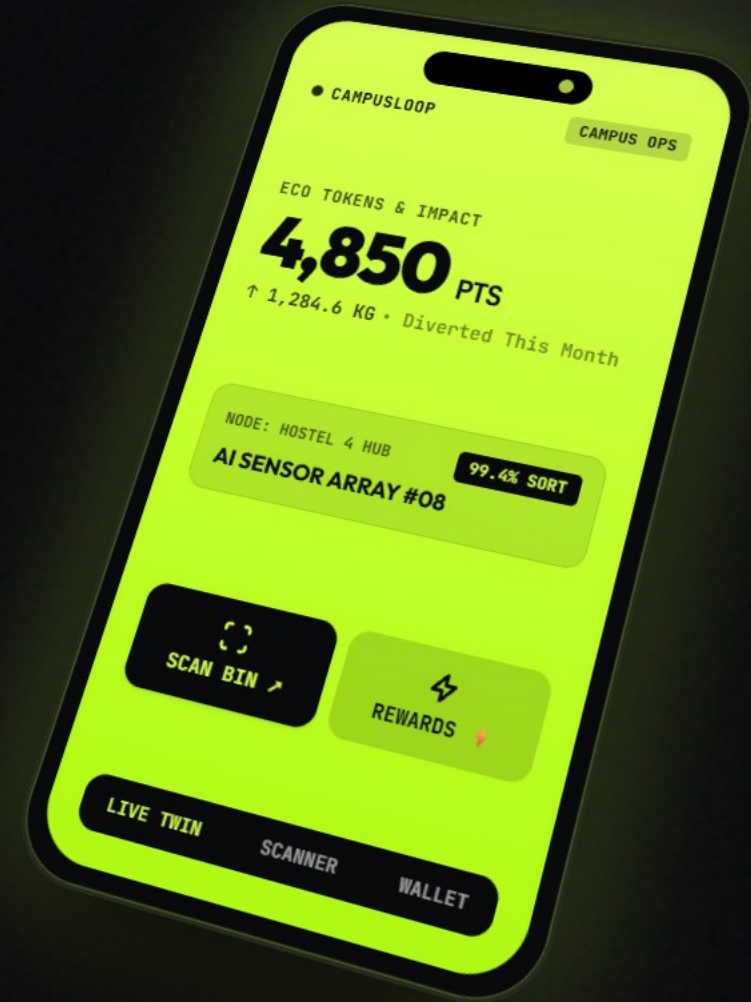


CAMPUSLOOP — CAMPUS WASTE INTELLIGENCE

“Every bin is an intelligent sensor, every scrap a valuable asset.”

Autonomous multi-class bin classification, real-time campus digital twin, and circular proof-of-sort student tokenomics.

CAMPUSLOOP



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THE STATUS QUO • SYSTEMIC INEFFICIENCY

CAMPUSES FLY BLIND ON WASTE



0

INSTITUTIONAL BLINDSPOTS

Metric tons generated daily with zero real-time weight or volume stream visibility across campus facilities.



>70%

CONTAMINATION DISASTER

Clean recyclables routed directly into general landfill waste due to improper manual sorting at disposal points.



40%

STATIC COLLECTION DRAG

Fixed truck routes empty half-empty bins while overflow hotspots fester, needlessly burning fleet fuel and budget.

SYSTEM ARCHITECTURE · CLOSED LOOP

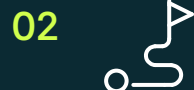
A CLOSED-LOOP CIRCULAR ECOSYSTEM FOR CAMPUSES

Hardware classification, real-time spatial telemetry, and verified student incentive loops connect to eliminate disposal loss.



AI COMPUTER VISION SCANNER

Hardware-level edge inference sorts waste streams and flags contamination at the instant of disposal, for instant sorting guidance.



IOT CAMPUS DIGITAL TWIN

Telemetry mesh maps spatial fill pressure and dynamically dispatches custodial collection routes for dynamic routing and fill telemetry.



PROOF-OF-SORT TOKENOMICS

Rewarding students with redeemable campus credits. Verified disposal transactions reward student IDs with redeemable campus dining and store credits.

FEATURE 01: AI VISION SORTS AT THE BIN

01 EDGE CLASSIFICATION INTO 3 STREAMS

Organic (compostable), recyclable (dry recoverable), and reject streams separated autonomously in under 300ms.

02 CONTAMINATION GUARDRAILS

Flags mixed and dirty items such as unwashed containers via real-time multi-lingual voice and visual guidance.

03 LIVE PROOF-OF-SORT VERIFICATION

Validates item integrity and user ID confirmation before issuing tokens, systematically preventing gaming or fraud.



FEATURE 02: A LIVE DIGITAL TWIN DISPATCHES TRUCKS

01 3D CAMPUS HEATMAP

Fill level, temperature and tilt across hostel and academic zones.

02 PREDICTIVE AI ROUTING

Replaces fixed schedules, cutting route distance and fuel by 40%.

03 COMPOSITE HEALTH SCORE

Campus hygiene index from fill pressure and sensor uptime.



FEATURE 03: SORTING EARNS GREEN PTS

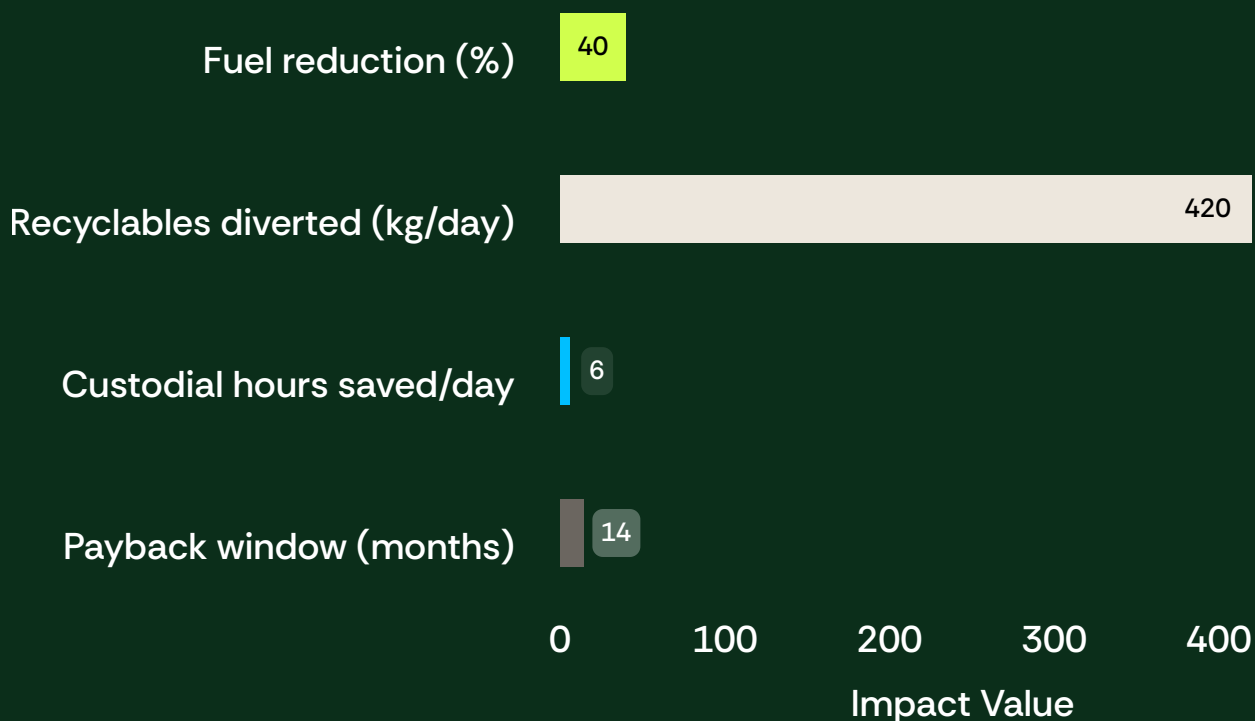
- Scan university ID, dispose of sorted waste, earn verified Green PTS
- Redeem for cafeteria meals, campus store discounts and EV shuttle credits
- Circular marketplace for upcycled goods and peer-to-peer exchange



FINANCIAL VALIDATION · 63-BIN PILOT MODEL

PAYBACK IN UNDER 14 MONTHS

Metric



Modeled across a 63-bin pilot cluster serving university residential and dining zones

14 MO

maximum capital amortisation

420 kg/day of clean recyclables diverted from municipal landfill tipping fees to certified recycling off-takers generates recurring feedstock revenue, ensuring long-term net positive cash flow.

ARCHITECTURE BUILT FOR THE EDGE

FRONTEND

Responsive React SPA, Tailwind CSS, Recharts operational telemetry.

BACKEND

Python FastAPI engine, computer vision inference pipeline, automated ESG audit engine.

EDGE AND SENSOR MESH

Micro-telemetry nodes, offline-first fallback.

FROM 63 BINS TO CITY SCALE IN FOUR PHASES

01

PHASE 01

HOSTEL PILOT

10 high-density zones with 63 connected smart bins validating student sort habits.

02

PHASE 02

CAMPUS-WIDE

Comprehensive rollout across academic blocks, science research labs, and central dining halls.

03

PHASE 03

CONSORTIUM HUB

Multi-university cluster pooling volume into a shared Material Recovery Facility.

04

PHASE 04

CIVIC SCALE

Municipal ward infrastructure licensing and SaaS urban sanitation analytics dashboard.

Structured trajectory expanding from verified campus nodes to regional municipal waste intelligence.

DEPLOYMENT READY · LIVE DEMO

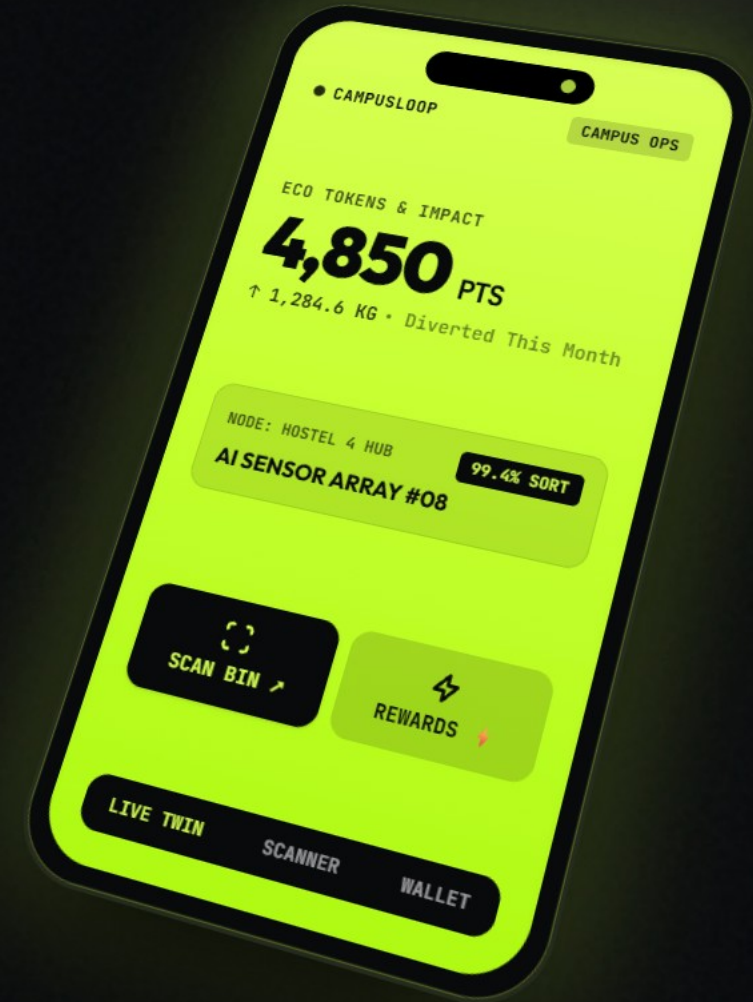
CLOSING THE LOOP ON CAMPUS WASTE

Interactive digital twin and edge scanner
operational right now.

Experience the live web app and inspection console:
<https://campus-loop-dg0.pages.dev/login>

Sociothon 2026 Showcase · Autonomous Waste Intelligence

CAMPUSLOOP



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