

AI

Deep imaging

Quantitative biomarker for clinical decision making

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English, October 2017

54% of healthcare leaders
see an **expanding role of AI**
in medical decision support.*

* The future of healthcare 2nd October 2017, The Economist
(<http://thefutureishere.economist.com/thefutureofhealthcare-infographic.html>)

What does a radiologist do?



*UK Radiologist workforce
grew by **5%**, but number of
CT scans increased by **29%.****

* The clinical radiology UK workforce census 2015,
The Royal College of Radiologists

*When radiologists are forced to work faster, their **average interpretation error rate rises by 16.6%.****

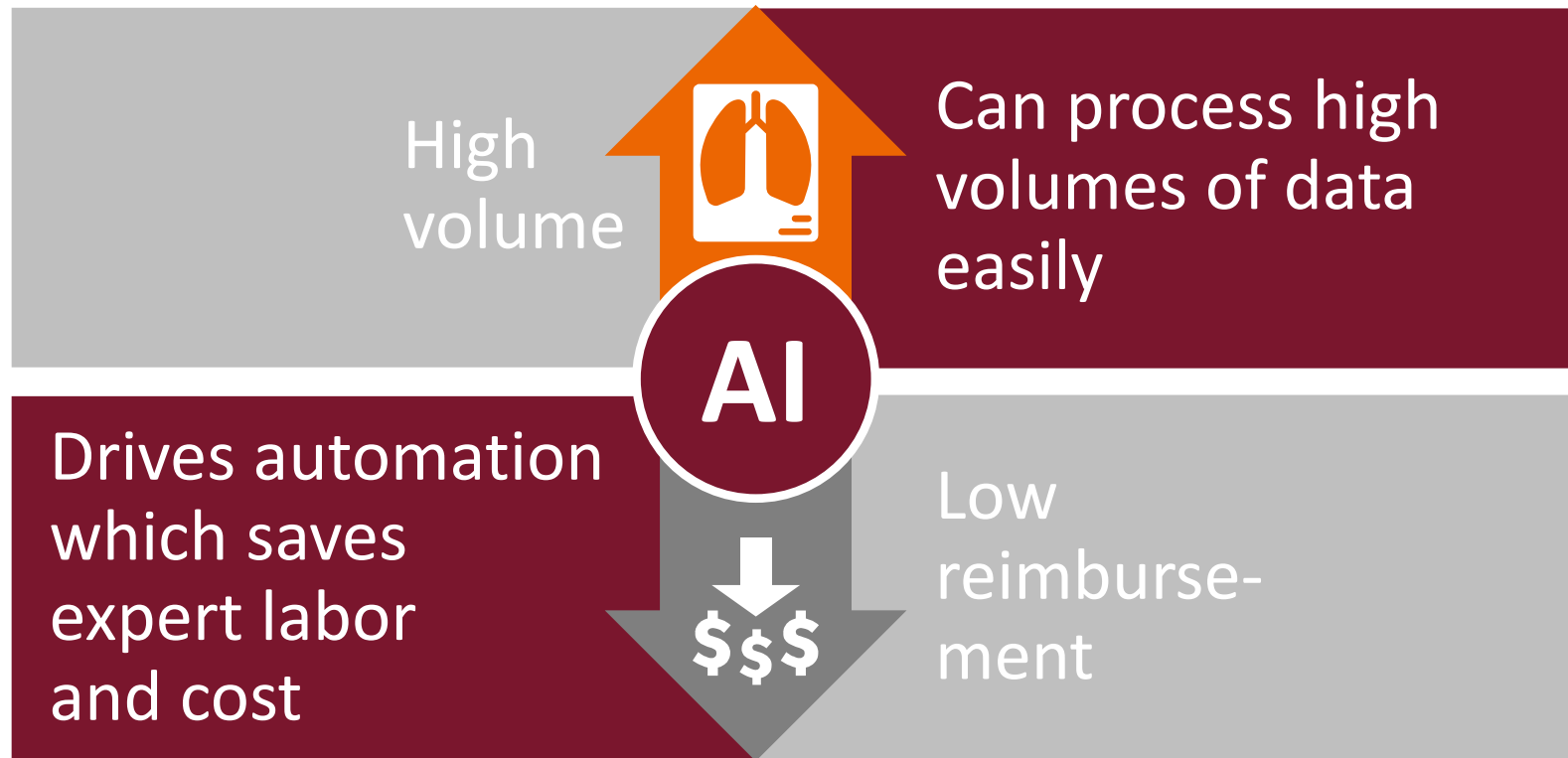
* Faster Reporting Speed and Interpretation Errors: Conjecture, Evidence, and Malpractice Implications, Journal of the American College of Radiology, Volume 12, Issue 9, September 2015, Pages 894-896

*The average radiologist
is interpreting an image every
3–4 seconds, 8 hours a day.**

* Edward Choi et al.: Medical Concept Representation Learning from Electronic Health Records and its Application on Heart Failure Prediction, Atlanta, USA, 2016.

AI helps radiologists by providing accelerated image interpretation

Applying AI to medical imaging is a powerful strategy to deal with high volumes and low reimbursement



Radiology is characterized by high volumes of examinations at low reimbursement



AI based image analytics can drive automation – helping to read chest imaging faster

Abnormality highlighting

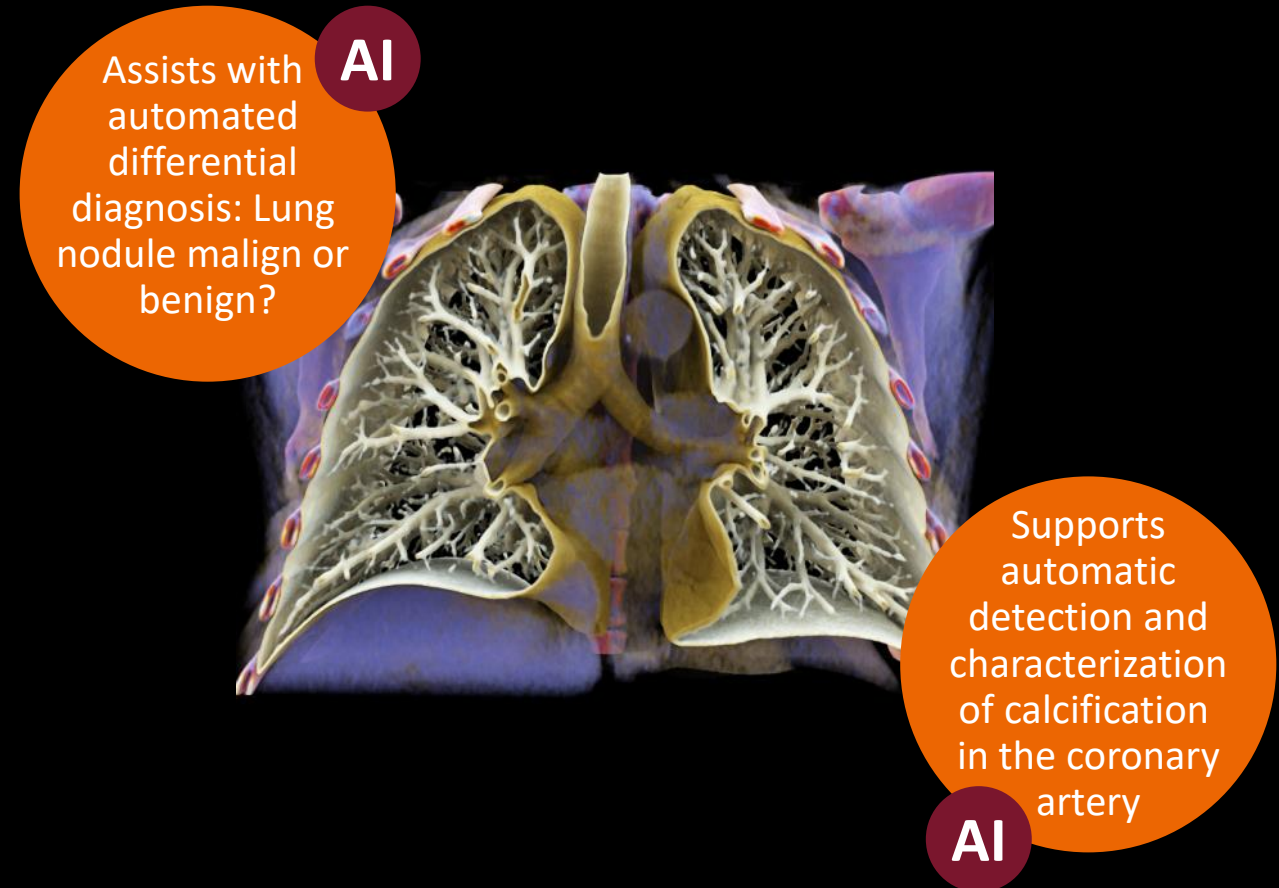
Helps avoid missed abnormalities and identify incidental findings.

Augmented reporting

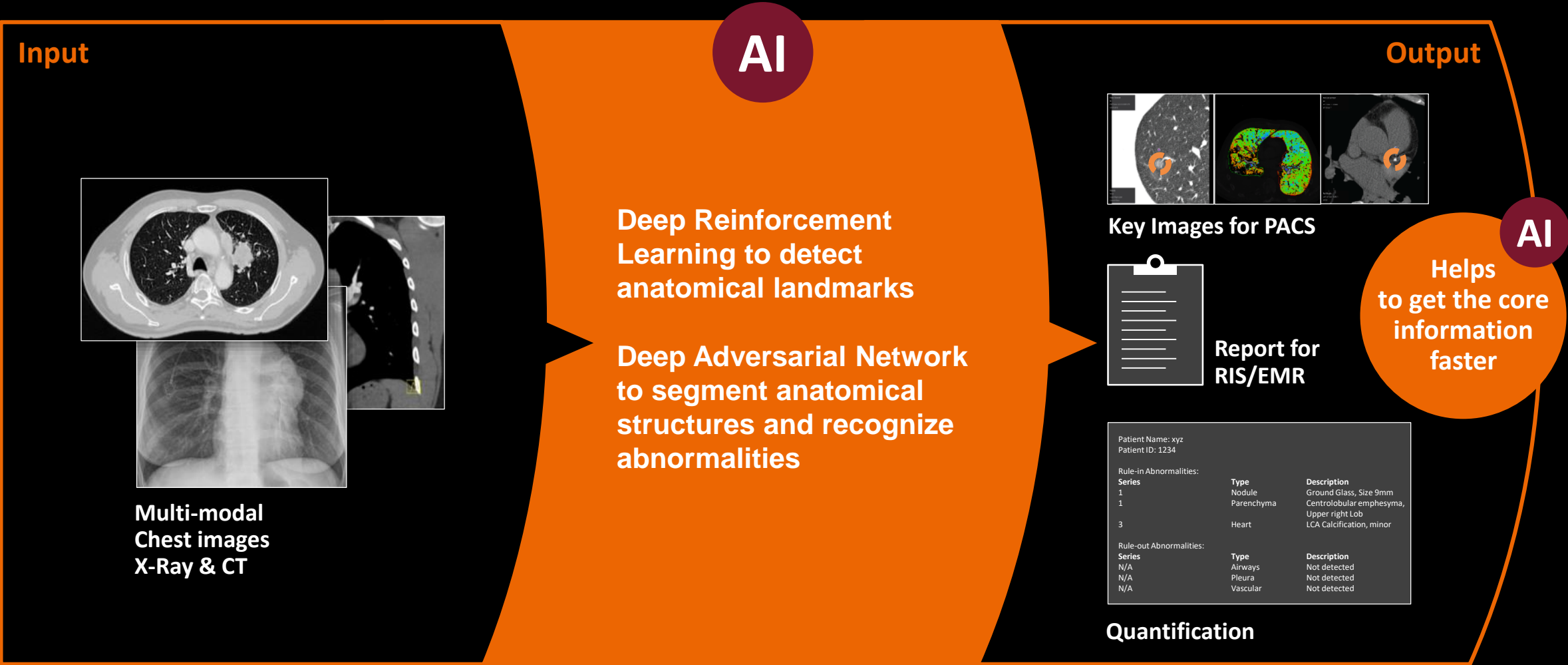
Provides standardized, reproducible quantitative reports using automated information extraction from images.

Image-based biomarker

Assists with differential diagnosis for lung disease



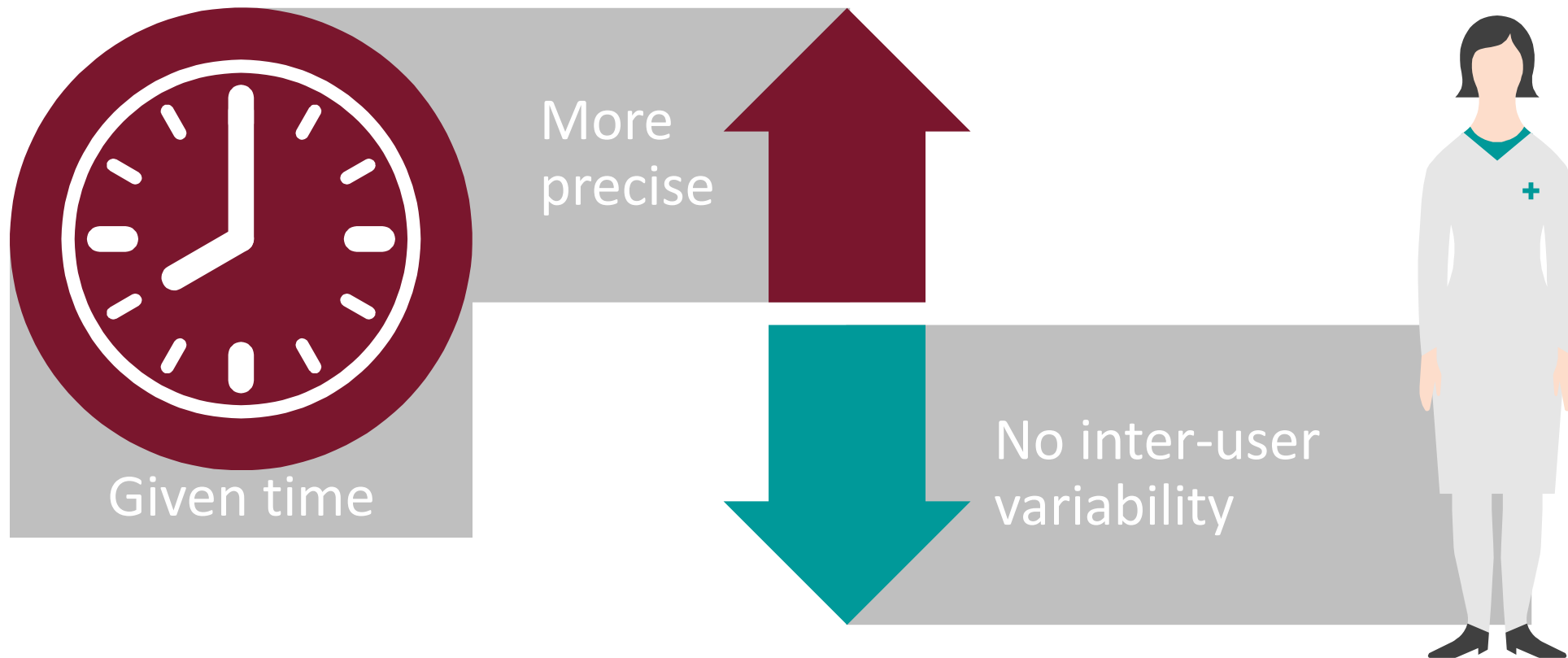
Deep learning algorithms help to fuel AI technology in chest imaging



This feature is based on research, and is not commercially available. Due to regulatory reasons its future availability cannot be guaranteed.

**AI helps radiologists by providing
more precise
image-based biomarkers**

AI helps increase precision in a given amount of time – providing results independent from user skills



Artificial Intelligence technology assists prostate cancer risk assessment and amplifies reporting capabilities

Augmented mpMRI reading

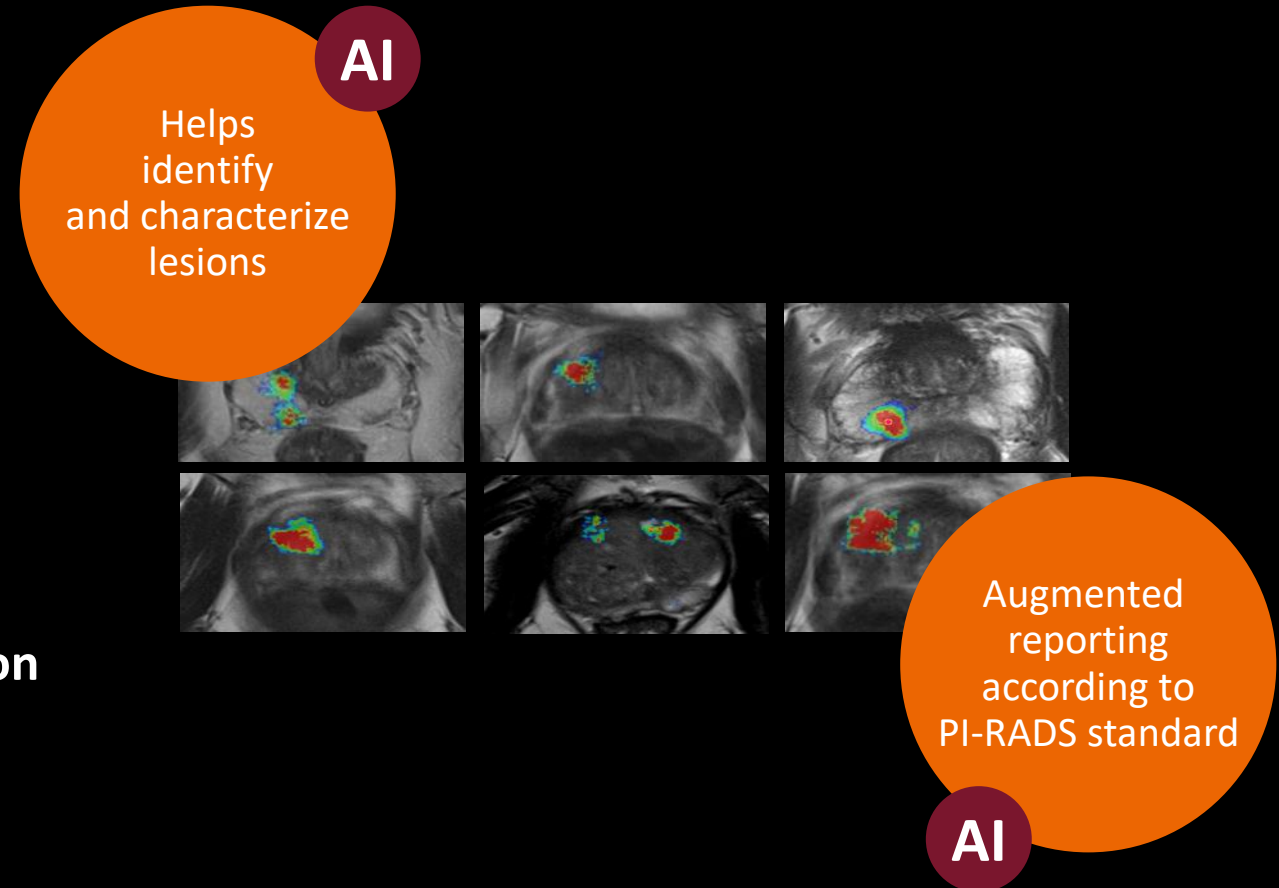
Leverage algorithms trained on expert findings and correlations with pathology

Augmented reporting

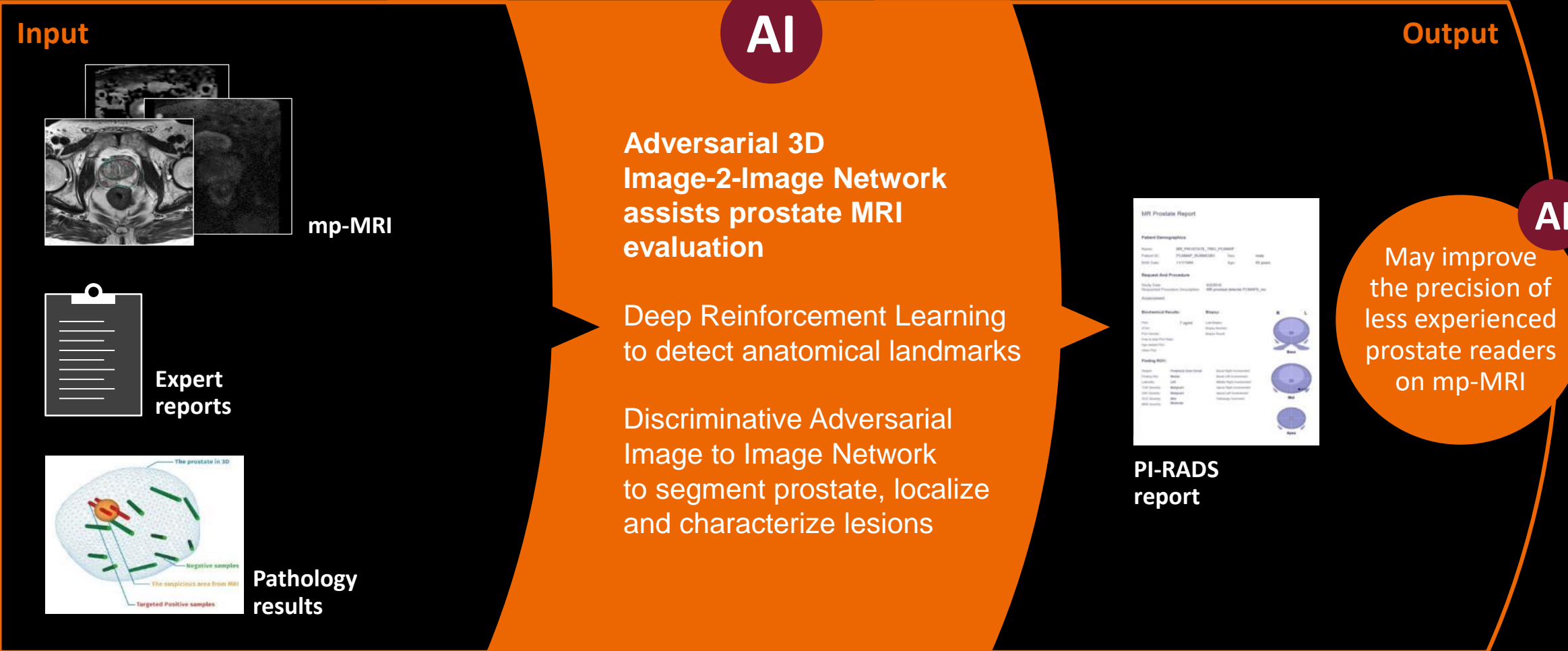
Pre-populate PI-RADS (Prostate Imaging Reporting and Data System) structured report

Enable broad access to mpMRI for early detection of clinically significant prostate cancer

Enable fast, high-quality adoption beyond specialist centers



Deep learning technology drives AI-assisted prostate mpMRI reading



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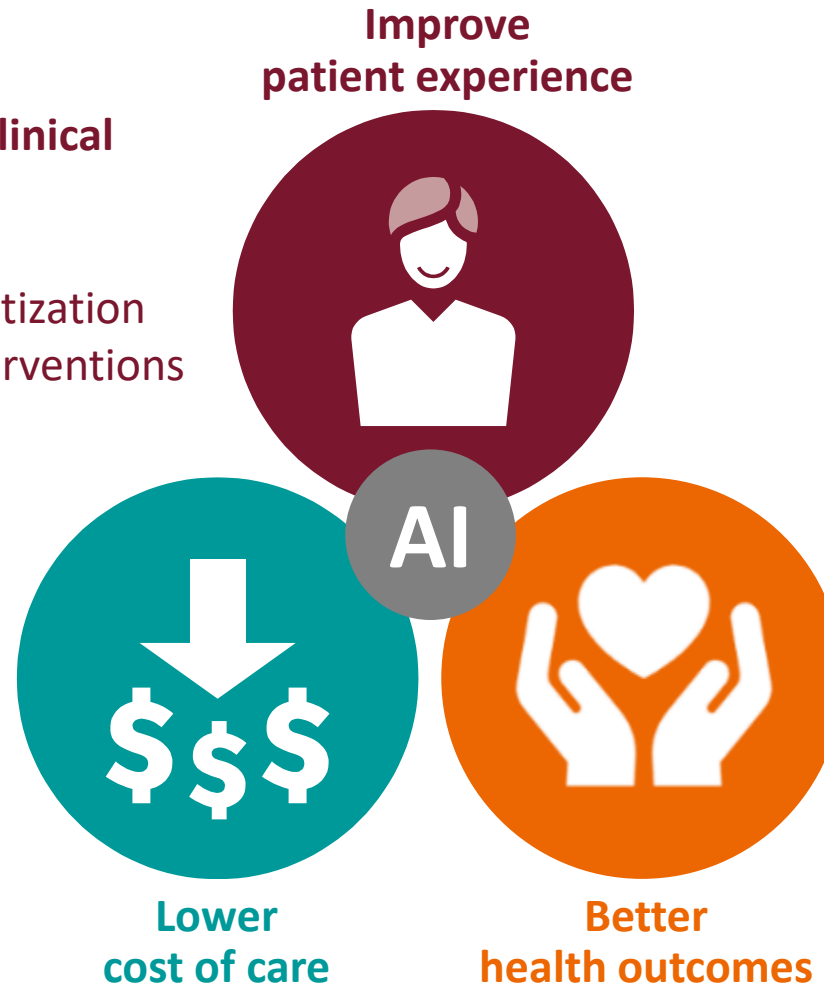
Artificial Intelligence:

AI is vital for value-based care

AI drives improvement of clinical pathways

by

- complex/acute case prioritization
- avoiding unnecessary interventions



AI drives efficiency and productivity

by enabling

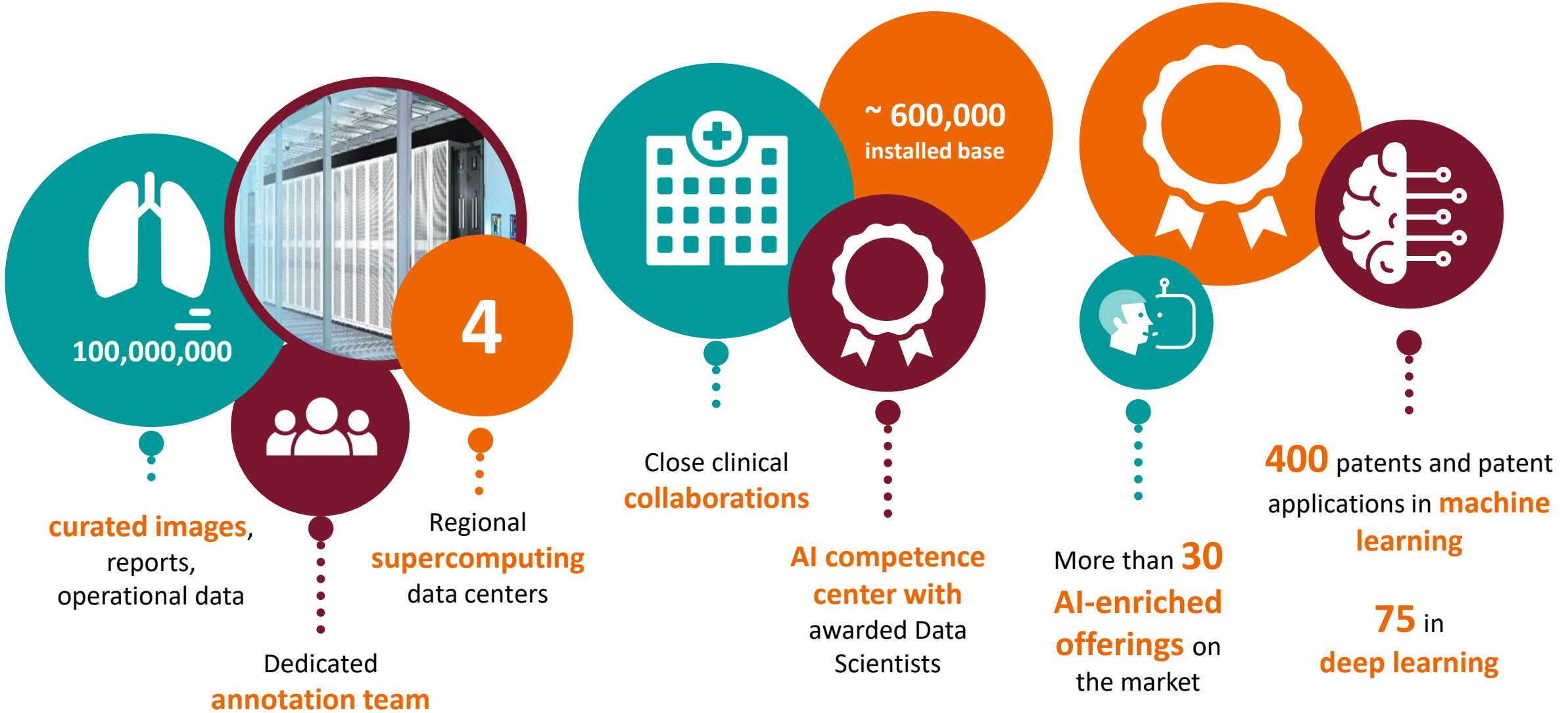
- automation and standardization through image analytics tactics

AI drives quality of care

by increasing

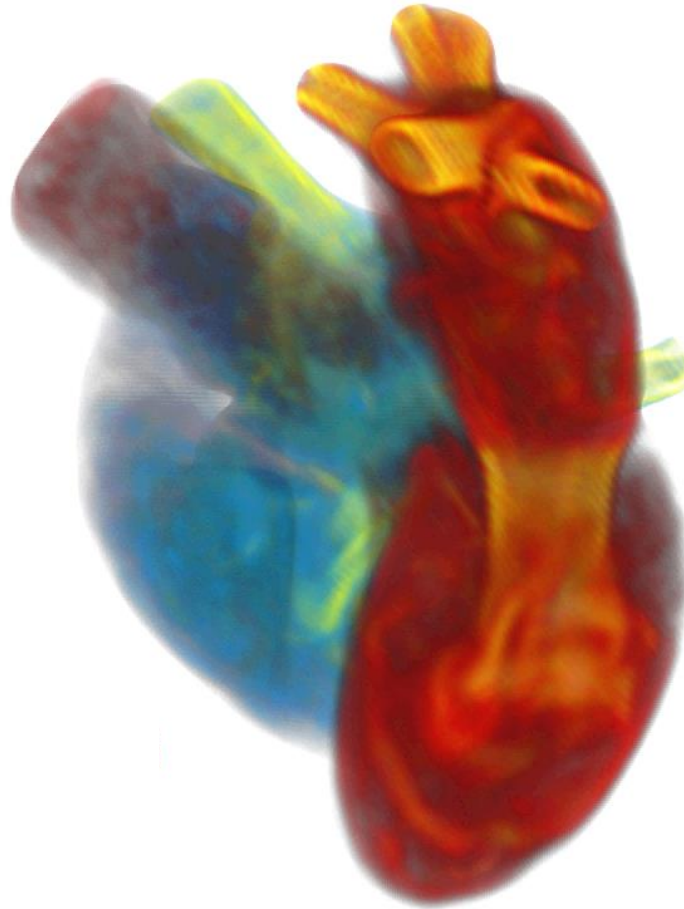
- diagnostic precision through quantitative imaging
- personalization

Siemens Healthineers: We have what it takes in AI



In the future, AI can do so much more

Digital twin –
lifelong, personalized
physiological model
updated with each
scan, exam



**Patient-centric,
holistic
treatment**

Joerg Aumueller

**Global Product Management Artificial Intelligence
HC DI MSC**

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