

## OECD's work on Al From Principles to practice

NIC.br webinar "Public Statistics on AI" Keynote

Luis Aranda Digital Economy Policy Division September 2020





## Today's plan

## > OECD AI Principles

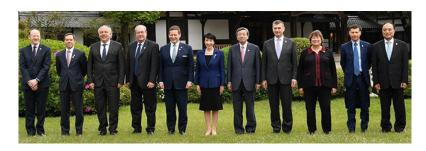
- Implementation efforts
  - OECD AI Policy Observatory (OECD.AI)
  - OECD Network of Experts on AI (ONE AI)
  - ➢ The AI Wonk
- COVID-19 resources





## **OECD AI Principles** *How it all started*

- G7 ICT Ministerial meeting in Japan, April 2016
- AI Foresight Forum, 2016
- Conference 'AI: Intelligent
   Machines, Smart Policies.' 2017
- 2018 mission: scope principles to foster trust in and adoption of AI











Facilitate innovation & trust	Enable trust in and adoption of AI
Specific / key to Al	<i>Reflect the specific characteristics of, or key issue related to, AI</i>
Implementable	In policies and practices
Flexible	Stand the test of time
Foster co-operation	Multi-stakeholder, multi- disciplinary, international





## Al expert group at the OECD (AIGO)

## September 2018 – February 2019

**Mission**: to scope principles to foster trust in and adoption of AI **Composition**: multi-stakeholder and multi-disciplinary: 50+ experts

- Governments, academics, IOs, businesses, technical community, labour unions, civil society...
- 4 meetings in 5 months







## **OECD AI Principles**

- <u>Goal</u>: foster policy ecosystem for trustworthy AI that benefits people and planet.
- Inter-governmental standard. Adopted May 2019 by 37 OECD + 7 partner countries. Same as G20 AI Principles approved June 2019.
- Non-binding yet strong political commitment to implement & OECD monitoring.







## **10 Principles, covering two areas:**

## Principles for responsible stewardship of trustworthy AI

- 1.1. Inclusive growth, sustainable development and well-being
- 1.2. Human-centred values and fairness
- 1.3. Transparency and explainability
- 1.4. Robustness, security and safety
- 1.5. Accountability

## National policies & international cooperation for trustworthy Al

- 2.1. Investing in AI research and development
- 2.2. Fostering a digital ecosystem for AI
- 2.3. Providing an enabling policy environment for AI
- 2.4. Building human capacity and preparing for labour transition
- 2.5. International cooperation



## Inclusive growth, sustainable development and well-being

## AI should benefit people and the planet by driving inclusive growth, sustainable development and well-being.







## AI systems should be designed in a way that respects the rule of law, human rights, democratic values and diversity, and include appropriate safeguards to ensure a fair and just society.





# **B** Transparency and explainability

## There must be transparency and responsible disclosure around AI systems to ensure that people understand AIbased outcomes and can challenge them.







## AI systems must function in a robust, secure and safe way throughout their lifecycle and potential risks should be continually assessed and managed.







## AI actors should be accountable for the proper functioning of AI systems in line with the above principles.





The OECD recommends that governments...

- Facilitate public and private investment in **research & development** to spur innovation in trustworthy AI.
- Foster accessible **AI ecosystems** with digital infrastructure and technologies and mechanisms to share data and knowledge.
- Ensure a **policy environment** that will open the way to deployment of trustworthy AI systems.
- Empower people with the **skills** for AI and support workers for a fair transition.
- **Co-operate across borders** and sectors to progress on responsible stewardship of trustworthy AI.





## **OECD AI principles** Why are they relevant?



## **3 reasons you should pay attention to the OECD AI principles**

BY JESSICA CUSSINS NEWMAN, OPINION CONTRIBUTOR — 05/28/19 09:30 AM EDT THE VIEWS EXPRESSED BY CONTRIBUTORS ARE THEIR OWN AND NOT THE VIEW OF THE HILL

2,333 SHARES

Just In...

It may be tempting to skip over last week's launch of the Organisation for Economic Co-operation and Development (OECD) artificial intelligence (AI) <u>recommendation</u> as yet another set of non-binding AI principles with little real-world impact, but this would be a mistake.

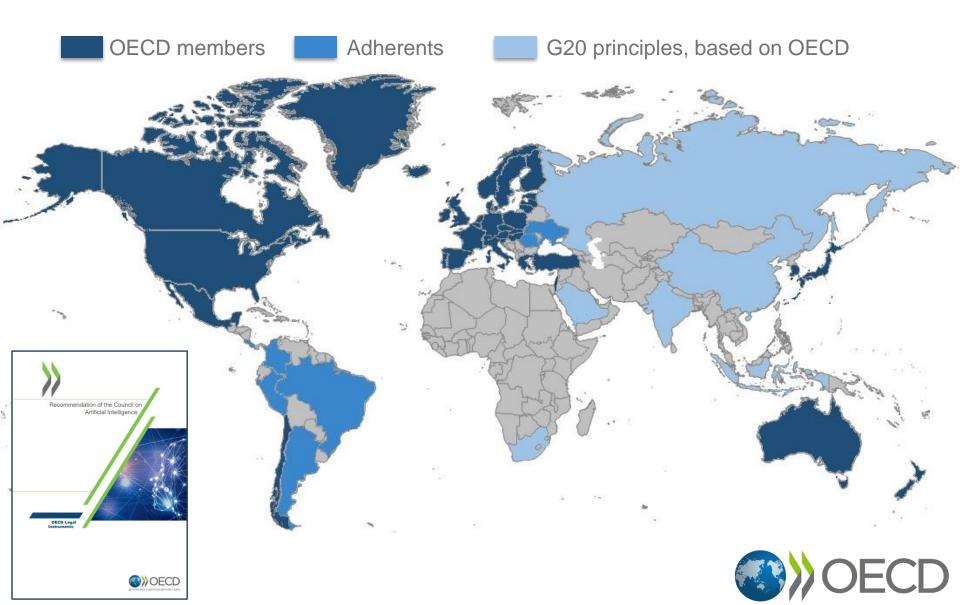
As the world's first intergovernmental policy guidelines for AI, developed by more than 50 international and multidisciplinary experts, and already adopted by more than 40 countries, the OECD principles in fact represent a new core, or "global reference point," of AI governance.

This is significant for several reasons.

https://thehill.com/opinion/technology/445627-three-reasons-you-should-pay-attention-to-the-oecd-ai-page-attention-to-the-oecd-ai-page-attention-to-the-oecd-ai-page-attention-to-the-oecd-ai-page-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-attention-to-the-oecd-att



## Governments that have adhered to the OECD or G20 AI principles



## **From Principles to Practice**



## **From Principles to Practice**

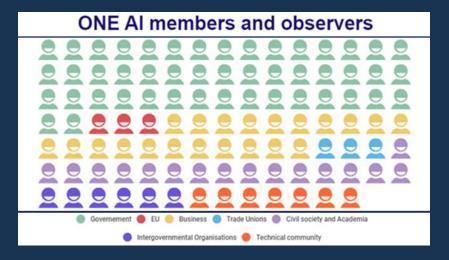
## Al Policy Observatory (OECD.Al)

A platform to share & shape public policies for responsible, trustworthy & beneficial AI



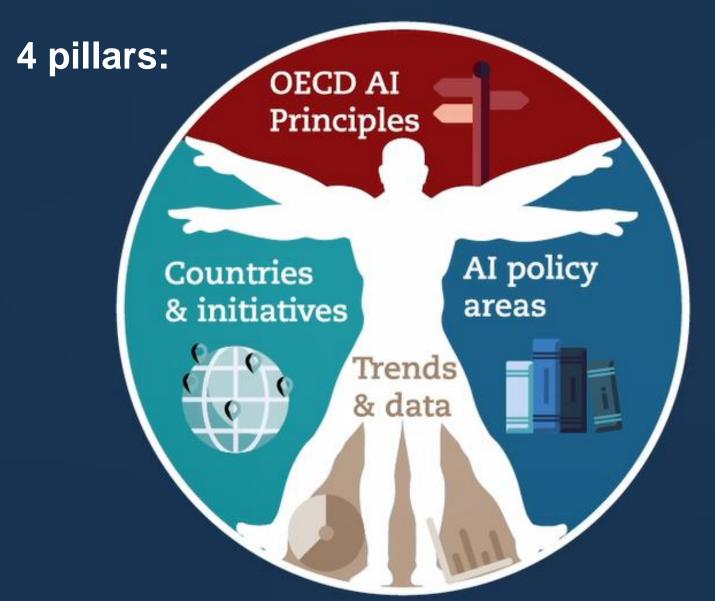
## OECD Network of Experts on AI (ONE AI)

A multi-stakeholder group of experts is helping the OECD CDEP develop practical implementation guidance.



## OECD.AI

Shape and share public policies for responsible, trustworthy and beneficial AI





AI Principles  $\lor$  Policy areas  $\lor$  Trends & data  $\lor$  Countries & initiatives  $\lor$  About  $\lor$ 

Enlarge

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### **OECD AI Principles overview**

The OECD AI Principles promote use of AI that is innovative and trustworthy and that respects human rights and democratic values. Adopted in May 2019, they set standards for AI that are practical and flexible enough to stand the test of time.

#### Values-based principles Recommendations for policy makers The OECD AI Principles focus on how governments and other actors can shape a human-centric approach to Inclusive growth, sustainable Investing in AI research and trustworthy AI. As an OECD legal 调 development and well-being development instrument, the principles represent a common aspiration for its adhering countries. â Human-centred values and fairness ᠫᡍᡭ Fostering a digital ecosystem for AI Official text Shaping an enabling policy Transparency and explainability environment for AI Building human capacity and preparing for labour market Governments that have committed Robustness, security and safety > to the AI Principles പ്പ്പം transformation International co-operation for $\bigcirc$ Accountability trustworthy AI



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Policy areas  $\sim$ Countries & initiatives  $\sim$ AI Principles  $\vee$ Trends & data  $\, \smallsetminus \,$ About  $\sim$ 

OECD AI Principles > Transparency and explainability (Principle 1.3) Home

## **Transparency and explainability (Principle 1.3)**

This principle is about transparency and responsible disclosure around AI systems to ensure that people understand when they are engaging with them and can challenge outcomes.

#### Rationale for this principle

The term transparency carries multiple meanings. In the context of this Principle, the focus is first on disclosing when Al is being used (in a prediction, recommendation or decision, or that the user is interacting directly with an Al-powered agent, such as a chatbot). Disclosure should be made with proportion to the importance of the interaction. The growing ubiquity of AI applications may influence the desirability. effectiveness or feasibility of disclosure in some cases.

Transparency further means enabling people to understand how an AI system is developed, trained, operates, and deployed in the relevant application domain, so that consumers, for example, can make more informed choices. Transparency also refers to the ability to provide meaningful information and clarity about what information is provided and why. Thus transparency does not in general extend to the disclosure of the source or other proprietary code or sharing of proprietary datasets, all of which may be too technically complex to be feasible or useful to understanding an outcome. Source code and datasets may also be subject to intellectual property, including trade secrets.

An additional aspect of transparency concerns facilitating public, multi-stakeholder discourse and the establishment of dedicated entities, as necessary, to foster general awareness and understanding of AI systems and increase acceptance and trust.

Explainability means enabling people affected by the outcome of an AI system to understand how it was arrived at. This entails providing easy-to-understand information to people affected by an AI system's outcome that can enable those adversely affected to challenge the outcome, notably - to the extent practicable the factors and logic that led to an outcome. Notwithstanding, explainability can be achieved in different ways depending on the context (such as, the significance of the outcomes). For example, for some types of Al systems, requiring explainability may negatively affect the accuracy and performance of the system (as it may require reducing the solution variables to a set small enough that humans can understand, which could be suboptimal in complex, high-dimensional problems), or privacy and security. It may also increase complexity and costs, potentially putting Al actors that are SMEs at a disproportionate disadvantage.

Therefore, when AI actors provide an explanation of an outcome, they may consider providing - in clear and simple terms, and as appropriate to the context - the main factors in a decision, the determinant factors, the data, logic or algorithm behind the specific outcome, or explaining why similar-looking circumstances generated a different outcome. This should be done in a way that allows individuals to understand and challenge the outcome while respecting personal data protection obligations, if relevant,

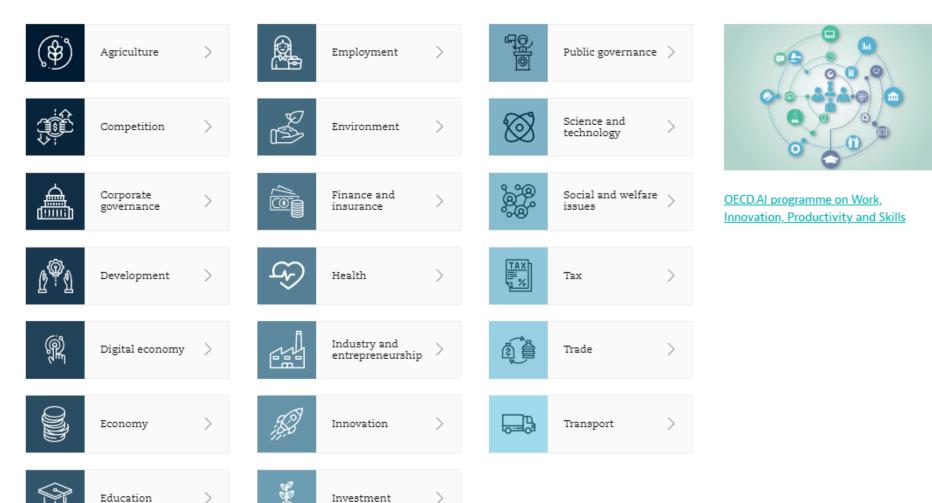
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Home > Policy areas overview

#### Policy areas overview

Al is a new general-purpose technology that will impact every field of public policy. Here is the latest Al policy research taking place in different policy communities across the OECD and beyond.





## AI & employment



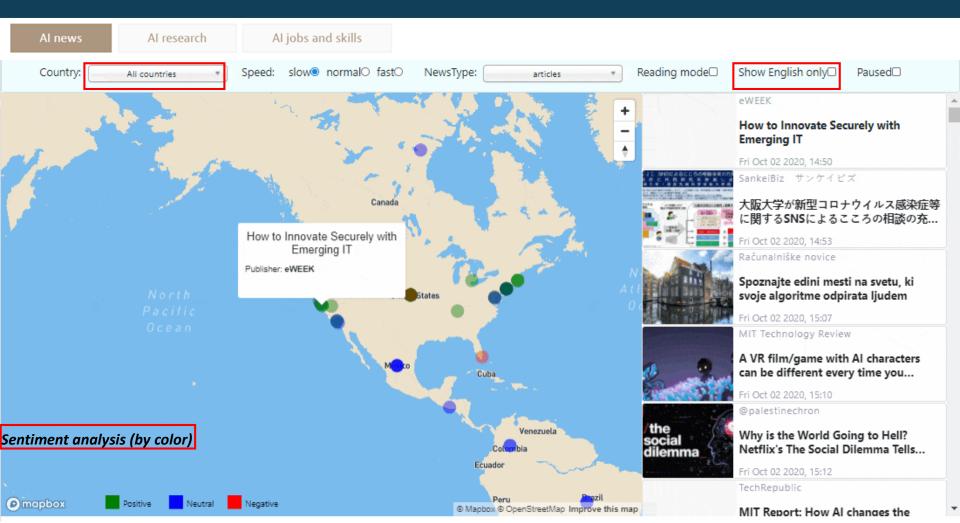
Al is widely expected to change the nature of work as it diffuses across sectors. It will complement humans in some tasks, replace them in others and also generate new types of work. This section showcases the latest on Al and employment.

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### Live data from partners

This section leverages live data from partners to show timely trends about where, how and at what rate AI is being developed and used, and in which sectors.





#### Live data from partners

This section leverages live data from partners to show timely trends about where, how and at what rate AI is being developed and used, and in

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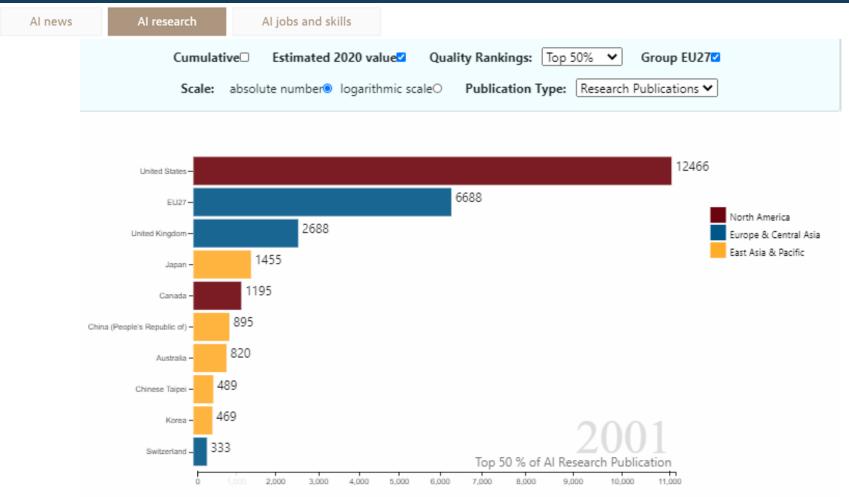
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### Live data from partners

This section leverages live data from partners to show timely trends about where, how and at what rate AI is being developed and used, and in

which sectors.



Note: The 'cumulative' option displays aggregate results since 1980. Please see methodological note for more information.



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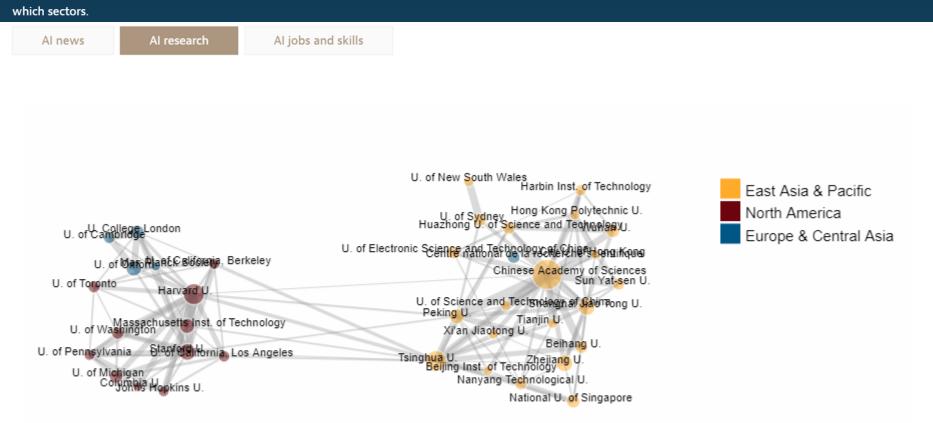
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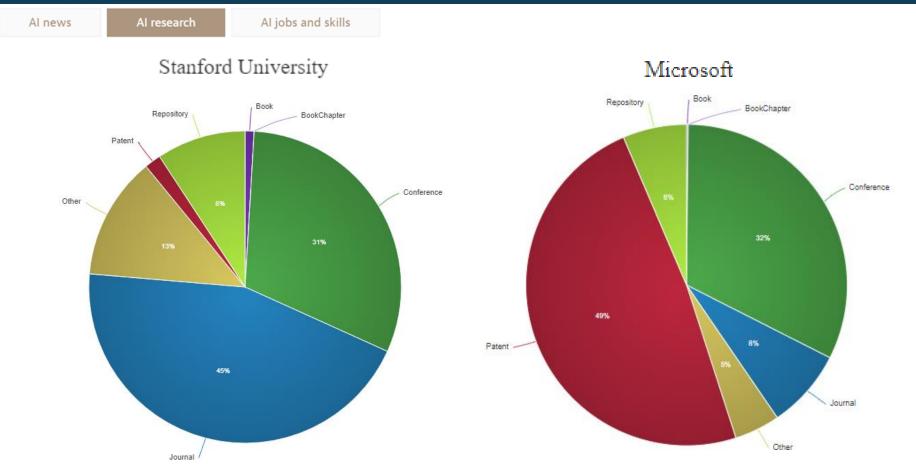
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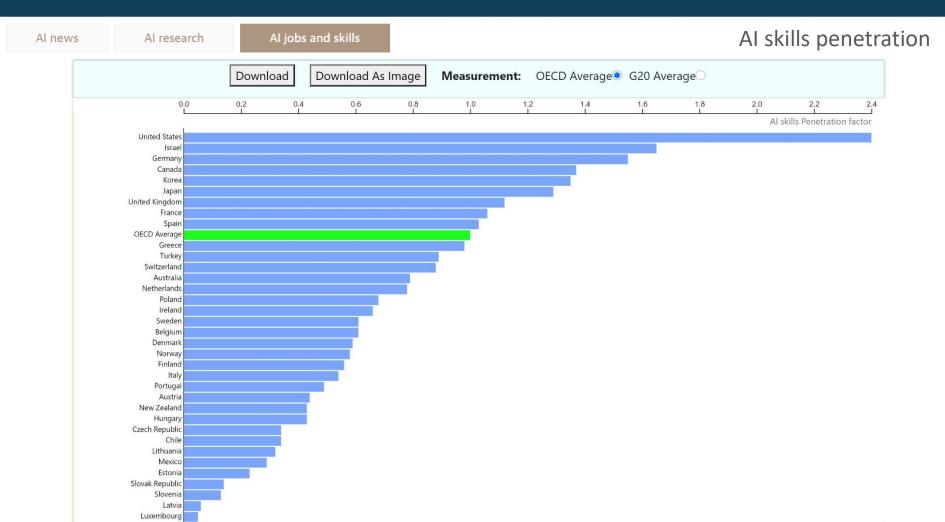
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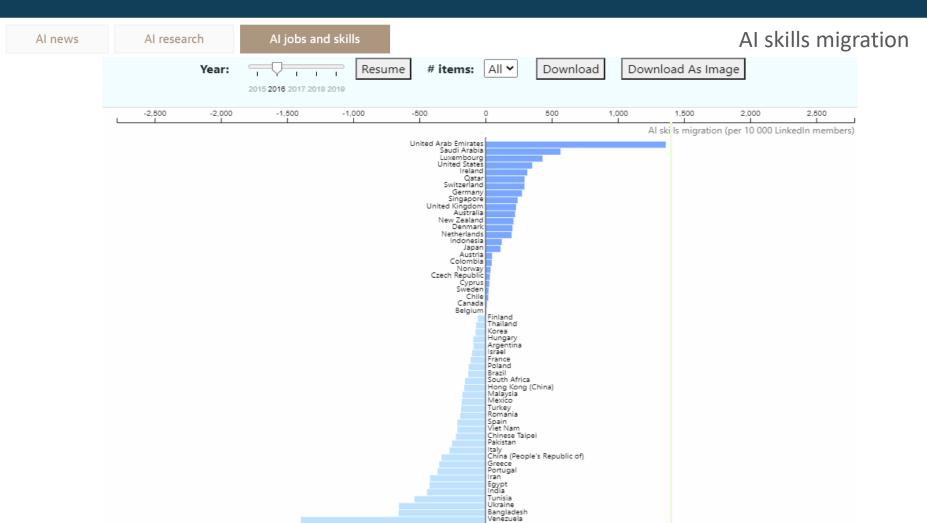
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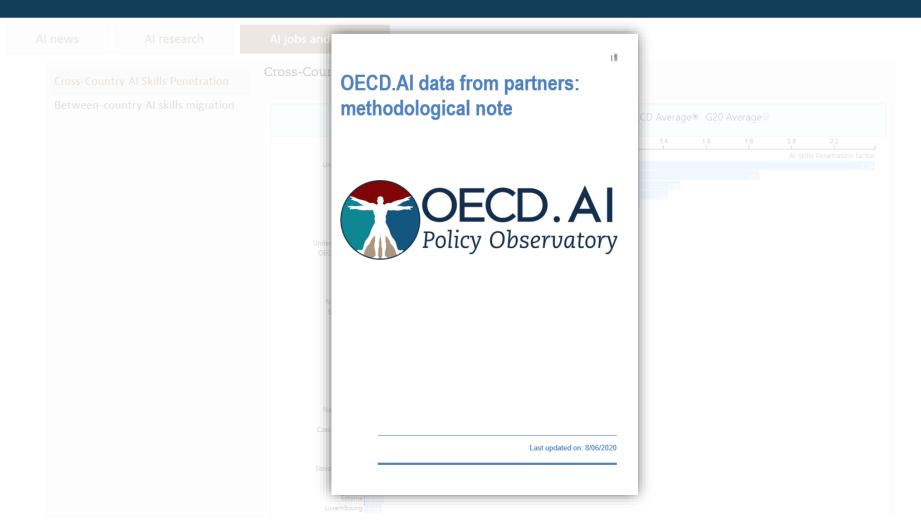
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### Live data from partners





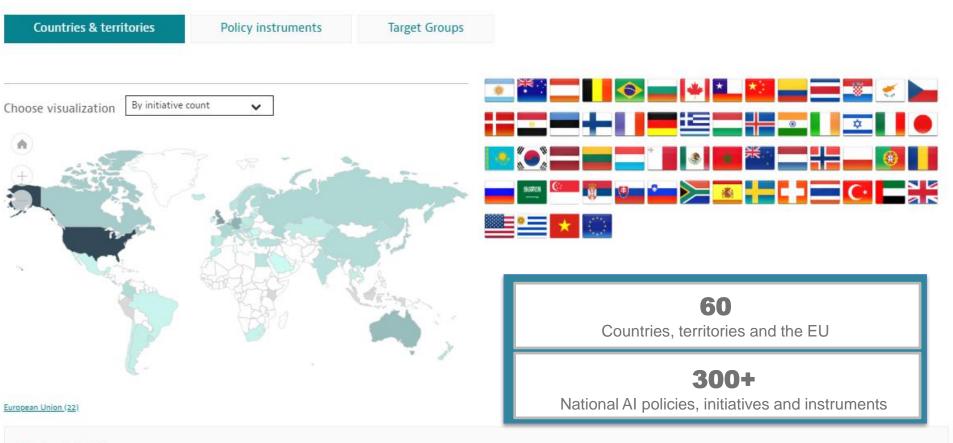
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### National AI policies & strategies

This section provides a live repository of over 300 AI policy initiatives from 60 countries, territories and the EU. Click on a country / territory, a policy instrument or a group targeted by the policy.



Regional disclaimer

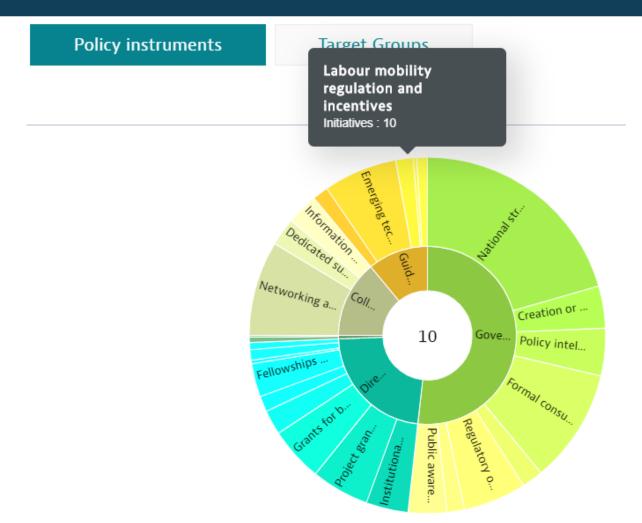


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### National AI policies & strategies

This section provides a live repository of over 300 AI policy initiatives from 60 countries, territories and the EU. Click on a country / territory, a policy instrument or a group targeted by the policy.

**Countries & territories** Policy instruments **Target Groups** Choose visualization By initiative count  $\sim$ All - Click inside square to zoom in Researchers, students and teachers Firms by size Firms by age Research and education organisati... Economic actors (individuals) Initiatives: 372 Initiatives: 282 Initiatives: 192 Initiatives: 113 Initiatives: 133 Governmental entities Intermediaries Initiatives: 219 Initiatives: 134 Social groups especially emphasised Initiatives: 106

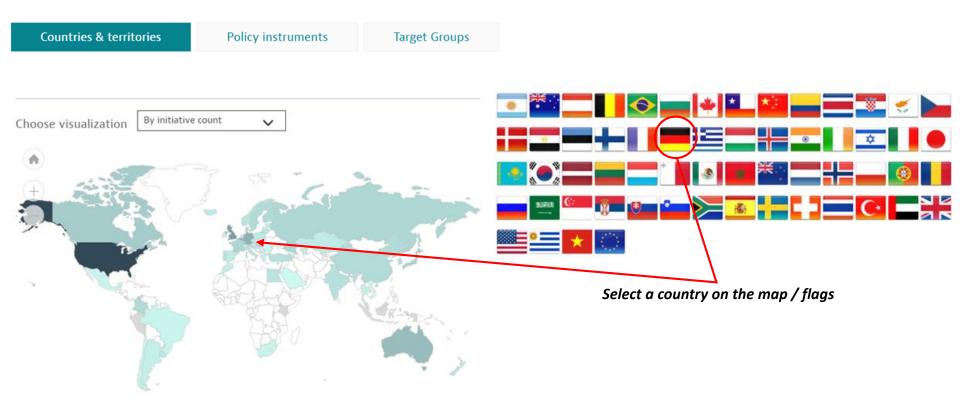


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## National AI policies & strategies

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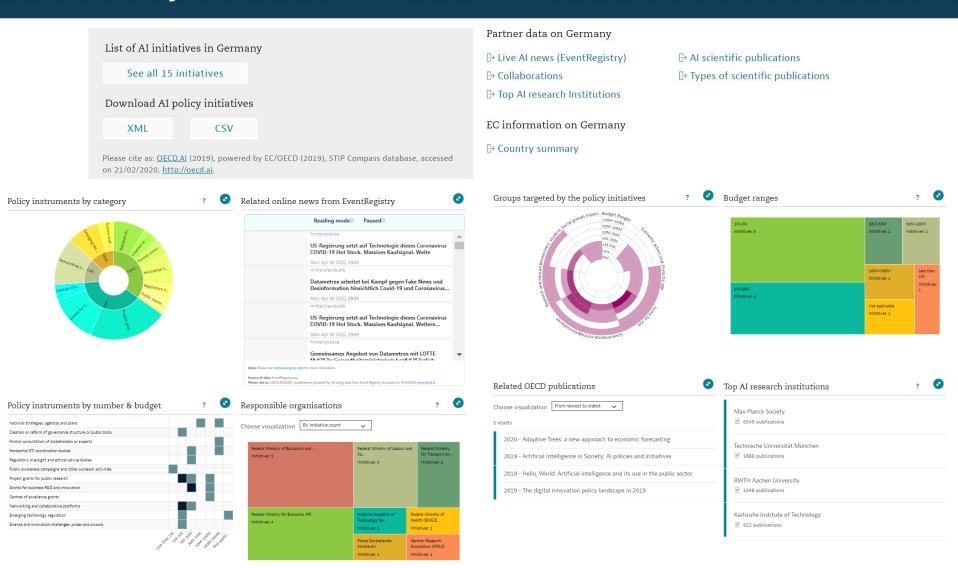




AI Principles  $\lor$  Policy areas  $\lor$  Trends & data  $\lor$  Countries & initiatives  $\lor$  About  $\lor$ 

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### AI in Germany





## Future indicators (WIP)

## **Aggregate-level** visualisations of:

- Al trending search topics
- Venture capital investments
- Financial statements
- Al software development
- AI online education
- Hardware/compute data
- AI job adverts
- Al master's degrees



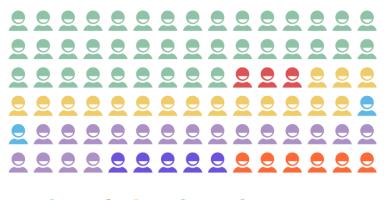
## **ONE AI**

A multi-stakeholder group of experts is helping the OECD CDEP develop practical implementation guidance.

## 3 Working Groups:

- 1. The classification of AI systems
- 2. Implementing trustworthy AI
- 3. National AI policies

### **ONE AI members and observers**



Government EU Business Trade Unions Civil society and Academia

🔵 Intergovernmental Organisations 🛑 Technical community



## ONE AI: from Principles to practice

## **OECD AI Principles**

### Principles for responsible stewardship of trustworthy Al

- 1.1. Inclusive growth, sustainable development and well-being
- 1.2. Human-centred values and fairness
- 1.3. Transparency and explainability
- 1.4. Robustness, security and safety
- 1.5. Accountability

## National policies and international cooperation for trustworthy Al

- 2.1. Investing in AI research and development
- 2.2. Fostering a digital ecosystem for AI
- 2.3. Providing an enabling policy environment for AI
- 2.4. Building human capacity and preparing for labour transition
- 2.5. International cooperation

ONE AI - WG3 'National Al policies

ONE AI - WG2 'Implementing trustworthy AI'



**<u>Goal</u>:** Develop a user-friendly framework to navigate policy implications of different types of AI systems

**<u>Approach</u>:** Explore AI system attributes via 4 different dimensions to develop the framework:

- **Context / sector** (e.g., transportation, healthcare, hiring/HR)
- Output / task that describe how the AI system interacts with the world (e.g., recognition, personalization, event detection etc.)
- Input / data
- **AI model / technological methods** that substantively inform other attributes (e.g., robustness, level of automation, explainability).

## **Co-Moderators**:



Marko Grobelnik, Al Researcher & Digital Champion, Al Lab, Slovenia Jozef Stefan Institute



**Dewey Murdick**, Director of Data Science, Center for Security and Emerging Technology (CSET), School of Foreign Service, Georgetown University





*«Comment voulez-vous gouverner un pays où il existe 258 variétés de fromage !»* Charles de Gaulle, 1962

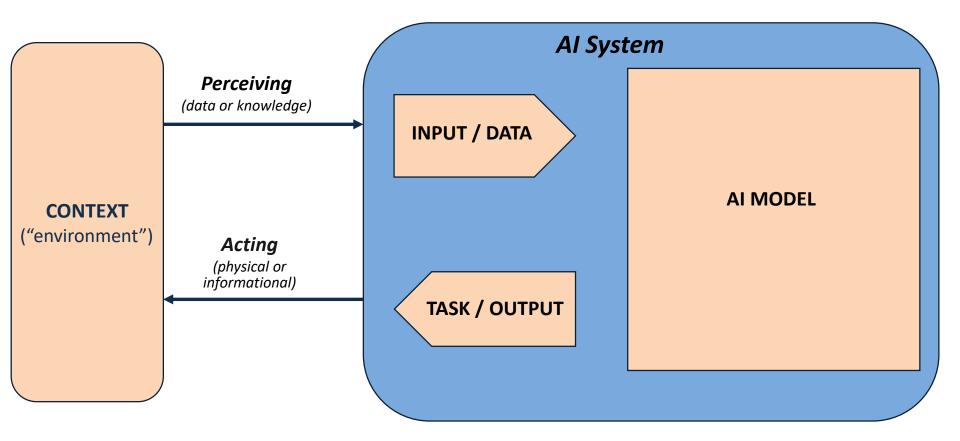
Lots of different cheeses!

Different types of Al systems in different contexts raise different policy considerations





## Mapping of 4 dimensions for classification



An AI system is a machine-based system that is capable of influencing the environment by making recommendations or predictions for a given set of objectives. It uses inputs/data to: i)perceive environments; ii) abstract these perceptions into models; and iii) interpret the models. AI systems are designed to operate with varying levels of autonomy.





## OECD Network of Experts on AI WG2 on Implementing trustworthy AI

**Goal:** Identify practical guidance and shared procedural approaches to help AI actors and decision-makers to implement effective, efficient and fair policies for trustworthy AI.

**<u>Approach</u>**: a short and practical framework serving as a reference for AI actors in their implementation efforts via analysis of a survey of initiatives – over 70 fairly detailed responses with many of the main initiatives covered:

- Codes of conduct/guidelines; Risk management frameworks; Corporate governance.
- o Software tools; Technical research; Technical standard.

• Awareness building; Capacity building.



Adam Murray, ONE AI Chair and US delegate to CDEP



**Carolyn Nguyen,** Director of Technology Policy, Microsoft



**Barry O'Brien,** Government and Regulatory Affairs Executive, IBM





WG2 Survey

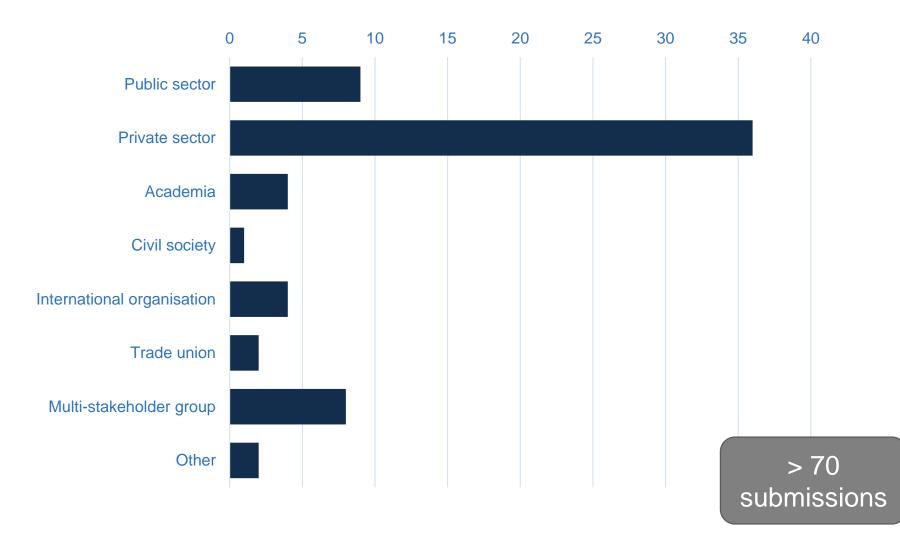
## https://oecd.ai/survey







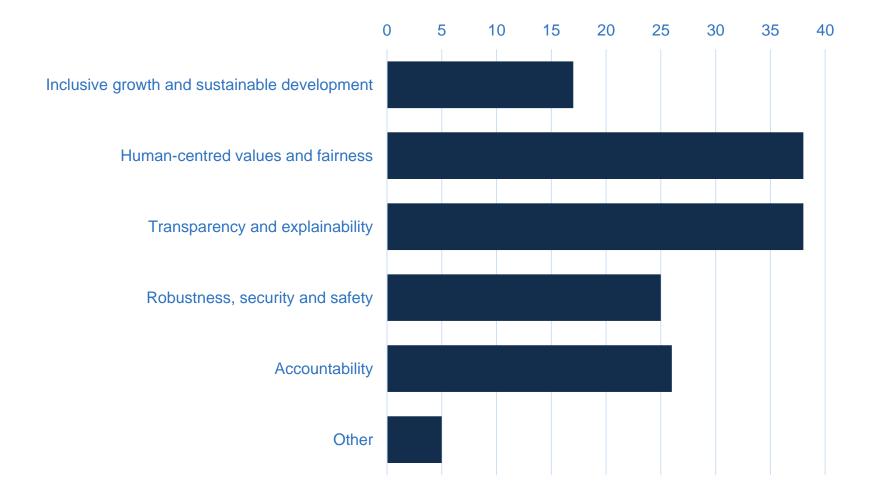
## Summary By stakeholder type







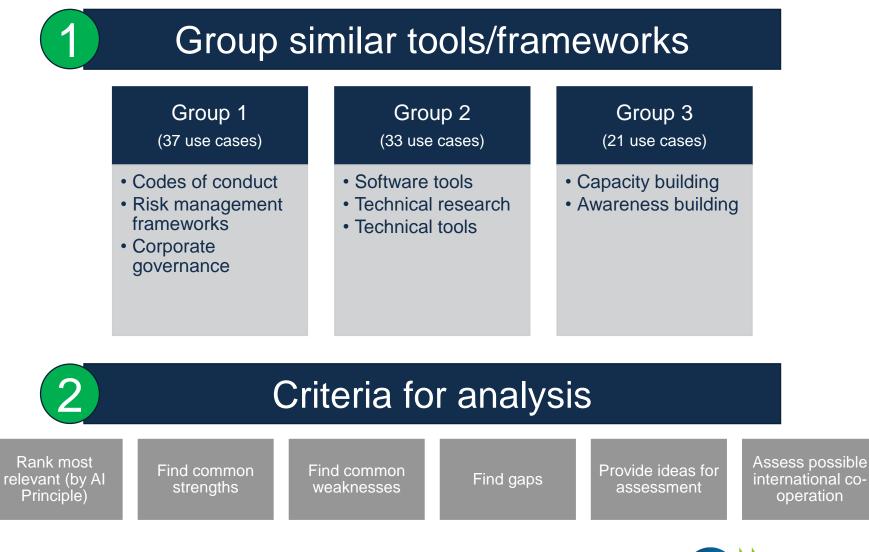
## Summary By Al Principle







Analysis







## OECD Network of Experts on AI WG3 on national AI policies

**Goal**: Identify good practices for implementing the 5 recommendations to policy-makers contained in the AI Principles:

- 1. Investing in AI R&D
- 2. Fostering a digital ecosystem for AI
- 3. Shaping an enabling policy environment for AI
- 4. Building human capacity and preparing for labour market transformation
- 5. International co-operation for trustworthy AI

**Deliverable**: A practical guidance report containing a set of good practices to implement these 5 recommendations to policy makers

## Co-moderators:



Andras Hlacs, Counsellor, Permanent Delegation of Hungary to OECD



**Mike Selitto,** Deputy Director, Stanford Institute for Human-Centered AI (HAI)











## OECD Network of Experts on AI WG3 on national AI policies

### A. Policy design

governance, processes used to formulate national AI strategies and policies

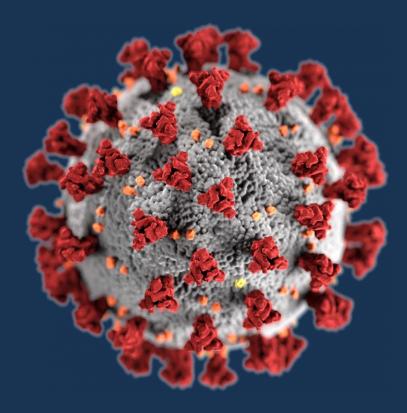
**B. Policy implementation** of the 5 recommendations

**C. Policy Intelligence** to monitor implementation

**D. International multi-stakeholder co-operation** good practices by other IGOs



## **COVID-19 Resources**



## **COVID-19 Resources**

## "Using artificial intelligence to help combat COVID-19" Policy brief

#### Al and COVID-19 A crisis management framework

#### Detection

Early warning Detecting anomolies and digital "smoke signals" eg. BlueDot

#### Diagnosis

Pattern recogniton using medical imagery and symptom data eg. CT scans

### Prevention

Prediction Calculating a person's probability of infection eg. EpiRisk

Surveillance Monitor and track contagion in real time eg. contact tracing

#### Information Personalised news and content moderation to fight misinformation

eg. via social networks

#### Response

#### Delivery Dropes for tra

Drones for transporting materials; robots for high exposure tasks at hospitals eg. CRUZR robot

Service automation Deploying triaging virtual assistants and chatbots eg. Canada's COVID-19 chatbot

#### Recovery

#### Monitor

Track economic recovery through satellite, GPS and social media eg. WeBank

Accelerating Research

ortuquese

Open data projects and distributed computing to find Al-driven solutions to the pandemic, e.g. drug and vaccine development

panish



French



## **COVID-19 Resources**

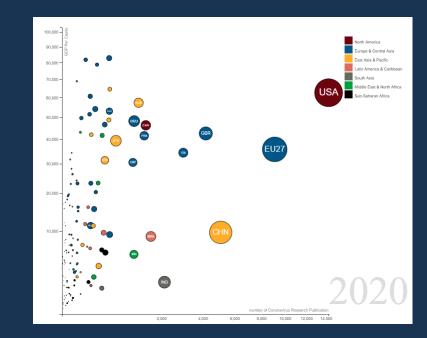
## Al-powered COVID-19 tracker

Follow the latest COVID-19 developments in your country in real time

Live news	Evolution	Trajectories	Progression	Worldometer data	Social di	stancing		
Days after 100 cases:								
	0		50	100		150		219
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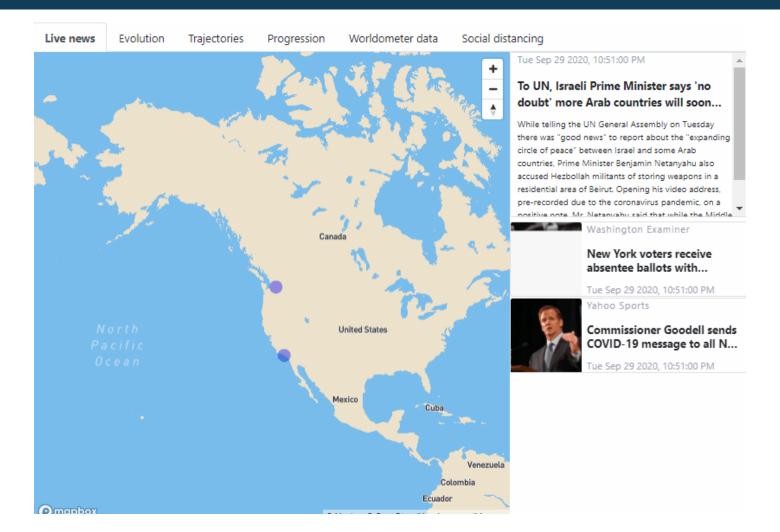
## **COVID-19 research**

Live data on COVID-19-related publications (MAG)



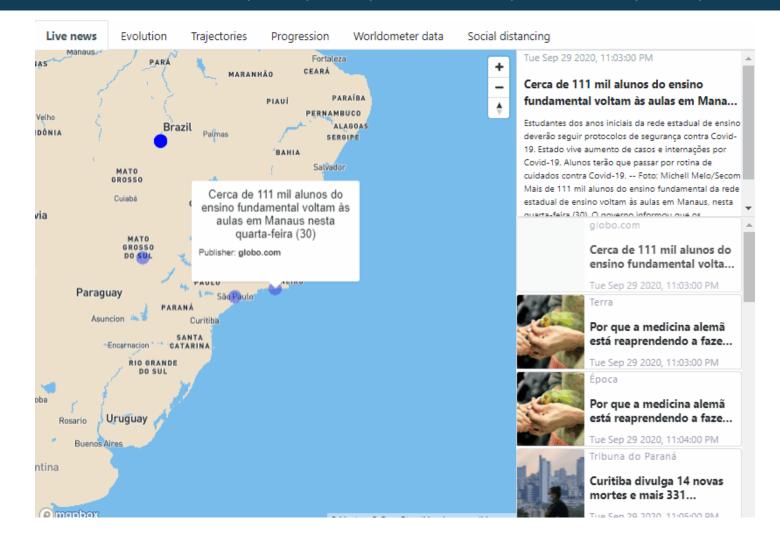


## AI-powered COVID-19 watch



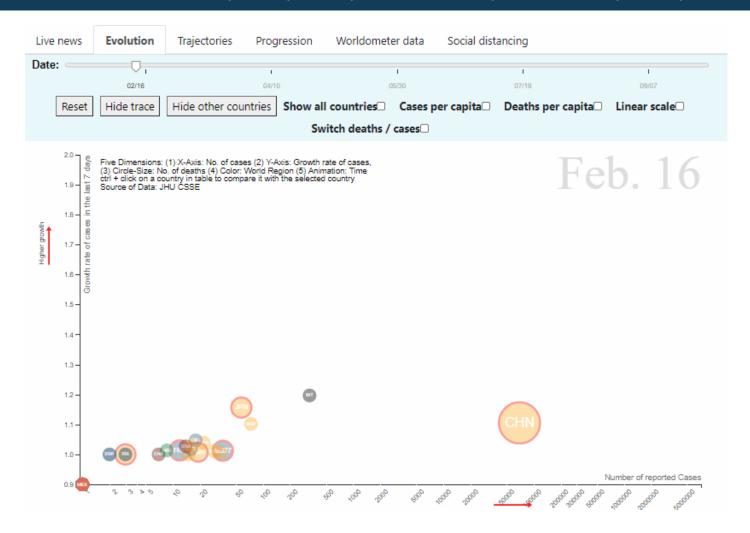


## AI-powered COVID-19 watch



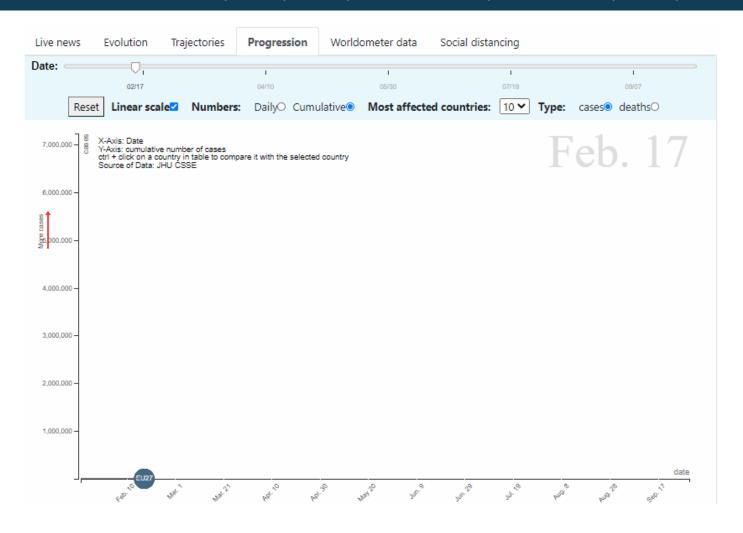


## AI-powered COVID-19 watch





### AI-powered COVID-19 watch





## AI-powered COVID-19 watch

Live news	Evolution	Trajectories	Progression	Worldometer data	Social distancing	
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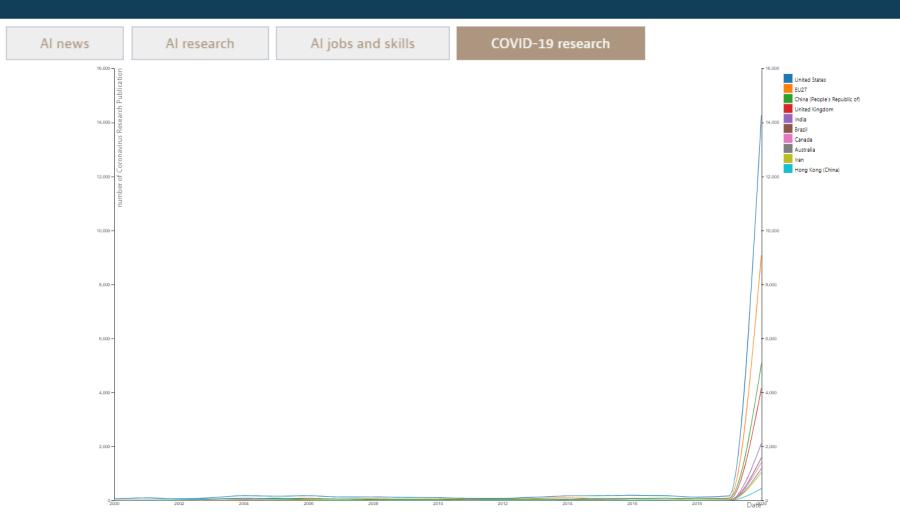


## Live data from partners

Al news	Al research	Al jobs and skills	COVID-19 research	
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80.000 - 70.000 -				East Asia & Paolic Latin America & Carlebean South Asia Midde East & Mont Africa Sub-Saharan Africa
60,000 -				
90,000 - 40,000 - <b>`</b>	USA			
30.000				
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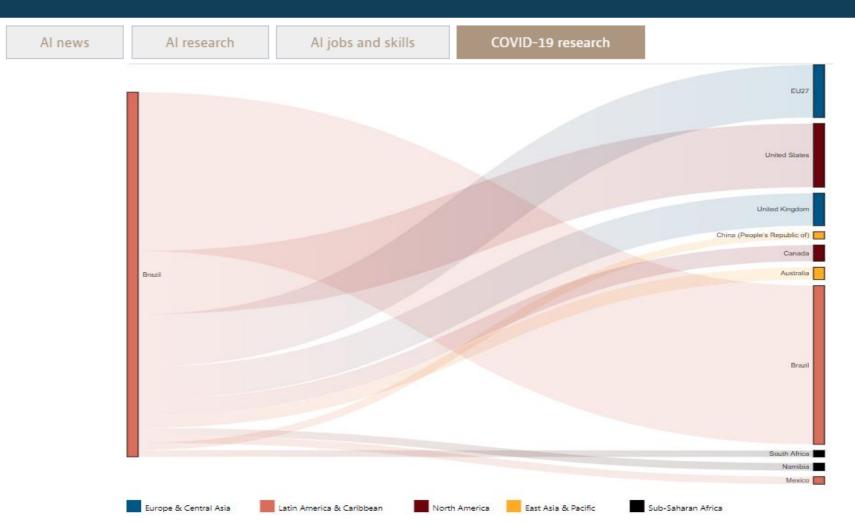


## Live data from partners





## Live data from partners



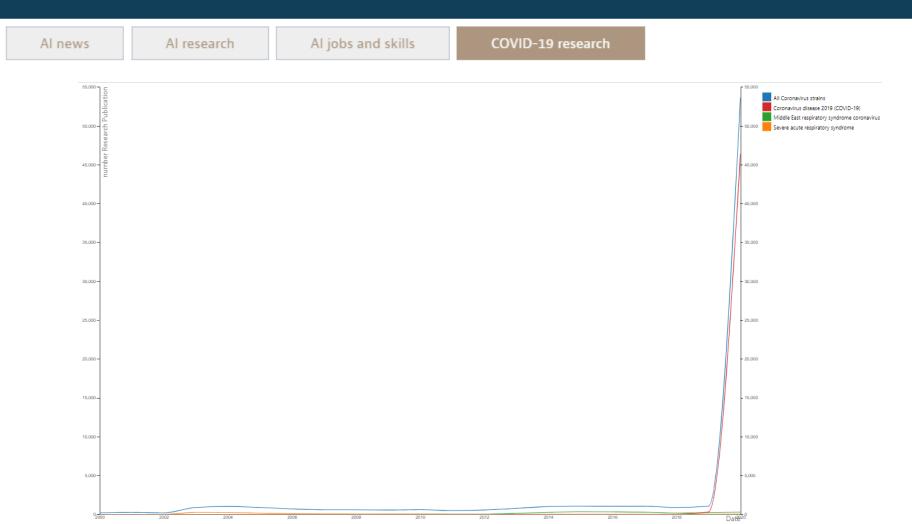


## Live data from partners

Al news	Al research	Al jobs and skills	COVID-19 research	
	Harvard University			Harvard University
				Boston Children's Hospital
	Huazhong University of Science and Techn	nology		
				University of Oxford
	University of Oxford			University of Washington
	Boston Children's Hospital			University of Toronto
	University of Toranta	SA.		Stanford University
	University College London			University College London
	Johns Hapkins University			University of Pennsylvaria
	University of Paris			
	University of Washington			Brigham and Women's Hospital
	Wuhan University			Huazhong University of Science and Technology
	North America East Asia &	Pacific Europe & Central Asia		_



## Live data from partners





Home > The Al Wonk

### The AI Wonk

Not all intelligence is artificial. Keep yours real with the Al Wonk blog.



#### Intergovernmental

### Artificial intelligence in health still needs human intelligence

COVID-19 has shown that AI can deliver benefits, but it has also exposed its limits, often related to having the right data.



#### Singapore's model framework balances innovation and trust in AI

To sustain a trusted AI ecosystem, Singapore has to be proactive about providing guidance for AI and responding to industry realities.

June 24, 2020 - 🕚 5 min read



Busines

#### Can AI combat cognitive capacity issues and information overload?

Cybersecurity, viral pandemics and climate change make fostering international co-operation and access to knowledge more urgent than ever.

June 15, 2020 — 🕔 3 min read



#### An introduction to the Global Partnership on AI's work on Responsible AI

The Global Partnership on AI (GPAI) has a mission to "support the development and use of AI based on human rights, inclusion, diversity, innovation, and economic growth, while seeking to address the U...



September 1, 2020 - () 6 min read



#### Technical community

Three habits to cultivate when converting ethical AI principles into ethical AI practice

May 11, 2020 — 🕔 4 min read



#### Intergovernmental

Harnessing Artificial Intelligence for Development

July 29, 2020 - () 4 min read



#### Intergovernmental

The IDB is bringing responsible and ethical AI to Latin America and the Caribbean

June 3, 2020 — 🕔 4 min read



#### An introduction to the Global Partnership on AI's work on data governance

Jeni Tennison, Co-Chair of GPAI's Working Group on Data Governance, introduces her working group and its mission.

August 21, 2020 - () 6 min read



Intergovernmental

#### Harnessing Artificial Intelligence for Development

Governments can help balance opportunities and risks linked to Al.

July 29, 2020 - 🕚 4 min read



A platform to share and shape Artificial Intelligence policies

## THANK YOU

# Visit the **OECD AI Policy Observatory (OECD.AI)** for more, including:

- Overview of the OECD AI Principles
- Latest research in AI policy areas
- Al-powered COVID-19 watch
- Trends and data
- Interactive database of country's AI initiatives
- The AI Wonk blog

