

Gerardo Ezequiel Martín Carreño

I make the complexity of cities legible, from material flows to heat to how people move. Spatial data scientist and technologist, with a critical cartographic practice.

me@gerardoezequiel.xyz · gerardoezequiel.xyz · linkedin.com/in/gerardoezequiel · London

CONTENTS / EVIDENCE REGISTER

A01	COMMUNITYAI	2026–PRESENT
	CASE STUDY	
A02	CLIMATE INTELLIGENCE	2026–PRESENT
	CASE STUDY	
A03	SHAPING COOL CITIES	2024–PRESENT
	CODE AND METHODS	
A04	GEOSPATIAL CAREERS	2024–PRESENT
	CASE STUDY	
A05	SPATIAL DERIVE	2023–PRESENT
	CASE STUDY	
A06	UPSIDE DOWN WORLD	2023–PRESENT
	CASE STUDY	
A07	CHRONO.CITY	2026
	CASE STUDY	
A08	NO ONE HOME	2026
	CASE STUDY	
A09	INVISIBLE BORDERS COMPANION	2026
	CASE STUDY	
A10	WHERE THE EA SAID NO	2026
	CASE STUDY	
A11	TWENTY YEARS ON THE LOWER LEA	2026
	CASE STUDY	
A12	CITYLOOPS: URBAN CIRCULARITY ASSESSMENT	2022–2023
	D4.4 METHOD PDF	
A13	CENTRINNO: URBAN ECOSYSTEM CARTOGRAPHY	2021–2022
	D2.2 CARTOGRAPHY PDF	
A14	SOCIAL SUPERBLOCKS	2019–2020
	UPC THESIS RECORD	

14 CASE STUDIES
CASE · EVIDENCE · CLAIM BOUNDARY
SCREEN AND A4 EDITION

COMMUNITYAI

Technology and data direction for an early-stage community-intelligence venture, turning public, area-level evidence into a privacy-safe and auditable product without representing model signals as client outcomes.

ROLE

Chief Technology Officer (Designate)

SCALE

Organisation and platform

CAPABILITIES

Solution architecture, Data architecture, GeoAI, Delivery leadership

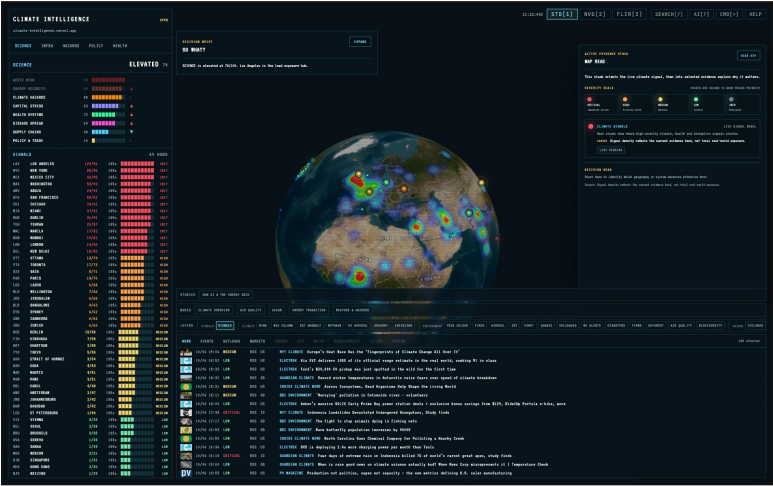
- Appointment as CTO-designate following a technical audit and a staged platform roadmap.
- An open-data evidence architecture with traceable dataset, processing and model provenance.
- A validation framework that uses spatial holdouts, baseline comparisons and explicit claim boundaries rather than inflated random-split scores.
- Governed release controls separating research evidence, product-ready outputs and client-specific validation.

Claim boundary: This case records my current technical mandate, not ownership of the venture or proof of a client outcome. Detailed architecture, counterparties, internal findings and model results are withheld pending written approval. The work is predictive and decision-supporting, not a causal claim.

CASE STUDY [Read on gerardoezequiel.xyz](#)

CLIMATE INTELLIGENCE

An open, keyless climate instrument: hand it any coordinate on Earth and it returns a sourced, multi-hazard exposure profile with a live satellite view, then hands the whole engine to AI agents.



ROLE

Founder and full-stack developer

SCALE

Global, any coordinate

CAPABILITIES

Climate-risk modelling, Geospatial engineering, Open data, AI agents (MCP)

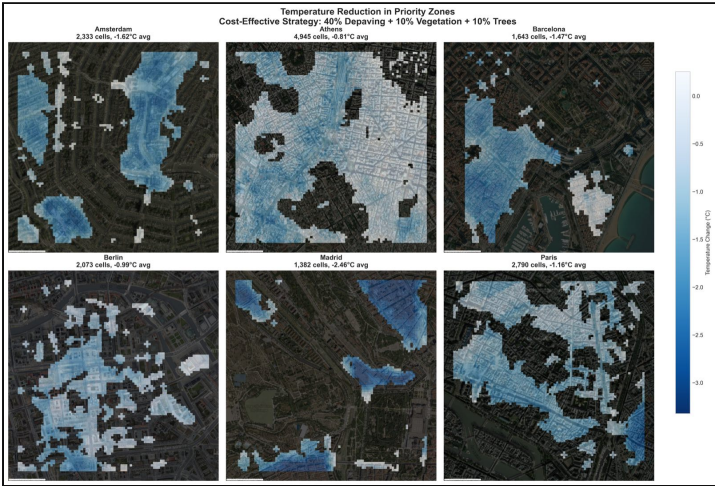
- A per-location Climate Exposure Profile with a dominant hazard, confidence value, heat outlook and per-hazard provenance, served through a read-only endpoint.
- A live Sentinel-2 preview through keyless STAC, plus a deterministic report generated without an LLM or per-request model spend.
- An authenticated, read-only MCP surface allowing agents to call the same inspectable climate functions.
- A broad regression suite and an explicit source catalogue recording each feed's provenance and licence tier.

Claim boundary: This is hazard and exposure screening, not loss modelling. The per-location engine and read-only agent tools are usable; the global-monitoring layer is still being hardened, and riverine flood remains contextual until return-period scoring lands. The work acknowledges its conceptual lineage and does not claim the source concept as my own.

CASE STUDY [Read on gerardoezequiel.xyz](#) LIVE WORK [Open Climate Intelligence](#) ↗

SHAPING COOL CITIES

An urban-heat study fusing Landsat thermal imagery, 3D building morphology, street networks and street-level computer vision across six European cities at 30 metre resolution, from my Bartlett MSc thesis: the model tests how much neighbourhood heat variation these sources explain together and where their relationships differ by city.



ROLE

Researcher and developer

SCALE

Six European cities

CAPABILITIES

Climate analytics, GeoAI, Data fusion, Urban research

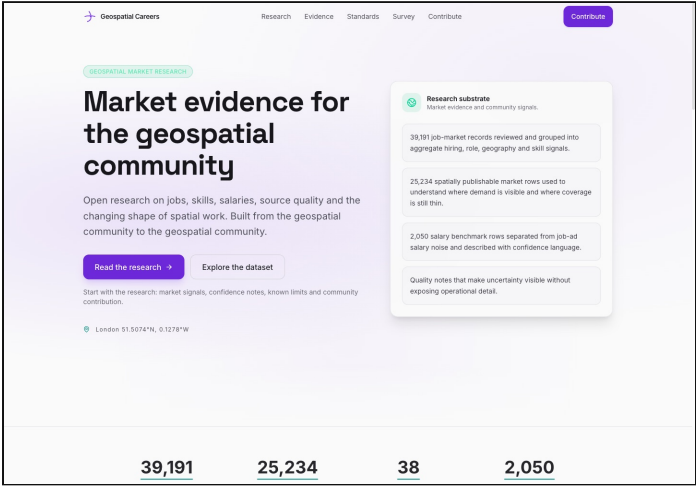
- A six-city comparative study of Amsterdam, Athens, Barcelona, Berlin, Madrid and Paris at 30 metre resolution, integrating four source families in one reproducible pipeline.
- Spatial GroupKFold validation with 600 metre blocks, designed to keep neighbouring cells out of opposing train and test folds.
- SHAP-based interpretation showing that the mix and influence of surface, morphology, network and street-view variables vary by city; attribution is reported as predictive association, not intervention effect.
- A bounded scenario analysis and vulnerability-weighted priority map, published with the methodology and code so the assumptions and limits can be inspected.

Claim boundary: This is an observational thesis, not a causal intervention study. The candidate radii and scenario bounds were chosen before modelling; the strongest tested de-sealing result occurred at the upper search bound, so it does not establish a non-linear threshold. SHAP importance is not an intervention effect, and the study did not run leave-one-city-out transfer tests or real-world before-and-after validation. The outputs are research hypotheses and screening priorities that require local testing.

CASE STUDY [Read on gerardoezequiel.xyz](#) REPOSITORY [Code and methods](#) ↗

GEOSPATIAL CAREERS

A research and product prototype for the spatial-data field: where its roles are, what they pay, what they demand, and who its map leaves out. Publication is held while the public data and deployment gates are repaired.



ROLE

Founder and lead developer

SCALE

Labour market and community

CAPABILITIES

Data product, Data engineering, PostGIS, Research governance

- A prototype interface backed by a three-layer PostGIS and dbt research platform; the current production surface is not represented as publication-ready.
- A provenance- and licence-aware ingestion path spanning job advertisements and official salary evidence, with public corpus magnitudes withheld until publication gates pass.
- Metric perturbation checks and certified marts that separate exploratory analysis from claims suitable for release.
- A methodology and claims registry that attach source date, denominator, confidence language and known limits to every publishable result.

Claim boundary: It is not a complete or unbiased census of the profession. The current publication candidate is blocked while source attribution, rights and production release evidence are reconciled, so no corpus magnitude on this portfolio should be read as a released dataset claim.

CASE STUDY [Read on gerardoezequiel.xyz](#)

SPATIAL DERIVE

A walking instrument that makes the phone already in your pocket a way to record the street's sensory texture, the layer satellites and administrative data leave out, by deepening attention rather than optimising a route.



ROLE

Founder and artist-technologist

SCALE

Body, street and city

CAPABILITIES

Creative technology, Critical cartography, Situated interfaces, Practice-based research

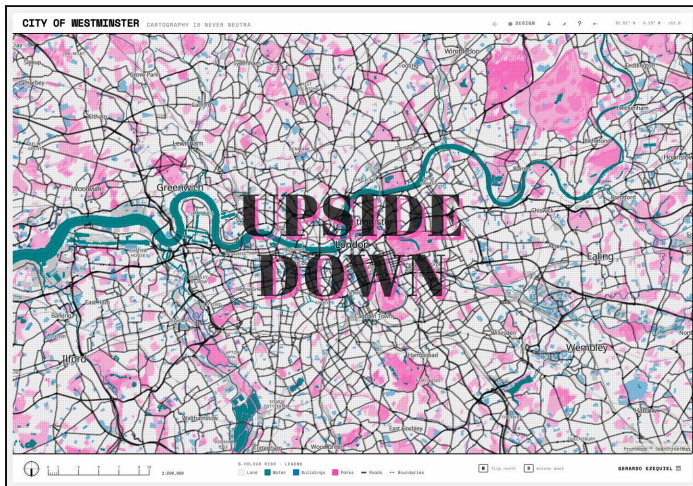
- A deployed mobile-first PWA at spatialderive.city, with local-first persistence in IndexedDB and a walking interface that remains useful without an account.
- A documented export system spanning structured data, a data dictionary, zines, fold-imposed PDFs, countermaps, posters and a complete bundle.
- Architectural decision records and a drafted DPIA for optional physiological data; the stricter public cross-walker workshop threshold is specified separately from other release contexts.
- Automated unit and end-to-end coverage across the narrator, sensors, persistence, export and interface layers.

Claim boundary: Spatial Derive is the umbrella practice; the public Derive app is one evolving prototype within it, not a finished or peer-reviewed research claim. The DPIA is a draft pending UK data-protection-lawyer review before any production physiological-data launch, and several research metrics are partially instrumented rather than validated.

CASE STUDY [Read on gerardoezequiel.xyz](#) LIVE WORK [Visit Spatial Derive](#) ➤

UPSIDE DOWN WORLD

A live, interactive re-projection that turns the 1569 Mercator worldview against itself: flip the planet south-up and its familiar neutrality falls away, exposing north-on-top as a five-hundred-year-old choice, not a fact.



ROLE

Artist and developer

SCALE

Planetary representation

CAPABILITIES

Radical cartography, Visual systems, Map critique, Web development

- A public, browser-native map (MapLibre GL v5) that flips south-up and reorients on drag, so the bias is felt through the hand rather than only read.
- An honest treatment of the engine's limits: the live surface renders the Mercator-and-Globe flip, while alternative projections are exported as static plates rather than misrepresented as interactive.
- A free, unwatermarked poster export as the deliberate growth mechanism, where the shareable artefact is itself the argument.
- Framing that names north-on-top as a 1569 Mercator choice built for European sea navigation, turning a map toy into a piece of map critique.

Claim boundary: A cartographic provocation about orientation and whose worldview a standard map encodes, not a proposal to standardise a south-up world.

CASE STUDY [Read on gerardoezequiel.xyz](#) LIVE WORK [Visit Upside Down World](#) ➤

CHRONO.CITY

An archived prototype that ran live urban analytics for anywhere on the planet entirely inside one browser tab, with no server in the loop, computed from open global data.

ROLE

Founder and full-stack developer

SCALE

Global urban data

CAPABILITIES

Product engineering, Spatial architecture, Open data, Web performance

- Client-side analysis of Overture GeoParquet (2026-01-21 release) pulled from the AWS Open Data S3 bucket, deployed as a static site with no API keys and no per-query cost.
- Network-based 5, 10 and 15 minute isochrones from a custom Web Worker Dijkstra over Overture transportation, driven by a documented per-road-class walk-speed model.
- A documented metric catalogue with academic references (Ground Space Index and Floor Space Index after Berghauser Pont and Haupt, 2010) and per-chapter marimo research notebooks covering urban fabric, land use, amenities, street network, composite scores and isochrones.
- Open-source implementation with architecture, data-strategy and tech-decision documents recording the reasoning behind each choice.

Claim boundary: The public chrono.city domain has since lapsed, so this stands as an archived prototype rather than a live service. No backend never meant no infrastructure: it still depended on public Overture data and content delivery networks. A later iteration migrated the analytics path to a hosted CARTO and BigQuery backend with deck.gl, trading pure client-side purity for query scale, so the zero-backend property belongs specifically to the archived browser-native phase described here.

CASE STUDY [Read on gerardoezequiel.xyz](#)

NO ONE HOME

Open housing evidence, built with the London Renters Union: fragmented official data reconciled into 296 comparable councils and a Lewisham map you can actually investigate.

ROLE

Researcher and developer

SCALE

England and Lewisham

CAPABILITIES

Civic data, Open research, Web mapping, Evidence design

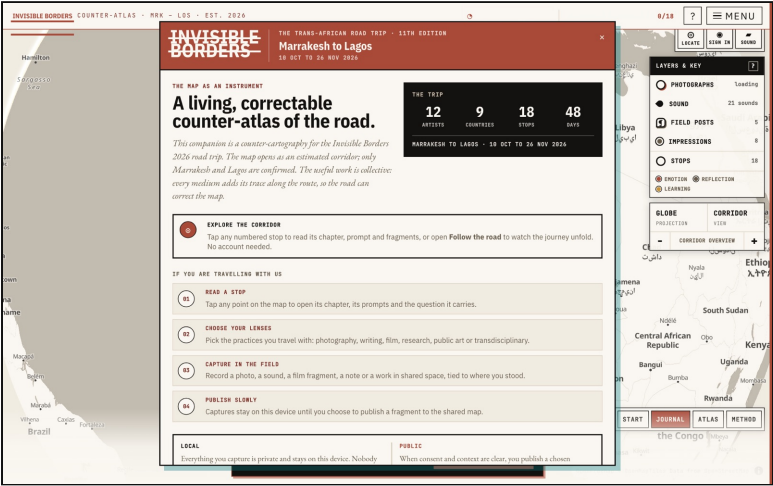
- A 296-local-authority interactive choropleth with six switchable measures; the derived total of 303,185 differed from Action on Empty Homes' independently published 303,143 by 42 homes, or 0.014%.
- Lewisham's enforcement gap quantified from open data: 469 of 1,070 long-term empties (43.8%) carry no Empty Homes Premium, against a national gap of 150,257 (49.6%).
- A Lewisham building-level map of 96,123 Overture footprints delivered as 25 MB PMTiles vector tiles, plus a seven-sheet Excel deliverable and companion CSV built to the LRU brief.
- A full public methodology, a UK GDPR legitimate-interests assessment, three FOI templates, and a pipeline parametric on a single config that reruns for any of the 296 districts.

Claim boundary: The building layer supports investigation; it does not assert that every mapped footprint is an empty home. The per-property composite vacancy score is a documented, source-cited plan, not yet run: it awaits FOI aggregates and walking-survey ground truth before any individual building can be called empty.

CASE STUDY [Read on gerardoezequiel.xyz](#)

INVISIBLE BORDERS COMPANION

A mobile field companion for the Marrakesh-to-Lagos road, built to record borders as lived conditions rather than fixed lines, with its own honesty encoded in the data model.



ROLE

Artist-researcher and developer

SCALE

Route and territory

CAPABILITIES

Field research, Critical mapping, Narrative interface, Web development

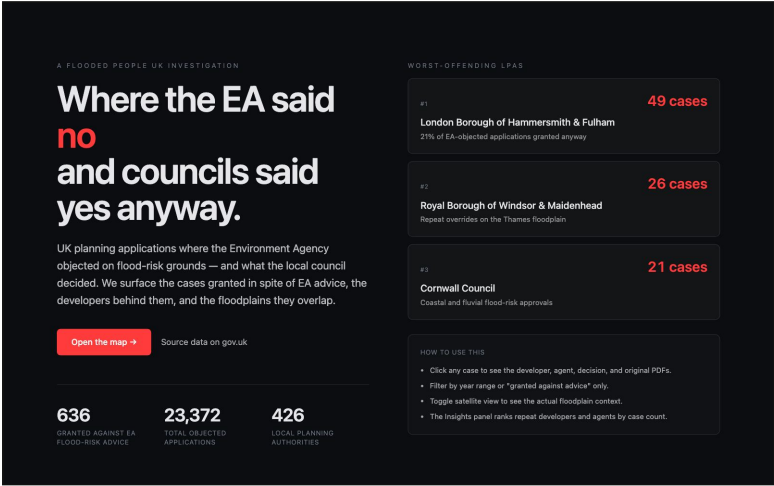
- A live deployed PWA at invisible-borders-companion.vercel.app plus a separate dossier landing page, built in Next.js 16 and React 19 with roughly 68 React components and 32 library modules.
- An estimated route model spanning all nine corridor countries: 32 waypoints and 18 field stops, each carrying an explicit estimated flag, rendered on a MapLibre map with a chapter picker and a conditions dashboard.
- Field conditions drawn from six live data sources with a 'Here' mode reading the traveller's own GPS, all behind Zod validation with unit tests on the conditions, air-quality, daylight and effects logic.
- A complete seven-plate application dossier (motivation letter, CV, portfolio, application copy and three research samples) published as PDFs for the Invisible Borders 2026 open call, alongside a print companion pipeline built with WeasyPrint and Matplotlib.

Claim boundary: The route is an estimated research scaffold, not an official itinerary or a border claim; only Marrakesh and Lagos are confirmed and the rest is inferred from the published corridor. The companion is a pre-production prototype and application artefact for a journey that has not yet taken place, so it documents a method and an intent, not a completed field record, and its acceptance to the programme is not claimed here.

CASE STUDY [Read on gerardoezequiel.xyz](#) LIVE WORK [Open the companion](#) ➤

WHERE THE EA SAID NO

A browser-native map and scraping pipeline that pulls flood-risk planning decisions out of hundreds of separate council portals and shows, case by case, where homes were approved on floodplains against the Environment Agency's own objection.



ROLE

Developer and data engineer

SCALE

England and Wales planning system

CAPABILITIES

Web scraping, PDF data extraction, Web mapping, Civic data

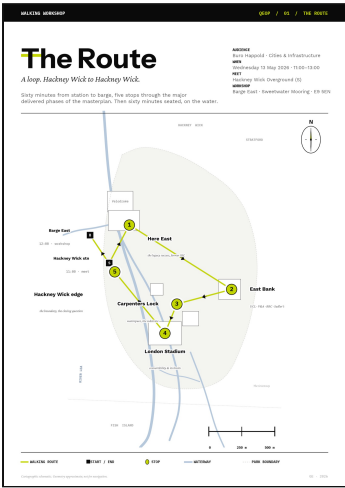
- 23,372 applications collated across 426 local planning authorities, of which 636 are recorded as permission granted against Environment Agency flood-risk advice, mapped and rankable by authority.
- A PDF extraction pipeline scoring 99.7% field accuracy on the scored test set at 2.4s per document sequential and about 0.25s per document across 10 workers, with a costed path to the full corpus of roughly 370,000 PDFs.
- Platform-general council-portal scrapers (Idox implemented, 13,674 applications queued) plus applicant and agent parsing that surfaces repeat developers.
- A browser-native map (Next.js 15, MapLibre, PMTiles, DuckDB-WASM over Parquet) with an EA flood-zone overlay and LPA choropleth, served from object storage on zero egress.

Claim boundary: Work in progress: only a subset of the objected applications is fully scraped and geocoded so far, so the map shows a slice, not the whole. The source objections list was obtained by Flooded People UK from public gov.uk records; I built the pipeline and map on top of it. The 99.7% figure is measured on a small scored test set, not the full corpus. The map surfaces patterns for investigation and does not, on its own, prove wrongdoing by any council or developer.

CASE STUDY [Read on gerardoezequiel.xyz](#) LIVE WORK [Open the investigation](#)

TWENTY YEARS ON THE LOWER LEA

A two-hour walking workshop that reads twenty years of Olympic Park regeneration critically, on foot, where every engineer's phone becomes a voting booth and the walk itself is the data.



ROLE

Artist and developer

SCALE

Queen Elizabeth Olympic Park, London

CAPABILITIES

Critical spatial practice, Participatory design, Web and print, Space syntax

- Delivered and run as a live two-hour session for the practice's Cities and Infrastructure team, not a prototype: three Supabase migrations applied to production, poll writes returning HTTP 201, bars moving on tap.
- Two synchronised deliverables shipped: a 15-page A4 print companion plus a standalone vector route map (PDF, SVG and PNG, A3/A4 printable) with a compass rose drawn in figure coordinates, and a mobile web companion deployed to Vercel.
- A full application, not a demo: around fifty React components, a Supabase schema with row-level security, realtime publication and read-only aggregate views, and Playwright end-to-end specs covering critical flows, print quality and the equity spine.
- A local-first sync layer with an optimistic update path, a persisted retry queue and auto-flush on reconnect, plus three geofenced context zones using haversine distance that surface a 30-second card on the path between stops.
- Every critical claim carries a verbatim citation (Watt 2013, City 17(1), with DOI; Debord 1958; Hillier 1984 and 1996) and every engineering claim a number or date; the brand lime was verified against source, coordinates against Google Places, and the cover quote transcribed verbatim from the interview record.

Claim boundary: This records my concept, design and build. It was made iteratively through critique and delivered as a collaboration; the commissioning practice, the co-host and the participant contributions are kept private, and there is no public link because the app was a live event surface rather than a showcase. The participation figures describe the design target of a room of around twenty-five, not independently audited attendance.

CASE STUDY [Read on gerardoezequiel.xyz](#)

CITYLOOPS: URBAN CIRCULARITY ASSESSMENT

A city-scale material-flow and stock accounting method with system-wide indicators, developed within Horizon 2020 CityLoops, Closing the Loop for Urban Material Flows, and adapted from Eurostat's economy-wide framework for urban circularity decisions.

ROLE

Co-author · Horizon 2020 grant 821033

SCALE

Five CityLoops pilot cities

CAPABILITIES

Material-flow accounting, Material-stock accounting, Circularity indicators, Data visualisation

-
- Named as one of four authors of CityLoops deliverable D4.4, Urban Circularity Assessment Method.
 - An evaluation of 29 urban material-flow methods followed by a city-scale adaptation of Eurostat economy-wide material-flow accounting.
 - Ten scale indicators and eight circularity indicators, paired with material-flow and bottom-up building-stock accounts.
 - A reproducible path from data collection and mass balancing to Sankey diagrams, indicators and a city dashboard, prepared for five pilot cities.

Claim boundary: The method estimates and interprets urban material flows and stocks from the best available evidence. It does not claim to audit every tonne moving through a city.

CASE STUDY [Read on gerardoezequiel.xyz](#) DOCUMENT [D4.4 method PDF](#) ↗

CENTRINNO: URBAN ECOSYSTEM CARTOGRAPHY

A shared urban-ecosystem mapping methodology and cartographic infrastructure for nine European pilot cities, developed within Horizon 2020 CENTRINNO, New CENTRAlities in INdustrial areas as engines for inNOvation and urban transformation.

ROLE

Co-author · Horizon 2020 grant 869595

SCALE

Nine European pilot cities

CAPABILITIES

Urban-system mapping, Participatory cartography, Material-flow mapping, Research methods

- Named as one of six authors of CENTRINNO deliverable D2.2, Cartography Alpha Version.
- A common method joining geospatial context mapping, community mapping and material-flow mapping.
- Nine pilot cartography pages paired with internal KUMU workspaces for collaborative data collection, analysis and visualisation.
- A public methodology and resource library intended to make the cartographic process repeatable beyond the original pilots.

Claim boundary: In this project, urban ecosystem refers to the local resources, infrastructures, communities and material relationships involved in circular regeneration. It is not a biodiversity survey or a species-modelling claim.

CASE STUDY [Read on gerardoezequiel.xyz](#) DOCUMENT [D2.2 cartography PDF](#) ↗

SOCIAL SUPERBLOCKS

A spatial allocation method for Barcelona's home-care service that moved from neighbourhood demand to contiguous service zones, using the social-superblock model to connect urban form with how care is organised.

ROLE

Researcher and spatial data analyst

SCALE

Barcelona

CAPABILITIES

Spatial optimisation, Urban services, Genetic algorithms, Neighbourhood analysis

- A thesis deposited in the Universitat Politècnica de Catalunya institutional repository under its original-language title.
- A spatial allocation model built for Barcelona's home-care service within the Superilles Socials programme.
- Genetic-algorithm optimisation of contiguous service zones, evaluated against demand, compactness and neighbourhood indicators.
- A method that translates the superblock from a street-design concept into a framework for organising neighbourhood-scale care.

Claim boundary: This case documents the research method and its institutional context. It does not claim that the model was implemented as Barcelona's final operating allocation or that it independently improved care outcomes.

CASE STUDY [Read on gerardoezequiel.xyz](#) PUBLICATION [UPC thesis record](#) ↗
