PROJECT HIGHLIGHT · VISUAL CASE STUDY

Less time counting. More time connecting.

Pulse: an Instagram analytics workspace designed and built by Chris Yen to make social media reporting lighter for a volunteer communications team in the City of Sydney ISLA program.

Role	Context	Status	Date
Designer & developer	**ISLA program**	**Working prototype**	**8 November 2026**

AT A GLANCE

Pulse turns scattered Instagram insights into one shared picture.

I built Pulse because reporting on our ISLA Instagram account (@sydney.intstudents) was turning into a transcription exercise. Pulse brings profile, post and campaign metrics into one workspace, reads figures from insight screenshots with AI assistance, and produces visual reports the team can discuss.

3
levels of analysis
Profile, individual post, and campaign.

3
ways to bring data in
Instagram Graph API, manual entry, screenshot extraction.

2
ways to share
Interactive dashboards and exportable PDF reports.

What it is

A web application (Next.js, React, TypeScript) with authentication, a PostgreSQL database, Instagram Graph API integration, chart dashboards, AI-assisted screenshot extraction using Gemini 2.5 Flash, and browser-side PDF export.

What it's for

Reducing repetitive data handling so communications volunteers can spend their time on interpretation, content decisions and relationships with the student community.

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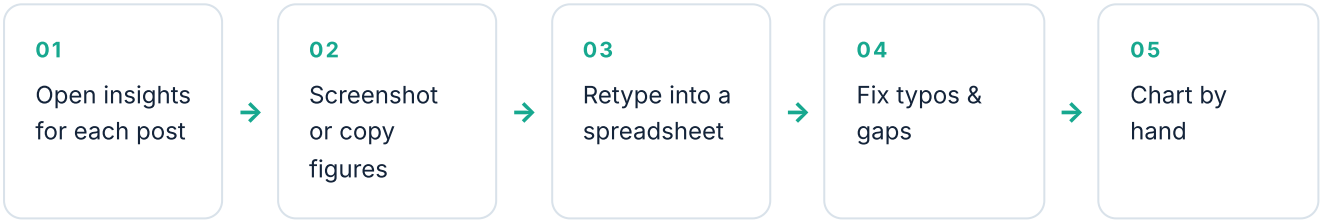
Evidence boundary. Pulse is a working prototype in use for team reporting. Time saved, extraction accuracy and wider adoption have not yet been measured; this report sets out how they will be. All charts are illustrative.

01 · THE PROBLEM

Reporting was becoming the job, instead of supporting it.

Volunteer communications teams often work with Instagram data spread across several places: the account dashboard, individual post insights, and screenshots shared in chat. Pulling those into a report means opening each post, copying figures into a spreadsheet, correcting errors, and building charts by hand. By the time the report is ready, little energy is left for the question that matters: *what is this telling us about the students we're trying to reach?*

The manual reporting loop



Each step is repeated per post, per reporting period. Week-by-week reporting multiplies the effort.

02 · DESIGN PRINCIPLES

Automate the counting. Keep people on the meaning.

1 · Reduce transcription, not judgement

Pulse handles collection, structuring and charting. Interpretation stays with the team.

2 · Never invent data

The AI is instructed not to guess unseen metrics, and uncertain values are surfaced for review.

3 · Make it shareable

Every analysis can become a visual report suitable for a team meeting or program lead.

4 · Respect permissions

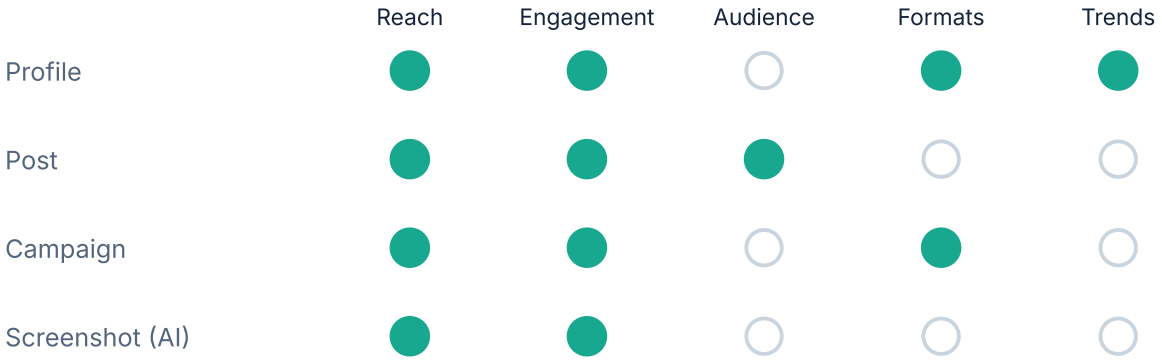
Only authorised accounts are connected; data handling is documented before wider use.

03 · PRODUCT CAPABILITIES

One workspace, several levels of analysis.

AREA	WHAT IT DOES	WHO IT HELPS
Profile intelligence	Historical post performance with date windows, follower growth, summary metrics, content-format comparison and top posts.	Program leads tracking the account over time
Post diagnostics	Reach, views, saves, shares, watch time and audience segmentation for a single post; side-by-side two-post comparison.	Content creators learning what worked
Campaign lens	Groups posts into a campaign, aggregates performance and shows each post's contribution using consistent metric definitions.	Teams reporting on events and series
AI-assisted input	Converts Instagram Insights screenshots into a typed schema via the Vercel AI SDK and Gemini 2.5 Flash, with schema validation and instructions not to invent values.	Anyone holding data only as screenshots
Visual reporting	Recharts dashboards, a print-optimised report view and browser-side PDF export.	Sharing results with the wider team
Access & admin	Authentication (Better Auth), connected-account workflow, admin components and a PostgreSQL schema via Drizzle ORM.	Keeping account data with the right people

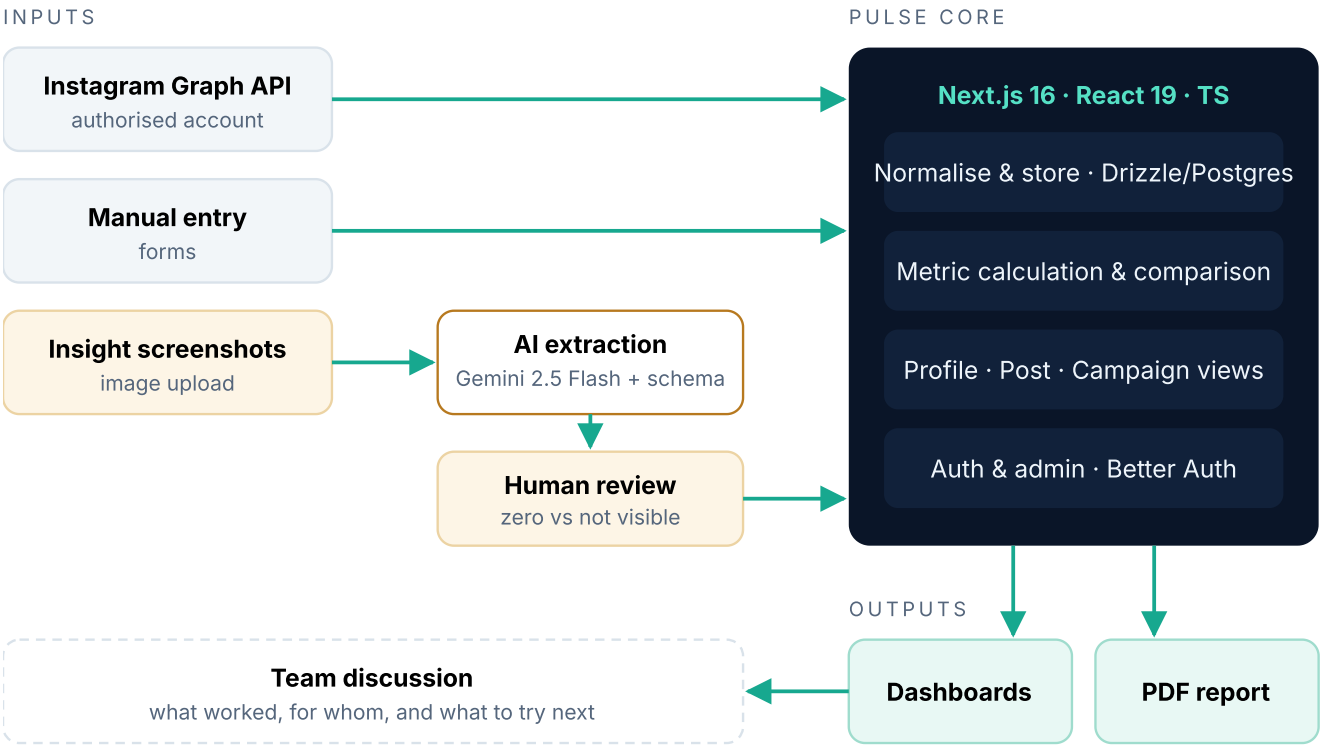
Coverage by analysis level



Filled = primary focus of that view. Outline = not the primary focus. Summarised from the capability descriptions above.

04 · SYSTEM ARCHITECTURE

From raw inputs to a conversation about what worked.



Technology stack

Next.js 16 · React 19 · TypeScript · Tailwind CSS · Recharts · Drizzle ORM · PostgreSQL · Better Auth · Instagram Graph API · Vercel AI SDK · Gemini 2.5 Flash · jsPDF · modern-screenshot · Vercel hosting

05 · AI EXTRACTION & HUMAN REVIEW

Useful automation needs a clear place for human judgement.

Some insight figures only exist as screenshots. Pulse sends the image to Gemini 2.5 Flash through the Vercel AI SDK with a typed schema, and validates the response before saving. The prompt explicitly tells the model not to invent metrics it cannot see.

One design limitation matters: **a field that is not visible is stored as zero.** A genuine zero (no shares) and a missing value (watch time scrolled off-screen) look identical in the data. Without review, a report could state "0 seconds average watch time" when the true figure was simply not captured.

Worked example (illustrative)

FIELD	IN SCREENSHOT	AI OUTPUT	AFTER HUMAN REVIEW
reach	2,318	2,318	✓ Matches source
views	4,905	4,905	✓ Matches source
likes	212	212	✓ Matches source
shares	0	0 (flagged)	✓ Confirmed true zero
saves	47	47	✓ Matches source
avg_watch_time	*not visible*	0 (flagged)	× Marked n/a, excluded from totals

Review loop



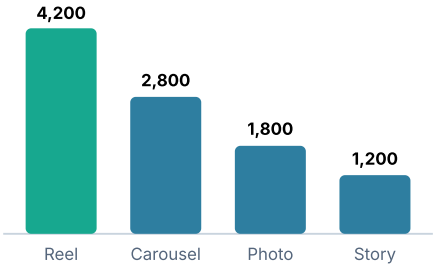
Recommended improvement. Allow the schema to record "not visible" as a distinct value (e.g. null) rather than zero, so the distinction is preserved automatically, not only by review.

06 · ILLUSTRATIVE ANALYTICS

What a Pulse report helps a team see.

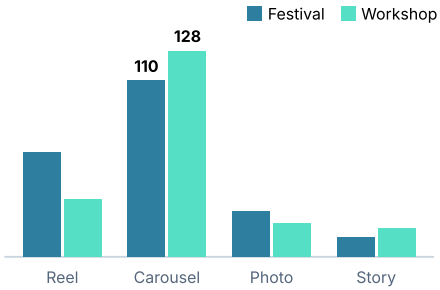
Synthetic data. The figures on this page are invented to demonstrate the analysis. They do not represent @sydney.intstudents or City of Sydney results.

Reach by format · community festival



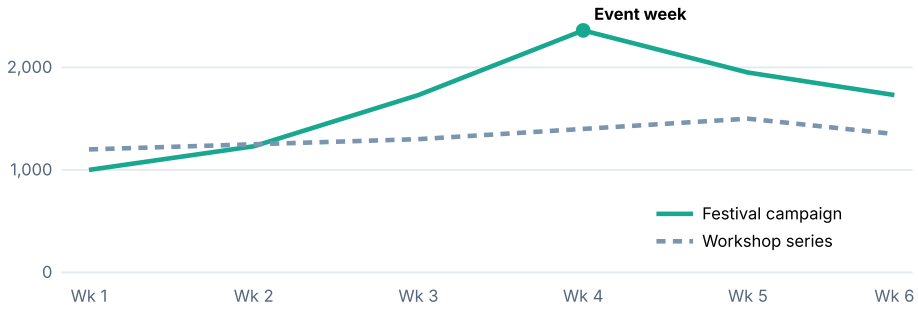
Reels led reach in this scenario.

Saves by format · festival vs workshop



Carousels drew the most saves in both scenarios, a signal of content people want to keep.

Weekly reach · festival campaign vs workshop series



A campaign spike versus steady growth from a recurring series: two patterns that call for different follow-up content.

Questions a report should prompt

Which formats are people saving to come back to? What happened after the event week, and what could hold attention? Is a recurring series building a returning audience? These are conversations for the team, not conclusions for the tool.

07 · EVALUATION FRAMEWORK

Evidence before claims.

QUESTION	MEASURE	METHOD	SUCCESS SIGNAL
Does it save time?	Minutes per report	Baseline manual logs vs pilot logs, same reporting period	Consistent reduction across reports
Is extraction accurate?	Field-level error rate	Compare AI output with manually verified screenshot values	Low error rate; all zeros correctly classified
Is review working?	Corrections caught	Record each reviewer change and its cause	No unreviewed errors reach a report
Is it usable?	Ease-of-use rating	Short survey and observation with pilot users	Volunteers complete a report unaided
Does it inform decisions?	Decision examples	Note content choices made from report findings	Concrete changes traced to insights

08 · PRIVACY & GOVERNANCE

Built for trust, not just speed.

Authorisation

Connect only accounts the user is authorised to manage, with the account holder's agreement and within Instagram's API permissions.

Data protection

Protect access tokens and any personal data; define how long data is kept and who can see it.

Third-party AI

Document what is sent to the AI service for screenshot extraction, and confirm this is acceptable to the organisation.

Before organisational rollout: secure approval from the program lead, record consent and data-handling decisions, and confirm the City of Sydney's position on third-party tools for its accounts.

09 · ROADMAP

From prototype to evidence.

NOW
Build
Working prototype used for team reporting.

NEXT
Validate
Test connections and exports; check extraction against known values; separate null from zero.

THEN
Pilot
Structured trial with a small group of authorised team members.

THEN
Measure
Time logs, accuracy, usability and decision examples.

LATER
Share
Publish verified, anonymised results with collaborators credited.

10 · REFLECTION

What this project says about how I work.

> I built Pulse to make social media reporting more accessible for a community-facing team. It brings profile, post and campaign insights together, reads metrics from screenshots, and produces visual reports. My aim is to reduce repetitive data handling while keeping human interpretation and relationships at the centre.

Systems thinking

Seeing reporting as a workflow, not a spreadsheet, and redesigning it end to end.

Responsible technology

Designing AI around its failure modes, with human review where it matters.

Community focus

Using tools to give volunteers more time for the people they serve.

Attribution and scope. Pulse is designed and built by Chris Yen. ISLA refers to the City of Sydney International Student Leadership and Ambassador program. This is an independent project; it does not imply City of Sydney ownership, deployment or endorsement, or verified organisational impact. Technical details are based on a review of the source code; production performance and extraction accuracy have not been independently verified. All charts use synthetic data.