Simplifying the AI consumption process through the implementation of a standard-based AI platform

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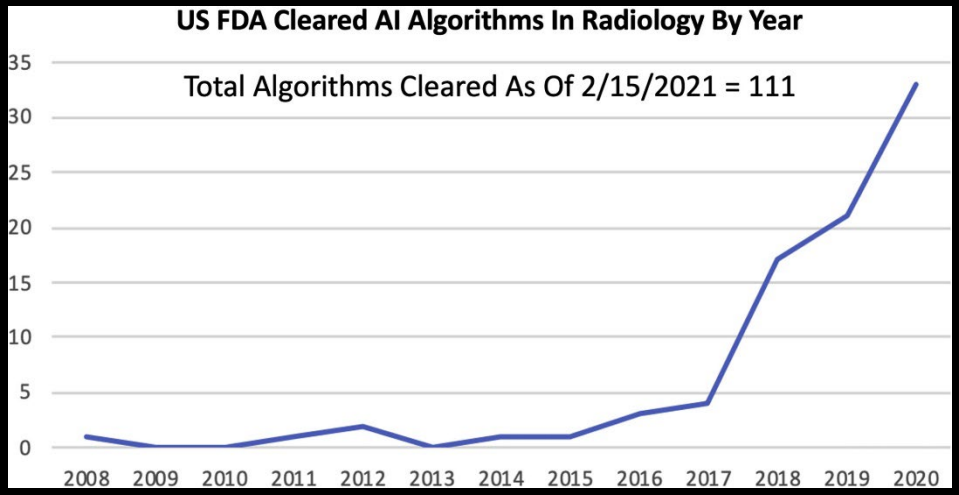
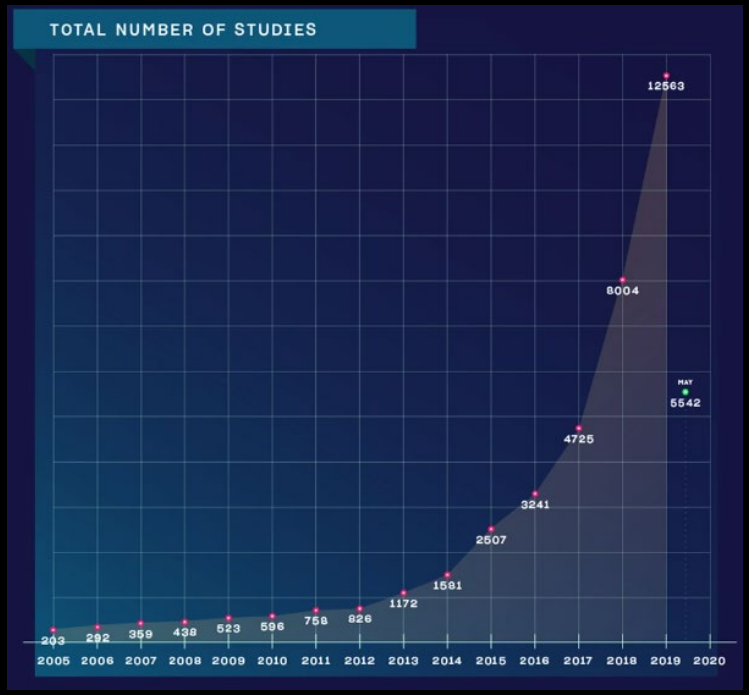
AI Trends

- There is an increased number of AI algorithms available to aid in the interpretation of medical images
  - As a consequence, it's important to standardize and simplify the AI consumption process



Evaluation and Real-World Performance Monitoring of Artificial Intelligence Models in Clinical Practice: Try It, Buy It, Check It. By Bibb Allen, MD, Keith Dreyer, MD, PhD, Robert Stibolt Jr., MD, et al. JACR, VOLUME 18, ISSUE 11, P1489-1496, NOVEMBER 01, 2021



Number of medical A.I. studies on PubMed.com by year from 2010 to 2020. From: A short guide for medical professionals in the era of artificial intelligence. Bertalan Meskó & Marton Görög
npj Digital Medicine volume 3, Article number: 126 (2020)

Current Architecture

Gets quickly overwhelmed by the increasing number of AI engines connected

Tech

PACS

Diagnostic Reporting

Firewall

Cloud

LVO

Pneumo -thorax

Bone Fracture

ICH

Free Air

Liver Lesions

PE

Images OUT
Results IN

GPU Farm

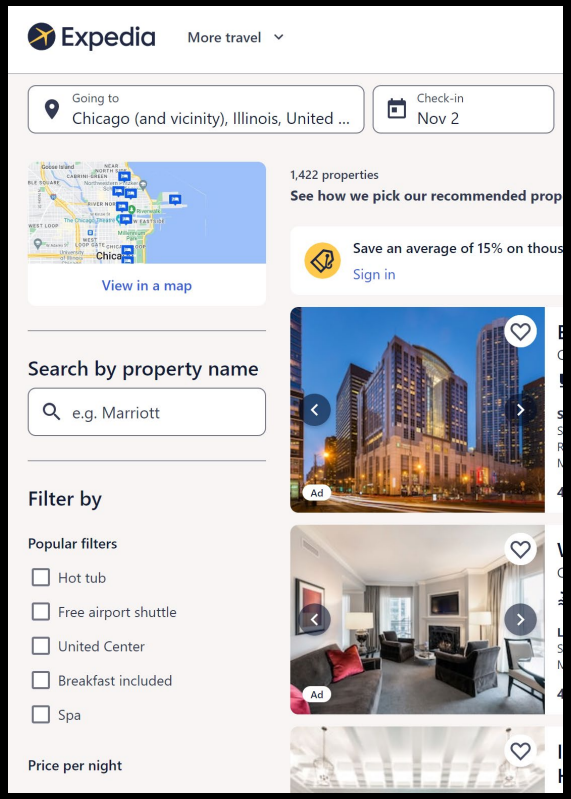
On-premises

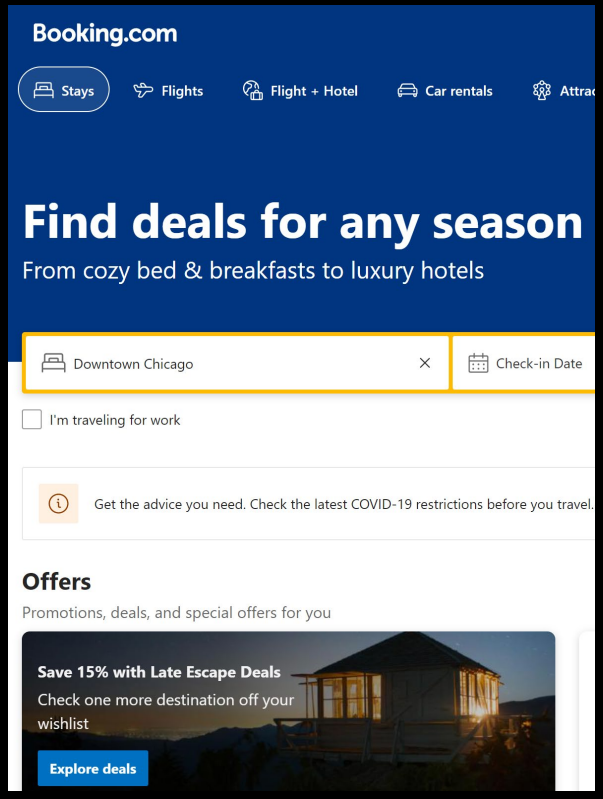
Mammo CAD

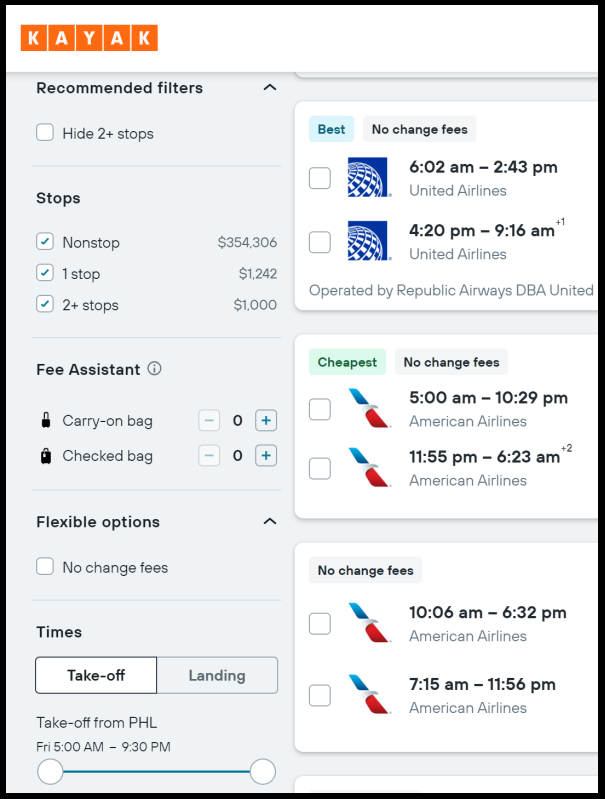
Pulm Nodule

A Lesson from Consumer Platforms

They increase efficiency by aggregating distributed data into a single consumption site







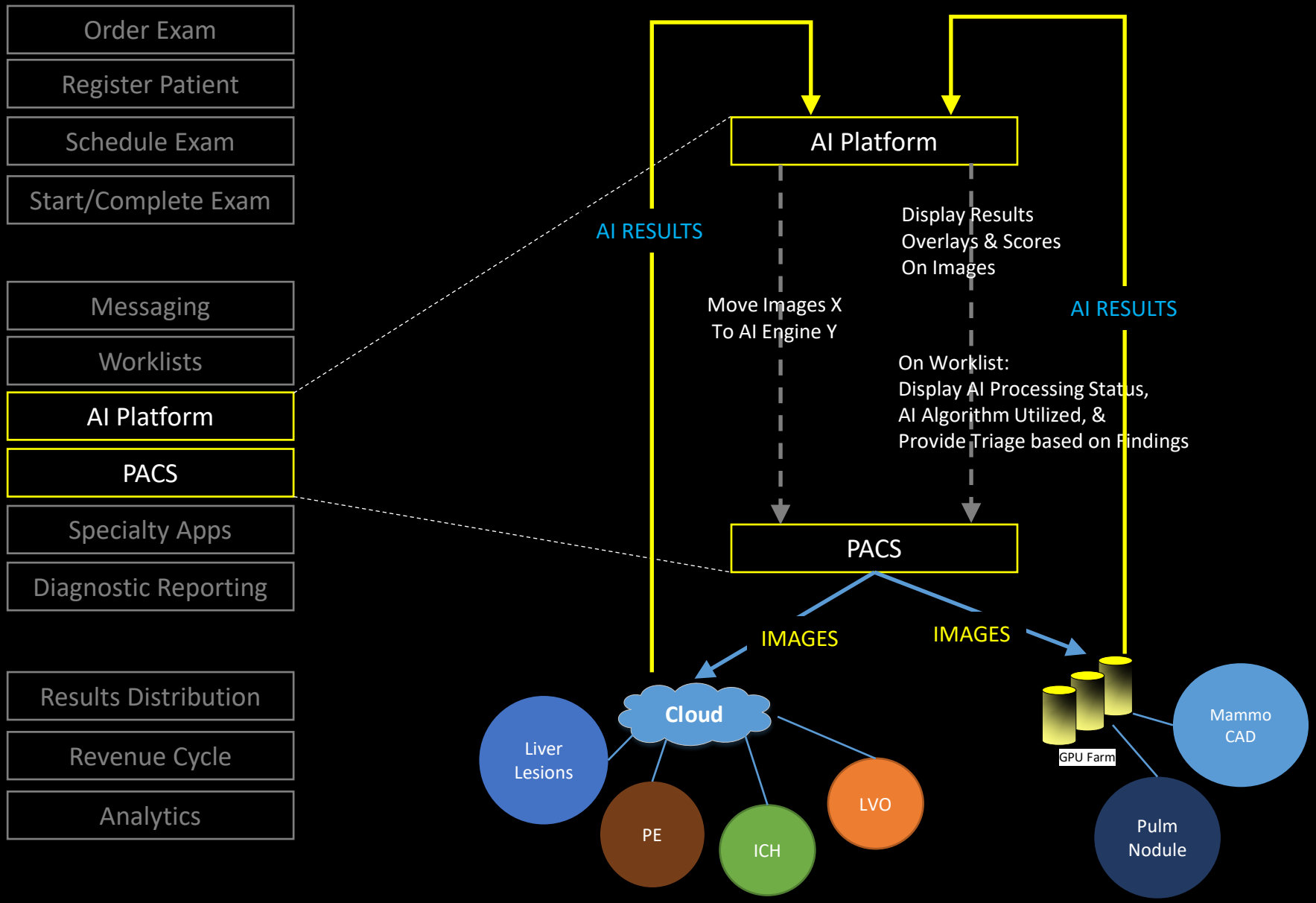
New Architecture

- A standard-based AI platform to deliver a common user experience regardless of the AI solutions adopted
  - Streamline data out of PACS & results into PACS and Reporting System
    - Minimize the impact on Technologists' workload – no manual pulling & pushing of data
  - Single point of integration with on-premises & cloud-based AI engines
    - Automates the export of cases & intake of results, creates queues based on study priority and improves hardware scalability through load balancing
  - Leverages on industry-wide, vendor-agnostic standards such as DICOM & HL7
  - Greater control can be achieved through a published Open API which is publically available and shared freely

AI Platform Features & Functionality

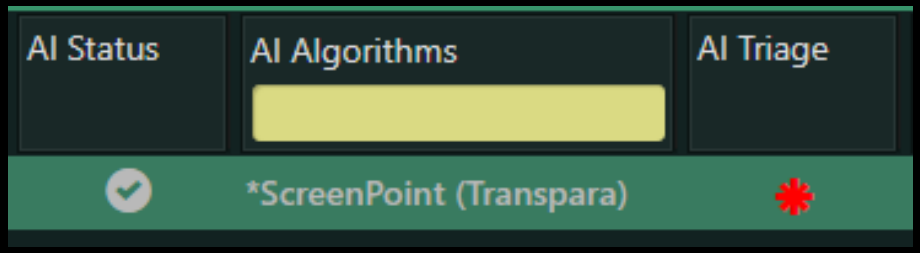
- Automates the data flows in-and-out of PACS
  - Extraction: Easily select datasets to be routed to external engines
  - Transformation: Anonymize PHI
  - Load: Encrypt for transmission
- Orchestrates the sending of imaging data to the appropriate AI engine
  - No need for the Tech to double-pitch data
  - Provides hardware load balancing
  - Scheduling and Prioritization of cases
- Streamline the display of AI results into the Radiologist workspace, ie, PACS viewer, worklist and/or reporting system
  - Triage cases
  - View CAD results (marks, annotations, measurements, …)

Radiology IT
Technology Stack w/ AI Platform



Integration Profiles

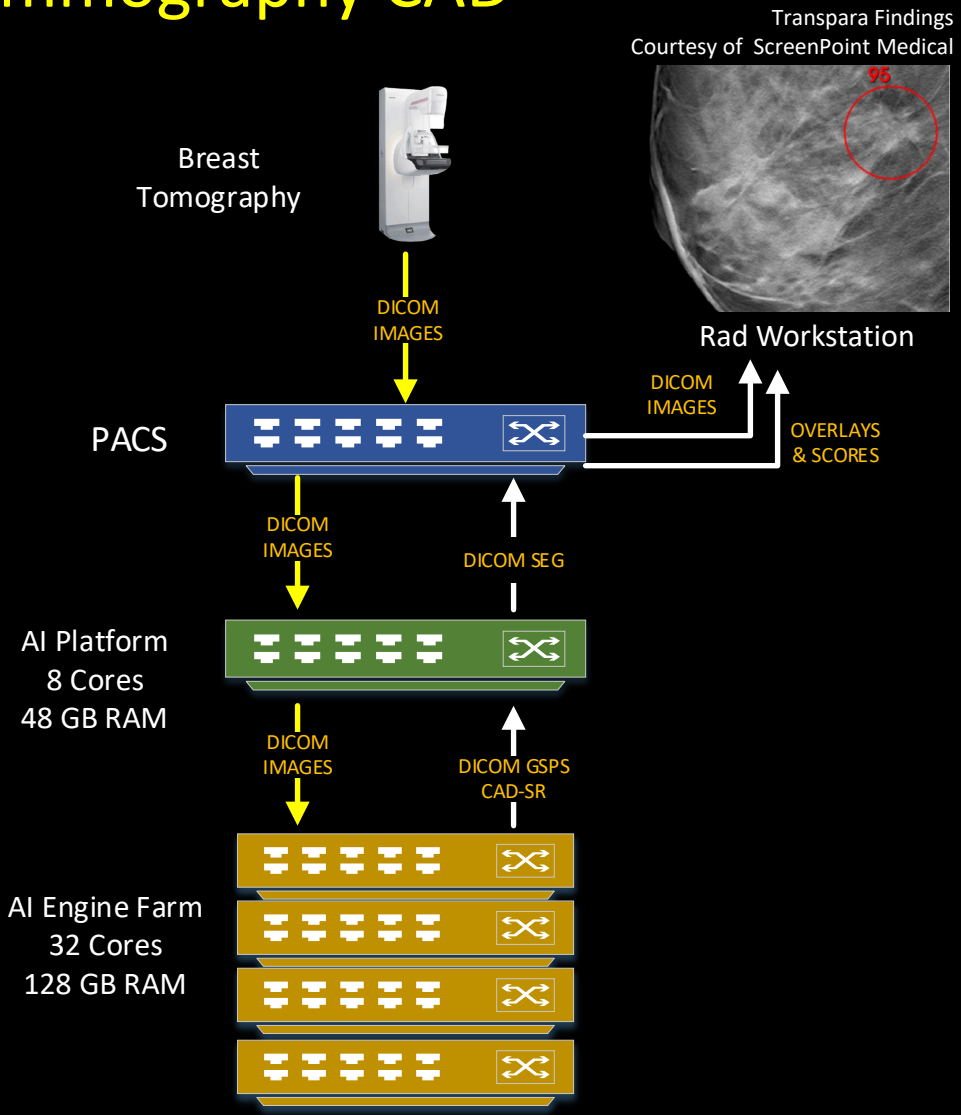
- Integrate AI results directly into PACS viewer
  - GSPS, DICOM SC, DICOM SEG, CAD SR
  - Overlays can be toggle on/off
  - DICOM SC provides minimum level of integration
- Notifications of Results
  - AI processing status
  - AI algorithm utilized
  - Triage assignment based on AI findings



Case Study

AI Platform & AI-based Mammography CAD

- For diagnostic breast exams where the interpretation occurs in near real-time, the AI TAT needs to be < 3 min (illustrated on the right)
- This is critical in order to provide the AI results prior to the radiologist's start of interpretation



AI Platform Benefits

- Orchestrates the secure exchange of imaging data and intake of AI results in a standardized and simplified manner
- Aggregates the output of multiple AI algorithms under a single platform delivering a consistent end-user experience
- Platform provides AI-vendor independence facilitating the consumption of best-of-breed AI solutions
- Platform automates the data distribution between PACS and AI engines eliminating manual workload by Technologists

Thank you

Questions & Feedback:

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