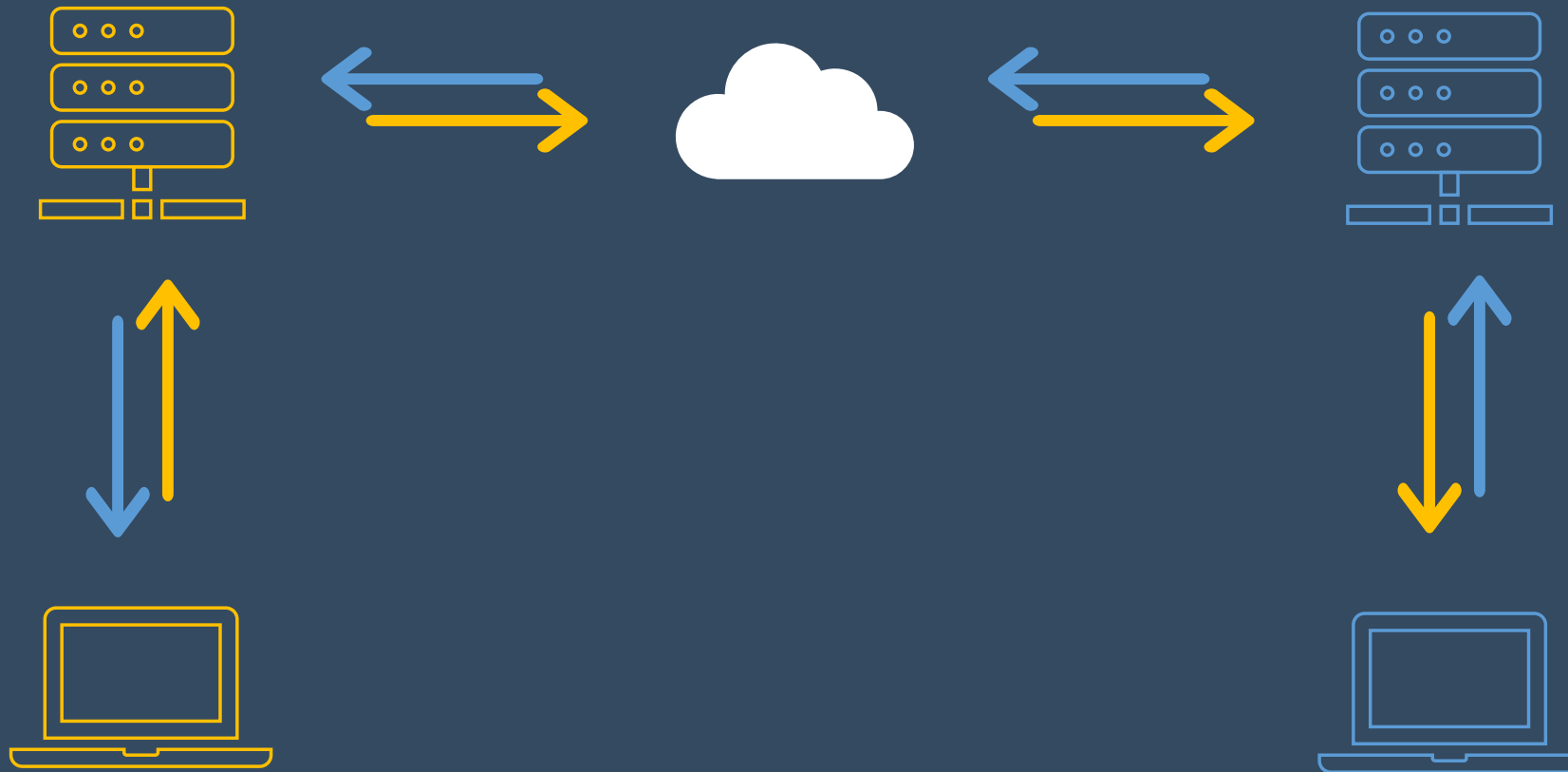
- GIPS
- On2
- 2010 - acquisition
- 2011 - project
- IETF, W3C, WHATWG
- Implementation
 - Ericsson
- 2011 - Chrome
- 2013 - Firefox
- Android
- 2014 - Opera
- 2017 - Edge



GLOBAL IP SOLUTIONS

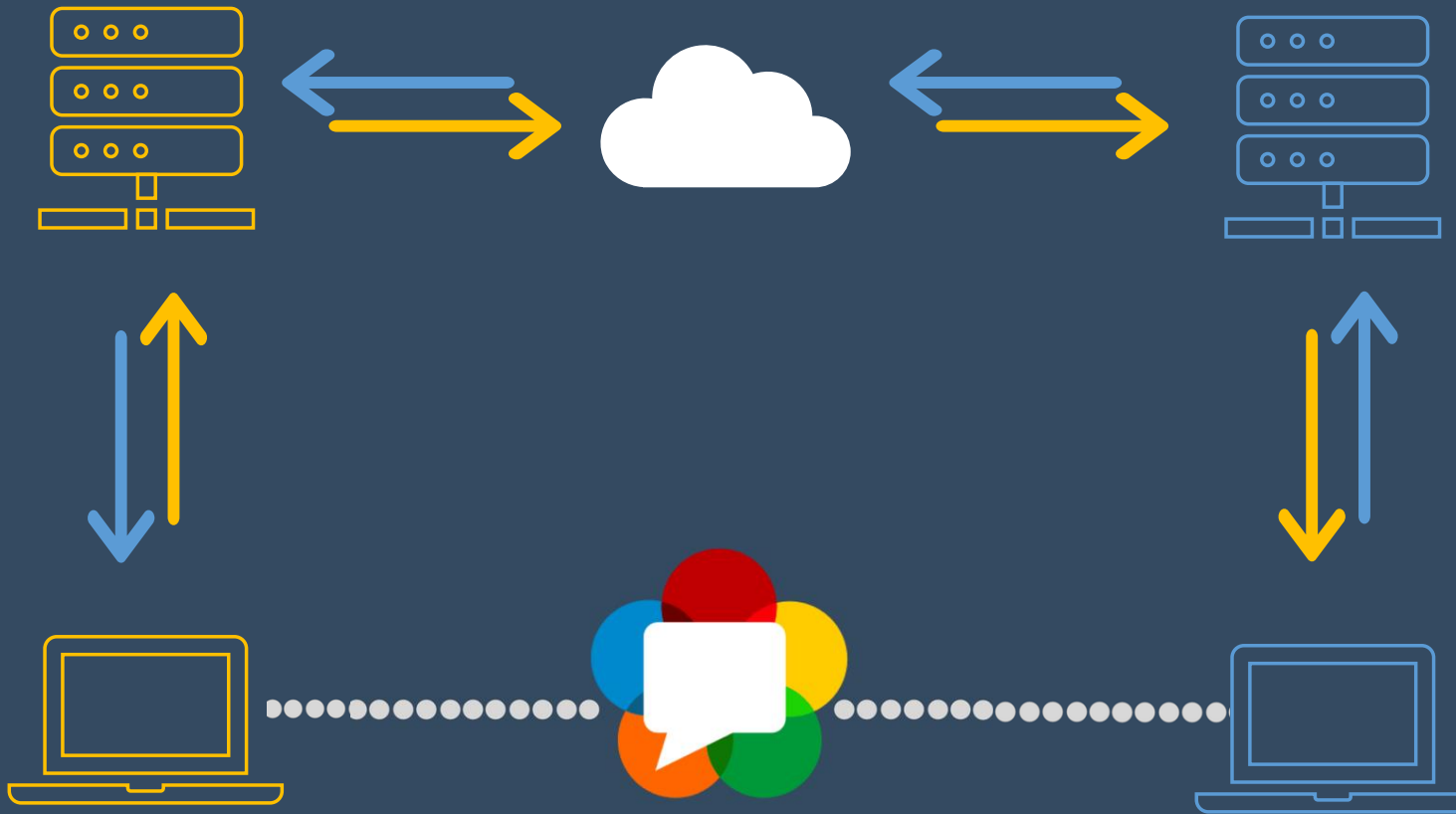
How does it work?

Real time communication without WebRTC



How does it work?

Real time communication *with* WebRTC

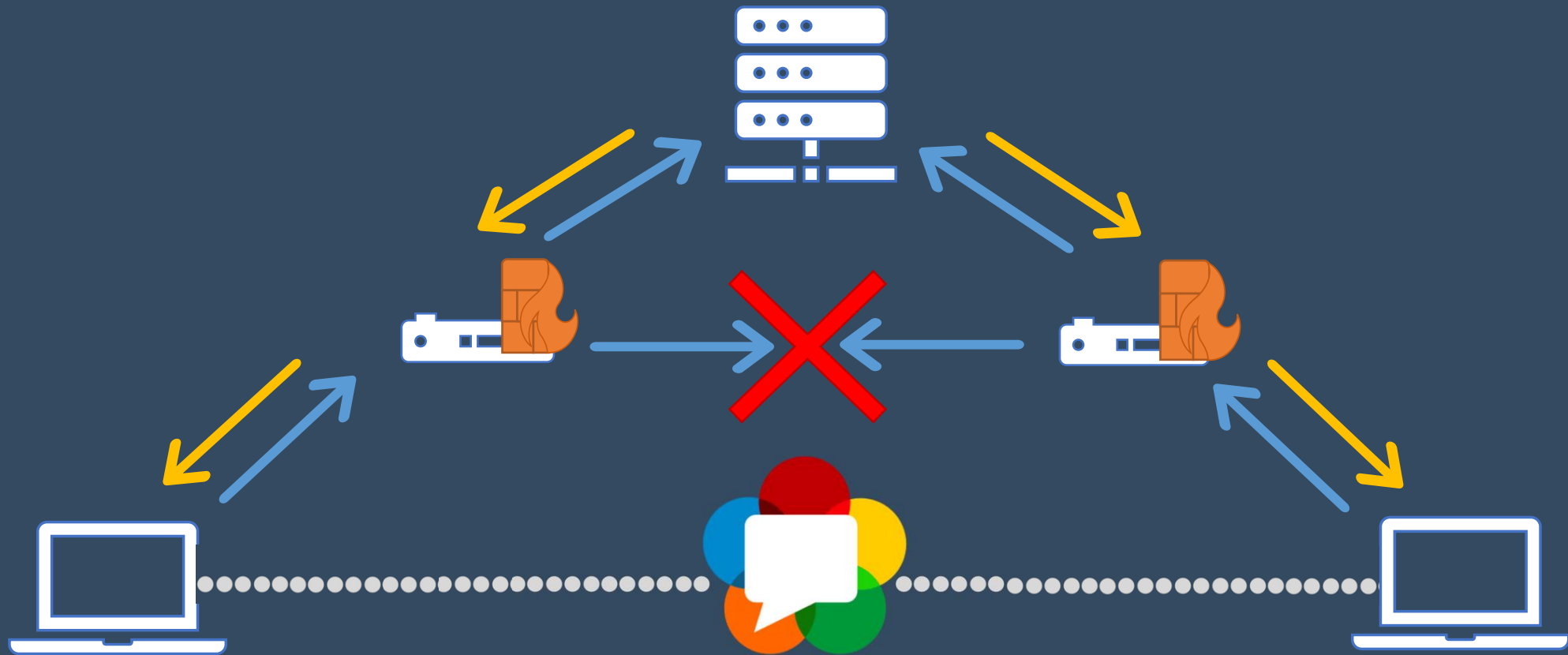


- *Signaling*
 - HTTP
 - WebSocket
- In each endpoint:
 - *RTCPeerConnection()*
 - *RTCDataChannel()*
 - *getUserMedia()*
- *Direct Channel* without server interference

How does it work?

Crossing *NATs* and *firewalls*

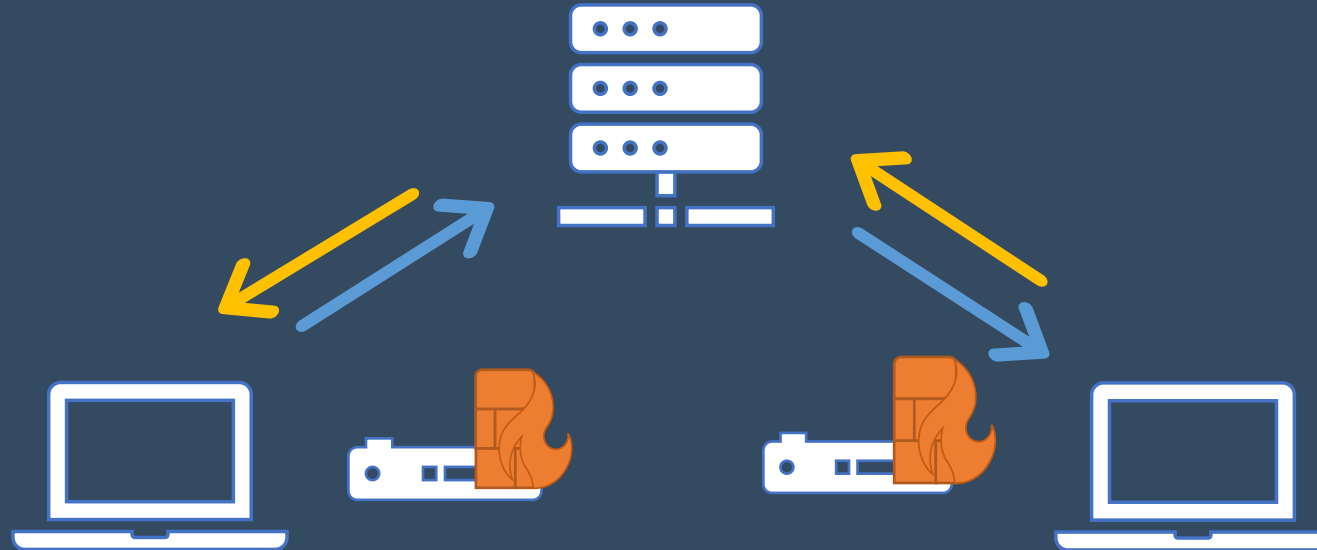
The most common methods are with the use of *STUN* and *TURN* servers



How does it work?

Crossing *NATs* e *firewalls*

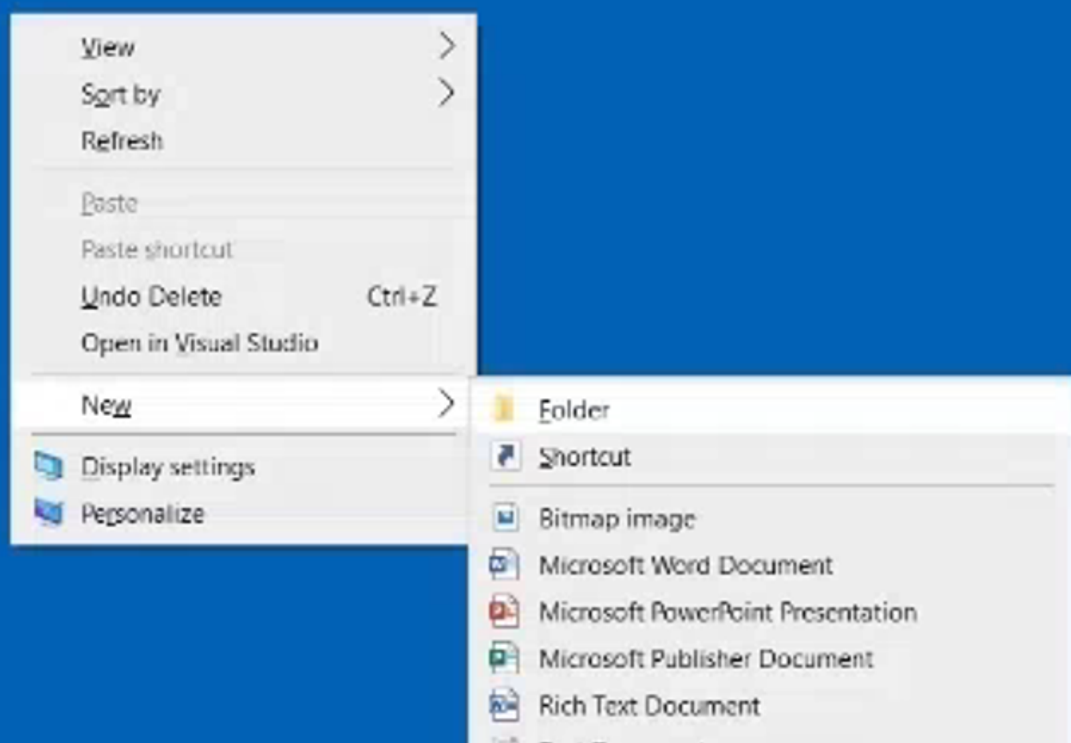
The most common methods are with the use of *STUN* and *TURN* servers





Recycle Bin

How to implement?



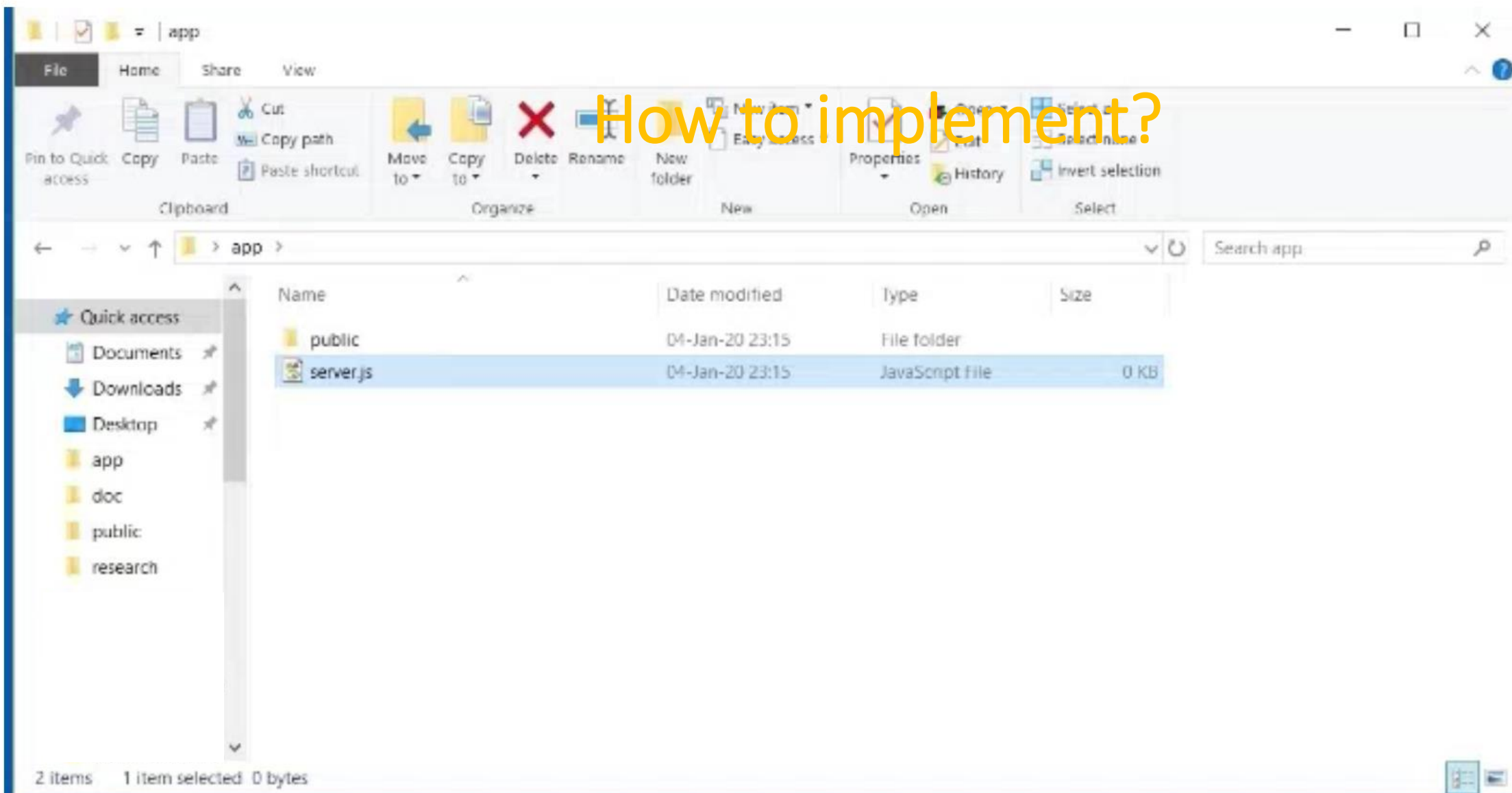


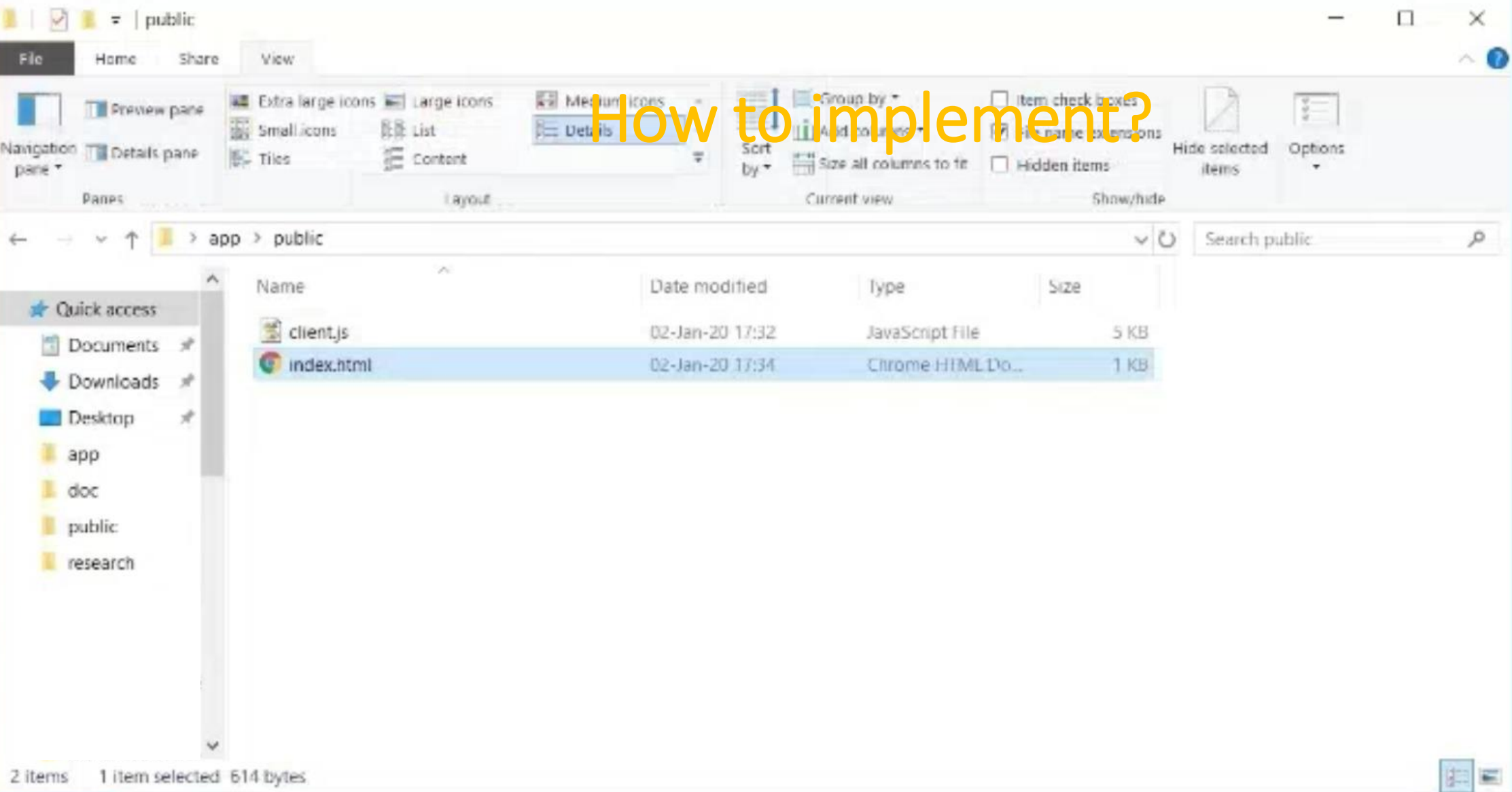
Recycle Bin

How to implement?



How to implement?





```
C:\Users\tomas\Desktop\app>node server.js  
listening on 3000
```

How to implement?

Microsoft Windows [Version 10.0.18362.535]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\name>cd C:\Users\name\Desktop\app

C:\Users\name\Desktop\app>npm init -y

Wrote to C:\Users\name\Desktop\app\package.json:

```
{
  "name": "app",
  "version": "1.0.0",
  "description": "",
  "main": "server.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1",
    "start": "node server.js"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}
```

C:\Users\name\Desktop\app>npm install -S express@4.15.4 socket.io@2.0.3

npm WARN deprecated uws@0.14.0: New code is available at github.com/uNetworking/uWebSockets.js

[.....] \ extract:socket.io-client: sill extract socket.io-client@2.0.2 extracted to C:\Users\name\Desktop\app\node_modules\socket.io-client

How to implement?

```
npm notice created a lockfile as package-lock.json. You should commit this file.
```

```
npm WARN app@1.0.0 No description
```

```
npm WARN app@1.0.0 No repository field.
```

```
+ socket.io@2.0.3
```

```
+ express@4.15.4
```

```
added 82 packages from 55 contributors and audited 173 packages in 4.265s
```

```
found 10 vulnerabilities (5 low, 2 moderate, 3 high)
```

```
run 'npm audit fix' to fix them, or 'npm audit' for details
```

```
C:\Users\name\Desktop\app>npm audit fix
```

```
npm WARN app@1.0.0 No description
```

```
npm WARN app@1.0.0 No repository field.
```

```
removed express@4.17.1
```

```
added 8 packages from 10 contributors, removed 3 packages and updated 15 packages in 1.456s
```

```
fixed 10 of 10 vulnerabilities in 173 scanned packages
```

```
C:\Users\name\Desktop\app>localhost 3000
```

```
'localhost' is not recognized as an internal or external command,
```

```
operable program or batch file.
```

```
C:\Users\name\Desktop\app>nodeserver.js
```

```
'nodeserver.js' is not recognized as an internal or external command,
```

```
operable program or batch file.
```

```
C:\Users\name\Desktop\app>node server.js
```

```
listening on 3000
```

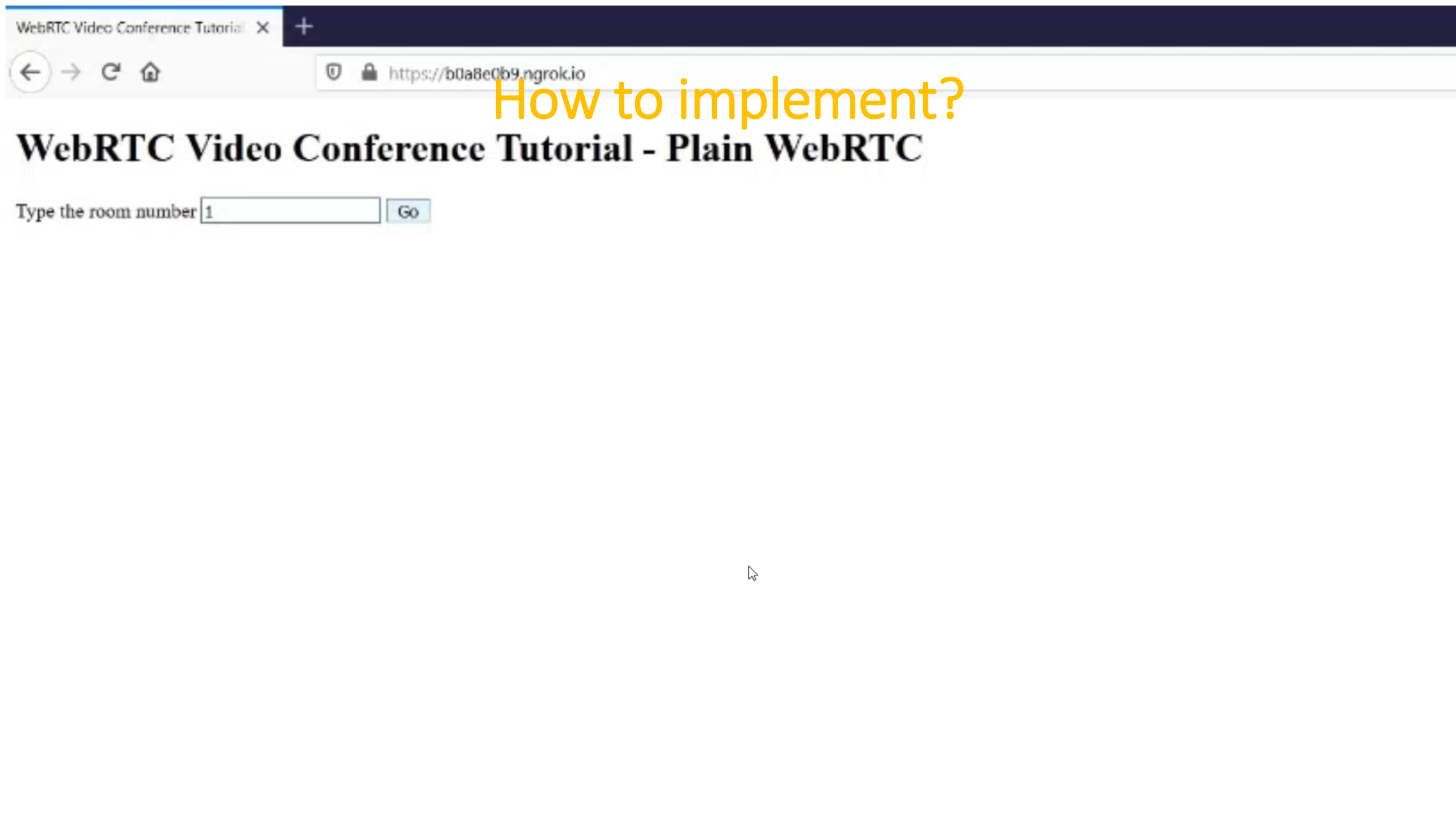
ngrok by @inconshreveable

(Ctrl+C to quit)

How to implement?

```
Session Status      online
Session Expires     7 hours, 59 minutes
Update              update available (version 2.3.35, Ctrl-U to update)
Version             2.3.29
Region              United States (us)
Web Interface        http://127.0.0.1:4040
Forwarding           http://b0a8e0b9.ngrok.io -> http://localhost:3000
Forwarding           https://b0a8e0b9.ngrok.io -> http://localhost:3000

Connections
  ttl    opn    rt1    rt5    p50    p90
    0      0     0.00   0.00   0.00   0.00
```



How to implement?

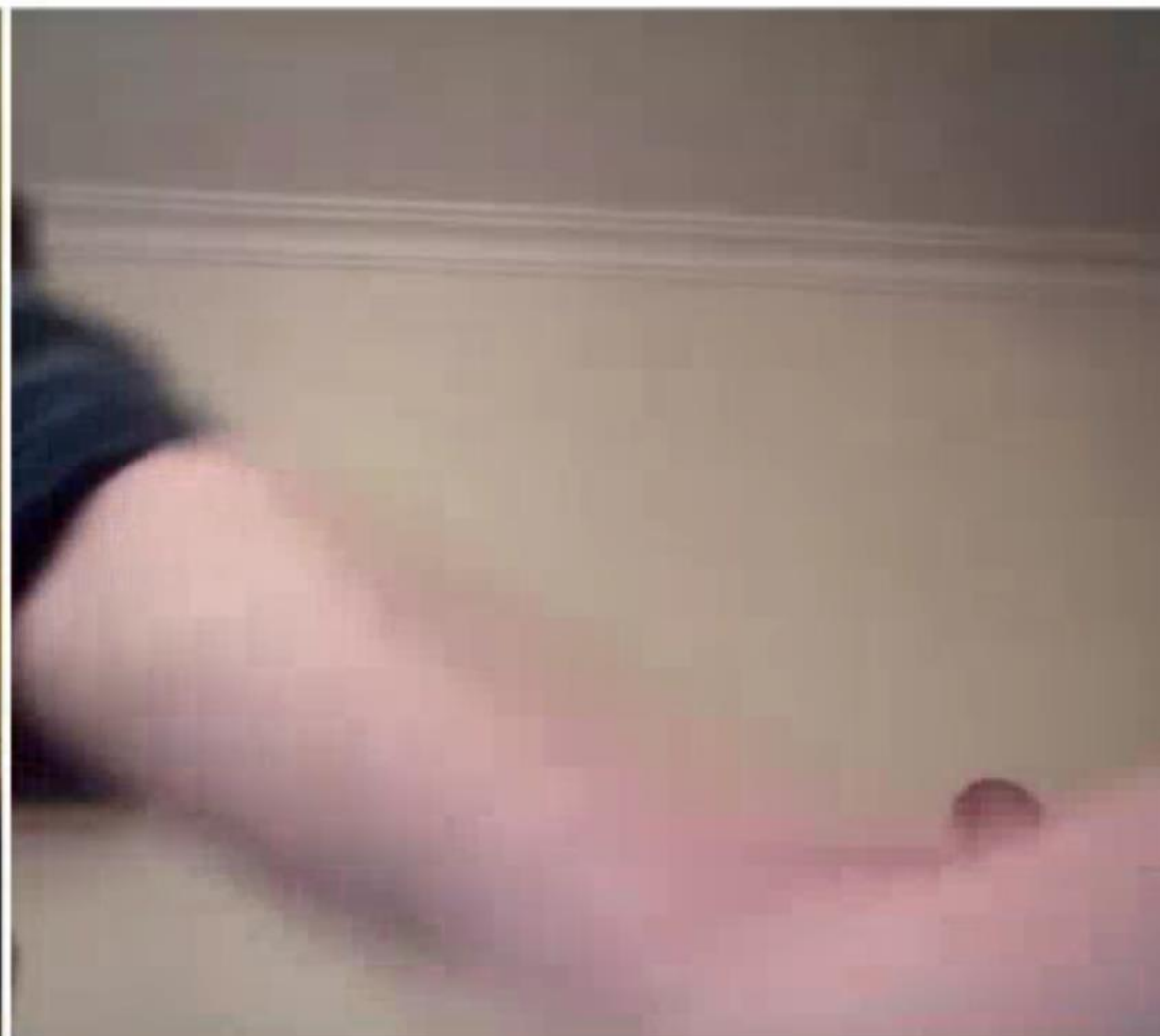
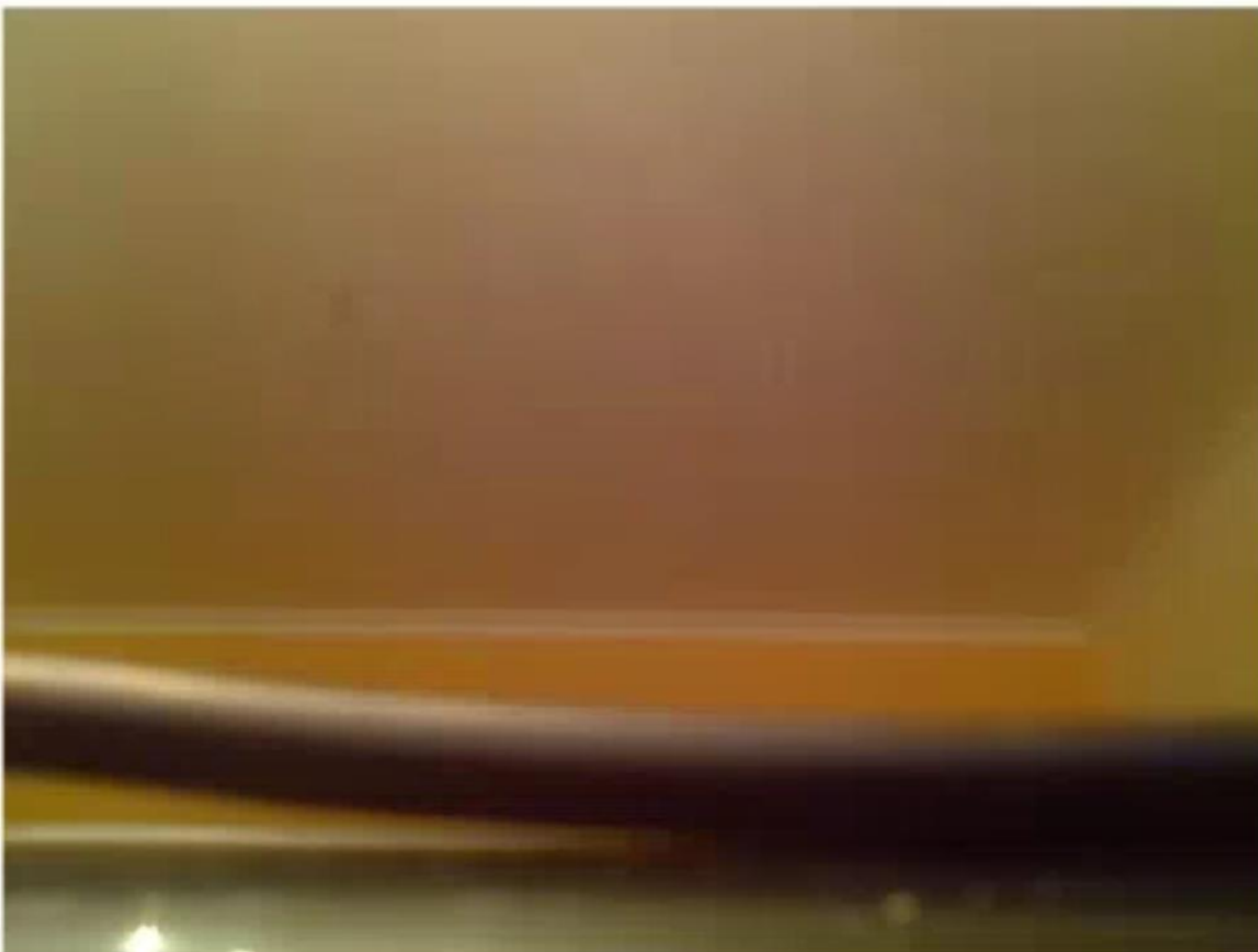
WebRTC Video Conference Tutorial - Plain WebRTC

Type the room number



How to implement?

WebRTC Video Conference Tutorial - Plain WebRTC



How to implement?

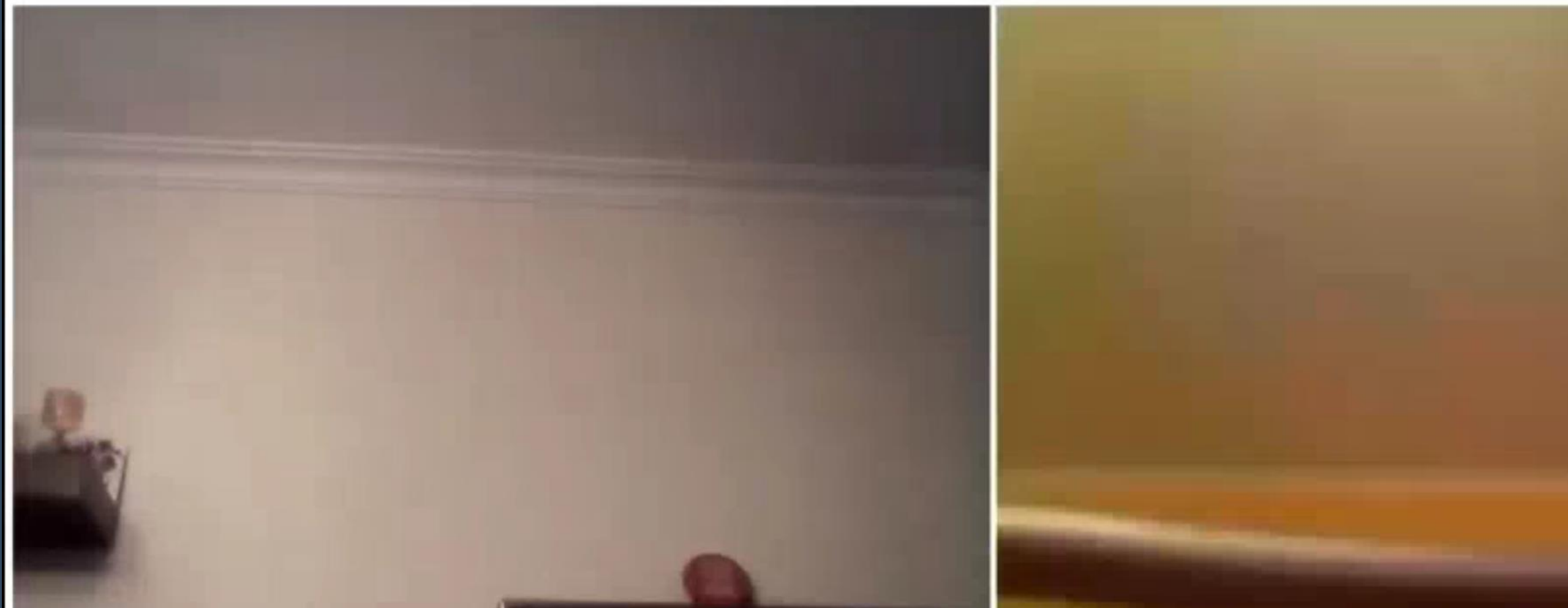
WebRTC Video Conference Tutorial - Plain WebRTC

Type the room number



How to implement?

WebRTC Video Conference Tutorial - Plain WebRTC



How is it evolving?



VeriShow



webRTC.ventures



SightCall



amazon



MED ZED



COMPETENTUM



*Companies offering WebRTC tools

*Companies offering products that use WebRTC technology in all sorts of industries

How is it evolving?



AT&T

ORACLE



Google

CISCO



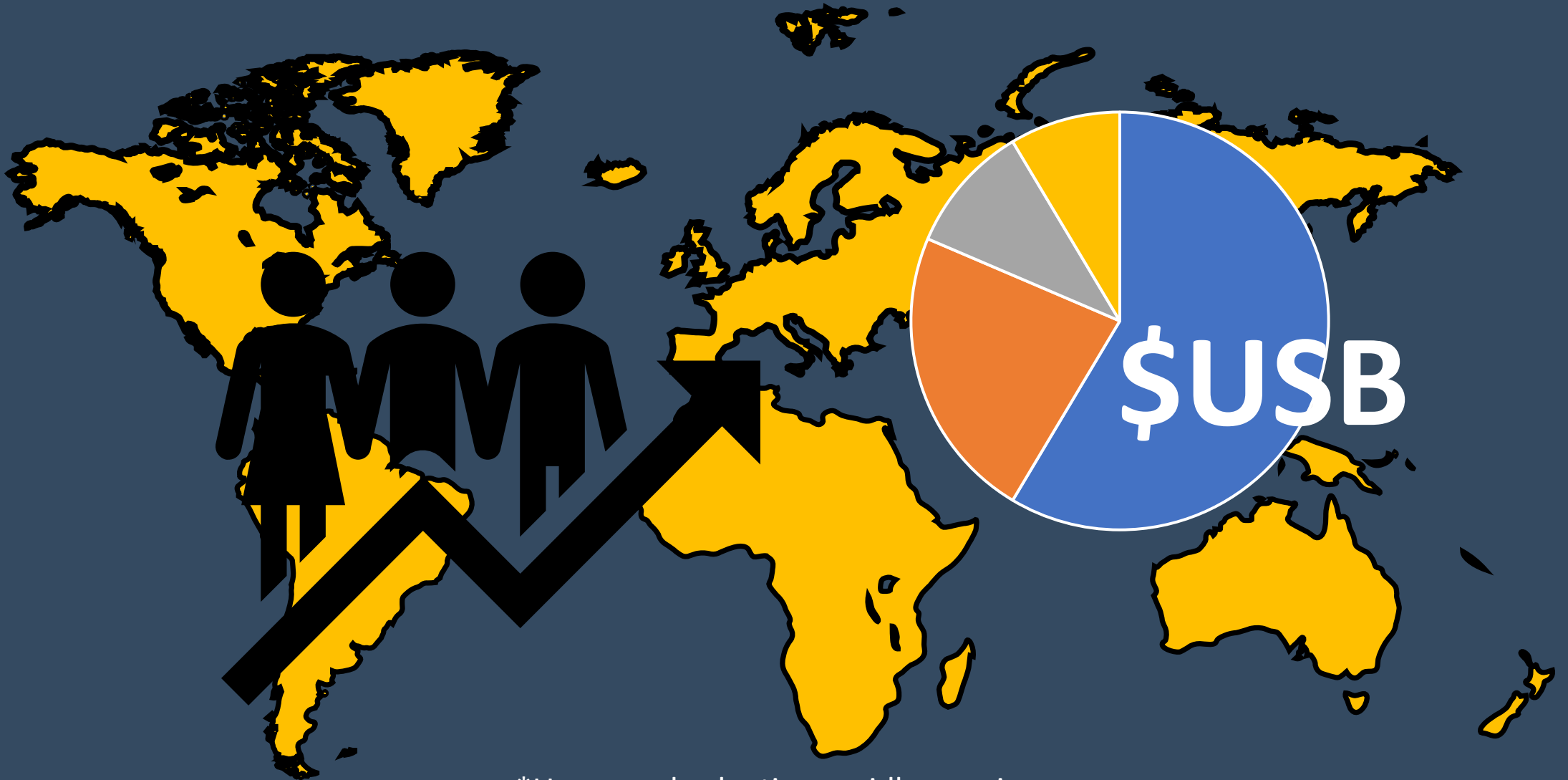
Microsoft



IBM

*Major players using WebRTC tech

How is it evolving?



*Usage and valuation rapidly growing