

For Healthcare Professionals and other relevant decision makers.
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Harnessing the power of platform technology for medical imaging AI

Intelligent Health AI Summit, Basel 07-8th Sept 2022

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Ever increasing pressure on healthcare is threatening the sustainability of radiology departments and patient care



GREATER COMPLEXITY

5x

Increase

In the number of images produced per scan¹

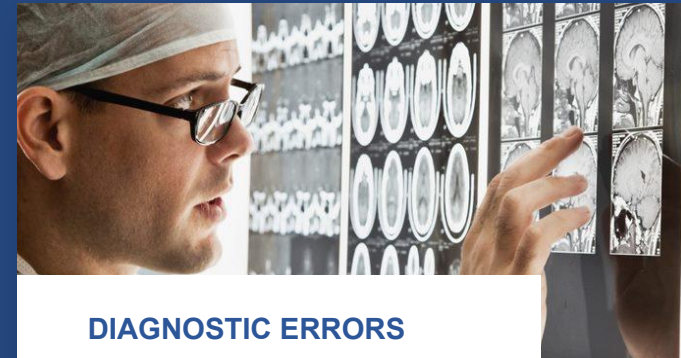


RADIOLOGY DEPARTMENTS PUSHED TO THEIR LIMITS

46%

Radiologists

reporting signs of burn-out²



DIAGNOSTIC ERRORS

~40m

Diagnostic Errors

per year worldwide³

1) McDonald RJ, Schwartz KM, Eckel LJ et al (2015) "The Effects of Changes in utilisation and Technological Advancements of Cross-Sectional Imaging on Radiologist Workload", Academic Radiology, Volume 22, Issue 9, Pages 1191-1198

2) Medscape Radiologist Lifestyle, Happiness & Burnout Report (2020). URL <https://www.medscape.com/slideshow/2020-lifestyle-radiologist-6012479> accessed 21/06/2022

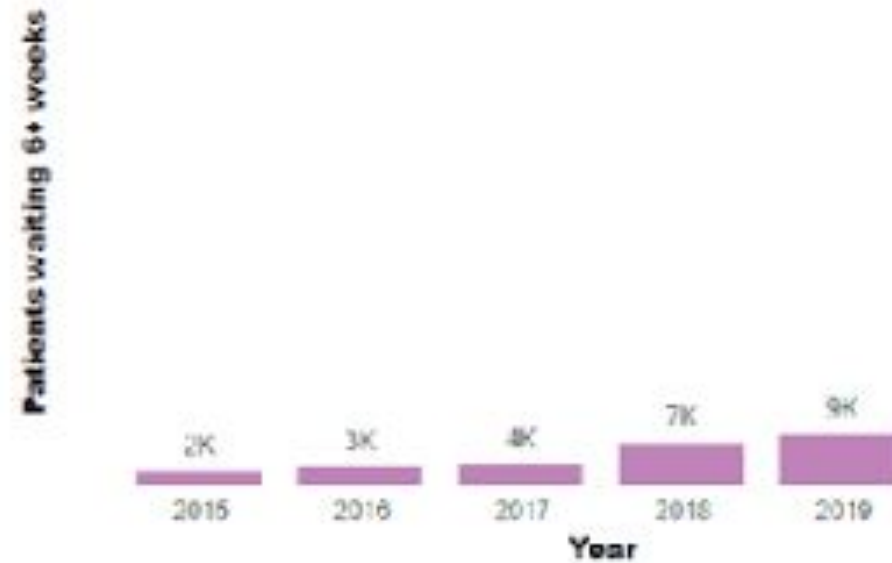
3) Itri JN, Tappouri RR, McEachern RO et al (2018) "Fundamentals of Diagnostic Error in Imaging", Radiographic, Volume 38, Issue 6, 1845-1865



Royal College of Radiologists

UK Workforce census 2020 report

Figure 2. Numbers of patients waiting six weeks or more for a CT or MRI examination – England, five-year trend (2015–2020)

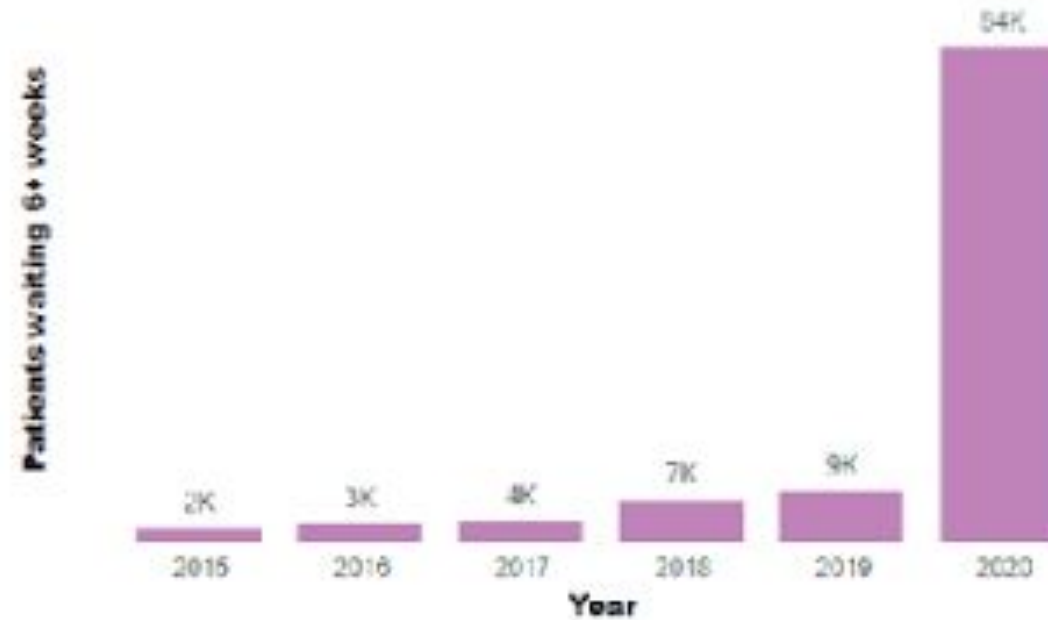




Royal College of Radiologists

UK Workforce census 2020 report

Figure 2. Numbers of patients waiting six weeks or more for a CT or MRI examination – England, five-year trend (2015–2020)





Artificial Intelligence holds the potential to help address some of these challenges, and thereby...



Address operational inefficiencies¹,



optimise patient journeys²,



potentially improve patient outcomes³.



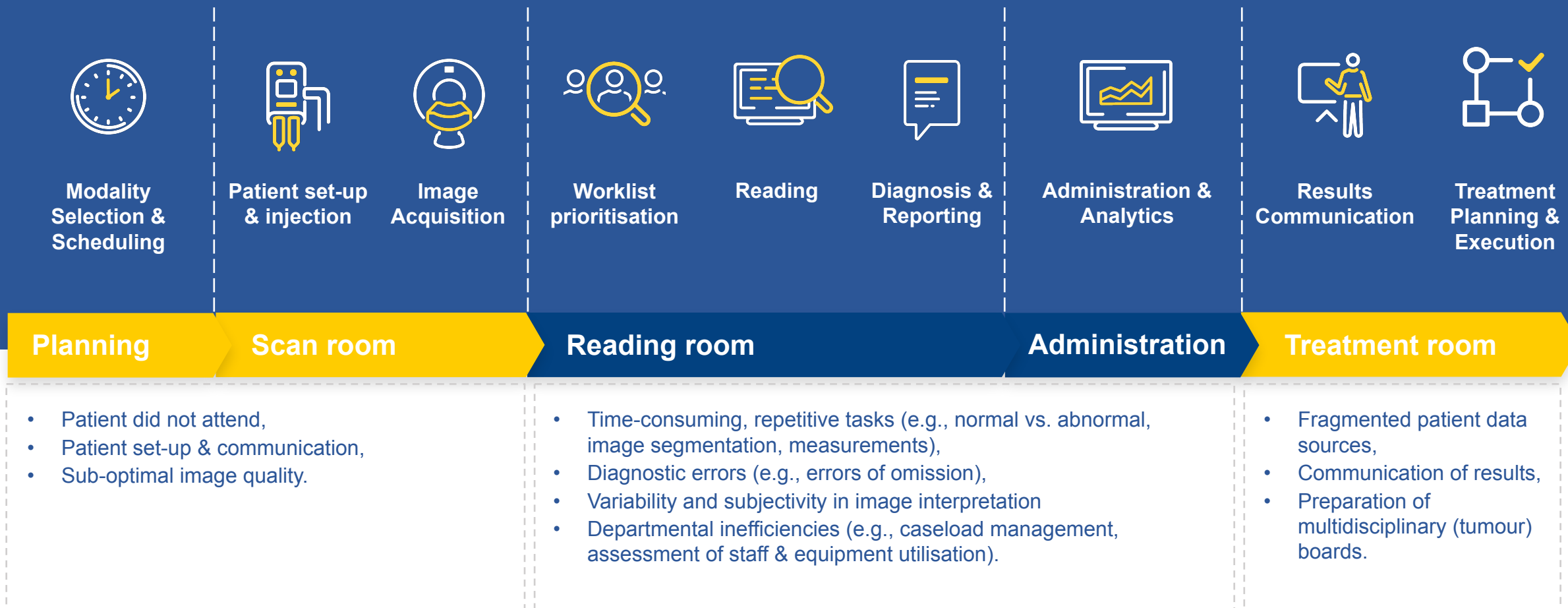
1) Ranschaert E, Topff L, Pianykh O. (2021) "Optimization of Radiology Workflow with Artificial Intelligence" *Radiologic Clinics of North America*, Volume 59, Issue 6, 955-966

2) Blezek DJ, Olson-Williams L, Missert A et al (2021) "AI integration in the Clinical Workflow" *Journal of Digital Imaging*, Volume 34, Issue 1, 1435-1446

3) Wichmann JL, Willemink MJ, De Cecco CN (2020) "Artificial Intelligence and Machine Learning in Radiology: Current State and Considerations for Routine Clinical Implementation" *Investigate Radiology*, Volume 55, Issue 9, 619-627



Despite technology advancements, inefficiencies along the overall radiology workflow persist



Exponential rise in available AI technologies

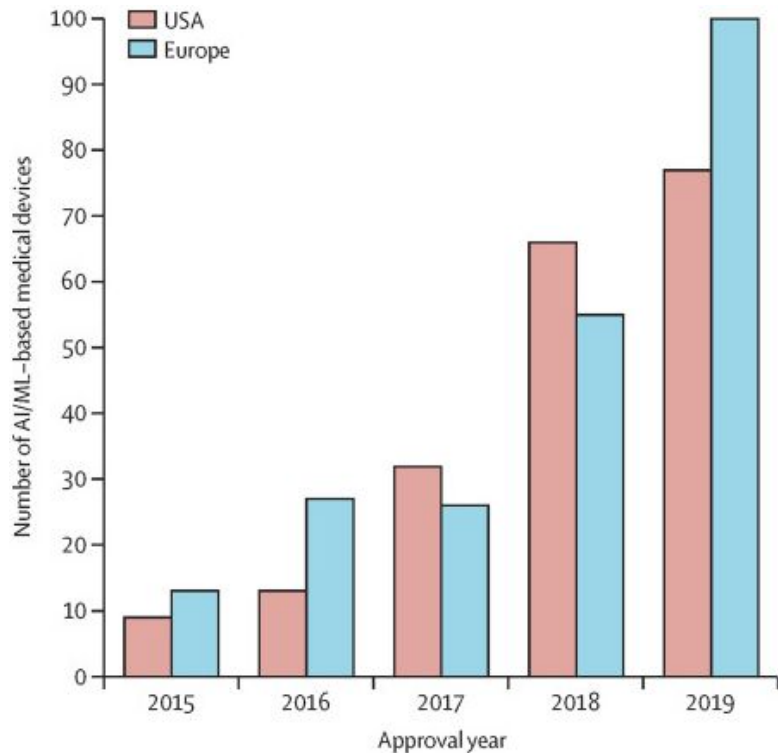


Figure 2. Number of approved (USA) and CE-marked (Europe) AI/ML-based medical devices between 2015 and 2019

The CE-mark year is considered the approval year for devices in Europe. AI/ML=artificial intelligence and machine learning. CE=Conformité Européenne.

- Certified AI technologies are rising exponentially¹
- Now **over 200** AI applications with CE certification for Radiology²
- Deployment of algorithms is not commensurate with their development
- Stand alone point solutions are unmanageable³

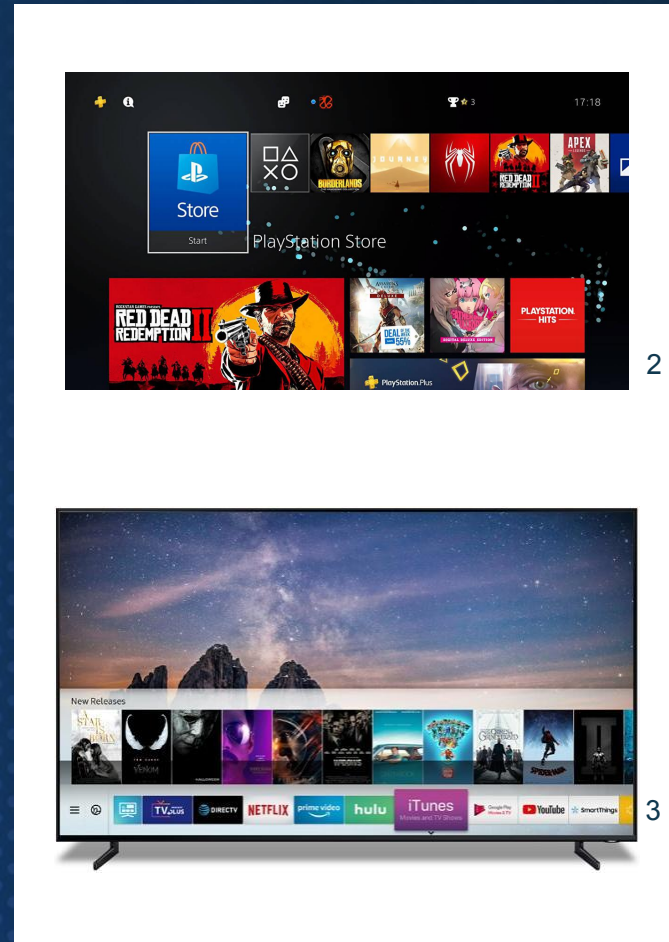
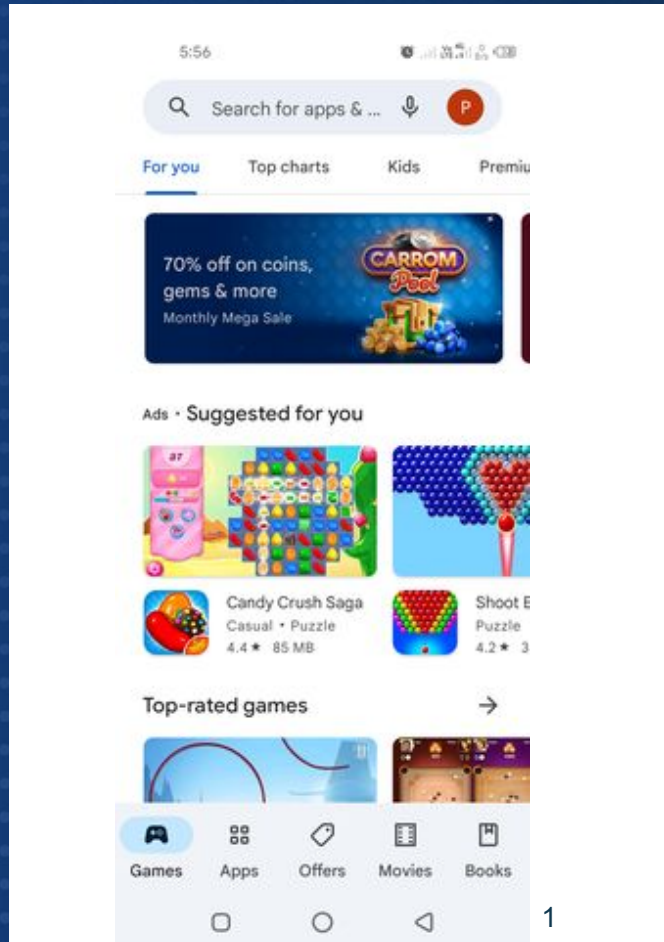
1) Muehlematter U, Daniore P & Vokinger K. (2021). Approval of artificial intelligence and machine learning-based medical devices in the USA and Europe (2015–20): a comparative analysis. The Lancet Digital Health. 3. 10.1016/S2589-7500(20)30292-2.
 2) Available online: <https://grand-challenge.org/aiforradiology/> [Accessed 23/08/2022]
 3) Leiner T, Bennink E & Mol C et al. (2021). Bringing AI to the clinic: blueprint for a vendor-neutral AI deployment infrastructure. Insights into Imaging. 12. 10.1186/s13244-020-00931-1.



How have other markets adapted to such an increase in offerings?



Marketplace for healthcare AI?



What can we learn from other industries?

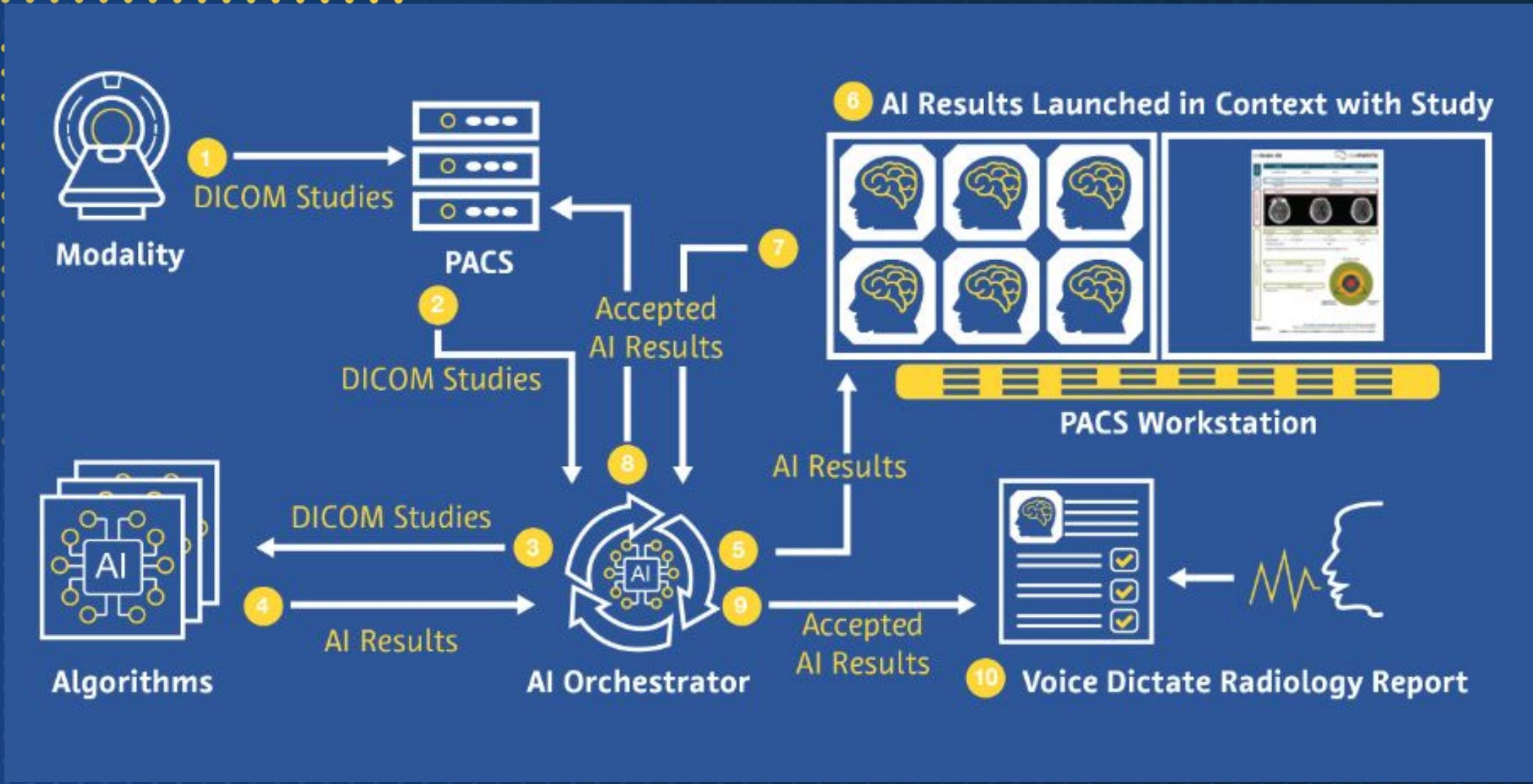
- Establish user interface familiarity and operational consistency.
- Enhance the user experience with a single user interface for all applications.

1: Available online at https://en.wikipedia.org/wiki/Google_Play [Accessed 23/08/2022]

2: Available online at <https://www.eurogamer.net/playstation-plus-games-month-6300> [Accessed 23/08/2022]

3: Available online at <https://www.samsung.com/uk/support/tv-audio-video/how-do-i-manage-apps-on-my-smart-tv/> [Accessed 23/08/2022]

Platform technology





AI Challenge in Healthcare



Lack of strong evidence limits deployment



Curation of Algorithms



Multidisciplinary team collaboration and co-ordination



Reimbursement structure maturity





AI Challenge in Healthcare



Lack of strong evidence
limits deployment
**Generate Real World
Evidence through
deployment about service,
workflows and patient
outcomes**



Curation of Algorithms
**Develop a transparent
expert-led curation
process**



Multidisciplinary team
collaboration and
co-ordination
**Facilitate organisational
multidisciplinary team
collaboration**



Reimbursement
structure maturity
**Generate health
economic outcome data
and pay-per-use models**



The power of platform technology



One-off integration



Vendor neutral infrastructure with scalable architecture for the future



Local validation of datasets is possible



Try-before-you-buy prior to committing to an application



Application-level analytics for quality assurance



The power of platform technology



Generation of Real World Evidence and service / patient level data



Triggered Automation, Cascade workflows¹ and Ensembling of AI models



Versioning control¹



Collective decision making with multiple similar or same models



Platform for local departments to leverage their own data with capability of deployment



AI Culture – Keys to success

- Implementation can support or derail the strategic and clinical advantages of the organizations' AI adoption
- AI implementation as a service rather than just a technology
- Understand, in detail, the landscape in which you are operating in
- Focus on the needs of the customer and the AI users
- AI deployment is not all-or-nothing
- Human-in-the-loop AI
- AI adoption is a journey that each stakeholder should enjoy being part of that journey

40% of organizations rate themselves at the three highest levels of AI maturity, from Operational to Transformational.

Gartner AI Maturity Model

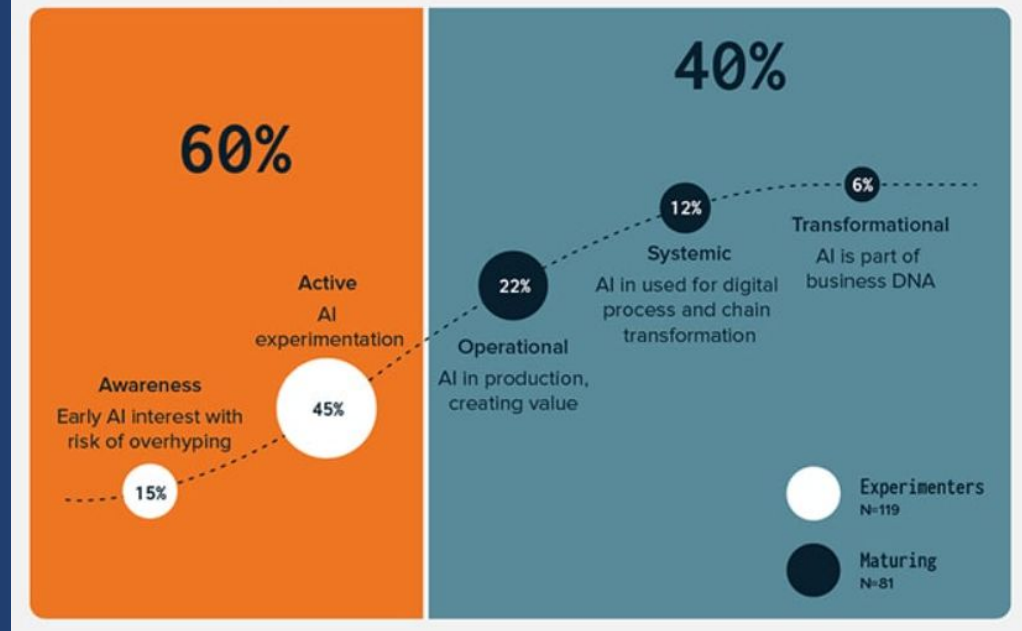


Figure 1: LTX 2022, highlights from our executive survey: The path to AI Maturity. Available Online at <https://www.ltx.ai/blog/highlights-from-our-executive-survey-the-path-to-ai-maturity/> [Accessed 23/08/2022]



Summary

- There are several key advantages of platform deployment compared to single application integration
- Platform technology has the potential to address the needs of AI deployment in healthcare
- Strategy for implementation is a key factor for determining successful implementation
- Patient, healthcare professional and service level impact understanding and evaluation is essential



Thursday 08th September
14:40-15:40 Room: Delhi



Workshop 9: Can we holistically quantify financial returns for investment made in hospital AI?

Prateek Bharadwaj, Global Market Access Manager, Radiology, Bayer AG
Michael Blankenburg, Market Access Manager, Radiology, Bayer AG
Juan Gutiérrez Alliende, Medical Lead EMEA Digital Solution Business, Radiology, Bayer AG

Thank You

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