

Product Requirements Document (PRD)

Project: Family Telepresence & Media Hybrid System

Objective: Build a highly reliable, remotely manageable telepresence system for daily long-duration video communication between Spain and Mexico, with dual-use capability for weekend media consumption.

1. Problem Statement

For a 5-month period, one parent will be in Spain while the other remains in Mexico with their young daughter. The goal is to maintain daily visual presence, especially during mornings and afternoons, with minimal technical interaction required by the non-technical household member.

2. Core Requirements

- Automatic daily startup of video session.
- Zero interaction required from spouse/child during weekdays.
- High stability for long-duration calls.
- Full remote administration capability.
- Fail-safe recovery (automatic restart, watchdog, remote power cycle).
- Secure and private communication channel.
- Weekend mode allowing normal media consumption.

3. Architecture Decisions & Rationale

- Use Jitsi Meet (self-hosted) for stable WebRTC-based group video with kiosk compatibility.
- Deploy Ubuntu LTS on Intel NUC for long-term support and reliability.
- Implement Chromium in kiosk mode for persistent 'window presence' UX.
- Use Tailscale for secure remote access and management.
- Integrate smart plug with Tasmota firmware for hard-reset recovery.
- Enable HDMI-CEC for automatic TV power control.
- Implement systemd services with restart policies for resilience.
- Create dual operational modes: Telepresence (weekday) and Media (weekend).

4. Operational Modes

Weekday Mode (Telepresence):

- Automatic boot and login.
- Jitsi kiosk session auto-start.
- TV auto power-on via HDMI-CEC.
- Watchdog and auto-restart enabled.

Weekend Mode (Media):

- Disable kiosk service.
- Enable Kodi or standard desktop environment.
- Manual or voice-triggered switching via Home Assistant/Alexa.
- Automatic reversion to telepresence Sunday night.

5. Risk Mitigation

- ISP outage → recover via auto-reconnect and watchdog.
- Browser crash → systemd auto-restart.
- System freeze → smart plug remote power cycle.
- Hardware failure → remote diagnostics via Tailscale SSH.

6. Strategic Justification

The chosen architecture prioritizes stability, autonomy, and emotional continuity over minimalism. Self-hosted Jitsi ensures control and predictable behavior. Ubuntu LTS guarantees long-term reliability. Dual-mode system design prevents operational conflicts between telepresence and media usage. Layered redundancy (systemd, watchdog, smart plug, VPN access) minimizes downtime risk over the 5-month duration.