

Transforming global healthcare with AI

Sander Timmer, Ph.D.
Artificial Intelligence in Health and Life Sciences
WW Industry Solutions Manager
Microsoft Corporation

Follow us @Health_IT
Follow me @swtimmer
Sander.Timmer@Microsoft.com

AI isn't just another piece of technology. It could be one of the world's **most fundamental** pieces of technology the human race has ever created.

— Satya



Computers **Understanding** the World



AI is not a hype, it is real!

96%

RESNET vision test
152 layers

5.1%

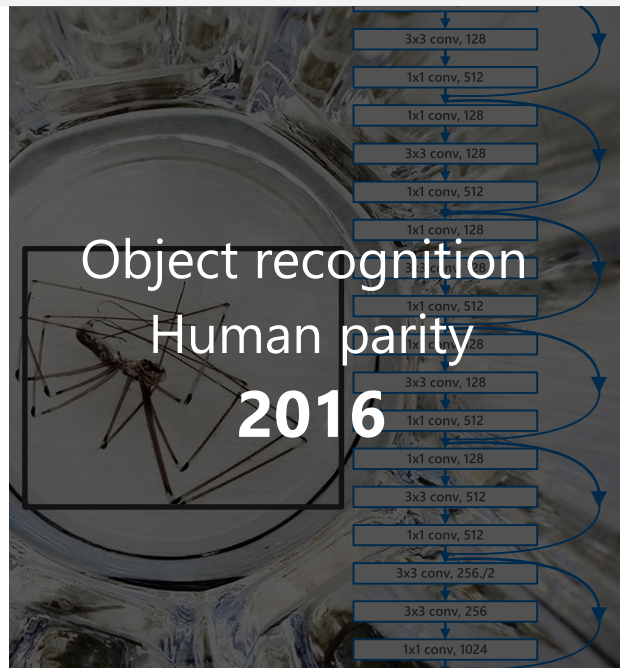
Switchboard speech
recognition test

88.493%

SQuAD reading
comprehension test

69.9%

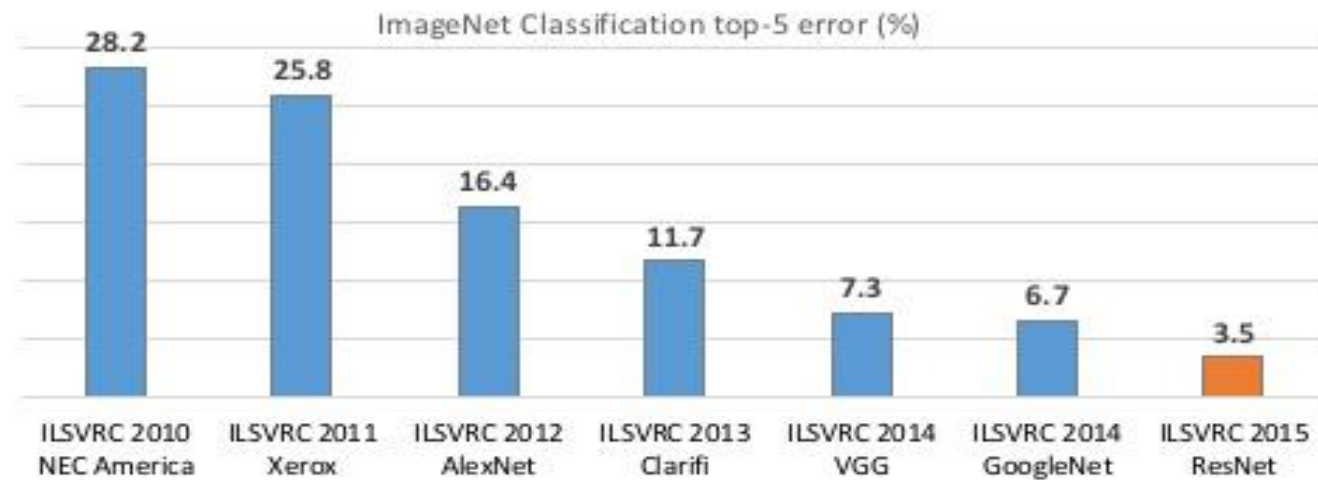
MT
research system



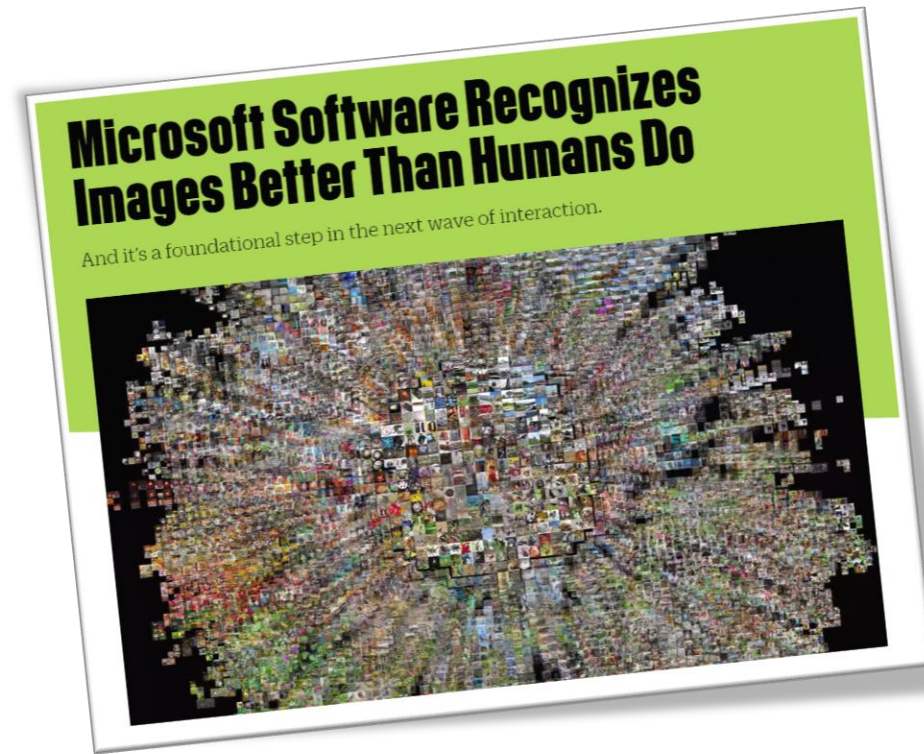
AI improvements are going fast..... very fast!

A “deep” revolution in machine learning

ImageNet: Microsoft 2015 ResNet



Microsoft had all 5 entries being the 1-st places this year: ImageNet classification, ImageNet localization, ImageNet detection, COCO detection, and COCO segmentation



Each of these network architectures have unique approach to different problems
ResNet – residual network that uses residual learning (shortcut to another layer)

"People will only use technology they trust."

Brad Smith
President & Chief Legal Officer
Microsoft Corporation



Fairness



Reliability
& Safety



Privacy &
Security



Inclusiveness



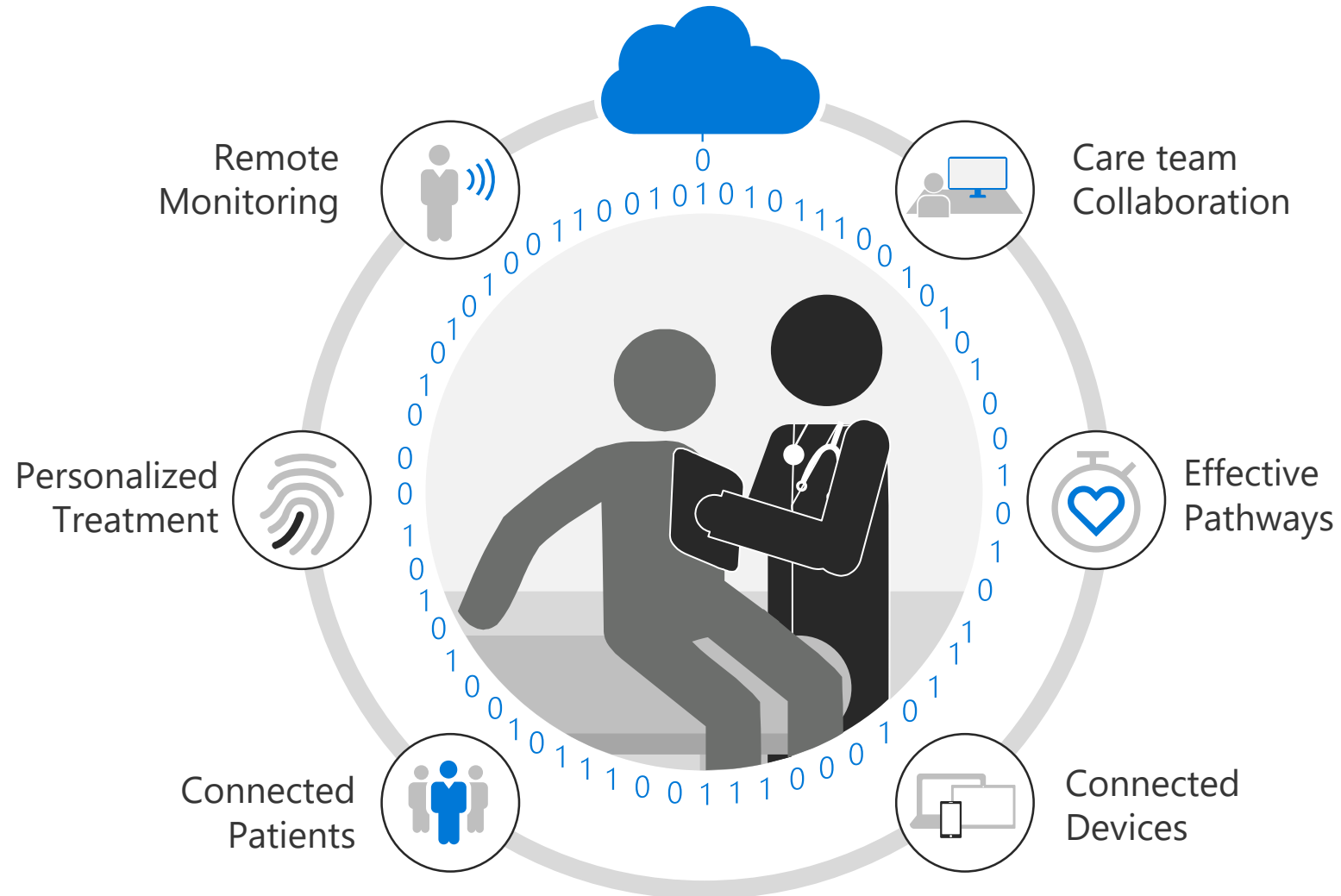
Transparency



Accountability



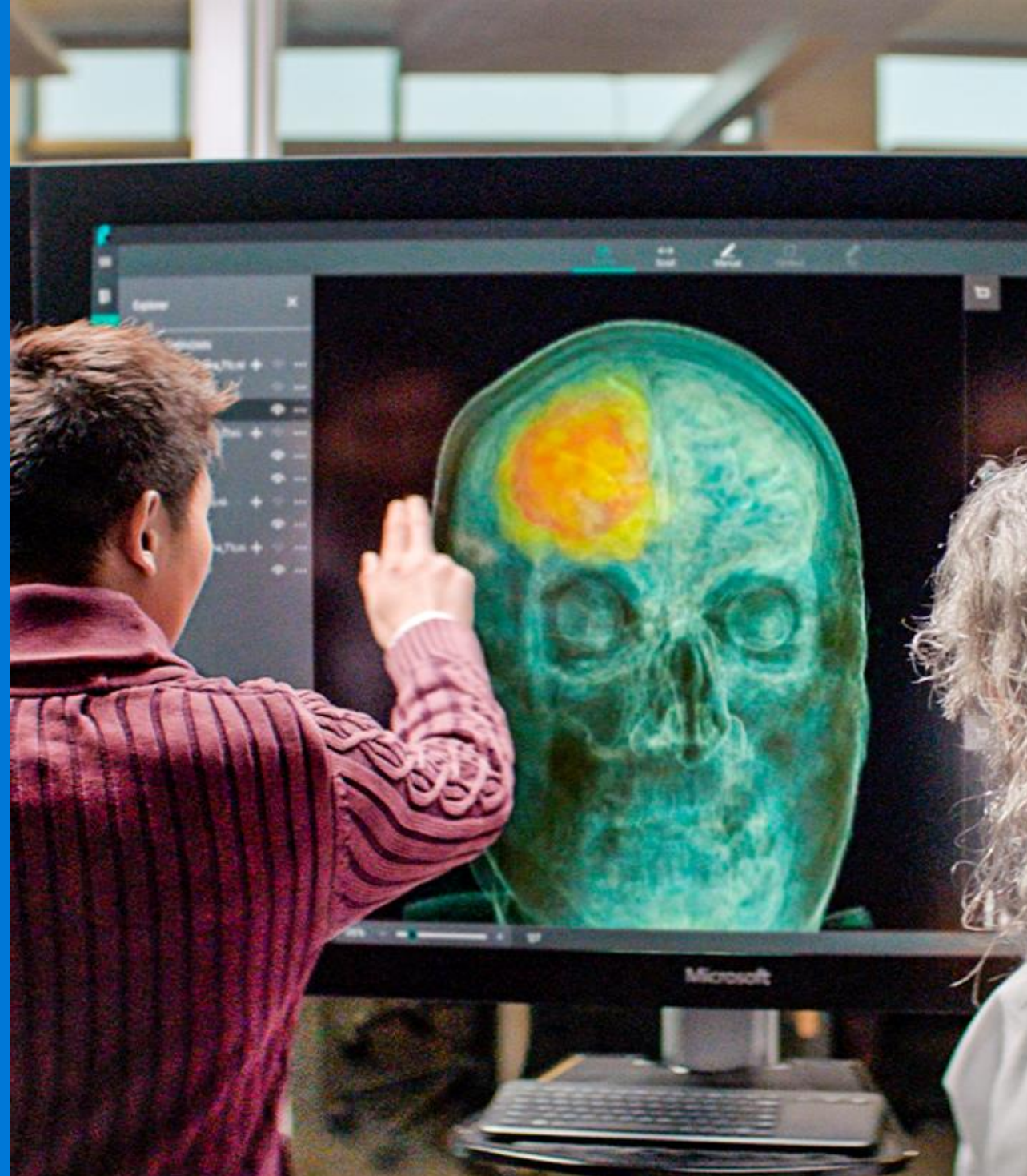
Patient-center approach to health





The evolution of Health systems towards:

- Smart Data
- New experiences and conversations
- Precision medicine





HUS

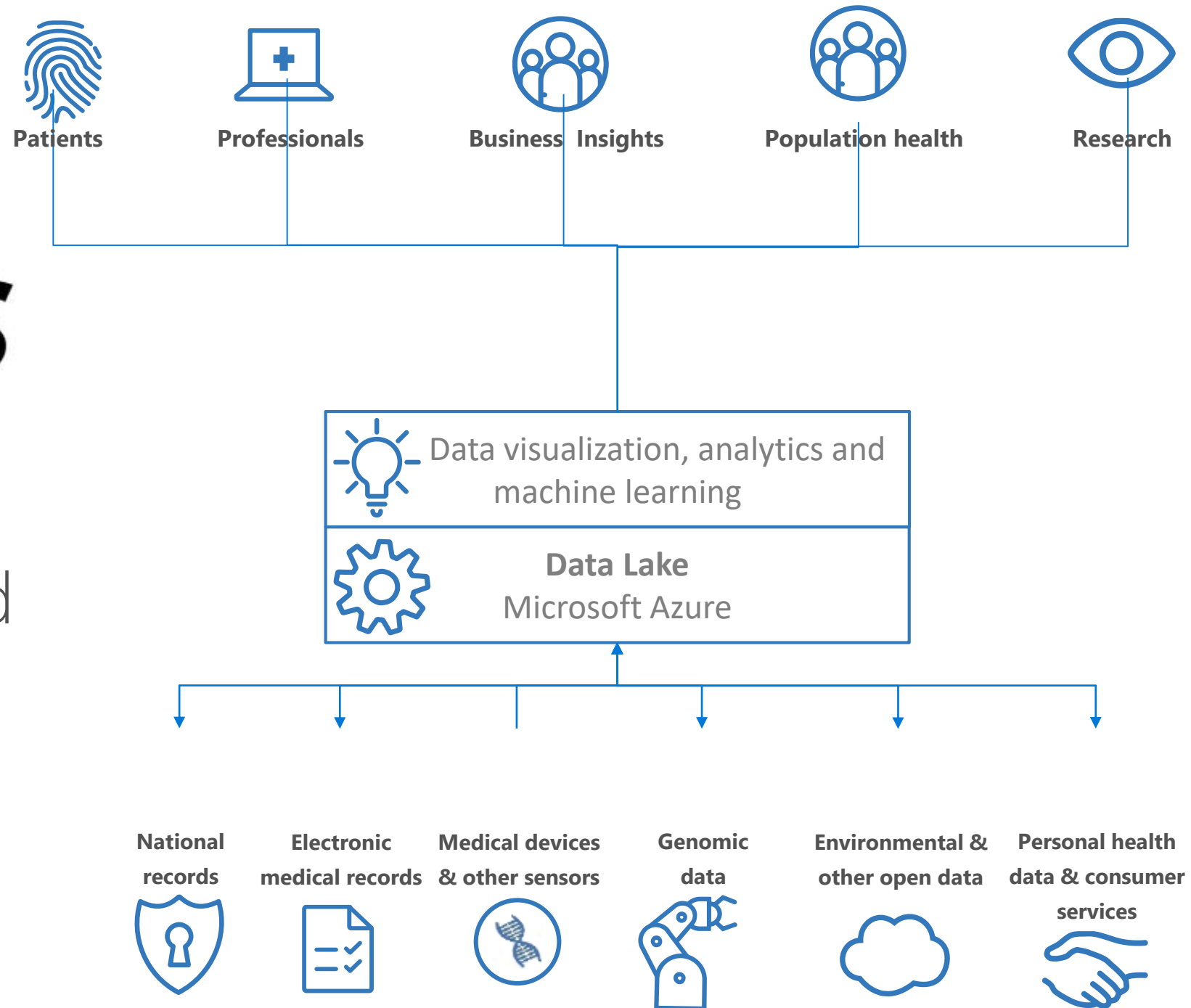
HUS pioneering in
utilising health and
wellbeing data

(open, scalable, compatible)



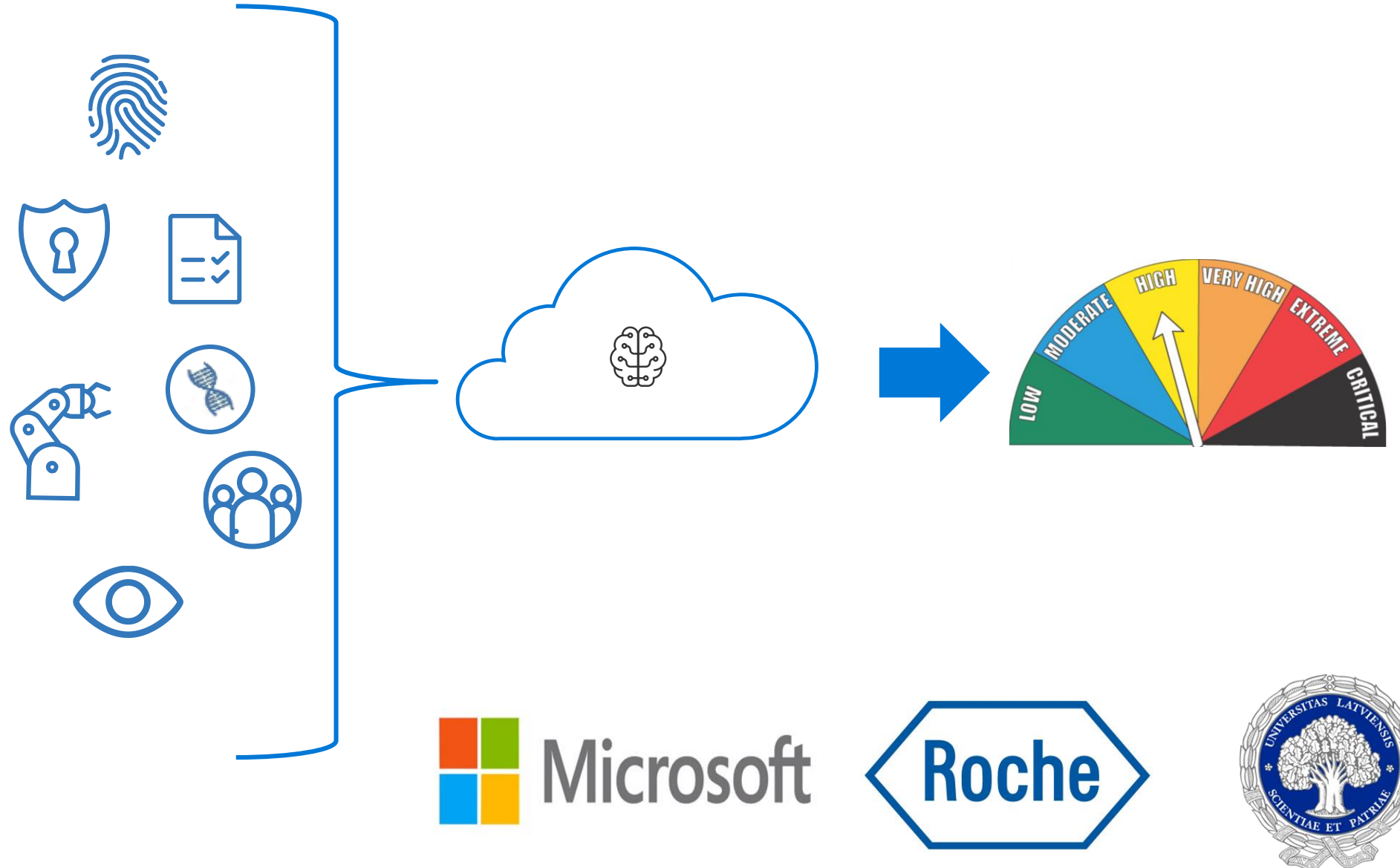
Microsoft

<http://democratizing-ai-in-health.com/>



Latvia: Data Lakes for Precision Medicine

Can a well characterized pool of patients and healthy individuals be used to train a country-wide lung cancer risk prediction?



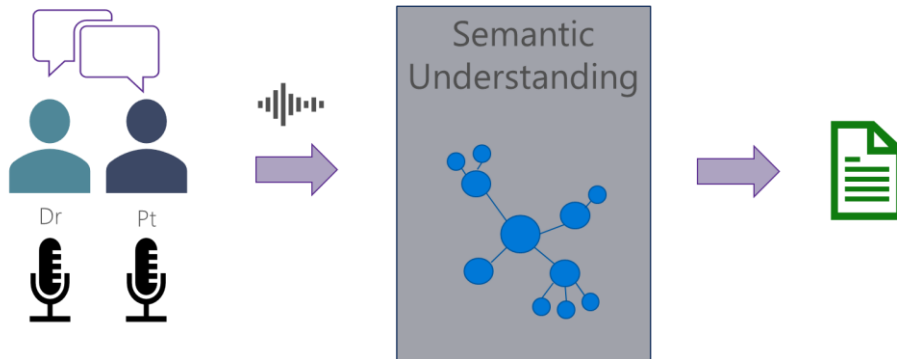
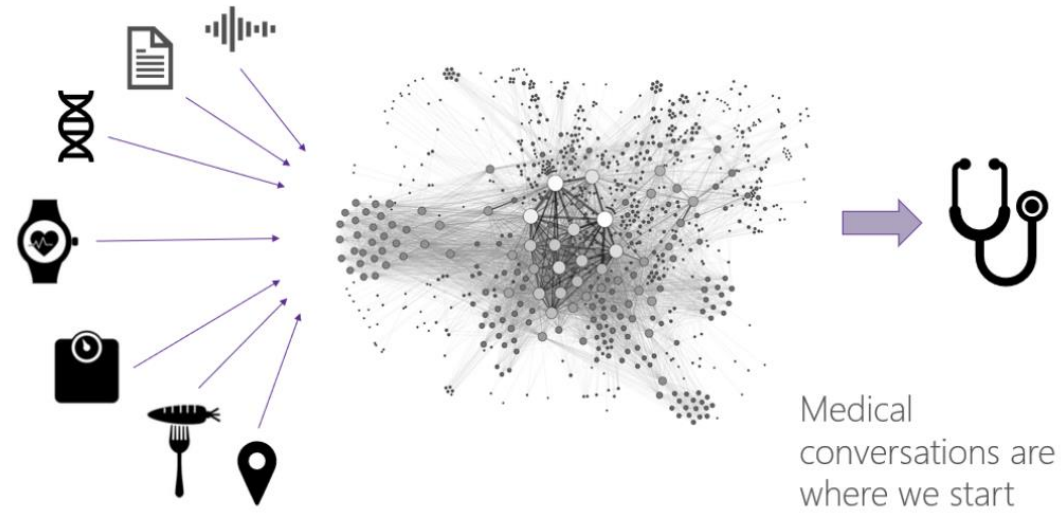
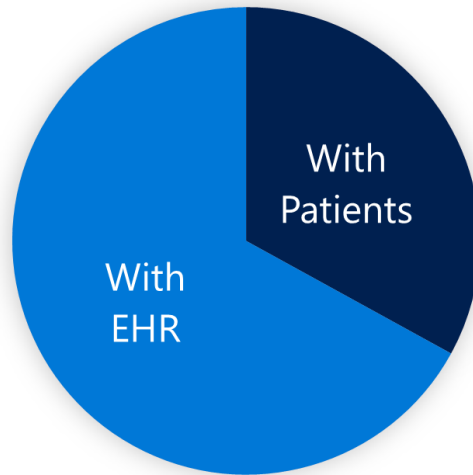
The evolution of Health systems towards:

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- Precision medicine



Medical conversation into Medical intelligence

A Doctor's Time



EmpowerMD 
UPMC LIFE CHANGING MEDICINE



Project EmpowerMD

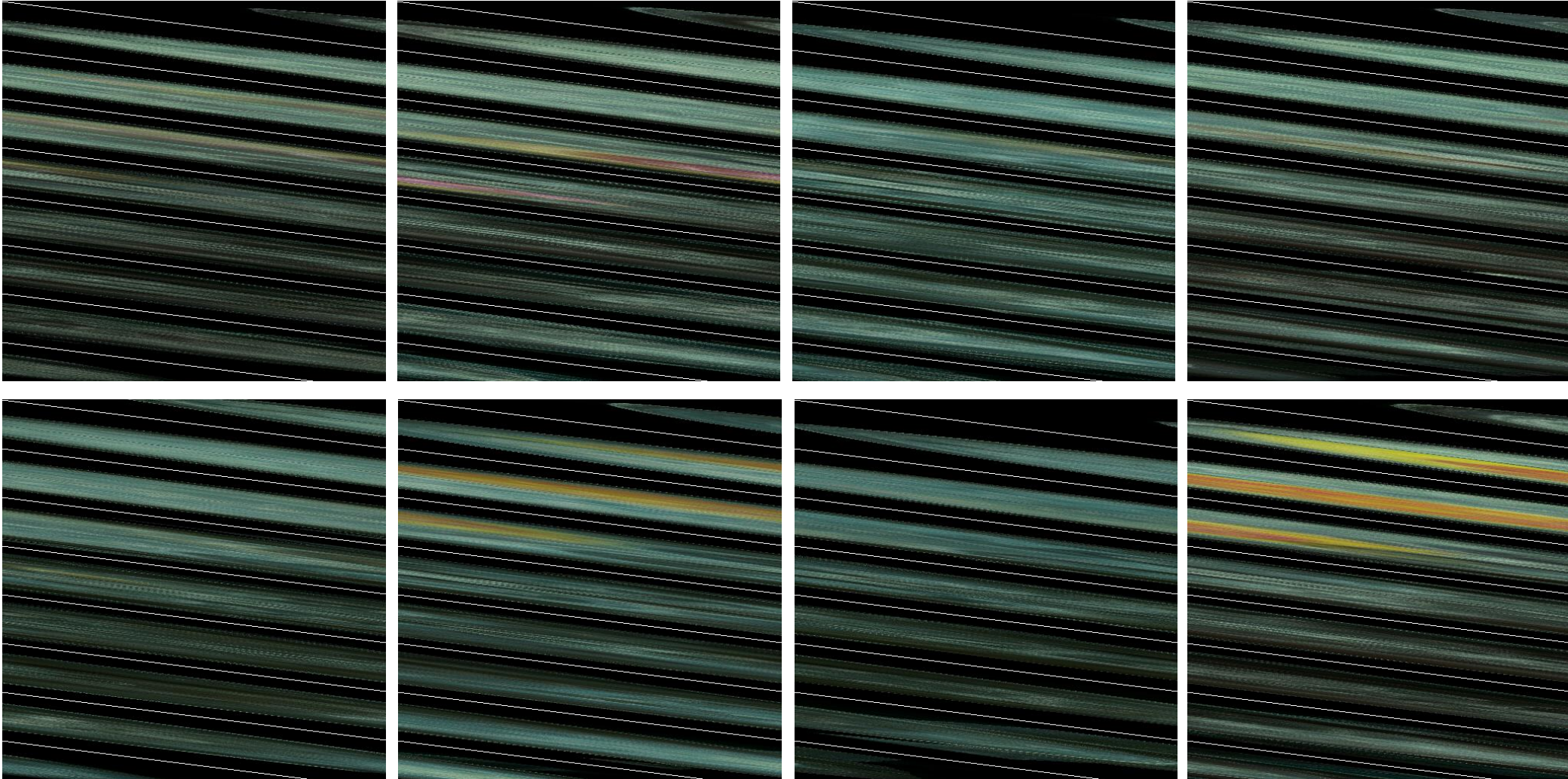
Medical conversations to medical intelligence

The evolution of Health systems towards:

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Project InnerEye: a decade of research in automatic, semantic segmentation of medical images

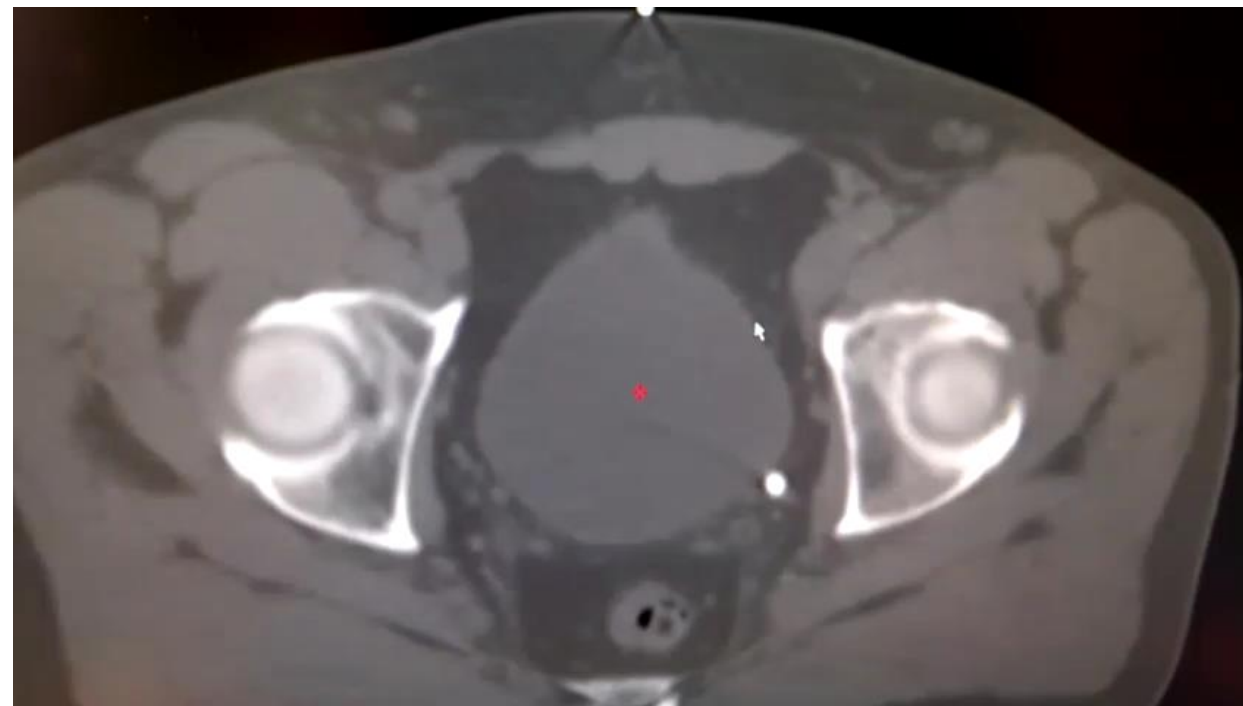


MRI-based segmentation of: oedema, active tumor and necrosis

Delineating tumors and anatomy in images by hand is arduous, costly, and inaccurate



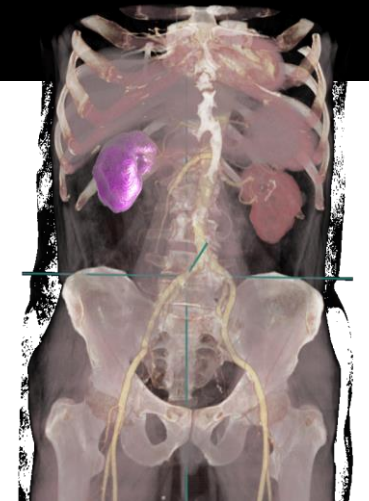
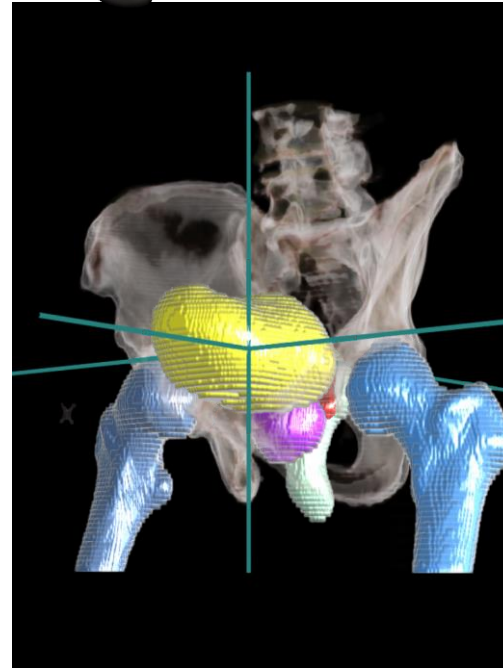
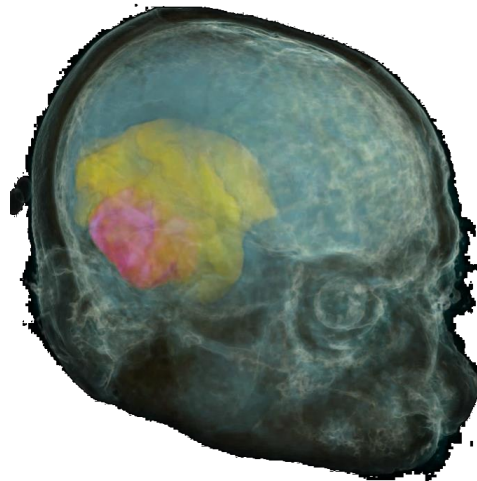
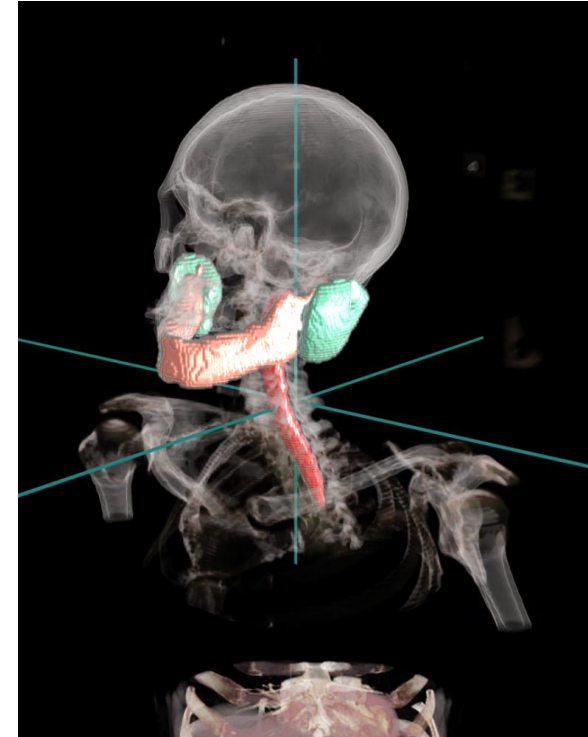
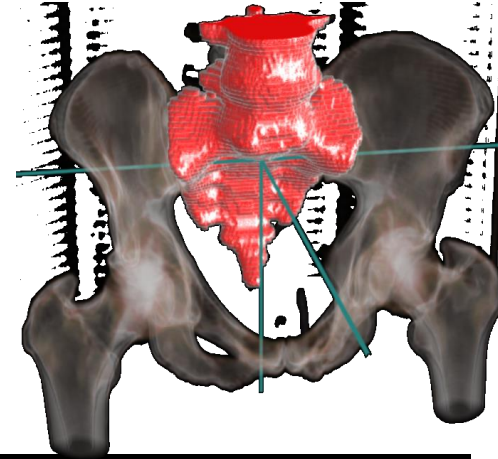
A linear accelerator (linac) for radiotherapy delivery



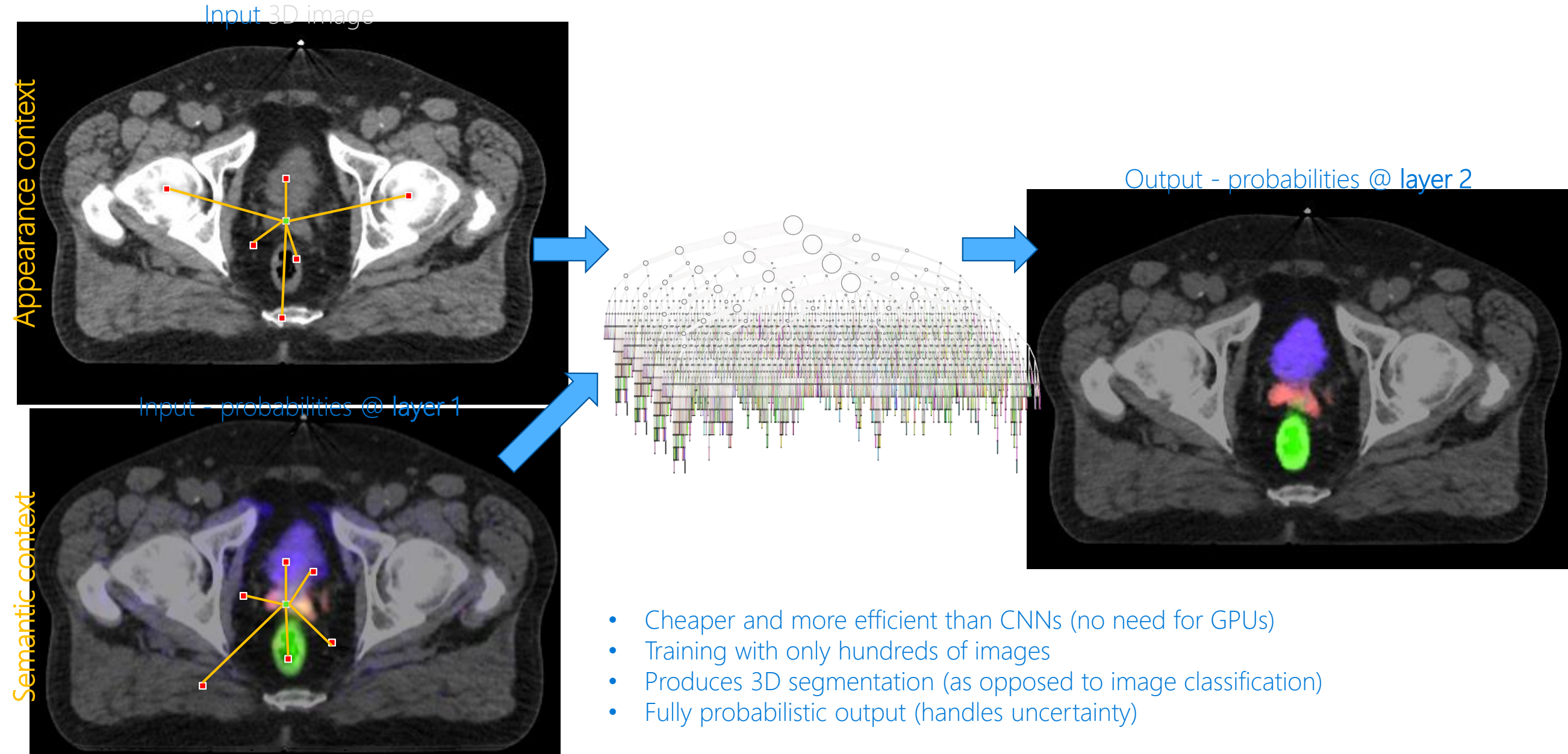
Tracing anatomy in a popular commercial tool

AI for image segmentation

Efficient segmentation
of anatomy and
pathology to empower
clinicians



Deep Decision Forests for semantic segmentation



The new patient paradigm

Preventative
Connected
Continuous





Mixed
Reality

A visualization of a mountain peak, likely Mount Everest, under a starry night sky. The mountain's surface is partially covered by a dense, glowing point cloud of blue and white dots, representing a digital overlay on the real-world scene.



Artificial
Intelligence

A visualization of a mountain peak, likely Mount Everest, under a starry night sky. The mountain is shown with realistic textures and colors. Two data points are annotated: 'Elevation 25,643'' with a line pointing to the peak, and 'Temperature -22°C' with a line pointing to a small white square on the mountain's slope.



Quantum
Computing

A visualization of quantum computing concepts. It features a network of blue nodes connected by lines, representing a quantum circuit or data flow. A central Bloch sphere is shown with a red and blue ribbon winding around it. Various mathematical symbols are scattered throughout: y , z , ϕ , ψ , and γ .