

EDUCATIONAL CASE STUDY

Airtable as the backend for a real website.

How a nonprofit youth softball site runs its content, registration, and admin dashboard on Airtable, while the organization and the public never open Airtable once.

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Built pro bono for East Hartford Softball, Inc., a 501(c)(3). The schema and code patterns shown are the real ones. Admin screenshots use sample data.

One site, three audiences, one datastore.

Families (public)

Programs, events, calendar, news, sponsors, resources, contact.

Register a player online: pick dates, get a confirmation email with an add-to-calendar button.

Static pages. Fast, cheap, and nothing private can leak because nothing private is built into them.

The board (admin dashboard)

Post announcements that banner across every page within a minute.

Email registered families by event or by a single date.

See registrations per date, print the clinic-day check-in sheet.

Invite-only accounts with roles. Every consequential action is logged.

Me (the one person in Airtable)

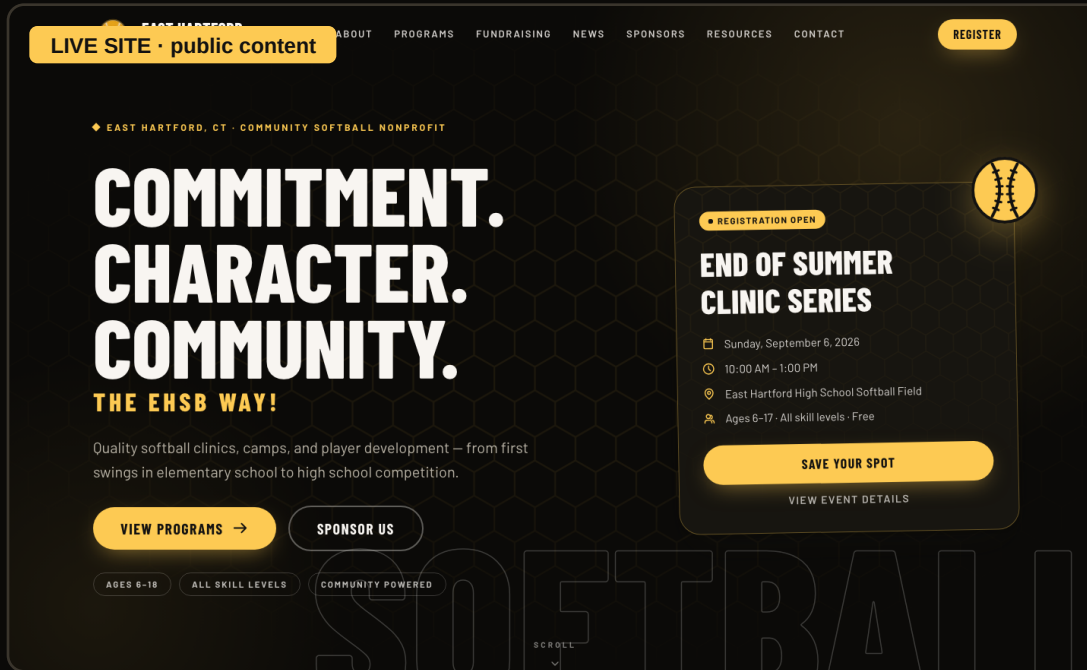
Schema, data fixes, exports, imports from the old Google Form sheet.

The board never sees Airtable. It is invisible infrastructure.

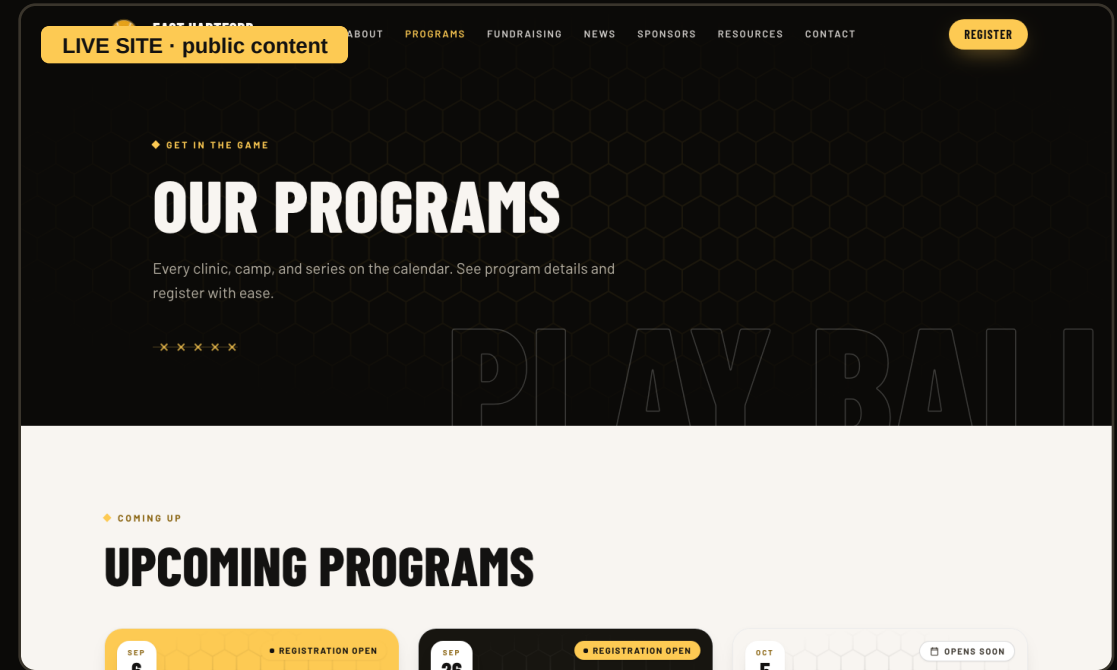
Stack: Astro plus a few React islands, Vercel, Clerk for auth, Resend for email, Airtable for all data.

WHAT FAMILIES SEE

The public site. Every word of it comes from Airtable tables.



Home: hero, upcoming events, sponsors. Prerendered.

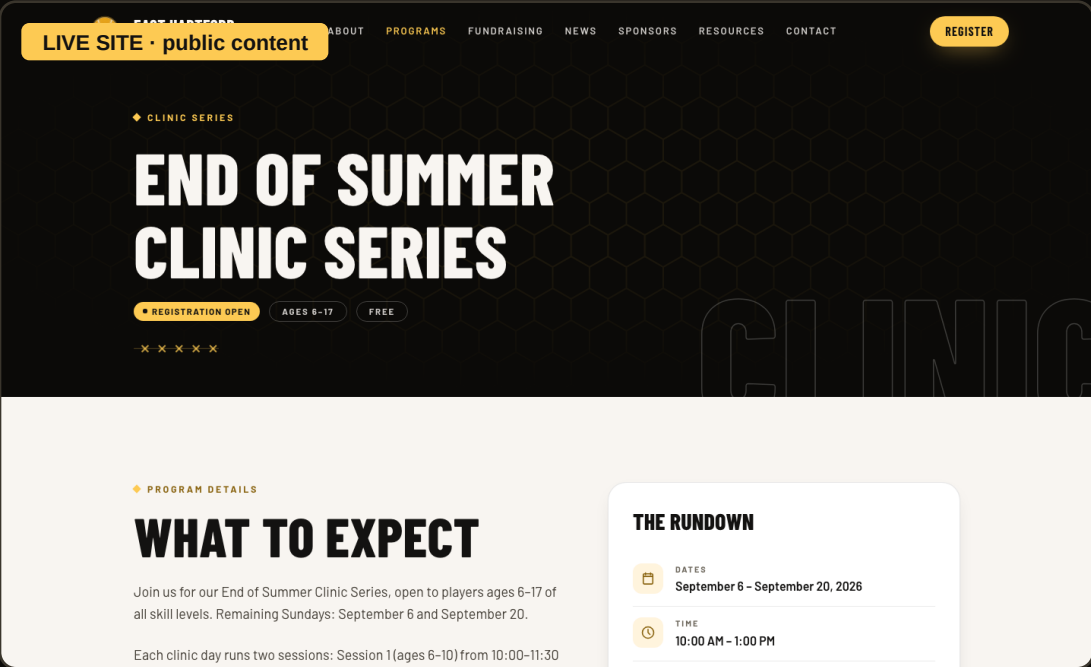


Programs: events + calendar from the Events table.

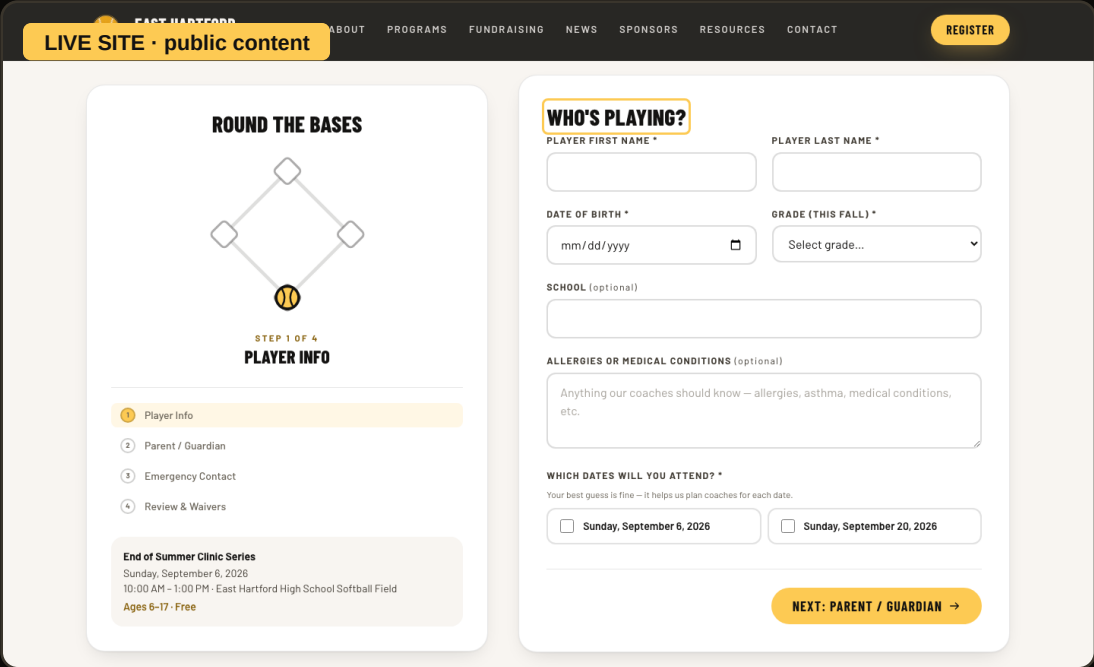
Visitors never trigger an Airtable call. The build reads Programs, Events, Locations, News, Sponsors, Documents, and Board Members once, renders HTML, and Vercel serves it from the edge.

REGISTERING A PLAYER

The only public page that writes to Airtable.



Event detail: status, dates, ages, and the Register button.



Registration form: birthdate first, then the dates that fit.

The form posts to a server route. Nothing in the browser knows Airtable exists. The route validates, dedupes, writes four linked records, logs the action, sends the confirmation, and only then answers the browser.

Nobody talks to Airtable except the server.

PUBLIC SITE

- Prerendered at build time
- Reads through `src/lib/data/*`
- Zero Airtable calls per visitor
- Only the alert banner polls a cached endpoint



ADMIN + API ROUTES

- Server-rendered, gated by Clerk
- `/api/register`, `/api/admin/*`
- Validate, dedupe, write, audit
- Then email, then respond



AIRTABLE

- 14 tables, one base
- Created by a setup script via the Meta API
- Token lives only in server env
- Never imported by a component

The rule that shaped every decision: components never import Airtable or mock data. Everything goes through service functions with stable signatures, so the site ran on sample data for weeks and swapped to live Airtable without touching a page.

I usually reach for Clerk + Convex. Not this time.

Why Airtable won here

The client thinks in spreadsheets. If I ever hand them direct access, it is already a tool they understand.

I can fix one record by hand in ten seconds. No admin panel needed for the data itself.

The whole schema is a script: 14 tables, fields, selects, and links created through the Meta API, idempotent on rerun.

No database to host, no migrations, no ORM. The free tier carried months of building.

Volunteer org, zero budget, one developer. Boring and legible beats clever.

What I gave up, and the workaround

No transactions. Idempotent writes with deterministic IDs, so a retry can never double-create.

5 requests/sec and a monthly call cap per workspace. Cache reads hard, poll nothing faster than 60s.

Formula and rollup fields cannot be created by API. Add them by hand, never depend on them in code.

Select values must match exactly. typecast: true on every write, status vocabulary mapped in one place.

No realtime. The one live surface (alerts) polls a CDN-cached endpoint.

SCHEMA

14 tables in two families, plus a log.

PUBLIC CONTENT · what the website renders, filtered on Published / Active

Programs

Events

Locations

Announcements

News

Sponsors

Sponsorships

Documents

Board Members

Site Settings

PRIVATE PEOPLE DATA · never in a static bundle, never on a public page

Guardians

Participants

Registrations

Attendance

SYSTEM

Audit Log

Conventions that keep the code small: every public table has a Slug and a Published or Active checkbox. Human select labels in Airtable ("Almost Full", "Opens Soon") map to a fixed status vocabulary in exactly one place per table.

Nothing fictional ever enters the people tables. Sample families live only in the mock layer used for the design preview and these slides.

Events: the table the whole site hangs off.

Identity & publishing

Name, Slug (URL and lookup key),
Published, Featured

Status: Open · Almost Full · Waitlist · Opens
Soon · Closed · Completed

Event Type: Clinic · Clinic Series · Camp ·
Community Event

Program and Location as links

Scheduling

Date, End Date, Start/End Time as HH:MM
strings

Session Dates: one YYYY-MM-DD per line.
A series is one record with many dates.

Registration Opens / Closes

ISO strings end to end; formatting happens
in one utility so UTC never shifts a day.

Registration rules

Capacity, Age Minimum / Maximum, Age
Label, Cost

External URL: when set, the event links out
(a community 5K) and the on-site form is
skipped.

Published = false stubs get created
automatically when a registration arrives for
an event that only exists in site content.

Four linked tables carry every family.

GUARDIANS

Name, Email (dedupe key)
Phone, Address
Emergency contact name, phone, relation



PARTICIPANTS

First, Last, Full Name
Date of Birth (dedupe key with name)
Grade, School, Medical Notes
Primary Guardian link



REGISTRATIONS

Registration ID (deterministic)
Participant, Guardian, Event links
Status, Source, Session
Dates Attending, one per line
Waiver, Media Release, Registered At



ATTENDANCE

Attendance ID
Event, Participant, Registration links
Attended · Absent · Walk-In · Excused
Check-In Time, Method, Checked In By

Links point child to parent, so records are created in order: guardian, then participant, then registration. Per-date rosters and counts come straight from Dates Attending. No join table per date.

What only I see: the Events table behind the site.

AIRTABLE · content tabletball

DataAutomationsInterfacesForms

LaunchShare

ProgramsLocationsGuardiansParticipantsEventsRegistrationsAttendanceAnnouncementsNewsSponsorsSponsorshipsDocumentsBoard MembersTools

Grid viewHide fieldsFilterGroupSortColorShare and sync

	A Name	A Slug	Program	Event Type	Status	Short Description	Full Description	Date	Start Time
1	End of Summer Clinic Ser...	end-of-summer-clinic-se...	Camps & Clinic Series	Clinic Series	Open	Close out the summer str...	Registration is now open f...	2026-08-29	09:00
2	SAMPLE — Fall Fundame...	sample-deck-fall-fundam...		Clinic Series	Open	Sample event for docume...		2026-10-05	18:00
+									

Plain grid, no interfaces, no automations. The real End of Summer series plus an unpublished sample event added for this shot.

Registrations: what the website's write path produces.

AIRTABLE · SAMPLE DATA only

DataAutomationsInterfacesForms

LaunchShare

ProgramsLocationsGuardiansParticipantsEventsRegistrationsAttendanceAnnouncementsNewsSponsorsSponsorshipsDocumentsBoard MembersTools

Grid viewFiltered by NotesGroupSortColorShare and sync

	A Registration ID	Participant	Guardian	Event	Status	Source	Waiver Accepted	Media Release	Registered At
1	sample-deck-fall-fundam...	Maya Torres	Luis Torres	SAMPLE — Fall Fundament...	Confirmed	Website	✓	✓	2026-08-10 05
2	sample-deck-fall-fundam...	Brooklyn James	Tasha James	SAMPLE — Fall Fundament...	Confirmed	Website	✓	✓	2026-08-11 06
3	sample-deck-fall-fundam...	Sofia Nguyen	Lan Nguyen	SAMPLE — Fall Fundament...	Confirmed	Website	✓		2026-08-12 07
4	sample-deck-fall-fundam...	Ava Sullivan	Meg Sullivan	SAMPLE — Fall Fundament...	Confirmed	Website	✓	✓	2026-08-13 08
5	sample-deck-fall-fundam...	Destiny Clark	Monique Clark	SAMPLE — Fall Fundament...	Confirmed	Website	✓	✓	2026-08-14 09
6	sample-deck-fall-fundam...	Grace Adeyemi	Bisi Adeyemi	SAMPLE — Fall Fundament...	Confirmed	Website	✓		2026-08-15 10
7	sample-deck-fall-fundam...	Harper Diaz	Marisol Diaz	SAMPLE — Fall Fundament...	Waitlisted	Website	✓	✓	2026-08-16 11
8	sample-deck-fall-fundam...	Riley Chen	Wendy Chen	SAMPLE — Fall Fundament...	Confirmed	Walk-In	✓	✓	2026-08-17 12
+									

Filtered to eight fictional families: deterministic Registration IDs, links to Participant, Guardian, and Event, Status, Source, waiver and media flags.

One registration, eight Airtable calls, zero duplicates.

- 1 Validate on the server**
Required fields, email shape, ISO date, age within the event's range, at least one future date, waiver accepted. Honeypot field for bots.
- 2 Guardian: find by email, then update or create**
`LOWER({Email}) = '...'` with `maxRecords 1`. Latest contact info wins. Blank optionals are omitted so a light resubmit never erases data.
- 3 Participant: find by name + DOB**
`AND(LOWER({First Name}), LOWER({Last Name}), DATESTR({Date of Birth}))`. Link the Primary Guardian.
- 4 Event: resolve by Slug, or stub it**
Site content may still be sample data. A `Published=false` stub keeps the link valid without surfacing anywhere.
- 5 Registration ID = eventSlug + '--' + participantRecordId**
Deterministic, so a resubmit finds the existing row and merges Dates Attending instead of creating a second registration.
- 6 Audit, then email, then respond**
Write the Audit Log row, await the confirmation email (Vercel freezes the function after the response), then return 200.

Small rules that removed whole classes of bugs.

Idempotent everything

Deterministic IDs for registrations and attendance. Re-running an import or double-clicking submit is harmless.

The same dedupe path serves the website form and the one-time import from the old Google Form sheet.

Age locks at the series' first date

Session 1 (6–10) or Session 2 (11–17) is computed once from DOB against the first session date.

No mid-series bumps on birthdays. A human can move a player; the software never will.

Dates Attending as a newline list

One long-text field per registration instead of a per-date join table.

Per-date rosters, email lists, and counts are a `split()` away. Merges on resubmit are a set union.

typecast: true, always

Selects like Status and Session are written as plain strings and Airtable resolves the option.

New option values appear without a schema deploy. The vocabulary lives in one map per table.

What the board actually sees. Never a spreadsheet.

SAMPLE DATA · fictional families, local build

 EAST HARTFORD
ADMIN

OVERVIEW

☆ Dashboard

⚙ Analytics

OPERATIONS

📅 Events

📄 Registrations

✓ Check-In

👤 Players

CONTENT

📢 Announcements

✉ Messages

⚙ DESIGN PREVIEW — SAMPLE DATA · SIGN-IN ACTIVATES WHEN CLERK KEYS ARE SET

DASHBOARD

WELCOME BACK, DEMO!

Here's how the season is shaping up.

UPCOMING EVENTS

5

2 accepting registrations

PLAYERS REGISTERED

12

Across upcoming events

SPOTS REMAINING

84

of 96 total capacity

ACTIVE ANNOUNCEMENTS

1

Live on the website now

RECENT REGISTRATIONS

VIEW ALL

PLAYER	EVENT	GUARDIAN	WHEN
Quinn Murphy Grade 6 · Age 11	middle-school-fall-development	Shannon Murphy (860) 555-0113	Aug 24 · 9:15 AM
Imani Walker Grade 8 · Age 14	middle-school-fall-development	Troy Walker (860) 555-0128	Aug 23 · 2:27 PM

NEXT EVENT

IN 3 DAYS

END OF SUMMER CLINIC SERIES

Sunday, September 6, 2026

12 registered of 96 · 13%

REGISTRATIONS

PUBLIC PAGE

Dashboard: events, registration counts, active announcements. Every number is an Airtable read behind a role check.

Per event, per date, with the session auto-assigned.

SAMPLE DATA · fictional families, local build

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OPERATIONS

REGISTRATIONS

35 TOTAL

24 CONFIRMED

1 WAITLISTED

3 WALK-INS

EVENT

All events

+ ADD REGISTRATION

EXPORT CSV

PLAYER	GRADE / AGE	EVENT	GUARDIAN	CONTACT	REGISTERED	STATUS
Quinn Murphy	6 · 11	middle-school-fall-development	Shannon Murphy	smurphy@example.com (860) 555-0113	Aug 24 · 9:15 AM	WAITLISTED
Imani Walker	8 · 14	middle-school-fall-development	Troy Walker	twalker@example.com (860) 555-0128	Aug 23 · 2:27 PM	CONFIRMED
Yara Haddad	6 · 11	middle-school-fall-development	Rania Haddad	rhaddad@example.com (860) 555-0127	Aug 22 · 9:58 AM	CONFIRMED
Camila Reyes	2 · 7	End of Summer Clinic Series	Elena Reyes	ereyes@example.com (860) 555-0122	Aug 21 · 8:50 AM	CONFIRMED
Isabella Romano	5 · 10	fall-fundamentals-clinic	Gina Romano	gromano@example.com (860) 555-0110	Aug 20 · 9:34 PM	CONFIRMED

The Registrations table rendered the way a volunteer needs it: filter by event, see who is coming on which date.

Announcements and Messages, straight into Airtable.

DESIGN PREVIEW – SAMPLE DATA · SIGN-IN ACTIVATES WHEN CLERK KEYS ARE SET

SAMPLE DATA · fictional families, local build

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Maintenance

ANNOUNCEMENTS

POST AN ANNOUNCEMENT

Rainout? Registration open? Type it here and it's on the website — watch the preview update as you write.

THE MESSAGE

TITLE *

e.g. Saturday's clinic moved to 10 AM

MESSAGE *

One or two sentences families need to know.

TYPE *

General

PRIORITY *

5 – Normal

Only Cancellation, Urgent, Weather, and Schedule Change appear in the site-wide banner (within ~30s). Other types save for the record but don't show publicly yet.

BUTTON (optional)

BUTTON LABEL

e.g. Register Now

BUTTON LINK

/register

LIVE PREVIEW – HOW FAMILIES SEE IT

easthartfordsoftball.org

GENERAL

YOUR TITLE SHOWS HERE

Your message shows here as you type it.

High-priority announcements also appear in the scrolling ticker and homepage spotlight.

Post an announcement: creates an Announcements record; the site banner picks it up.

DESIGN PREVIEW – SAMPLE DATA · SIGN-IN ACTIVATES WHEN CLERK KEYS ARE SET

SAMPLE DATA · fictional families, local build

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MESSAGE FAMILIES

Reminders, closures, big news — it emails from the club's own address in the site's branding, one private email per family. Every send is recorded in the audit trail.

WHO GETS IT

AUDIENCE *

Choose an audience...

THE MESSAGE

HEADLINE (ALSO THE SUBJECT LINE) *

e.g. No clinic this Sunday

MESSAGE *

What families need to know. Blank line between paragraphs.

BUTTON LABEL (optional)

e.g. See the Schedule

BUTTON LINK

https://easthartfordsoftball.org/programs

Message families: audience lists come from Registrations and Dates Attending.

Both forms post to /api/admin/* routes. The route checks the user's capability, writes the record with typecast, appends an Audit Log row, and returns. The board never learns what a record ID is.

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Check-in roster and the printable binder sheet.

SAMPLE DATA · fictional families, local build

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CLINIC DAY

CHECK-IN

EVENTEnd of Summer Clinic Series

PRINT SHEET

REGISTERED12

CHECKED IN0

REMAINING12

WALK-INS0

👤 Search players...

ALLREMAININGCHECKED IN

+ ADD WALK-INRESET DEMO

End of Summer Clinic Series · Sunday, September 6, 2026

CAMILA REYES

Grade 2 · Age 7 · Elena Reyes · (860) 555-0122

CHECK IN

PRIYA PATEL

Grade 4 · Age 9 · Anish Patel · (860) 555-0121

CHECK IN

Attendance: who is registered for today, emergency contacts, walk-in rows. Print pages are gated exactly like the admin.

The board gets a dashboard. Airtable gets a record of everything.

Dashboard, not a database

Clerk handles invite-only sign-in. Roles live in user metadata: superadmin, admin, editor, check-in, viewer.

Each admin page and API route checks one capability. Nav hides what you cannot do; the server enforces it anyway.

Every write goes through `/api/admin/*` on the server: announcements, invites, broadcast emails, registrations.

Airtable's own UI, sharing, and views are never part of the board's workflow. One person holds the token.

Audit Log table

Summary (one human sentence), When, Actor Id, Actor Name, Actor Role, Action key, Entity Type, Entity Id, Details JSON.

Written for registrations, check-ins, announcements, message sends, invites, account changes.

Never throws: an audit failure logs to the console and the action still succeeds.

Read only from a superadmin maintenance view. Kids' data deserves an answer to 'who did what, when.'

Cache like every call costs money. Because it does.

How reads are budgeted

Public pages read once at build time. A visitor costs zero Airtable calls.

Server reads use an in-memory cache per table with a TTL: 60s for people data, 5–15 min for content, an hour for locations and board.

Find-or-create lookups are deliberately uncached. A stale cache is how you create duplicates.

Polled endpoints get an in-memory TTL and a CDN s-maxage, so most polls never reach the function.

429s: retry twice with backoff, then fail. A billing-limit 429 is never retried.

The lesson from launch week

The alert banner polled every 30 seconds from every open tab against an endpoint with a 15-second cache.

That exhausted the workspace's monthly API allowance in two days. Every call, including registration, returned 429.

Worse: the read loop retried 429s forever, so each poll spun until the function timed out. Every spin was another counted call.

Fixed the same morning: bounded retries, a quota-aware error that returns an honest 503 to families, 60s cache, 60s poll that skips hidden tabs.

Know your plan's limit before launch. Treat every list call as a budget line.

Private data cannot leak from pages that never contained it.

- Public pages are prerendered and only ever read the content tables. People tables are not reachable from any static page.
- Admin pages opt out of prerendering and render per request behind the auth middleware.
- The Airtable token and base ID exist only in server environment variables. No component or client script can import the client module.
- People-data reads are gated on credentials being present, never on a mock-data flag, so sample families can never appear in production admin.
- Confirmation and broadcast emails are individual sends. Parents never see each other's addresses.
- Photos of players appear only with a signed media release, and the release choice is a required field on every registration.

When I would still choose Convex + Clerk, and when Airtable wins.

Convex + Clerk

Realtime UI, high write volume, or many people editing the same records at once.

Complex relations, transactions, server functions that must be atomic.

A product team that will iterate on the data model weekly.

When nobody non-technical ever needs to open the raw data.

Airtable

Content plus forms plus a small team who thinks in spreadsheets.

Event production, event planning, event registration: stable, human-readable data shapes.

You want the client to be able to inherit the data without you.

Low budget, one developer, and you will design around API limits and idempotent writes.

Honest take: I expected Airtable to be the compromise on this build. It ended up being the reason a volunteer organization can run a season without calling me.

Questions, or want the walkthrough?

This deck is educational. Nothing here is for sale. If you want to see the base schema, the setup script, the registration pipeline, or how the admin dashboard is wired, reach out and I will sit down with you and walk through it.

Built pro bono for East Hartford Softball, Inc., a 501(c)(3). My daughter plays there. It was the best way I could give back.

Joseph Rivera

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