



Web Real-Time Communication Solutions

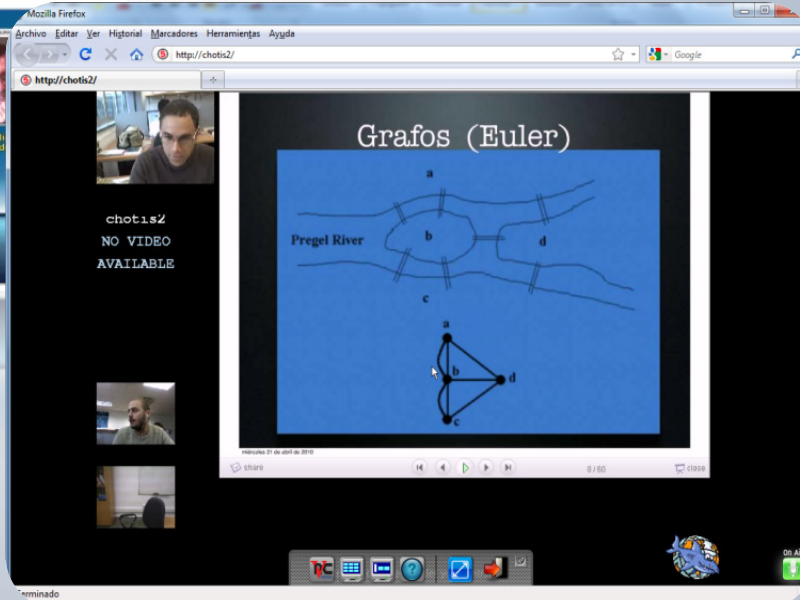
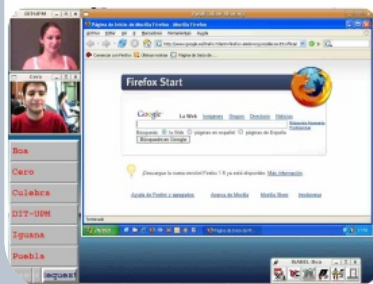


Lico  
de



# History

*dit*  
UPM





Browser-based Real-time Communications

**Video, Audio, Data**

Recording, Screen Sharing.

**HTML5 & WebRTC**

Designed to dynamically scale on-demand



lync



- Real-time communications
- Multimedia



- In your own infrastructure
- Easy to Use API



- Integrated in your web application
- Multi-device



- Cloud Ready
- Distributed MCU
- Efficient scalability





# Design objectives for our Webrtc MCU

- Focus on **video conference** & real-time **collaboration**
  - Video
  - Audio
  - Data (for user interaction)
  - Recording
- **Video Conference as a Service**
  - **REST** in the server to manage resources
  - **JavaScript** library in the client
  - **Customisation**

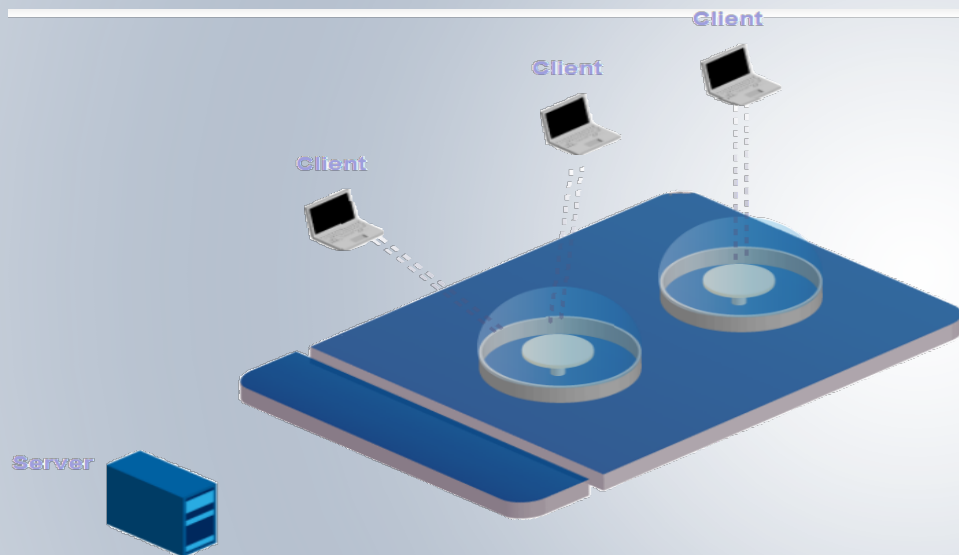


# Design objectives for our WebRTC MCU

- Easily deployable in **Cloud** environments
  - Private, public Hybrid
  - **Efficiently** use available **resources**
- Avoid **transcoding** whenever possible
- **JavaScript** on both client and server side



# Architecture

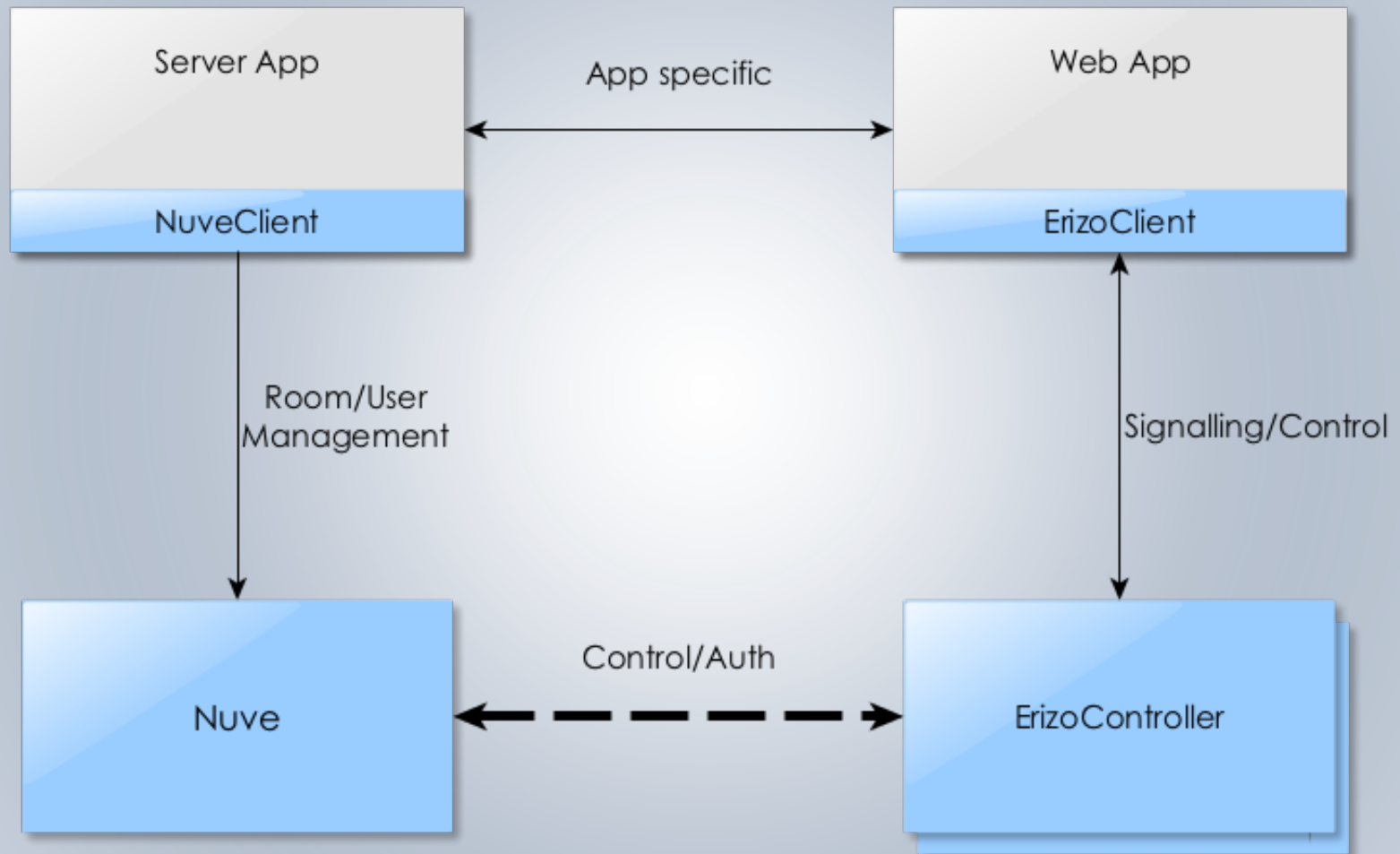


- **Services**
  - Server App + Client App
- **Rooms**
  - Communication scope
- **Users**
  - Roles
- **Tokens**
  - Delegated auth



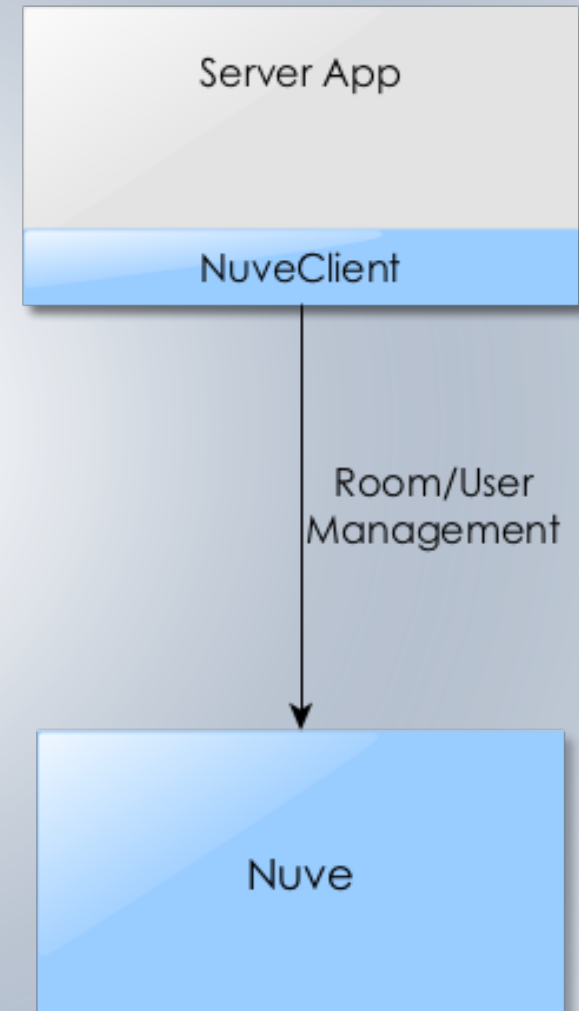


# Architecture: Control



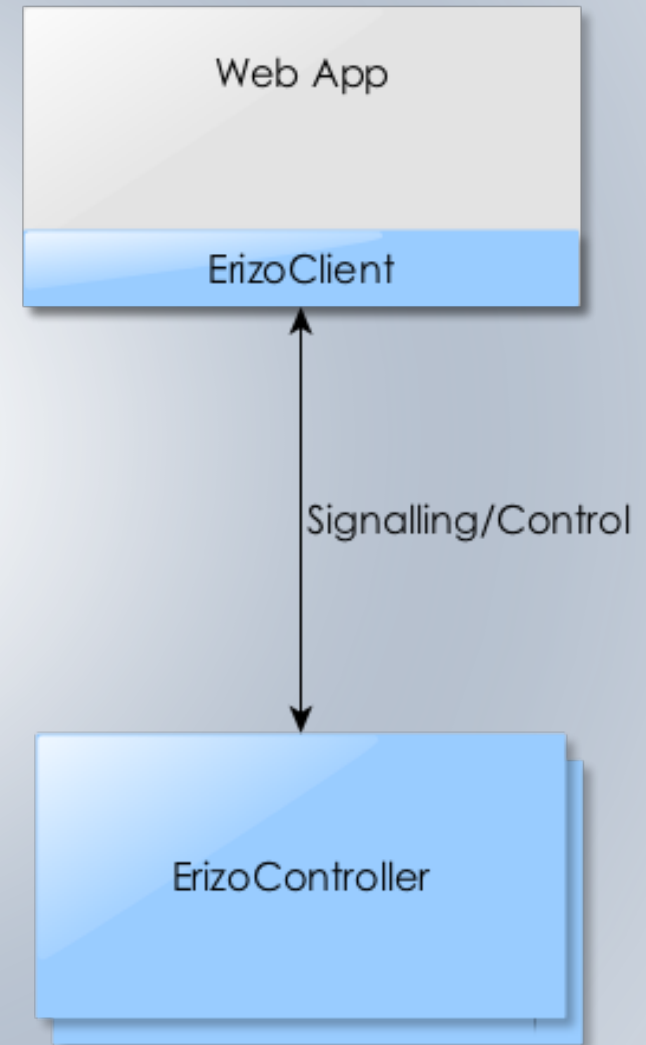
# NUVE & SERVER API

- **Resource Management**
  - Rooms
  - Users
  - Services
  - Tokens
- **REST Client**
  - For Server Apps
  - Node.js, Python, Ruby
- **REST Server**
  - DB Access
  - ErizoController Management
  - Cloud Handler



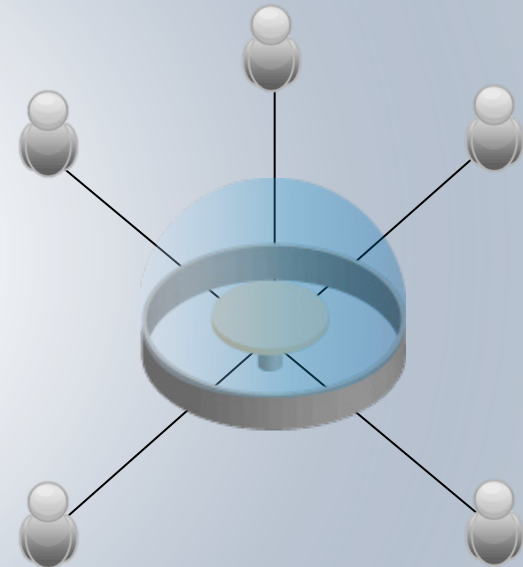
# ErizoController & erizoclient

- **Room Management**
  - Browser Control & Signalling
  - MCU Control
- **Client Library (erizoClient)**
  - JavaScript API
  - Wrap around WebRTC
  - Media, Data, Events
    - Publish/Subscribe
- **Server**
  - MCU Control
  - Nuve Auth

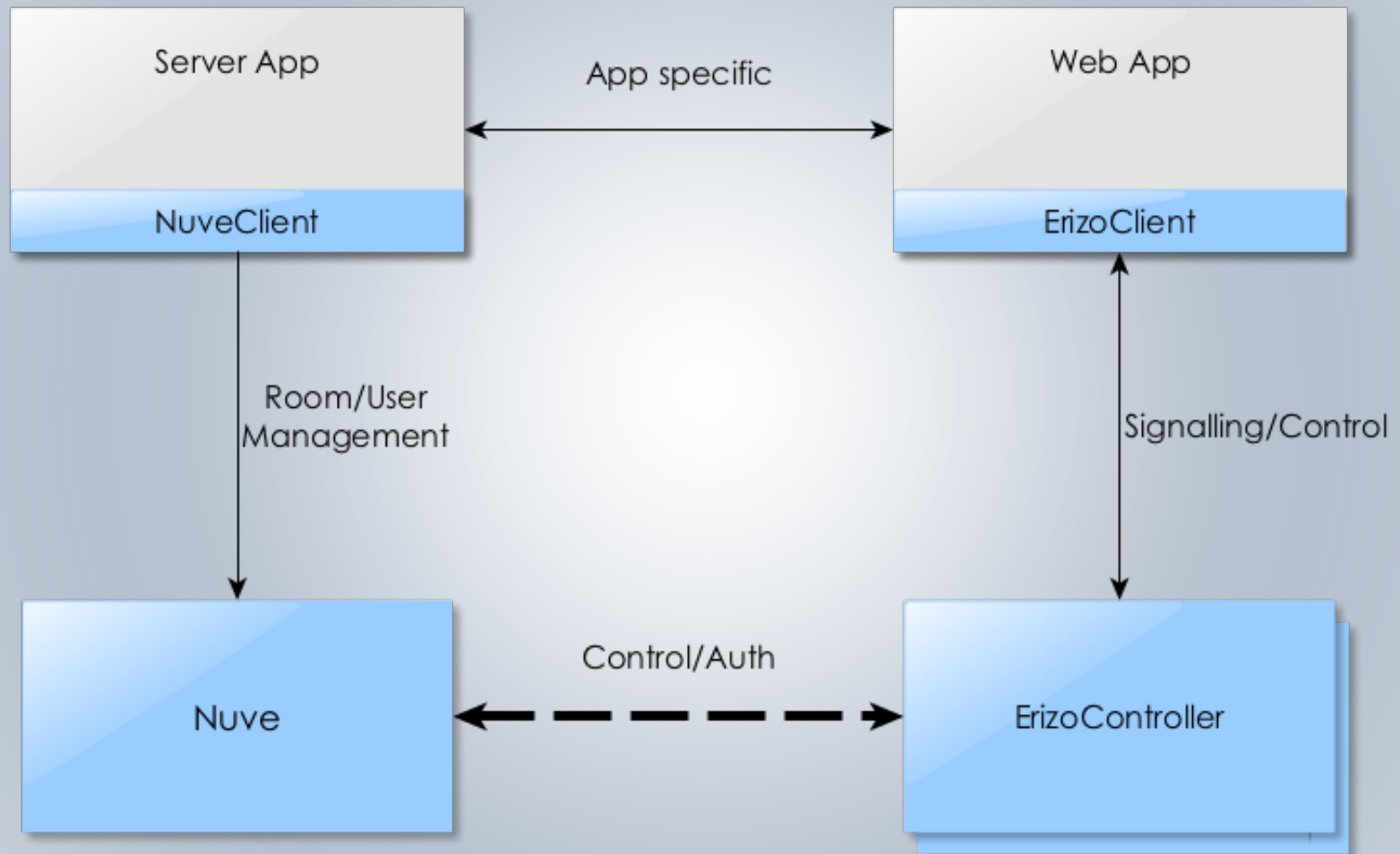


# Erizo & ERizoAPI

- **Licode MCU**
  - Implementation of WebRTC
    - DTLS-SRTP
    - SDP negotiation
    - ICE
- **Stream forwarding**
- **External Outputs**
  - Recording
  - RTP
- **External Inputs**
  - Recorded Sessions
  - RTSP/RTP
- **ErizoAPI – node.js addon**
  - Wrapper C++ code



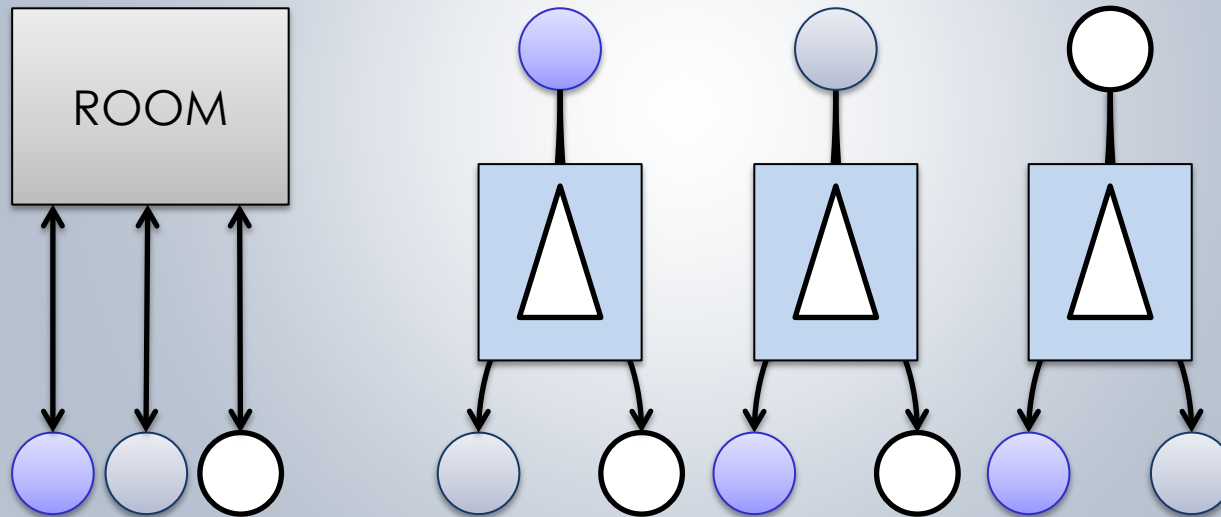
# Architecture: Control



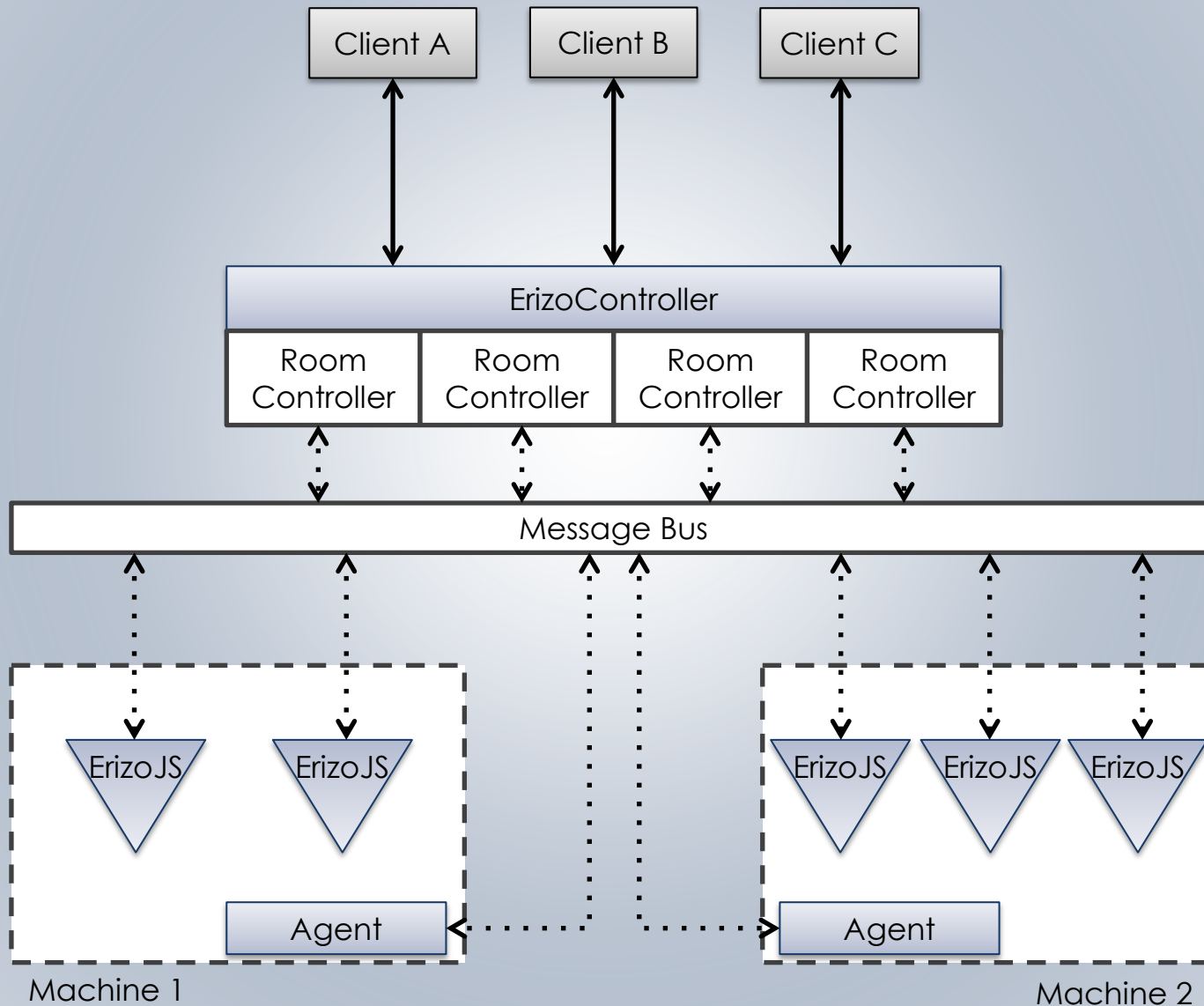


# Distributed Architecture: Media

- Participant A
- Participant B
- Participant C



# Distributed Architecture: Control



# Distributed Architecture: NOW & Future


- **Now**
  - Improved stability
    - Each publisher a different process
  - **Better scalability**
  - **No added delays**
- **Geographical distribution**
- **Trees**




# Open Source




 <https://github.com/ging/licode>

 480+ stars

 140 clones per fortnight

 1200+ commits

 70+ pull requests

 512 unique visitors per fortnight



# Use Case Kuddels.de

- **Integrated** into an existing **Text-Chat**
- **Web** and **Android** clients
- Rooms with up to **9 publishers**
- **Live** for a **month** for **10% users**
- More than **600,000 published minutes**







[www.lynckia.com](http://www.lynckia.com)

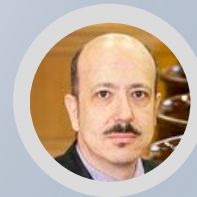
**Thank you**



**Pedro Rodriguez**  
[prodriguez@dit.upm.es](mailto:prodriguez@dit.upm.es)  
[@lodoyun](#)



**Alvaro Alonso**  
[aalonsog@dit.upm.es](mailto:aalonsog@dit.upm.es)  
[@larsonalonso](#)



**Joaquín Salvachúa**  
[jsalvachua@dit.upm.es](mailto:jsalvachua@dit.upm.es)  
[@jsalvachua](#)

