

## CASE STUDY · UNIVERSAL DESIGN

# The case for a touchless, signless world.

A short essay from 1892 Immersive Experiences · Frederick, MD.

Most of the technology around us assumes you can speak. Voice assistants. Drive-thru intercoms. Phone trees. Museum kiosks that bark a prompt and wait. It is a quiet assumption, and like most quiet assumptions, it leaves a lot of people standing on the wrong side of the glass.

This is a short essay about that glass — how big it actually is, why we have been pretending it is not there, and what happens when you design the room for the body that is actually in it.

## WHAT'S INSIDE

- **The premise.** Most technology around us assumes you can speak. That fails a much bigger group than people usually imagine.
- **By the numbers.** 7.5M Americans can't easily use their voices. 36 handshapes cover the alphabet. ~5B cameras are already deployed.
- **What designing for it looks like.** A keypad you sign at. A drive-thru that responds to a thumb. A guestbook that prints your name ten feet tall.
- **Where we come in.** Hardware, firmware, gameplay, set design — built end to end in Frederick. Built once, run for years.

## ONE · THE PREMISE

## Voice was never universal.

Sit in any newly renovated lobby, drive-thru, ticket counter, or self-serve kiosk and you will notice the same script. A microphone asks you a question. You are expected to answer with your voice. If your voice does not work the way the machine expects — because you are Deaf, because you stutter, because you had a stroke, because you are non-verbal autistic, because English is a second language and the model in the cloud was not trained on your accent — the interaction simply ends. You become invisible to the room you are standing in.

In the United States alone, that is roughly 7.5 million people who cannot easily use their voices to operate the systems built for them. Worldwide it is a number with nine zeros in it. The standard industry response is to build a separate accessibility flow — a different door, a different button, a different number to call. We do not think the answer is another door. We think the answer is to stop building rooms that require speech in the first place.

*“Universal design” gets used to mean a lot of things. The version we care about is the simplest: the room works for the body that walks in. No alternate flow. No accommodation form. No QR code that takes you somewhere quieter. The interaction itself is the accessible one.*

# 7.5M

## AMERICANS

who can't easily use their voices — Deaf, stuttering, post-stroke, non-verbal autistic, ESL.

# 36

## HANDSHAPES

cover the entire ASL fingerspelled alphabet. Learnable in an afternoon.

# ~5B

## CAMERAS DEPLOYED

already in phones, laptops, doorbells, kiosks. The sensor is in the room.

# 0

## NEW SCIENCE

needed. Gesture recognition runs on hardware shipped in 2019.

## TWO · WHY IT CAN BE BUILT NOW

## The sensors are already there.

Here is the part that surprises people: none of this needs a research breakthrough. The 36 handshapes that cover the English alphabet in ASL are learnable in an afternoon — by a person, and by a model. A laptop camera and a model that fits in a browser tab can read them in real time. We know this because we built it, shipped it, and watched a six-year-old at a county fair spell her own name into a keypad on the first try.

The deployed sensor surface is already enormous. Roughly five billion cameras live in phones, laptops, doorbells, drive-thrus, museum kiosks, point-of-sale stands, ATMs, and the dashboards of every car built in the last decade. The dominant industry use case for those cameras is staring at a face for three seconds to unlock a screen. The same hardware, pointed three inches lower, can read a sentence.

The recognition models are no longer the bottleneck. We run a TensorFlow-trained classifier on the client. It is roughly 200 kilobytes. It runs offline. It does not need to talk to a cloud. On a five-year-old MacBook Air it returns a confident answer in about 40 milliseconds — faster than the round-trip to the cell tower that voice assistants depend on.

***There is no new physics here. No new chips. No new permissions.  
Just a different assumption about who walks up to the machine.***

### THREE · WHAT IT LOOKS LIKE INSTALLED

## The room responds to the body.

What does a touchless, signless venue actually feel like? We have spent the last few years quietly answering that question, one piece of cabinetry at a time. A few of the installations:

**The keypad.** A four-by-four wall fixture. Sign a digit. The keypad confirms with light, never with sound. A receptionist on the far side of the room can see what was entered without anyone speaking. Hospitals use it. So do clinics that take walk-ins from people who are nonverbal.

**The drive-thru.** Order with a thumbs-up, a peace sign, a flat palm. The board reads back the order in plain text. A six-person breakfast crew never has to ask anyone to repeat themselves through a tinny speaker again. Median order time fell by 22% in the pilot.

**The guestbook.** A museum signs in a visitor by reading their fingerspelled name and projecting it ten feet tall onto the lobby wall, in their handwriting. Three hundred names a day, no staff intervention, no signup form, no email harvest.

**The waiting room.** A doctor's office where a patient signs that they have arrived, signs their pain level, signs whether they need a sign-language interpreter. The front desk gets a quiet ping. The waiting room stays quiet. People with anxiety love it. So do tired parents.

None of these required a special accessibility consultant. None of them required signage that says "please ask staff for assistance." The interaction is the accessibility.

## FOUR · WHY NOW

## Three things finally lined up.

If gesture recognition is so old, why has nobody just shipped it? The honest answer is that, until recently, three things were not all true at the same time: the cameras were not everywhere, the models were not small enough to run client-side, and the room itself was still being designed around speech as the default input. All three shifted in the last eighteen months. The cameras shipped. The models shrank. And after voice assistants spent a decade failing to be the interface anyone actually wanted, the field is finally open.

The other thing that changed: people stopped pretending that voice was a neutral default. A whole generation of designers got loud about the fact that the 'just talk to it' interface excludes the person at the counter who cannot or will not. The conversation moved from 'is this an accessibility concern' to 'why was the room ever designed this way in the first place.'

*We build for the body that is actually in the room.*

## FIVE · WHERE WE COME IN

## Built end to end in Frederick.

1892 Immersive Experiences is a small studio in Frederick, Maryland. We make the hardware, write the firmware, design the gameplay, and build the set. Everything ships out our back door under one roof. When a venue calls about a problem on a Tuesday, the person who soldered the controller answers the phone on Wednesday. The pace is unhurried. The work is meant to last.

The number in our name is not nostalgia. The lineage of small American shops that built things end-to-end — from the lumber to the lacquer — goes back to about that year. We are trying to carry that practice forward, not romanticize it.

If you run a venue, a clinic, a hospitality space, or a public-facing operation that you suspect would work better if it stopped requiring speech, tell us about the room.

CONTACT · COMMISSION

## Send us a space.

We commission about six installations a year. We do not do RFPs, agency tiers, or 60-page decks. We do tour the room, draw on a napkin, build a prototype that runs in your lobby for a week, and then build it for keeps.

If the room is interesting, we will say so. If it is not the right fit for us, we will say so quickly, and probably tell you who is. Either way you will get a real human answer inside two business days.

## Tell us about the room.

Anthony Mowl · Founder, 1892 Immersive Experiences · Frederick, MD. Email [contact@madeby1892.com](mailto:contact@madeby1892.com) with a photo of the space and a sentence about who walks in. That is enough to start.

[contact@madeby1892.com](mailto:contact@madeby1892.com) · [madeby1892.com](http://madeby1892.com) · Run the live demonstration at the same URL.

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*“Built in Frederick. Carried forward since 1892.”*