

CASE STUDY

A look inside the 5-year plan to revolutionize hospital care in Costa Rica

SOIN's plan to consolidate disparate hospitals, with an enterprise imaging foundation from Merge



Status quo: The siloed imaging landscape across Costa Rica's hospitals

SOIN Soluciones Integrales (SOIN) is one of the main healthcare systems providers for the Costa Rican government. The solution integrator was contracted to modernize and consolidate the imaging environments of 50 hospitals across the country, and bring them all into a centralized Enterprise Archive, PACS, RIS, and EMR.

Up to this point, the country's hospitals were completely siloed from each other. Different hospitals used different PACS. Patient information and imaging data were stored in often manual, bespoke methods. The administrative work was also done manually – and in many sites, done on paper!

There was a total lack of consolidation of patient data between hospitals. This not only placed a burden on doctors and clinicians, but also on the patients. Patients were forced to become messengers for their own information: carrying paperwork from hospital to hospital, which not just forced unnecessary responsibilities on them, but also dragged out the doctors' timeline for interpreting patient histories and imaging data before they could make care decisions.

The solutions that these clinicians use also varied from hospital to hospital. For example, some hospitals used proprietary viewers, while others used open-source viewers. This lack of standardization not only stretched out the patient care timeline; it also invited the risk of inconsistencies in reporting and patient care between hospitals.



Enter Merge enterprise imaging solutions from Merative

To tackle the problem of concentrating all of the country's hospitals' imaging data into one place, and digitizing into electronic medical records (EMRs), SOIN reached out to Merative in 2016. By 2021, these initial conversations had evolved into a five-year partnership, beginning with the implementation of two solutions: Merge VNA and Merge Universal Viewer.

These two solutions became the foundation for giving SOIN the functionality it needed: not just integrating 50 hospitals' worth of imaging data into one system – to one ultimately manage 2.5M annual studies – but integrating the myriad pre-existing solutions at each of these hospitals, all stemming from different vendors.



Integration challenges

There were a number of challenges facing this integration project. First among them was a resistance to change from some of the radiologists.

Some radiologists were happy to switch over to new solutions, tired of working in difficult environments with outdated tools. An upgrade was welcomed as long overdue.

But for others, they had spent years using and becoming comfortable with their specific PACS – and naturally preferred the status quo to something different. Being asked to phase out these systems for the sake of pooling their data together with dozens of other hospitals was a tall ask, and led to concerns among radiologists about:

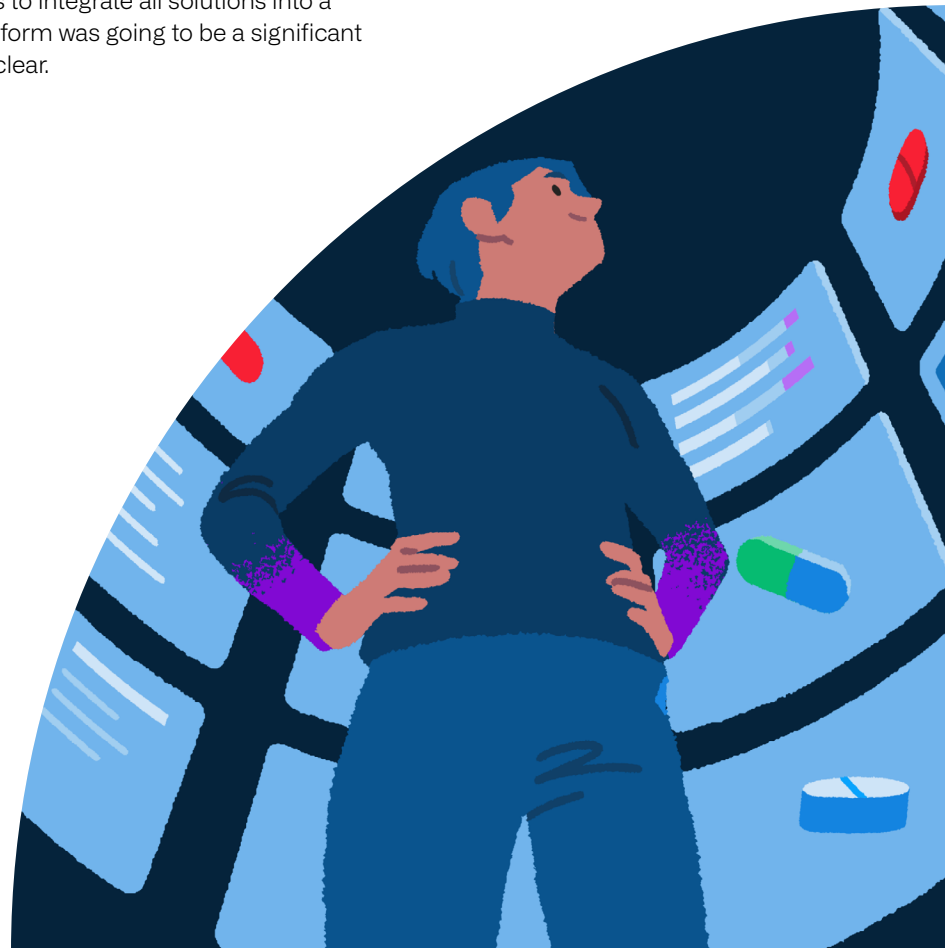
- The reliability of the new integrated solutions
- The speed with which they would become comfortable with the new solutions and user interfaces (UIs) for managing their worklists
- The degree to which the new solutions may disrupt their workflows
- And any potential negative impacts on everything from interpretation time to patient care outcomes

The challenges went beyond just radiologists' preferences for existing solutions.

There were also enormous logistical and technical challenges for integrating multiple solutions, across 50 hospitals, from vastly different vendors – each with their own UIs,

security and privacy protections, and means of managing workflows and worklists. They each had different capabilities for being AI and cloud ready. They each boasted different levels of replication software and virtualization. And they all operated on different strategies for disaster recovery, business continuity, and backing up imaging data in the event of a cyberattack.

Overcoming all these challenges and disparate conditions to integrate all solutions into a single platform was going to be a significant hurdle to clear.



Standardizing workflows

Working together with Merative, and utilizing Merge VNA and Merge Universal Viewer, SOIN was able to design a solution capable of integrating the hospitals' technology stacks, capabilities, and stored imaging data – all into one place.

The only sticking point that remained: workflow. Every hospital had its own workflow. How to consolidate them all into a single, centralized model?

Together, SOIN and Merative helped these hospitals identify all the critical points of their radiologists' workflows that had to be taken into consideration – all of the key elements that would need to be present in the consolidated workflow.

From that list of identified elements, SOIN would then create a complete report for each hospital, to guide them through the steps needed to integrate their workflows – best practices to adopt, legacy practices to abandon, and guidance on what would and wouldn't change with the new implementation.

By conducting these current state assessments for each individual site, SOIN could standardize their disparate workflows and effectively bring them all in alignment with each other.



Filling in gaps

In integrating the sites' disparate solutions, SOIN and Merative also needed to identify and fill in the gaps in the previous patchwork status quo. This entailed:

- Building a solutions portal that could integrate with the Costa Rican Social Security Fund (CCSS) to authenticate the radiology solutions being used across all sites. This portal was critical for integrating both disparate radiology solutions and the monitoring systems for those solutions, so that the end result was an integrated, extensive monitoring system that would provide oversight into every modality – and catch problems before they appear.
- Compensating for the CCSS IT department's lack of load balancers and firewalls by deploying 99.98% availability in two data centers, using only SOIN's resources and equipment.
- Implementing new communication solutions that could be deployed on a national level, as CCSS' infrastructure wasn't efficient enough to use.



24/7 support

Beyond the integration challenges, there were a number of environmental challenges to contend with as well – COVID-related supply chain disruptions and semiconductor shortages, alongside a barrage of cyberattacks on Costa Rican government networks and databases.

The Merative support team was able to assist SOIN in weathering these challenges as well. If a solution wasn't working, or there was a problem with the integration, Merative provided 24/7 support, either remotely or in-person, to find a positive outcome.

According to Adrian Jimenez, senior manager for SOIN Costa Rica, this 24/7 support service was essential to getting the project off the ground and "made the difference between success and failure."

“Merge believed in us on the most challenging project in our region. We received the best and most professional support, at every step, from expert people who helped us both remotely and on site. We managed all of our challenges side by side with Merge. They made this project successful.”

Adrian Jimenez
Senior Manager, SOIN Costa Rica



Looking ahead

Now that the Merge solutions have been successfully implemented and updated, SOIN is undergoing the process of fully integrating hospitals into the centralized system. As of March 2023, the first three of the 50 hospitals have successfully gone live in the new system, taking advantage of support for features like teleradiology, advanced visualization, and voice dictation. Eventually, the system is expected to manage 2.5M annual studies.

The complete EMR integration and scheduling has also led to improved attention times for patient care, with new opportunities for data analysis to identify any delays in those timelines – something that wasn't possible in the past. This has also led to better optimized workflows, with more balanced workloads between sites and radiologists now able to read images for other facilities.

Beyond continuing to add and manage the remaining 47 hospitals to the integrated system over the coming weeks and months, SOIN is also exploring other Merge solutions to adopt – including for their eventual migration from a hybrid-cloud environment to a fully cloud-based one over the next several years.



About Merative

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