Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

AI FOR HUMANITY

Demetris Skourides

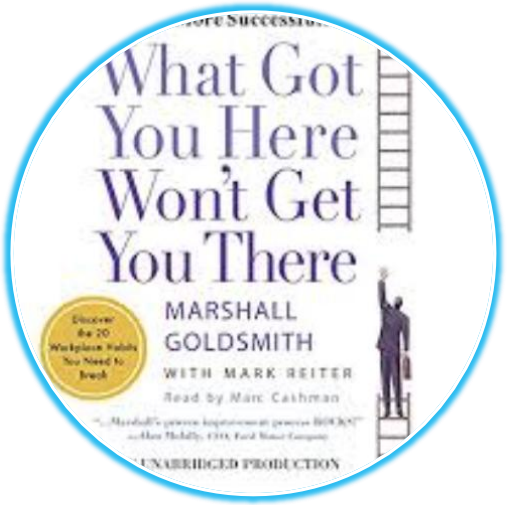
Chief Scientist of the Republic of Cyprus

Chair of the National AI Taskforce

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

ARE WE THERE YET



BUSINESS AND PERSONAL USE

AUTONOMOUS & MILITARY GRADE

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

REDEFINING MODERN WARE

“AI enables humans and machines to SEE AROUND CORNERS enabling the communication of Operational insight across theatres possible in Real-time. This capability make the Art of the Impossible Possible” Demetris Skourides, Cyprus Chief Scientist for Research, Innovation and Technology

THE GAME CHANGER

Chief Scientist for Research, Innovation and Technology

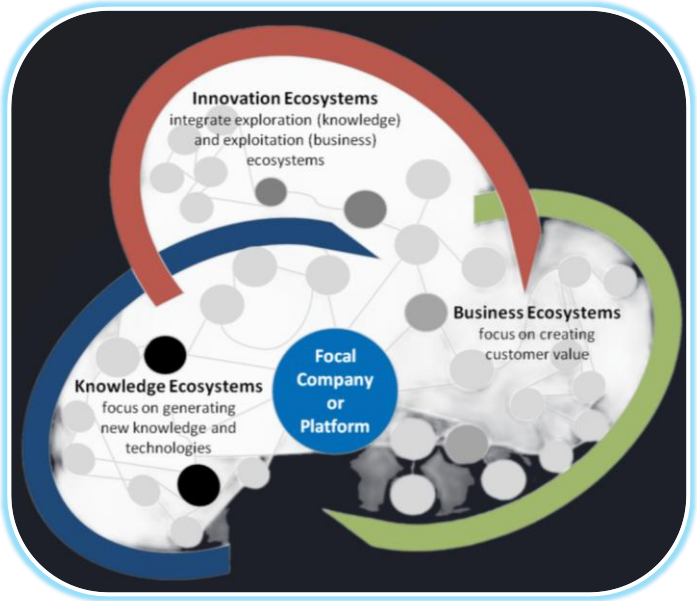
RESEARCH & INNOVATION FOUNDATION

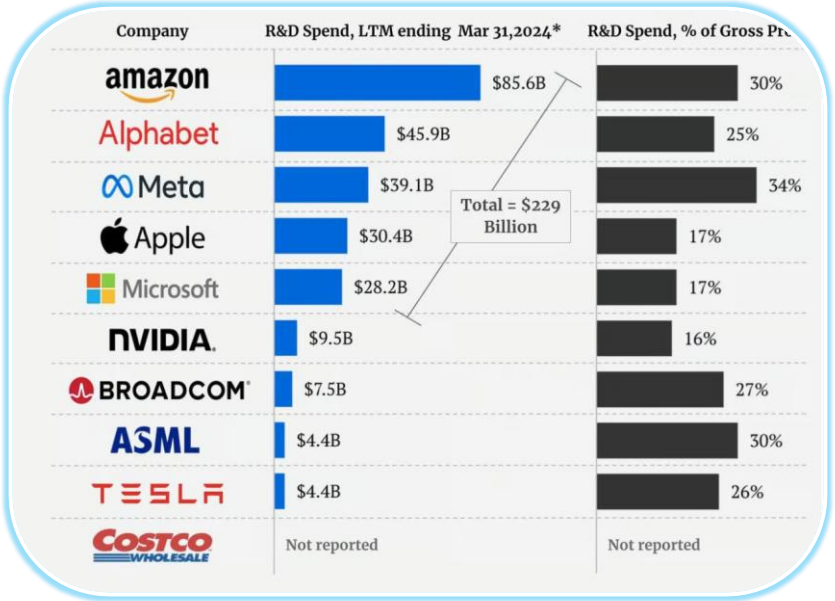
“AI breask across silos, disrupts use-cases, and when operational insight across all systems is combined, the cost of defending against is just too hard. Defence analysts will have to rethink their playbook” Demetris Skourides, Cyprus Chief Scientist for Research Innovation and Technology

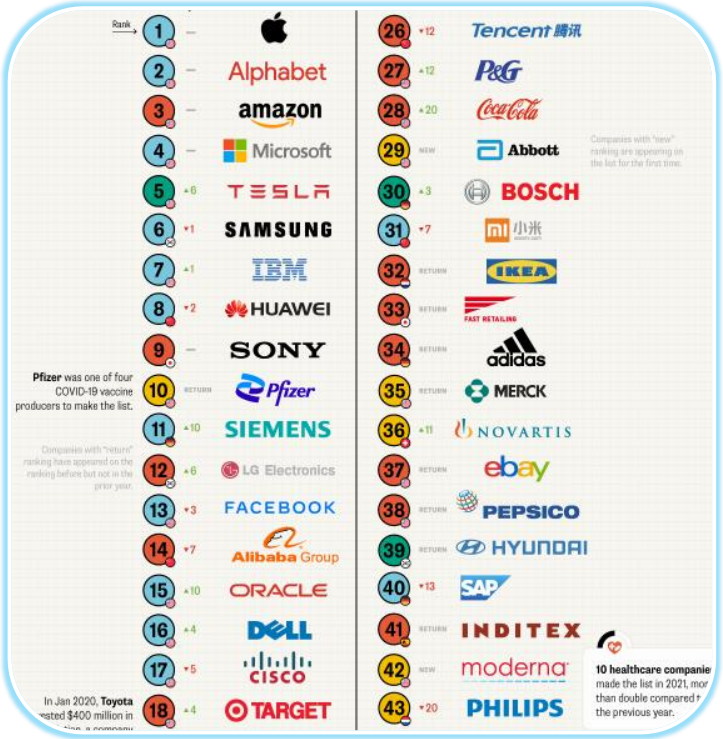
Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

INNOVATION | R&D



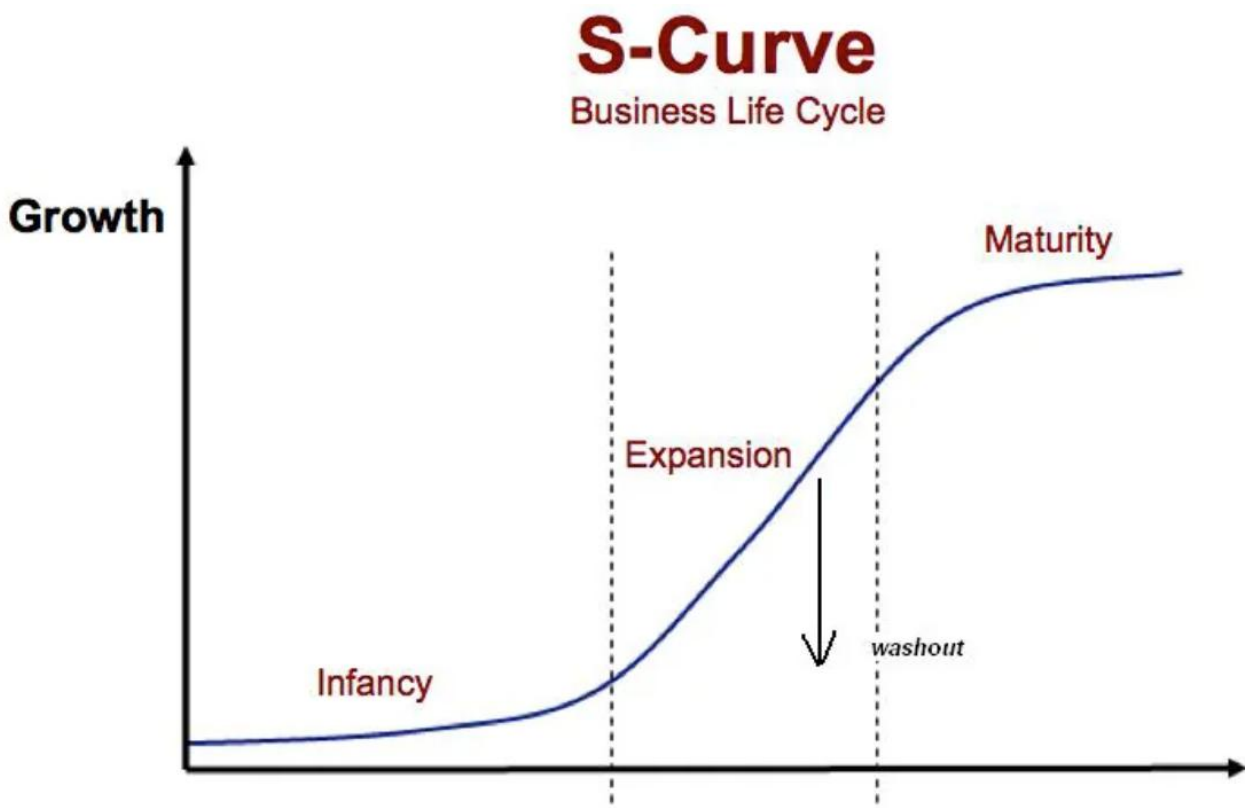


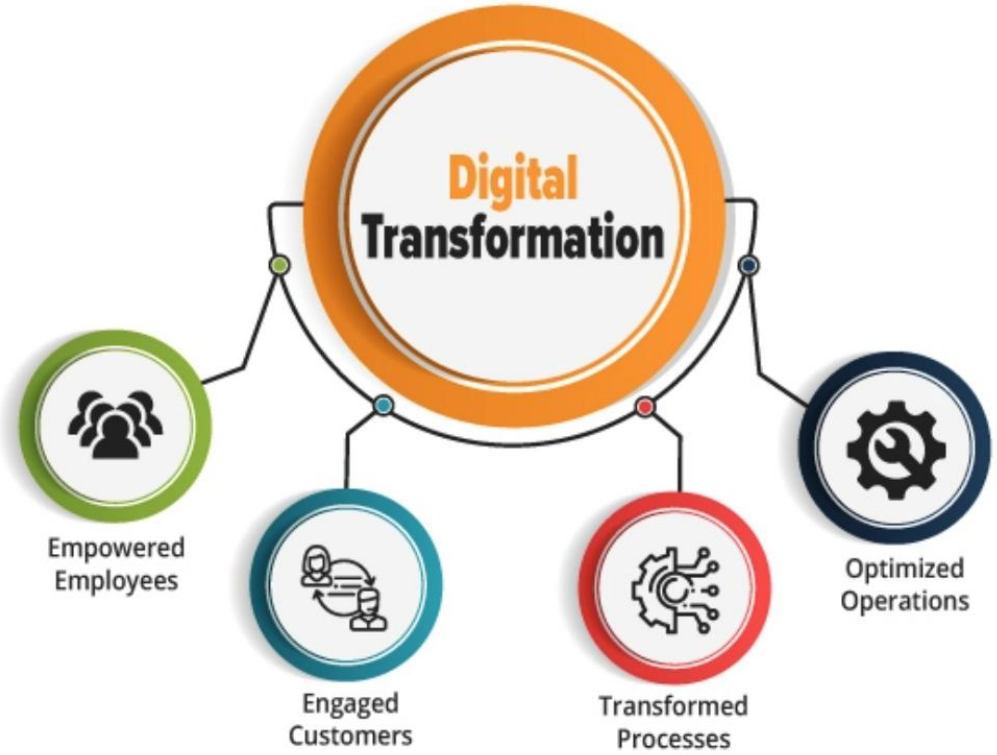


Chief Scientist for Research, Innovation and Technology

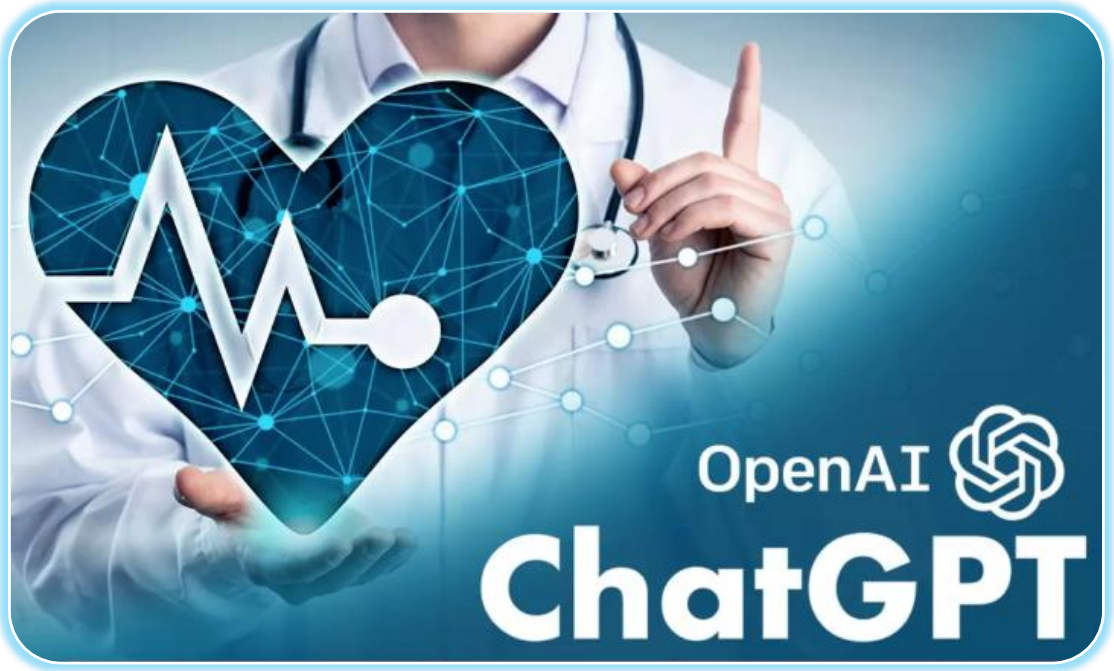
RESEARCH & INNOVATION FOUNDATION

WHAT'S HAPPENING?





Is It
Real?



Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

CAN ARTIFICIAL INTELLIGENCE IMPROVE HEALTH CARE

Are The Risks > Benefits?

Will Machines Become Better Doctors?

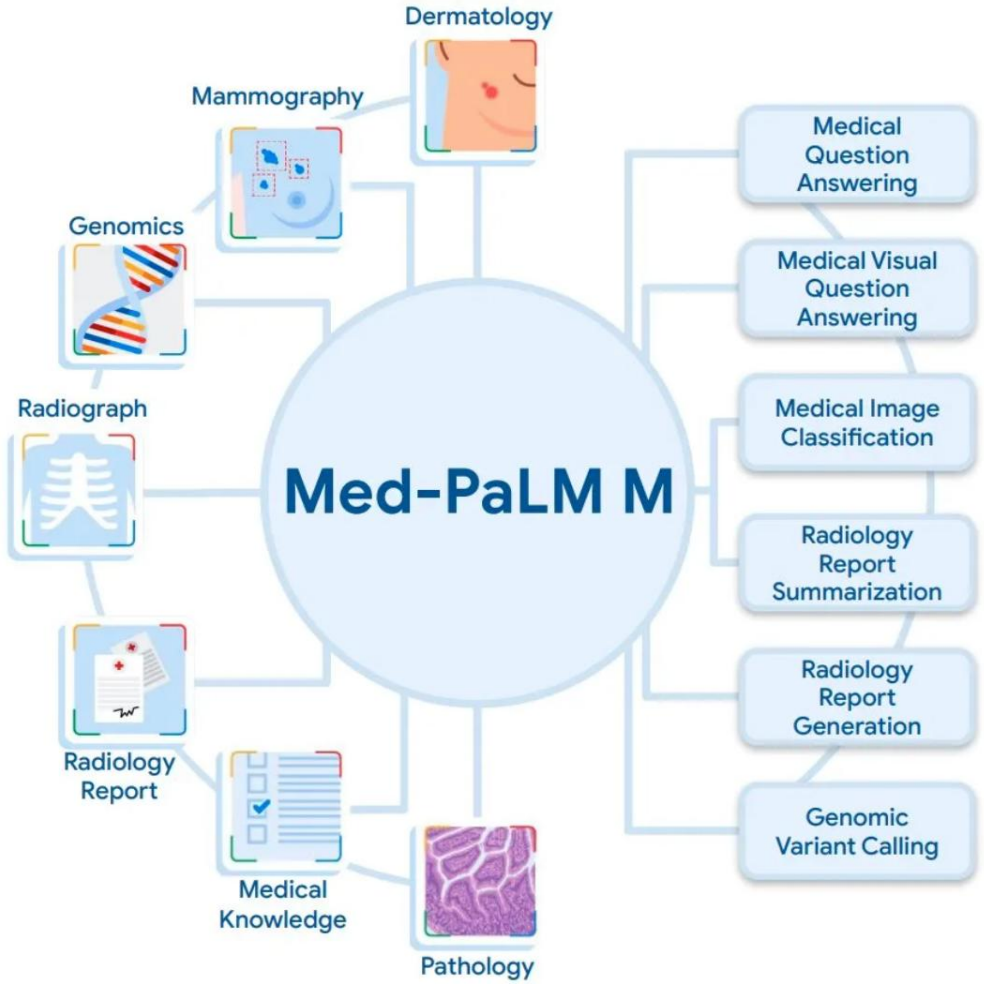
DOCTORS, PHYSICIANS AND THEIR FRIENDS

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

Nurse Robots

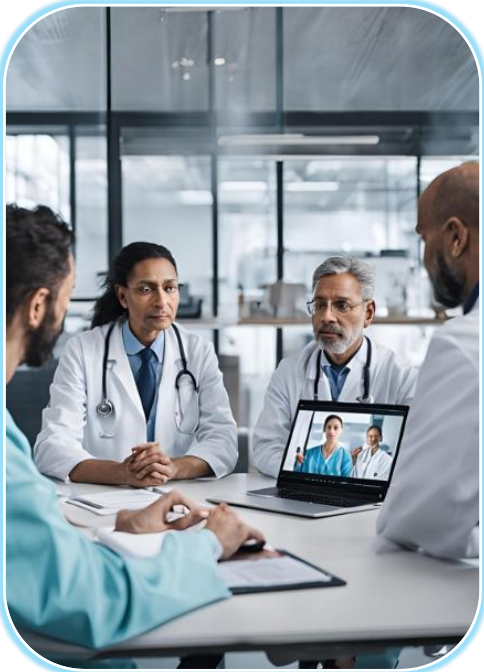
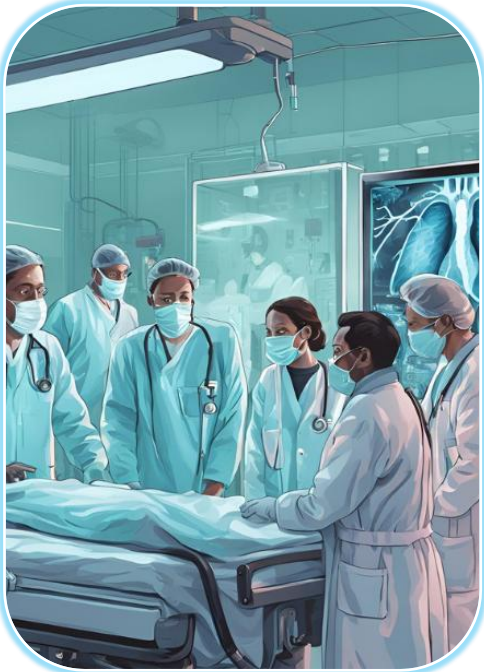
Elderly Care & Rehabilitation

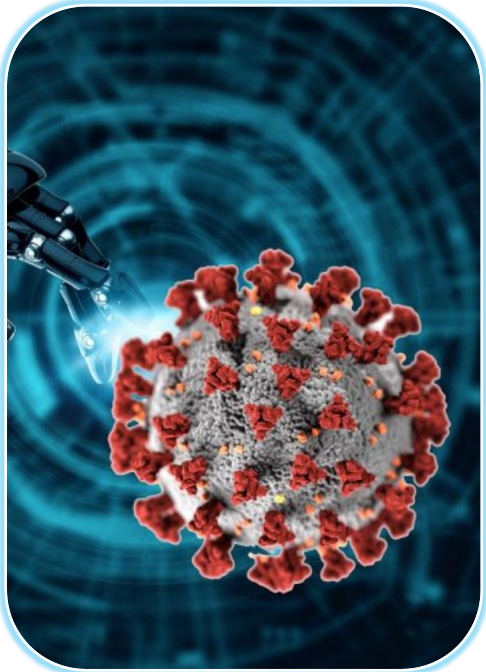


Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

JENNY FAINTED



COVID VS JIM

How many patients could we have saved if we knew better?

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

AI ASSISTED ROBOTIC SURGERY

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

AI IN MEDICAL DIAGNOSIS

Liver, Lung, Colorectal Cancer

AI identifies predictively 54% of cancer occurrences overlooked by Human Eye

Personalized Treatment

DISEASE PREDICTION

AI-driven drug discovery has the potential to revolutionize treatments for hepatocellular carcinoma (HCC)

Survival Rate Prediction
up to 80% Accuracy

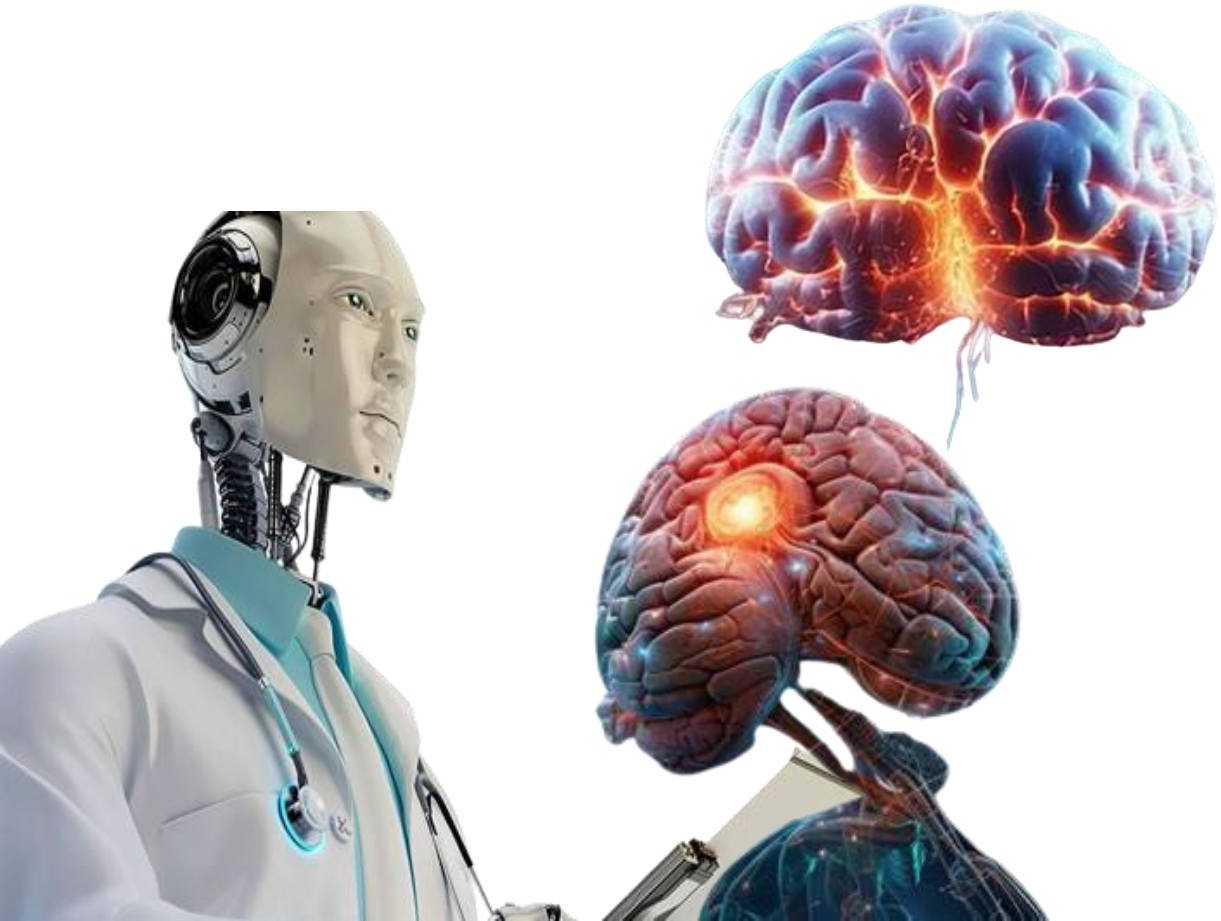
Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

AI IN EDUCATION



Data Augmented, Technology Assisted Medical Decision Making (DATA-MD)

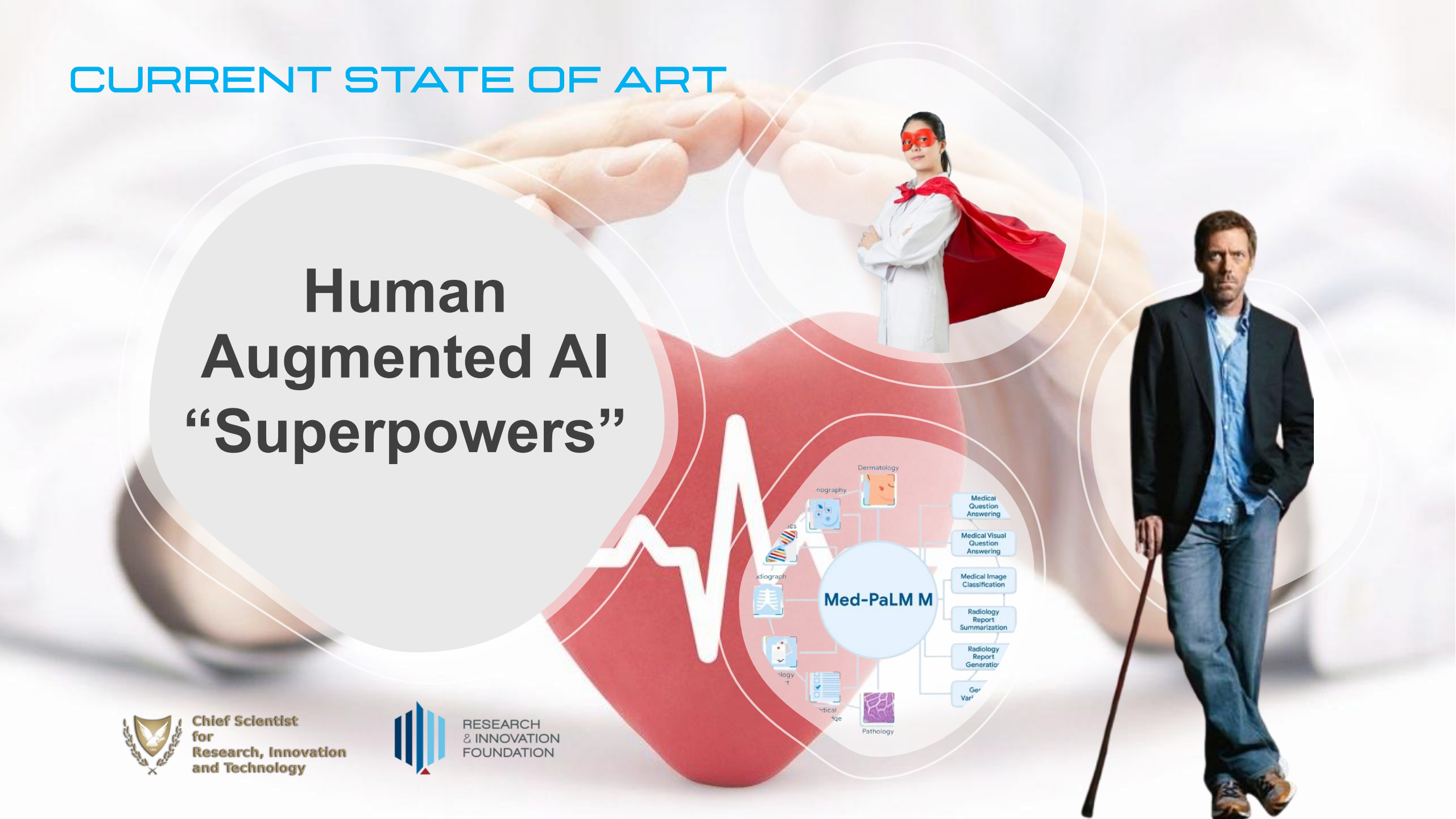
DATA-MD

- Seven web-based modules
  - Intro to AI
  - Methodologies
  - Diagnosis
  - Treatment and Prognosis
  - Law, Ethics, Regulation
  - AI in the Health System
  - Precision Medicine
- Launch late 2023

AMA AMERICAN MEDICAL ASSOCIATION

CURRENT STATE OF ART

Human Augmented AI “Superpowers”



Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

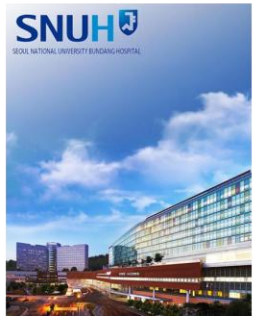
AI IN MEDICAL SCHOOLS

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

NHS

UKM
Universitätsklinikum Düsseldorf
Medical Services GmbH



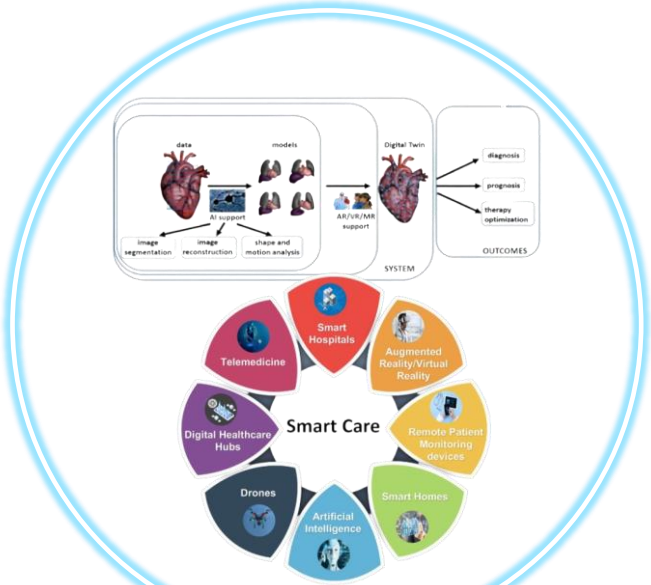
Kyoto University Hospital
京都大学医学部附属病院
KYOTO UNIVERSITY FOUNDED 1897

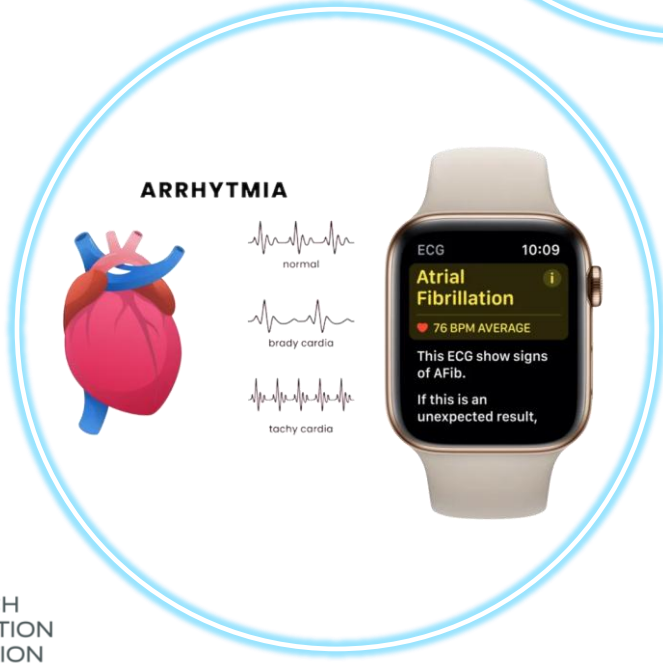
ASAN MEDICAL CENTER
서울아산병원

SNUH
SEOUL NATIONAL UNIVERSITY HOSPITAL

hd 東大病院
The University of Tokyo Hospital

FICTIONAL SCENARIO
FUTURE HEALTHTECH
HUMAN AUGMENTED AI





Treatment Plan

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

BRAIN

C-SpaRC
International Space Innovation Centre

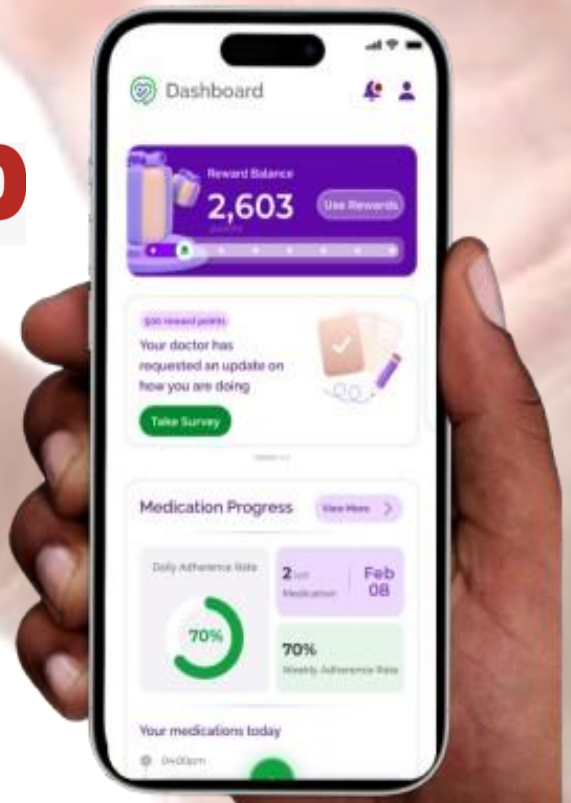
Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

INNOVATION IN CYPRUS

SOZO BRAIN CENTER

agor3.0



SmartPLAIGO (transform emergency healthcare services)

MyAria (Blockchain COVID-19 tracking)

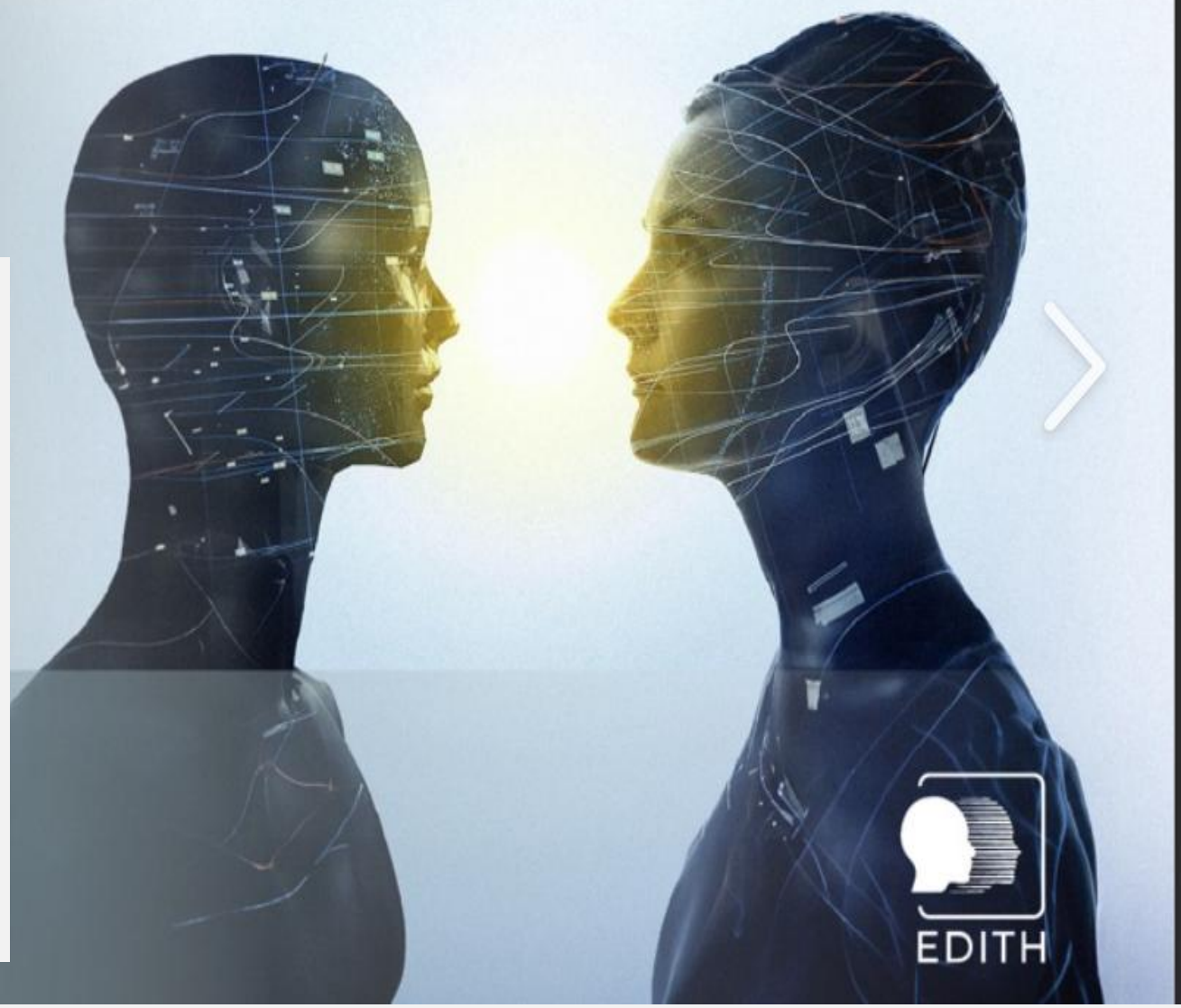
AI-Driven Intracranial Aneurysm

Solution for Predicting the Rupture Risk)

EUROPEAN VIRTUAL HUMAN TWIN

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION



In her opening remarks, **Henna Virkunnen**, European Commission Executive Vice-President for Tech Sovereignty, Security and Democracy, stressed that with an **investment of €100 million**, the European Commission is developing an **advanced collaborative platform**. Its goal is to *"help develop faster, safer and more efficient treatments, delivering life-saving therapies sooner, and positioning Europe at the forefront of next-generation healthcare"*.

Policy vision and ethical foundations

Sandra Gallina, Director-General of DG SANTE, underlined the role of the European Health Data Space (EHDS), in relation to VHTs. EDHS is central to ensuring data quality, secure, ethical data access, and a framework that empowers citizens to control their data whilst enabling researchers and innovators to transform this data into improved public health outcomes. **Lucilla Sioli**, Director of the AI Office at DG CONNECT, emphasised that the Virtual Human Twins (VHTs) Initiative represents *"a game-changer for Europe's healthcare systems, not only with the potential to share and validate results, connect different organs and systems, but also to accelerate pharmaceutical development and clinical trials, while respecting privacy and Intellectual Property rights."*

FROM DIGITAL TWINS TO THE VIRTUAL HUMAN TWIN

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

Research & Ecosystem

- Inclusive Ecosystem Leadership and Participation (Government, Academia, Industry).
- Launch of the VHT Manifesto and Alignment of the EDITH CSA Project.
- Building the Roadmap for Integrating Organ-level Twins into full-body Digital Representations.
- Focus on Silico Research and Simulation.
- Supporting Ethical and Legal Framework Development through Ecosystem.

Digital

- Multiscale Modelling of Human Anatomy.
- Integration of Digital and Medical Technologies.
- Data Infrastructure and Federated Repositories.
- Simulation Platforms.

Goal

Safe, Ethical, Personalized Patient Treatment at Scale

- Testing Clinical Hypothesis.
- Healthcare Impacts & Network Effects.
- Disease Correlation and Impact
- Supporting Evidence Based Policy.
- Medical Learning Models Supporting Every Doctor.
- Next Generation Medical Assisted Learning.
- Ecosystem and Marketplace Compliance to Standards.

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

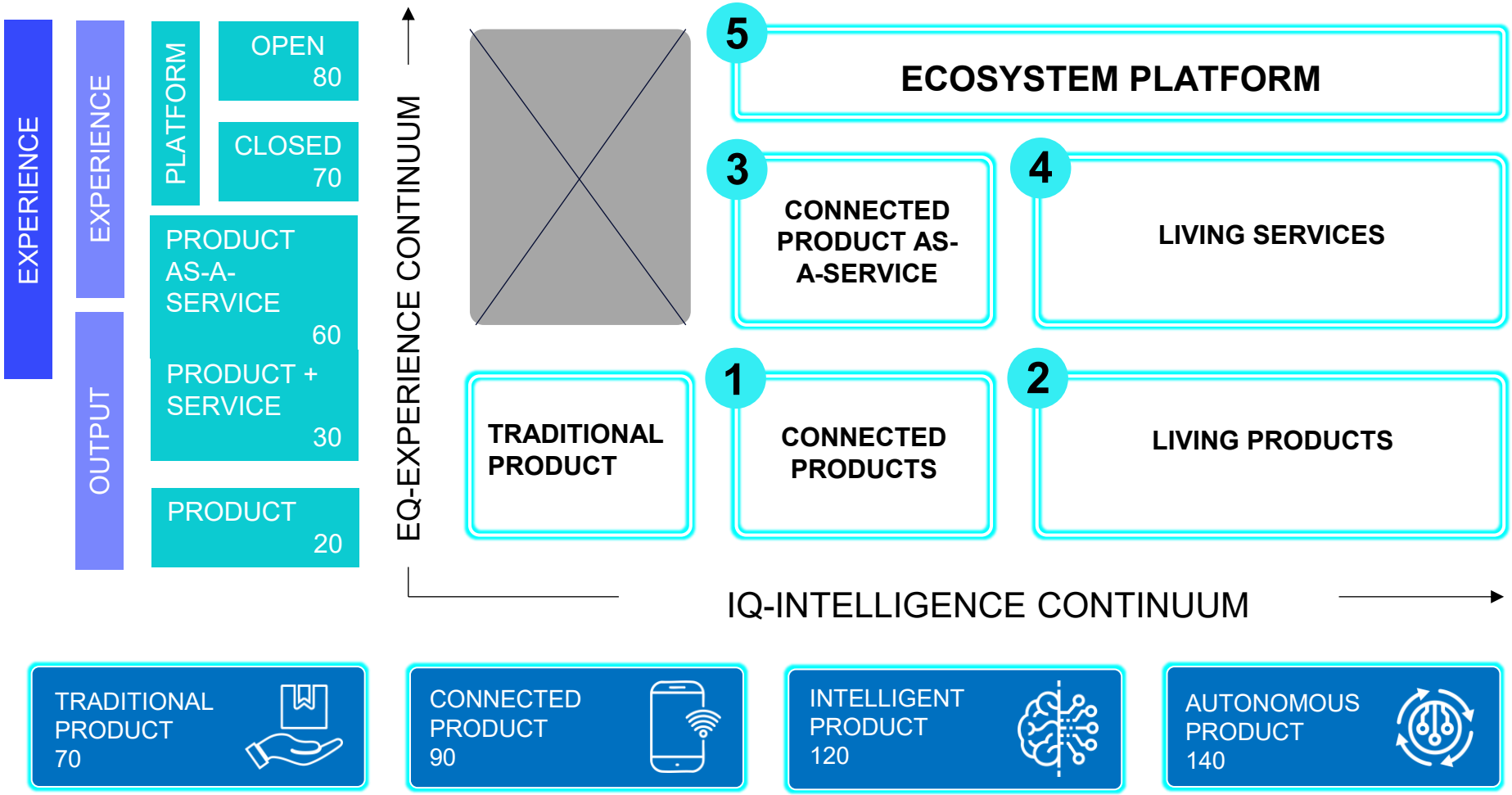
NATIONAL HEALTH AUTHORITY FOCUS

- Implementation of Cyprus' MyHealth@EU for cross-border health services and operation as the NCP for digital health (NCPeH) and cross-border services.
- Implementation of Cyprus' HealthData@EU for secure cross-border access to health data for research, innovation and policy-making

THE PRODUCT REINVENTION GRID

Experience Quotient (EQ) measures the degree of sophistication achieved in terms of services levels.

Intelligence Quotient (IQ) measures product's degree of technical sophistication



Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

ENHANCING CARE BUT HANDLE WITH CARE

- *Lack of Trust in AI*
- *Ethical and Legal Concerns*
- *Security & Privacy*

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

UNDERSTANDING DATA ETHICS IN HEALTHCARE

- **Best Practice #1:** Establish Clear Data Ethics Policies in Healthcare
- **Best Practice #2:** Implement Strong Data Protection Measures
- **Best Practice #3**: Foster a Culture of Transparency
- **Best Practice #4:** Emphasize Ethical Use of Data in Research
- **Best Practice #5:** Engage in Continuous Education on Data Ethics in Healthcare
- **Best Practice #7:** Monitor and Audit Data Practices Regularly
- **Best Practice #8:** Collaborate with Other Organizations
- **Best Practice #9:** Advocate for Stronger Regulations

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

ARTIFICIAL INTELLIGENCE IN MEDICINE BENEFIT OR RISK

Medical Diagnosis

Disease Prediction

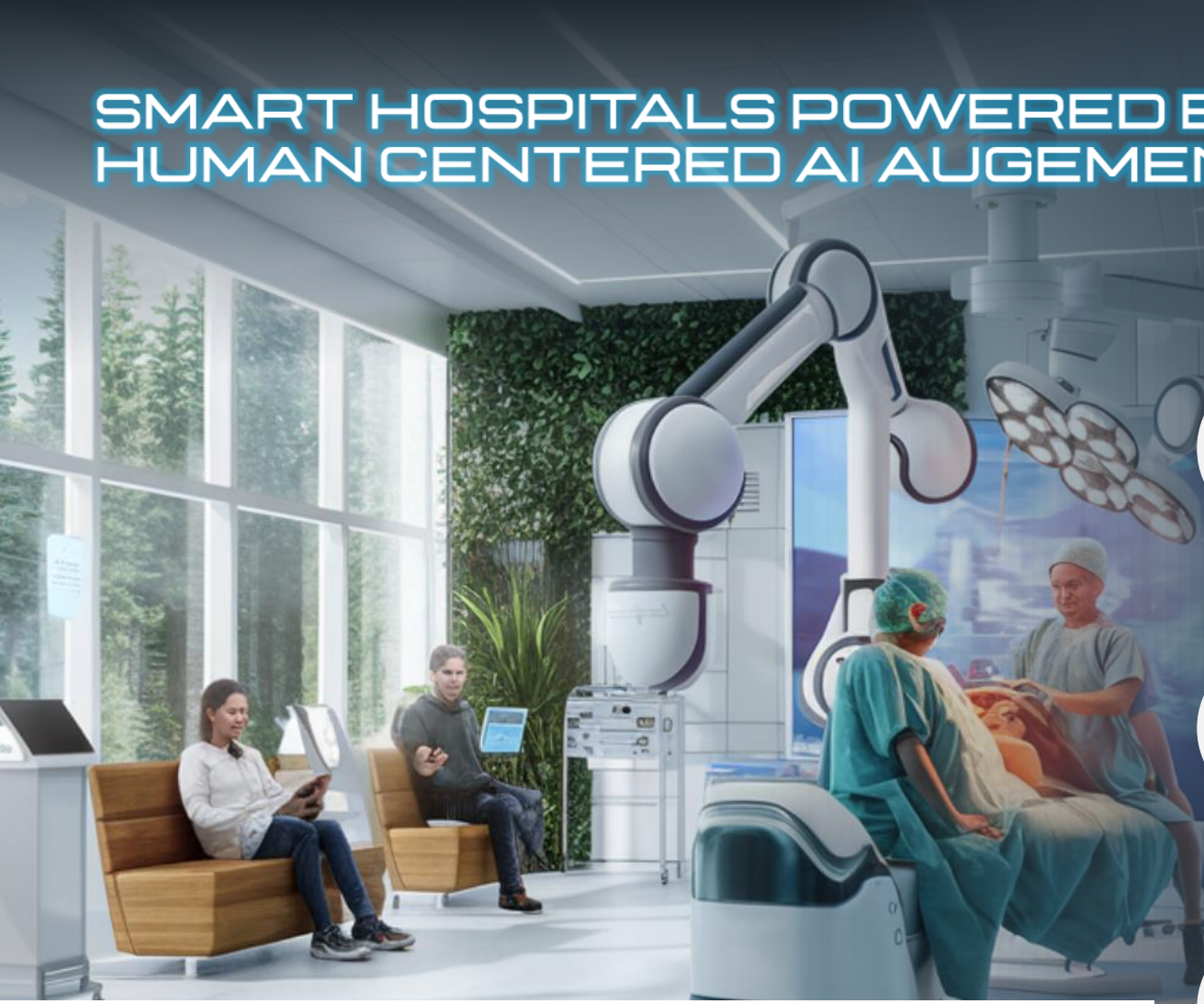
Clinical Trials

Disease Treatment

SMART HOSPITALS POWERED BY HUMAN CENTERED AI AUGEMENTATION

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION



- Transforming decision-making
- Reducing errors
- Accelerating knowledge discovery.
- Promoting Open Innovation
- Agility
- Speed

The "Great 8 Risks" to Healthcare

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

FUTURE CXO SUITE SUPPORTING CEO

- Changing Dynamics Require a Reviewed Perspective of DATA

Is the CXO team ready for The New Era?

Chief Compliance Officer

Chief Data Officer

Chief AI Officer

Chief Technology Officer

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

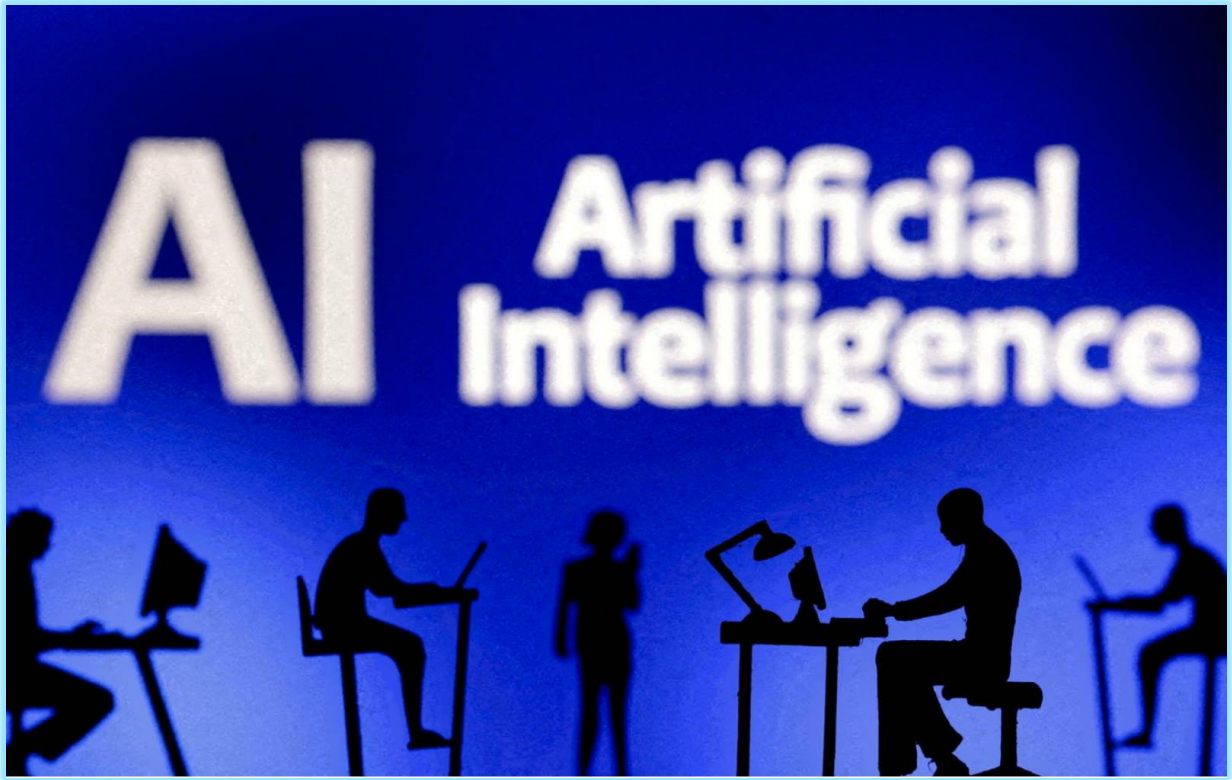
ARE THEY READY OR WILL THEY BE DISRUPTED?

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION

DOES AI CREATE NEW JOBS?

Op-ed: Bringing AI to the workplace – How can Cyprus catch up and ride the wave of change



1. **Prompt Engineer** – Σχεδιάζει και βελτιστοποιεί τις οδηγίες που δίνονται στα συστήματα ΤΝ για ακριβή, σχετικά και ηθικά ορθά αποτελέσματα.

2. **AI Model Trainer** – Εκπαιδεύει τα συστήματα ΤΝ τροφοδοτώντας τα με προσεκτικά προετοιμασμένα δεδομένα και βελτιώνοντας την απόδοσή τους με την πάροδο του χρόνου.

3. **Σύμβουλος Δεοντολογίας ΤΝ** – Συμβουλεύει οργανισμούς σχετικά με την υπεύθυνη χρήση της ΤΝ, διασφαλίζοντας ότι οι τεχνολογίες ευθυγραμμίζονται με τα ηθικά πρότυπα και τους κανόνες δεοντολογίας

4. **Digital Twin Specialist** – Κατασκευάζει ψηφιακά αντίγραφα φυσικών συστημάτων ή διαδικασιών για τη βελτίωση των προσομοιώσεων, των δοκιμών και της λήψης αποφάσεων.

5. **AI Product Manager** – Εποπτεύει την ανάπτυξη και την κυκλοφορία προϊόντων που βασίζονται στην ΤΝ, εξισορροπώντας τις τεχνικές δυνατότητες με τις ανάγκες της αγοράς.

6. **AI Compliance Auditor** – Ελέγχει τα συστήματα ΤΝ για να διασφαλίσει ότι συμμορφώνονται με τους κανονισμούς, τους κανόνες προστασίας δεδομένων και τα πρότυπα του κλάδου.

7. **Διευθυντής ΤΝ (CAIO)** – Παρέχει στρατηγική κατεύθυνση στην υιοθέτηση της ΤΝ σε έναν οργανισμό, ευθυγραμμίζοντάς την με τους μακροπρόθεσμους στόχους.

8. **Νομικός ειδικός σε θέματα τεχνολογίας** – Χρησιμοποιεί εργαλεία ΤΝ για την απλοποίηση της νομικής έρευνας, της ανάλυσης συμβάσεων και της προετοιμασίας υποθέσεων.

9. **Ελεγκτής Algorithmic Fairness** – Αξιολογεί αλγόριθμους ΤΝ για τον εντοπισμό και τη διόρθωση προκαταλήψεων, διασφαλίζοντας δίκαια αποτελέσματα.

10. **Σχεδιαστής συνθετικών δεδομένων** – Δημιουργεί τεχνητά σύνολα δεδομένων που μιμούνται με ασφάλεια τα δεδομένα του πραγματικού κόσμου, τα οποία χρησιμοποιούνται για την εκπαίδευση της ΤΝ, προστατεύοντας παράλληλα το απόρρητο.

11. **Μηχανικός μηχανικής μάθησης** – Σχεδιάζει και εφαρμόζει μοντέλα μηχανικής μάθησης που τροφοδοτούν συστήματα ΤΝ σε διάφορους κλάδους.

12. **Μηχανικός επεξεργασίας φυσικής γλώσσας (NLP)** – Ειδικεύεται στην ΤΝ που κατανοεί, ερμηνεύει και παράγει φυσική γλώσσα.

13. **Αναλυτής Κυβερνοασφάλειας ΤΝ** – Προστατεύει τα συστήματα ΤΝ από κυβερνοαπειλές και διασφαλίζει ότι τα μοντέλα είναι ανθεκτικά σε επιθέσεις.

14. **Επικεφαλής Σχεδιασμού Χώρου Εργασίας** – Ανασχεδιάζει θέσεις εργασίας, ροές εργασίας και χώρους εργασίας για να μεγιστοποιήσει τη συνεργασία μεταξύ ανθρώπων και ΤΝ.

15. **Human-in-the-Loop Supervisor / Chief Feedback Loop Supervisor** – Εποπτεύει συστήματα όπου η ανθρώπινη ανατροφοδότηση είναι απαραίτητη για τη βελτίωση της ακρίβειας και της ασφάλειας της ΤΝ.

16. **AI Diversity Advocate** – Προωθεί την ένταξη στην ανάπτυξη και την εφαρμογή της ΤΝ, μειώνοντας τις προκαταλήψεις και υποστηρίζοντας τις υποεκπροσωπούμενες ομάδες.

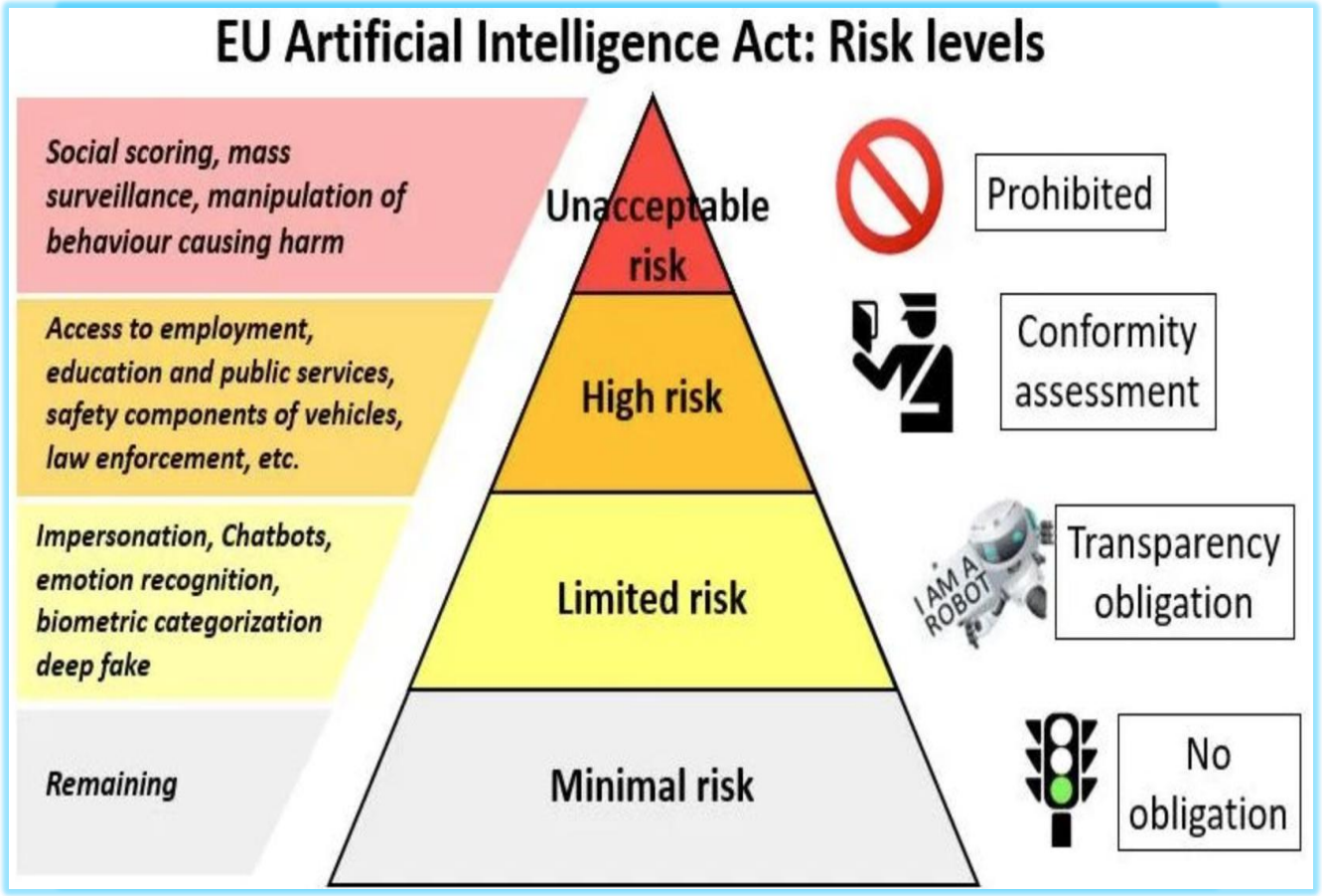
17. **AI UX Designer** – Δημιουργεί εμπειρίες χρήστη που καθιστούν τα εργαλεία ΤΝ διαισθητικά, διαφανή και αξιόπιστα.

18. **Αναλυτής Πολιτικών ΤΝ** – Διαμορφώνει πολιτικές και κανονισμούς στην ΤΝ, διασφαλίζοντας ασφαλή καινοτομία και προστατεύοντας την κοινωνία.

IS IT TOO LATE?

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION



FEARLESS FUTURE

BY DEMETRIS SKOURIDES.

CHIEF SCIENTIST OF THE REPUBLIC OF CYPRUS
VISIONARY, FUTURIST, LUMINARY THINKER.

Strategy, Innovation & Human-Centric Leadership in the Age of AI.

AI MUST SERVE HUMANITY

Twitter: @CScientistCy
https://www.youtube.com/@CScientistCy

Chief Scientist for Research, Innovation and Technology

RESEARCH & INNOVATION FOUNDATION