



Storie avvincenti e profonde rivelazioni....



Andrea Pescino • You

Digital Transformation Expert helping Governments, Organizations and Start...

2w • 🌐

Tomorrow, after quite a long time, I will be in Lecce among old friends and colleagues 🙌 to participate to [#illuminate2023](#) the [#Emea](#) conference of [#IAMCP](#). On Tuesday, I am thrilled to embark on a remarkable adventure, where I shall be bestowed with the incredible honor of unraveling the tapestry of my artificial intelligence odyssey 🤖📖 Brace yourselves as I unveil riveting tales and profound revelations, hopefully igniting the minds of those capable of steering these cutting-edge technologies to vanquish the formidable challenges that await us on the horizon 😊

Happy to share thoughts (and coffees) with friends there! ☕



Make this text more fun and enticing



Model: GPT-4



ANDREA PESCINO  
@ANDREAPESCINO

### Why talking about AI...

Fall in love with AI at the University (early 90s)  
Discover AI was only theoretical (at the time..)

Founded Digital Company (MS partner) - 1997  
Founded first Italian AI Innovation Hub (2016) – Digital Tree  
Launched MAIA (Microsoft AI Academy) in 2017

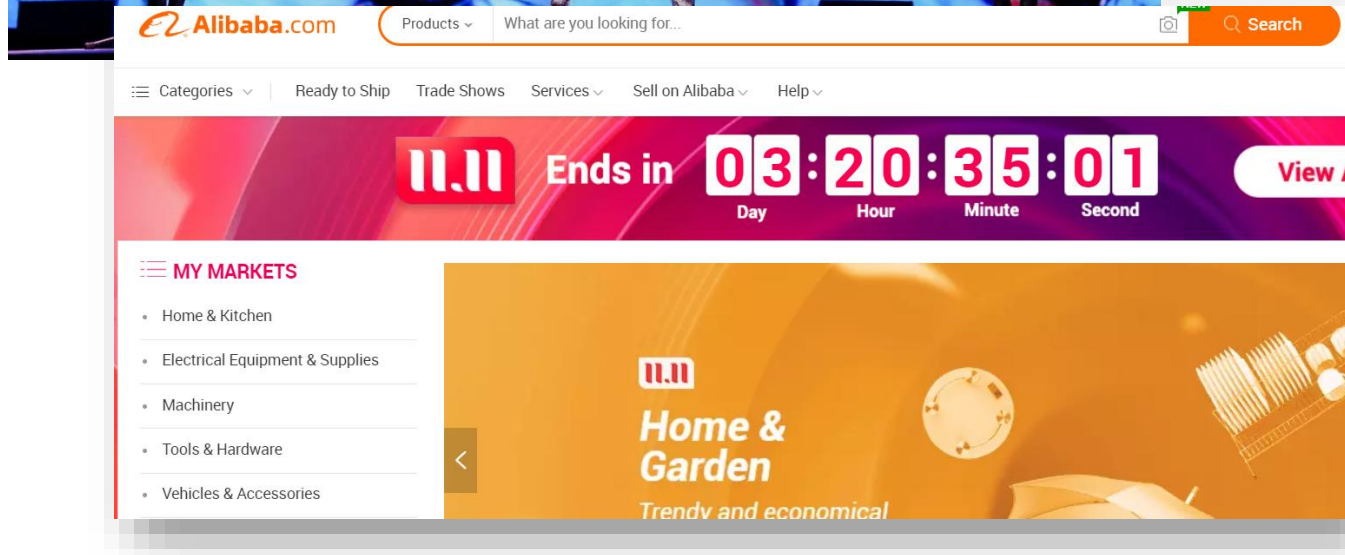
Now on **structural reform** programs using data and AI  
(since 2019)



Digital is made of (and FOR)  
DATA



# Alibaba Single Day 11.11.19



**24hr** 268 billion yuan → **\$38.4 billion**  
**01m08s** → \$1 Bln  
**1hr** → \$12 Bln

**11.11.20**  
**24hr** 498.2 billion yuan → **\$74.1 billion**

**11.11.21**  
**\$139 billion** (and green)

## Italian companies by turnover (Yearly)

Exor (\$161.7B)  
FCA Italy (\$125.6B)  
Assicurazioni Generali (\$100.6B)  
Telecom Italia (\$85.9B)  
Enel (\$84.1B)  
Eni (\$80B)





The Obama 2008 team tested 24 iterations of visuals and call-to-action combination for fundraising on the organization's website.

Combinations (24)		Page Sections (2)		Download: <a href="#">XML</a> <a href="#">CSV</a> <a href="#">TSV</a>   <a href="#">Print</a>		
Relevance Rating <a href="#">?</a>	Variation	Est. conv. rate <a href="#">?</a>	Chance to Beat Orig. <a href="#">?</a>	Observed Improvement <a href="#">?</a>	Conv./Visitors <a href="#">?</a>	
<b>Button</b> 5 / 5	Original	7.51% ± 0.2%	—	—	5851 / 77858	
	Learn More	8.91% ± 0.2%	100%	18.6%	6927 / 77729	
	Join Us Now	7.62% ± 0.2%	73.5%	1.37%	5915 / 77644	
	Sign Up Now	7.34% ± 0.2%	13.7%	-2.38%	5660 / 77151	
<b>Media</b> 5 / 5	Original	8.54% ± 0.2%	—	—	4425 / 51794	
	Family Image	9.66% ± 0.2%	100%	13.1%	4996 / 51696	
	Change Image	8.87% ± 0.2%	92.2%	3.85%	4595 / 51790	
	Barack's Video	7.76% ± 0.2%	0.04%	-9.14%	3992 / 51427	
	Sam's Video	6.29% ± 0.2%	0.00%	-26.4%	3261 / 51864	
	Springfield Video	5.95% ± 0.2%	0.00%	-30.3%	3084 / 51811	

Data driven decision Making

## How Obama Raised \$60 Million by Running a Simple Experiment



By Dan Siroker

November 29, 2010

A/B Testing Case Studies, Multivariate Testing, Political Campaign



# Artificial Intelligence

## Why it's happening now (circa)

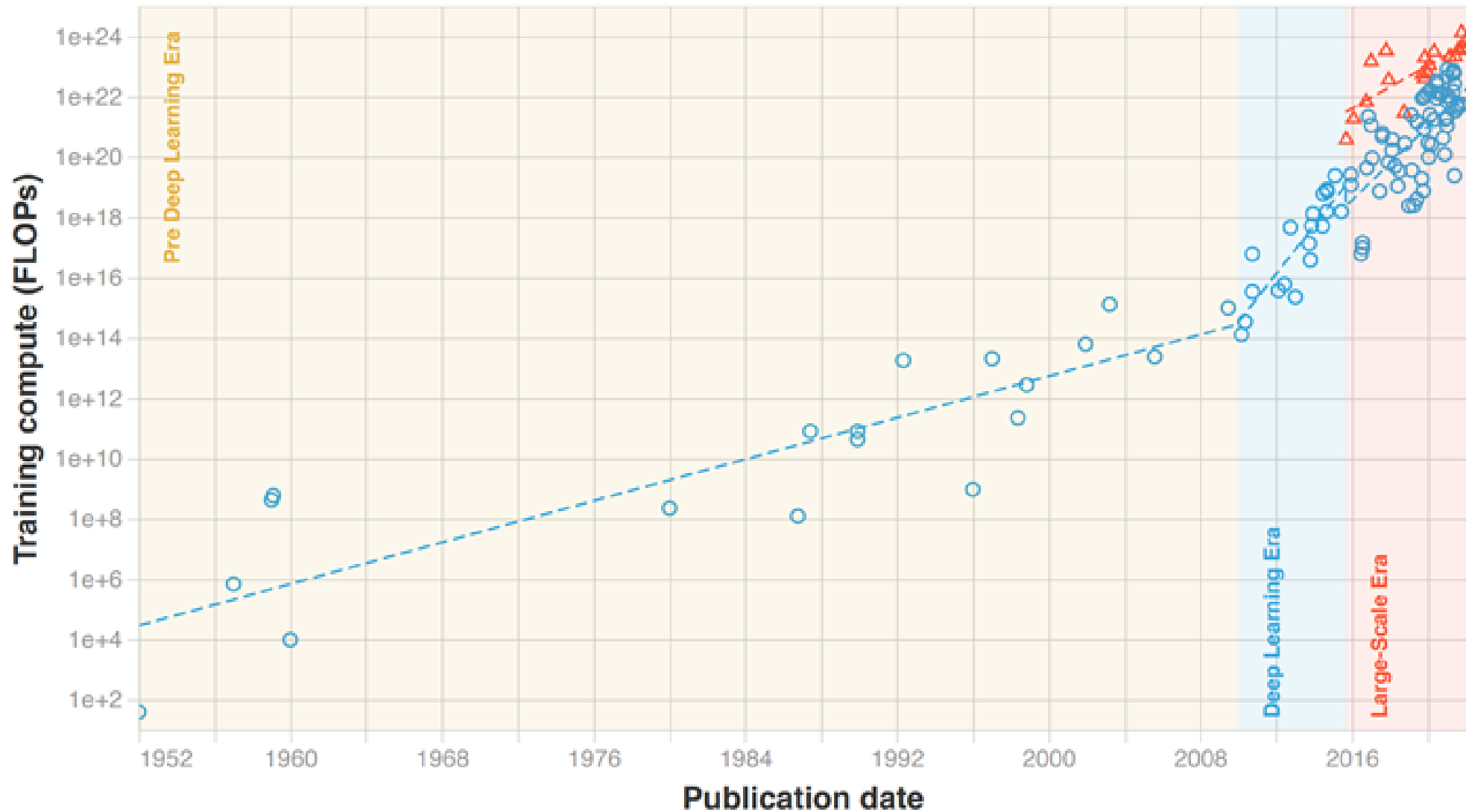
# Why Now, AI?

Training compute (FLOPs) of milestone Machine Learning systems over time

n = 121



Intelligence



1 0 1 0  
0 1 0 1  
1 0 1 0



big Data

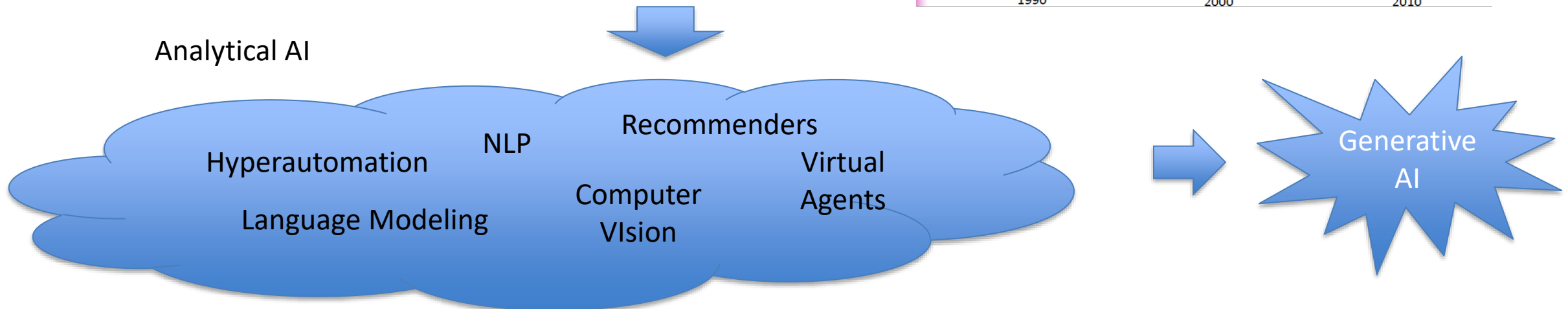
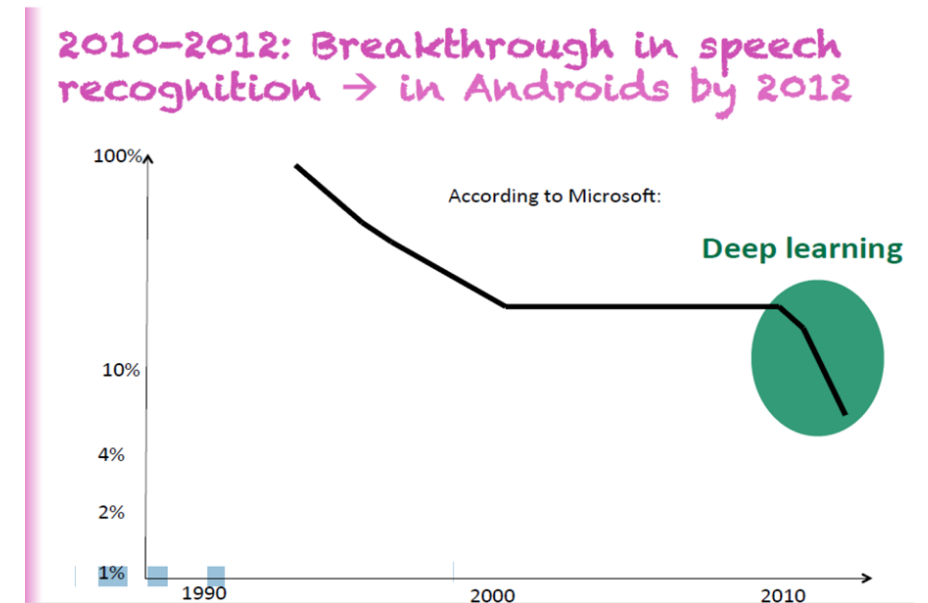
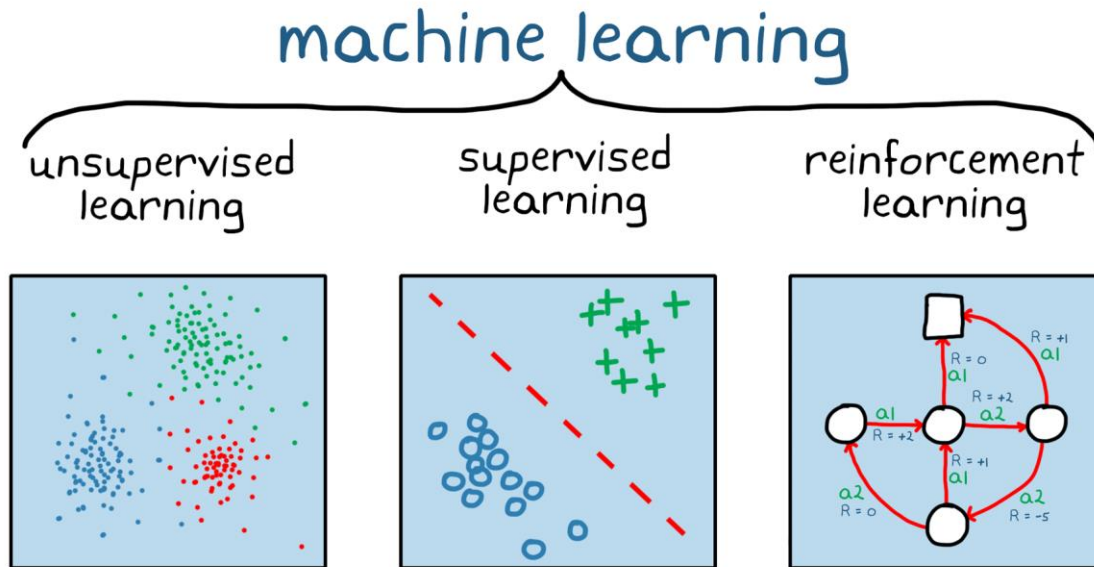
CI

Ecc



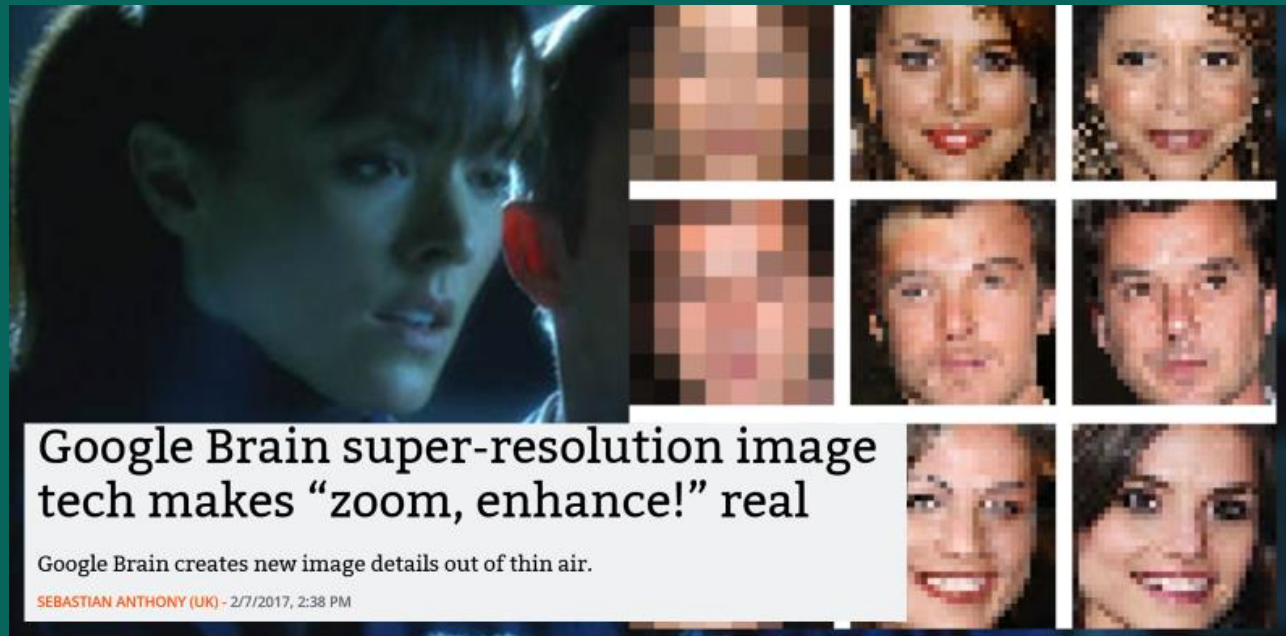
# AI today (it's a huge topic!)

Slide from **Y. Bengio**, Y. LeCun, G. Hinton (NIPS tutorial, Dec. 2015)



# AI and the future Generative (LLM and More) and ...reinforcement!

7 feb 2017



# What is GPT-3?

- OpenAI's third-generation Generative Pretrained Transformer language algorithm that uses machine learning to translate text predictively.
- It analyzes a series of terms, text and other data, then elaborates and generate fully original production in the form of an article or document.

Sharif Shameem  
@sharifshameem

Here's a sentence describing what Google's home page should look and here's GPT-3 generating the code for it nearly perfectly.

2020



Humans and AI  
Compete for Top Grades



## What Grades



Human grades										AI grades			
Writing Subject and Prompt										Fail			
Research methods COVID-19 Vaccine Efficacy	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	
U.S. History American Exceptionalism	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	
Creative Writing Place Narrative	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	
Law Policy Memo	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	

<https://gpt3demo.com/>

- AI manages to score a "C" average across four subjects, far below the human average of a "B" average.
- Feedback on human and AI papers looks remarkably similar.
- AI wrote shallow, less descriptive papers, compared to its human counterparts.

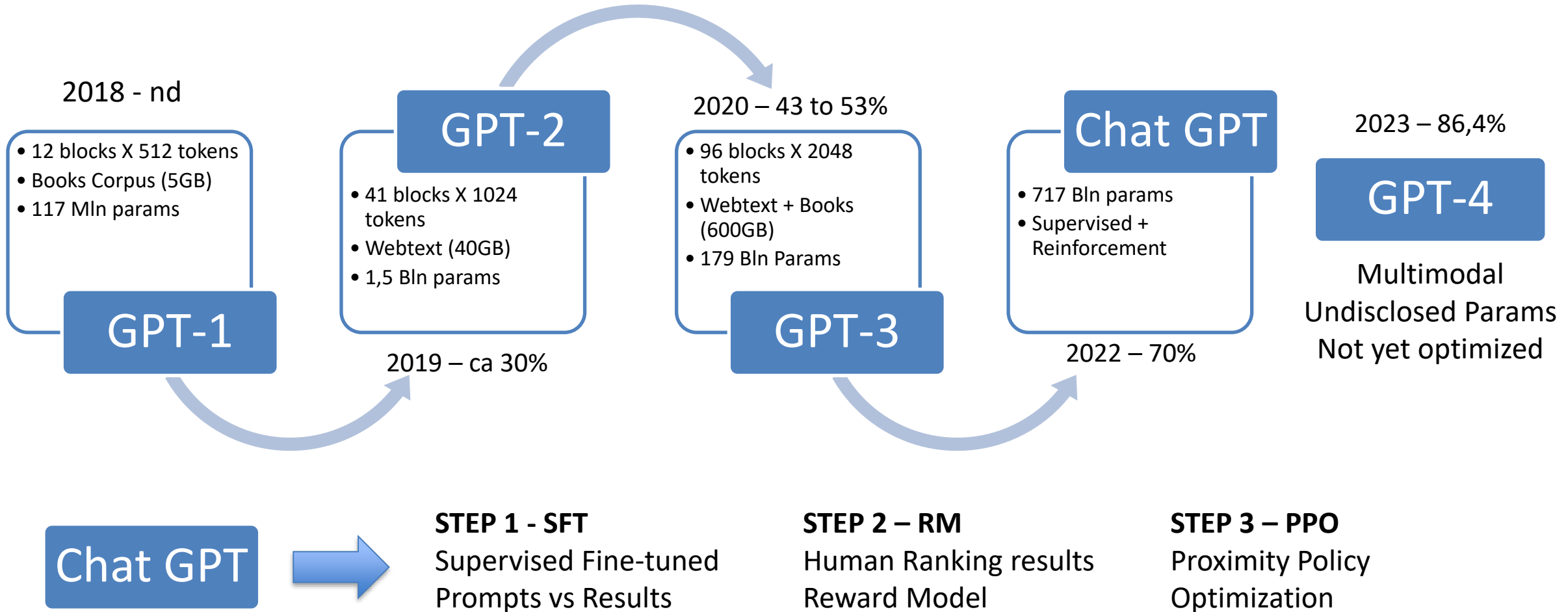
SOURCES: A panel of professors, a group of writers, and GPT-3

EduRef.net



# GPT-3.5 Behind the scenes

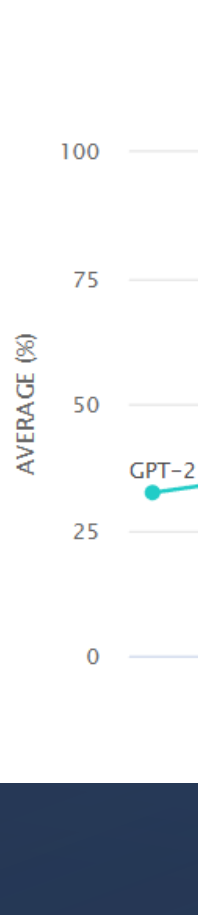
- **OpenAI** third Generative Pre-trained **Transformer** (GPT-3)
- **ChatGPT** (**DaVinci** Model) is both an evolution (limited) and a front-end



# Multi-task Language Understanding on MMLU

Leaderboard

Dataset



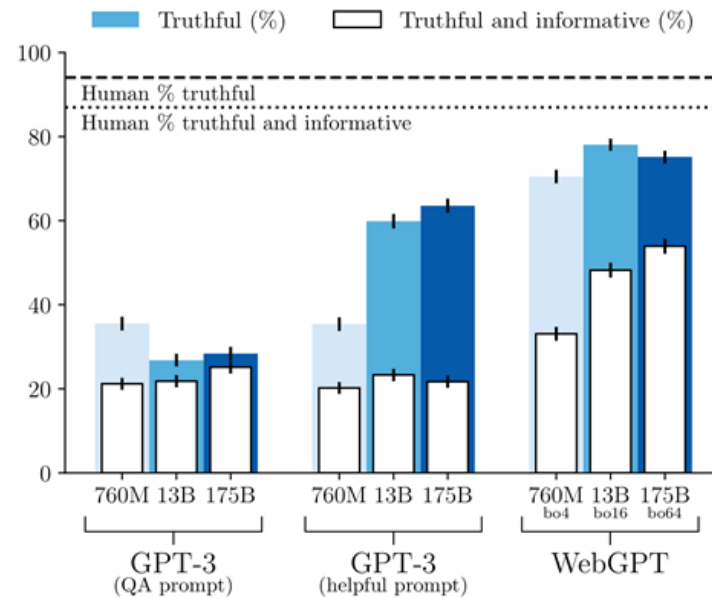
Model	Authors	Humanities	Social Sciences	STEM	Other	Average
<a href="#">Chinchilla</a> (70B, few-shot)	Hoffmann et al., 2022	63.6	79.3	54.9	73.9	67.5
<a href="#">Gopher</a> (280B, few-shot)	Rae et al., 2021	56.2	71.9	47.4	66.1	60.0
<a href="#">GPT-3</a> (175B, fine-tuned)	Brown et al., 2020	52.5	63.9	41.4	57.9	53.9
<a href="#">flan-T5-xl</a>	Chung et al., 2022	46.3	57.7	39.0	55.1	49.3
<a href="#">UnifiedQA</a>	Khashabi et al., 2020	45.6	56.6	40.2	54.6	48.9
<a href="#">GPT-3</a> (175B, few-shot)	Brown et al., 2020	40.8	50.4	36.7	48.8	43.9
<a href="#">GPT-3</a> (6.7B, fine-tuned)	Brown et al., 2020	42.1	49.2	35.1	46.9	43.2

Task Name	Description	Languages [mC4 rank]
Conlang Translation Problems	Decipher language rules and lexicon from a few examples	English [1], German [4], Finnish [24], <b>Abma [100+]</b> , <b>Apinayé [100+]</b> , <b>Inapuri [100+]</b> , <b>Ndebele [100+]</b> , <b>Palauan [100+]</b>
Kannada Riddles	Answer Kannada riddles	<b>Kannada [65]</b>
Language Identification	Identify the language a given sentence is written in	<b>1000 languages</b>
Swahili English Proverbs	For a given proverb in Kiswahili, choose a proverb in English which is closest in meaning	<b>Swahili [67]</b>
Which Wiki Edit	Match a recent Wikipedia revision to its corresponding edit message	English [1], Russian [2], Spanish [3], German [4], French [5], Turkish [10], Japanese [11], Vietnamese [12], Chinese [15], Arabic [17], Norwegian [25], <b>Tagalog [53]</b>

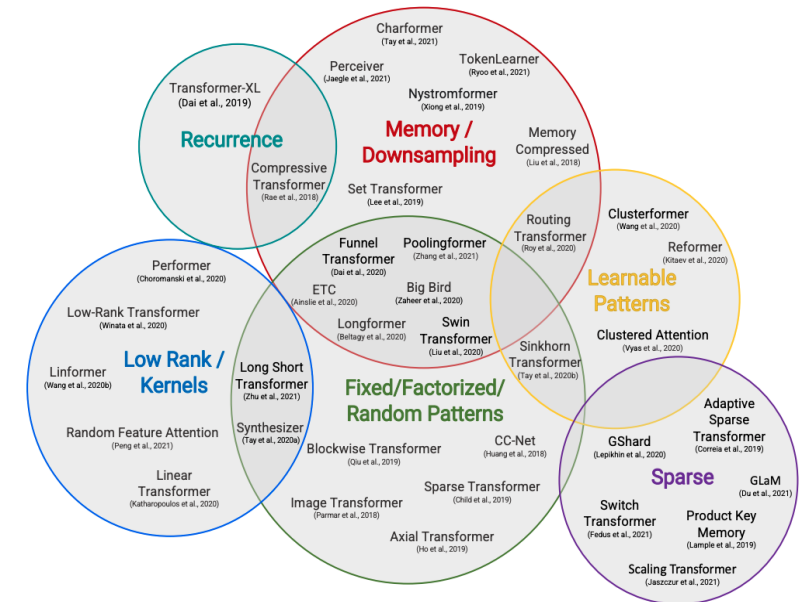
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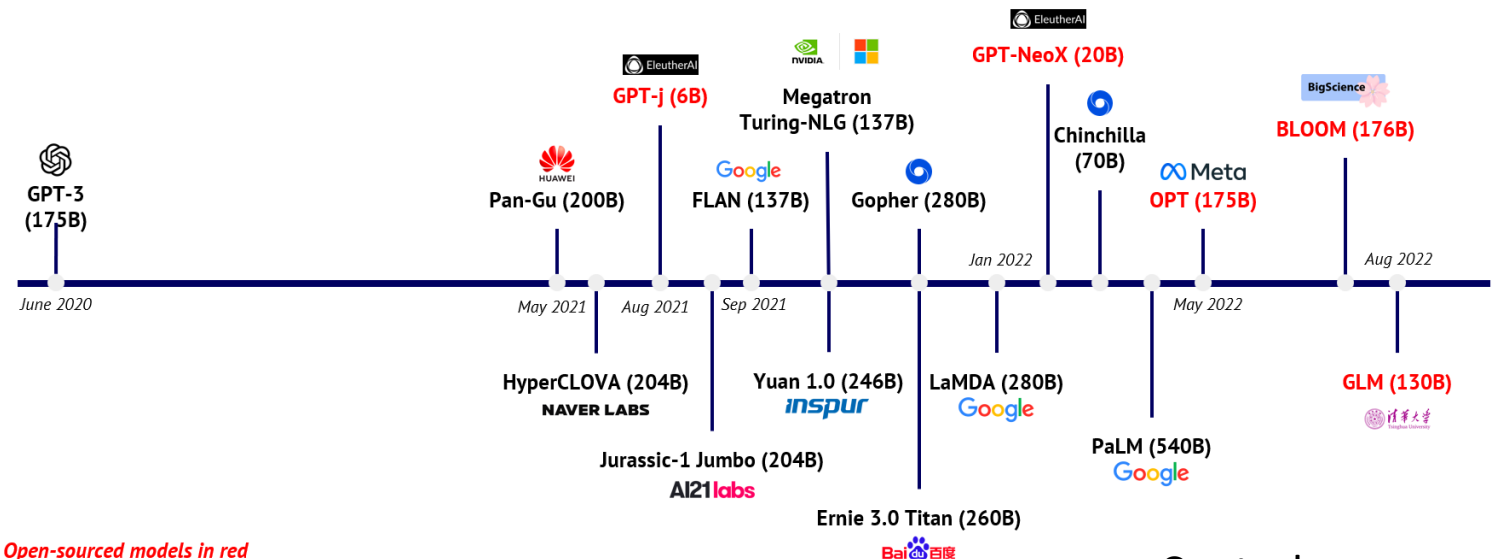
# Revelations



Truthfulness



Efficiency (sustainability?)

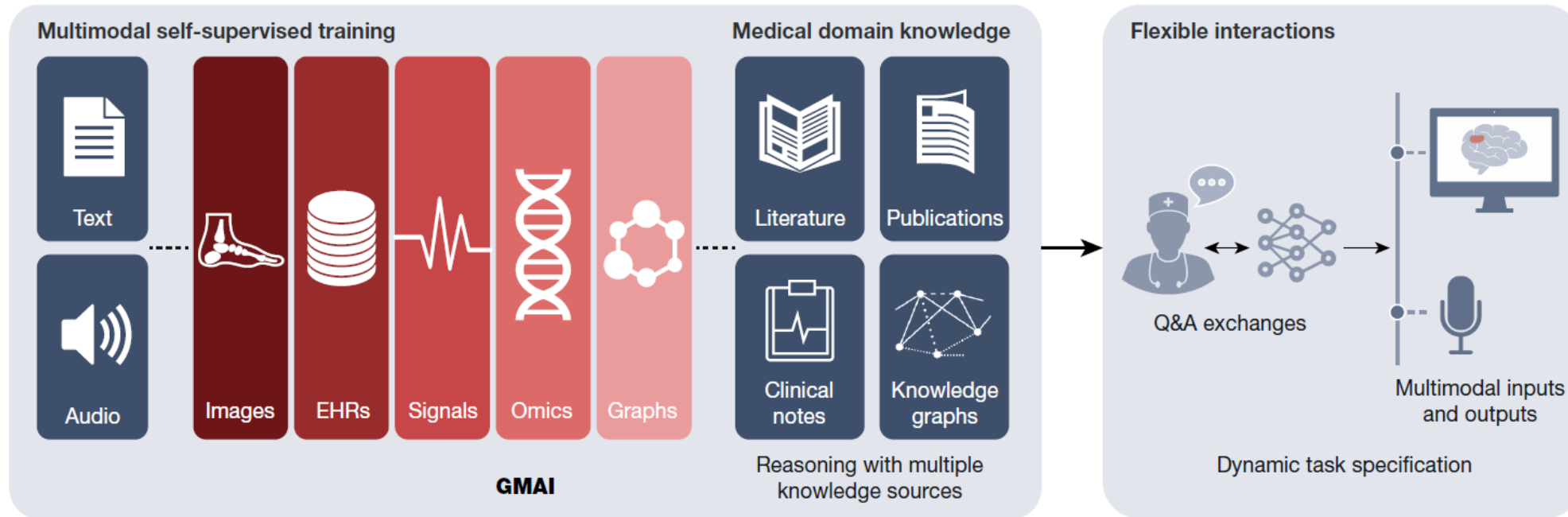


Open-sourced models in red

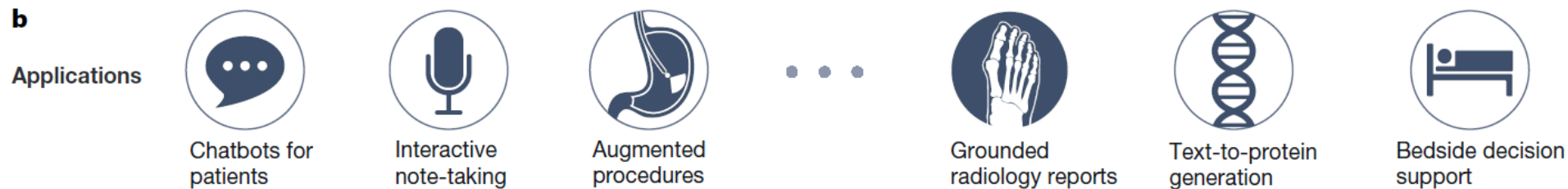
Control

# Foundational Models (LLM – Minerva, Med-PaLM)

**a**



**b**



**Regulations:** Application approval; validation; audits; community-based challenges; analyses of biases, fairness and diversity



Ref: *Foundation models for generalist medical artificial intelligence, Moor, Banerjee et. Al.*

So LLM (ChatGPT behind the scenes parents) are the future?



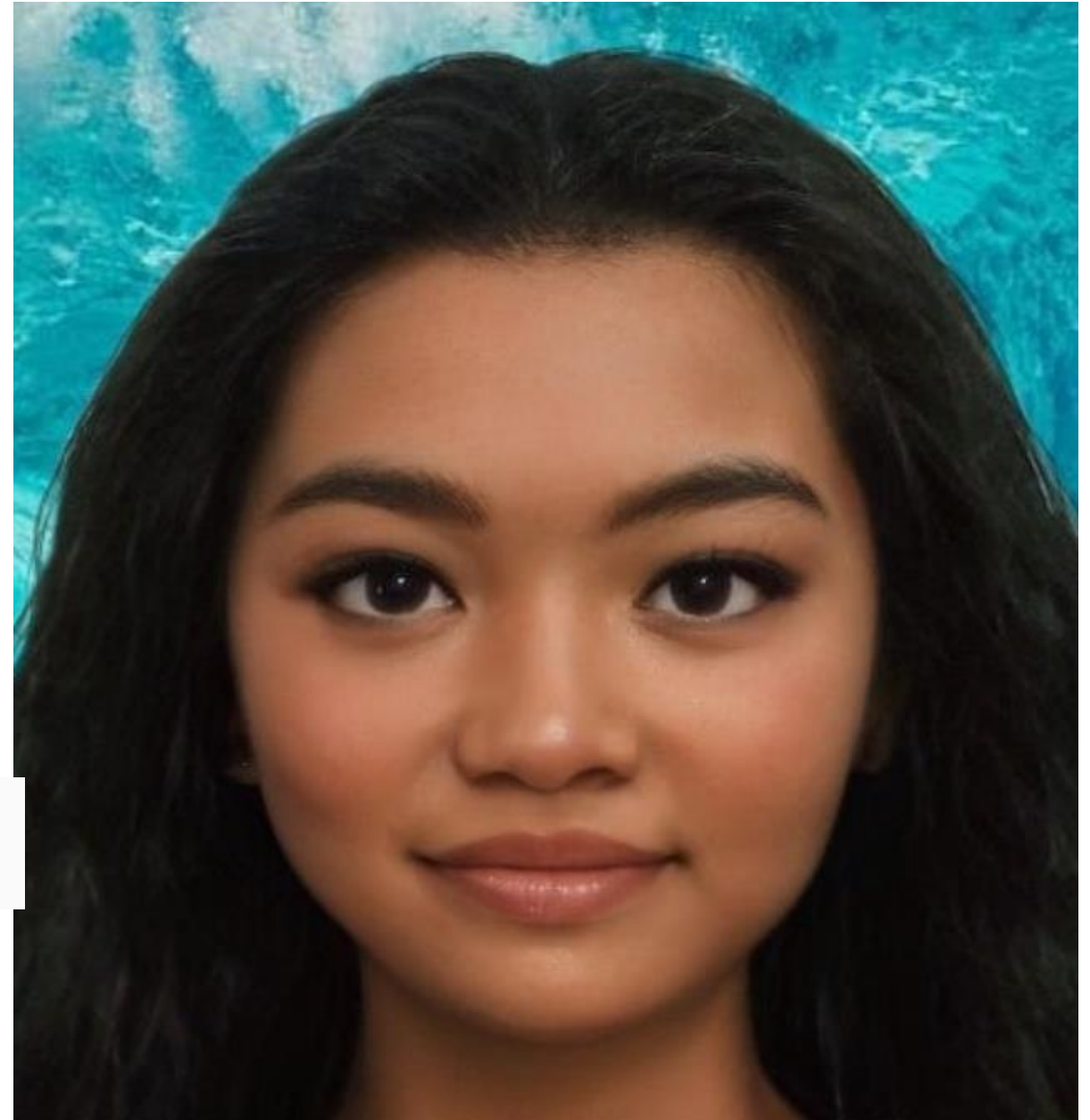


toyboyfan [Segui](#) ...

158 post 17,9mila follower 173 profili seguiti

Just another artist here.

**2020**



<https://github.com/huggingface/pytorch-pretrained-BigGAN>

From GANs

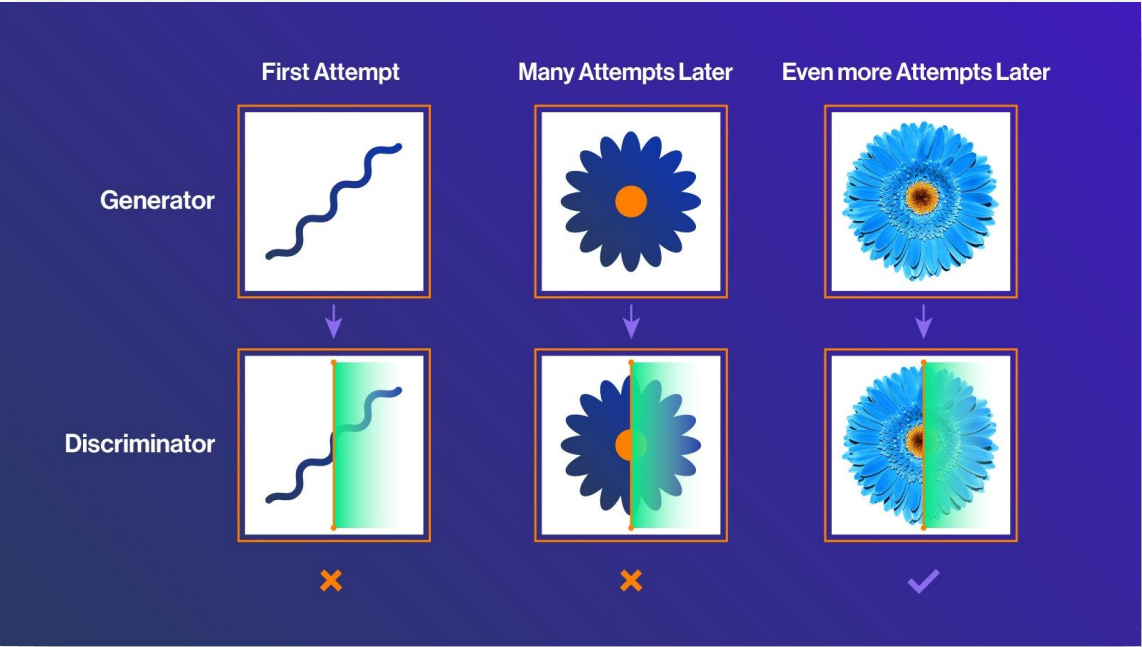
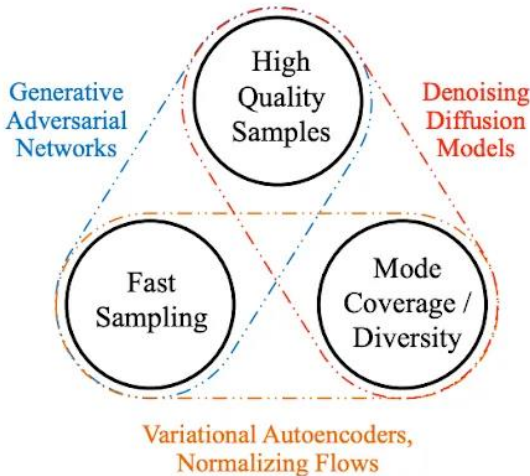


Image Generation Trilemma (NVIDIA)

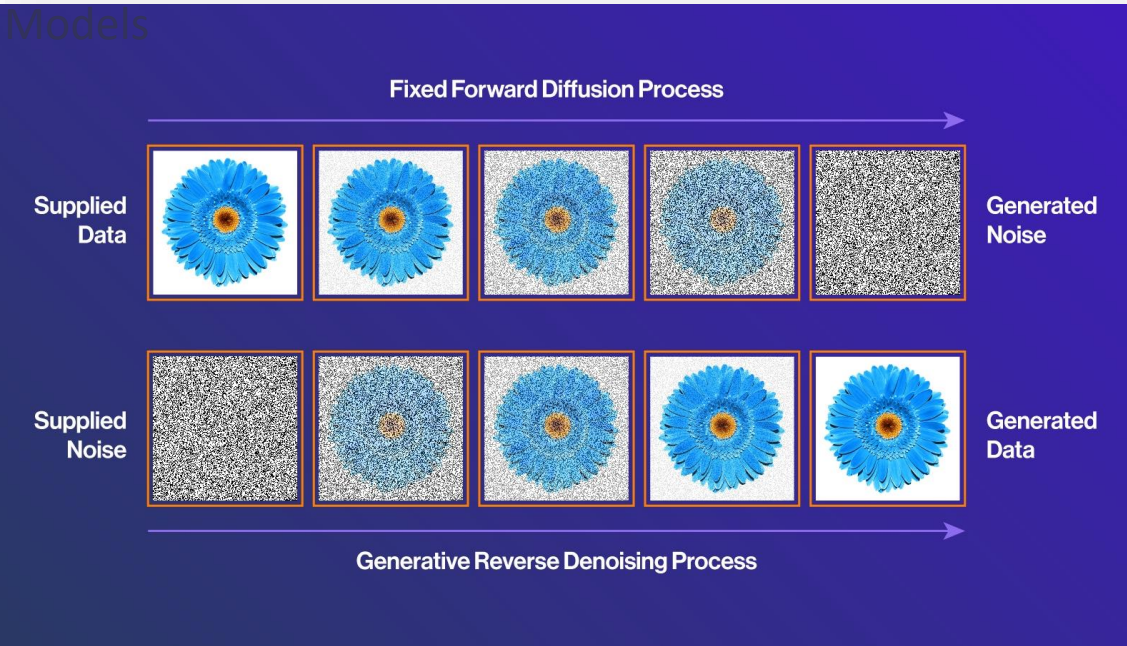


AI Models and Timelines

Model	Notable AI products	Research Paper	Details
VAE	Amazon Alexa, Google Photos, Spotify	Dec 2013	Kingma & Welling "Auto-Encoding Variational Bayes"
GAN	AlphaGo, DALL-E, NVIDIA StyleGAN	Jun 2014	Goodfellow & Bengio et al. "Generative Adversarial Networks"
Flow models	Google Pixel 4, GPT-3, NVIDIA StyleGAN	May 2016	Dinh & Bengio et al. "Density estimation using Real NVP"
Transformer	BERT, Google Translate, OpenAI's GPT models	Jun 2017	Vaswani & Polosukhin et al. "Attention is All You Need"
Diffusion	DALL-E 2, Midjourney, Stable Diffusion	Jun 2018	Gregor & Weber et al. "Temporal Difference Variational Auto-Encoder"

col\_jung Medium Col Jung

To Diffusion





## Forward Diffusion

From any source image to pure noise

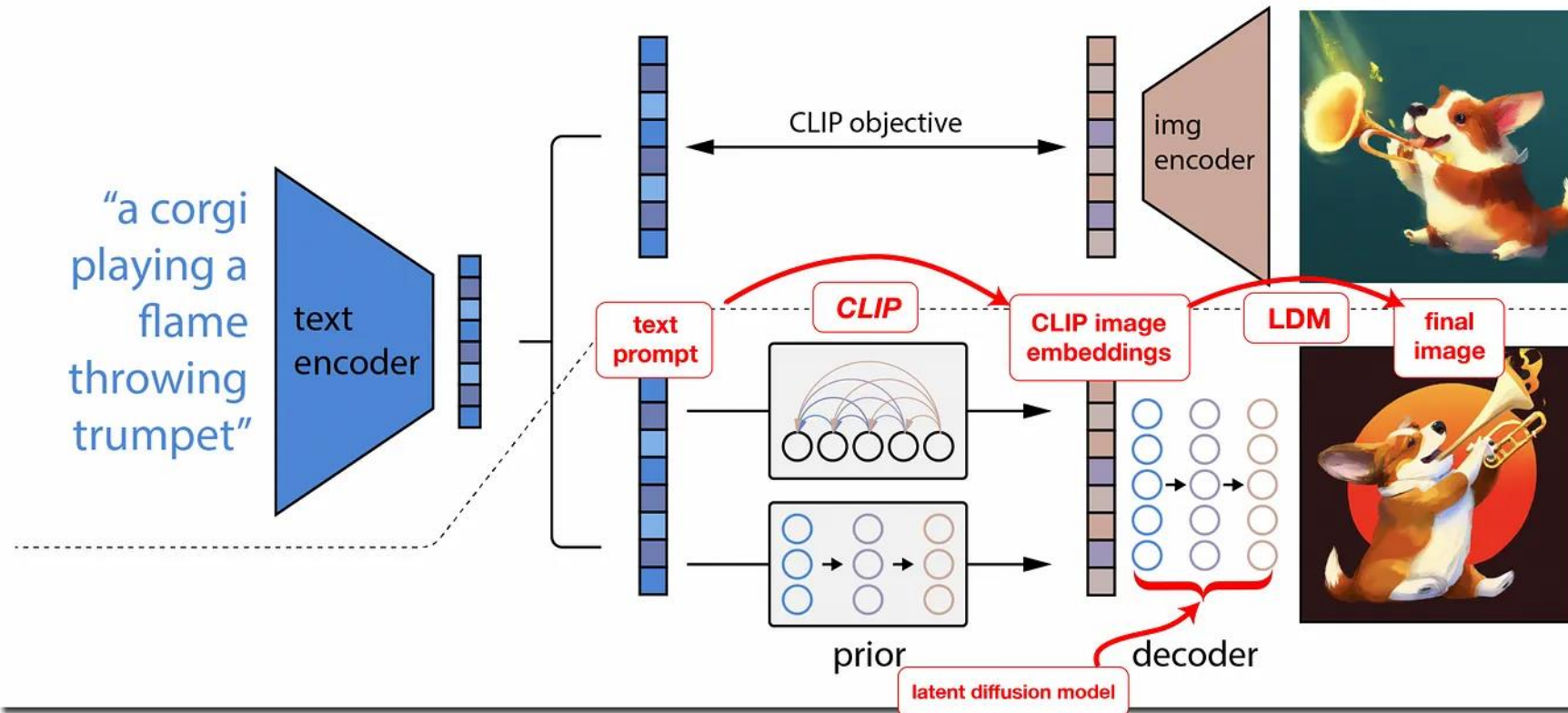


## Reverse Diffusion

Now train models to (progressively) de-noise



## Stable diffusion models = CLIP + LDMs



## SOTA

CLIP (Transformers)  
+ LDMs (Latent  
diffusion models)

Generalization (TR)  
+ details (LDM)

Image from  
[Ramesh & Chen et al. \(2022\)](#) (OpenAI)

# Generative

Product	Public Release
DALL-E	Jan 2021
Midjourney V1	Feb 2022
Midjourney V2	Apr 2022
Midjourney V3	Jul 2022
Stable Diffusion	Aug 2022
DALL-E 2	Sep 2022
Midjourney V4	Nov 2022
Midjourney V5	Mar 2023

The Economist

Russian assets: freeze or seize?  
Managing in a time of stagflation  
Britain's growth problem  
The short-sightedness epidemic

JUNE 11TH-17TH 2022

AI'S NEW FRONTIER



## Midjourney

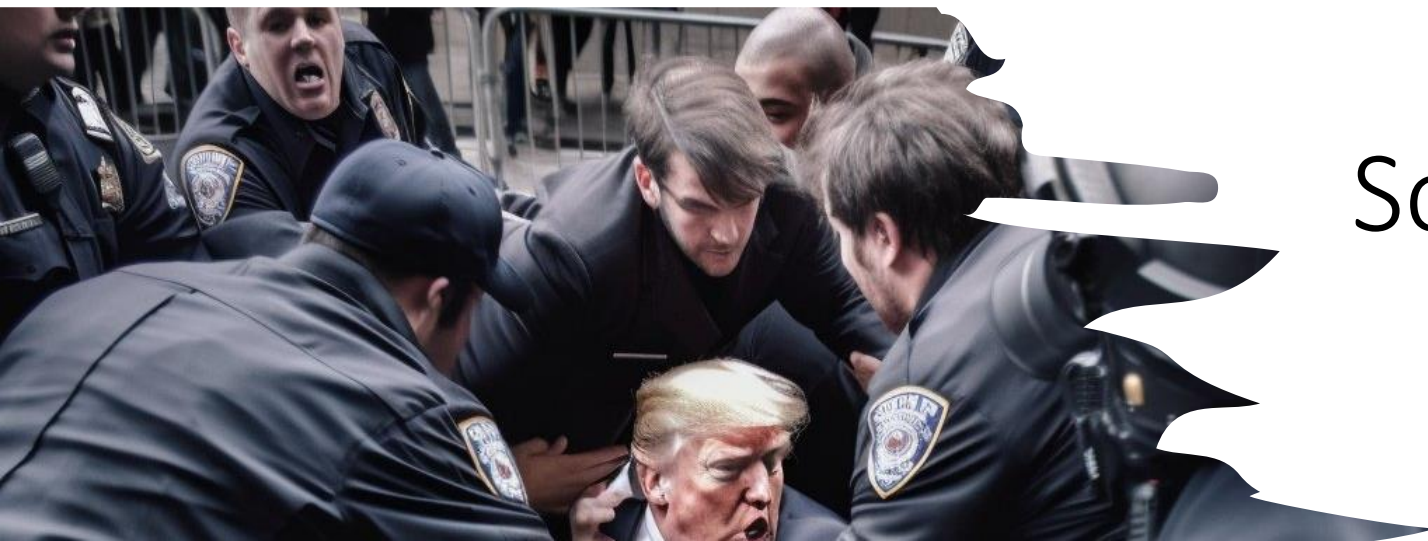
BBQ pork with sunny side up egg rice in a Hong Kong style



V4







Some weeks ago...

# Putting all together..

**Question to GPT (DaVinci Model):**

***«How AI could be beneficial for tourism industry?»***

Synthetic audio (StyleGAN) – Spoiler: Will boom in 2023

Video generation – specific tool



# What about DeepMind Qlearning?





Q-Learning + much more



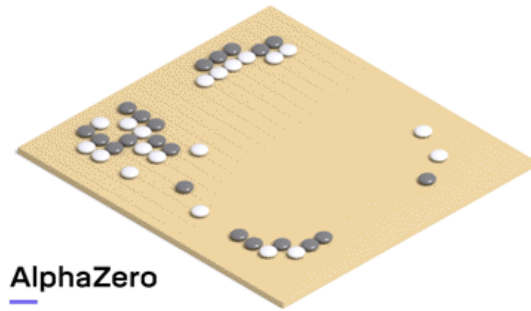
BLOG POST  
RESEARCH

06 DEC 2018

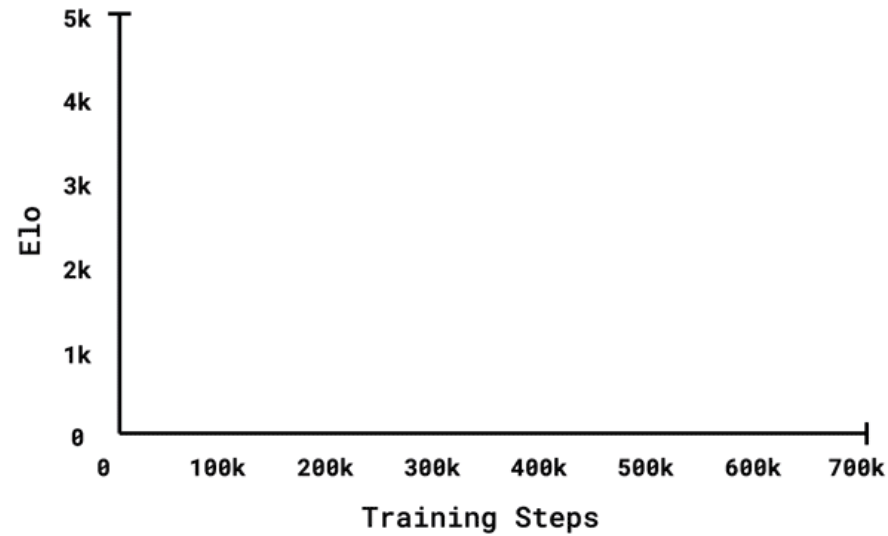
# AlphaZero: Shedding new light on chess, shogi, and Go







AlphaZero

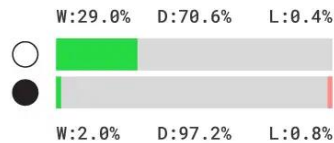


At first, it plays completely randomly, but over time the system learns from wins, losses, and draws to adjust the parameters of the neural network, making it more likely to choose advantageous moves in the future. The amount of training the network needs depends on the style and complexity of the game, taking approximately **9 hours for chess**, 12 hours for shogi, and 13 days for Go

## Chess



AlphaZero vs. Stockfish



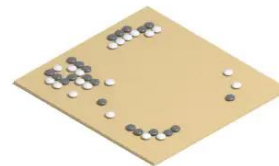
## Shogi



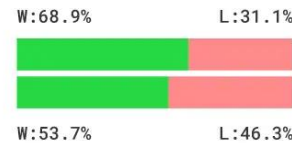
AlphaZero vs. Elmo



## Go



AlphaZero vs. AGO



Case LIVE 2 Time: 31.8 s

Distance: 3,875 ft

Closure: 382 kts

Heading: 68 deg

Alt: 13039 ft

Speed: 238 kts

Climb: 80 fps

Track Ang: 4 deg

1.7g

1

0

Heading: 218 deg

Alt: 12420 ft

Speed: 243 kts

Climb: 148 fps

Track Ang: 29 deg

3.1g

Test Case 2



Heron

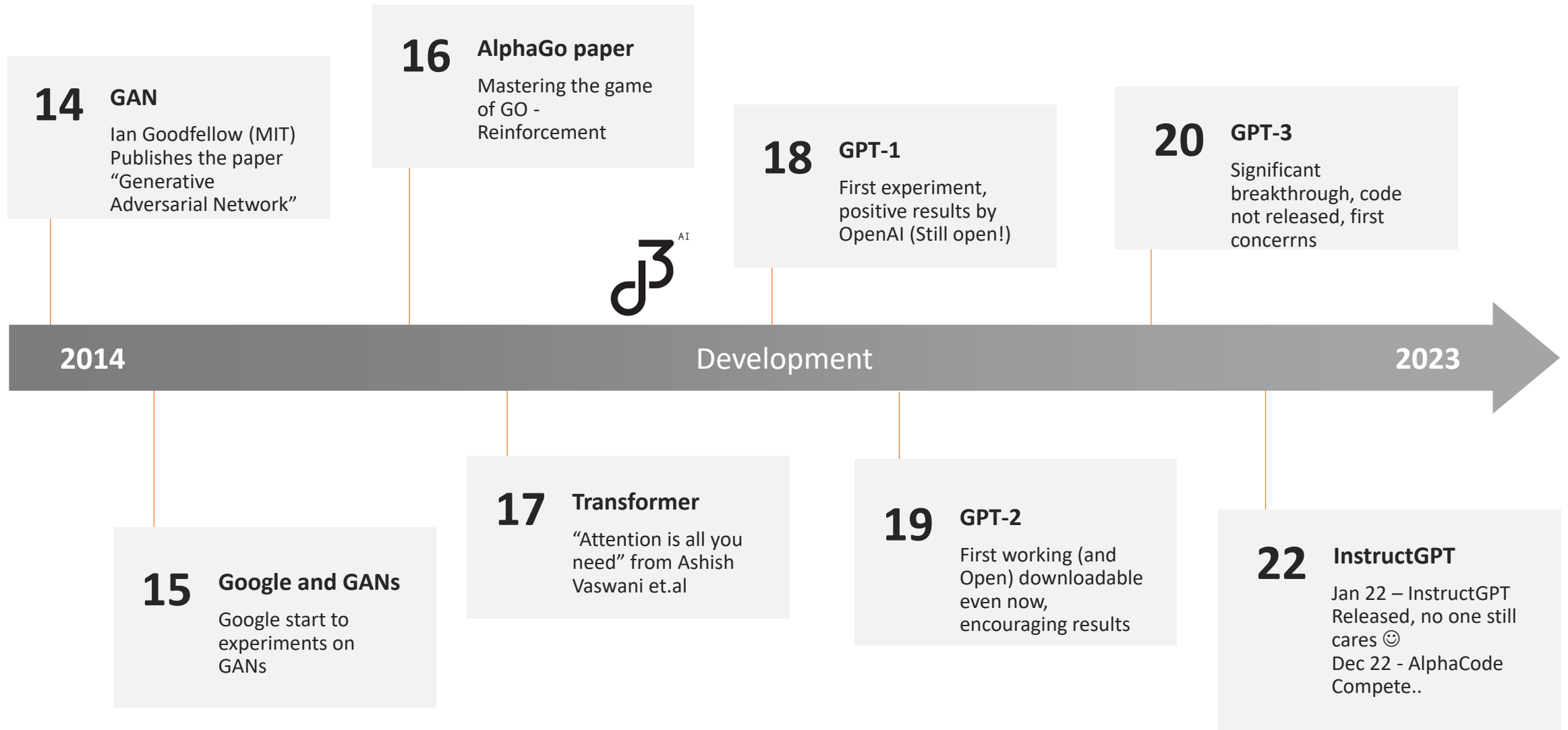
Banger

VS

ADT Webinar

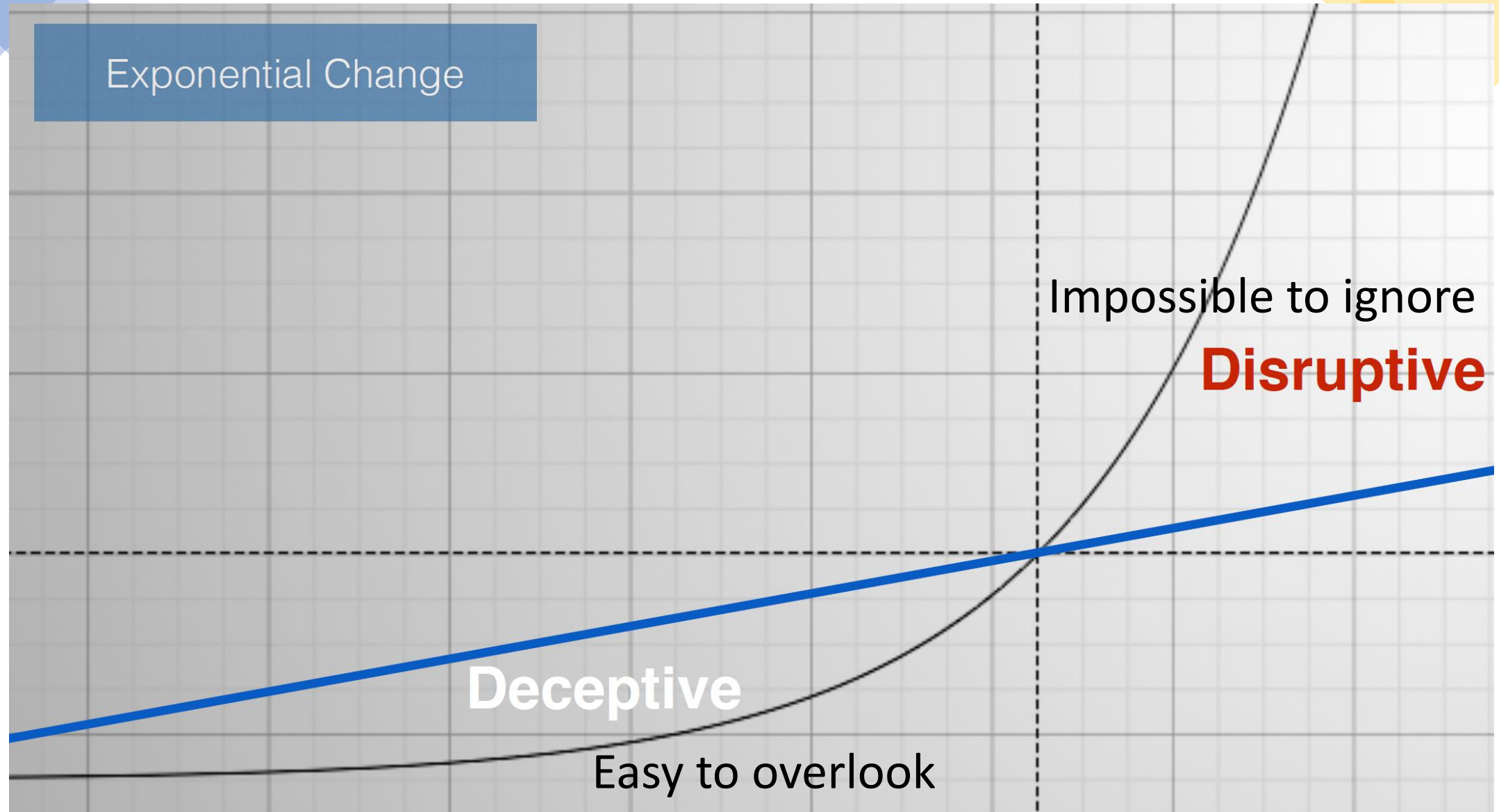


# Generative AI past timeline... 😊



RL is still widely overlooked...

## Exponential Change

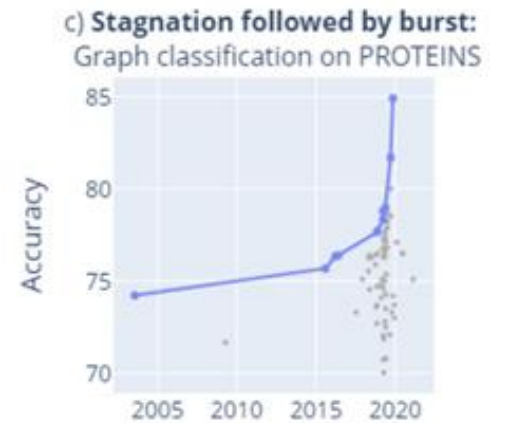
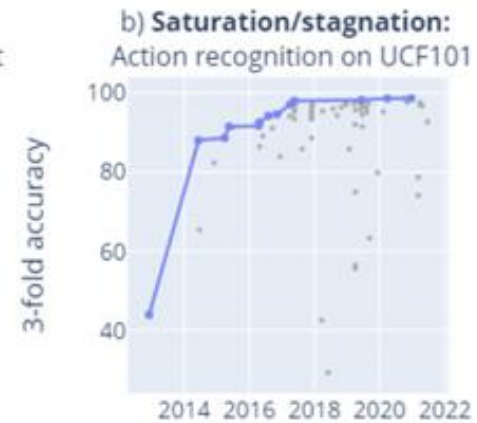
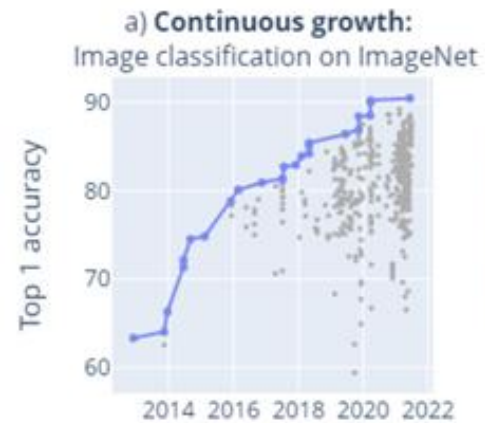


# Al Generativa (Una slide in italiano!! 😊)

AI Generativa (una sfida in più)								
Analisi e riepilogo	Revisione Codice	Design				Ontologie	Campo di applicazione	
Scrittura						Dati		
Supporto (Chat Email)		Costruzione Interfacce				Consumer / Social		Gaming
Vendite (Email)		Codice Generazione				Media / Advertising		RPA
Marketing (contenuti)		Codice Document.				Generazione Immagini		Sintesi Vocale
						Biologia e chimica		
TESTO	CODICE	IMMAGINI	VOCE	VIDEO	3D	ALTRO		
GPT-3 / 4	GPT-3 / 4	Dall-E 2	Whisper	X-Clip	DreamFusion	AlphaZero	Modelli Esistenti	
Gopher	MS Copilot	Stable Diffusion	Lovo	Make –a-Video	MOM	More		
Meta OPT	Tabnine	Craiyon			NVIDIA GET3D			
Claude	Stability.ai	Midjourney						
PaLM								
AI2								



# Ehm and Analytical AI? ☺



# The AI perception

## WHAT COMPANIES THINK A.I. LOOKS LIKE

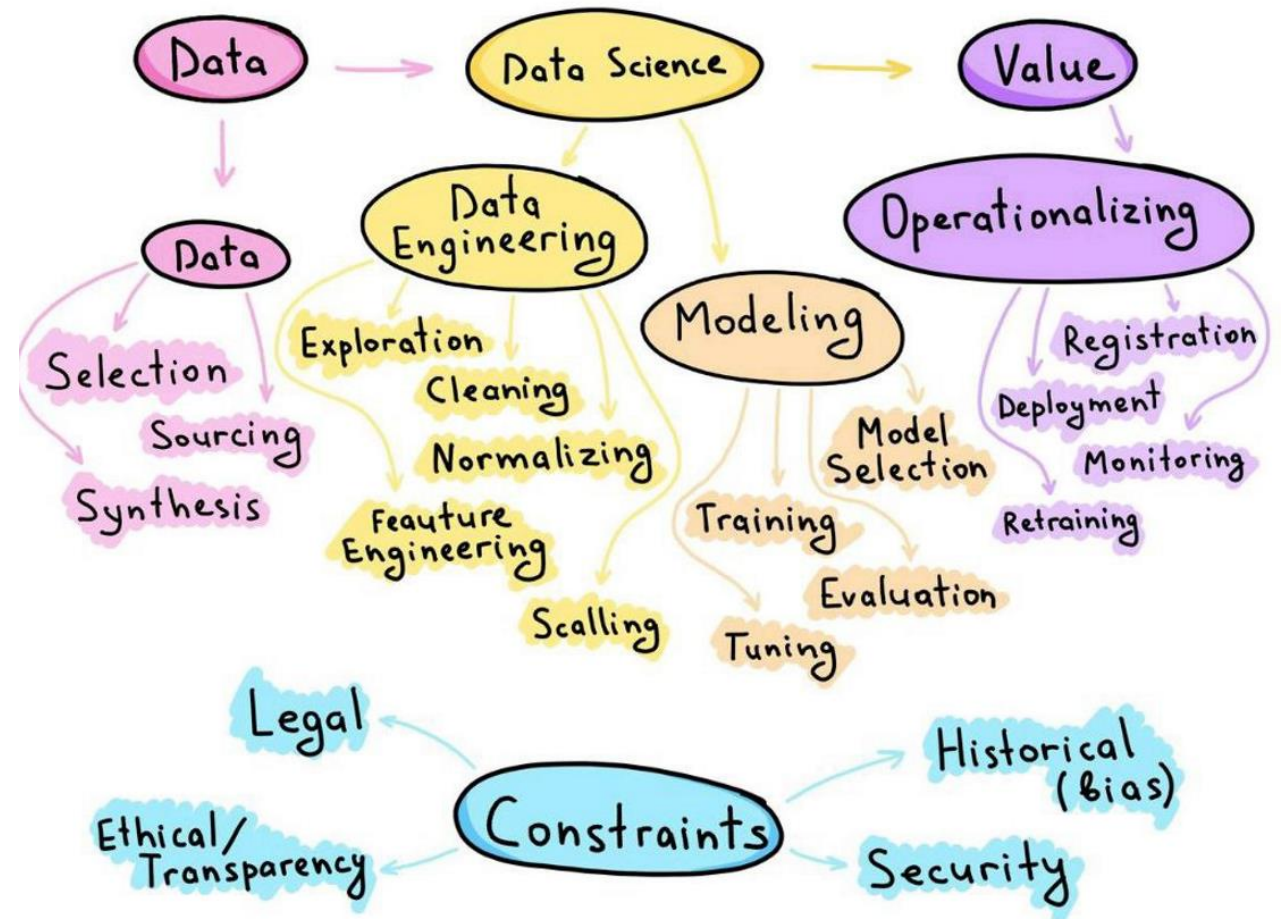


Multi-disciplinary Collaboration

Business Design

Impact Planning

## WHAT IT ACTUALLY IS



What could we do in the  
«real world»? 😊  
CORPORATE (Circa)

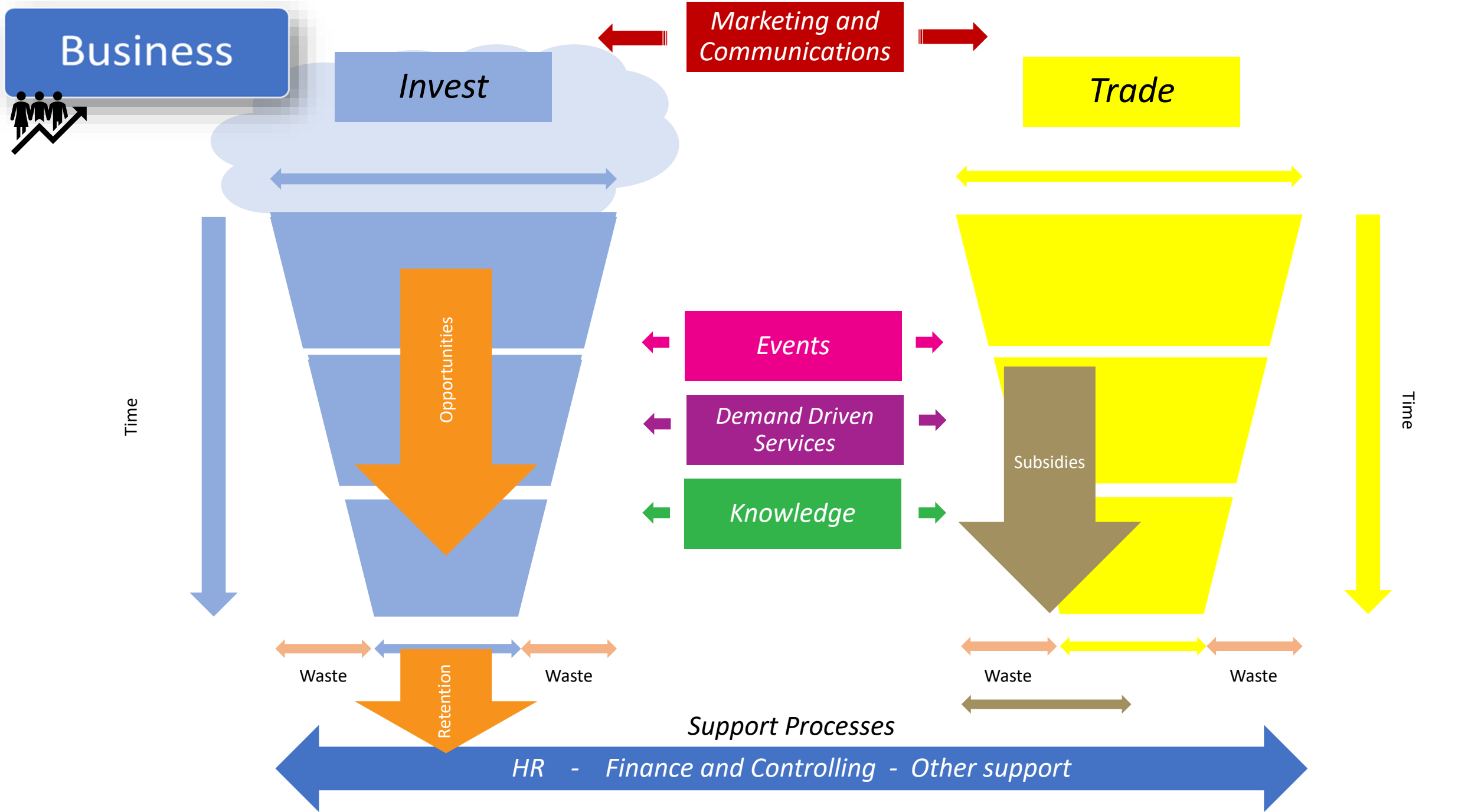


European Commission  
Structural Reform Support Service



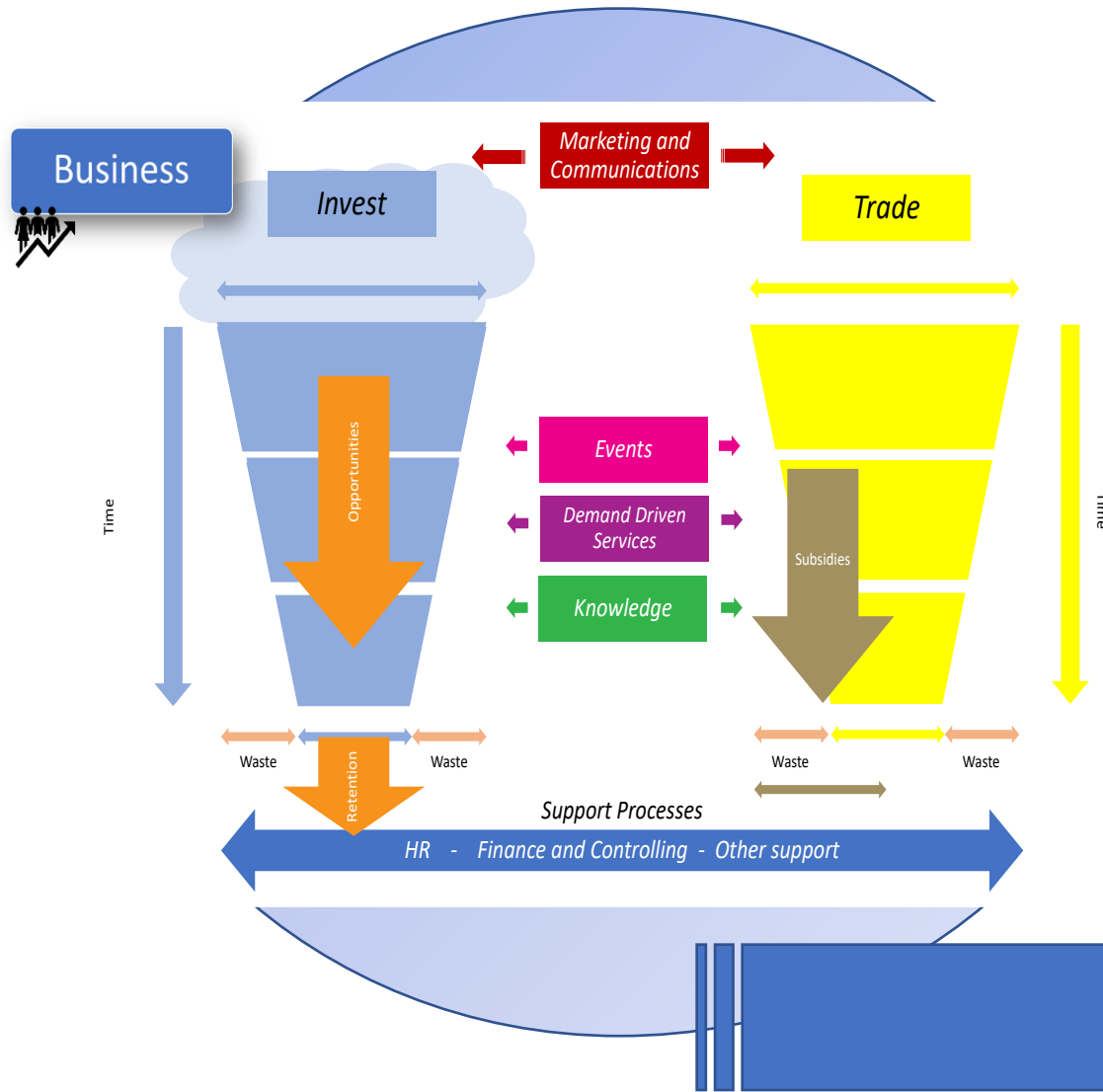
<https://www.youtube.com/watch?v=-44xdo5tRaA&t=4s>

Belgio / EU 2019  
***Lighthouse Project***  
European Artificial Intelligence **Blueprint** in governmental adoption

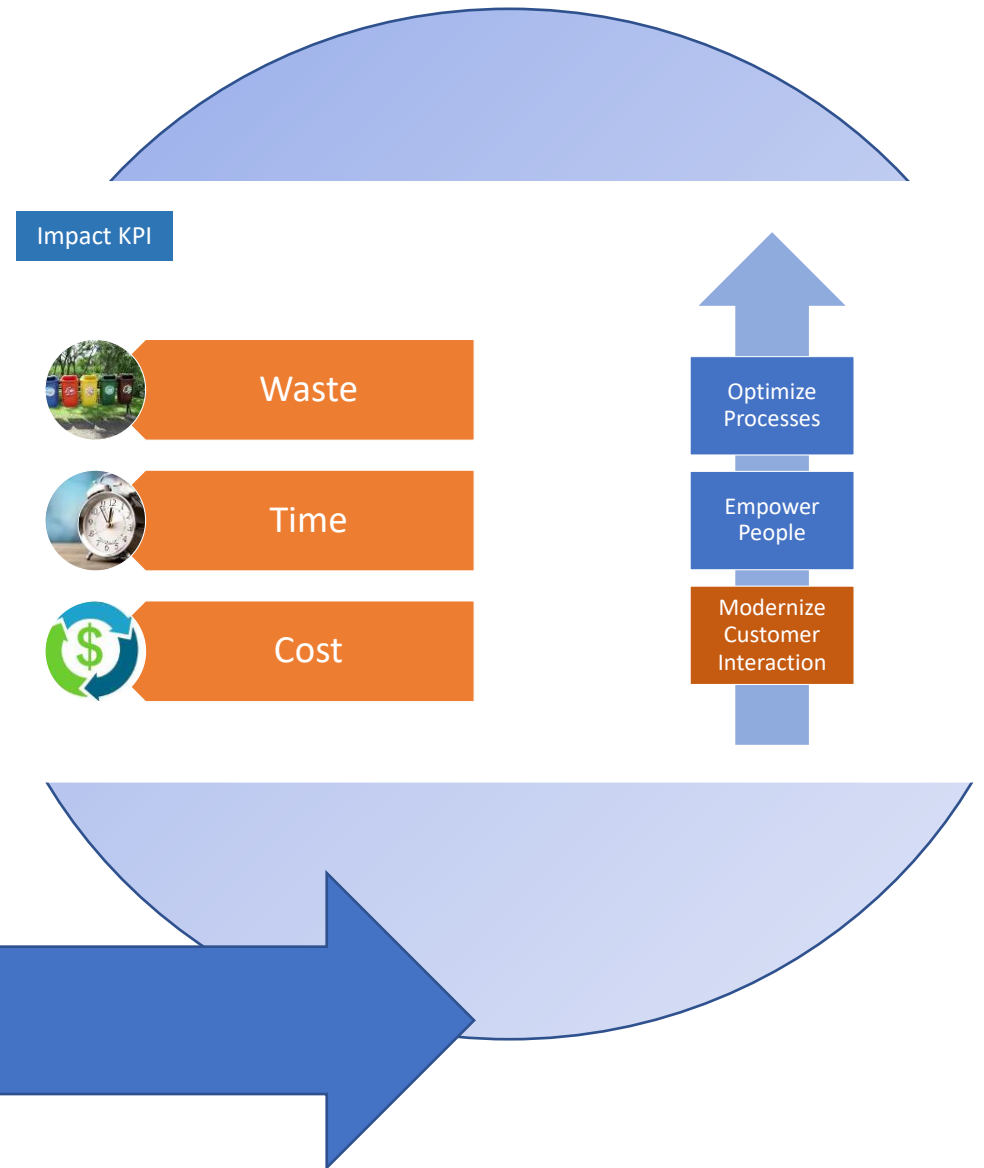




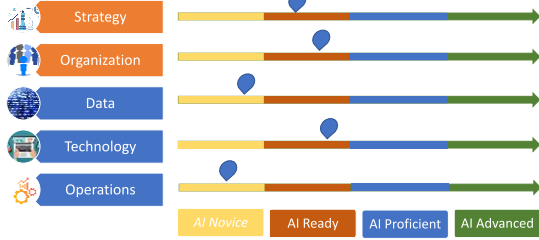
# PROCESSES



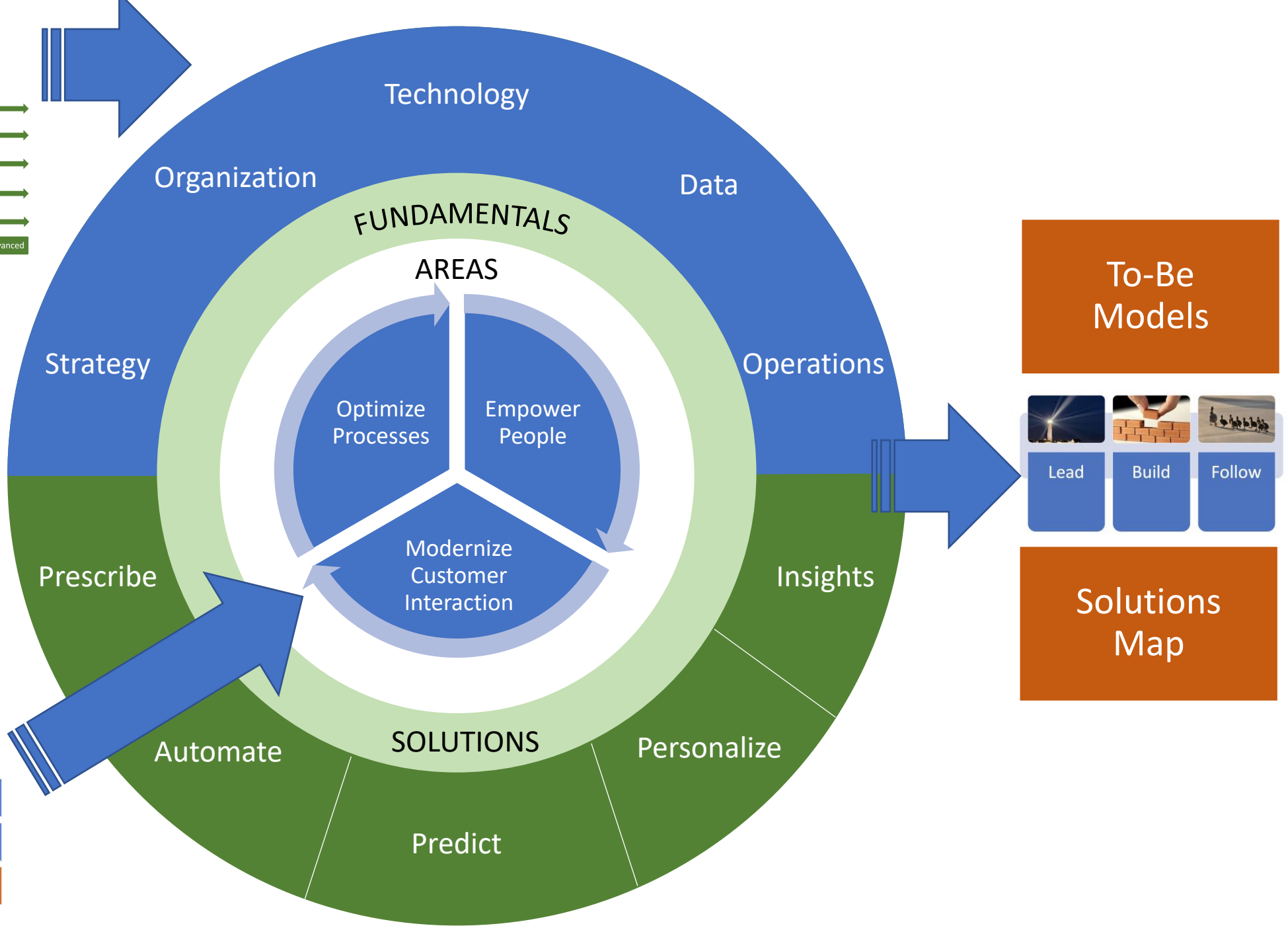
# KPIs



AI Assessment

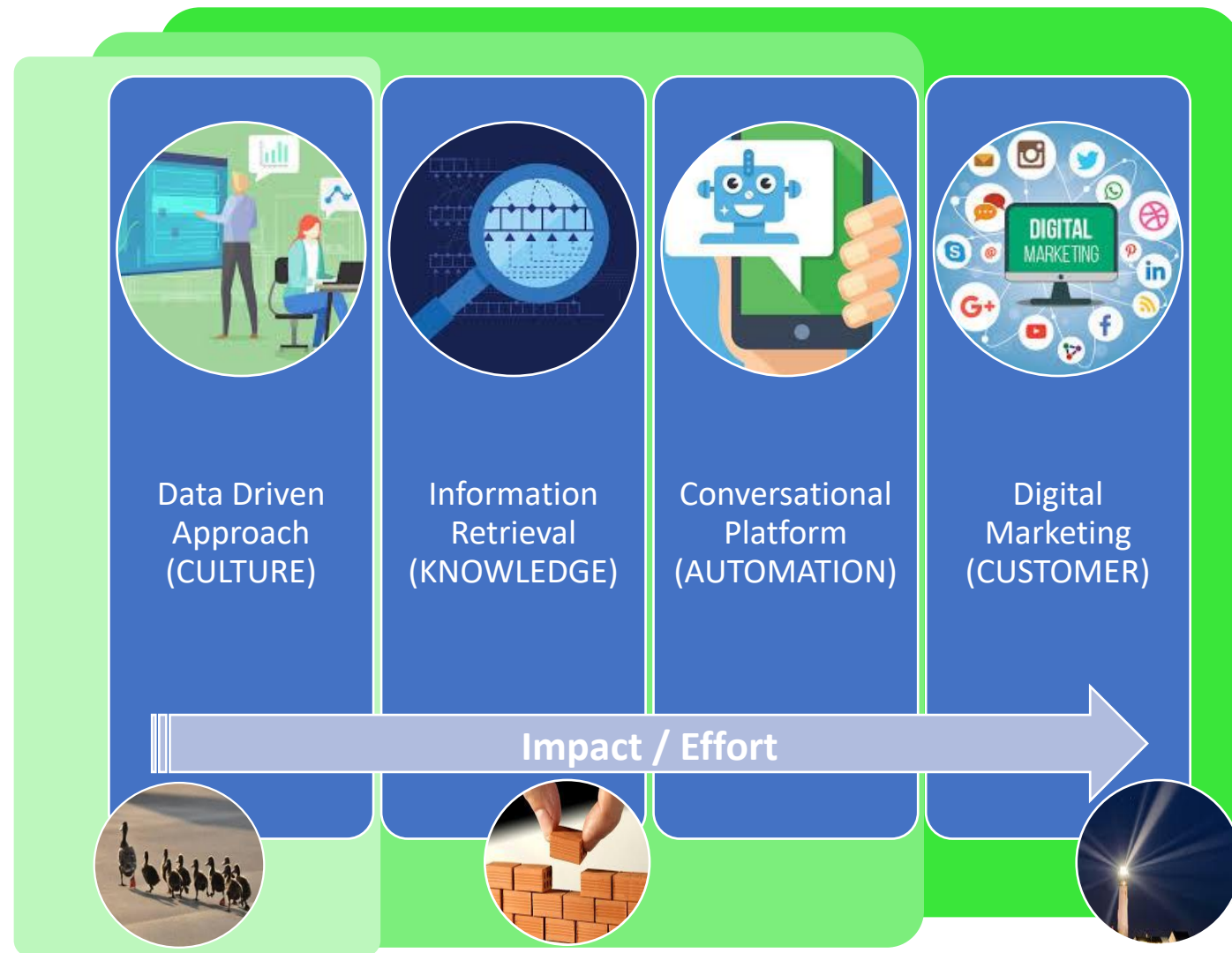


Impact KPI

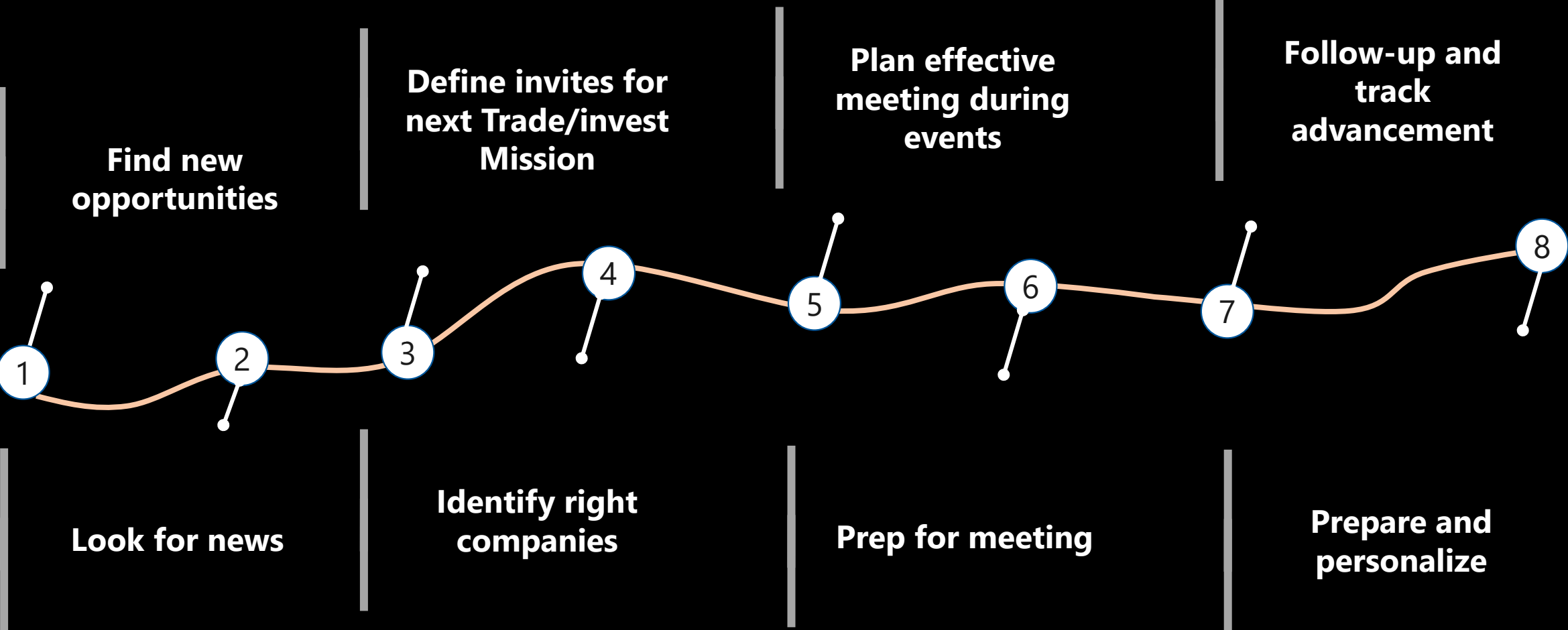


## AI application landscape for FIT

### Recommended Core Initiatives



# Day in the life of a Foreign Network



Current Needs

Customer Intelligence

Current market situation

Matchmaking and rec.

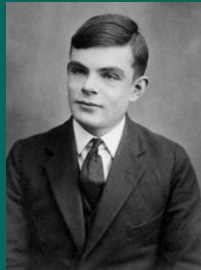
Location and venues

Status and scoring

Documents autocomposition

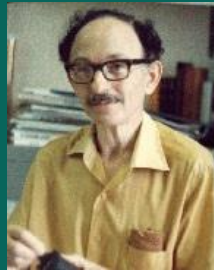


# AI is for good or will kill us all? (powerful, handle with care...)



Alan Turing  
1951

“...it seems probable that once the machine thinking method has started, it would not take long to outstrip our feeble powers. ... At some stage therefore we should have to expect **the machines to take control**”



I.J. Good  
1965

“Thus the first ultraintelligent machine is the last invention that man need ever make, **provided that the machine is docile enough to tell us how to keep it under control.**”



Marvin Minsky  
1984

“The problem is that, with such powerful machines, it would require but **the slightest accident of careless design** for them to place their goals ahead of ours”

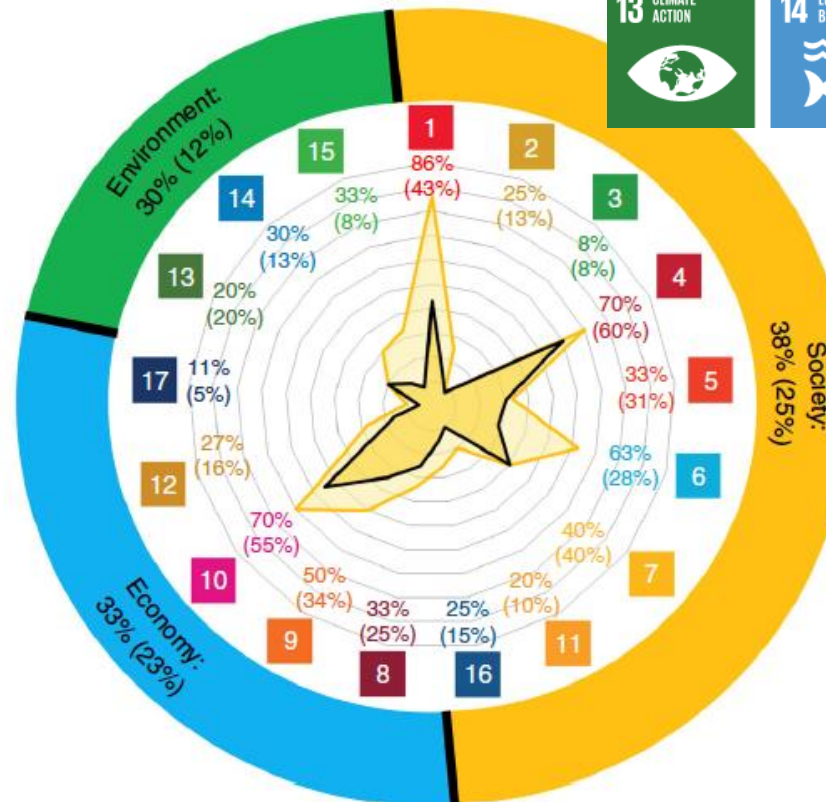
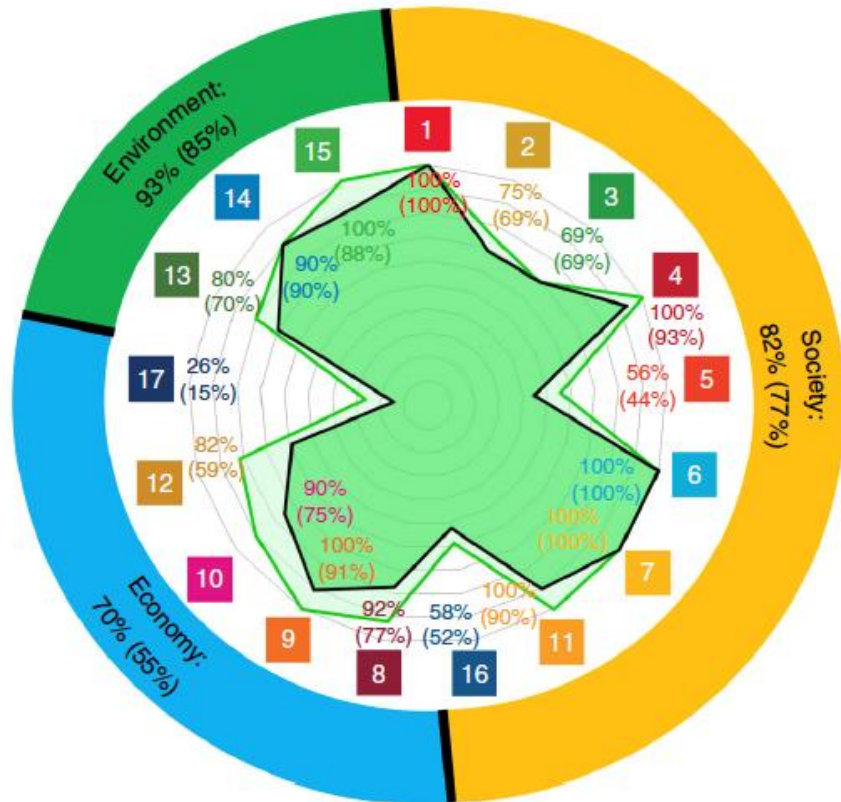


# Sustainable Development Goals (SDG)



**a** Positive impacts of AI: 79% (71%)

**b** Negative impacts of AI: 35% (23%)

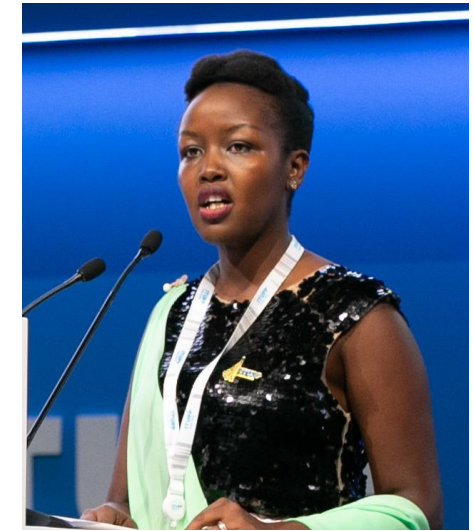
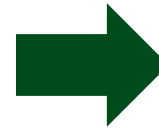




## BLUEPRINT ARTIFICIAL INTELLIGENCE FOR AFRICA

FIRST EDITION © 2021

[www.smartafrica.org](http://www.smartafrica.org)



*Paula Ingabire*  
(Jan 83)



*Zipline*

*Babyl*





# The dark side of the moon



NORTH ATLANTIC TREATY ORGANIZATION

[https://www.nato.int/cps/en/natohq/official\\_texts\\_187617.htm](https://www.nato.int/cps/en/natohq/official_texts_187617.htm)

## Summary of the NATO Artificial Intelligence Strategy

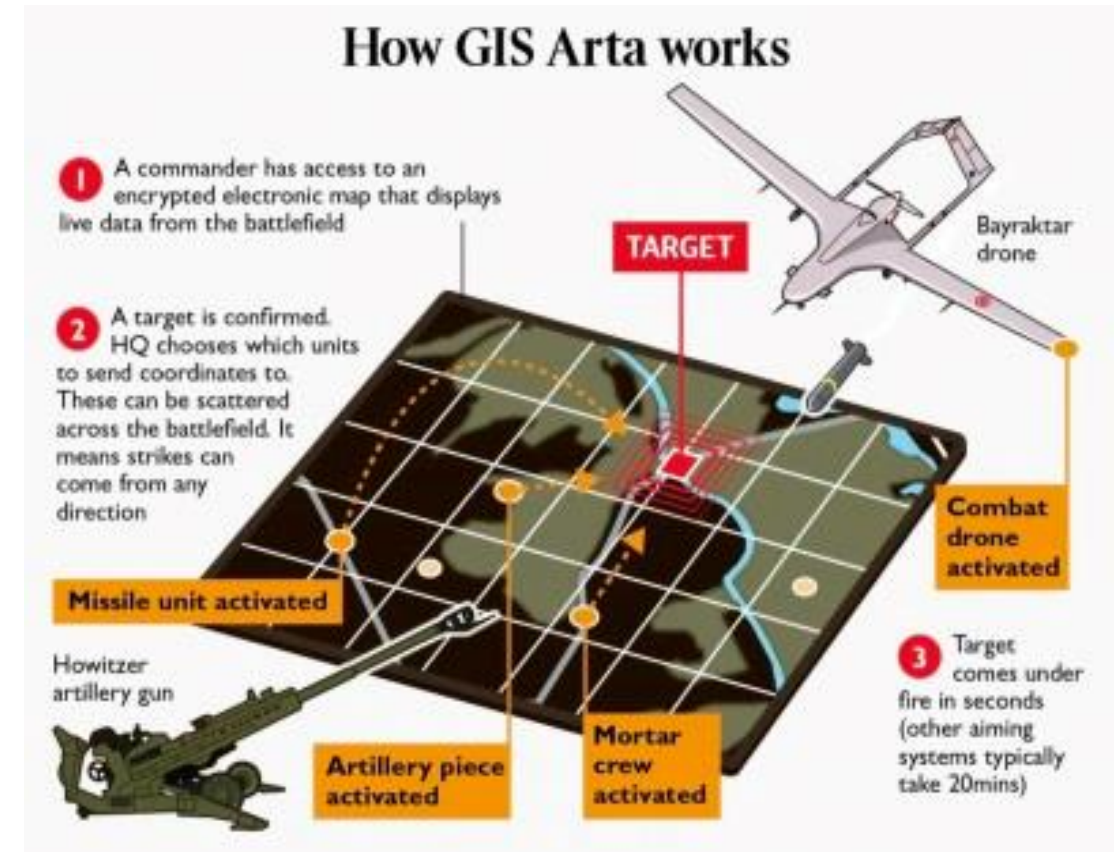
22 Oct. 2021 - | Last updated: 22 Oct. 2021 13:43

English | French | Ukrainian

1 BN\$ to invest in «dual-use» AI technologies

**Shield.AI** – 2,3 Bn\$ (dec 22) «Building the world's best AI pilot»

**Helsing** – 102 M € series A «AI to serve our democracies»



The use of geospatial (GIS) software has reportedly reduced the decision chain around artillery from **20 minutes** to **under one minute**.

Volunteer based development, based on Uber platform



# EXPERIENCES

## AI for Safety and civilian support



# Lybian Civil War



# Libyan Emergency Chatbot | Overview

Welcome!!! Are you in trouble? مرحبا! انت في مشكلة؟

Just now

Someone was shot. شخص ما تعرض لإطلاق النار. I am wounded. إني مجروح. I am a victim of violence. أنا ضحية للعنف.

Type your message

I am wounded. إني مجروح.

Just now

Send a GPS signal. يمكنك الإعتقاد بما تريد لكن هذا ليس شيئاً. Write a message. ليترك ترسل رسالة نصية.

Just now

Send a GPS signal. يمكنك الإعتقاد بما تريد لكن هذا ليس شيئاً.

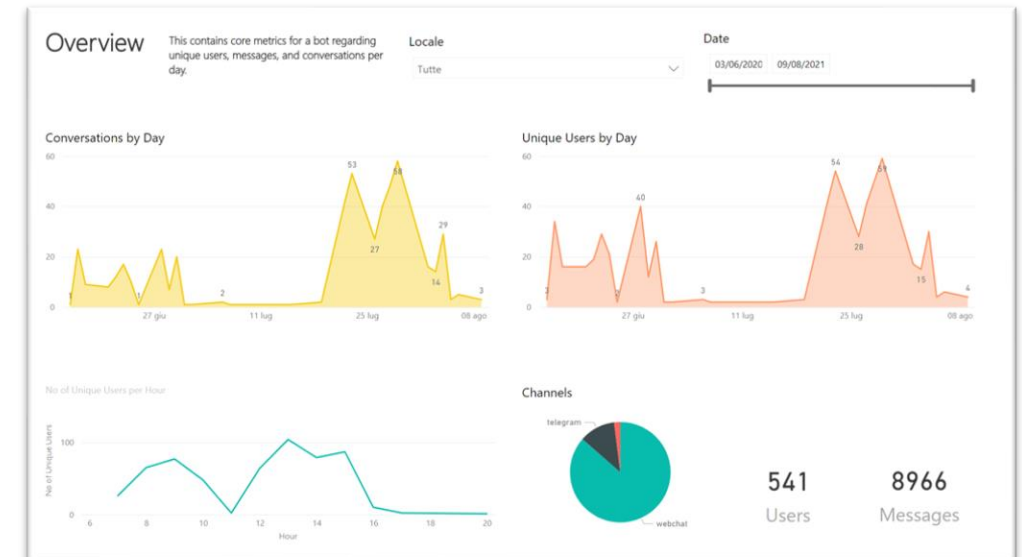
Just now

GPS signal sent successfully. تم إرسال الإشارة بنجاح.

Just now

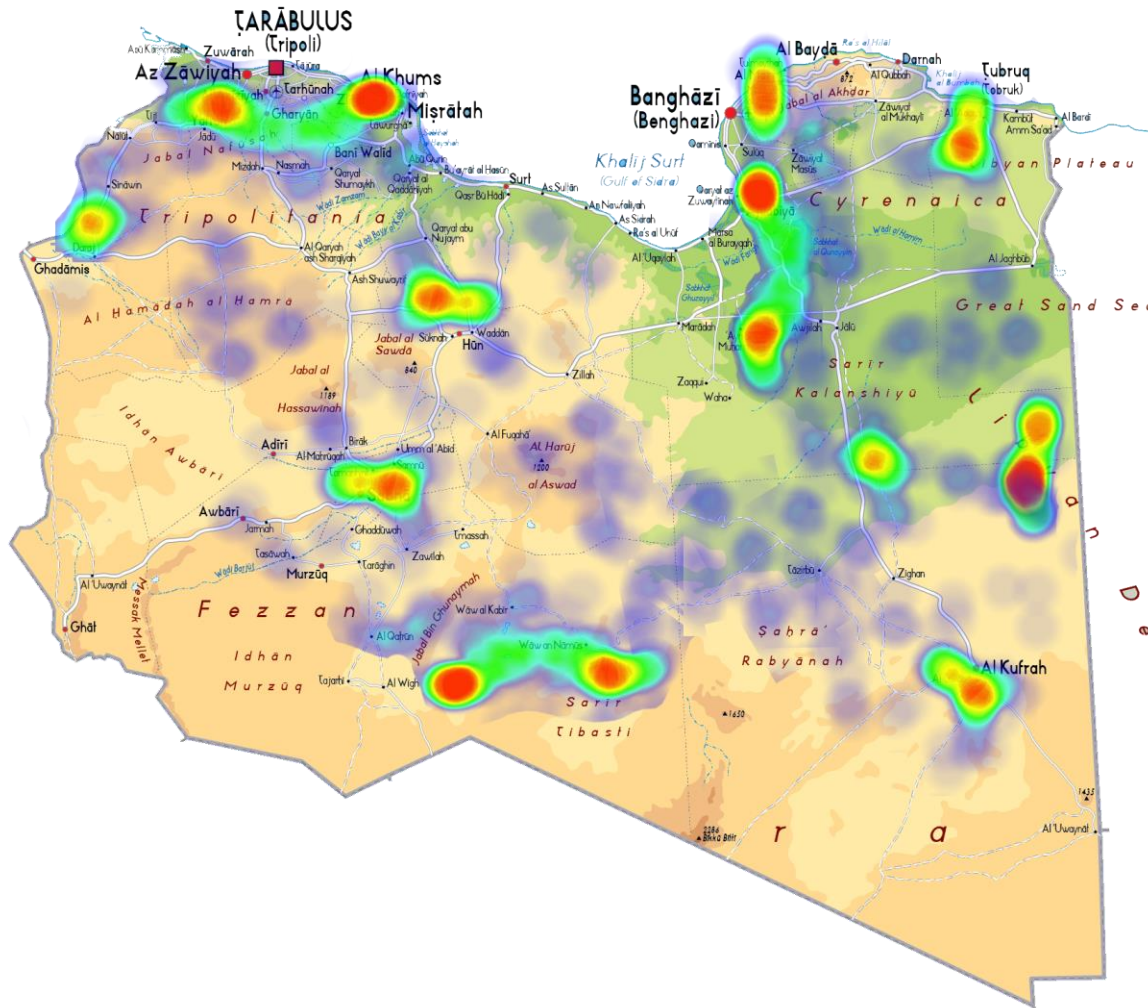
The **main benefit** of the Libyan Emergency Chatbot that we are designing:

- **Reduction** of response times
- **Targeted** measures in the concerned areas
- **Mapping** of the emergencies in the areas
- **Predictive Models** through the Artificial Intelligence





# Libyan Emergency Chatbot | Overview



The chatbot will be characterized by a data collection system which, using the **Artificial Intelligence**, can produce a **Heat Map** where the Libyan areas with the majority of the emergency calls are mapped.

The use of **AI** will allow the emergency service to have a **talking map of the Libyan territory**, thanks to which it will also be possible to develop **predictive models** that enable the emergency service **to manage more efficiently and**, consequently, **optimize** the rescue service resources.

Thanks to





# Non Traditional data and Some magic with Image Enhancement

## Kenya – Data Driven strategies

Maturity assessment findings and Dashboard strategy



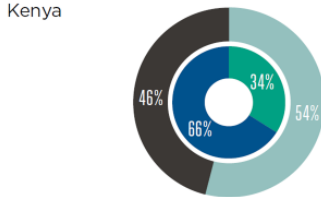
UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

[https://www.youtube.com/watch?v=Z8Q\\_xfmx1T8](https://www.youtube.com/watch?v=Z8Q_xfmx1T8)

January 2020

## Agriculture Contribution to GDP and labour force 2018

Kenya



**GDP**

■ Agriculture industry ■ Other industries

**Labour force**

■ Agriculture labour force ■ Other labour force

The World Bank (2018), "Agriculture, Forestry, and Fishing, value added, % of GDP".  
The World Bank (2018), "Employment in agriculture, % of total employment, (modified & automated)".

Data strategies related to

- Online **Integrated Management Information System (MIS)**
- **Horticulture data platform**
  - Production
  - Consumption
  - Food Safety
- **Market Analysis**
  - Demand
  - Price
  - Standards
- Contractual Agreements – National, Regional, International

# Categories for Data Collection

Producers (MSME)

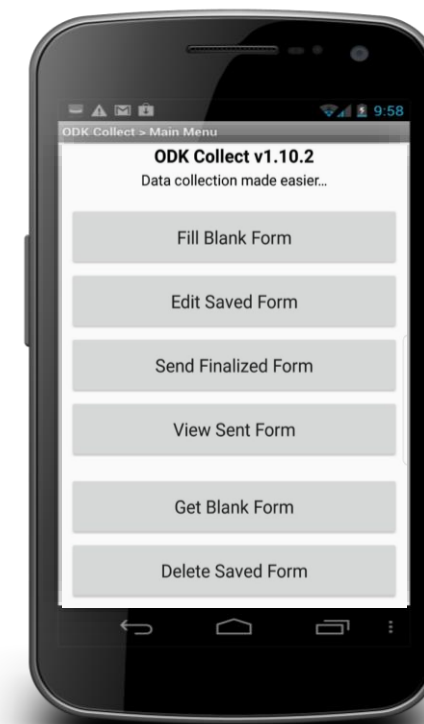
Commercial Buyers

Service Providers

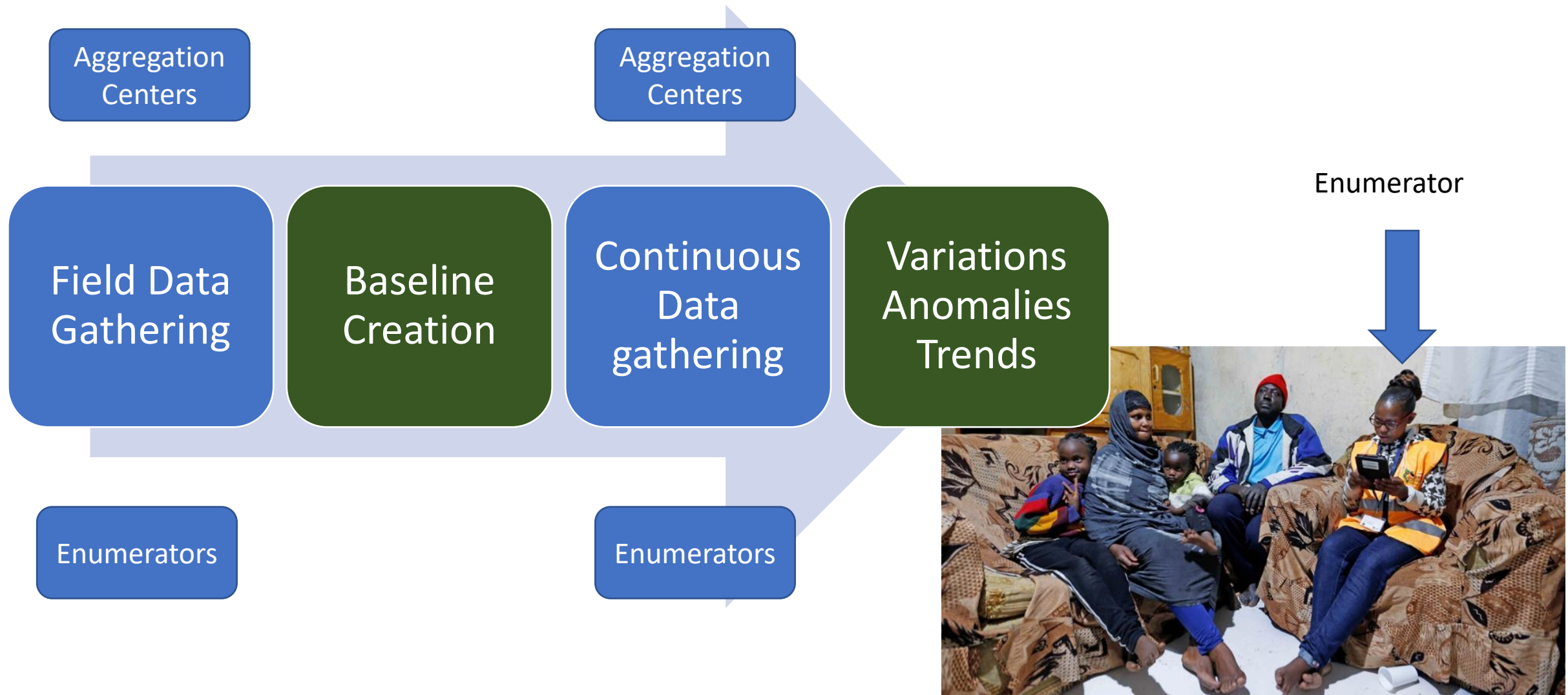
Commercial Sellers

Farmers Bio Data  
Level of Production  
Marketing situation  
Current skill level  
Membership group  
Machineries and equipment  
Access to farm labour  
Pest and disease record

## Specific Field Tool



# The «standard» process





# Maturity Scenario

## Data Maturity Progress

BASIC

READY

DYNAMIC

ADVANCED

Progress

### Awareness

- Understanding of value of data
- Definition of audiences and needs

### Design

- Definition of needs and areas
- Definition of tools and processes
- Definition of modality

### Data Quality

- Data quality and standardization
- Reports and outputs
- Continuous data gathering

### Data Integration

- External data sources to complement
- Usage of non-traditional data
- Dynamic and self service reporting

### Data Engineer

- Data lineage and harmonization
- Data Platforms
- Multidimensional analysis
- Detailed time series

### Data Science

- Machine learning applications
- Data and robotic process automation
- Field Data integration (IoT)

# Satellite Data for Agriculture improvement

First analysis



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



## In-Season Preliminary Results

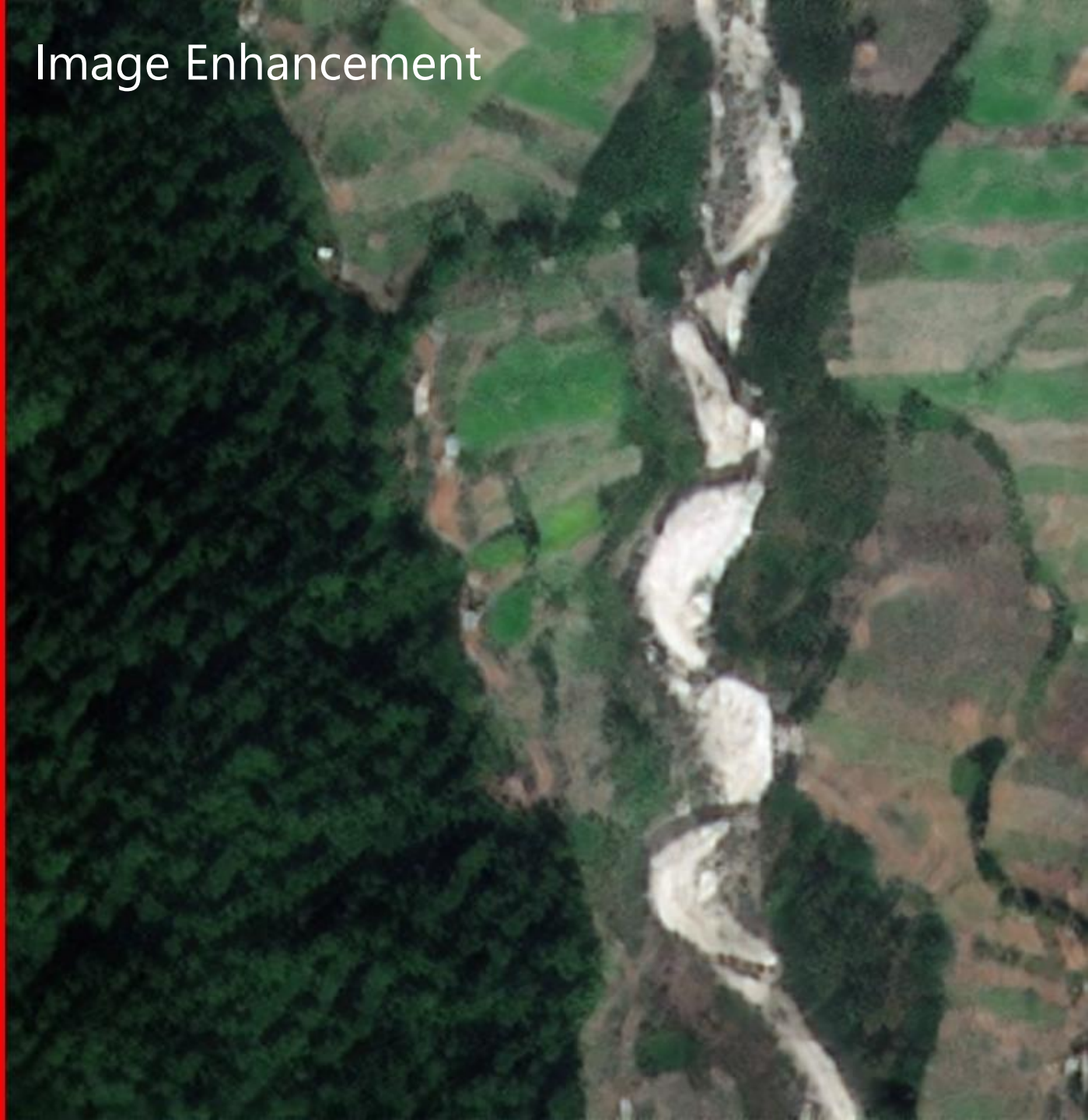
Kenya 2021

with support from:





Image Enhancement



## INNOVATIVE DATA



## MNO data

- Customer data;
- Event data; and
- Network data.



## Remote sensing data

- Public satellite images;
- Private satellite images; and
- Drone images.



## Private utility service provider data

- Customer, event and network/infrastructure data from;
- Water service providers;
- Sanitation service providers;
- Transport service providers; and
- Energy service providers.



## Other digital services and data

- Social media data;
- Web browser data; and
- Financial transactions data.

## PROCESSING

- Cleansing;
- Filtering;
- Validation;
- Normalisation;
- Aggregation; and
- Segmentation.



## Innovative data holder's internal data warehouse

## ANALYTICS

- Through iterations of exploration, modeling and testing:
- AI/Machine learning;
  - Learning;
  - Statistics; and
  - GIS.



## Specialised platform



## Traditional data

- Administrative areas;
- Infrastructure maps;
- Points of interest;
- Population;
- Surveys on access to utility services; and
- Manual utility infrastructure monitoring data.

## PRODUCTS AND SERVICES

- Visualisation;
- Selection;
- Interpretation; and
- Reformatting.



## Report



## App



## Visualisation



## Decision support system



Decision making



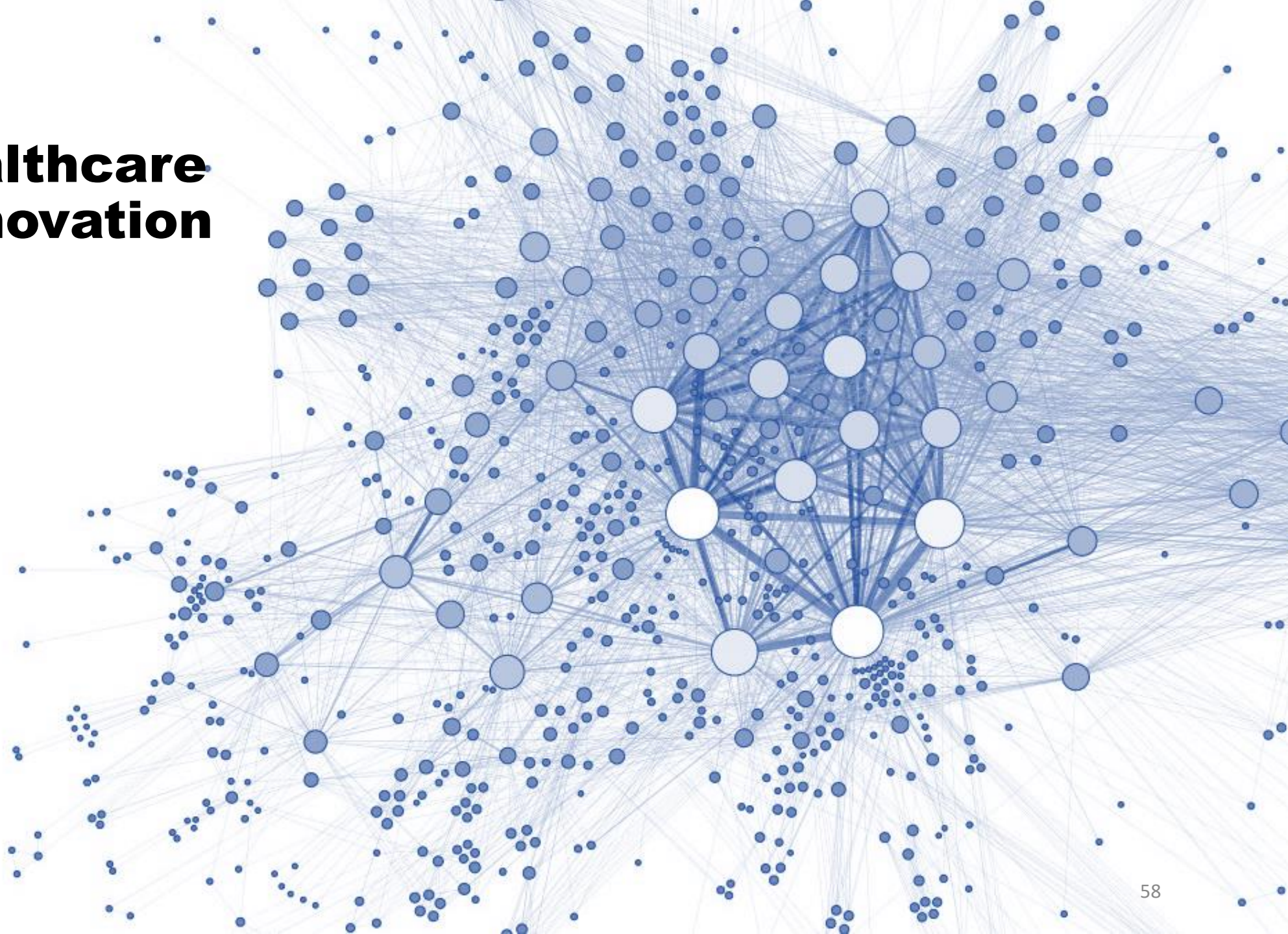


# Time - Check



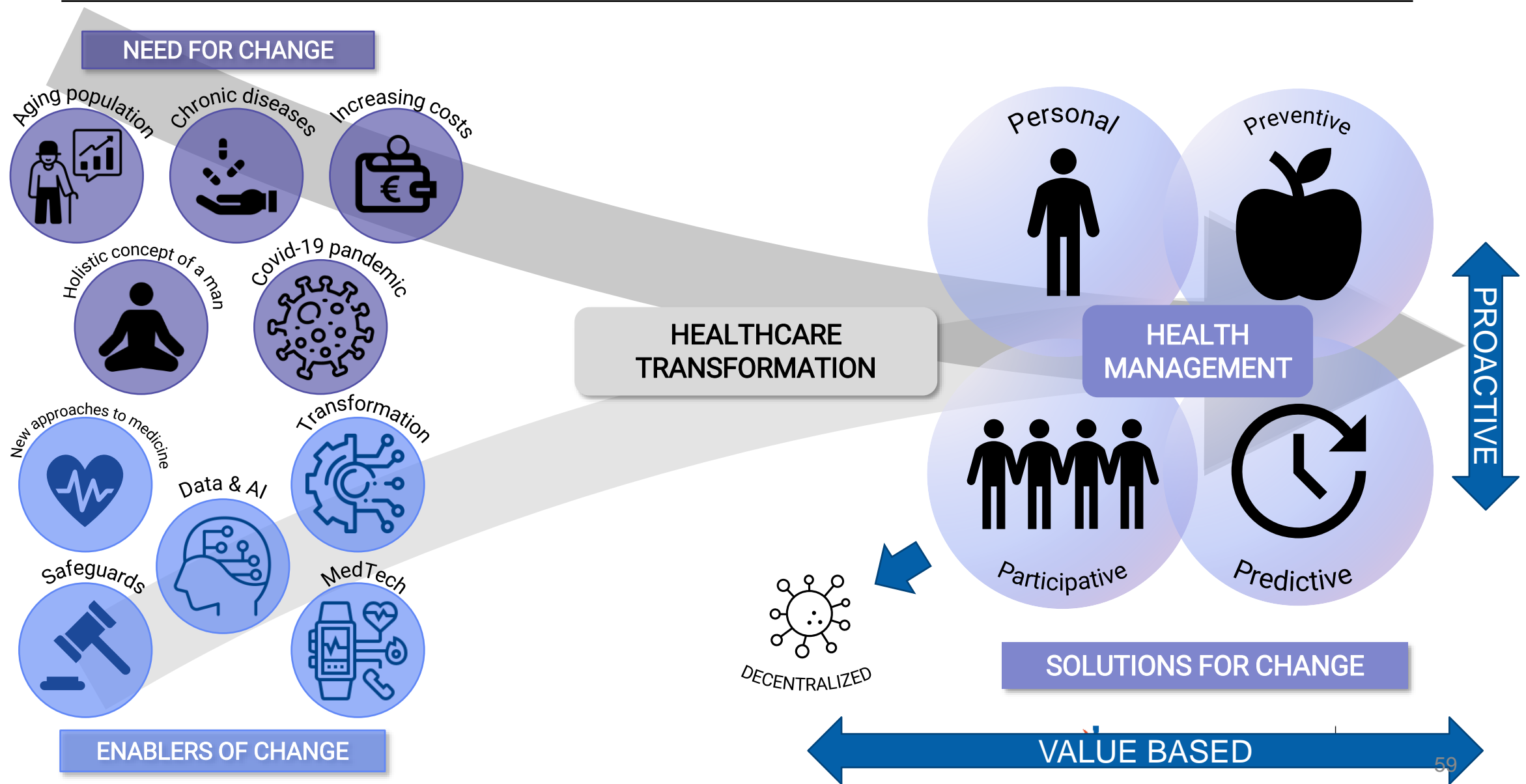
# AI, data and Healthcare

# The Healthcare Data Innovation Council





# A Data Driven Healthcare's framework should focus on



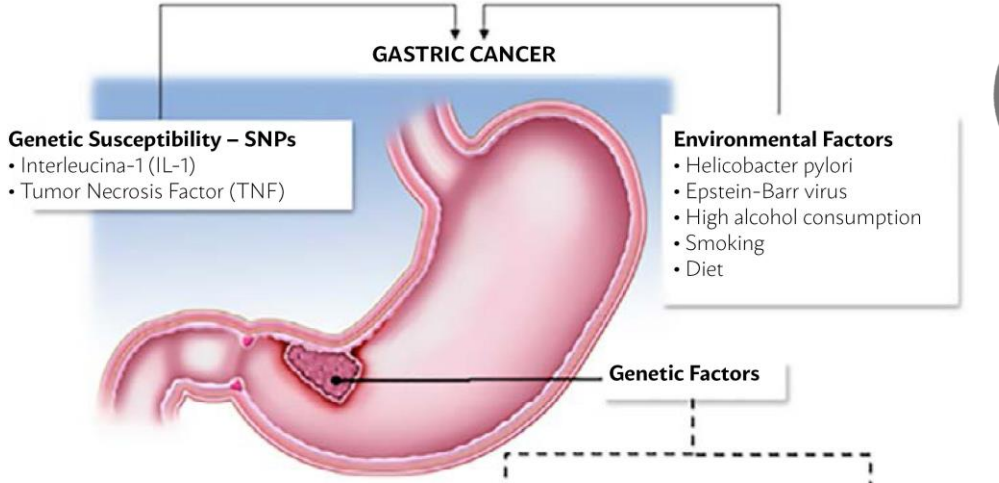


# Data can save lives

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A blueprint for European Health Data Space architecture

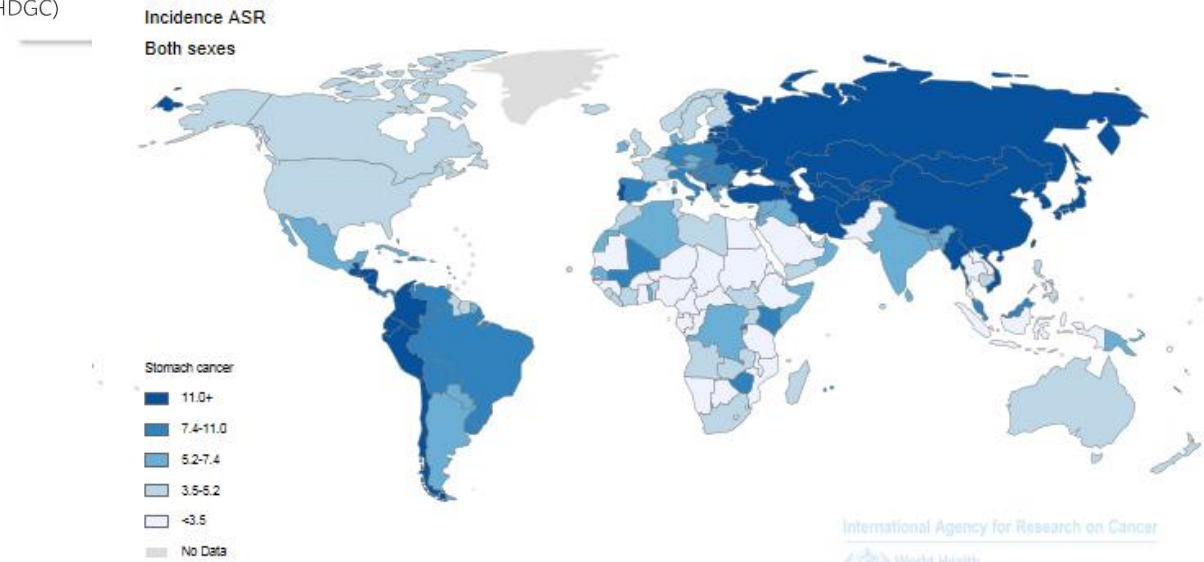





# Carecol

Gastric Cancer data collaborative

- Hereditary Gastric Cancer (<3%)**
- Hereditary Nonpolyposis Colorectal Cancer (HNPCC)
  - Hereditary Diffuse Gastric Cancer (HDGC)
- Sporadic Gastric Cancer**
- Chromosomal instability
  - Microsatellite instability
  - Changes in epigenetic profile
  - Somatic genetic mutations



Source: GLOBOCAN 2012 (IARC)

International Agency for Research on Cancer  
World Health Organization

2018 2040

**+ 1.03 M** **≈783 000** **1.75 M**

More than 1.03 million new cases occurred worldwide in 2018, making it the fifth most common cancer.


Nearly 783 000 people died from gastric cancer in 2018, making it the third deadliest cancer in the world.

By 2040, gastric cancer could affect 1.75 million people, which is 69% more than in 2018.

**3<sup>RD</sup> MOST DEADLY CANCER**  
AFTER LUNG AND COLORECTAL CANCER

Source : Globocan 2018

## RISK FACTORS



**HELICOBACTER PYLORI**  
(Bacterium incriminated in 80% of cases)



**SMOKING**

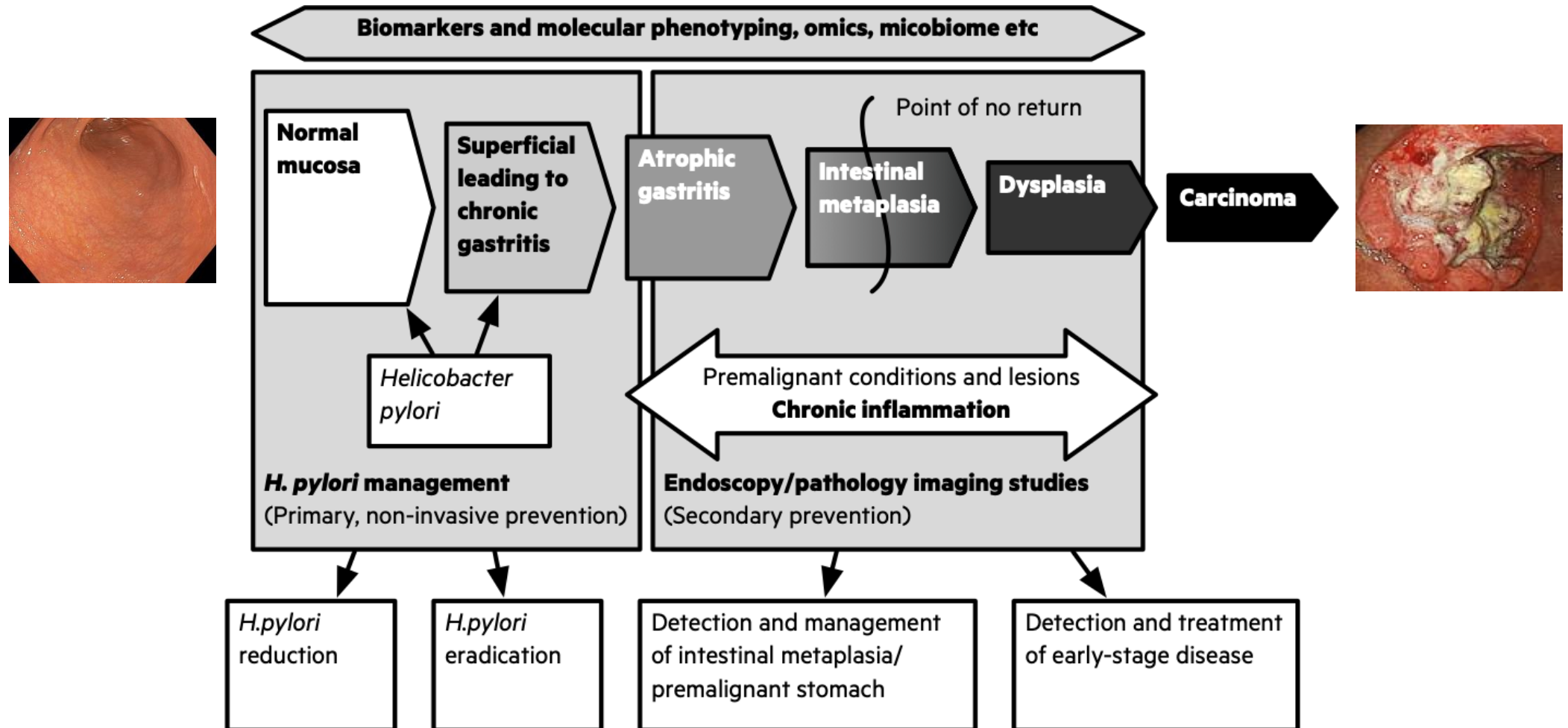


**ALCOHOL**



**HIGH DIETARY SALT INTAKE, smoked meat and fish**

# Correa's Cascade: Tracing the Stealthy March from Gastritis to Gastric Cancer

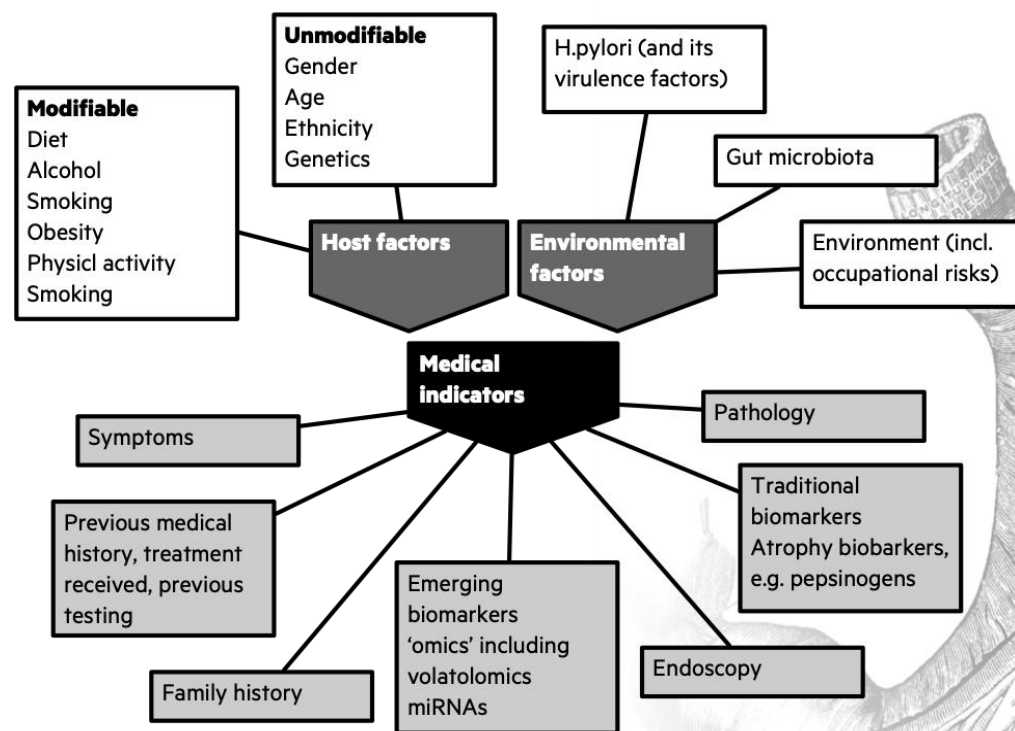






An Artificially Intelligent  
Diagnostic Assistant  
for gastric inflammation

# Navigating the Gastric Cancer Maze: Unearthing the Interplay of Host, Environment, and Medical factors



The available data sets that are relevant for, say, establishing a risk profile of a potential gastric cancer patient, lie scattered around various research institutes, medical centres, universities et cetera in many different countries. They come from different domains and were collected for different purposes.

The promise of federated big data and AI is to help generate metrics with far greater accuracy than could be inferred from the original data sets. Once these metrics have been determined for individual patients or groups of patients, all kinds of insights, reports and applications can be defined on top of these metrics.



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the European Union

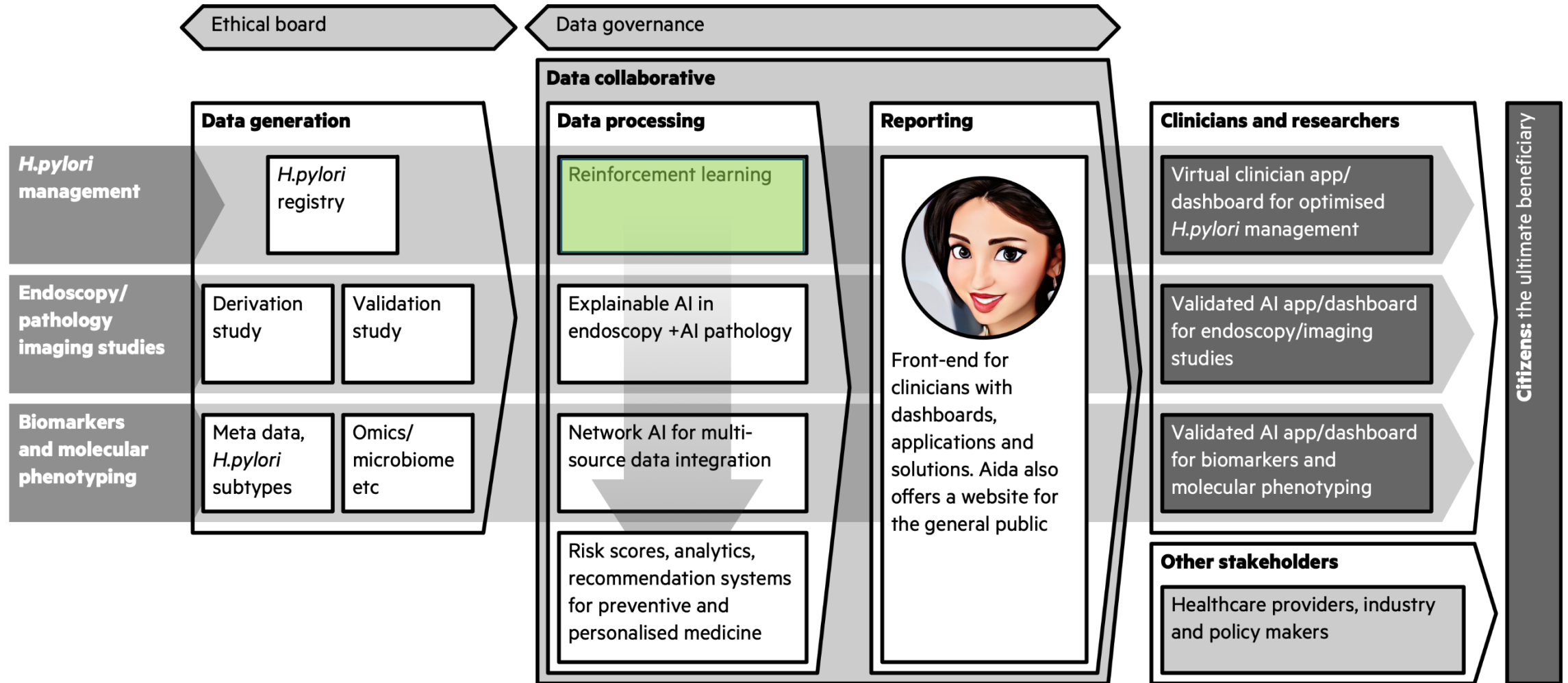


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# HP Registry Gaia-X MVP

## CARECOL Scope

*H.pylori* eradication is an essential aspect of **primary prevention** for gastric cancer and for other gastric pathologies

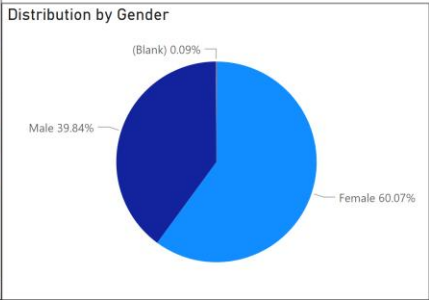
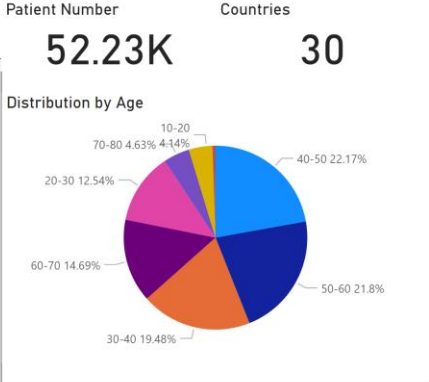
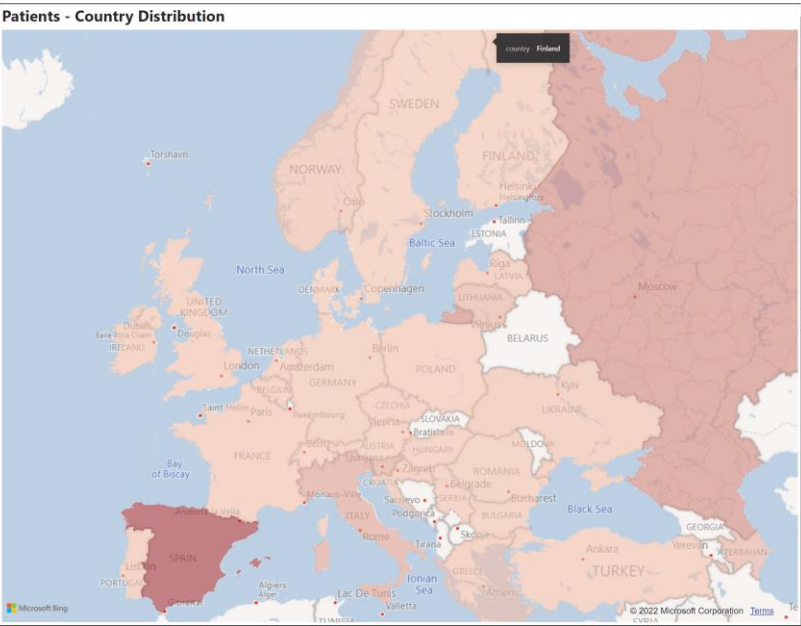
From **data gathered** by the HP EU Registry to a **coherent, accessible value** through the cloud, available for the Gaia-X ecosystem

## Technology

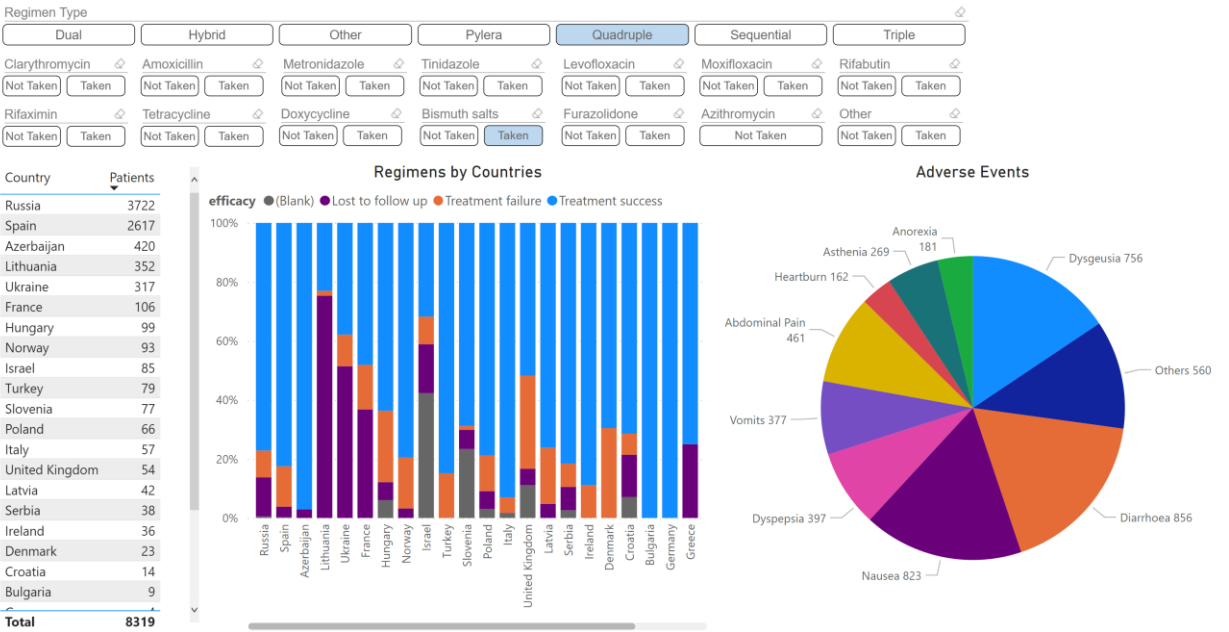
Leading edge cloud technologies, from **Azure Synapse Analytics** to **Azure Cognitive services** including the Open Source **Eclipse Dataspace Connector**

## ANALYTICS AI

### Helicobacter Pylori Treatments Dashboard - Patients Statistics

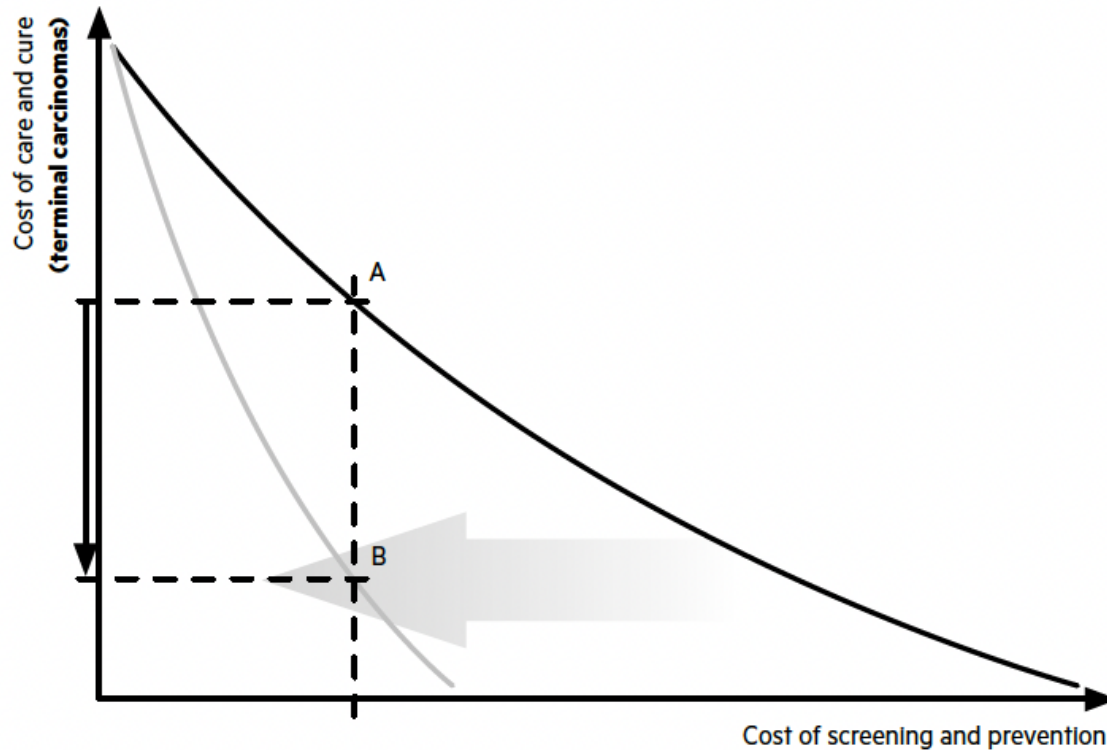


### Helicobacter Pylori Treatments Dashboard - Regimen Antibiotics Effectiveness (Table 2)



# Carecol – Economic and societal Impact

Carecol helps lower the incidence of terminal gastric cancer for a given prevention and screening budget. This directly benefits health outcomes and quality of life.



Full implementation of Carecol could save up to **20 000 lives per year** in Europe with associated healthcare savings of **€ 4 bn**

*The shape, scale and relative positions of the curves are arbitrary and only serve to illustrate the point being made*



An Artificially Intelligent  
Diagnostic Assistant  
for gastric inflammation

By leveraging Large Language Models (LLMs), the AIDA chatbot has inherited several powerful features:

- Conversation context
- Multilanguage support
- Text summarization

# AIDA Chatbot – Features



AIDA 05:57 PM

Hello, nice to meet you! How can I help you today?

05:57 PM

What is the AIDA project?



AIDA 05:57 PM

The AIDA project aims to develop and validate a multidisciplinary AI-powered assistant that helps clinicians diagnose precancerous inflammation, suggests personalized therapeutic strategies for medical treatment and follow-up, and makes personalized recommendations for monitoring patient health status. This innovative approach focuses on improving the diagnosis and management of gastric pathologies, such as *Helicobacter pylori* infection and gastric cancer.

05:58 PM

Can you translate it in japanese?



AIDA 05:58 PM

AIDAプロジェクトは、多分野にわたるAIを活用したアシスタントを開発・検証することを目指しており、これにより医師が前がん性炎症の診断を行い、個別化された治療戦略を提案し、患者の健康状態の監視に関する個別化された勧告を行うことができます。この革新的なアプローチは、ヘリコバクターピロリ感染や胃がんなどの胃病変の診断と管理の改善に焦点を当てています。



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An Artificially Intelligent  
Diagnostic Assistant  
for gastric inflammation

# Electronic Medical Record Evaluation

The text understanding feature can be used to extract essential information from Electronic Medical Records. In this scenario, it's possible to analyze clinical summaries and medical reports to:

- Summarize reports effectively
- Enhance patient understanding
- Highlight critical information
- Provide suggestions for patient follow-up

## History and Physical Notes - Final Report

### Service

Service Date :10/07/2007

Admit Date :10/07/2007

Performing Service:MEDICINE::HEMATOLOGY/ONCOLOGY

### Patient

Name : [REDACTED]

### Present Illness

Chief Complaint:  
Dyspnea on Exertion

The history was obtained from the patient who seems to be a reliable informant.

### History of Present Illness:

This is a 51 year old gentleman with no significant past medical history presenting with 3 weeks of worsening dyspnea on light exertion, chest pain, cough, and a 10 lb weight loss in 8 days. Just over 6 months ago the patient was at his normal baseline state of health. Now he has had progressive worsening of his dyspnea on exertion (DOE) to where he cannot walk across a room or talk while sitting up without becoming short of breath; he has never had anything like this before. He rates his breathing troubles as a 7 of 10, with 10 being can't breathe at all and 1 being normal. He says the breathing troubles are from his lungs/chest and not his nose/congestion. He has had the DOE for ~6 month but progressive worsening in the last 3 weeks. He says the quality of his breathing is just "like suffocating" but he denies burning in his lungs or other feelings. He says that hot temperatures bring on his breathing troubles and coughing while cold temperatures will help relieve those symptoms.

Additionally, he has a productive cough with whitish mucus that is not bloody or bilious, and often coughs so hard that he ends up vomiting; he has averaged vomiting once a day over the past few weeks. He has tried Mucinex which made his cough worse and Nyquil to help him get to sleep w/o coughing. He often experiences an aching/burning pain across his whole anterior chest, and sometimes he has more of a tightness in his chest. The chest pain is like bad heartburn. All of his symptoms have always occurred after eating and sometimes without a noticeable trigger.

He has had no fevers, chills, or night sweats. He has no allergies, seasonal or otherwise, and no hx of breathing troubles/asthma. He reports feeling like he is wheezing, but no dyspnea at rest (as long as he is lying down), no orthopnea, and no paroxysmal nocturnal dyspnea. No hx of recurrent pneumonia. He has no sick contact, TB exposure (that he knows of - ie incarcerated, homeless). He also has no pets, has not been around any farm animals, and has not traveled recently or been around those who have. He has about a 20 pack year history with tobacco and has still smoked during the past three weeks despite the fact it will often bring about coughing symptoms. He does not have the CAD risks factors of Diabetes, HTN, or Hypercholesterolemia. There is no hx of cancers in his family, but while he's never been diagnosed with asthma, his son does have this condition. He has worked as a car mechanic but does not seem to have any significant occupational risk factors (coal mining/worked around asbestos).

---

The patient presented 9 days ago to the UNC ED with the same set of symptoms and had a CT Chest that showed a large right-sided mediastinal mass with "mass effect on the trachea and endobronchial extension as well as perihilar soft tissue lesion that was most concerning for a primary bronchogenic carcinoma." The patient said that at that time he wasn't prepared to be an inpatient and stay overnight, so he signed out AMA. He had little to no change in his symptoms over the next 9 days and came to the ED again today.

### Medical/Surgical History

No primary care provider, No past diagnoses, no hospitalizations, no surgeries.



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AIDA @ 5/30/2023, 2:02:04 PM 



**AIDA** 02:02 PM

Hello, nice to meet you! How can I help you today?

02:02 PM

The doctor just diagnosed me helicobacter pylori infection, what should I do?



**AIDA** 02:03 PM

I'm sorry to hear about your diagnosis. It's important to follow your doctor's recommendations for treating the H. pylori infection, which usually involves a combination of antibiotics and acid-suppressing medications. Make sure to complete the full course of treatment as prescribed, even if you start feeling better before it's finished. Additionally, maintaining a healthy lifestyle with a balanced diet and regular exercise can help support your overall health during this time. Remember that it's crucial to attend any follow-up appointments with your doctor to ensure the infection has been successfully treated and monitor for any potential complications.



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for gastric inflammation



AIDA @ 5/30/2023, 2:04:54 PM 



**AIDA** 02:04 PM

Hello, nice to meet you! How can I help you today?

02:04 PM

I just diagnosed hp to one of my patient, which therapy should I suggest?



**AIDA** 02:05 PM

As a doctor, you may consider the standard first-line therapy for *Helicobacter pylori* eradication, which typically includes a proton pump inhibitor (PPI), clarithromycin, and amoxicillin or metronidazole for 10-14 days. However, it is essential to take into account local antibiotic resistance patterns and the patient's medical history before prescribing any treatment.



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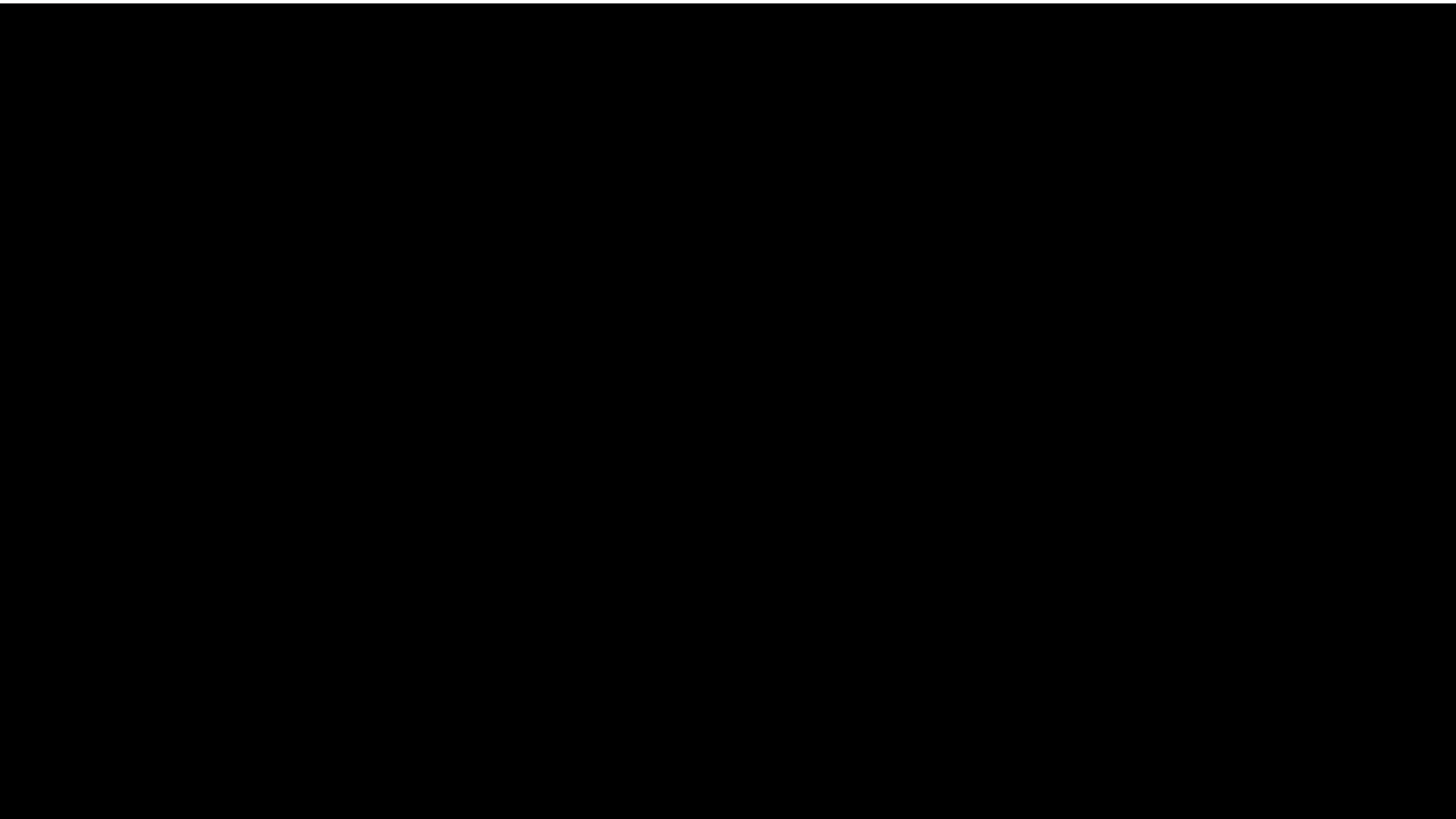


GRAPH-NEURAL MACHINE LEARNING (NARROW "AI") ALLOWS TO TAP INTO INTO LARGE OMICS DATASETS AND FIND NETWORK PATTERNS IN THE DATA THAT WOULD TAKE EONS FOR HUMANS TO FIND



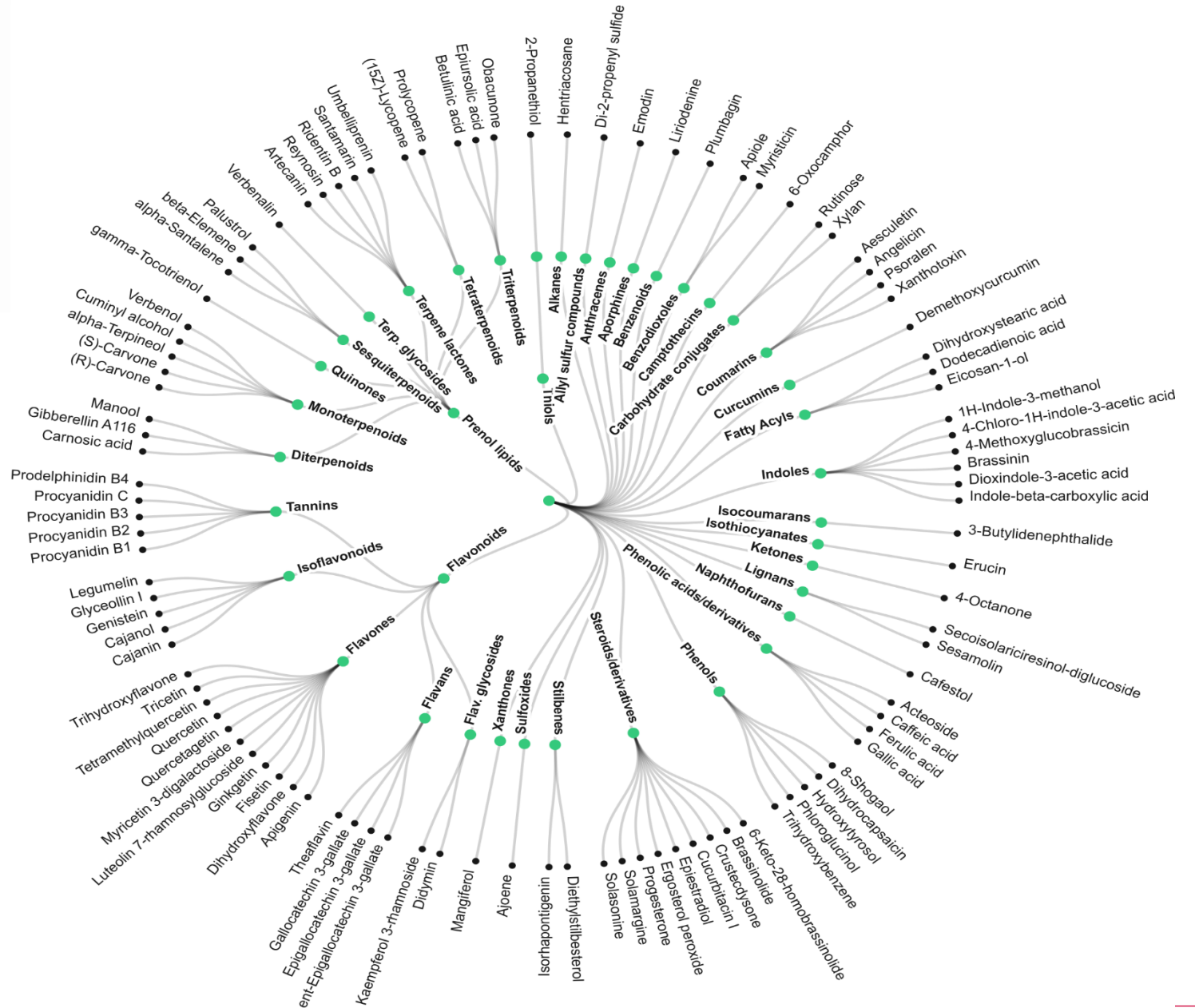
networks of interactions  
between biological molecules



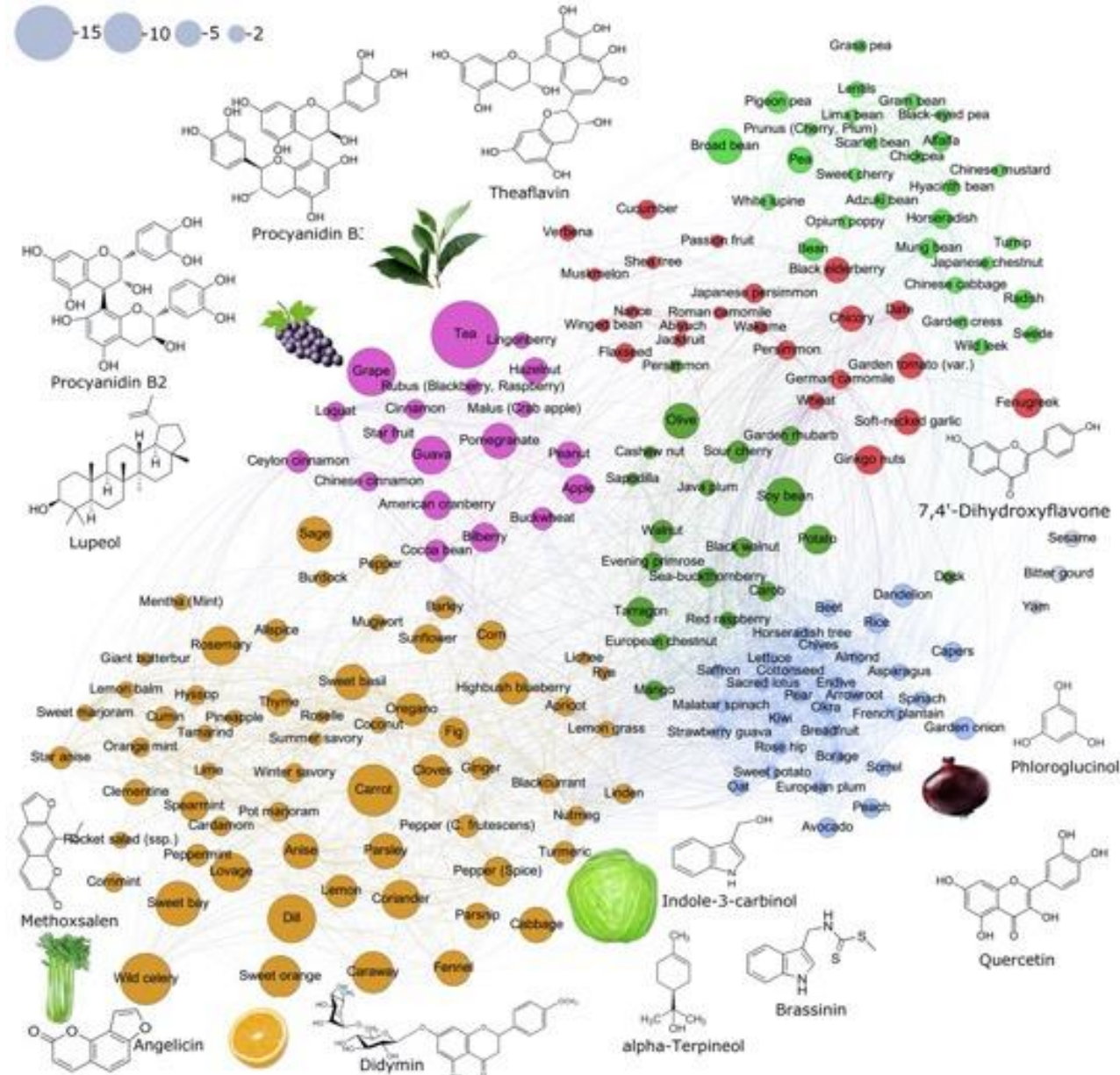


## HyperFoods: Machine intelligent mapping of cancer-beating molecules in foods


Received: 21 March 2019  
Accepted: 3 June 2019



# AI designed precision nutrition against gastric inflammation





A promotional image for a play. It features a white cup of coffee on a saucer, a smartphone displaying the word 'AGENT' on its screen, and some papers with colorful tabs in the bottom left corner, all resting on a dark, patterned marble table. The text 'Vodafone Foundation Presents' is overlaid in the center.

Vodafone Foundation Presents

# THE CALL

Starring John Boyega