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Introduction to Health Insurance Information System



50M+

Citizens Covered



\$100B+

Annual Imposition Managed



1.5 Days

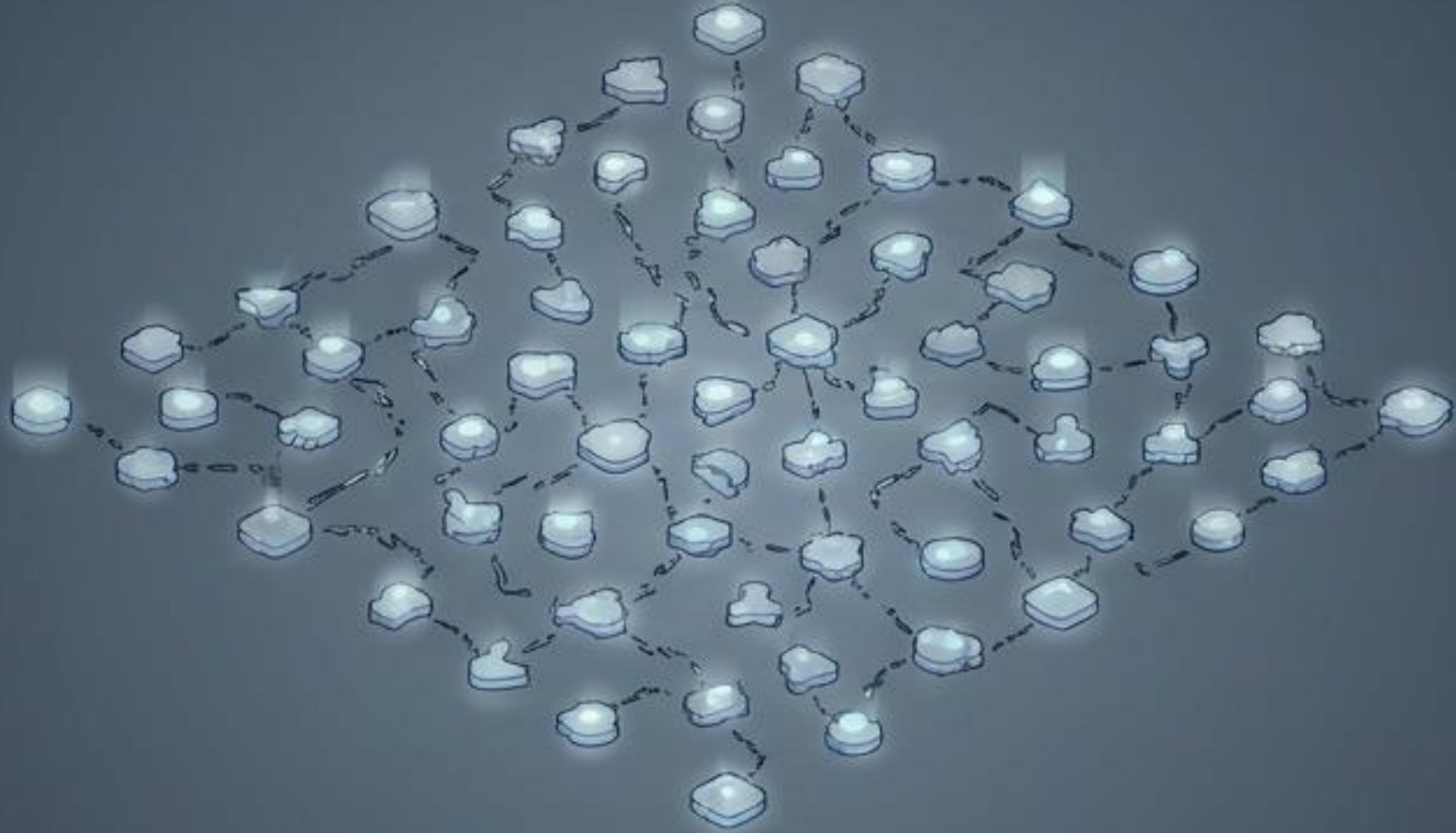
Monthly National
Calculation Time



100%

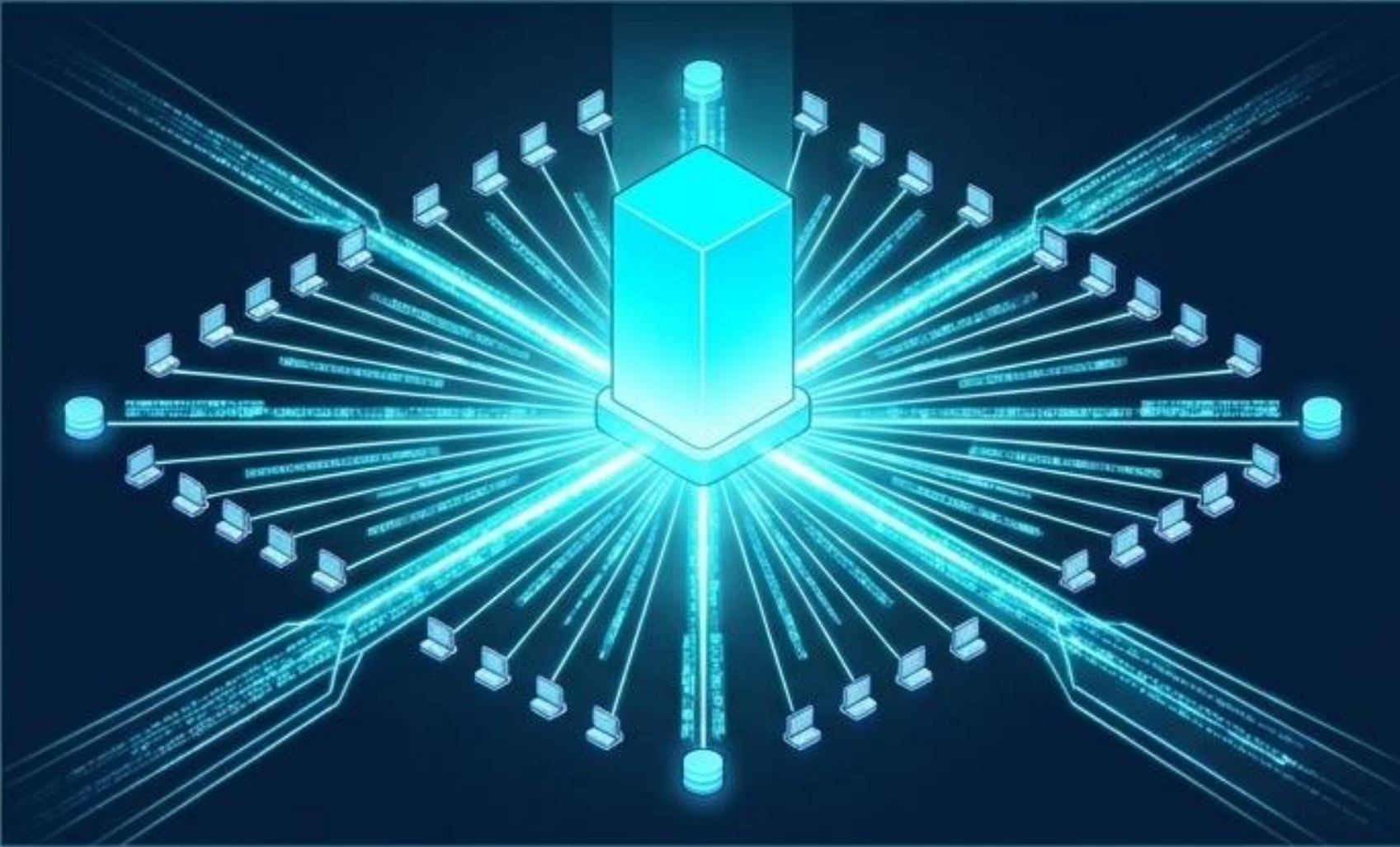
Security & Data Integrity

The Era of **372 Islands** (Pre-1998)

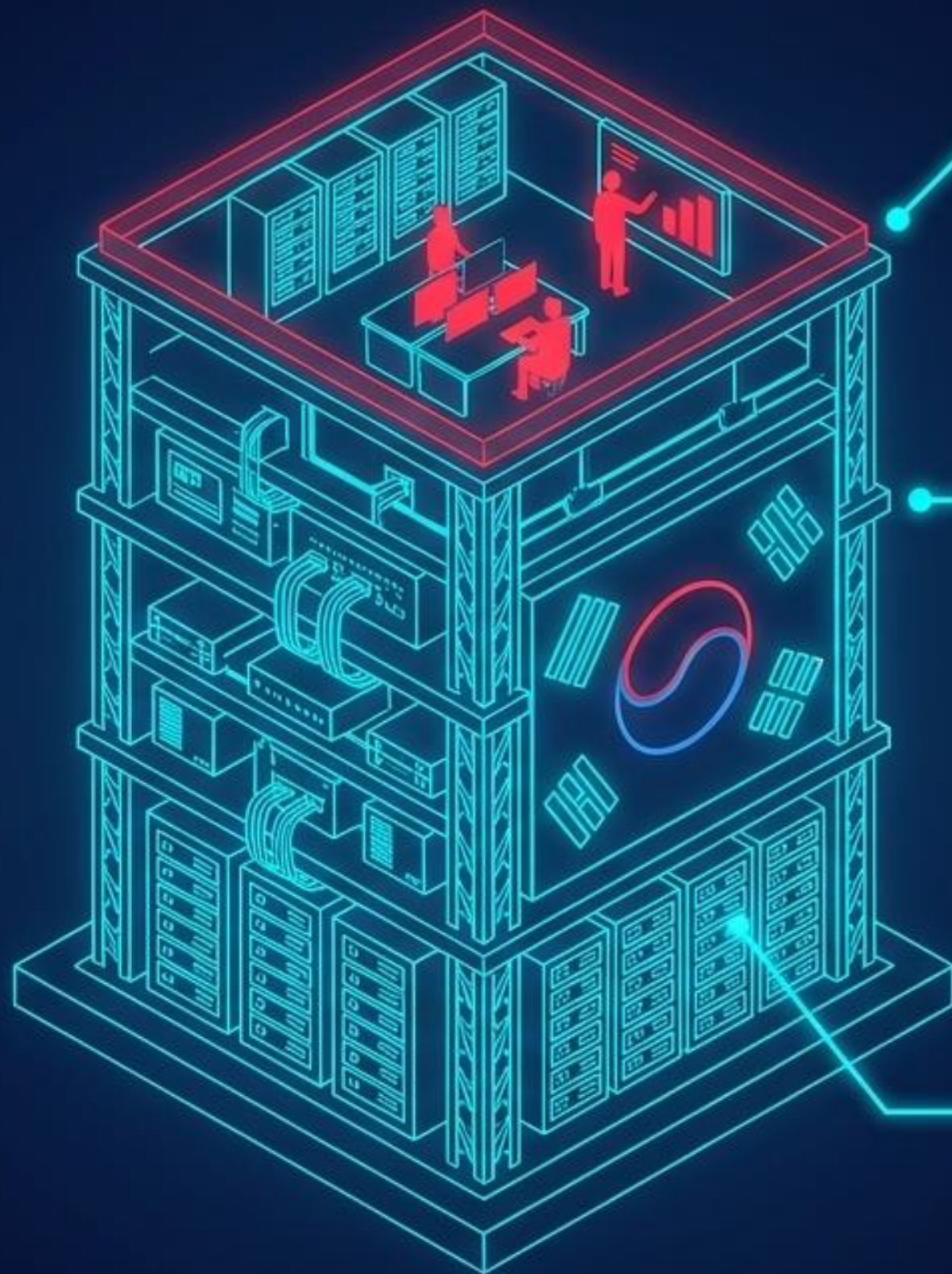


- 372 independent medical insurance cooperatives.
- 372 fragmented databases.
- Zero data portability for citizens moving cities.
- Exorbitant compliance costs.

The **Single Hub** (2006–Present)



- 1 Central Terminal Hub in Wonju.
- 178 regional branches act purely as terminals with no local servers.
- Instantaneous, nationwide policy updates with zero rollout lag.



3 The Human Capital

A dedicated force of 310 Elite IT Professionals.

Technology is only as effective as the governance behind it. Development, security, and data mining are managed by specialized in-house units.

2 The Terminal Architecture

Direct, zero-latency connections for 178 branch offices. Local branches hold no data.

1. The Hardware Core

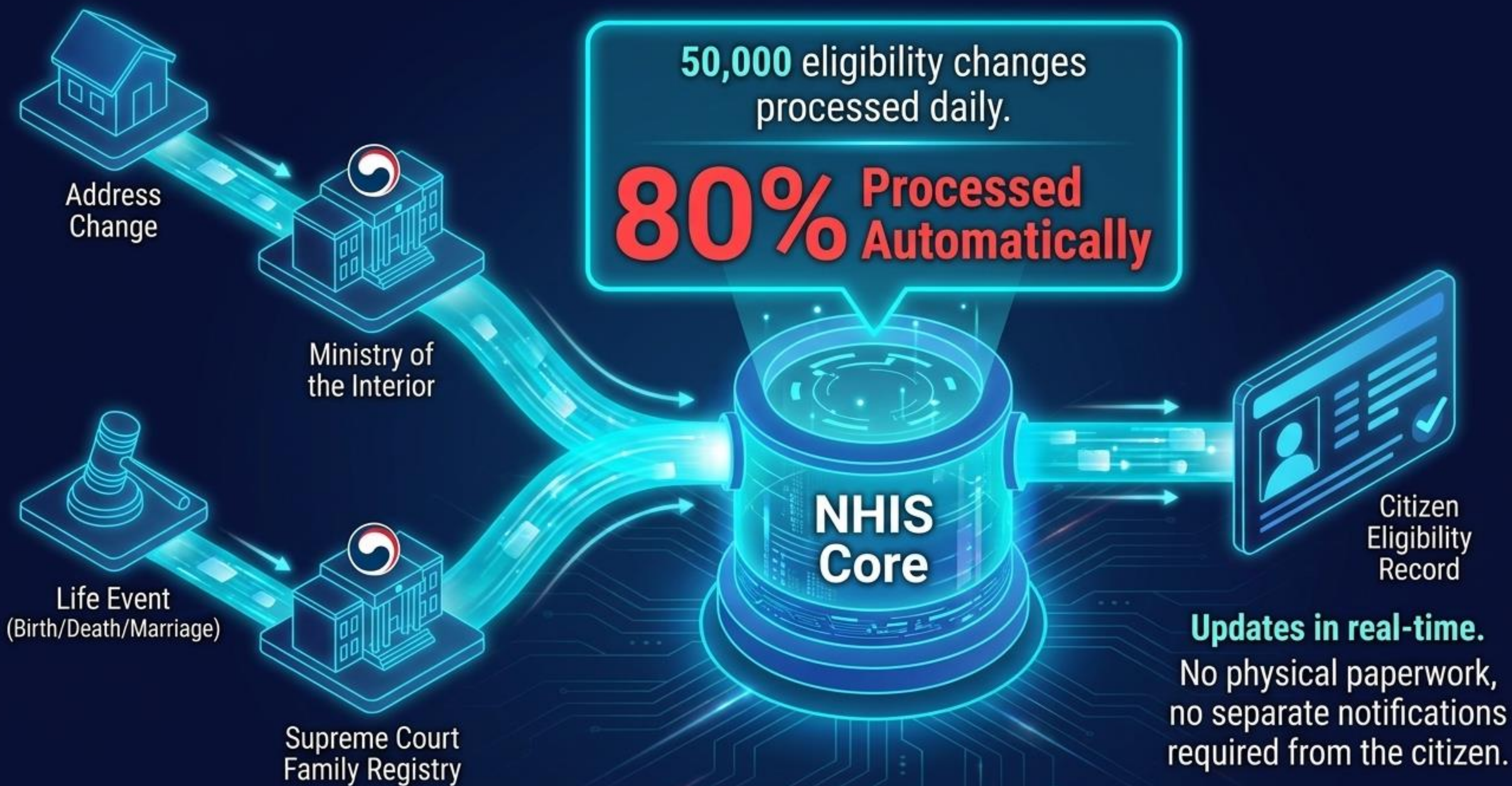
1,632 integrated servers actively managing 77 distinct database types.

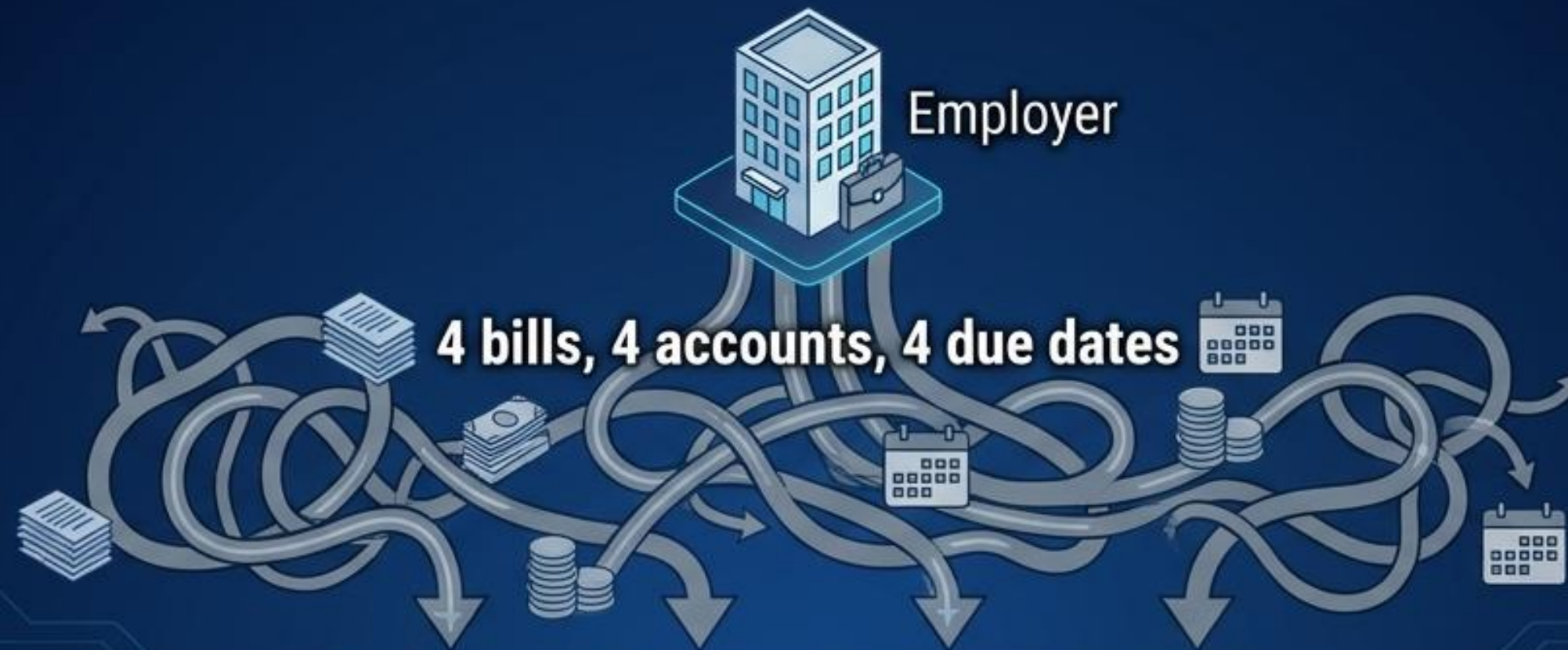
55
External
Agencies Linked

1,654
Types of Data Exchanged
in Real-Time



Operational Reality: The system operates as the backbone of Korea's public data network. Real-time data is ingested continuously, eliminating administrative burden for the citizen.





One bill to rule them all: The EAI/ESB Middleware Engine

Processes hyper-scale transactions and acts as the ultimate traffic cop.



Funds routed to correct agencies with 100% data integrity.

Building upward from a foundation of absolute security

Multi-Layer Security Cake



Strategic Priority: By embedding security at the foundational DRM/SSO layer, user data remains seamlessly protected as it moves upward through the core processing engines to the web interfaces.



**9.4M
Households**

The infographic features a large blue circular gauge with a glowing cyan ring. To its right is a blue rectangular box with a circuit-like border containing descriptive text. Below the gauge is a blue rounded rectangle with the category name. The entire section is set against a dark blue background with faint circuit patterns.

Self-Employed

Complex imposition
calculated by
synthesizing income,
property, and asset
data synchronized
from 8 external
institutions.



**19M
Subscribers**

The infographic features a large blue circular gauge with a glowing cyan ring. To its right is a blue rectangular box with a circuit-like border containing descriptive text. Below the gauge is a blue rounded rectangle with the category name. The entire section is set against a dark blue background with faint circuit patterns.

Employee Insured

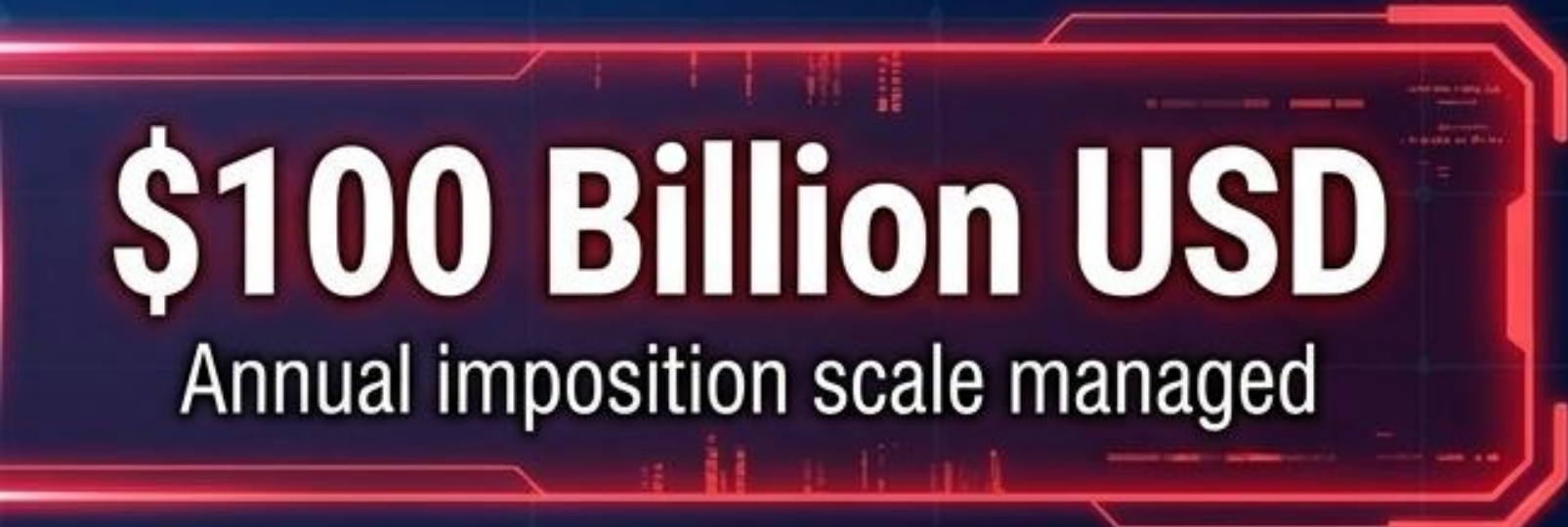
Exact, precision
settlements based
on actual
remuneration and
National Tax Service
year-end data.



120M+

The infographic features a large red rounded rectangle with a glowing red border. Inside, the number '120M+' is prominently displayed in white, with the full description below it. The background of the rectangle has a dark blue circuit pattern.

Integrated notices generated annually



\$100 Billion USD

The infographic features a large red rounded rectangle with a glowing red border. Inside, the amount '\$100 Billion USD' is prominently displayed in white, with the full description below it. The background of the rectangle has a dark blue circuit pattern.

Annual imposition scale managed

The 2016 Pillar: Extending the digital fortress to the living room edge

Context: Korea faces one of the most rapidly aging populations in the world, requiring massive long-term care management.

Wonju Central Hub

Transformation

1 Before



Paper forms, delayed office data entry, disconnected local assessments.

2 After



39 comprehensive improvement tasks realized. Assessors upload geriatric evaluations directly from the patient's home via mobile edge computing.

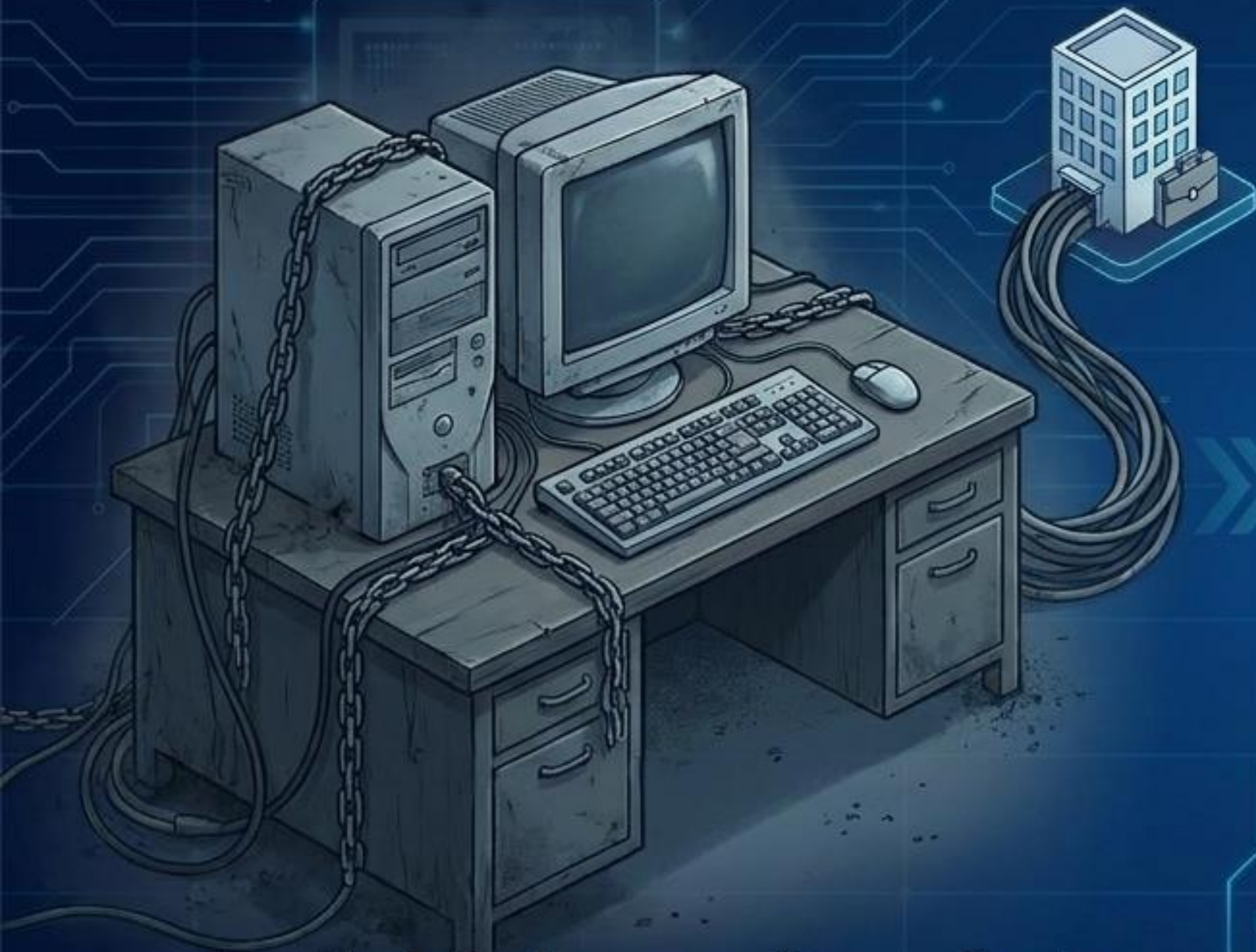
Key Insight

Impact

Real-time synchronization eliminates administrative lag, bringing the full computing power of the central hub directly to the citizen's bedside.



The Heavy Desktop Era (Pre-2015)

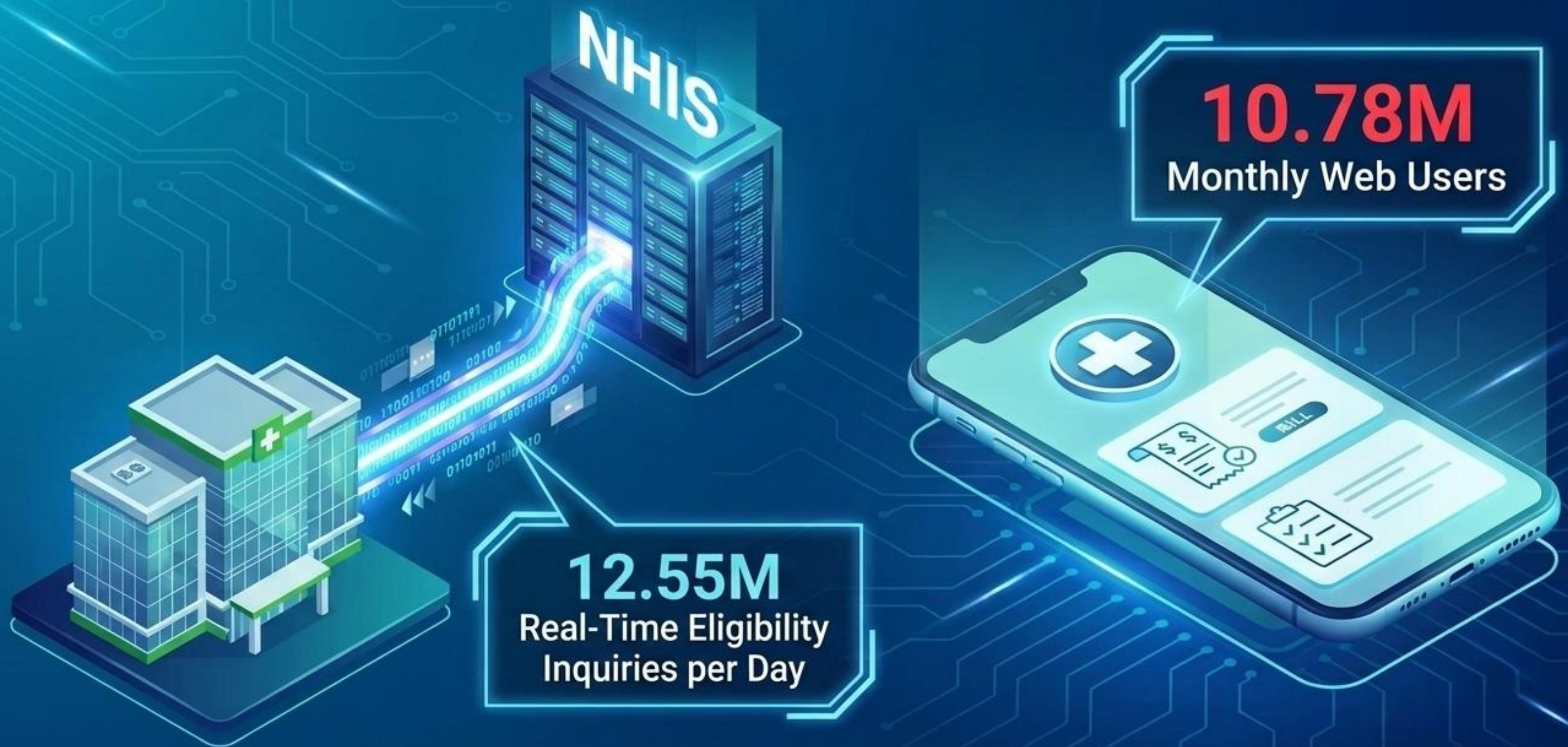


Localized client-server software rollouts.
Field assessors tethered to regional branch offices.

The Web-Based Evolution (2016+)



Universal web-based browser system.
Field assessors evaluate Long-Term Care patients
directly in their living rooms, instantly uploading
photos and assessments to the Wonju Hub.



Operational Reality: 96,000 healthcare institutions tap into the network. Card swipes provide instant eligibility and special estimate status (e.g., cancer, rare diseases).

A comprehensively stable 24/7 digital ecosystem

21

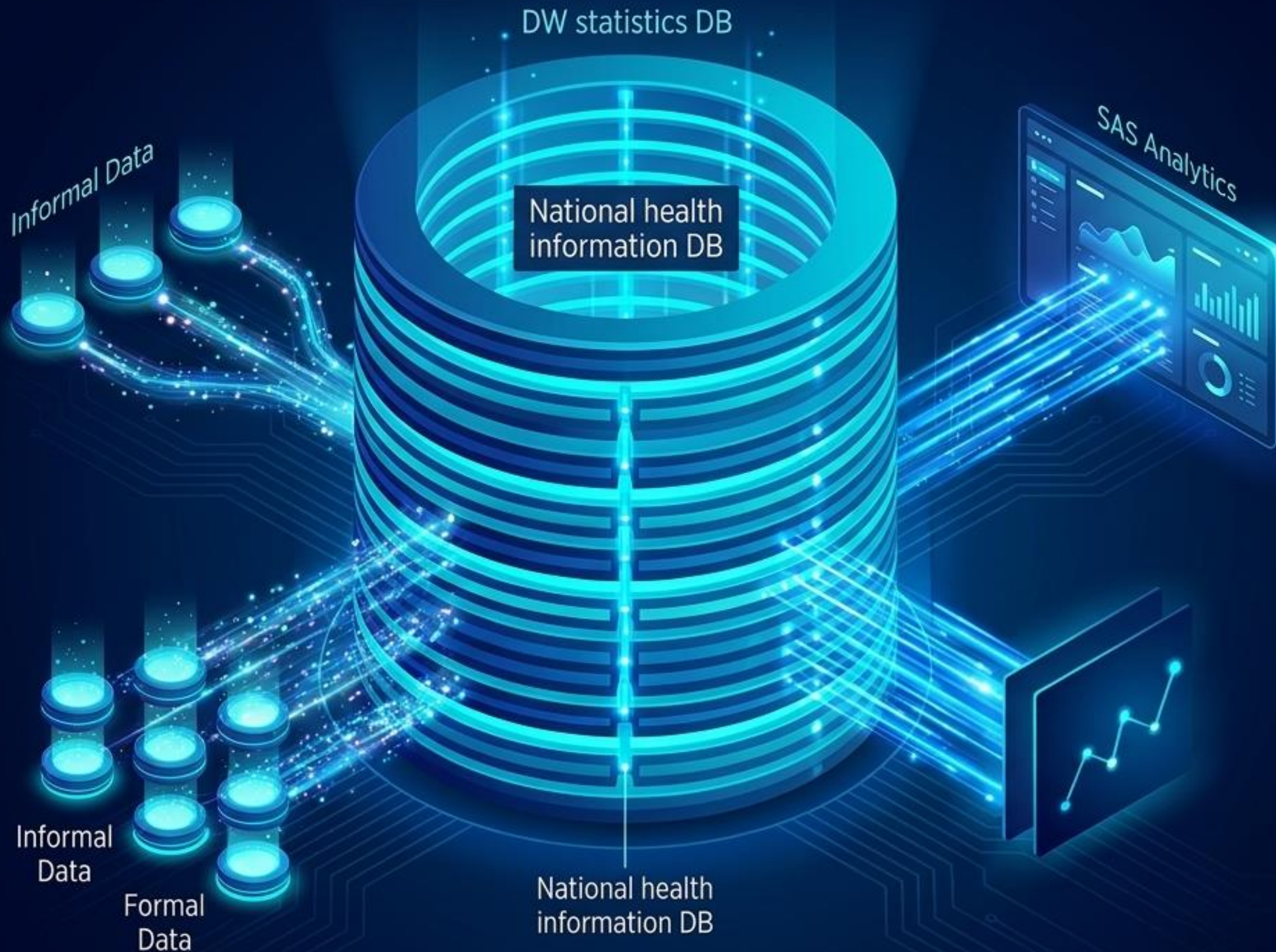
**Specialized Major
Information Systems**
operating as one organism.

Core Business:
Eligibility,
Collection,
Benefits.

Support Infrastructure:
Big Data Warehouse (DW),
Financial Analysis,
ERP/Knowledge Management.

Resilience:
Robust Disaster Recovery
systems guaranteeing everyday,
everynight stability.

Key Insight: These are not standalone software programs. They are interlocking gears in an inescapable, highly stable digital infrastructure supporting the entire nation.



The Big Data Warehouse (DW)

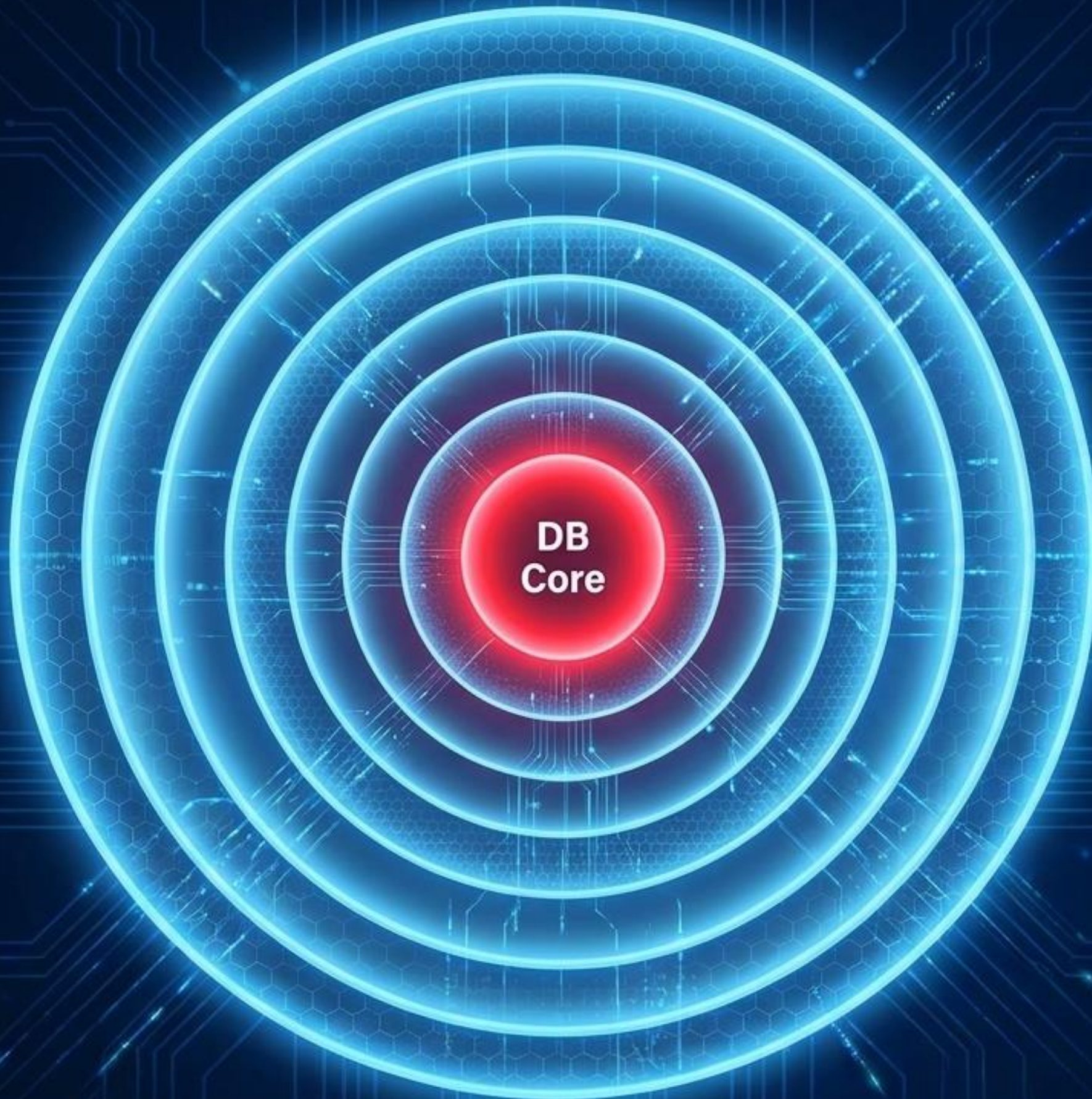
- **Scale:** 156.3 Terabytes holding 2,395.4 billion records.
- **Scope:** A companywide repository compiling at least 10 years of national health information.
- **Application:** Utilized for financial estimation, e-audit detection, cohort studies, and steering national evidence-based policy making.



“It is more efficient to guard one giant fortress than 372 small thatched huts.”

- **The Risk:** If all data (health, property, income) is centralized, a single successful hack or physical disaster results in national paralysis.
- **The Mandate:** Absolute centralization is only viable if it is underpinned by absolute, flawless security and resilience.

Defense in Depth: The 7-Layer Shield



DDoS Defense: Stopping traffic overflow at the perimeter. 1

IPS: Intrusion Prevention System for malicious signatures. 2

IDS: Intrusion Detection for anomalous patterns. 3

Primary Firewall: The initial hardened gate. 4

The DMZ: A secure buffer network (Security OS). 5

Secondary Web Firewalls: Protecting the applications. 6

DB Access Control: The final vault lock. 7

External Internet Network



Internal Business Network (Patient Data)



Mitigating the Insider Threat

- **The Reality:** 80% of security threats involve an internal component or human error.
- **The Standard:** Strict Network Separation.
- **The Execution:** Utilizing Virtual Desktop Infrastructure (VDI), the internal business network is physically and logically cut off from the external internet. Data leakage via email or external drives is technically impossible.



Wonju
(Main Hub)

Ansan
(DR Center)

Absolute Resilience: Disaster Recovery

- The Architecture: A 3-way redundancy system featuring a complete, duplicate hot site brain in Ansan built for rapid failover.
- The Drill: Full national disaster simulations conducted 3 times a year, forcing the entire country's traffic to route to the DR center.
- The Philosophy: "Hope is not a strategy for national infrastructure." Stability must be guaranteed everyday, every night.

The next evolution: Expanding the fortress with Artificial Intelligence



NHIS-CALL

Target: For the Public.

Function: An intelligent citizen-facing interface, utilizing the massive centralized data pool to instantly triage and resolve inquiries without human hold times.

NHIS-MATE

Target: For the Staff.

Function: An internal AI assistant, navigating the complex rulesets of the 21 major information systems to provide staff with instantaneous diagnostic support and operational efficiency.

Closing Vision: With the architectural foundation fully integrated, South Korea's NHIS transitions from managing data to **intelligently anticipating** the needs of its citizens and workforce.