



## Artificial Intelligence (AI) Introductory Webinar for Healthcare Professionals.

AFRICA  
TELEHEALTH  
COLLABORATION



*In collaboration with the Future of South African Healthcare Inc (FOSHI).*

June 2025  
[AudereNow.org](https://AudereNow.org)



audere  
Africa

# Agenda

- ❖ Who are we and why are we here?
- ❖ 🤖 Interactive Activity: Human/AI Trust
- ❖ What is Artificial Intelligence?
- ❖ Use cases for AI in the real world
- ❖ Nothing about us, without us
- ❖ Cautious optimism: LLMs changing the game - hype or real?
- ❖ Call to action
- ❖ Q&A



# Today's Cautious Optimists



Dino Rech

Chief Executive Officer



Sarah Morris

Chief Product Officer

- **Nonprofit:** founded by Gates foundation support in 2018. Catalytic development support from the Gates Foundation, Patrick J. McGovern Foundation, and other global donors.
- **Global team:** co-headquartered in South Africa + US
- **Field-tested:** flagship HealthPulse AI toolkit verified > 1.3 Million rapid tests with computer vision in 11 countries.
- **Extending equitable access:** Self-care from Anywhere multimodal AI (LMs, CV, ML) toolkit for differentiated HIV prevention and treatment, SRH, mental health, TB, STIs, and a growing range of use cases for AGYW, ABYM, PLHIV, Key pops, and more!



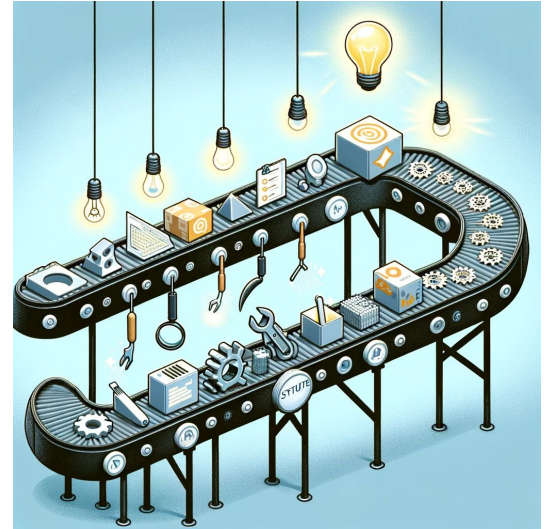




What would I  
ONLY trust a  
**human** to do?



What would I  
ONLY trust  
Artificial Intelligence  
(**AI**) to do?



## What would you ONLY trust a HUMAN to do?







What is artificial intelligence?

# A brief history of Artificial Intelligence (AI)



## Ada Lovelace

Widely considered the first computer programmer- She worked on Charles Babbage's early mechanical general-purpose computer, the Analytical Engine.



## John McCarthy

The phrase "artificial intelligence" found its origins in 1956, attributed to computer scientist John McCarthy.



## Bill Gates

1985 first Windows version with a goal of PC in every home.

1950

1956

1983

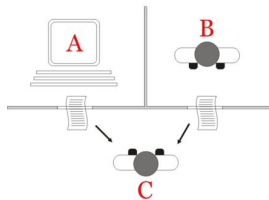
1985

2010

Mid  
1830s

## Alan Turing - the Turing Test

Alan Turing published his work "Computer Machinery and Intelligence" which eventually became The Turing Test.



## Elaine Rich

An AI researcher, she published one of the first AI textbooks, "Artificial Intelligence," in 1983.



## Access

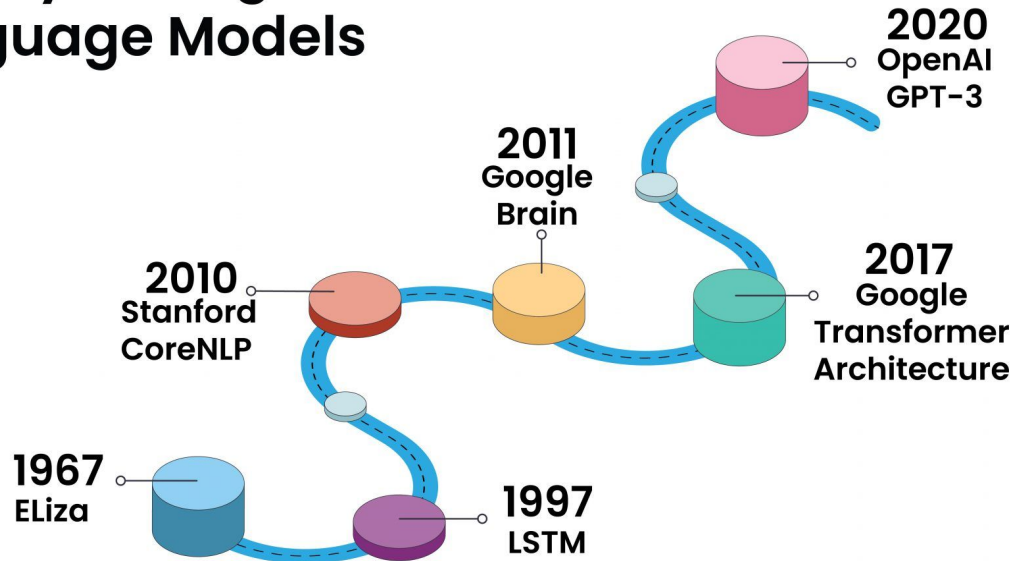
Mobile-first  
access to  
internet in LMIC



# A brief history of Artificial Intelligence (AI)

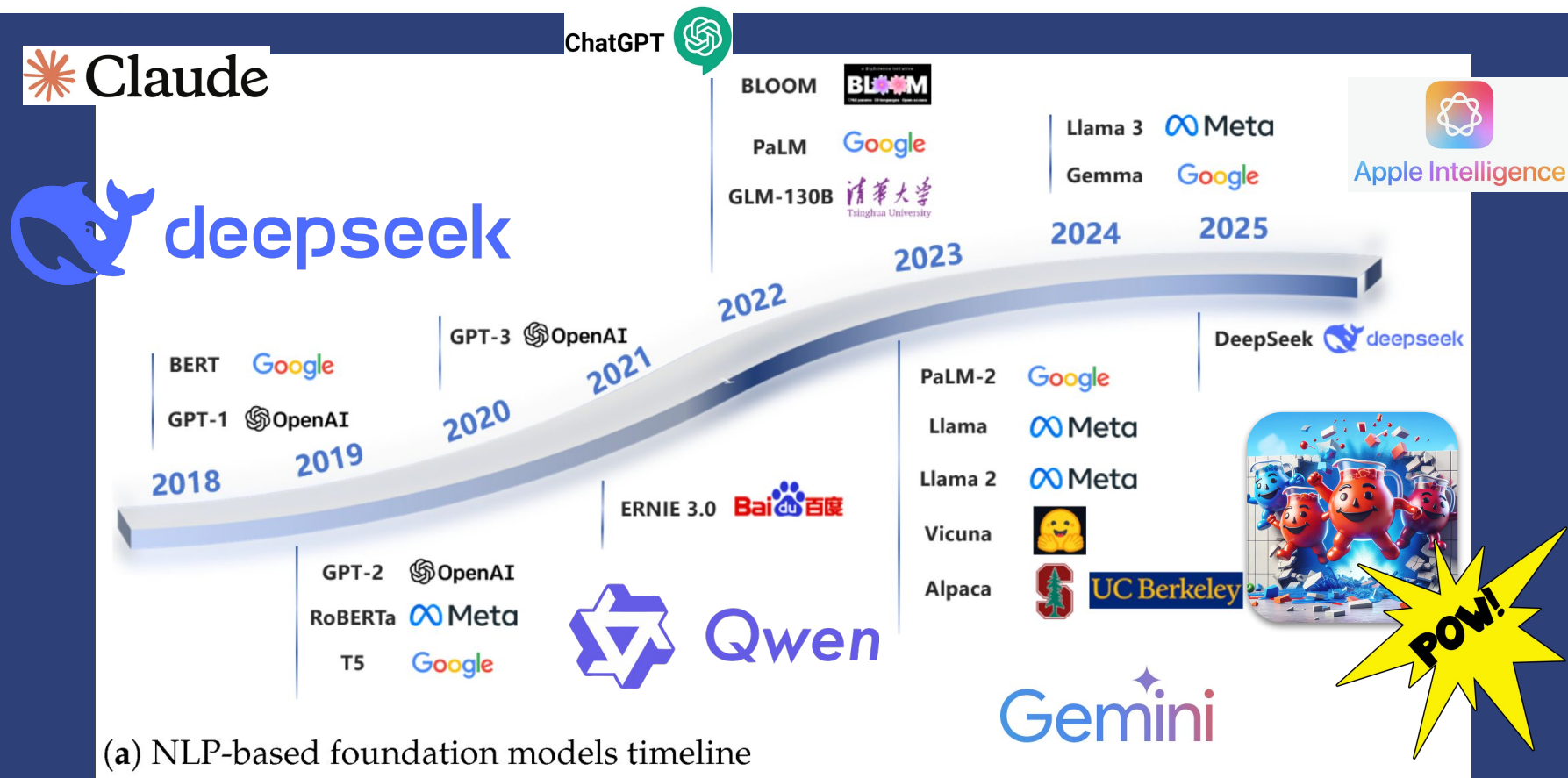
**LLMs didn't  
just appear in  
2020 -  
research &  
enabling  
innovations  
date back to  
the 1960s**

## History of Large Language Models





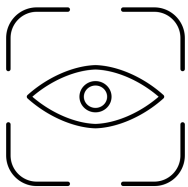
# A brief history of Artificial Intelligence (AI)



(a) NLP-based foundation models timeline

# What are the various types of AI

See



**Computer Vision (CV)**

Image Recognition  
Visual Patterns

Hear



**Automatic Speech Recognition (ASR)**

Acoustic Signatures  
Speech recognition

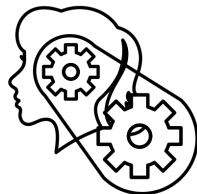
2-way Communication



**Language Models (LLM, etc)**

Digital Personal Assistants  
Conversational Chatbots  
Natural Language Processing (NLP)

Reason



**Big Data Analytics (BDA)**

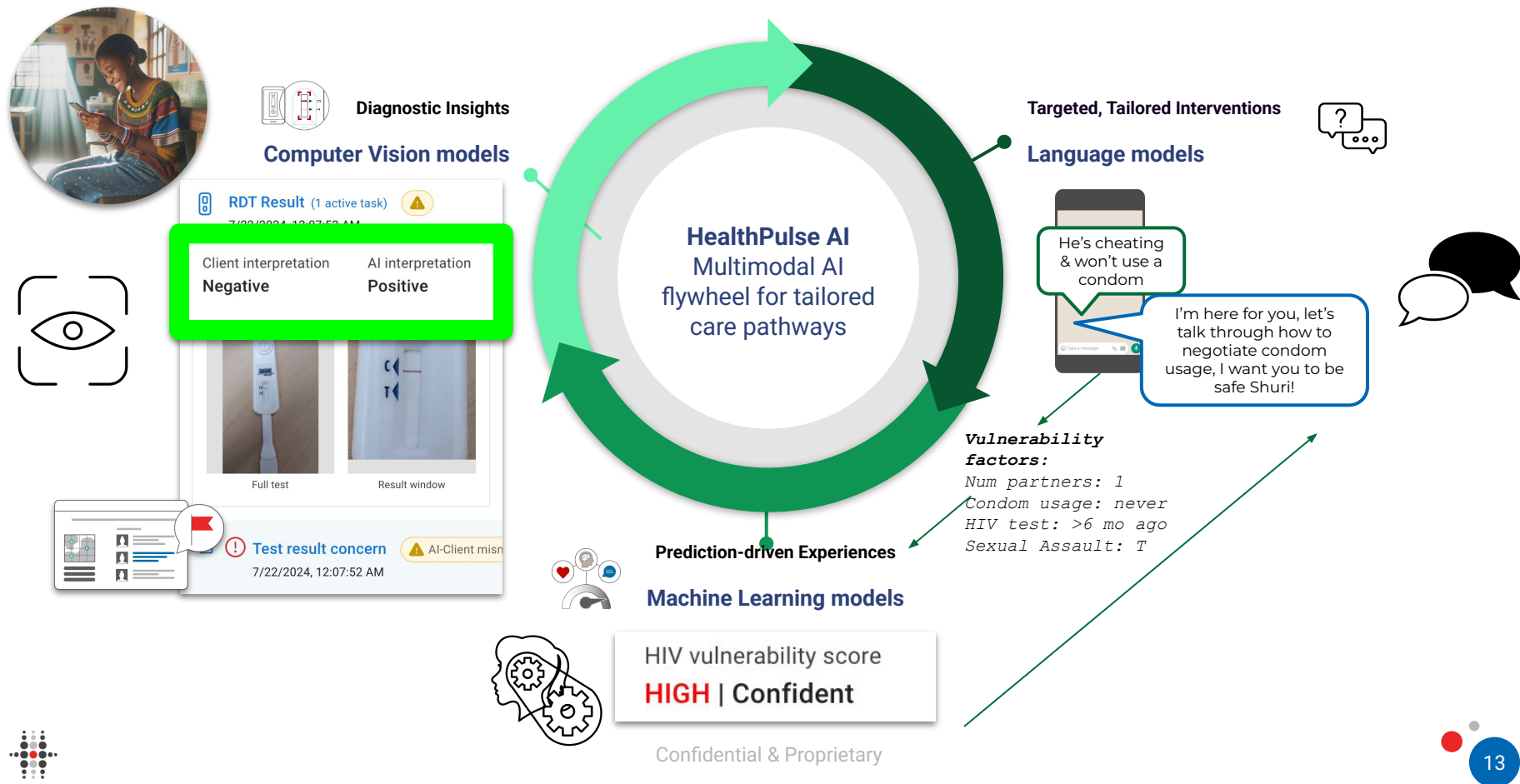
Data Pattern Recognition  
Predictive Modeling



**Artificial General Intelligence (AGI) &  
Multi-modal inputs/outputs**



# Example leveraging multiple types of AI in tandem



# What pillars lead to trusted AI?

## **Explainability**



Transparency about how the model works and biases that may exist so humans can understand and trust the results and outputs created by algorithms.

## **Reproducibility**



The ability to achieve the same or similar results using the same dataset and AI algorithm within the same environment.

## **Observability**



Monitoring, analyzing, and visualizing the states, inputs, and outputs of AI models to ensure their correctness, reliability, and effectiveness in production.

## **Privacy + security**



Preserve the privacy and security of end users particularly when the end users may be vulnerable populations.

## **Bias mitigation**



Understand the data you are using, ensure that it is representative of all your users and is the right data for the problem you are trying to solve.

## **Empathy**



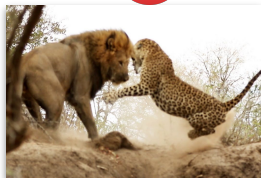
Build with empathy to ensure that the solution is user centered.



# How does AI learn?

## Naive Baby

*Only knows what it has seen so far - not much!*



## Training Data

*Knowledge & skills: what is correct, what is incorrect*



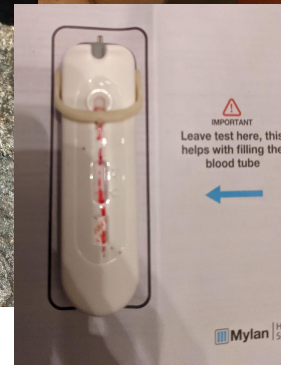
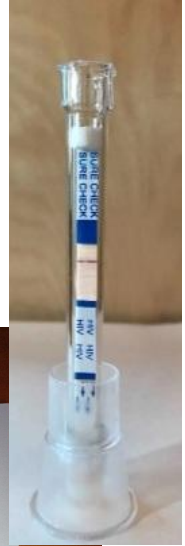
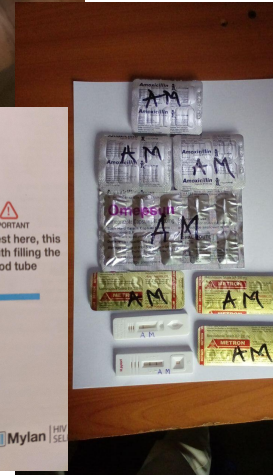
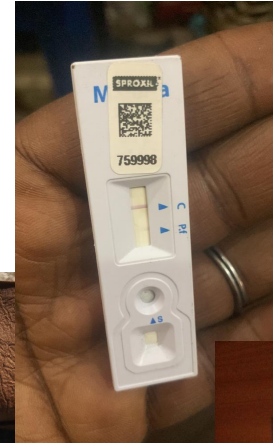
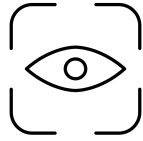
## Mature and Useful

*Context to make decisions, recognize patterns, distinguish differences*





# What do Audere's computer vision models learn from?





# What do Audere's computer vision models learn from?

## Example: HealthPulse AI training data and process



### Explainability



Line and result classification, flag quality issues.



### Reproducibility



Same image gets same result, 100% of the time.



### Observability



Accuracy validated pre-launch, monitored over time.



### Privacy + security



No PII included, no real-time learning, requires validation.



### Bias mitigation



Train on a diverse, representative dataset. Tuned for the use case.



### Empathy



Empathy infused in products leveraging the AI tool.

Key-points:

- Cassette/RTD
- Result Window
- C-line end-points
- T0-line and T1-line end-points

Black points are for the RTD:

- rdt\_top\_left
- rdt\_top\_right
- rdt\_bottom\_left
- rdt\_bottom\_right

Red points are for the result window:

- result\_top\_left
- result\_top\_right
- result\_bottom\_left
- result\_bottom\_right

Blue points are for the c-line end-points:

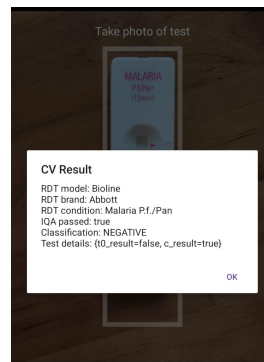
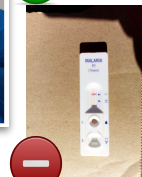
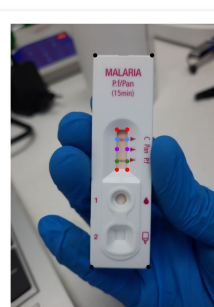
- c\_line\_left
- c\_line\_right

Purple points are for the t1-line (PAN or T2 label on cassette) end-points:

- t1\_line\_left
- t1\_line\_right

Green points are for the t0-line (P1 or T1 label on cassette) end-points:

- t0\_line\_left
- t0\_line\_right

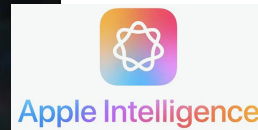
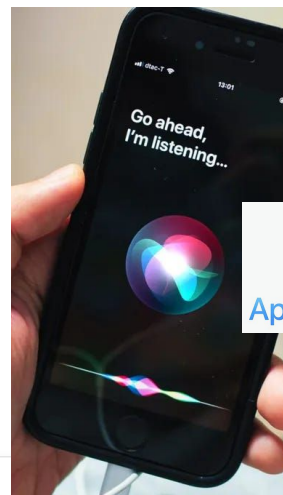
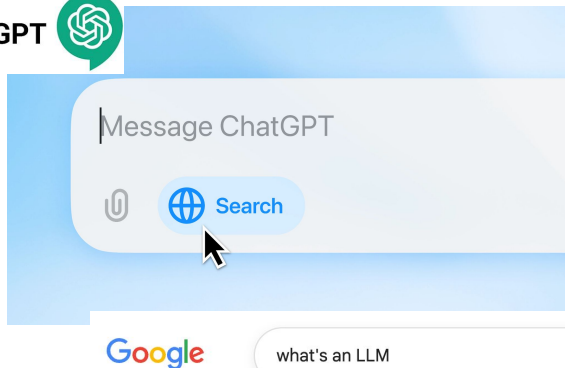


AI model  
outputs



>95%  
Accurate  
100%  
reproducible

# What do LLMs Learn From?



what's an LLM

AI Mode All Images News Videos Web Short videos More ▾

Search Labs | AI Overview

A Large Language Model (LLM) is a type of artificial intelligence that uses machine learning to understand and generate human language. Think of it as a sophisticated computer program that can read, write, and even engage in conversations like a person. LLMs are trained on massive amounts of text data, allowing them to learn patterns and relationships in language, enabling them to perform tasks like translation, text summarization, and question answering.



Here's a more de

Gemini

proprietary



# What do LLMs Learn From?

All the **knowledge**  
available on the  
internet



All the **Good days** humans  
have ever had

But also...

All [documented] **Bad days**  
humans have ever had





## AI that Mimics Humans




*Empathetic, responsive and sometimes explainable  
Not repeatable, fallible, and at times biased*



# How can LLMs build trust in their results?



**Lesedi**   
HIV vulnerability score  
**MEDIUM** | Low confidence  
Calculated 25 days ago



Working in record  


 **Conversation Summary** (2 active tasks)   ^


7/22/2024, 12:21:15 AM



The client expressed feeling not okay and shared concerns about their partner potentially cheating, which has led to significant distress. They mentioned a fear of having contracted HIV (referred to as "the drop") from their partner's infidelity. The client also expressed feelings of anger towards their partner and the other individual involved, mentioning thoughts of harming them or themselves. The conversation included a discussion about the importance of HIV testing, but the client has not been tested recently and is considering self-harm.

☐  **Chat concern**  Self-har... ^ ⋮

7/22/2024, 12:23:14 AM



☐  **Chat concern**  Violence ^ ⋮

7/22/2024, 12:22:18 AM



## Real-time monitoring

Grounded in local data to monitor LLM performance in the field and flag harmful situations



# How can LLMs build trust in their results?

What's the best rugby team in the world?

## 🏆 South Africa – The Springboks 🇿🇦

### Why They're #1:

- ◆ **2023 Rugby World Cup Champions**

They won their **fourth** Rugby World Cup title in 2023, becoming the **most successful team in World Cup history**, surpassing New Zealand (3 titles).

- ◆ **Incredible Big Match Record**

South Africa consistently wins high-stakes games, often by slim margins, demonstrating tactical brilliance and mental fortitude.

- ◆ **Dominant Defense & Physicality**

The Springboks are known for their brutal physicality, world-class set pieces, and disciplined defense.

- ◆ **Key Players (2025 squad)**

- **Siya Kolisi** – Inspirational captain and flanker
- **Eben Etzebeth** – One of the most dominant locks

- **Hendré Pollard** – Clutch goal-kicker and playmaker





# Biased data produces biased AI

## Naive Baby

*Hungry for knowledge*



## Training Data

*Biased and unrepresentative data*



## Confused & Unclear Role

*Garbage in, Garbage out*





# How can we understand if the AI is any good?

The right measure of AI accuracy can vary based on its intended use

## Accuracy - the **WHAT**

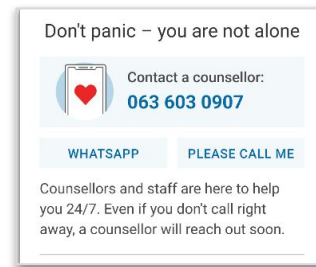
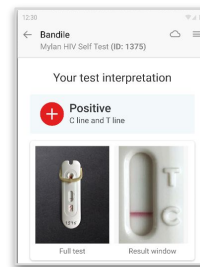


### CV Result

RDT model: Bioline  
RDT brand: Abbott  
RDT condition: Malaria P.f./Pan  
IQA passed: true  
Classification: NEGATIVE  
Test details: {t0\_result=false, c\_result=true}



## Relatability - the **HOW**



what is discovery health?



**Discovery Health (Pty) Ltd.**, a subsidiary of **Discovery Limited**, operates as the administrator and managed care provider for **Discovery Health Medical Scheme (DHMS)**, the **largest open medical scheme in South Africa** by membership and contributions. As a non-risk-taking administrator, Discovery Health derives its revenues primarily from **administration fees**, wellness fees, and managed care services rather than direct underwriting of medical risk.



### ♥ So like, what is Discovery Health?

Okay, so imagine there's this huge company in SA called **Discovery**, right? And one of their **BIGGEST** things is **Discovery Health** — it's basically the **cool auntie** of medical aid 🙋🏾🙋🏾🙋🏾

It helps you *and your fam* pay for things like:

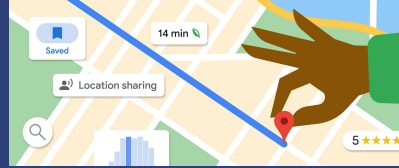
- Going to the doctor when you're sick 🤒
- Hospital bills (those things are *hectically* expensive 💸)
- Medicine, check-ups, and even mental health stuff 🧠💊



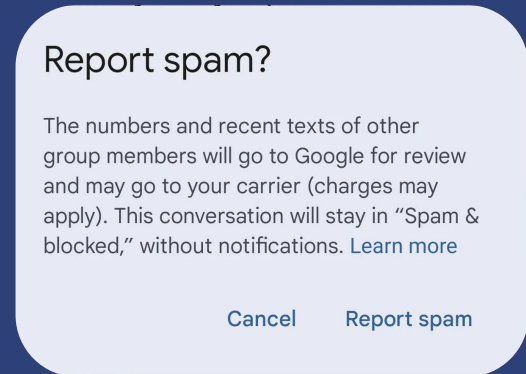
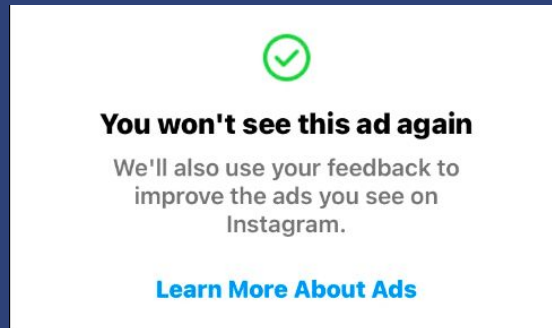
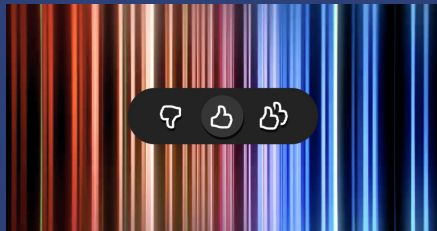
# Use Cases for AI in the real world



# Who uses AI in their daily life today?



# Who trains AI in their spare time?

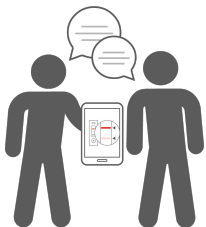


# What role can AI play?

Streamlining processes, reclaiming time & cost, and increasing confidence in decisions

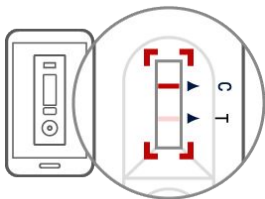
## Empathetic Guidance

Safe spaces for information, education, and counseling for clients and HCWs



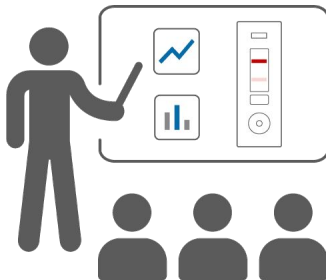
## Collaborative Upskilling

Supporting humans with augmented data for informed decision making



## Supportive Supervision

Oversee activities at scale to identify exemplars & need for retraining



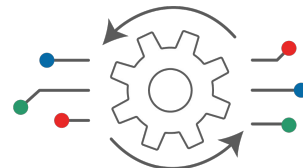
## Focused Prioritization

Predicting outcomes to focus human effort on high-impact areas.



## Efficient Automation

Automate rote or repetitive tasks to reduce human effort

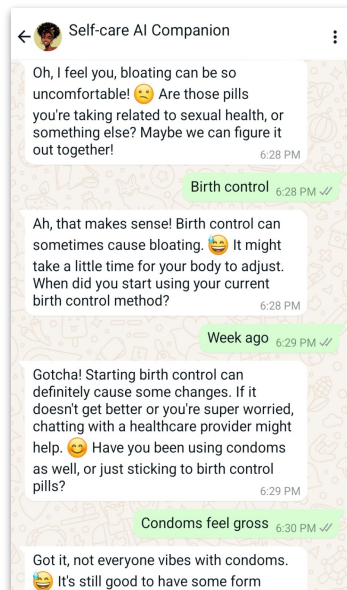


# Examples of AI in action

AI enables informed decision making for care delivery at all levels

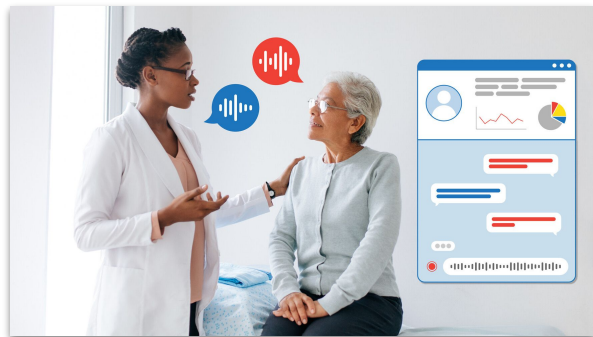
## Self-care

**Accessible info & guidance** with an **AI-powered counselor**, facilitated step by step self-testing, and prediction models for clinicians to prioritize outreach.



## Patient care

**Digital scribes that translate speech to text**, across languages and accents, extract relevant medical codes, and translate into EMRs.



## Clinician efficiency

Predictive analytics use historical patterns with outcomes to **predict future patterns**. One example is **targeting prevention resources** to those most at need through use of risk, or vulnerability models.

HIV vulnerability score  
**HIGH** | Confident  
*Calculated 12 days ago*



# Informed Decision Making with AI

What level of familiarity and personal impact does the user have with this use case?

Community member



Teacher



Community Health Worker



Clinic Health Worker



Hospital Physician



Basic understanding, possible misconceptions

Health Knowledge

Trained, credentialed, expert



Occasional or sporadic

Activity Frequency

Regular, repetitive, likely daily



Self/family health impact

Outcome Impact

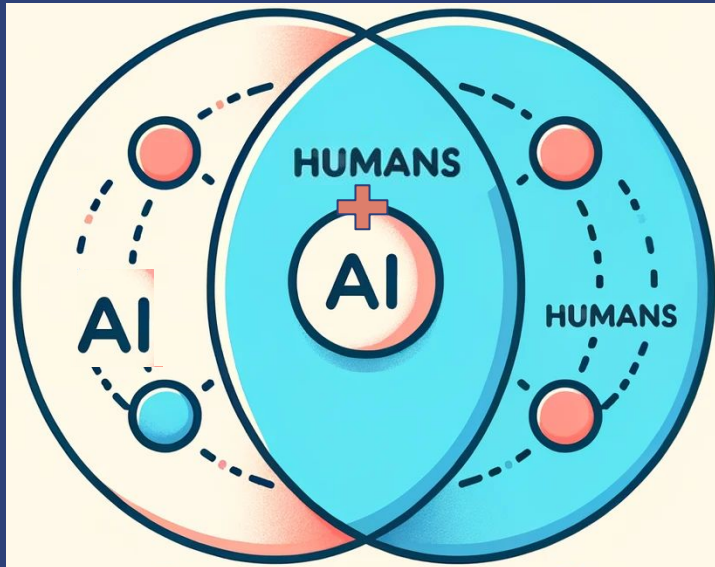
Professional consequences  
w/o personal health impact





# Informed Decision Making **with** AI

## Human-in-the-loop



*"[In the] adoption of AI ...autonomy requires that any extension of machine autonomy **not undermine human autonomy.***

*In the context of **health care**, this means that humans **should remain in full control of health-care systems and medical decisions**... they should be **designed to assist humans**, whether they be medical **providers or patients**, in making **informed decisions.**"*



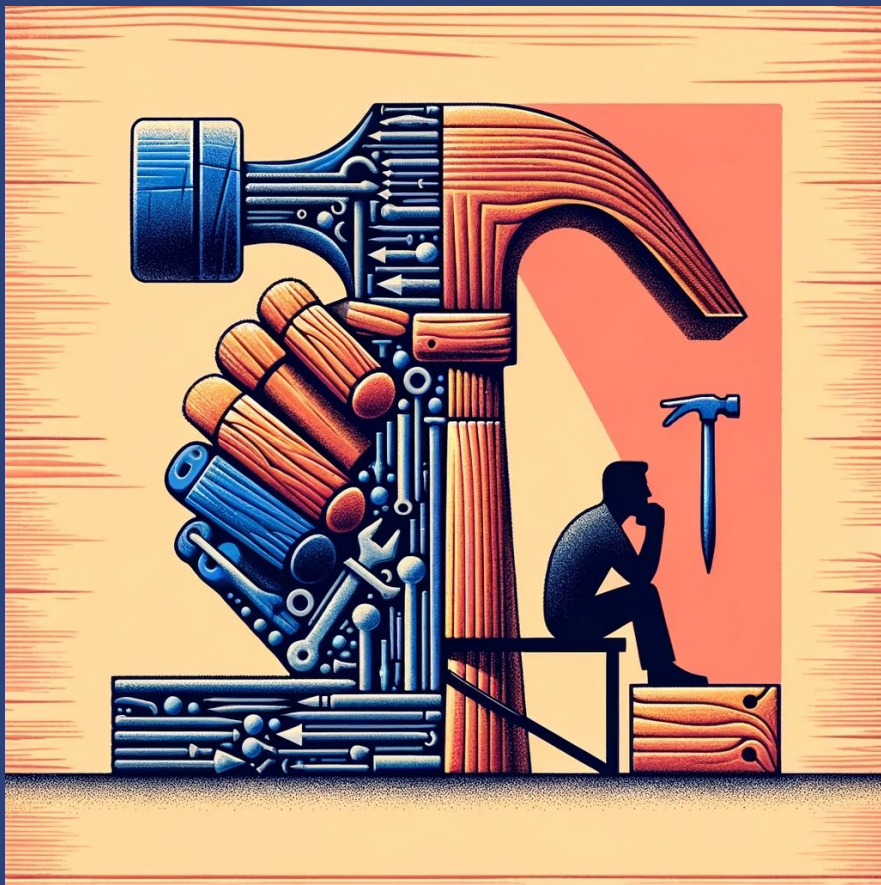
World Health  
Organization

Ethics and governance of AI for health,

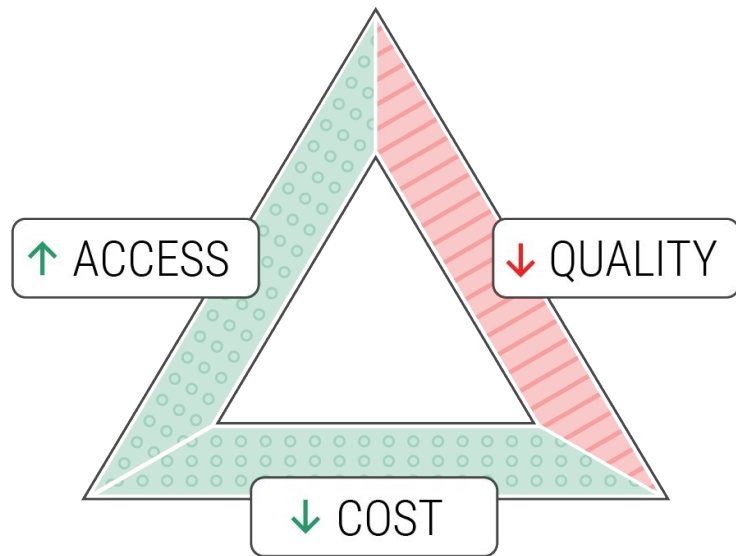
Section 5.1 Protect Autonomy, <https://www.who.int/publications/i/item/9789240029200>



# Is AI the right solution?



# Understand tradeoffs



# How will you build capacity for AI?

## Existing structural barriers to navigate



### Training/Skills

- MoH & policy maker understanding & readiness to adopt
- Health workforce training & support
- End-user education and understanding of tools, their own data use, and their rights



### Infrastructure

- Access to mobile devices with minimum hardware requirements
- Access to computers to monitor use & data
- Cloud service availability, MoH approval, AI service ability to run on non commercial servers



### Power & Internet

- Some AI tools are only accessible via the cloud (eg. LLMs) and require internet connectivity
- Connection to internet or use of on-device models may require frequent charging of devices



### Use & Maintenance

- Many AI tools are services with usage & hosting fees (eg. LLMs)
- AI systems must be monitored and maintained to ensure models do not drift in performance over time



*Designing WITH is a better route than designing FOR*

*Designing WITH is a better route than designing FOR*

# "If I share soap with my sister, can I get HIV?"



## Accuracy - the **WHAT**

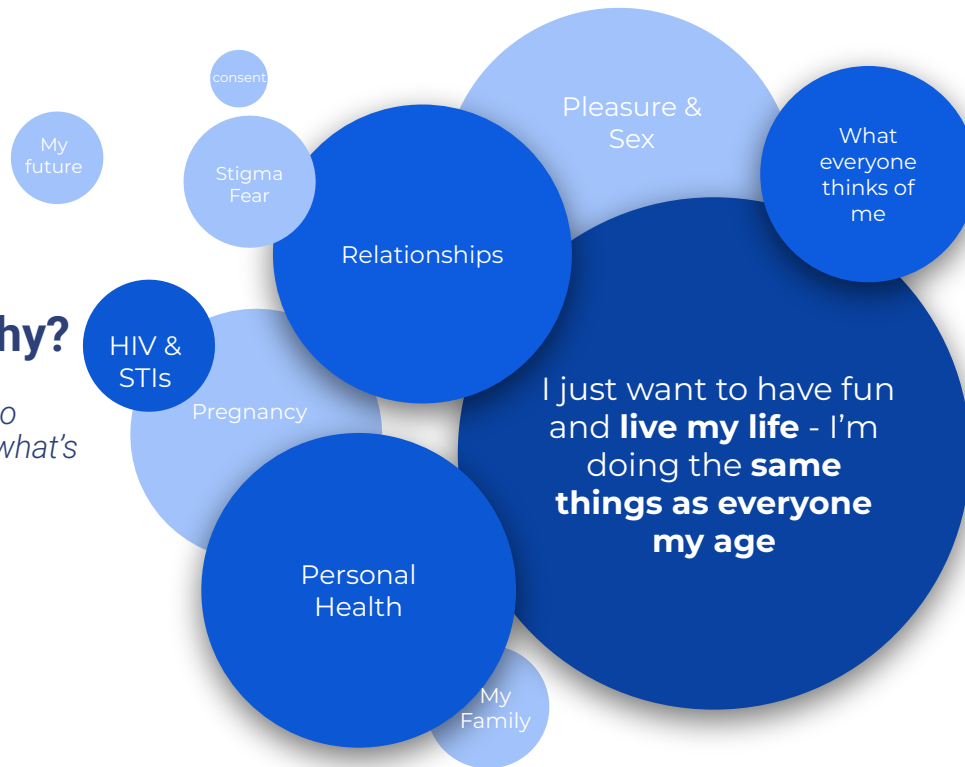
*Factually answer the question that is being asked*



No, you cannot get HIV from a bar of soap.

## Who's asking & Why?

*Contextually understand the intent & influencing factors to answer factually & address what's not directly being asked*





*"If I share soap with my sister, can I get HIV?"*



## Approachable friend

Alright Alice, HIV spreads through specific activities, not through soap or surfaces. You can get it from unprotected sex, sharing needles, or from mother to child during birth. But it can't spread through casual contact like hugging or sharing utensils. Got something more you wanna explore? 😊

9:31 PM

## Trusted health professional

No, you can't get HIV from soap. The virus cannot survive outside the human body for long and can't be spread through inanimate objects like soap. If you have more questions or concerns, feel free to share!

9:25 PM

## Relatable big-sister

Nope, you can't get HIV from soap, hun! HIV is a virus that can't survive outside the human body for long and definitely won't live on soap. It's always good to know how things work, so if you have any more questions or worries, feel free to ask! 💬 😊

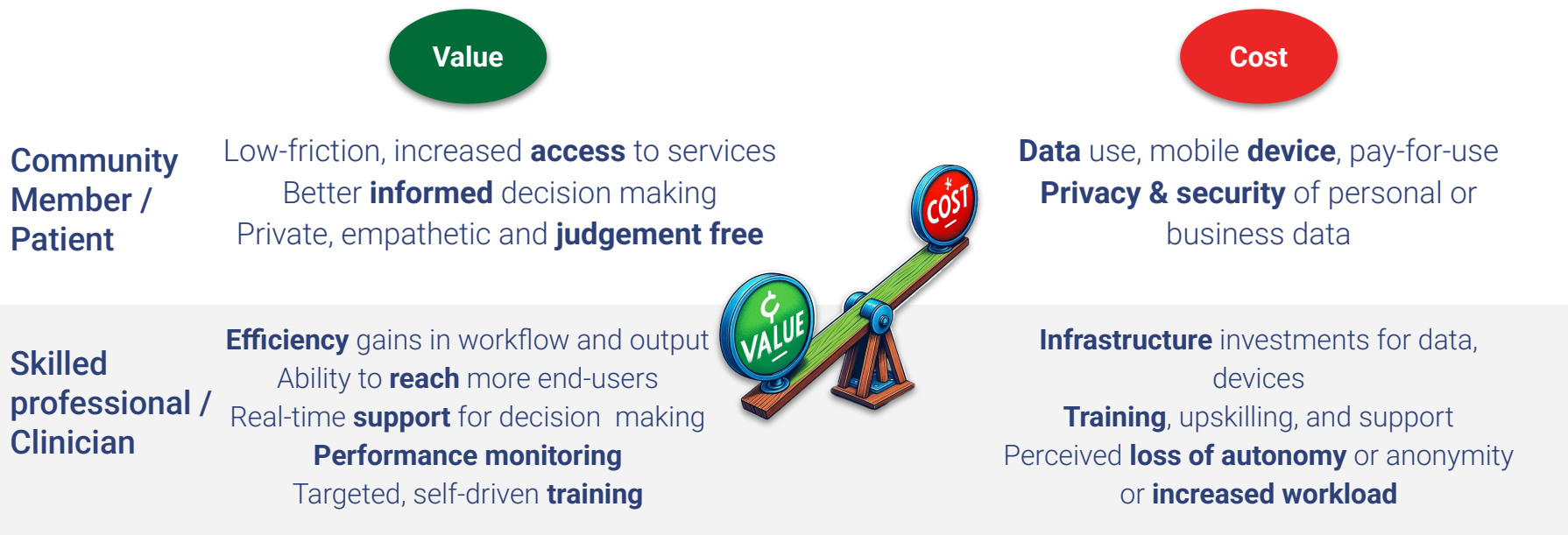
9:28 PM






# AI Cost Considerations

Incurring costs impact access, but must be balanced against improved quality, efficiency & savings for stakeholders





Cautious optimism:  
Generative AI changing the  
game - hype or real?

# Ok, so what is Generative AI anyway?

Let's hear from experts on Large Language Models, one of the multiple modalities of Gen AI



*Video from Code.org: <https://www.youtube.com/watch?v=X-AWdfSFCHQ>*





*“There is  
**nothing artificial** about  
artificial intelligence - it  
is **made by people,**  
**for people,** and  
**governed by people”***

**Dr. Fei-Fei Li**, AI Researcher &  
Professor, Stanford University; Co-Director,  
Stanford Human-Centered AI Institute



# A look at User Journeys with Self-care Anywhere



Aimee Chatbot

Self-guided journey with 24/7 AI companion chatbot, built-in nudges with resources, proactive connection to clinician, with remote self-testing and quick PrEP pick-up when desired

From home



1 Chat now to Aimee (AI companion)

I'm here for you. Here's resources that can help. To start, a nurse will reach out soon to get you tested for HIV

My partner is cheating, I want HIV testing & PrEP!

I feel worthless and my kids are impacted too :(



Nurse notified and provided context



You matter. Interested in a self-test or a clinic?

Can't self test- clinic near me please?



Clinic location provided and advice on testing

Thank you! I got PrEP! And using resources you and Aimee gave me- I feel much better!



2 Chat now to Aimee (AI companion)

Let's get an HIV test and connect to a nurse ASAP to get you PEP

My partner is HIV+, I'm scared, sex no condom, PEP unavailable at clinic :( HELP!

Ok, please help me find a test for free, I can't afford to buy one

I got a test and its negative, I uploaded the picture!

Nurse notified



Confirmed Negative - here's where you can get PEP near you



PEP & PrEP collected by client

I picked up PEP and started it today! I have PrEP too for when I'm done!

I'm happy you got them! Take the PEP all 28 days, Aimee will check in and remind you to start your PrEP!



# How could this solution extend to Clinician support?

---

I have a patient with extreme distress and I'm not sure what to say to them to comfort them!

Remind me again how long the XYZ test is supposed to process

I have a patient at risk of preeclampsia but they don't like taking medicine, give me 10 possible ways to convince them

Help me practice delivering a tough diagnosis to a patient

I have a colleague I'd like to give feedback to about their bedside manner, how can I be diplomatic?



# Call to Action:

## Try it out

- ❖ If you haven't yet used AI - either in your personal life or your professional life give it a try
  - OpenAI's ChatGPT, Google Gemini, Meta AI, Perplexity, Claude AI
  - AI note takers, apps that can read articles to you, etc.

## Use cases

- ❖ Think about how and where AI might help you reclaim time for research, time with patients, time for yourself
- ❖ Think about how AI may support your patients
- ❖ Think about how AI may support your management or leadership team

## TALK ABOUT IT

- ❖ You've taken the first step to learn about AI.... now go and have conversations with your peers, mentors, leadership
- ❖ Share what you learned, share your use case(s), and how you'd like to be a catalyst for exploring AI for your organisation
- ❖ Write about it -LinkedIn, blogs, wherever - we need your voice in the conversation!

## Barriers and Enablers

- ❖ What barriers exist to exploring these use cases in your role today? Regulatory, patient safety, skills, infrastructure, cost, etc....
- ❖ What enablers can you help put in place that would unlock the ability to explore AI's potential?



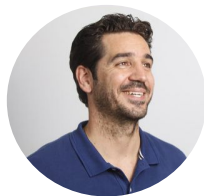
# Q&A time - THANK YOU

## Please reach out to innovate together!



**Sarah Morris**  
*Chief Product Officer*

[Sarah@auderenow.org](mailto:Sarah@auderenow.org)



**Dino Rech**  
*Chief Executive Officer*

[Dino@auderenow.org](mailto:Dino@auderenow.org)



[Auderenow.org](https://auderenow.org)

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