Project Concept Note

Resilient Digital Infrastructure for Municipal Innovation

Till: Social Innovation Team, Vinnova

Från: Björn K. Holmström, Lead Architect, Global Governance Frameworks

Ämne: Funding Request - CivicBase Infrastructure for TAK-405 & Swedish Municipal Resilience

Datum: December 23, 2025

> **In Brief:** We submitted **TAK-405 "Regionens Nervsystem"** to Region Stockholm (December 2024)—a concrete pilot integrating psychological resilience into public transit infrastructure, addressing **3+ billion SEK in annual stress-related costs** while meeting MSB's totalförsvar requirements. We're seeking Vinnova funding to build **CivicBase**—the underlying resilient digital infrastructure that enables TAK-405 implementation and creates reusable, crisis-ready platform for Swedish municipal innovation that functions even during internet disruptions.

THE STRATEGIC CONTEXT: DIGITAL VULNERABILITY

> **The Critical Dependency:** Swedish municipalities are 100% dependent on American cloud servers (AWS, Azure, Google). During a crisis—whether cyber attack, sabotage of undersea cables, or geopolitical de-platforming—civil society's digital functions collapse completely.
>
> **Recent Precedent:** November 2024 undersea cable cuts in Baltic Sea demonstrated infrastructure vulnerability. Current municipal systems would cease functioning entirely during such disruptions.

MSB's Challenge (Totalförsvar 2024:1032): How do we maintain societal functions when centralized internet infrastructure fails?

Our Answer: Build municipal infrastructure that continues operating offline, syncing when connectivity returns.

PROVEN DEMAND: TAK-405

The Problem: Region Stockholm pays twice for the same citizens—first for stress-inducing commute infrastructure (Trafiknämnden), then for stress-related healthcare (Hälso- och sjukvårdsnämnden). Annual cost: **3+ billion SEK** in stress-related sick leave.

The Solution: Four concrete interventions:

1. Vila-vagnen

Recovery spaces on Roslagsbanan (low-traffic hours). Passive design: dimmed lighting, natural soundscapes.

2. Återhämtningslinjen

Biophilic bus design (Järva/Söderort). Living plants, circadian lighting—equity focus.

3. Friskvårdspunkter

Digital incentives for walking last stop. Peak shaving without infrastructure costs.

4. 7-minutersregeln

Timing adjustments to activate parasympathetic response. Zero-cost A/B test.

Status: Submitted to Region Stockholm, December 2024
Funding Strategy: 80% external (MCF 40% + EU 40%), 20% regional innovation fund
Municipal Cost: Budget-neutral

THE TECHNICAL GAP

TAK-405 demonstrates policy demand, but current municipal IT infrastructure cannot support:

- **Privacy-preserving activity tracking** (earning Hearts for walking—GDPR-compliant)
- **Verifiable citizen contributions** (academic research requires data integrity)
- **Offline resilience** (totalförsvar requirement: must function during internet disruption)
- **Data sovereignty** (data stays in Sweden, not on American servers)
- **Rapid deployment** (traditional municipal IT procurement takes 18-24 months)

Commercial platforms create dependency on foreign infrastructure vulnerable to disruption. **Traditional municipal IT** cannot function offline and is too rigid for innovation pilots.

What's needed: Open-source, offline-capable infrastructure that municipalities can deploy without dependence on centralized internet services.

THE SOLUTION: CIVICBASE

CivicBase provides resilient digital infrastructure—a distributed platform for municipal operations that maintains functionality during network disruptions and eliminates dependency on foreign cloud services.

Technical Architecture

- **P2P Foundation:** libp2p-based distributed networking (no single point of failure)
- **Offline-First:** Local data storage with sync when connectivity returns
- **Privacy-Preserving:** Agent-centric architecture; no central identity database
- **Data Sovereignty:** All data stays on Swedish infrastructure
- **Modular Design:** Reusable components for diverse municipal applications

Immediate Application: TAK-405

- Hearts currency mechanism for Friskvårdspunkter incentives
- Verified activity tracking for pilot evaluation (GPS + step counter)
- SL-app integration interface
- Anonymous data aggregation for academic partnerships (KI/KTH/SU)
- **Crisis-ready:** System continues functioning during network outages

Enabling Democratic Infrastructure

CivicBase provides the foundation for resilient civic applications:

- **DPOP (Democratic Party Operations Platform):** Political parties can continue organizing during crises—offline-capable meeting coordination, decision-making, and internal communication
- **DiDiS (Distributed Digital Identity System):** Secure, privacy-preserving identity management that doesn't depend on centralized servers vulnerable to disruption
- **Emergency Coordination:** Neighborhood-level crisis response networks operating on mesh principles

> **Why This Matters for Totalförsvar:**
> During the 2024 Baltic cable disruptions, organizations dependent on cloud infrastructure lost functionality. CivicBase-enabled systems would have continued operating locally, syncing when connectivity returned. This is exactly the resilience MSB's totalförsvar doctrine requires.

Future Applications Beyond TAK-405

Once built, this platform enables a pipeline of crisis-ready municipal innovations:

- **Care Economy:** Valorizing unpaid care work (addressing demographic aging) with offline-capable tracking
- **Ecological Restoration:** Verifiable climate adaptation tracking that doesn't depend on continuous connectivity
- **Community Resilience:** Crisis preparedness networks at neighborhood level
- **Circular Economy:** Local economic networks resilient to global supply chain disruptions

WHY THIS MATTERS: GLOBAL CONTEXT

> **G20 Global Inequality Report (November 2025):**
> • 83% of countries face high inequality affecting 90% of global population
> • Inequality driven by policy choices (neoliberal deregulation, privatization, austerity)
> • Recommended solutions include: **valorizing unpaid care work** and **expanding public investment**

> **Peer-Reviewed Science (Nature Food, 2024):**
> "Dietary change interventions must be coupled with **economic system transformation** to achieve meaningful climate impact."
> → Behavioral shifts fail without structural mechanisms (Hearts currency provides this)

Swedish Strategic Context

- **MCF Totalförsvar (2024:1032):** Requires resilient infrastructure for societal functions
- **Digital Sovereignty:** Reduce dependency on foreign (primarily American) cloud infrastructure
- **Municipal Budget Pressure:** Need for cost-effective innovation through open-source reuse
- **Demographic Aging:** Care gap traditional systems cannot fill
- **Infrastructure Vulnerability:** Baltic cable cuts demonstrated need for offline-capable systems

FUNDING REQUEST: MVP DEVELOPMENT

> **Timeline:** 12 months (Q1 2026 - Q1 2027)
> **Project Start:** February 1, 2026
> **Budget Request:** 2,500,000 SEK
> **Deliverable:** Functional MVP enabling TAK-405 alpha testing and demonstrating offline resilience

Development Phases (12 months)

- **Months 1-4 (Core Infrastructure):** P2P networking foundation with libp2p, offline-first data layer, GDPR-compliant architecture, initial Hearts currency implementation. Includes recruitment of distributed systems consultant.
- **Months 5-9 (Application Integration):** TAK-405 components (SL-app interface, verified activity tracking, municipal dashboard), Hearts currency finalization, academic research platform setup.
- **Months 10-12 (Testing & Documentation):** Offline resilience testing (simulated cable cuts), security audit, technical documentation for municipal adoption, preparation for TAK-405 pilot.

Budget Allocation

- **800K SEK:** Distributed systems consultant (P2P expertise, 4 months @ 200K/month)
- **600K SEK:** Lead developer time (12 months)
- **400K SEK:** Security audit and penetration testing
- **300K SEK:** Municipal integration and documentation
- **200K SEK:** Testing infrastructure and pilot coordination
- **200K SEK:** Administration and reporting

Success Criteria

- Functional offline-first infrastructure demonstrated in simulated network disruption

- MVP enabling TAK-405 alpha testing with 50 early adopters
- Technical documentation for other municipalities
- Published architecture specifications (open source)
- Security audit confirming GDPR compliance and resilience to common attack vectors

STRATEGIC ALIGNMENT WITH VINNOVA

Resilient Digital Infrastructure

Directly addresses Vinnova's call focus: offline-capable systems, P2P architecture, elimination of single points of failure.

Digital Sovereignty

Open-source (no vendor lock-in), data stays in Sweden, agent-centric privacy model, reduces foreign cloud dependency.

Social Innovation

Valorizes unpaid care work, enables citizen participation in welfare provision, creates reusable civic infrastructure.

Dual-Use Readiness

Civilian wellness applications (TAK-405) + totalförsvar preparedness, crisis-ready offline capability, democratic infrastructure resilience.

WHY NOW

Window of Opportunity:

- Baltic cable disruptions (Nov 2024) demonstrated infrastructure vulnerability
- MCF funding cycle aligns with our external funding strategy
- EU digital sovereignty initiatives actively seeking infrastructure alternatives
- TAK-405 demonstrates concrete municipal demand
- Growing awareness of cloud dependency risks

> **Risk of Delay:** Without resilient infrastructure, TAK-405 implementation delayed even if Region Stockholm approves. Every quarter lost = **750+ million SEK** in continued stress costs. More critically, delay means continued dependence on vulnerable centralized infrastructure during increasing geopolitical tensions.

NEXT STEPS

We would welcome the opportunity to:

1. Present detailed technical specifications (45-min technical review including offline resilience demonstration)
2. Share the full TAK-405 proposal (submitted to Region Stockholm)

3. Demonstrate CivicBase architecture and its role in enabling DPOP/DiDiS applications
4. Discuss integration with existing Vinnova-funded municipal innovation initiatives
5. Explore partnership models (funding, technical support, dissemination)

> **In Summary:** We have proven demand (TAK-405), identified funding strategy (MSB/EU), and clear infrastructure need. CivicBase provides the resilient foundation Swedish municipalities require—offline-capable, data sovereign, crisis-ready. Vinnova support would build reusable infrastructure that transforms TAK-405 from a single pilot into a platform for Swedish municipal resilience leadership.
>
> **The choice:** Build resilient infrastructure once, enable countless municipal innovations. Or continue dependence on vulnerable centralized systems during increasing geopolitical uncertainty.

Global Governance Frameworks
Mobilizing Resilience. Designing for Life.
Lead Architect: Björn K. Holmström | | globalgovern