SIRONA

Untethering Radiology: Sirona's Cloud-Native Transformation of a Broken System

The radiology crisis has become impossible to ignore. As entrenched, on-premise infrastructure and fragmented solutions cause backlogs and burnout, radiologists and the systems they serve are clamoring for a better, more profitable way forward…

A Fragmented Past

Diagnostic imaging has been defined by three separate worlds for the last few decades — PACS, reporting, and worklists. Each evolved in its own silo (despite interdependency with the others), improving in fits and starts as users and competitors refined them over the course of 25+ years. However, none were ever designed to function - let alone exist - as a single, living system.

And while each has reached a level of individual maturity, the missing connections are what stifle speed, precision, and adaptability. Every new integration slows the flow. Every system change creates risk. The 'house of cards' perpetuates, and the result is an industry that has settled for good enough in pieces, while the whole remains deeply inefficient and costly.

The role of today's radiologist is to be the operator and enabler of these disparate systems instead of engaging patient care teams, supporting better outcomes, and practicing medicine. With rising complexity comes greater strain on radiologists, and ultimately higher costs for the facilities and patients depending on them.

The PACS Story: Perfect Pictures, Stuck in Place

It was a revelation when PACS first replaced film in the late 1990s: digitally created images could now be viewed on a screen. There would be no more lost film jackets and no more couriers to move information manually.

By 2008, Nvidia, the global pioneer in GPU processing technology, released its CUDA platform, and companies like TeraRecon, Visage, and Sectra expanded the capabilities of PACS into new territory with improved image-access speed and advanced diagnostic capabilities. But even the best PACS still came with hard limits. They were chained to on-premise or co-located servers and tethered to a single imaging business or hospital network.

Today, this convoluted infrastructure still exists. With no native connection to reporting tools, radiologists must alternate between systems and manually transfer findings from pixels to text. Artificial Intelligence applications can be bolted into the workflow, but they can never be seamlessly woven in, as the PACS itself was never built for it. This critical system of diagnosis and record, the primary tool for radiologists to deliver results, has become a layered experiment of technology quilting.

The Reporting Story: From Dictation to Digital Voice

Radiology reporting had its revolution as well. The proliferation of voice recognition platforms replacing the transcriptionist's keyboard was a radical change. Now, the product of radiologists, the diagnostic report, could be created, edited, and finalized in minutes instead of days. However, reporting remained on a separate island, pulling basic information from PACS via fragile interfaces based on human-coded rules. AI-generated findings, when they existed, often had to be manually transcribed into the report, and the power of AI was only evident in a simple auto-impression.

The Worklist Story: Organizing the Chaos

Vendors like Clario emerged to give radiologists a single queue, uniting cases from multiple hospitals into one prioritized list. It was a breakthrough for teleradiology and large practice groups.

However, a universal worklist was just an orchestration layer, a switchboard operator for the imaging world, if you will. It still had to connect to separate PACS and reporting systems at each site. Every connection was custom, and every update took weeks or months. It brought order, but it still couldn't bring transformation.

The Hidden Cost of Separation

Individually, PACS, VNA, reporting, and worklist technologies have made meaningful advances. Still, the patchworked, on-premise infrastructure that has emerged has

prevented modernization and has become more costly to maintain than the revenue it generates.

A single hospital or practice might use dozens of different hardware and software solutions, all tangled together. Updating and maintaining them is incredibly complex; one broken link can cause the entire workflow to fail. It's like trying to keep a house of cards from crumbling in a chaotic environment. The skill of the radiologist is almost equally the ability to navigate the separation as it is in actually reading.

Meanwhile, legacy vendors profit from the complexity; they lock in customers with long contracts and expensive maintenance fees. The radiologists and the systems they serve suffer from bad workflows, burnout, staffing issues, geographic constraints, blocked innovation, and lost revenue.

Meaningful change requires a complete re-architecture of the entire technology stack in the cloud. For existing vendors, this is prohibitively expensive. It requires not only rebuilding the technology but also migrating an entire installed base, all of which currently relies on unique custom solutions, to a new cloud-native architecture. Vendors lacking expertise in cloud architecture often forfeit lucrative maintenance contracts, struggle to manage complex migrations, and face downward reimbursement pressure that prevents them from increasing prices to recover their costs.

Sirona's Break from the Past

We rebuilt the diagnostic imaging platform from the ground up — a single, multi-tenant, cloud-native system, delivered entirely through Chrome. There are no handoffs, no brittle integrations, and no more broken workflows that crush profit and delay patient care. With Sirona's cloud-native and unified infrastructure, artificial intelligence unlocks powerful workflows and enables private practices and the systems they serve to operate their businesses profitably.

Powered by AWS Cloud Infrastructure

Our cloud-native architecture leverages AWS, the world's largest global cloud infrastructure provider, to intelligently and seamlessly maintain our solution and connect hospitals and radiologists around the world.

Like streaming Netflix, large data sets are transferred to the nearest point of presence (POP) location for radiologist consumption. Studies load quickly and consistently, regardless of the radiologist's location, anywhere in the world.

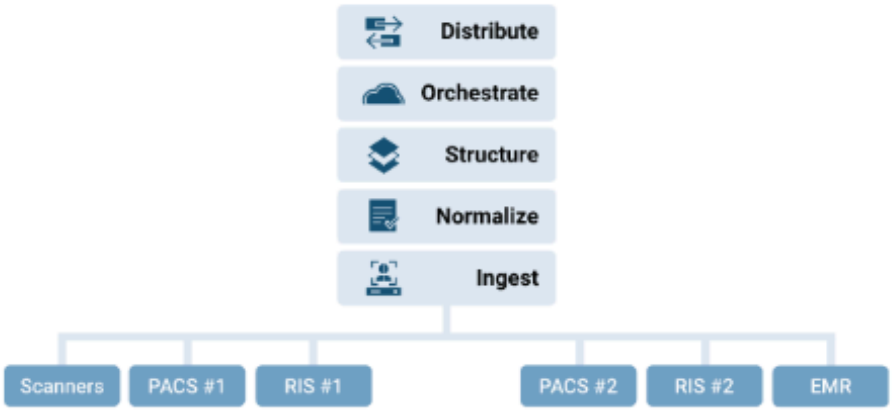
By leveraging the scale and resilience of AWS, Sirona delivers:

- **Low-latency image access** powered by local POP caching
- **Secure and HIPAA-compliant** access across devices and geographies
- **High availability and reliability** are built on a global cloud backbone
- **Automatic product updates** and enhancements delivered through a browser refresh
- **Scalable volume** without investment in hardware or storage
- **Globally connected infrastructure** across health systems or to new practices

RadOS™: The Central Brain

Within the cloud is the RadOS™, the foundation of the platform. It ingests, normalizes, and orchestrates imaging and text data, making it available globally and replacing brittle connections with a single, unified data model.

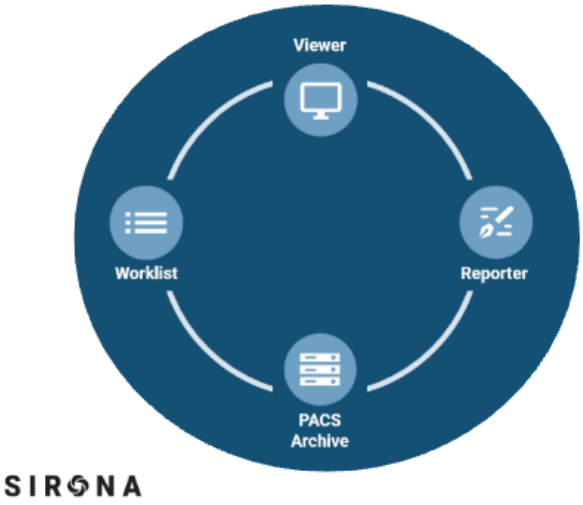
It accepts DICOM, HL7, FHIR, PDFs, and clinical notes, consolidating them into a consistent structure. RadOS™ normalizes and structures data to power a suite of patented, AI-driven technologies. These technologies include ontology classification and our radiology-specific LLM engine.



The Application Layer

Built on RadOS™, the universal worklist, a pixel-based voice recognition reporting solution, and an intelligent diagnostic viewer are integrated in a single, seamless environment. AI-powered features, such as automatic summarization of priors, auto-impressions, and intelligent hanging protocols, are built into the workflow from the start.

Users have access to the Universal Worklist, Reporting Solution, and Intelligent Diagnostic Viewer.



- **Auto-Impressions**
  Fine-tuned for each radiologist and customizable.

- **Focus Mode**
  Radiologists can dictate freely while AI automatically maps findings to the correct spot in the report.

- **Quality Assist**
  More than “spell check”–LLMs find and fix speech-to-text errors and clinical inconsistencies in real time.

- **AI Orchestration**
  Sirona reporting has full DICOM access, thanks to RadOS™, and can serve as the AI Orchestration layer, integrating third-party AI deeply into reporting workflows.

- **Priors Summary**
  AI summarizes the entire patient jacket in a manner specific to the current exam, enabling physicians to read more efficiently.

- **Auto-Priors**
  Hanging images and the reference to prior exams are automatically inserted into the report. The clinician keeps full control of report outcomes.

The Outcomes

Sirona doesn’t just modernize radiology workflows; it enables strategic transformation across the entire healthcare enterprise. Sirona empowers organizations to elevate care, improve efficiency, and unlock new growth opportunities.

With Sirona, radiology teams work smarter and more efficiently, improving satisfaction and retention while driving higher-quality care. By enabling internal radiologists to work remotely, organizations can reduce costly teleradiology and night-hawk spend while strengthening quality and consistency.

Intelligent workflows accelerate care delivery by surfacing priors, reports, and context instantly, helping providers make faster, better-informed decisions. Imaging bottlenecks

disappear as Sirona normalizes workflows and removes system-specific limitations. Ultimately, Sirona strengthens enterprise-wide strategy as infrastructure is unified across departments and locations, positioning healthcare organizations to thrive in an increasingly complex landscape.

Why This Time Is Different

Visage perfected viewing. Nuance perfected voice. Clario perfected orchestration. However, no one has ever unified them into a single, multi-tenant, cloud-native platform — stripping away the interfaces, embedding AI at its core, and delivering it through a browser.

Sirona doesn't just replace the old stack. It redefines who controls it, how it's paid for, and what's possible when AI becomes the first reviewer for most of the world's imaging.

About Sirona Medical

At Sirona Medical, we're building software that enables physicians to work as fast as they can think.

Each year in the U.S., billions of patient images are captured—and nearly all of them are reviewed and diagnosed by radiologists. These specialists are the central hub of diagnostic medicine: over 80% of all healthcare data flows through radiology IT systems. Yet despite their pivotal role, radiologists are overburdened by outdated, fragmented software, which limits their efficiency and ultimately the quality and efficiency of care that health systems can provide patients. That's where Sirona comes in.

We're a San Francisco-based, cloud-native software company with employees around the world. Our deep understanding of both the practice and business of radiology has allowed us to build RadOS™—a unified, AI-powered operating system powering the entire radiology workflows.

To learn more about how Sirona can enhance your radiology practice, visit www.sironamedical.com.