NERO PROJECT

Reactive Living Room - Doorbell, Speakers and TV

The house shows up where you already are.

Paul Schindler | Built with Claude | November 2026

Executive summary

Our smart home knew when someone rang the doorbell or the laundry finished, yet it told us only on our phones, and the doorbell's own sound was too quiet to hear. I made the TV and speakers part of the house. A doorbell press now fills the living-room TV with the doorbell camera for 30 seconds while a chime plays on the house speakers. A finished wash or dry cycle puts a 30-second banner on screen while the show keeps playing, and a movie request to a voice puck puts a ranked shortlist on the TV; one pick with the remote and the film is fetched automatically to the home media library. Alarm sirens and voice alerts borrow the speakers and hand them back to whatever was playing. I set the rules, decided what the house may and may not show, and verified each piece by outcome; AI agents wrote the code.

30 sec
doorbell camera on the living-room TV, then it clears

30 sec
laundry banner on screen while the show keeps playing

1 min
library check cycle after a movie pick

Live
since June 2026

What is in this report

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The idea in one line

People in a living room are already looking at the TV or listening to the speakers. Put the house's news there, keep it short, and never take more of the room than the moment needs.

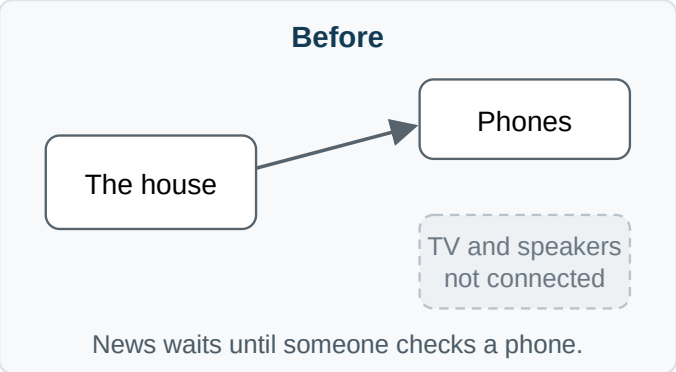
This report describes a private home system. Device models, network details and camera details are left out on purpose.

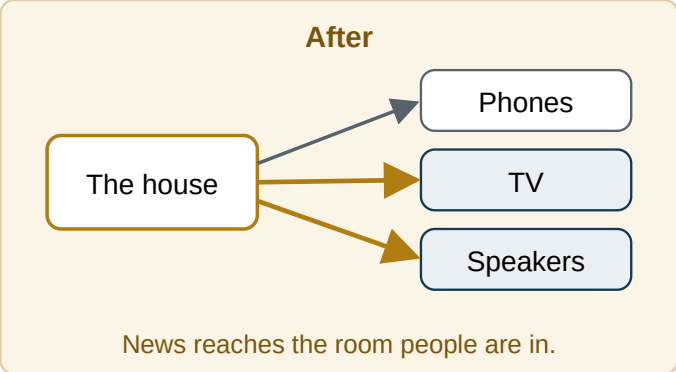
1. The problem and why it mattered

I started on this in January 2026, in my notes. Our home ran on Home Assistant, an open-source home automation platform. It knew when the doorbell rang, the laundry finished or the alarm tripped, yet all of that news went only to phones.

The gaps were practical. The doorbell's built-in sound was too quiet to hear. The TV and speakers, the two devices everyone in the room was already paying attention to, sat outside the smart home entirely. Adding a movie to the library could not be done from the couch.

The goal was to bring each message to the screen or speaker where people already are, without breaking what they were doing. That second half shaped almost every design choice.





Design choices I made, and what I ruled out

Choice	Decision and reason
Laundry news as a spoken announcement on the TV	**Ruled out.** Voice sent to the TV interrupts the video and does not resume cleanly. A banner floats over the picture for 30 seconds and the show never stops.
Movie options read aloud by the voice puck	**Kept as a fallback only.** The shortlist goes on the TV, because comparing file size against picture quality is impossible by ear (my reasoning is quoted below). The voice-only path still works with no TV at all; the puck reads out the top option.
Casting a web dashboard for the shortlist	**Ruled out.** The TV's casting receiver blocked the page. I had the agents build a small TV app that the ordinary remote drives instead.
A dedicated siren for the alarm	**Speakers first.** The house speakers already existed and could be driven at full volume. A standalone siren stays an option once the speakers have proven themselves.
An always-on status screen on the TV	**Built in July 2026, then switched off in October 2026.** Guests could see it. Page 5 tells that story.

> *"Sometimes there is a decent one that is not obvious... there are large files for like 8 gbs but a good option is available for 4 gb with the same quality."*
>
> My reason for putting the movie shortlist on screen, recorded in the project's design notes. A list like that has to be compared side by side; a voice reading it aloud cannot do that.

What the room should feel

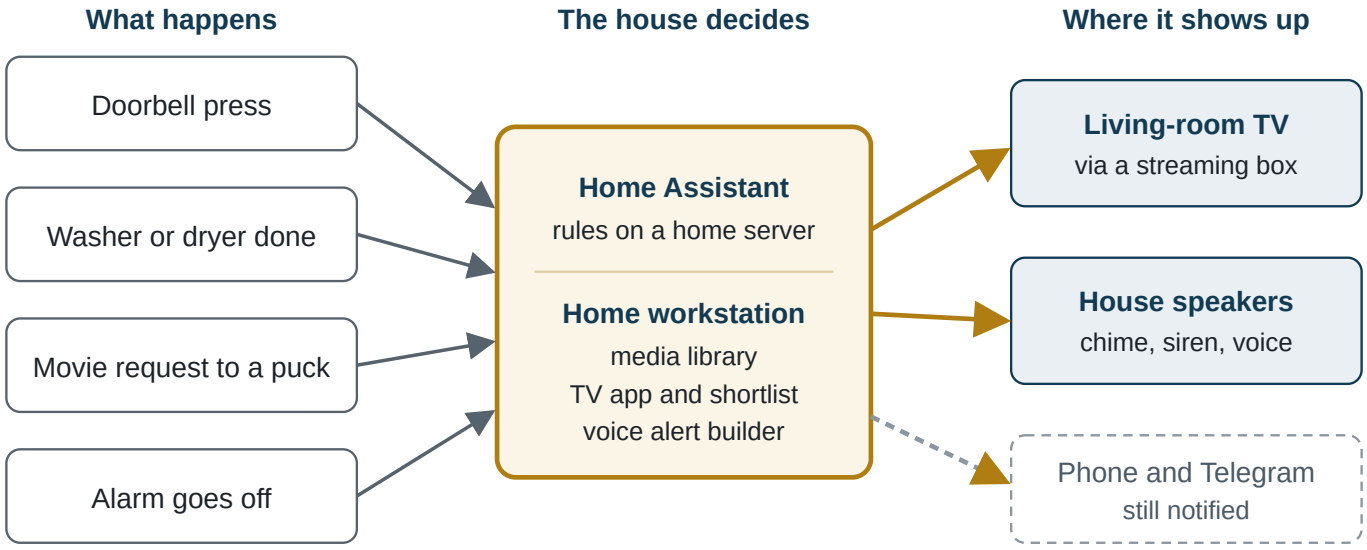
The house speaks up at the right moment, in the right place, for as long as it takes to be understood, then steps back.

What the room should never feel

A show cut off by an announcement, music left at siren volume, or a private status screen sitting on the TV when friends come over.

2. How it works

Home Assistant runs the rules on a small home server. A home workstation hosts the media library and the TV app. Four kinds of events reach the living room through two outputs, the TV (driven through a streaming box) and the house speakers.



The TV and speakers became outputs of the house, like the phone. Phone alerts did not go away; the room now gets the same news without anyone reaching for a phone.

The four moments

Moment	On the TV	On the speakers	Live since
Doorbell	The TV wakes and the doorbell camera fills the screen for 30 seconds, then clears.	A loud two-tone chime on the house speakers.	June 2026
Laundry	A 30-second banner in the top-right corner. The show keeps playing.	Nothing. Phone push stays on.	June 2026
Movie request	A ranked shortlist takes over the screen. Back returns to whatever was playing. A "ready to watch" banner follows.	None needed. With the TV off, the puck can read out the top option instead.	September 2026
Alarm	Nothing today (see what is next, page 6).	Siren and a blunt spoken warning, then every speaker returns to its previous volume and resumes what was playing.	June 2026; hand-back September 2026

Movie night, step by step

1. Ask a puck
Name a title out loud from the couch.

2. Shortlist on the TV
Ranked options with size and quality side by side.

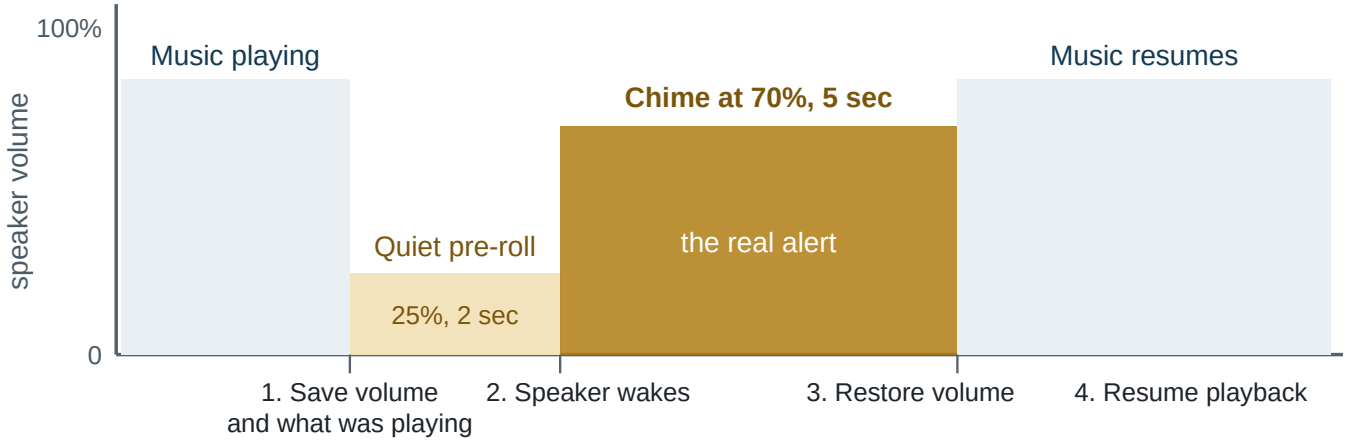
3. Pick with the remote
One press. Nothing is fetched until a person chooses.

4. Fetched automatically
Into the home media library. A check runs once a minute.

5. Ready banner
30 seconds on the TV, plus a Telegram message. Press play.

3. Speakers that hand themselves back

The speakers belong to whoever is listening. An alert may borrow them, but it must return them exactly as it found them. Every speaker alert follows the same four-step pattern, first built for the doorbell chime and later reused for the alarm siren.



Doorbell values shown. The alarm uses the same pattern with a 4-second pre-roll; it saves every speaker's volume when it fires and restores each one exactly when the alarm is turned off.

The quiet pre-roll exists because of one discovery. The powered speaker goes to sleep after 15 minutes without sound and wakes when sound arrives, but waking takes a moment, so the start of an alert was lost. A soft first play wakes the speaker; the real chime follows. In the June 2026 alarm test the speaker still swallowed the first 2 to 3 seconds of the siren, so I had the pre-roll raised from 2 to 4 seconds and confirmed a clean start by ear.

What I learned (described generically)

#	Lesson	What I did
1	**Casting to the TV needs a trusted certificate.** The TV will not load the house dashboard over an insecure connection.	Set up a free, publicly trusted security certificate for the house system. When it expired once in September 2026 the TV path went dark, so renewal now runs every week and one phone message goes out if fewer than 21 days remain.
2	**One view per dashboard.** The casting receiver reliably shows only the first screen of a dashboard.	Each thing the TV shows has its own single-screen dashboard. A second screen produced a built-in demo page instead.
3	**Waking a speaker swallows the first seconds.**	The quiet pre-roll above, applied to every speaker alert.
4	**The TV is usually asleep.** A command to a sleeping screen shows nothing.	The house sends a wake signal first, one that can never switch off a TV that is already on. If the TV does not respond, the voice path carries on regardless.
5	**Healthy checks can hide a broken path.**	In August 2026 an upgrade to another house service erased the name the TV uses to find the house system. Every local check still passed. The record was restored and the failure is now on the troubleshooting list, checked first.
6	**Not every file plays well on every box.**	One audio format played silent; one video format the streaming box cannot decode at all. The shortlist now marks that format down, so a bad pick is less likely to ruin a movie night.

4. Privacy in a shared room

A living room is a shared space. Anything on the TV is visible to whoever is on the couch, including guests.

In July 2026 I had the agents turn the idle TV into an always-on status screen. When nothing was playing it rotated through household status, upcoming reminders, project progress and news headlines, with a clock. It followed strict rules. It never woke a screen that was off, so turning the TV off still simply worked. It never interrupted something playing. The Back button always led out, never into a trap.

In October 2026 I switched it off. The screen was useful to us and too personal for anyone else in the room. My instruction was short.

> *"Too personal to leave on; guests see it."*
>
> My instruction to take the status screen off the living-room TV, October 2026.

Switching it off was not a single setting. I had the agents find and remove five separate paths that could put the screen back on its own - a background timer, a step at the end of the doorbell alert, the app's start-on-boot, an older display app and another alert's restore step. The TV app is still installed. It now opens only when someone picks it with the remote or asks a voice puck for a movie. When the doorbell camera clears after 30 seconds, the TV goes back to its ordinary home screen.

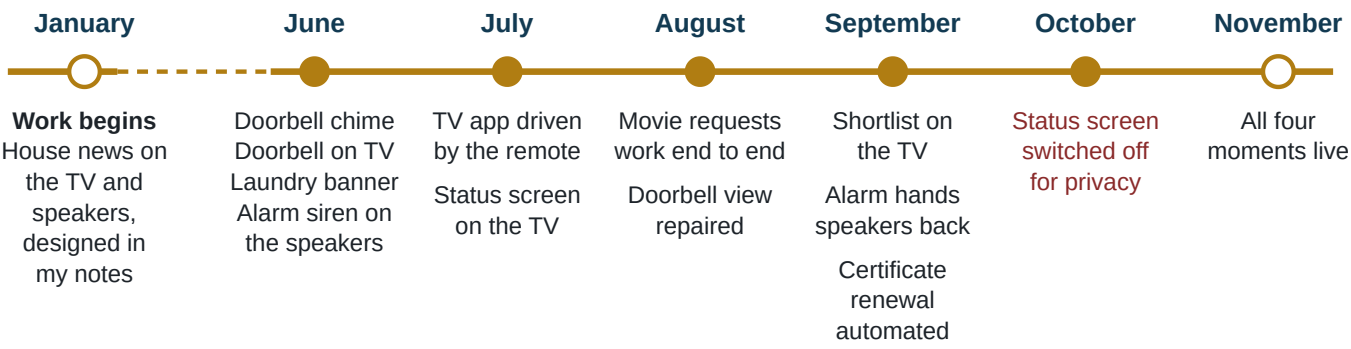
Safeguards built into the room

#	Safeguard	What it does
1	**Banners, not voices, over a show**	Laundry news floats on screen for 30 seconds and disappears. The video never stops.
2	**The screen is borrowed briefly**	The doorbell camera clears itself after 30 seconds. The movie shortlist returns to whatever was playing when someone presses Back.
3	**Speakers come back as they were**	Volume and playback are saved before any alert and restored after it, at the exact previous level.
4	**A banner never wakes a TV**	If the TV is off, the laundry banner simply does not appear. The phone push still arrives.
5	**A person picks every movie**	The house searches and ranks; nothing is fetched until someone chooses an option with the remote or by voice.
6	**A dead TV never breaks the voice path**	Every TV step fails quietly. The puck can still read out the top option, so a request works with the screen off.
7	**Nothing private on screen unasked**	The status screen opens only when someone chooses it. No automation puts it back.
8	**A watch on the certificate**	Weekly renewal, plus one phone message if fewer than 21 days remain, so the doorbell view cannot fail silently again.

The judgment call

Building the status screen was easy. Deciding it did not belong in a shared room was the more valuable decision, and it came from living with it rather than from the specification.

5. Results, status and what is next



Each step was verified by outcome - a real doorbell press, a siren heard in the room, a banner seen on screen.

2026 timeline, from first notes in January to the live system. The status screen is the one feature built and then deliberately retired.

Piece	Status	Evidence
Doorbell chime on the speakers	Live, June 2026	Confirmed by a physical doorbell press; the speaker woke from sleep and the full chime played. Volume later turned down from full after it proved too loud.
Doorbell camera on the TV	Live, June 2026	Confirmed on a real button press; repaired in August 2026 and re-verified with a test cast.
Laundry banner	Live, June 2026	Test banner seen on the TV.
Movie shortlist and ready banner	Live, September 2026	Built end to end in August 2026; screen takeover verified in September 2026.
Alarm siren and speaker hand-back	Live, September 2026	Siren tested live in June 2026; volume save-and-restore added in September 2026.

What is next. One idea sits on the backlog and is not built. When the alarm goes off, the TV would join the response, then hand the screen back on disarm the same way the speakers do.

6. What this shows about how I work

This project is a small version of the work I do with programs and partners. I started from where people already are, the couch, the TV and the speakers, rather than asking them to open one more app. I set the rules for each output and wrote down the reasoning, such as why a shortlist belongs on a screen. Then I let real use decide what stayed. The status screen worked as designed and still came off, because the people in the room mattered more than the feature.

I directed AI agents (Claude) to write the code and checked every piece by outcome, never by reading a diff. Each hard-won lesson went into a written runbook, so the next agent starts from what we learned instead of repeating it. That is the same discipline I bring to AI adoption in any organization - clear rules, verified results and decisions recorded where the next person will find them.