



Advanced Clinical Data Mining, Classification Algorithms, and Multidimensional Analysis Tools

RadCube—Multifaceted Data Modeling and Trend Analysis

CHALLENGE:

How can I mine years of clinical data and effectively calculate performance metrics, business indicators, forecasts and trends?

SOLUTION:

RadCube is an easy-to-use analysis tool that provides insight into every aspect of your business.

RadCube is a powerful tool for analyzing and sharing information that leads to more informed clinical and business decisions. RadCube's instantaneous, multifaceted approach to data analysis is a result of the merging of two very dynamic technologies, OLAP and web architecture. Advantages include web-based interfacing, zero deployment, and remote access.

The ability to monitor data in this fashion is the missing link in most modern radiology practices. RadCube allows departments to run their business in a data-driven fashion — from modality utilization to physician ordering patterns, through radiologist reporting statistics, throughput and outcomes analysis. RadCube is ushering in a new era of diagnostic imaging management.

Implementation of RadCube is simple. An HL7 data stream captures all of the essential variables and reporting parameters. With RadCube you can build a comprehensive data warehouse with decision support data, structured RIS data, reporting values, custom data entry, utilization statistics and more.

Key Benefits

- Analyze years of clinical records
- Make better medical and business decisions
- Manage costs more effectively
- Provide continuous clinical feedback
- Reduce external IT expenses
- Enhance overall service quality
- Improve customer satisfaction rates
- Access projects from virtually anywhere

Key Features

- Designed specifically for radiology
- No programming skills required — minimal training
- Dedicated high-capacity OLAP server
- Data capture via HL7
- Data classification via LEXIMER
- Consolidate records in a single data warehouse
- Sample report templates get you started
- Easy drag-and-drop interface
- Publish projects to your desktop or local web
- Export projects to XML, XLS, PPT
- Zero deployment and remote access
- Integrates with PowerScribe®, RadWhere™, RadPort™ and/or your RIS

Moreover, you can optimize your data with Lexicon Mediated Entropy Reduction (LEXIMER). LEXIMER provides data mining algorithms which extract, structure, and classify unstructured radiology report text in real-time as well as batch processing.

The patented Natural Language Processing (NLP) engine contains decision logic that interprets a wide range of radiology linguistic models revealing report positivity rates, recommendation rates, pathological findings, disease states, and more. This automated structuring and classification of report data significantly improves the quality and scope of analyzed values.

You can navigate, sort, filter, and interact with your data like never before. Ad-hoc queries and “what if” scenarios are supported through an easy to use drag-and-drop interface. You can build charts and graphs on an unlimited number of data points. You can also export data to XML-formatted documents, Microsoft Excel or PowerPoint, or publish to a website on your network with one simple click.

Data, Data, Everywhere

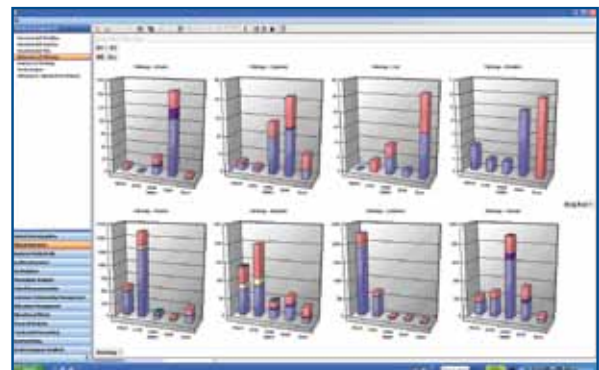
The first step to effectively conducting business intelligence is collecting, sorting and configuring all available data for optimum accessibility and manipulation. Developing a data warehouse eases analysis by building an up-to-date repository of information from a vast number of resources including PowerScribe, RadWhere, RadPort, and your RIS.

Feeding the Warehouse

After establishing a data warehouse, HL7 data streams will feed updates and new patient and report information into the data repository on a nightly basis.

First, RadCube compiles PowerScribe, RadWhere and/or RIS data and runs it through the LEXIMER algorithm to extract positive findings, recommendations, and disease details. This data is “dumped” into the general warehouse. Additionally, decision support metrics, appropriateness scoring, exam placement details and indications can be added to the RadCube warehouse.

Upon completing the data collection phase, RadCube provides a simple front-end interface for creating analytical “projects.” Unlike other reporting tools, no programming skills are required. With only 60 minutes of training, most users are modifying the included report templates as well as building their own analysis projects from scratch. Numerous display options allow you to communicate results with the right message along with raw data tables, view results on the desktop, laptop, and/or mobile devices.



Analyze Areas of Interest to Improve Clinical and Financial Performance

RadCube allows you to expose untapped information inherent in years of clinical data. You can further explore your information from various business, clinical and research perspectives or identify trends, opportunities and potential issues quickly with familiar visualization techniques.

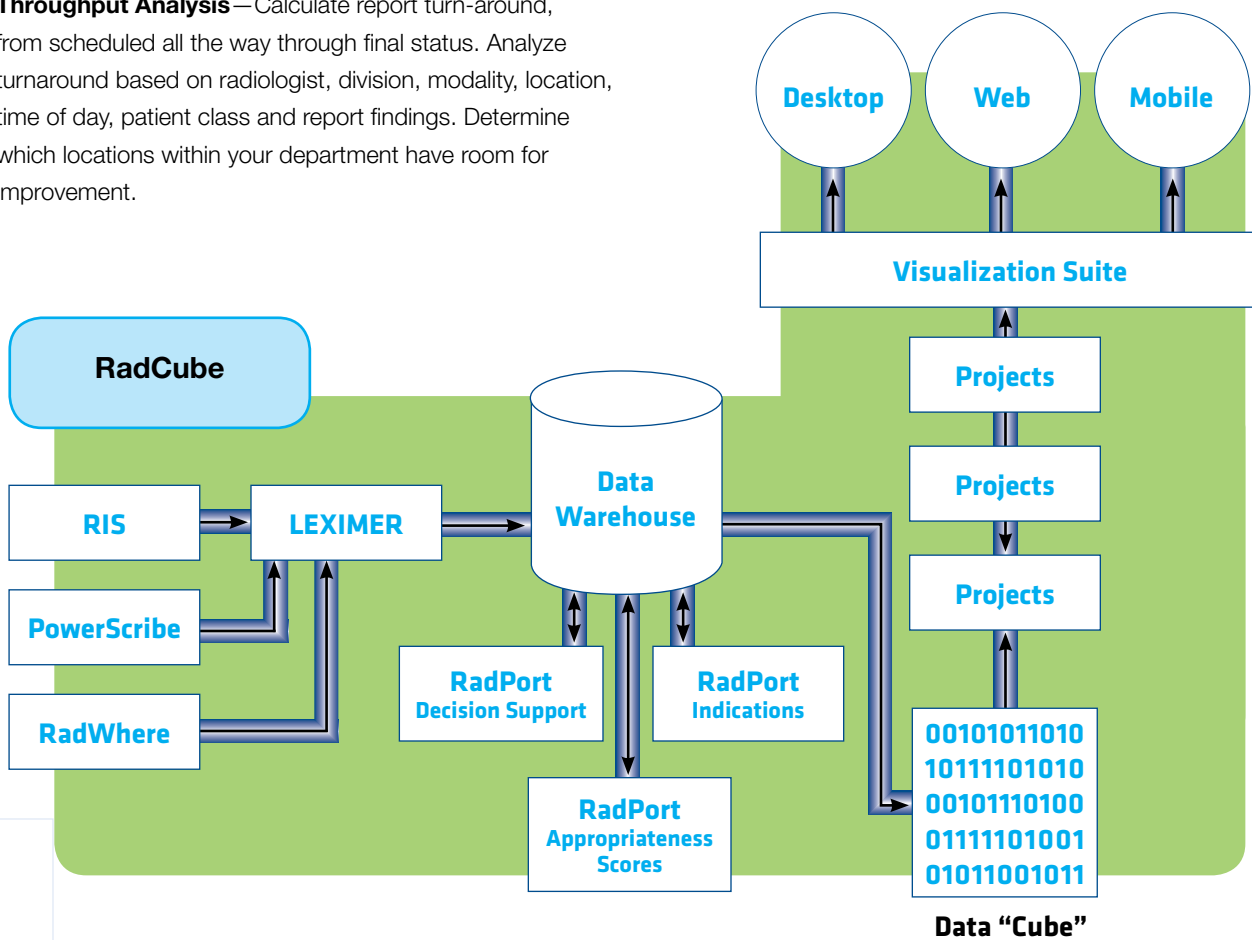
“Our early experience with RadCube™ has demonstrated that it is an effective and user-friendly tool that can quickly derive valuable performance metrics and business indicators. The combination of graphical presentation of data along with raw numbers provides the ideal means to instantly understand trends and calculate forecasts. This is a tool that practice leadership can use directly, on a daily basis, and will diminish the need for contract services.”

– Dr. David Mendelson,
Medical Director, Radiology Informatics
Mount Sinai Medical Center, New York, NY

You can analyze all operational aspects of your business including:

- **Business Productivity**—Measure radiologist and technologist productivity based on such factors as exam volume, modality, anatomy, location, and RVU's (technical and professional). Generate metrics for speech recognition vs. transcription savings and modality usage patterns.
- **Quality Assurance**—Compare finding and follow-up recommendation rates for radiologist and subspecialty groups. Analyze report consistency and length combined with macro usage, dictation patterns and custom data entry.
- **Utilization Management**—Compare physicians against each other for ordering, positive rates and decision support appropriateness ratings (available via RadPort). Monitor the effects of education on appropriateness ratings and evaluate based upon modality, anatomy or exams for appropriateness and trends.
- **Throughput Analysis**—Calculate report turn-around, from scheduled all the way through final status. Analyze turnaround based on radiologist, division, modality, location, time of day, patient class and report findings. Determine which locations within your department have room for improvement.

- **Evidence-Based Radiology**—Conduct population analytics and clinical data mining of evidence-based radiology for continuous improvement. Determine pathology/disease states and clinical outcomes based on positive findings and recommendations. Analyze indications (available via RadPort) and compare them against patient populations (age, gender, zipcode, etc) and cohorts.
- **Advanced Data Mining Techniques**—Perform Bayesian analysis. Examine neural networks and associative correlations between any number of data elements.
- **Trending and Forecasting**—Analyze historic trends and predict future events. Determine the impact of additional modalities, radiologists and imaging center throughput on your practice. Analyze high-tech vs. low-tech ordering trends and referring physician volumes.
- **Benchmarking**—Compare available metrics to industry standards and like peers via consulting partners.



Nuance Healthcare Solutions

Dictaphone® Enterprise Speech System—On-site dictation/transcription platform with background and front-end speech recognition with full controls and advanced workflow flexibility.

Dragon® Medical—A real-time speech recognition program that works with virtually any Windows®-based or Citrix® EHR system for efficient report completion, and easy navigation and adoption of the EHR.

eScription—On-demand platform for computer aided medical transcription, using background speech recognition to turn clinician dictation into formatted draft documents that medical transcriptionists—whether in-house or outsourced—can quickly review and edit, typically doubling productivity.

PowerScribe®—A speech recognition solution that can help radiology departments significantly reduce report turnaround time and lower transcription costs by as much as 75%-100% a year.

RadCube™—A comprehensive, yet flexible, data warehouse for multidimensional business analysis and visualization.

RadPort™—A secure, web-based decision support application that ensures appropriate high-tech diagnostic image ordering.

RadWhere™—A data-driven, front-end radiology speech recognition reporting application designed for multi-site workflow orchestration.

Veriphy™—A critical test result management solution that enhances patient care, increases physician productivity, improves risk management and automates compliance.



eScription

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 KLAS (www.klasresearch.com) is a leading research organization which reports the performance of healthcare information technology (HIT) and services vendors.

Powered by LEXIMER. Lexicon Mediated Entropy Reduction (LEXIMER) is a patented Natural Language Processing (NLP) engine designed for the medical imaging domain. LEXIMER provides data mining algorithms which extract, structure, and classify unstructured radiology report text in real-time as well as via batch processing.

Radiology Solutions Leadership

RadCube represents the next step in the expansion of the Nuance Healthcare family of radiology solutions. Instantaneous, multifaceted data analytics further support the closed loop radiology solution. Data collected with other Nuance Healthcare radiology solutions integrate directly with the RadCube data warehouse. By understanding the operating metrics of your imaging department, you can increase productivity and perform better utilization management, as well as benefit from appropriate order monitoring and forecasting while providing improved patient care.

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About Nuance Healthcare

Nuance Healthcare is a division of Nuance Communications, Inc., the world's leading provider of speech and imaging solutions. Today, Nuance Healthcare provides the most comprehensive family of speech-driven clinical documentation and communication solutions available anywhere. Our vision is to accelerate the adoption of EHR systems, helping providers maximize the return on their technology investments.

To learn more about Nuance Healthcare, please contact us at **800-350-4836** or visit **www.nuance.com/healthcare**.

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