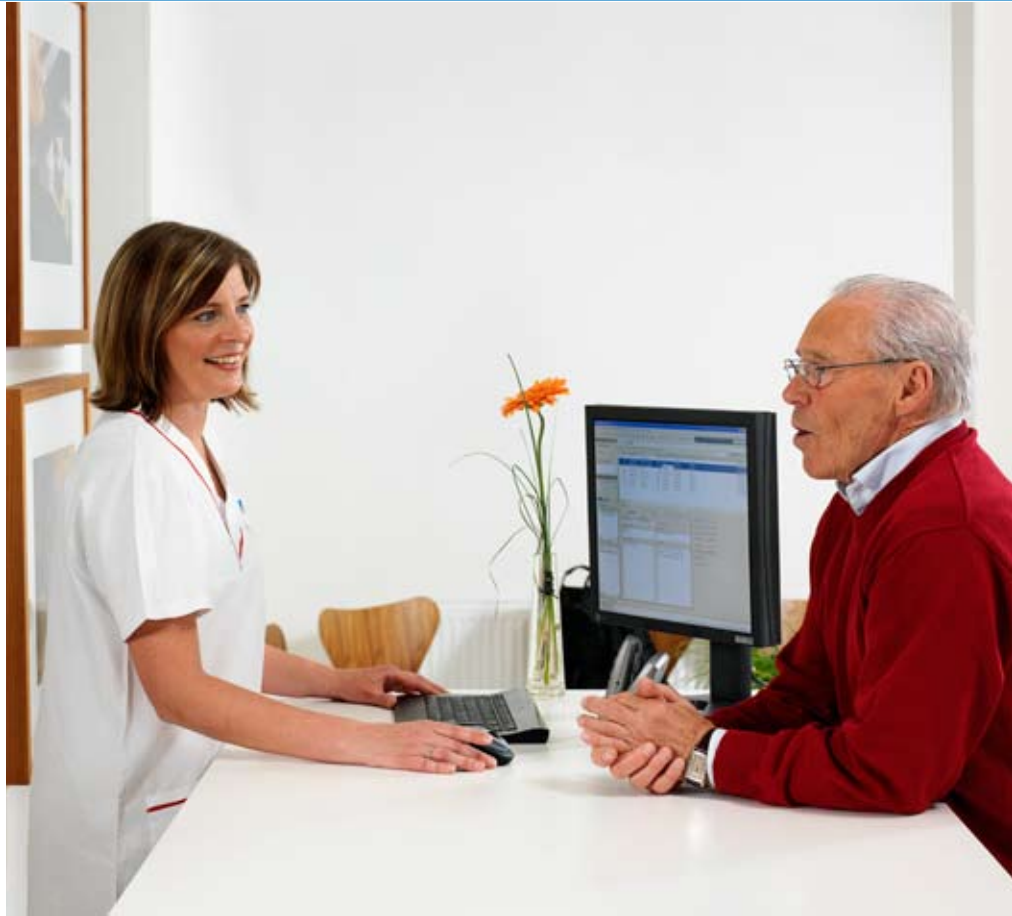


THE VITAL IMPORTANCE OF RIS

Strategies for driving revenue, productivity and profitability



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ABOUT SECTRA

Sectra provides industry-leading RIS/PACS, mammography and orthopaedic solutions. We are committed to transforming your needs into efficient medical imaging solutions. With more than 20 years of leading innovation, Sectra maintains its position at the forefront of medical IT development thanks to close cooperation with top research centers and more than 1,000 customers. This is how we provide the solutions you need, today and tomorrow. For more information about Sectra’s radiology solutions please visit sectra.com/medical. North American visitors, please visit futureproofpacs.com.

INTRODUCTION

It will be more critical than ever during these challenging times to take radiology workflow productivity and efficiency to its highest levels. The benefits of automated, integrated workflow are well documented and well understood – to keep the existing referring physician and patient base satisfied with great service and high quality scanning and reports; to drive in new referrals and exams; and to squeeze unnecessary costs out of the operation.

During these economic conditions, it's critical for radiology operations to optimize their workflow even if it's just to maintain a flat level of annual revenue and profits. Now is the time to put a rescue strategy into operation with a new, advanced RIS to help overcome key workflow, communications, and integration issues. The results will be significant: achievement of optimal revenue generation and increased productivity while boosting profits.

INDUSTRY FACTORS AND THEIR IMPACT

(applicable for the North American market)

The radiology industry is experiencing one of its toughest times in history. RIS and RIS/PACS purchases have slowed, first in imaging centers with the passing of the Deficit Reduction Act (DRA), followed by the hospital market due to the economic slowdown. It is much harder to get the capital needed for large IT purchases. Changes in reimbursement, increased insurance complexity, and a refocus of healthcare IT spending will all have an impact on the imaging provider's need for and use of a radiology workflow system.

PACS systems are incorporating traditional RIS functionality and the lines are getting blurred as to which does which. Ultimately, what the end user needs is what the industry has been chanting for 10 or more years – a single platform to manage radiology information and image workflow and distribution. Because the systems and vendors have evolved at different stages and several acquisitions have left vendors maintaining legacy technology while continuing to develop new products, it has been challenging to achieve this. For now, the best options are companies that offer integrated, single desktop RIS/PACS solutions, where the information and workflow is presented and managed in a unified fashion.

It is estimated that RIS products have reached 90 percent penetration in North America. RIS purchases today are primarily made in conjunction with a PACS purchase, which has become the primary driver of RIS replacements (Frost & Sullivan 2009). Unfortunately there are many old, legacy RIS products in the field that are lacking in critical workflow, report automation and multi-system integration features that have only been released in the last few years.

Additionally, as many radiology providers move to Web-based product platforms, they look to upgrade their RIS systems with those that will provide easier installation and updating, online order entry, scheduling, exam status checking and report distribution options for referrers.

The power and value of an advanced RIS should never be underestimated. It has the ability to make significant improvements to productivity and revenue generation, which together, drive increased profits.

Industry Factor	Impact on Industry
Proposed Medicare changes increase high end imaging equipment utilization rate to 65 percent from the current 50 percent starting in 2010.	This change would significantly reduce imaging facilities' technical component reimbursement for these modalities. Revenue and profits will be reduced, especially for sites that treat a high number of Medicare patients.
The American Recovery and Reinvestment Act (ARRA) has pushed the priority of electronic medical records (EMR) and computerized physician order entry (CPOE) products in the hospital area.	This could shift dollars away from radiology IT purchases. Yet it will also be very important to have an integration strategy to move radiology information/images into the clinician's EMR system.
Increasing complexity and staff time spent dealing with health plans, authorizations, radiology benefit management companies, billing matters, etc.	This is a large percentage of the staff's daily work. Software and automation tools that help speed these activities will become mandatory.
Government funding and radiology reimbursements to hospitals are getting more challenging to obtain, and the criteria for award continues to expand, including areas such as quality and performance measures.	Not-for-profit hospitals need to increase revenue generation in radiology service lines, which calls for better service, improved report turnaround, marketing, etc.

A sampling of the challenges faced in the radiology industry.

HOW A RIS DRIVES REVENUE, PRODUCTIVITY AND PROFITABILITY

It's not so much specific key features that make a RIS such a valuable strategic tool, but the collective sum of all the features combined. How well a RIS digitally automates and integrates real-world radiology workflow results in the reduction of manual, paper and duplicate processes that create inefficiencies and errors. Also important is the ease of use and how simply a RIS provides access to information in as few clicks as possible.

An advanced RIS application can automate and integrate as many as 20 or more different workflow areas that have been typically handled by separate processes and systems. These include: ordering, scheduling, appointment confirmation, registration, patient record keeping, online forms/documents, insurance eligibility, insurance pre-certification, billing coding/validation, technologist worklist, modality worklist, mammography tracking/reporting, radiologist worklist, speech dictation/recognition, transcription/editing, report creation, report signature, report distribution, film tracking, teaching archives, real-time monitoring, management reporting, communication between staff and referrers, and multi-system integration on a single-desktop or interface level.

Not all RIS products on the market today are created equal. There are key features that every RIS will have, such as a scheduling tool; however, this feature can be basic or advanced. It is important to understand the differences and ensure you match up the product's features and functionality with your specific needs.

Based on Sectra's understanding of key challenges facing the industry and our experience with RIS products and deployments, we have provided some examples of how an advanced RIS can have a dramatic impact on productivity. In this white paper we will discuss how hospital radiology departments and diagnostic imaging centers can overcome their key challenges, as well as outline the RIS capabilities that will help drive revenue, and profitability.



An intuitive RIS user interface increases system adoption and utilization.

HOW A RIS DRIVES REVENUE

Increased equipment utilization through scheduling optimization

For many, one of the greatest areas of impact a RIS can have is in its ability to increase radiology equipment utilization rates through advanced scheduling automation. The RIS appointment book should be set up with the appropriate amount of time for each procedure by each modality and location, rules on how multiple appointments or phased appointments (such as with nuclear medicine) should be scheduled together, as well as accounting for staff issues, equipment issues, reservations or over bookings. This eliminates any chance of wasted time slots or inefficient scheduling due to human error or lack of knowledge of appropriate scheduling procedures for each modality type. The key is for a scheduling tool to be flexible from both a manual adjustment standpoint as well as having an automated feature or a “wizard” which takes the patient preferences and exam information into account and automatically coordinates the best suggested time slots for one or multiple exams.

Centralized scheduling allows personnel in different locations to manage the same schedules simultaneously, and browser-based Web access allows referring physicians to request or even schedule their own patient exams, based on permissions set by the facility. Orders and scheduled events may be transmitted electronically from an EMR or third-party order entry or scheduling system.

An appointment confirmation summary should be presented to the scheduler at the completion of the scheduling process. This document can be customized and can include a map to the imaging facility and patient preparation instructions for each procedure. The summary can be e-mailed, faxed or printed for the patient’s or referring physician’s review. It should also have a setting to automatically fax or email

a patient confirmation summary to a physician per his or her preference. By providing preparation instructions you ensure that the patient is ready for the exam when they arrive, another way to eliminate incomplete exams and wasted time slots.

An appointment confirmation feature allows clerical staff to keep track of appointments that have not yet been confirmed, and confirm them with a single click. Appointments can also be rescheduled or cancelled, and patient demographic and insurance information can be updated. Prep instructions can be displayed on screen, and an appointment confirmation summary may also be re-sent to the patient as needed.

It is a good practice to note the reason when an appointment is cancelled or rescheduled and run a system report on this regularly. By knowing the reasons, you can work to prevent them from happening in the future. Another action to do when an appointment is cancelled is to call scheduled patients that have appointments later in the week to try and move them up to a newly open time slot, and then back fill the later time slot. You must of course take insurance pre-certification authorization rules into account.

An advanced scheduling software tool combined with best practice scheduling operations is one of the most critical factors in generating radiology revenue by ensuring that the equipment is utilized to its maximum capacity.

HOW A RIS DRIVES REVENUE (CONT.)

Billing validation and preparation (applicable only for the North American market)

RIS systems either have embedded billing validation and preparation features and then partner with a comprehensive billing software and services provider for submission and reconciliation, or they develop their own billing functionality from the ground up. The challenge with the latter is that radiology billing is very complex and it takes significant resources to develop, manage and support this functional area. Staying on top of the industry factors impacting radiology billing and coding updates is an ongoing battle, and a RIS vendor with 100 or 200 clients will be challenged to provide a solution as up to date as that from a dedicated billing vendor with thousands of clients. For RIS vendors that choose to partner with a comprehensive third-party billing/claims processing solution, they need to provide seamless integration in order to avoid the need for duplicate data entry.

A key to insuring increased revenue is to maximize insurance claim reimbursement, which means having accurate data and a timely, effective claims submission process. A RIS helps this vital role in radiology operations by forcing the capture of accurate information from the patient upon scheduling and arrival, and ensuring that medical necessity, eligibility verification and pre-authorization are done before the exam is performed. The RIS should also track co-payments and Private Pay, and provide a means of printing receipts for patients.

Finally, the RIS should provide some sort of billing validation module, which allows billing staff to perform ICD9 coding, manually adjust CPT codes and modifiers, and then verifies that all the key information has been entered and is ready to be sent to the billing system.

Features that help improve service to patients

For first-time imaging patients, the process can be very intimidating, not to mention the stress that comes with worrying about their diagnosis and treatment. You can reduce their anxiety by providing information about how to prepare for the exam, explain the procedure and modality, and communicate when you expect the radiologist to forward the results to their referring physician.

The faster you get the patient through the process, the happier the patient will be. Tools and tracking features in a RIS can help you ensure patient wait times and report turnaround times are reduced and provide preparation instructions and procedure background information so the patient will be ready for the exam.

Alerts attached to the patient file can let the staff know important cues such as the fact that a patient has had a reaction to certain contrast agent. By keeping track of patient information you can let your staff know a little bit more about the patient to help them create a more personalized experience. For example, if you know the patient speaks Spanish as their first language, you might want to match them up with a Spanish speaking technologist.

By capturing your patients contact information in the system you can e-mail, fax or mail them preparation information once you have scheduled the appointment. You can also send them marketing information letting them know about your latest technology, radiologists on staff, new patient services, etc. The next time the patient or his or her family member needs an imaging procedure, they will be sure to visit your facility again.

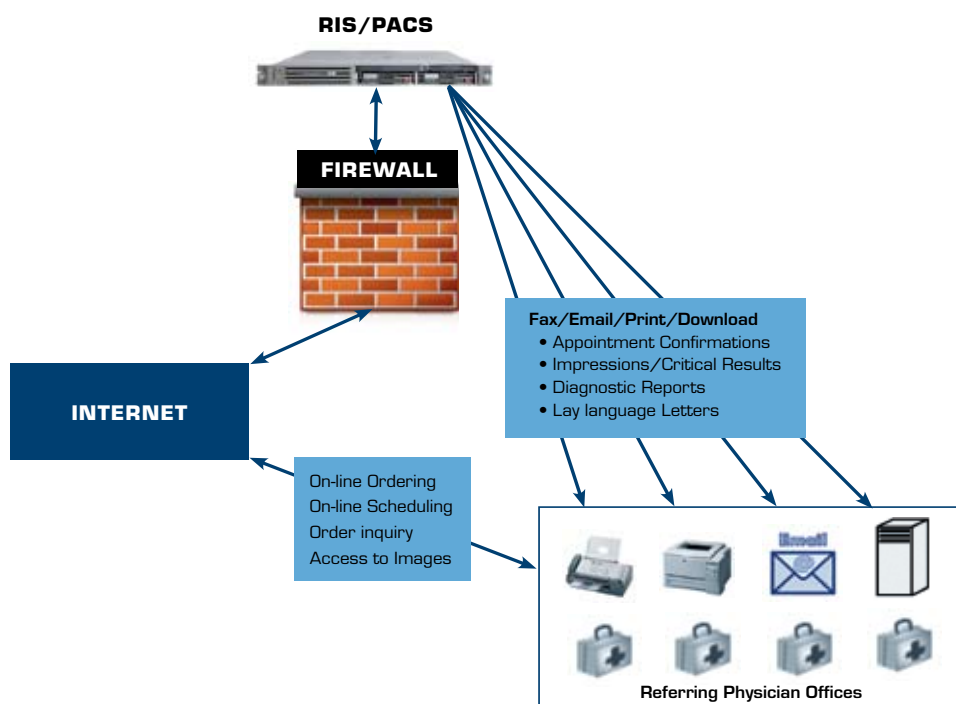
HOW A RIS DRIVES REVENUE (CONT.)

Features that help improve service to referring physicians

You can drive a steadier stream of orders into your imaging facility by ensuring that your referring physicians and medical staff are satisfied with the quality and timeliness of reports and consultations, accessibility of reports and images, speed of patient scheduling and quality of patient care. An advanced RIS enables the imaging facility to provide valuable services to referrers including:

- Informative reports, including embedded key images, annotated diagrams, contrast information, technologist notes, measurements, etc.
- Fast report turnaround times achieved with automated worklist management, embedded speech recognition, electronic report signature and tight integration with a PACS.

- Referring physician portal with on-line ordering, scheduling and access to real-time appointment status, real-time exam and report status, and final reports with associated images.
- Integration of reports into the ordering physician's EMR – this may be accomplished via an HL-7 interface or via a secure transmit of the final report in electronic format over the Internet, allowing a practice to manually or automatically import those reports into their EMR system.



Information flow between a radiology department or imaging center and referring clinicians or medical staff.

HOW A RIS DRIVES PRODUCTIVITY

Integration across multiple systems

The lack of integration between a RIS and existing IT systems both at a desktop and backend level is still one of the top challenges indicated by imaging facilities and one of the key drivers for integrated RIS/PACS purchases today. The operation of disparate systems results in duplicate data entry, multiple worklist management, patient safety and mismatch risks, wasted resources, longer report turnaround times and overall workflow inefficiencies.

A RIS should integrate with other systems throughout the enterprise, including ADT, order-entry, scheduling, HIS, billing, speech, PACS, document management, mammography, reporting, etc., by utilizing industry standard protocols including HL-7 and DICOM. An advanced RIS will embed many of these traditionally separate systems into its application so the user has only to log in and enter information once into the RIS and it flows through to the other systems in the natural progression of the workflow process, while the user works from a unified, single desktop and worklist. These traditionally separate systems may be provided as optional modules.

In the case of an integrated, single-desktop RIS/PACS, a RIS can allow users to view the images associated with a particular exam by directly launching the organization's PACS viewer. A RIS should not be limited to which system drives the radiologist worklist or image launching. It should be up to the radiologist to determine if he/she prefers RIS-driven or PACS-driven workflow. The radiologist should have immediate access to key patient and clinical history information along with relevant prior images in order to speed interpretation and report turnaround.

Only a few speech recognition systems, such as Nuance® PowerScribe Speech Recognition Software, can be embedded directly into RIS applications, without requiring any

interfaces. Speech recognition technology converts the radiologist's speech to text in real time, improves throughput, reduces or eliminates transcription costs, and speeds report turnaround time. The best systems provide real-time context-based recognition with a radiology-specific dictionary.

An advanced RIS can also have an integrated mammography reporting and tracking module that provides the administrative support necessary to ensure compliance with the Mammography Quality Standards Act (MQSA). By completely integrating mammography functionality within the standard RIS workflow, radiologists and other staff can follow the same workflow as they do for other exams, including scheduling, arrival, technologist's tools, diagnostic review and automatic report distribution. This simplifies the workflow for all of the staff, and reduces training time.

Paperless workflow

Paperless workflow speeds productivity and throughput because all key forms and documents have the ability to be completed and stored electronically within the patient record or exam. This ensures the appropriate documents are presented and signed at the right point within the workflow, which also helps to protect the imaging facility and the patient.

Paperless workflow can also speed communication and knowledge transfer processes between front desk and administrative staff, technologists, radiologists and referring physicians. Paperless workflow helps to reduce, and in many cases eliminate, time and costs related to paper copying, filing, printing, and storing—onsite or offsite, not to mention it is also a more environmentally friendly option.

HOW A RIS DRIVES PRODUCTIVITY (CONT.)

Paperless workflow (continued)

A RIS should provide document generation and management, electronic post-it notes, patient signature capture, scanner support, an Inbox and other communication tools, and the ability to markup electronic diagrams and capture key images and embed them within the diagnostic report.

During order entry, at the time of arrival, or at any other stage, a user can generate screening questionnaires, consent forms and other types of documents. These forms can include sections that need to be completed by the patient or the user, with dropdowns and fill-in-the-blank entries. Once the form or document has been generated, it can be signed using a signature keypad and attached to either a patient's record or to an exam record. This feature helps speed the patient registration process.

Finally, the technologist can record observations and measurements either freehand or by using an interactive template or spreadsheet, as well as annotate diagrams. These "electronic worksheets" are displayed to the radiologist at the time of dictation, and should be included on the final diagnostic report by the radiologist without any additional work.

The RIS should be able to link any type of document, or simply a note, to either a patient or exam record and specify at what points throughout the workflow this document should be pushed or automatically displayed to the user.

Productivity and utilization statistics and reporting

A RIS should include various reporting tools that let users generate a wide variety of analytical and administrative reports that provide vital decision making support to managers, allowing them to monitor and improve quality of care as well as the overall and specific productivity areas of their organization.

Reports should be able to be generated in HTML format for on screen viewing or printing; PDF format for e-mailing or sharing; CSV format for import into a statistical reporting system; or even automatically generated within Excel for further data manipulation, formatting and graph or chart creation. New report queries may be created and saved for future use, or scheduled to automatically run at regular intervals. There should also be the ability to use a third-party reporting engine, such as Microsoft® Reporting Services or Crystal Reports® to do true ad-hoc data reporting on any of the information contained within the database.

It is important to make sure that the staff can access reports as needed. For example, most RIS products today have referral volume reporting by such variables as referring physician, referrer type, modality, etc., and can track the increases and decreases in volume over user-defined time periods. This is a key report to have for the marketing/sales team to understand how to address issues and maximize referral relationships. A facility needs to have benchmark data in order to measure and improve key performance metrics. This also helps with annual performance reviews of the staff.

HOW A RIS DRIVES PRODUCTIVITY (CONT.)

Proactive monitoring of key metrics

In order to be successful in today's increasingly competitive radiology environment, you need to know about problems before they impact your operation. By defining what information must be completed at various points during the workflow and tracking these key metrics you can reduce errors, improve service and maximize revenue capture.

Real-time monitoring capabilities proactively and continuously monitor various tasks or events within the RIS, allowing a user to drill down to the corresponding worklist in order to act upon the information provided. User-defined snapshot reports should also notify staff via e-mail or text message when certain key performance metrics are at risk, thresholds have been reached, or exams remain in a particular status for too long.

Thresholds can be based on service levels, wait times or staff backlogs. For example, you might want to be alerted by email if a patient has been in the waiting room for more than 30 minutes. A snapshot such as "email me when a report has been sitting in a radiologist worklist for more than 4 hours" could be configured to be sent automatically to the manager or directly to the worklist owner.

Some useful metrics might include:

- Excessive unbooked time slots
- Extended patient wait times
- Exams not yet sent to billing
- Technologist and Radiologist productivity metrics
- Report turnaround times

Intuitive user interface and customization options

An extremely intuitive RIS user interface (UI) and best-of-breed design reduces learning time, and speeds adoption and user acceptance. This is extremely helpful in getting the productivity improvements realized as soon as possible.

Every radiology department and imaging center has certain unique aspects to their workflow, operations and metrics and a RIS should offer the ability to create custom fields at the patient and exam level to meet the customer's unique requirements as well as track and report on the data entered in these custom fields.

A differentiating feature in a RIS UI is how quickly a user can access key patient information. For the radiologist, offering customized views of patient information is extremely important whether displayed on the radiologist's workspace screens in the RIS or the PACS.

Custom forms can also be created to meet workflow and data requirements. Custom forms can be assigned to apply to a specific set of procedures or to one or more modalities, and can be set to pop-up automatically for a user at a particular point in the workflow.



A sample of real-time monitoring alerts delivered to a hand-held device.

HOW A RIS DRIVES PROFITABILITY

The most powerful results delivered with an advanced RIS include the ability to increase the efficiency at which patients and reports move through the system, increased equipment utilization due to better scheduling, and an overall improvement in service to referrers and patients. This enables the imaging facility to increase its exam volume, revenue and efficiency, all of which directly impacts profitability. The many ways in which a RIS can improve profitability are described below:

- Increased exam volume due to improved equipment utilization.
- Increased referrals as a result of improved referring physician satisfaction, driven by faster patient scheduling, improved report turnaround times, and online access to ordering and scheduling, exam status tracking, and reports and images.
- Increased repeat visits or referrals from patients if they are happy with their experience, treatment, wait time, procedure and report turnaround time.
- Reduced time and costs related to copying, printing, distributing, and on-site/off-site storage of paper forms.
- Reduced postage fees and courier costs for delivering reports if a facility switches to fax and electronic report distribution.
- Elimination of yet undiscovered workflow bottlenecks, staff and operational inefficiencies through real-time monitoring and reporting tools.
- Redeployment of full or part time employees depending upon how well the RIS removes time consuming paper/manual based workflow steps compared to a customer's current processes. However, staff might still be needed or redeployed to support the increase in exam volume.



Productivity = Profitability: An advanced RIS will help reduce wait times for patients, increase staff utilization and effectiveness, and improve your referring clinician relationships.

WHAT TO LOOK FOR IN A RADIOLOGY SOFTWARE VENDOR



When evaluating a new RIS product, it is just as important to evaluate the vendor. You will have a long-term relationship with this company as you both have a role in making the RIS implementation a continued success at your facility.

Look for a vendor that takes a partnership approach with its customers. This means that the vendor takes the time to understand the customer's business, key goals and challenges, workflow and existing system configurations and is committed to helping its customers meet their needs, solve their problems, improve revenue and deliver better quality patient care. A vendor should proactively collaborate with customers to enhance and update products and services on an ongoing basis. Additional factors to consider closely when evaluating a vendor include:

- Ability to scale product, services, and IT platform to support your growth and theirs
- Length of time in business, size and financial stability

- Commitment level to the product and industry
- Industry reputation

Today, most pricing models for RIS and RIS/PACS utilize annual procedure volume as a means to account for deal complexity. Some vendors still price using a per-user license model, however most offer some sort of pay-per-exam model as well. Regardless, the vendor should offer a flexible approach that meets your financing requirements.

An effective vendor aggregates the learning and experiences from their entire customer base, and is up to date on the latest technology advancements and industry issues. Acting as a true partner, the vendor should share this knowledge to help customers in any way possible.

SUMMARY

By understanding the value of an advanced RIS and how strategic a role it plays in the radiology department, or imaging center, one can directly link its benefits to overcoming productivity, revenue and the resulting profitability challenges that exist today. The potential for productivity and profitability improvements from a newly installed RIS is a compelling argument against extending the life of a legacy RIS system or “waiting to see” what happens with proposed Medicare technical reimbursements cuts and healthcare reform.

The benefits that come with a new advanced RIS implementation are significant, such as booking more appointments, speeding report turnaround, increasing patient throughput,

reducing manual, paper and multi-system workflow inefficiencies and increasing the productivity of the staff. These improvements lead to increased referring physician satisfaction and referrals and of course, more profitability. In most cases, a RIS implementation coupled with delivering the best patient care possible will boost the competitive advantage an imaging facility has in its local market.

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