Constella Integration Roadmap — From Pilots to Modern Systems

A staged plan to embed Constella into municipal, enterprise, and community workflows.

Stage 0 — Reference Stack (3–6 months)

- Stand up minimal APIs (/threads, /charters, /datasets, /audits, /tome/changes) and sign responses.
- Data formats: GeoJSON/COGs for maps; CSV/Parquet for time■series; SensorThings API where feasible.
- Identity: OIDC (Google/Microsoft/City SSO) with pseudonymous project IDs.
- Storage: local■first Synology + cloud sync (object storage) with dataset hashes/DOIs.
- Observability: logs, metrics, traces; S3 versioning; immutability for published datasets.

Stage 1 — Integration Adapters (6–12 months)

- GIS: publish WMS/WFS endpoints; ArcGIS/QGIS plugins for Gaia/Sky layers.
- Utilities & codes: export Eden playbooks to city permitting portals; map to rebate programs.
- Emergency management: push advisory layers to EOC dashboards; CAP alerts for Sky Lattice nowcasts.
- Health & safety: Harmony results as wellness (not medical) dashboards for employers/schools.

Stage 2 — Procurement & Policy Hooks

- RFP language: require open methods, dataset hashes, E■levels, and Astris validation on deliverables.
- MOUs/DPAs: privacy terms (local■first, retention, consent codes).
- Insurance & incentives: partner on premium credits for Eden■verified risk reductions; utility rebates bundled.

Stage 3 — Governance Embedding

- Keep Auctor/Astris as an overlay; city retains statutory power; Constella informs and verifies.
- Amendment pipeline: red■team window (7–14 days) before major changes; Tome diffs published.
- Public audit log and quarterly impact reports with cost/benefit summaries.

Stakeholders & Roles

- Municipal (planning, sustainability, emergency mgmt), utilities, insurers, community orgs, schools.
- Stewards run threads; validators audit; data custodians manage consent; mediators run Penumbra.

Compliance & Security

- Privacy: CCPA/GDPR■style consent; DPIAs for sensitive pilots; no surveillance/no medical claims.
- Security: SSO, MFA, role■based access; key rotation; regular pen tests; SOC 2 path if needed.

Funding Mix

- Seed grants + philanthropy for pilots; utility rebates; green bonds for scale; insurer partnerships; Astris bounties for verified wins.

Success Metrics & SLAs

- Eden: ≥15–30% energy cut; comfort↑; IAQ improvements; publish intervals.

- Gaia/Sky: backtest AUC, lead■time gains, low false alarms; quarterly review.

- Governance: audit pass rate, time■to■G3, conflict repair times, participation diversity.