DATA BRIDGE

VENDOR QUALIFICATION FOR ADOPTION OF RADIOLOGY INFORMATION SYSTEM (RIS) BY RADIOLOGY HOSPITAL CHAIN

OVERVIEW:

The healthcare industry is undergoing a transformative shift, driven by advancements in healthcare informatics solutions for streamlining the workflow of daily operational activities. The early 1970s experienced the adoption of computer systems for digital image storage and retrieval. Picture Archiving and Communication Systems (PACS) emerged in the 1990s, allowing radiologists to store, view, and distribute digital medical images electronically. PACS started to replace film-based storage and film readers, significantly improving the efficiency and accessibility of radiological images. Further, the integration of PACS with Radiology Information Systems (RIS) became more common with the advent of the 21st century. RIS-PACS integration allowed for seamless management of patient information and radiology workflows, enhancing efficiency and patient care. Voice recognition software became widely adopted in radiology departments, enabling radiologists to dictate reports directly into the computer, reducing the reliance on manual transcription. Advanced image processing and visualization tools gained popularity during the first decade of the 21st century, providing radiologists with enhanced tools for analyzing complex medical images and planning surgical interventions. With the advent of teleradiology solutions radiologists reviewed and interpreted medical images remotely, facilitating collaboration and access to specialized expertise across geographic locations. Computer-Aided Detection (CAD) software became more prevalent, assisting in detecting potential abnormalities in medical images and improving diagnostic accuracy. The adoption of Electronic Health Records (EHR) systems has integrated radiology reports and images into a comprehensive digital patient record accessible to various healthcare providers.

RIS-PACS stands for Radiology Information System and Picture Archiving and Communication System. It is a combination of software and hardware solutions used in medical imaging departments to manage, store, and distribute radiological images and patient information. RIS-PACS enables healthcare professionals to efficiently handle radiology workflows, including image acquisition, storage, retrieval, viewing, and distribution among various healthcare settings to settle claims for radiological procedures. Some of the notable developments currently observed in the RIS-PACS include AI and ML integration, cloud-based deployment, interoperability enhancements, mobility and remote access, cybersecurity improvement, integration with novel imaging modalities, and patient engagement features.

CLIENT BACKGROUND:

The client represented a prominent multinational information technology services and consulting company having a direct presence in around 50 countries worldwide. The client had complex requirements to be unraveled for understanding the vendor qualification process enabling analysis of the integration capability to the desired PACS, EHR, and data migration services. The client team was curious to understand the deployment process for RIS by a large hospital chain operating in multiple sites.

Challenges Faced By Client:

The client faced several challenges in vendor qualification for the RIS suite to be deployed for a radiology hospital having a presence in multiple sites. Some of the major criteria put forth by the client in assessing the appropriate vendor were as follows:

- Compatible with all industry-related EMR and PACS Modules
- High Reporting Volumes
- Capacity: High Single Digit Petabytes
- Comparison Mapping of each Brand with another RIS solution
- Vendor Capability Mapping Index inclusive of the following parameters:
  - Survivability
  - Support Services
  - Availability
  - Architecture
  - Localization
    - Mandatory: Country 1
    - Nice to have: scalable to other APAC Countries
  - Cost Analysis
  - Scalability
    - Large Number of Reports per day
    - Support hundreds of sites and doctors
  - Options for Customization

The client approached Data Bridge Market Research to address these aforementioned complex challenges and to understand the vendor qualification process that can provide suitable vendors for the requirements with the capacity to scale to other countries. Data Bridge Market Research, a trusted market research consulting firm renowned for its expertise in procurement consulting analyzed the feasibility of the project. Furthermore, the client wanted to know about the costs associated with the implementation of the data migration services to shift to cloud-based deployment. DBMR conducted a comprehensive analysis of the vendor operating in the region, and parameters associated with the capability matrix, and provided actionable insights to guide the client's vendor qualification process.

DBMR Market Research Approach to Overcome Client Challenge:

DBMR adopted the following approach to help the client:

Benchmarked Offering:
The benchmarked offerings available in the oceanic country from a vendor were to be compared with other vendors operational in the country based on parameters included in the capability matrix index

Product Mapping:
Companies offering radiology information systems were profiled and their products were mapped to check whether the vendors can be included in the scope aforementioned at the start of the research study

Operational Existence:
As the research study progressed, the number of companies shortlisted got reduced, taking into consideration their geographical presence and product availability in the country. Finally, the number of companies operating reduced based on previously set parameters such as survivability, availability, data localization, data security, modular integration, scalability, and ability to customize according to the client specifications

Capability Matrix:
DBMR mapped and provided extensive analysis in the form of a capability matrix available, examining market presence, competitor analysis, and customer preferences. This analysis provided valuable insights into the vendor selection process. DBMR helped the client overcome challenges by analyzing available brands based on the preferable parameters and recommending a list of suitable vendors through brand analysis

Use Case Identification:
Collaborating closely with the stakeholders and professionals from other brand providers, diagnostic imaging centers, and departments DBMR identified specific use cases where RIS could significantly enhance the workflow. These use cases ranged from minimization of the administrative costs supporting operational imaging processes related to scheduling, patient records, billing, reporting, and collaboration

Vendor Positioning:
DBMR conducted a thorough analysis of compliance applicable to adopting similar brands in Southeast Asian countries. This assessment ensured that the client's implementations complied with the requirements.

Recommendations and Implementation:

Based on the market research findings, Data Bridge Market Research provided a set of recommendations to the client, including:
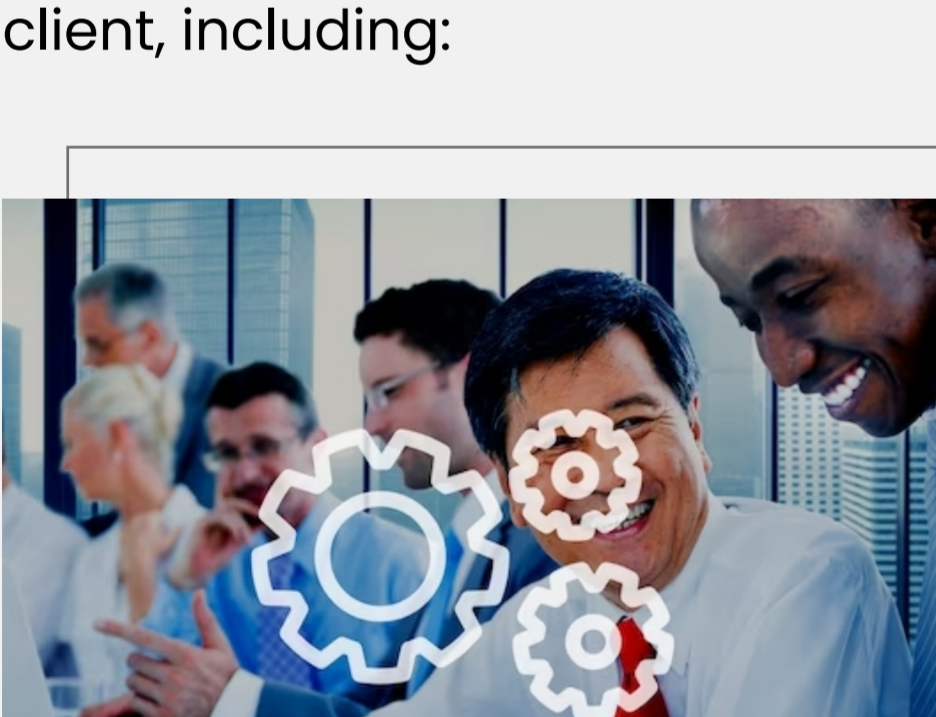
Integration Capabilities: DBMR developed a comprehensive implementation roadmap, outlining the steps required to integrate RIS into the PACS, HER, and other probable imaging equipment for exchanging information among various modalities. The roadmap addressed factors such as speed, availability, survivability, hardware integration, localization, scalability, and the possibility to customize the offering
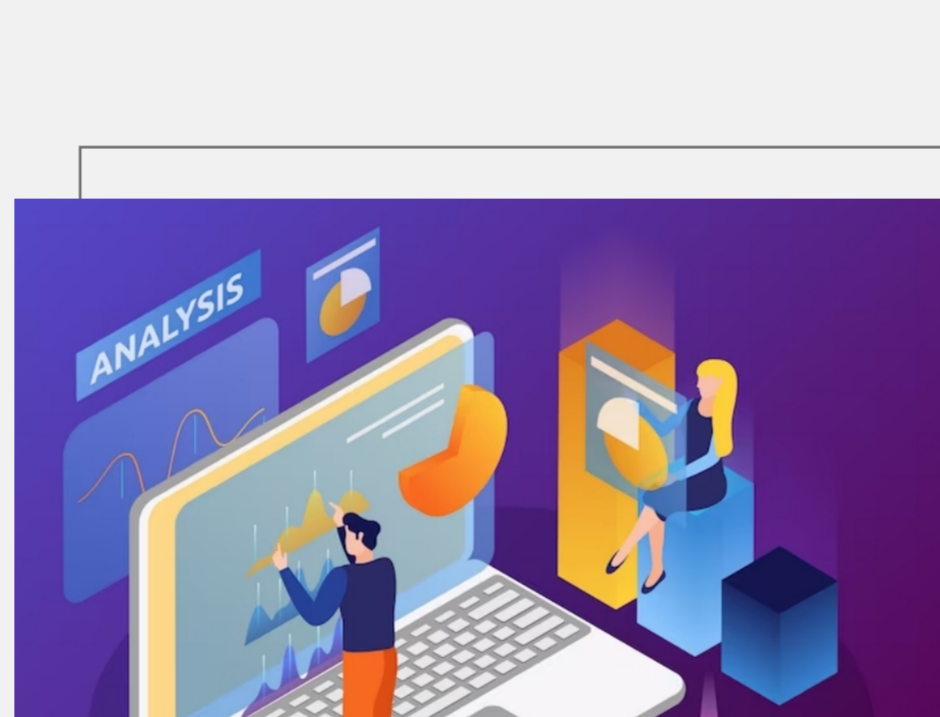
Alternative Analysis: DBMR assisted the client in identifying alternative vendors vis-à-vis their brand and probable benefits associated with their adoption based on administrative support, voice dictation & recognition, bulk billing associated with claims and codes, flexible & streamlined scheduling, records sharing, e-prescribing, advanced reporting, and enablement of radiology departments to share information accurately, rapidly, and securely between multiple users and organizations. The real-time collaboration capabilities between patients and healthcare providers were informed to the client for the selection of vendor
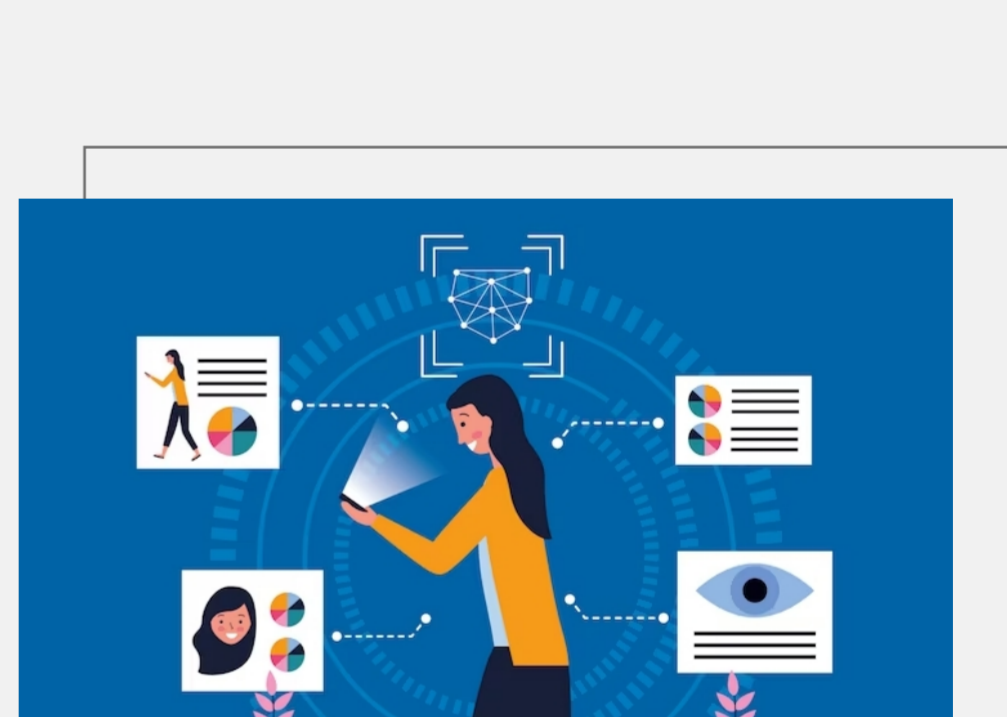
Image Tracking, Data Sharing, and Tech Stack: DBMR recommended client decide on the safeguards against possible duplicate patient records and images. HL7 integration was used for exchanging information and communicating the information to other teams whereas DICOM for sharing images between various imaging modalities was explained for better understanding. The tech stack used to develop the solution such as SQL for the backend, HTML5 for web product, and C++ as well as C Sharp were the preferred coding languages as per the interviewed techies focused on the development activities

Results and Business Impact:

DBMR's recommendations yielded significant results for the client:

Pricing Analysis: DBMR aided the client in understanding the approximate financial allocation to the implementation of RIS software, PACS-RIS module, data migration services per terabyte, and annual maintenance cost. Products that can be customized depending on the use and budget of the company were preferred as the client mentioned it was one of the prerequisites. The flexibility offered during the adoption such as lump sum amount for data migration services were measured through quantitative analysis of the responses shared by the respondents through a questionnaire including Likert scale-based assessment questions. The services offered for example implementation services, optimization services, maintenance services, and upgrading services were compared to understand the cost. The cost variations for radiology imaging centers, hospitals, and public health systems were explained as an exhaustive cost analysis process. The standard warranty from the date of implementation for various is made aware of for additional costs

Data Storage and Localization: DBMR supported the client in choosing the deployment mode and strategy for data storage as well as localization. The vendors offering the ability to expand to the nearest Asian countries were preferred over the vendors having no presence in the other Countries

Billing Data and Support Services: DBMR consulted on the procedures-based coding data implementation possibilities including Medicare Bulk Bill Claim (ICD-10), Transport Accident Commission, Private Patient Claiming, and Inpatient Medical Claims, among other reimbursement available at regional levels within the country and Southeast Asian countries. Customer support via phone, email, and remote desktop access available as per the needs were discussed. The client's entity was able to choose the appropriate medical coding to be embedded based on the regional level

Conclusion:

Data Bridge Market Research played an important role in driving the client's selection process. The PACS integrating all modalities, imaging archives solution, and online reporting through RIS, integrated into the healthcare management system was selected by the client to be capable of managing multiple sites and doctors. The deployment model involving a local archive and a virtual central RIS serving multiple sites for improved data storage and sharing was adopted by the radiology hospital chain as recommended by the client. DBMR can help clients in data-driven decision processes including vendor selection, positioning, pricing analysis, and other customized needs related to healthcare informatics solutions involving infrastructure, software, and associated services focused on the betterment of patient outcomes.