with a significant capital cost, and in these times of economic constraints in the health care industry, investments must be wisely chosen. We review the background of VNA and EI solution development and describe the characteristics and advantages of such systems. We, then, describe our experience in the implementation of Enterprise PACS of Shiraz University of Medical Sciences since 2015.

Objectives: By listening to this lecture, the audience is expected to:

1. Be familiar with the standard concept of Enterprise Imaging, Vendor Neutral Archive, standards and achievements.
2. Be aware of a variety of challenges of Enterprise Imaging Implementation on VNA infrastructure.
3. Be able to consider suitable planning before approaching the implementation of Enterprise Imaging on VNA infrastructure.

Outline: The use of digital imaging has substantially grown in recent decades in traditional services, new specialties, and departments. The need to share these data among departments and caregivers necessitates central archiving systems to communicate with various viewing applications and electronic medical records. This has promoted the development of modern vendor-neutral archive (VNA) systems. The need to aggregate and share imaging data from various departments has promoted the development of enterprise-imaging (EI) solutions that replace departmental silos of data with central healthcare enterprise databases. The important feature of most VNA systems is the programmable "life cycle" of studies or files. The VNA life cycle, if activated and programmed, compresses all studies and copy to a cheaper media saving space and money. It also can move, change, compress, change metadata, auto copy from folders, etc. In general, VNA must become the "final archive" of the PACS and other medical systems. Cardiology PACS, radiology PACS, pathology PACS, laboratory systems, radiotherapy and planning and other systems must be allowed to save final studies and reports on the VNA either by DICOM connection, HL7 delivery, direct upload, ftp or any other valid method.

Combining VNA and EI, the overarching themes include:

- Capturing data from any source and in any format.
- Storing data on any storage and with any strategy.
- Accessing and exchanging any image anywhere.

The following outcomes are to be expected after VNA and EI implementation:

- Reduced system complexity achieved through the consolidation of all storage solutions to a single centralized solution that can be operated more efficiently with implications on reliability and total cost of ownership.
- Improved technology management through controlling and synergies in information lifecycle management (ILM), disaster recovery (DR), workflow, data security, and data mining.
- Improved interoperability and data exchange as achieved through a single point of integration. An obvious necessity is that this single point of integration provides an interface implemented through adherence to open standards.
- Through this lecture, we are going to introduce the accurate concept of Enterprise Imaging and Vendor Neutral Archive, as well as related standards, technical and workflow challenges and prerequisites, to launch Enterprise Imaging Implementation on the VNA platform.

Besides, we are going to share the experience of previous Enterprise Imaging implementations in Iran, especially the Shiraz University of Medical Sciences as a Premier Enterprise PACS solution in Iran since 2015.

• 10.5812/IRANJRADIOL.99228

Templates, Modules, and Common Data Elements: Building Blocks of Structured Reporting

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Abstract

Background: The report is mostly considered the main product of a radiology department, the quality of which affects the success and impact of the institution and radiologist. The current trend of using electronic tools for the enhancement of the quality

of reports reveals that structured reporting has undeniable advantages over free-text reporting. But, why this method has not been widely adopted?

Objectives: By listening to this lecture, the audience is expected to:

1. List the barriers to using structured reporting in clinical practice.
2. Describe the advantages of modular vs. template-based structured reporting.
3. Explain the importance of common data elements in standardized reporting.

Outline: There are multiple technical, conceptual, professional, and cultural reasons preventing radiologists to make use of structured reporting in their day to day practice. From the professional or clinical point of view, the flexibility of the system to provide the most relevant items while being reasonably short is the main reason why radiologists cannot report in a structured manner even if they like. Templates are the most popular containers of the predefined elements every radiologist plans to include in his/her report. But, the templates available for structured reporting are not comprehensive enough to cover all potential pathologies. In addition, there should be a basic standard to define how everybody describes a particular situation. These standards can be defined through the common data elements concept.

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AI in Radiology: From Theory into Practice

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Abstract

Background: Radiology is at the forefront of the revolution in medical imaging, which is mainly based on the progress made in machine learning and deep learning. New tools are being developed and made commercially available for implementation in radiology practice. AI solutions can intervene in different parts of the entire radiological workflow, and thus are likely to have a significant impact on the way that radiology services are being offered.

Objectives: By listening to this lecture, the audience is expected to:

1. Understand the basic principles of machine learning and deep learning.
2. Understand the different ways and possibilities by which these techniques can be applied in radiology.
3. Understand the advantages, disadvantages, and risks of implementing AI-based tools in radiology practice.

Outline: In this presentation, a brief historical overview is provided of the progress that has been made in the past few years in the field of artificial intelligence. The basic principles of machine learning and deep learning are explained. Radiology is at the forefront of these developments, with the ability to provide a huge resource of data. The way these new AI-based applications can be applied is explained, accompanying with advantages, disadvantages, and risks. Advice is provided on how to use these tools in clinical practice.

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AI Startups: The Need for Collaborative Research and Development

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Abstract

Background: In recent years, the rapid development of Artificial Intelligence (AI) has had a remarkable impact on the medical imaging domain. However, there remain challenges in utilizing state-of-the-art models in clinical practice. This talk focuses on challenges faced by AI startups in using machine learning in clinical practice.

Objectives:

1. How the machine learning methods solve a real clinical problem and what are its opportunities and challenges?
2. What are the future directions of AI in medical imaging?

Outline: The first part of the talk provides an overall review of some machine learning models developed for solving medical imaging problems. The second part of the talk presents some of the main challenges in utilizing state-of-the-art machine learning in medical imaging applications. These challenges include interpreting complex models, incorporating causality in our models, working with longitudinal data, model