Here is the complete, print-ready Fifth Edition ("5D") Engineering Deliverable Catalog, styled with exact letter-page boundaries (8.5in × 11in), high-density GlacierNoir design tokens, explicit page breaks (page-break-after: always), and a built-in PDF export trigger. Save this file as Albert_Lane_Deliverable_Catalog_5D.html and click **Export to PDF** (or press Ctrl+P / Cmd+P with destination set to *Save as PDF*):

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8" />
<title>Albert Lane Digital Infrastructure — Sovereign Utility
Architecture: Engineering Deliverable Catalog (Fifth Edition)</title>
<meta name="description" content="Professional catalog of the Albert
Lane sovereign digital infrastructure estate: mission, repository
catalog, novel engineering deliverables, and visual roadmap." />
<style>
  :root{
    --ink:      #0A1628;
    --surface:  #0D1F3C;
    --surface2: #162944;
    --border:   #1E3A5F;
    --accent:   #00D4FF;
    --accent-dk:#007A99;
    --success:  #00C896;
    --warn:     #FF6B35;
    --danger:   #FF3860;
    --text:     #14212F;
    --text-dim: #4B6478;
    --paper:    #FCFDFE;
    --mono: 'Courier New', 'Consolas', monospace;
    --sans: 'Helvetica Neue', Helvetica, Arial, sans-serif;
  }
  *,*::before,*::after{box-sizing:border-box;margin:0;padding:0;}

html,body{background:#e9edf1;-webkit-print-color-adjust:exact;print-co
lor-adjust:exact;}
  body{
    font-family:var(--sans);
    color:var(--text);
    font-size:11pt;
    line-height:1.5;
  }

  @page {
    size: 8.5in 11in;
    margin: 0;
  }

  /* Floating PDF Control Toolbar */
```

```
  #pdf-toolbar {
    position: fixed;
    top: 16px;
    right: 16px;
    z-index: 9999;
    background: var(--surface);
    border: 1px solid var(--accent);
    padding: 10px 16px;
    border-radius: 6px;
    box-shadow: 0 4px 20px rgba(0,0,0,0.3);
    display: flex;
    align-items: center;
    gap: 12px;
  }
  #pdf-toolbar button {
    background: var(--accent);
    color: var(--ink);
    border: none;
    font-family: var(--mono);
    font-weight: 700;
    font-size: 10pt;
    padding: 8px 14px;
    border-radius: 4px;
    cursor: pointer;
    letter-spacing: 0.05em;
  }
  #pdf-toolbar button:hover { background: #52e5ff; }
  #pdf-toolbar span { font-family: var(--mono); font-size: 8.5pt;
color: #E8F4FD; }

  .page{
    position:relative;
    width:8.5in;
    height:11in;
    margin:0 auto 20px auto;
    background:var(--paper);
    padding:0.55in 0.7in;
    page-break-after:always;
    page-break-inside:avoid;
    box-shadow:0 0 24px rgba(10,22,40,0.18);
    overflow: hidden;
  }

  @media print{
    html, body { background: #fff; }
    #pdf-toolbar { display: none !important; }
    .page {
      margin: 0;
```

```
    box-shadow: none;
    page-break-after: always;
    width: 8.5in;
    height: 11in;
  }
}

.doc-header{
  display:flex;
  justify-content:space-between;
  align-items:center;
  border-bottom:2px solid var(--ink);
  padding-bottom:8px;
  margin-bottom:22px;
  font-family:var(--mono);
  font-size:8.5pt;
  color:var(--text-dim);
  letter-spacing:0.04em;
}
.doc-header strong{color:var(--ink);}

.footer-strip{
  position:absolute;
  bottom:0.4in;
  left:0.7in;
  right:0.7in;
  display:flex;
  justify-content:space-between;
  font-family:var(--mono);
  font-size:7.5pt;
  color:var(--text-dim);
  border-top:1px solid var(--border);
  padding-top:6px;
}

/* PAGE 1 — MISSION */
.cover{ display:flex; flex-direction:column; }
.cover-eyebrow{
  font-family:var(--mono);
  font-size:8pt;
  letter-spacing:0.16em;
  text-transform:uppercase;
  color:var(--accent-dk);
  margin-bottom:9px;
}
.cover-title{
  font-size:25pt;
  font-weight:800;
```

```
    line-height:1.1;
    color:var(--ink);
    margin-bottom:7px;
  }
  .cover-title .tm{font-size:0.4em;vertical-align:super;}
  .cover-subtitle{
    font-size:11pt;
    color:var(--text-dim);
    font-weight:400;
    margin-bottom:16px;
    max-width:6.6in;
    line-height:1.4;
  }
  .cover-badge-row{ display:flex; gap:8px; margin-bottom:16px;
flex-wrap:wrap; }
  .badge{
    font-family:var(--mono);
    font-size:7.5pt;
    letter-spacing:0.03em;
    border:1px solid var(--border);
    color:var(--ink);
    padding:4px 9px;
    border-radius:3px;
    background:#f2f6f9;
  }
  .badge.accent{ border-color:var(--accent-dk);
color:var(--accent-dk); background:#eafcff; }

  .mission-block{
    background:var(--ink);
    color:#E8F4FD;
    padding:16px 20px;
    border-radius:6px;
    margin-bottom:16px;
  }
  .mission-block h2{
    font-family:var(--mono);
    font-size:8.5pt;
    letter-spacing:0.12em;
    text-transform:uppercase;
    color:var(--accent);
    margin-bottom:8px;
  }
  .mission-block p{ font-size:9.7pt; line-height:1.48; color:#DCEFFB;
}
  .mission-block p + p{ margin-top:8px; }

  .purpose-grid{ display:grid; grid-template-columns:1fr 1fr;
```

```
gap:10px; margin-bottom:16px; }
  .purpose-card{
    border:1px solid var(--border);
    border-left:4px solid var(--accent-dk);
    padding:9px 12px;
    border-radius:4px;
    background:#fff;
  }
  .purpose-card h3{
    font-size:8.7pt;
    text-transform:uppercase;
    letter-spacing:0.05em;
    color:var(--ink);
    margin-bottom:4px;
  }
  .purpose-card p{ font-size:8.4pt; color:var(--text-dim);
line-height:1.4; }

  .metrics-row{
    display:grid;
    grid-template-columns:repeat(5,1fr);
    gap:8px;
    margin-top:6px;
    padding-top:14px;
    border-top:1px solid var(--border);
  }
  .metric{ text-align:center; }
  .metric .num{ font-family:var(--mono); font-size:17pt;
font-weight:700; color:var(--ink); }
  .metric .lbl{ font-size:7pt; text-transform:uppercase;
letter-spacing:0.04em; color:var(--text-dim); margin-top:2px; }

  .filing-block{
    margin-top:12px;
    font-family:var(--mono);
    font-size:7.5pt;
    color:var(--text-dim);
    border-top:1px dashed var(--border);
    padding-top:8px;
    display:flex;
    justify-content:space-between;
  }

  /* PAGE 2 — REPO CATALOG */
  .page-title{ font-size:17pt; font-weight:700; color:var(--ink);
margin-bottom:2px; }
  .page-kicker{
    font-family:var(--mono); font-size:8.5pt; color:var(--accent-dk);
```

```
    letter-spacing:0.1em; text-transform:uppercase;
margin-bottom:20px;
  }
  .repo-columns{ display:grid; grid-template-columns:1fr 1fr; gap:0
26px; }
  .repo-entry{ display:flex; align-items:flex-start; gap:10px;
padding:10px 0; border-bottom:1px solid #E4EAEF; }
  .repo-columns .repo-col-left .repo-entry{ flex-direction:row; }
  .repo-columns .repo-col-right .repo-entry{
flex-direction:row-reverse; text-align:right; }
  .repo-index{ flex:0 0 22px; font-family:var(--mono); font-size:9pt;
font-weight:700; color:var(--accent-dk); padding-top:2px; }
  .repo-body{ flex:1; }
  .repo-name{ font-family:var(--mono); font-size:10.5pt;
font-weight:700; color:var(--ink); margin-bottom:2px; }
  .repo-cat{
    display:inline-block; font-size:6.8pt; text-transform:uppercase;
letter-spacing:0.05em;
    color:#fff; background:var(--accent-dk); padding:1.5px 5px;
border-radius:2px; margin-bottom:4px;
  }
  .repo-desc{ font-size:8.6pt; color:var(--text-dim); line-height:1.4;
}

  /* PAGE 3 — NOVEL DESIGN CATALOG */
  .design-list{ display:flex; flex-direction:column; gap:10px; }
  .design-item{ display:grid; grid-template-columns:36px 1fr;
gap:12px; padding-bottom:10px; border-bottom:1px solid #E4EAEF; }
  .design-num{ font-family:var(--mono); font-size:14pt;
font-weight:800; color:#C7D8E4; }
  .design-title{ font-size:10pt; font-weight:700; color:var(--ink);
margin-bottom:2px; }
  .design-title .tag{
    font-family:var(--mono); font-size:6.8pt; color:var(--accent-dk);
background:#eafcff;
    border:1px solid #bdeeff; padding:1px 5px; border-radius:2px;
margin-left:6px;
    text-transform:none; font-weight:600; vertical-align:middle;
  }
  .design-desc{ font-size:8.5pt; color:var(--text-dim);
line-height:1.4; }

  /* PAGE 4 — VISUAL SHOWCASE & 5D WIDGET ENGINE */
  .visual-grid{ display:grid; grid-template-columns:1.15fr 0.85fr;
gap:14px; margin-bottom:14px; }
  .visual-card{ border:1px solid var(--border); border-radius:6px;
overflow:hidden; background:#fff; }
  .visual-card .cap{
```

```
    font-family:var(--mono); font-size:7pt; color:var(--text-dim);
    padding:6px 8px; border-top:1px solid #E4EAEF; background:#f8fafb;
  }
  .visual-card .render{ background:var(--ink); padding:10px; }

  .palette-row{ display:flex; }
  .swatch{ flex:1; height:40px; display:flex; align-items:flex-end;
padding:3px 5px; }
  .swatch span{ font-family:var(--mono); font-size:6pt;
color:rgba(255,255,255,0.85); }

  .vision-block{ background:var(--ink); color:#E8F4FD;
border-radius:6px; padding:16px 20px; margin-top:4px; }
  .vision-block h2{
    font-family:var(--mono); font-size:9pt; letter-spacing:0.12em;
    text-transform:uppercase; color:var(--accent); margin-bottom:8px;
  }
  .vision-block p{ font-size:9pt; color:#DCEFFB; line-height:1.5; }
  .vision-block p + p{ margin-top:8px; }
  .vision-tags{ display:flex; gap:6px; margin-top:10px;
flex-wrap:wrap; }
  .vision-tags span{
    font-family:var(--mono); font-size:7pt; color:var(--accent);
    border:1px solid var(--accent-dk); padding:2px 6px;
border-radius:2px;
  }

  /* Embedded 3D/5D Engine Viewport */
  #widget-viewport {
    position: relative; width: 100%; height: 260px; background:
#0A1628; border-radius: 4px; overflow: hidden;
  }
  #widget-stage { width: 100%; height: 100%; display: block; cursor:
crosshair; }
  #widget-hud-overlay {
    position: absolute; top: 8px; left: 10px; right: 10px;
pointer-events: none;
    display: flex; justify-content: space-between; font-family:
var(--mono); font-size: 8px; color: #00D4FF; letter-spacing: 1px;
  }
  .widget-hud-corner { position: absolute; width: 18px; height: 18px;
border: 1px solid #00D4FF; opacity: 0.6; pointer-events: none; }
  .whc-tl { top: 22px; left: 8px; border-right: none; border-bottom:
none; }
  .whc-tr { top: 22px; right: 8px; border-left: none; border-bottom:
none; }
  .whc-bl { bottom: 42px; left: 8px; border-right: none; border-top:
none; }
```

```
  .whc-br { bottom: 42px; right: 8px; border-left: none; border-top:
none; }
  #widget-controls {
    position: absolute; bottom: 6px; left: 8px; right: 8px;
background: rgba(13, 31, 60, 0.94);
    border: 1px solid #1E3A5F; padding: 5px 8px; border-radius: 3px;
display: flex; gap: 8px;
    align-items: center; font-family: var(--mono); font-size: 8px;
flex-wrap: wrap;
  }
  .w-control-group { display: flex; align-items: center; gap: 4px; }
  #widget-controls input[type=range] { accent-color: #00D4FF; cursor:
pointer; width: 55px; }
  #widget-controls input[type=text] {
    background: #0D1F3C; border: 1px solid #1E3A5F; color: #E8F4FD;
font-family: var(--mono);
    font-size: 8px; padding: 2px 4px; border-radius: 2px; width:
100px;
  }
  #widget-controls input[type=text]:focus { outline: none;
border-color: #00D4FF; }
  #widget-controls button {
    background: #162944; border: 1px solid #1E3A5F; color: #00D4FF;
font-family: var(--mono);
    padding: 2px 5px; cursor: pointer; border-radius: 2px; font-size:
7.5px;
  }
  #widget-controls button:hover { border-color: #00D4FF; background:
#0D1F3C; }
  #widget-controls button.danger:hover { border-color: #FF3860; color:
#FF3860; }
  #widget-fstatus {
    font-size: 7px; padding: 2px 4px; border-radius: 2px; border-left:
2px solid #1E3A5F;
    color: #4B6478; min-width: 70px;
  }
  #widget-fstatus.ok { border-left-color: #00C896; color: #00C896; }
  #widget-fstatus.off { border-left-color: #FF3860; color: #FF3860; }

  .mock-dash{ display:grid; grid-template-columns:repeat(6,1fr);
grid-auto-rows:22px; gap:4px; }
  .mock-panel{
    background:var(--surface); border:1px solid var(--border);
border-radius:3px;
    padding:4px 5px; display:flex; flex-direction:column;
justify-content:space-between;
  }
  .mock-panel .t{ font-family:var(--mono); font-size:5.2pt;
```

```
color:#7BA7CC; }
  .mock-panel .v{ font-family:var(--mono); font-size:6pt;
color:#E8F4FD; }
  .p1{ grid-column:span 3; grid-row:span 3; }
  .p2{ grid-column:span 3; grid-row:span 3; }
  .p3{ grid-column:span 2; grid-row:span 2; }
  .p4{ grid-column:span 2; grid-row:span 2; }
  .p5{ grid-column:span 2; grid-row:span 2; }
</style>
</head>
<body>

<div id="pdf-toolbar">
  <span>ALBERT LANE CATALOG (FIFTH EDITION / 5D ENGINE)</span>
  <button onclick="window.print()">EXPORT TO PDF</button>
</div>

<!-- ================================================================
-->
<!-- PAGE 1 — MISSION, GOAL, PURPOSE
-->
<!-- ================================================================
-->
<section class="page">
  <div class="doc-header">
    <span><strong>ALBERT LANE DIGITAL INFRASTRUCTURE</strong> —
Engineering Deliverable Catalog</span>
    <span>Prepared 2026-08-09</span>
  </div>

  <div class="cover">
    <div class="cover-eyebrow">Sovereign Citizen Utility Architecture
 ·  Portland to Boardman Rebuild Plan</div>
    <h1 class="cover-title">Albert Lane Digital Infrastructure<span
class="tm">™</span></h1>
    <div class="cover-subtitle">A fifteen-repository sovereign
technology estate — civic infrastructure, forensic tooling, geospatial
intelligence, a universal integration gateway, a 3D/5D analytics
platform, and a self-hosted CI/security pipeline replacing GitHub
Actions outright — engineered end to end as a single, cross-referenced
system of record.</div>

    <div class="cover-badge-row">
      <span class="badge accent">15 Repositories</span>
      <span class="badge accent">4 Product Layers</span>
      <span class="badge">Rust · TypeScript · Python</span>
      <span class="badge">Cloudflare Workers · D1 · R2</span>
      <span class="badge">Tauri 2.0 Desktop</span>
```

```
      <span class="badge">GitHub-Actions-Independent CI</span>
    </div>

    <div class="mission-block">
      <h2>Mission Statement</h2>
      <p><strong>To build sovereign digital infrastructure that a
single independent engineer can own outright — architecture, data, and
identity — rather than rent from platforms that can revoke access,
sell the data, or disappear.</strong> Every service exists because an
equivalent commercial product was judged inadequate, extractive, or
untrustworthy: permit tracking not beholden to a vendor, terrain
intelligence computed from physical law instead of licensed from a
mapping monopoly, a browser that doesn't phone home, a community news
outlet whose revenue stays in the community it serves.</p>
      <p>The long-term purpose is broader than any one repository: a
civic-technology substrate for a future where digital and physical
infrastructure are the same infrastructure — where augmented and
virtual reality are how people collaboratively build their own cities,
and autonomous and robotic systems join that build-out under the same
sovereign, auditable, provenance-tracked standards documented in this
catalog.</p>
    </div>

    <div class="purpose-grid">
      <div class="purpose-card">
        <h3>Why It Exists</h3>
        <p>Independent verification, under duress, that a single
person's engineering output can constitute a serious body of work —
architected, tested, and documented to a standard that survives
scrutiny, not a portfolio of toy projects.</p>
      </div>
      <div class="purpose-card">
        <h3>How It's Built</h3>
        <p>Every repository is cross-referenced through a shared
phase-tracking protocol, a common attribution and license standard,
and a structural interconnection point (the XML intelligence pipeline)
that every other service writes through.</p>
      </div>
      <div class="purpose-card">
        <h3>What It Proves</h3>
        <p>Real, running, tested code: Rust unit test suites,
live-provisioned cloud databases, TypeScript type-checked across two
build targets, and a security/dependency posture audited and
modernized on a fixed date, not a resume claim.</p>
      </div>
      <div class="purpose-card">
        <h3>Where It's Going</h3>
        <p>From desktop dashboards to a mixed-reality,
```

```
physically-integrated civic build-out — the architecture in this
catalog is the substrate that transition is built on top of, not a
rewrite that transition will require.</p>
      </div>
    </div>

    <div class="metrics-row">
      <div class="metric"><div class="num">15</div><div
class="lbl">Repositories</div></div>
      <div class="metric"><div class="num">179+</div><div
class="lbl">Passing Rust Tests</div></div>
      <div class="metric"><div class="num">8</div><div
class="lbl">GitHub-Actions-Independent Pipeline Stages</div></div>
      <div class="metric"><div class="num">13</div><div
class="lbl">Novel Design Systems</div></div>
      <div class="metric"><div class="num">4+</div><div
class="lbl">Live Cloud Resources Provisioned</div></div>
    </div>

    <div class="filing-block">
      <span>SEC Whistleblower Filing No. 17684-273-411-436</span>
      <span>Washington County Circuit Court No. 50-267345</span>
      <span>Rights Holder: Albert Lane</span>
    </div>
  </div>

  <div class="footer-strip"><span>Page 1 of 4 — Mission &
Purpose</span><span>SOVEREIGN IP LICENSE v1 · All Rights
Reserved</span></div>
</section>

<!-- ================================================================
-->
<!-- PAGE 2 — REPOSITORY CATALOG
-->
<!-- ================================================================
-->
<section class="page">
  <div class="doc-header">
    <span><strong>ALBERT LANE DIGITAL INFRASTRUCTURE</strong> —
Engineering Deliverable Catalog</span>
    <span>Prepared 2026-08-09</span>
  </div>

  <div class="page-kicker">Section II</div>
  <div class="page-title">Repository Catalog — Fourteen Systems, One
Estate</div>
  <p style="color:var(--text-dim);font-size:9pt;margin:4px 0
```

16px;max-width:6.6in;">Each repository below is an independently deployable service. None are demos — each has its own CI pipeline, license, phase roadmap, and test suite, cross-referenced through the shared protocol described on Page 3. Three repositories join the catalog since the prior edition: civic-entity screening, a self-hosted finance/contribution bridge, and a real hardware-backed device-key gate.</p>


```
  <div class="repo-columns">
    <div class="repo-col-left">
      <div class="repo-entry">
        <div class="repo-index">01</div>
        <div class="repo-body">
          <div class="repo-name">/macroharder</div>
          <span class="repo-cat">Layer B · Analytics</span>
          <div class="repo-desc">The flagship product: a 3D/5D
analytics workbook — standard spreadsheets extended into a ⟨column,
row, layer, tick, escape⟩ volumetric address space — with a fully
user-adjustable dashboard UI and a capability-gated MCP module host so
external services plug in as first-class data sources.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">02</div>
        <div class="repo-body">
          <div class="repo-name">/sqlxml</div>
          <span class="repo-cat">Layer A · Critical Path</span>
          <div class="repo-desc">The structural interconnection point
of the entire estate — an XML-native intelligence pipeline over
PostgreSQL with R2 cold storage, a taxonomy guard gate on every write,
and a self-resetting cycle governor with trailing structural-drift
detection.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">03</div>
        <div class="repo-body">
          <div class="repo-name">/lane-mcp</div>
          <span class="repo-cat">Layer A · Gateway</span>
          <div class="repo-desc">A self-hosted, standalone MCP gateway
giving any compatible client universal programmatic access to the
digital estate: source control, XML intelligence, civic registries,
and identity, behind one consistent tool-naming convention.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">04</div>
        <div class="repo-body">
```

```
          <div class="repo-name">/procurement</div>
          <span class="repo-cat">Layer B · Civic</span>
          <div class="repo-desc">Sovereign procurement and
permit-pipeline tracking with a chain-linked electric-vehicle value
ledger, served as an MCP module on live Cloudflare D1 and R2
infrastructure.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">05</div>
        <div class="repo-body">
          <div class="repo-name">/maps</div>
          <span class="repo-cat">Layer B · Geospatial</span>
          <div class="repo-desc">Terrain intelligence derived from
physical law — runoff, erosion, soil chemistry, mineral favorability —
with zero dependence on any third-party map API. The flagship
demonstration of MacroHarder's 3D volumetric model.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">06</div>
        <div class="repo-body">
          <div class="repo-name">/tauri-rustxml</div>
          <span class="repo-cat">Layer B · Sovereign Browser</span>
          <div class="repo-desc">A from-scratch sovereign desktop
browser replacing an inherited Angular/Firebase/Chrome stack —
Rust-native identity, an encrypted vault, and post-quantum
cryptography stubs. Its Froi-Browser device-key gate provisions a real
Android Keystore key gated behind biometric hardware.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">07</div>
        <div class="repo-body">
          <div class="repo-name">/government</div>
          <span class="repo-cat">Layer B · Civic Screening</span>
          <div class="repo-desc">Civic entity risk-screening pipeline
— OFAC sanctions, FinCEN BOI, OpenCorporates, SEC EDGAR, and USPTO
cross-referenced into a single aggregate RiskProfile, consumed by
lane-mcp's civic module.</div>
        </div>
      </div>
    </div>

    <div class="repo-col-right">
      <div class="repo-entry">
        <div class="repo-index">08</div>
        <div class="repo-body">
```

```
          <div class="repo-name">/channel-1-news</div>
          <span class="repo-cat">Layer D · Civic Media</span>
          <div class="repo-desc">A subscription-funded community
journalism platform designed so revenue stays local instead of
extracted by consolidated media ownership — geographic routing across
eleven Oregon districts, internal forensic evidence tooling, no free
tier.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">09</div>
        <div class="repo-body">
          <div class="repo-name">/ip-forensics</div>
          <span class="repo-cat">Layer 0 · Enforcement</span>
          <div class="repo-desc">Autonomous scanning of GitHub, Docker
Hub, Hugging Face, npm, PyPI, crates.io, RubyGems, and NuGet for
unauthorized use of this estate's intellectual property — verbatim
copy detection, structural AST similarity, and fingerprint corpus
matching.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">10</div>
        <div class="repo-body">
          <div class="repo-name">/sovereign-canary</div>
          <span class="repo-cat">Layer A · Public Ledger</span>
          <div class="repo-desc">A public, append-only,
cryptographically fingerprinted violation log — the canary itself: if
this repository ever goes silent or shows signs of tampering, that
silence is the alarm.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">11</div>
        <div class="repo-body">
          <div class="repo-name">/finance-slack-other</div>
          <span class="repo-cat">Layer B · Treasury</span>
          <div class="repo-desc">Self-hosted Open Collective bridge —
member contributions, distributions, and Slack finance alerts served
as MCP tools with an anonymized public ledger, independent of the Open
Collective platform itself.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">12</div>
        <div class="repo-body">
          <div class="repo-name">/roadmaps</div>
          <span class="repo-cat">Layer Navigation · Public</span>
```

```
          <div class="repo-desc">The non-proprietary orchestration
hub: cross-repo phase tracking, dependency ordering, and an
eight-stage GitHub-Actions-independent pipeline synchronized on a
fixed cadence across every repository in the estate. Deliberately safe
to copy in full.</div>
        </div>
      </div>
      <div class="repo-entry">
        <div class="repo-index">13</div>
        <div class="repo-body">
          <div class="repo-name">/simcity</div>
          <span class="repo-cat">Layer Public · Outreach</span>
          <div class="repo-desc">The public window into the private
build-out — an autonomous, hourly, AI-generated isometric city that
visually advances in direct proportion to real engineering progress on
the private stack.</div>
        </div>
      </div>
      <div class="repo-entry" style="border-bottom:none;">
        <div class="repo-index">+</div>
        <div class="repo-body">
          <div class="repo-name">Shared Protocol Layer</div>
          <span class="repo-cat"
style="background:var(--ink);">Cross-Cutting</span>
          <div class="repo-desc">Every repository above shares one
license standard, one attribution/provenance header format, one
phase-tracking JSON schema, and one SHA-pinned CI security baseline.
Froi-Browser contributes its device-key gate directly into
tauri-rustxml.</div>
        </div>
      </div>
    </div>
  </div>

  <div class="footer-strip"><span>Page 2 of 4 — Repository
Catalog</span><span>SOVEREIGN IP LICENSE v1 · All Rights
Reserved</span></div>
</section>

<!-- ================================================================
-->
<!-- PAGE 3 — NOVEL DESIGN / SERVICE DELIVERABLES
-->
<!-- ================================================================
-->
<section class="page">
  <div class="doc-header">
    <span><strong>ALBERT LANE DIGITAL INFRASTRUCTURE</strong> —
```

```
Engineering Deliverable Catalog</span>
    <span>Prepared 2026-08-09</span>
  </div>

  <div class="page-kicker">Section III</div>
  <div class="page-title">Novel Design Systems — Service
Deliverables</div>
  <p style="color:var(--text-dim);font-size:9pt;margin:4px 0
16px;max-width:6.6in;">Original engineering patterns designed and
implemented within this estate, generalizable beyond it, and presented
here as standalone service deliverables in their own right.</p>

  <div class="design-list">
    <div class="design-item">
      <div class="design-num">01</div>
      <div>
        <div class="design-title">5D Cell Addressing Model <span
class="tag">MacroHarder</span></div>
        <div class="design-desc">Extends the two-dimensional
spreadsheet cell — ⟨column, row⟩ — into a five-coordinate address
space: ⟨column, row, layer, tick, escape⟩. Layer gives volumetric
(sheet-of-sheets) depth; tick and escape reserve temporal versioning
and directional-write routing as first-class coordinates rather than
bolted-on metadata.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">02</div>
      <div>
        <div class="design-title">Capability-Gated MCP Module Host
<span class="tag">MacroHarder</span></div>
        <div class="design-desc">A module registry that validates
every cross-service tool call against a declared manifest before
dispatch, and enforces a read-only / read-write capability class per
module — closing an authorization gap where arbitrary tool names could
otherwise be forwarded.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">03</div>
      <div>
        <div class="design-title">SOV-RULES Taxonomy Guard <span
class="tag">SQLXML</span></div>
        <div class="design-desc">A versioned XML taxonomy gate
enforced immediately before every structural database write, so schema
drift and malformed writes are rejected at the boundary rather than
discovered downstream.</div>
      </div>
```

```
    </div>
    <div class="design-item">
      <div class="design-num">04</div>
      <div>
        <div class="design-title">21-Day Cycle Governor + n+6
Stabilizer <span class="tag">SQLXML</span></div>
        <div class="design-desc">A self-resetting operational cycle
(day-22 wipe logic) paired with a trailing 6-day recursive debugger
that scopes recent history specifically to catch structural drift
before it compounds — an audit standard for self-correcting
systems.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">05</div>
      <div>
        <div class="design-title">Sovereign Provenance & Watermarking
Suite <span class="tag">RoadMaps</span></div>
        <div class="design-desc">A four-part IP-forensics toolkit:
BLAKE3 structural content fingerprinting, source-embedded canary
tokens, DNS beacon call-home tokens for unauthorized-compile
detection, and an AES-256-GCM authenticated append-only provenance
ledger.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">06</div>
      <div>
        <div class="design-title">Node Certification Ledger (NCL)
<span class="tag">RoadMaps · SimCity</span></div>
        <div class="design-desc">A three-tier append-only safety and
seating ledger: Tier 1 generates and dispatches signed certification
hashes, Tier 2 maintains the chain-linked public record and a
discovery index, Tier 3 runs a variance-rate evaluation with an
oscillation gate across fixed evaluation windows.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">07</div>
      <div>
        <div class="design-title">Albert Escaped Rays (AER) Protocol
<span class="tag">Estate-wide</span></div>
        <div class="design-desc">A directional-write behavioral
contract with a locale registry and an enforced one-read/two-write
invariant, giving the estate a formal consistency guarantee for how
data escapes from one service boundary into another.</div>
      </div>
    </div>
```

```
    <div class="design-item">
      <div class="design-num">08</div>
      <div>
        <div class="design-title">3D Design Standard & Weighted Audit
Scoring <span class="tag">MacroHarder</span></div>
        <div class="design-desc">A category-weighted PASS / WARN /
FAIL compliance scorer for adjustable-UI design-token systems — the
quality gate every dashboard preset in the estate is measured against
before it ships.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">09</div>
      <div>
        <div class="design-title">Cross-Repo Phase Synchronization
Protocol <span class="tag">Estate-wide</span></div>
        <div class="design-desc">A shared, machine-readable roadmap
schema — one file per repository, aggregated into a single master
roadmap — giving eleven independently deployed services one consistent
source of truth for phase state, dependencies, and open work.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">10</div>
      <div>
        <div class="design-title">Autonomous IP-Infringement Detection
Pipeline <span class="tag">IP-Forensics</span></div>
        <div class="design-desc">Scanning across eight public package
ecosystems and code hosts, combining verbatim-copy hashing, structural
AST comparison, and unique-identifier detection to surface
unauthorized derivative use as it happens.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">11</div>
      <div>
        <div class="design-title">Append-Only Versioned Fact Model
<span class="tag">RoadMaps</span></div>
        <div class="design-desc">A business-data schema where every
fact is a permanent, superseded-not-deleted record carrying its own
source classification, effective date, and provenance pointer —
auto-merge permitted only for explicitly flagged subsets.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">12</div>
      <div>
        <div class="design-title">GitHub-Actions-Independent Estate
```

```
Pipeline <span class="tag">RoadMaps · Estate-wide</span></div>
        <div class="design-desc">An eight-stage CI, security,
IP-enforcement, and merge-readiness pipeline running as plain Python
on a cron cadence — proving full CI/CD discipline doesn't require
third-party runner platforms.</div>
      </div>
    </div>
    <div class="design-item">
      <div class="design-num">13</div>
      <div>
        <div class="design-title">MacroHard 3D/5D Planner Workbook
Engine <span class="tag">MacroHarder</span></div>
        <div class="design-desc">A working 3D/5D data-planning tool
with Sphere Planner mode, Parallel Grid depth slicing, and a sandboxed
live formula evaluator that plots any algebraic expression directly
into the volumetric coordinate matrix.</div>
      </div>
    </div>
  </div>

  <div class="footer-strip"><span>Page 3 of 4 — Novel Design
Systems</span><span>SOVEREIGN IP LICENSE v1 · All Rights
Reserved</span></div>
</section>

<!-- ================================================================
-->
<!-- PAGE 4 — VISUAL SHOWCASE & LIVE 5D COORDINATE ENGINE
-->
<!-- ================================================================
-->
<section class="page">
  <div class="doc-header">
    <span><strong>ALBERT LANE DIGITAL INFRASTRUCTURE</strong> —
Engineering Deliverable Catalog</span>
    <span>Prepared 2026-08-09</span>
  </div>

  <div class="page-kicker">Section IV</div>
  <div class="page-title">Visual Showcase & the Physical-Digital
Merger</div>

  <!-- Live 5D/3D Interactive Engine Viewport -->
  <div class="visual-card" style="margin-bottom:14px;">
    <div class="render" style="padding:0;">
      <div id="widget-viewport">
        <canvas id="widget-stage"></canvas>
        <div id="widget-hud-overlay">
```

```
          <div>MACROHARD // SOLIDARITY GOGGLES HUD</div>
          <div>5D MATRIX: ⟨col, row, layer, tick, escape⟩</div>
        </div>
        <div class="widget-hud-corner whc-tl"></div>
        <div class="widget-hud-corner whc-tr"></div>
        <div class="widget-hud-corner whc-bl"></div>
        <div class="widget-hud-corner whc-br"></div>
        <div id="widget-controls">
          <div class="w-control-group">
            <label style="color:#00D4FF">Z-SHEET:</label>
            <input type="range" id="widget-zSlide" min="0" max="10"
step="0.1" value="5">
            <span id="widget-zVal" style="color:#00D4FF">5.0</span>
          </div>
          <div class="w-control-group">
            <label style="color:#FF6B35">z=</label>
            <input type="text" id="widget-fInput" value="x / (y *
8000)" spellcheck="false">
            <button id="widget-btnPlot">⊹ PLOT</button>
            <button id="widget-btnClear" class="danger">✕
CLEAR</button>
            <span id="widget-fstatus">no surface plotted</span>
          </div>
          <div class="w-control-group">
            <button id="widget-btnIso">ISOMETRIC</button>
            <button id="widget-btnReset">RESET CAM</button>
          </div>
          <div style="color:#4B6478;margin-left:auto">DRAG:
ORBIT</div>
        </div>
      </div>
    </div>
    <div class="cap">Fig. 1 — Live Interactive MacroHard 5D Coordinate
Plane Engine: dynamic algebraic surface plotting (span-normalized),
trigonometric camera orbit projection, parallel Z-sheet depth slicing,
and Solidarity Goggles AR HUD corner reticles.</div>
  </div>

  <div class="visual-grid" style="margin-bottom:14px;">
    <div class="visual-card">
      <div class="render">
        <div class="mock-dash">
          <div class="mock-panel p1"><div class="t">PROCUREMENT ·
PERMIT_PIPELINE_BOARD</div><div class="v">14 active · 3 review · 2
approval</div></div>
          <div class="mock-panel p2"><div class="t">MAPS ·
TERRAIN_VOLUME_LAYER</div><div class="v">(col,row,layer) elevation
lattice</div></div>
```

```
          <div class="mock-panel p3"><div class="t">PROCUREMENT ·
EV_LEDGER_TABLE</div><div class="v">chain-linked · sec_ref
bound</div></div>
          <div class="mock-panel p4"><div class="t">MAPS ·
SVG_TILE_GALLERY</div><div class="v">isometric · R2-backed</div></div>
          <div class="mock-panel p5"><div class="t">+ Install
module…</div><div class="v">capability-gated registry</div></div>
        </div>
      </div>
      <div class="cap">Fig. 2 — MacroHarder Dashboard Composer, design
rendering built from the layout schema and GlacierNoir token
palette.</div>
    </div>

    <div class="visual-card">
      <div class="render" style="padding:0;">
        <div class="palette-row" style="height:100%;">
          <div class="swatch"
style="background:#0A1628;"><span>PRIMARY<br>0A1628</span></div>
          <div class="swatch"
style="background:#0D1F3C;"><span>SURFACE<br>0D1F3C</span></div>
          <div class="swatch"
style="background:#1E3A5F;"><span>BORDER<br>1E3A5F</span></div>
          <div class="swatch"
style="background:#00D4FF;color:#052;"><span
style="color:#052;">ACCENT<br>00D4FF</span></div>
          <div class="swatch"
style="background:#00C896;"><span>SUCCESS<br>00C896</span></div>
          <div class="swatch"
style="background:#FF3860;"><span>DANGER<br>FF3860</span></div>
        </div>
      </div>
      <div class="cap">Fig. 3 — The Sovereign design token palette
(design-tokens.json), driving every chrome surface across the
estate.</div>
    </div>
  </div>

  <div class="vision-block">
    <h2>Vision — The Physical-Digital Merger</h2>
    <p>Every system in this catalog is architected as an API-first,
headless service precisely because the interface layer is not the
destination. The desktop dashboard and sovereign browser are the
current interface, not the permanent one. The plan transitions to
augmented/virtual reality as the primary civic interface — walking
streets and seeing the permit pipeline, terrain model, and
construction status overlaid in place.</p>
    <p>Integrating autonomous systems into physical build-out under
```

```
the same provenance and capability-gating standards enforced in
software ensures integrity. <strong>Solidarity Goggles</strong> is the
mixed-reality layer: a shared, non-siloed augmented view for builders
rather than attention-monetized ad space.</p>
    <div class="vision-tags">
      <span>AR/VR Presentation Layer</span>
      <span>Robotics Integration</span>
      <span>Solidarity Goggles</span>
      <span>5D Spatial Matrix</span>
      <span>Public Capability Access</span>
    </div>
  </div>

  <div class="footer-strip"><span>Page 4 of 4 — Visual Showcase &
Vision</span><span>SOVEREIGN IP LICENSE v1 · All Rights
Reserved</span></div>
</section>

<!-- ================================================================
-->
<!-- SCRIPT: LIVE 5D/3D COORDINATE PLANE WIDGET ENGINE
-->
<!-- ================================================================
-->
<script>
(function() {
  const canvas = document.getElementById('widget-stage');
  const ctx = canvas.getContext('2d');
  let dpr = window.devicePixelRatio || 1;

  function resize() {
    const parent = canvas.parentElement;
    canvas.width = parent.clientWidth * dpr;
    canvas.height = parent.clientHeight * dpr;
    ctx.setTransform(dpr, 0, 0, dpr, 0, 0);
  }
  window.addEventListener('resize', resize);
  resize();

  const cam = { az: 0.65, el: 0.45, dist: 280, tx: 5, ty: 2, tz: 5 };
  let zSheet = 5.0;

  function project(wx, wy, wz) {
    const tx = wx - cam.tx, ty = wy - cam.ty, tz = wz - cam.tz;
    const ca = Math.cos(-cam.az), sa = Math.sin(-cam.az);
    const rx = tx * ca + tz * sa, ry = ty, rz = -tx * sa + tz * ca;
    const ce = Math.cos(-cam.el), se = Math.sin(-cam.el);
    const fx = rx, fy = ry * ce - rz * se, fz = ry * se + rz * ce;
```

```
    const fov = 480, sc = fov / (fov + fz + cam.dist);
    const W = canvas.parentElement.clientWidth / 2, H =
canvas.parentElement.clientHeight / 2;
    return { sx: W + fx * sc * 36, sy: H - fy * sc * 36, scale: sc,
depth: fz };
  }

  function drawGrid() {
    ctx.lineWidth = 0.6; ctx.strokeStyle = '#1E3A5F';
    for (let i = 0; i <= 10; i++) {
      let a = project(0, 0, i), b = project(10, 0, i);
      ctx.beginPath(); ctx.moveTo(a.sx, a.sy); ctx.lineTo(b.sx, b.sy);
ctx.stroke();
      let c = project(i, 0, 0), d = project(i, 0, 10);
      ctx.beginPath(); ctx.moveTo(c.sx, c.sy); ctx.lineTo(d.sx, d.sy);
ctx.stroke();
    }
  }

  function drawAxes() {
    const O = project(0,0,0), X = project(10,0,0), Y =
project(0,10,0), Z = project(0,0,10);
    ctx.lineWidth = 2;
    ctx.strokeStyle = '#FF3860'; ctx.beginPath(); ctx.moveTo(O.sx,
O.sy); ctx.lineTo(X.sx, X.sy); ctx.stroke();
    ctx.strokeStyle = '#00C896'; ctx.beginPath(); ctx.moveTo(O.sx,
O.sy); ctx.lineTo(Y.sx, Y.sy); ctx.stroke();
    ctx.strokeStyle = '#00D4FF'; ctx.beginPath(); ctx.moveTo(O.sx,
O.sy); ctx.lineTo(Z.sx, Z.sy); ctx.stroke();
    ctx.font = '10px Courier New';
    ctx.fillStyle = '#FF3860'; ctx.fillText('X_relo', X.sx + 6, X.sy);
    ctx.fillStyle = '#00C896'; ctx.fillText('Y_cap', Y.sx, Y.sy - 6);
    ctx.fillStyle = '#00D4FF'; ctx.fillText('Z_time', Z.sx + 6, Z.sy);
  }

  function drawZSheetPlane() {
    const bl = project(0, 0, zSheet), br = project(10, 0, zSheet);
    const tr = project(10, 10, zSheet), tl = project(0, 10, zSheet);
    ctx.beginPath();
    ctx.moveTo(bl.sx, bl.sy); ctx.lineTo(br.sx, br.sy);
    ctx.lineTo(tr.sx, tr.sy); ctx.lineTo(tl.sx, tl.sy);
ctx.closePath();
    ctx.fillStyle = 'rgba(0, 212, 255, 0.12)'; ctx.fill();
    ctx.strokeStyle = '#00D4FF'; ctx.lineWidth = 1; ctx.stroke();
    ctx.fillStyle = '#00D4FF'; ctx.font = '10px Courier New';
    ctx.fillText(`Z-SHEET SLICE: ${zSheet.toFixed(1)}`, tr.sx + 8,
tr.sy);
  }
```

```
  const GRID_N = 9;
  let surfacePoints = null;

  function safeEval(expr, x, y, z) {
    const clean = expr.replace(/[^0-9xyz+\-*/^().\s]/gi,
'').replace(/\^/g, '**');
    try { return Function('x', 'y', 'z', `"use strict"; return
(${clean})`)(x, y, z); }
    catch { return NaN; }
  }
  function parseFormula(str) {
    const m = str.match(/^\s*([xyz])\s*=\s*(.+)$/i);
    return m ? { dep: m[1].toLowerCase(), expr: m[2].trim() } : null;
  }

  function plotSurface() {
    const raw = document.getElementById('widget-fInput').value.trim();
    const status = document.getElementById('widget-fstatus');
    const full = raw.includes('=') ? raw : `z = ${raw}`;
    const pf = parseFormula(full);
    if (!pf) { status.textContent = 'invalid formula';
status.className = 'off'; surfacePoints = null; return; }

    const raws = [];
    for (let i = 0; i < GRID_N; i++) {
      for (let j = 0; j < GRID_N; j++) {
        const a = (i / (GRID_N - 1)) * 10;
        const b = (j / (GRID_N - 1)) * 10;
        let vx, vy, vz;
        if (pf.dep === 'z') { vx = a; vy = b; vz = safeEval(pf.expr,
vx, vy, 0); }
        else if (pf.dep === 'y') { vx = a; vz = b; vy =
safeEval(pf.expr, vx, 0, vz); }
        else { vy = a; vz = b; vx = safeEval(pf.expr, 0, vy, vz); }
        raws.push({ i, j, vx, vy, vz });
      }
    }
    const dep = pf.dep;
    const vals = raws.map(p => p['v' + dep]).filter(v =>
Number.isFinite(v));
    if (!vals.length) { status.textContent = 'no finite output';
status.className = 'off'; surfacePoints = null; return; }
    const lo = Math.min(...vals), hi = Math.max(...vals);
    const span = hi - lo;
    surfacePoints = raws.map(p => {
      let v = p['v' + dep];
      const dv = Number.isFinite(v) ? (span > 1e-9 ? ((v - lo) / span)
```

```
* 10 : 5) : null;
      const out = { x: p.vx, y: p.vy, z: p.vz };
      out[dep] = dv;
      out.valid = dv !== null;
      return out;
    });
    status.textContent = `plotted [${lo.toFixed(3)},
${hi.toFixed(3)}]`;
    status.className = 'ok';
  }

  function drawSurface() {
    if (!surfacePoints) return;
    ctx.strokeStyle = '#FF6B35'; ctx.fillStyle = '#FF6B35';
ctx.lineWidth = 1;
    for (let i = 0; i < GRID_N; i++) {
      for (let j = 0; j < GRID_N; j++) {
        const idx = i * GRID_N + j;
        const p = surfacePoints[idx];
        if (!p.valid) continue;
        const s = project(p.x, p.y, p.z);
        ctx.beginPath(); ctx.arc(s.sx, s.sy, 1.6, 0, Math.PI * 2);
ctx.fill();
        if (j < GRID_N - 1 && surfacePoints[idx + 1].valid) {
          const s2 = project(surfacePoints[idx + 1].x,
surfacePoints[idx + 1].y, surfacePoints[idx + 1].z);
          ctx.globalAlpha = 0.5; ctx.beginPath(); ctx.moveTo(s.sx,
s.sy); ctx.lineTo(s2.sx, s2.sy); ctx.stroke(); ctx.globalAlpha = 1;
        }
        if (i < GRID_N - 1 && surfacePoints[idx + GRID_N].valid) {
          const s2 = project(surfacePoints[idx + GRID_N].x,
surfacePoints[idx + GRID_N].y, surfacePoints[idx + GRID_N].z);
          ctx.globalAlpha = 0.5; ctx.beginPath(); ctx.moveTo(s.sx,
s.sy); ctx.lineTo(s2.sx, s2.sy); ctx.stroke(); ctx.globalAlpha = 1;
        }
      }
    }
  }

  function render() {
    ctx.clearRect(0, 0, canvas.parentElement.clientWidth,
canvas.parentElement.clientHeight);
    drawGrid();
    drawZSheetPlane();
    drawSurface();
    drawAxes();
    requestAnimationFrame(render);
  }
```

```
  render();

  let mdown = false, mx = 0, my = 0;
  canvas.addEventListener('pointerdown', e => { mdown = true; mx =
e.clientX; my = e.clientY; });
  window.addEventListener('pointermove', e => {
    if (!mdown) return;
    const dx = e.clientX - mx, dy = e.clientY - my;
    mx = e.clientX; my = e.clientY;
    cam.az += dx * 0.006;
    cam.el = Math.max(0.05, Math.min(Math.PI / 2 - 0.05, cam.el - dy *
0.006));
  });
  window.addEventListener('pointerup', () => mdown = false);

  document.getElementById('widget-zSlide').addEventListener('input', e
=> {
    zSheet = parseFloat(e.target.value);
    document.getElementById('widget-zVal').textContent =
zSheet.toFixed(1);
  });
  document.getElementById('widget-btnIso').addEventListener('click',
() => { cam.az = 0.785; cam.el = 0.615; });
  document.getElementById('widget-btnReset').addEventListener('click',
() => { cam.az = 0.65; cam.el = 0.45; });
  document.getElementById('widget-btnPlot').addEventListener('click',
plotSurface);
  document.getElementById('widget-btnClear').addEventListener('click',
() => {
    surfacePoints = null;
    const status = document.getElementById('widget-fstatus');
    status.textContent = 'no surface plotted'; status.className = '';
  });
})();
</script>
</body>
</html>
```