



HIMSS IN ACTION

SAMSUNG MEDICAL CENTER

Location
Seoul, South Korea

Transformation Type
Software-Defined Networking

Maturity Model
Infrastructure Adoption Model
(INFRAM)



HIMSS®

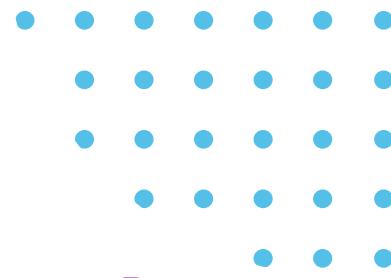
INFRAM



BUILDING SOUTH KOREA'S MOST ADVANCED HEALTH INFRASTRUCTURE.

HIMSS helped Samsung Medical Center roll out software-defined networking and become a smart hospital.

Let's explore the full story.



STATSHOT + OVERVIEW

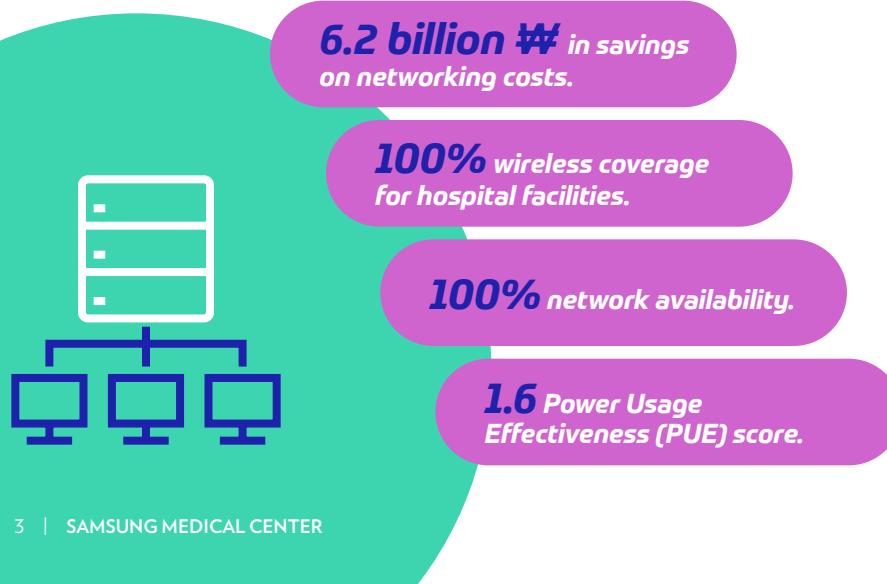
HIMSS helped Samsung Medical Center strengthen every part of their health infrastructure.

Software-designed networking (SDN) puts traditional networking to shame. Instead of relying on separate physical hardware like routers and switches, you've got centralized, digital connections between every medical device. That means better connectivity, better security, and better value. To make this networking structure their reality, Samsung Medical Center teamed up with HIMSS.

Our INFRAM model guided the rollout of Samsung's SDN system, and what they did once that infrastructure was set up. As they moved through the first stages of INFRAM,

they set up core pieces of software-defined networking, like centralized network controls and data center automations. As Samsung advanced to INFRAM Stage 7, they focused on data communication, device interconnectivity, and service convergence across their *whole* hospital.

Our model's infrastructure guidance helped Samsung align their technical projects with their big organizational goals, too. All the infrastructure work for INFRAM supported their *Connect* and *Thru* goals, which include facilitating seamless communication, enabling data sharing, and improving the patient treatment process. Now, Samsung is one of just two medical centers in the world to have reached INFRAM Stage 7—and they're really *that* smart hospital.



Guided by INFRAM, Samsung laid the groundwork for software-defined networking and then made it reality.

 THE SETUP

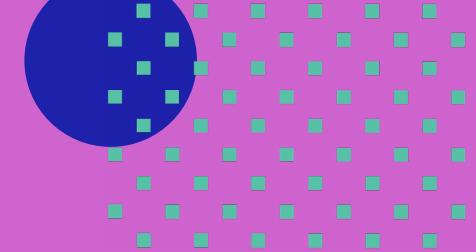
When we first teamed up, Samsung needed to cut their internal networks down to size—and fast.

If you get sick in Gangnam District, there's a good chance you'll end up at Samsung Medical Center. As one of Seoul's largest hospitals, they take in over 2 million outpatients and over 80,000 emergency visits per year. The caseloads were high, and their staff were hustling trying to provide person-centered care. Samsung knew that they needed to become a smart hospital, with simple data exchange and interconnected systems. What's more, they knew that meant starting with a foundation of smart infrastructure.

Prior to INFRAM, Samsung was a hospital that ran on hardware systems. They had a Hospital Information System (HIS) system that'd been active since 1994 and switches for a separate picture archiving and communication (PACS). There was redundant network operation, and it cost Samsung billions of won (₩). Wires were getting crossed everywhere—literally and figuratively.

Initially, Samsung started building the foundation without guidance. Quickly, they realized that they wanted a framework to guide their adoption of smart infrastructure. "Various problems such as remodeling, relocation, expansion, and data integration have been present," their Chief Medical Information Officer Meong Hi Son explained in conversation.

That's a lot to transform at once, and that's why they turned to our INFRAM model.



SOLUTIONS

INFRAM guided Samsung as they built the whole foundation for software-defined networking.

Samsung Medical Center's solution to their outdated digital networks was based on a combination of three key improvements: 1) mass data communication, 2) multi-species and mass device connection, and 3) seamless service convergence. Thanks to the new SDN, and a little help from INFRAM along the way, SMC addressed all three areas—and more.

First, Samsung needed to make sure clinicians could send information reliably across devices and throughout the system. With INFRAM's guidance, Samsung made strategic investments in network capacity and private networks for remote collaboration. This allowed for mass data exchange in real-time, and turned all those separate systems into a living, breathing one.

Specifically, Samsung set up 802.1x protocols and Authentication, Authorization, and Accounting (AAA) measures on every network, as well as Network Access Controls (NACs). That means every device gets verified, assigned access to select resources, and has its network usage tracked. Unusual activity sticks out immediately, and staff still get automatic authentication, so they're not wasting time logging in. It's a secure network, but *not* a slow one.

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We decided to work towards INFRAM Stage 7 because we wanted to find ways to improve our infrastructure in order to realize a high-tech, intelligent hospital.”

DR. SEUNG WOO PARK | Chairman | Samsung Medical Center

SOLUTIONS

With a rock-solid network, Samsung was then able to connect their equipment and devices. They plugged monitors, pumps, ventilators, and diagnostic equipment into their EHR, nailing the goal of multi-species and mass device connection. That is interoperability.

Their INFRAM validations also helped clinicians prepare improvements around cybersecurity and data protection. A software-defined system has way tighter security than traditional networks, thanks to its ability to automatically check the identities of everyone connected to the network. This helps manage who can access network resources and makes it easier to apply clear security policies at scale.

Service convergence was a challenge, but they nailed it too. The infrastructure Samsung built allowed them to transmit patient medical records, diagnostic images, monitoring data, and other medical information in real time, as well as categorize and store everything accurately in one place. No more digging through dusty file cabinets to find records—they’re seeing each patient story in living color now.

HIMSS helped them know what infrastructure to build when, and benchmark their work against other top systems.



 CHANGE MANAGEMENT

Samsung used INFRAM to get internal teams aligned, and win buy-in at I think every stage.

When patients have their gowns on, you can't afford being caught with networks down. Preventing downtime was the biggest challenge Samsung faced in rolling out software-defined networking—and it took serious internal coordination to overcome it.

To guide the change, they created two task forces. At the strategic level, a Digital Innovation Promotion Team brought together C-suite and technology leaders to plan each innovation stage. This team aligned the digital infrastructure projects with the hospital's top-level goals, and secured resources to make the transformation happen.

An IT Infrastructure Operations Team ran everything on the ground. To support day-to-day adoption, they conducted regular outpatient, inpatient, and surgical task force meetings. Medical staff had space to voice their needs, discuss their progress, and feel like they had real control over

their health infrastructure. INFRAM supported with the big-picture roadmap, but Samsung's teams drove all the change themselves. Belief is powerful.

With a brand-new network and buy-in from the top down, Samsung was ready for Stage 7 validation.



INFRAM was an opportunity for Samsung to take it to the next level with infrastructure.

MEONG HI SON |
Chief Medical Information Officer | Samsung Medical Center

 RESULTS

Now, Samsung Medical Center ranks as the top smart hospital in South Korea.

All that infrastructure work paid off. Guided by INFRAM, Samsung earned bragging rights for having the best medical AI in South Korea, and that's straight from Newsweek. The biggest revenue came from removing all the redundant hardware switches during the move to software-defined networking. That alone saved Samsung 6.2 billion ₩—or 4.5 million USD.

Workflow-wise, Samsung's never been in better shape. Software-defined networking helped them consolidate everything from medical records to scans and real-time monitoring data in a central system-wide repository. Patient adoption has been strong, and they've reached 100% usage for their mobile device intake system.

It's all ultra-secure, too. Samsung reached 100% network uptime, 0% downtime during the transition period, and have reported 0 cybersecurity incidents since the system rolled out. That's crucial, because they've been simultaneously building the foundations for telemedicine: private networks, increased network bandwidth, and a logically-separated contact center.



 **RESULTS**

Samsung's sustainability wins were real, too. With a high speed WLAN based on 802.11ax and automated wireless and wired network access based on AAA, their network reached a Power Usage Effectiveness (PUE) of 1.6. PUE is a complex metric, but an important one—it's the ratio of the total amount of energy used by the network to the energy used by the IT equipment within it.

$$\mathbf{PUE} = \frac{\mathbf{\text{TOTAL FACILITY ENERGY}}}{\mathbf{\text{IT EQUIPMENT ENERGY}}}$$

Effectively, this number means that for every 1.6 units of energy used by the data center, 1 unit is used by the IT equipment and the remaining 0.6 units are used by other infrastructure components like cooling systems and lighting. This means lower energy costs, less strain on power systems, and stabler IT operations in cases of power failures.

Infrastructure is just the start, too. Samsung's work with INFRAM has supported every part of their digital maturity journey, across imaging, community care and electronic medical record usage. They've reached Stage 7 on our EMRAM and DIAM models, Stage 6 on our C-COMM

model, and regularly top the global rankings for our Digital Health Indicator (DHI). As Samsung continues working towards their 2028 Connect and Thru goals, they've got the exact foundation they need for innovation.

Samsung Medical Center is among the world's top smart hospitals, and they're charging into the future with a plan.

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The Samsung team is so ambitious, and we're beyond proud of their infrastructure achievements with INFRAM.

PHILIP BRADLEY | Digital Health Strategist | HIMSS



ABOUT INFRAM / ABOUT HIMSS

INFRAM is our dedicated infrastructure model.

This maturity model supports infrastructure adoption, and helps systems connect tech investments to outcomes. With our framework backing you up, you'll build the foundation you need to extend your workforce's capacity and improve patient outcomes.

We're ready when you are.

INFRAM *Capabilities*

-  **Assessing infrastructure maturity**
-  **Making high-value infrastructure investments**
-  **Spotting technical gaps**
-  **Getting buy-in and proving ROI**
-  **Fighting ransomware and cyber threats**

 INFRAM RESULTS

Meet another INFRAM Stage 7 center:

Based in Utah, Intermountain is another of the world's quadruple Stage 7 Healthcare Organizations—including with INFRAM.

Intermountain used our model to guide their infrastructure projects across cardiac care, virtual health and hyperbaric therapy, and they're only getting more advanced.



Intermountain Health

Let's make your infrastructure transformation happen.

Reach out to speak to our team anytime at dht@himss.org. (We're here!)