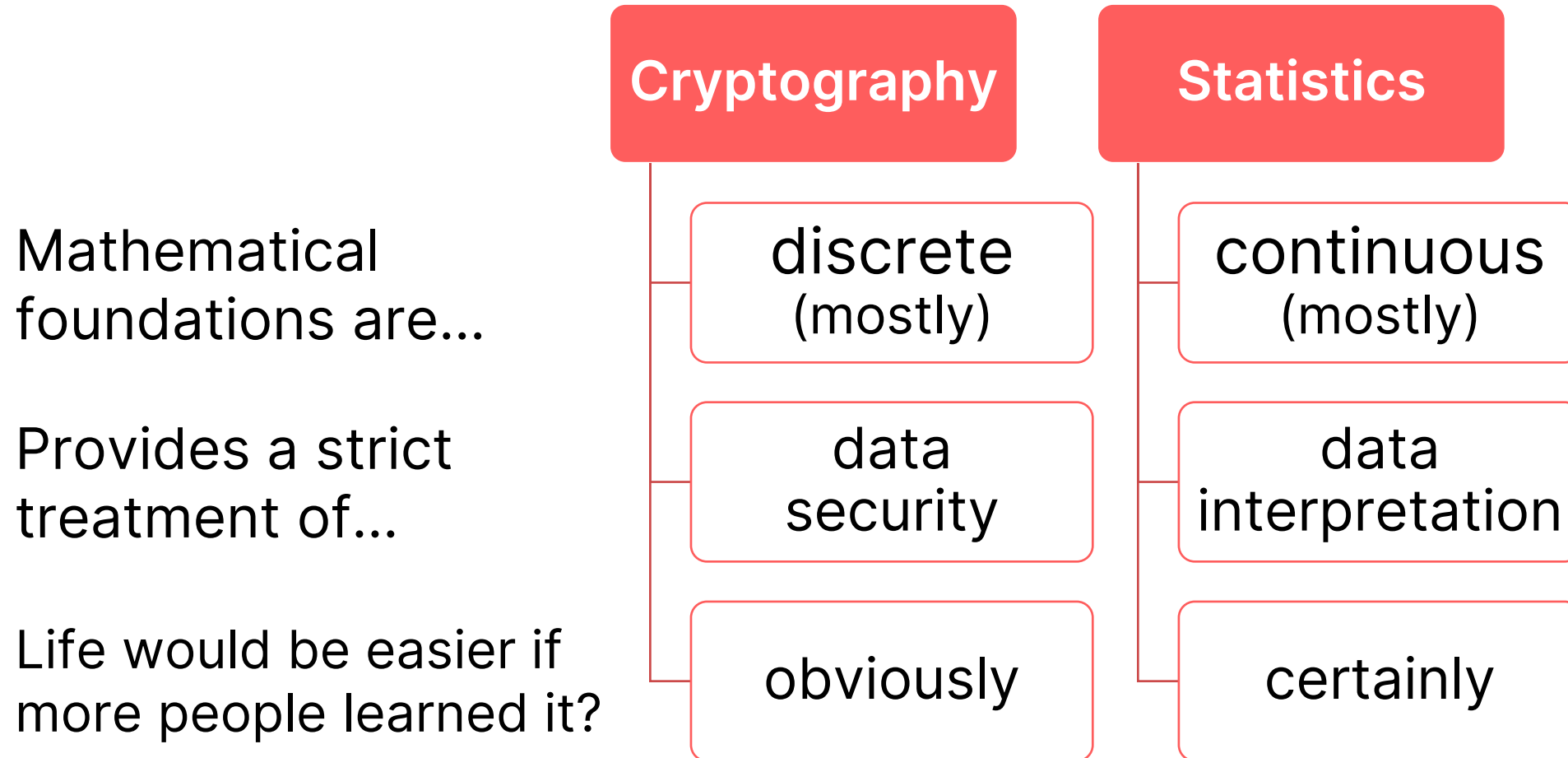# How can NSIs bring the planet together for great data and even better governance?

Dan Bogdanov, PhD

Chief Scientific Officer at Cybernetica

Member of the Estonian Academy of Sciences

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Disciplines of cryptography and statistics

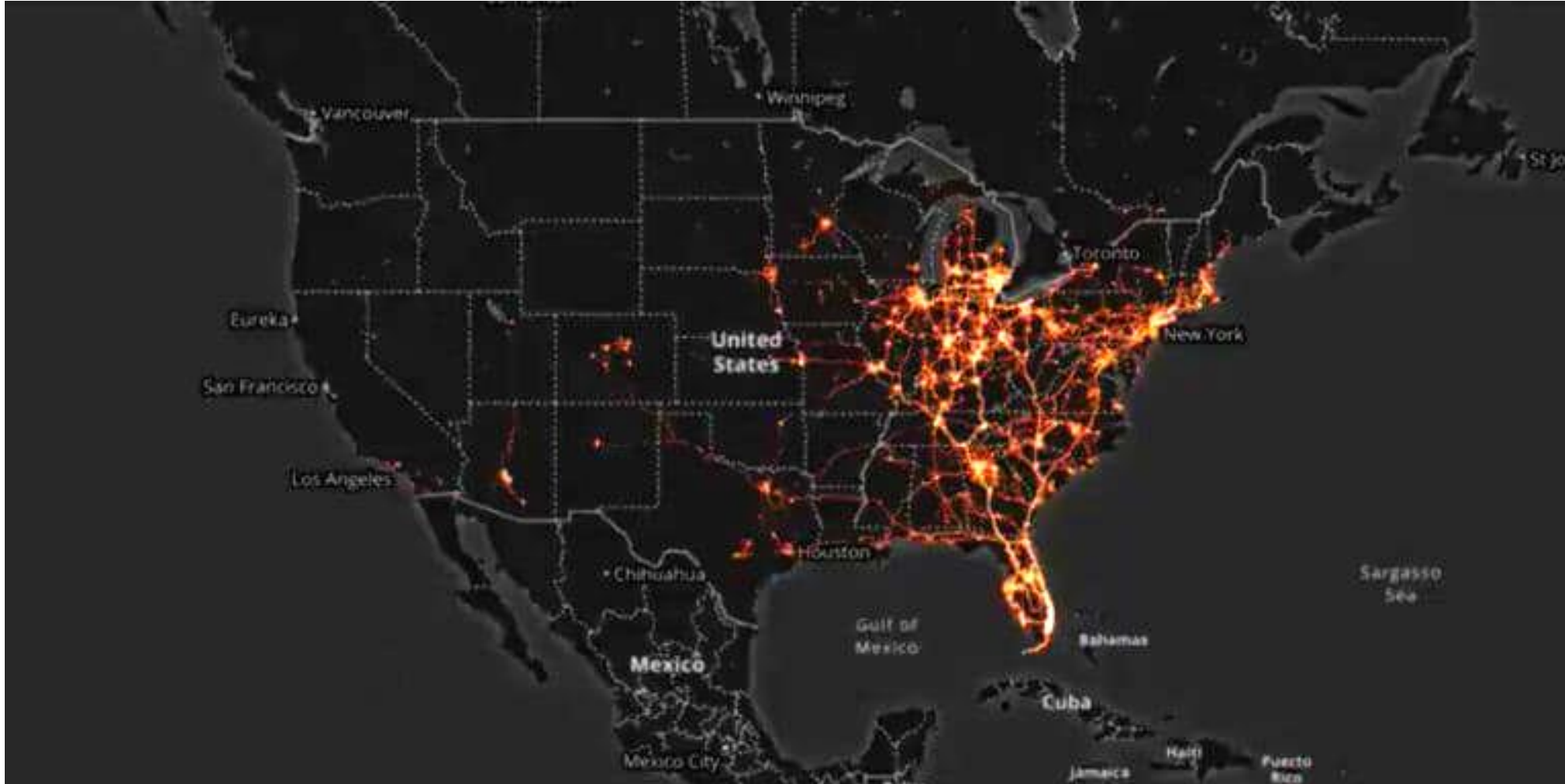|	Cryptography	Statistics
Mathematical foundations are...	discrete (mostly)	continuous (mostly)
Provides a strict treatment of...	data security	data interpretation
Life would be easier if more people learned it?	obviously	certainly

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Trusting data in the time of SARS-CoV-2

Figure from: Terrifying cellphone 'heat map' shows just how much people are still traveling. Daily Dot. March 27th, 2020
https://www.dailydot.com/debug/cellphone-heat-map-coronavirus/

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We built federated data services globally

- Brazil
- Kenya
- Tunisia
- Bahamas
- Malaysia (MyGDX)
- Ukraine (Trembita)
- Japan (SMTB)
- Benin
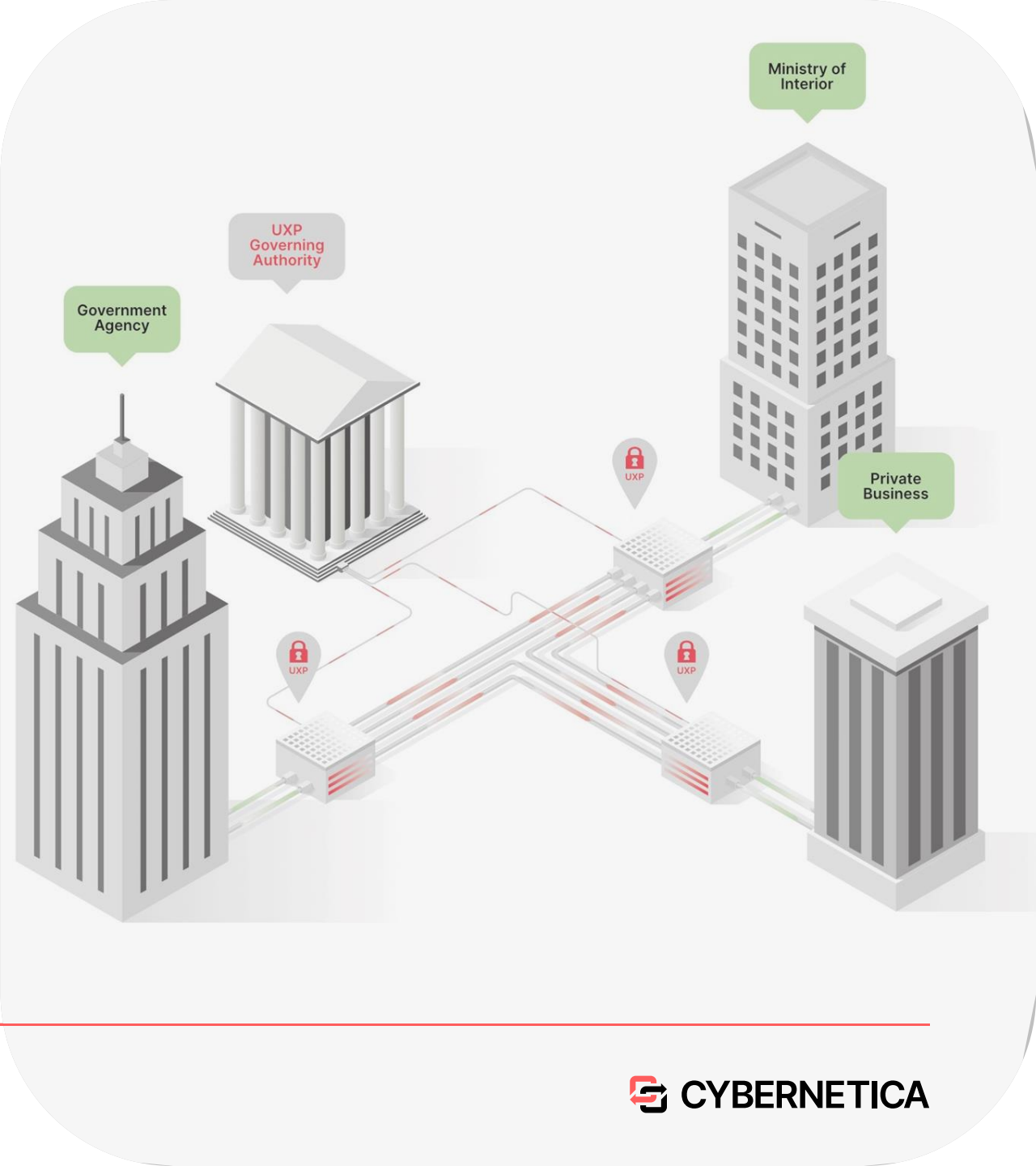- Greenland (Pitu)
- Azerbaijan
- Estonia (X-Road)

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Photo: Shutterstock.

Data governance principles are important

- Data used for decisions has a high bar for quality
  - data quality is provided by the source,
  - data transactions are trustworthy,
  - transport and use of data are secured.

- In some of our systems, data transactions can be used as evidence in courts.

- In a world built like this, even AI might be trustworthy.

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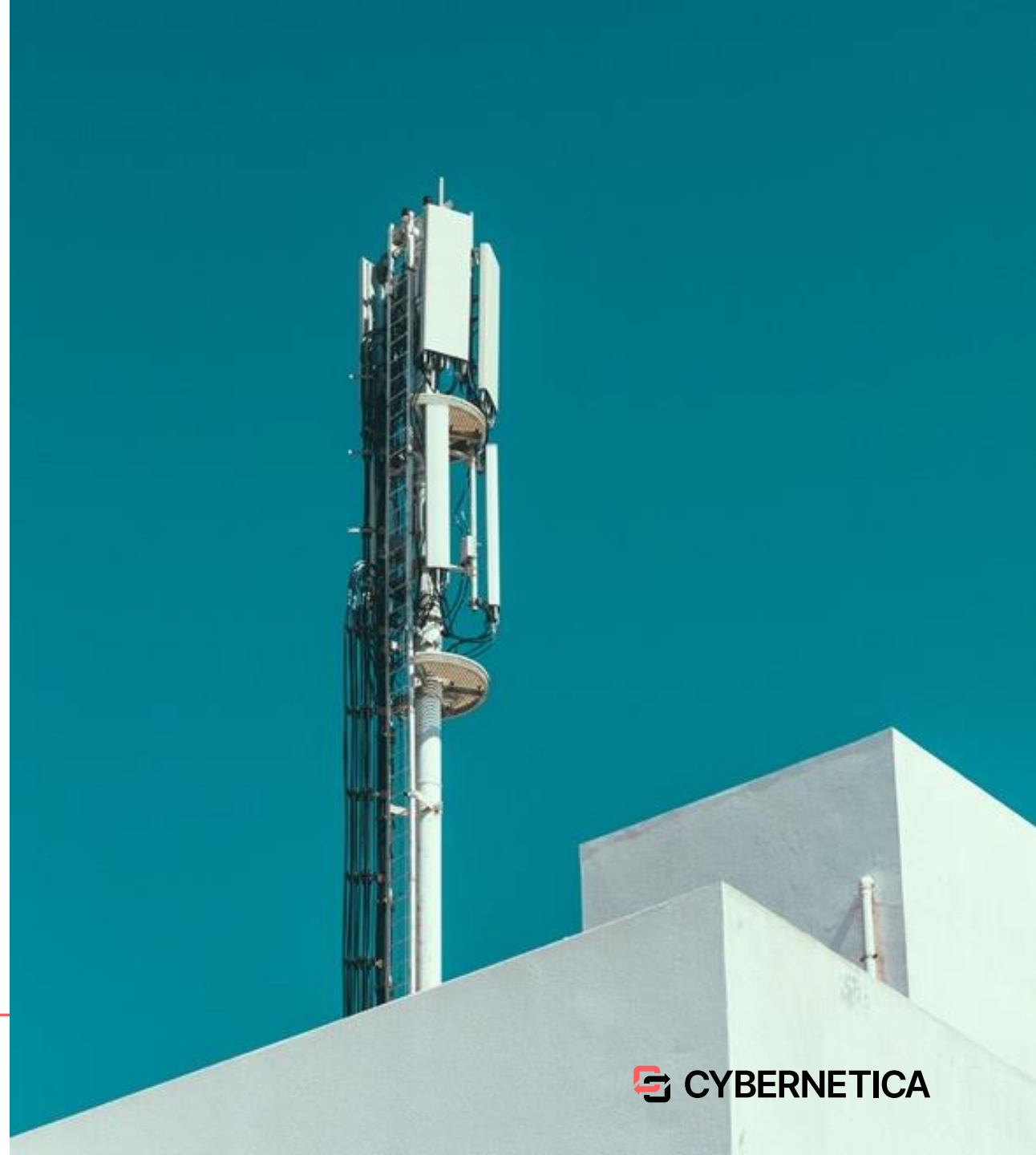# Take home message

1 NSI experience on data management and quality matters, even as new technologies enter the world.

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What is a good quality data source for retail pricing and volume?

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What is a good quality data source for personal mobility?

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Barriers to accessing private sector data

Barrier	Challenging thoughts	Helpful thoughts
Mandate and basis	Is this within the legal mandate of an NSI?	Who else do we consider equipped to do it well?
Governance	New services may challenge statistical confidentiality	If new data governance tools are needed, let's use them
Quality	Is the quality of private sector data good enough?	They use data to build their own businesses – they care
Cost	The data would come at a price, which sets a bad precedent (+no budget)	While statistics is not a business, the data services have a value chain

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Take home messages

1 NSI experience on data management and quality matters, even as new technologies enter the world.

2 NSI access to private sector data can improve statistics but needs a clear value chain and updated societal agreements.

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"The future is already here — it's just not very evenly distributed"
--William Gibson

- Local statistics and insights support locally relevant decisions.

- Globally relevant decisions require globally sourced insights.

Regulation complicates cross-border data sharing and the use of cloud computing for NSIs.

Will LLM (AI) makers pull all the world's data together anyway?

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There are many pathways to innovation

- Some NSIs have wider mandates than others.

- Some NSIs have wider access to private sector data.

- Some NSIs have successfully set up international data sharing.

- Some NSIs are successfully embracing cloud computing.

- If it works, and helps produce quality statistics, <u>don't break it!</u>

- However, for use cases with sensitive data sources (tax, surveys, location data), new approaches may be required.

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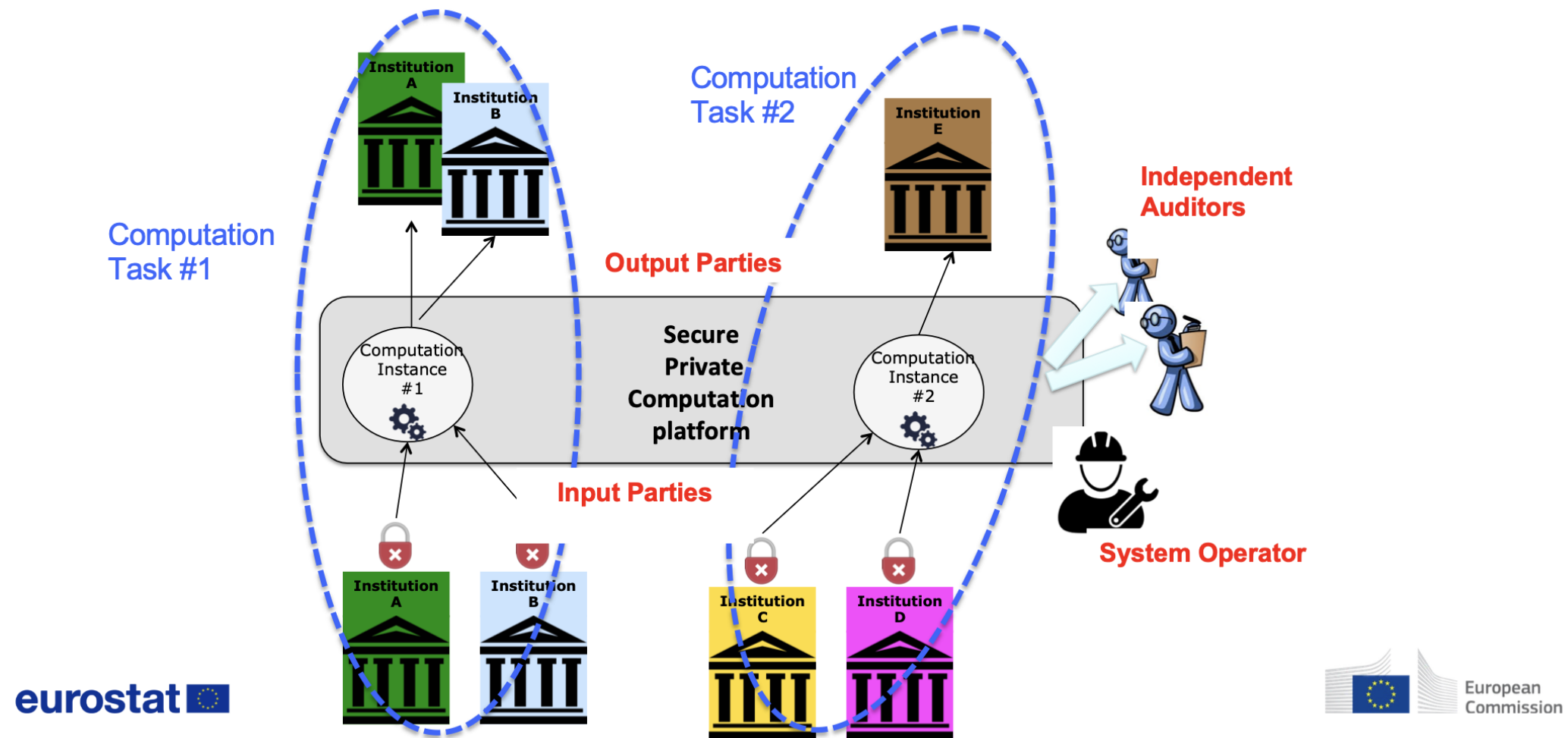# Introducing JOCONDE

Joint On-demand COmputation with No Data Exchange

https://cros.ec.europa.eu/joconde

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Joint On-demand COmputation with No Data Exchange

- <u>JOCONDE</u> is a project of the European Statistical System, coordinated and led by Eurostat.

- JOCONDE envisions a shared statistical toolbox where:
  - data users can use the data without having access to them,
  - data holders remain in control without needing unlimited trust and
  - rules and rights of all parties are under shared control.

- This is achieved by using beyond-state-of-the-art cryptographic data governance technologies, including secure multi-party computation and trusted execution environments.

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Multi-Party Secure Private Computing-as-a-service

Take home messages

1 NSI experience on data management and quality matters, even as new technologies enter the world.

2 NSI access to private sector data can improve statistics but needs a clear value chain and updated societal agreements.

3 NSIs can use novel data governance technologies for stricter enforcement of the separation between mandated tasks.

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Thank you for the invitation!

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