

7th Workshop on
Understanding the Diversity of Financial Risk
Machine Learning for Prediction and Optimisation
Budapest, Hungary, November 24, 2023

2023

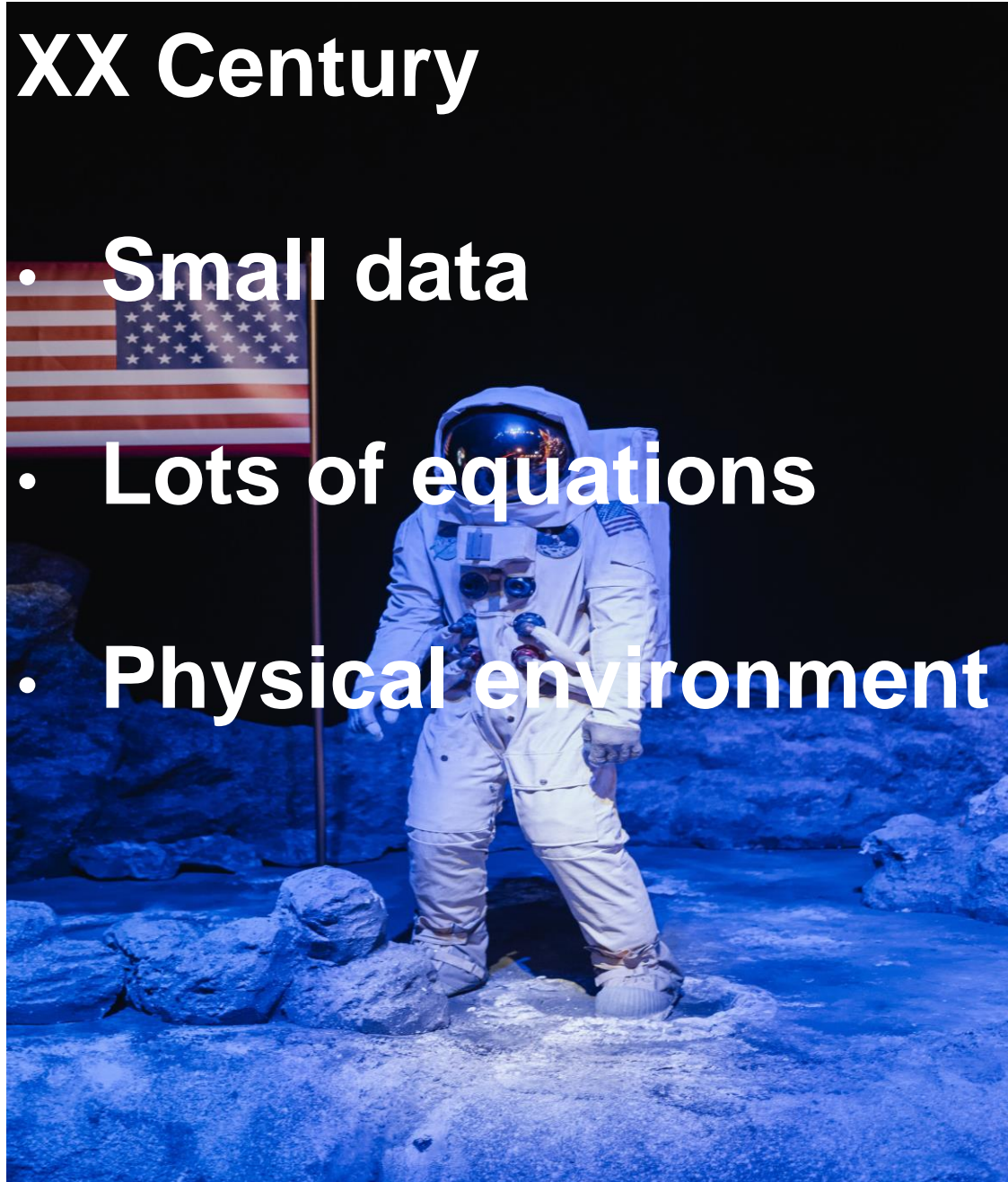
Prof. Luis Seco

**The Dawn of The Social Fintech: AI, Finance and
Sustainability**

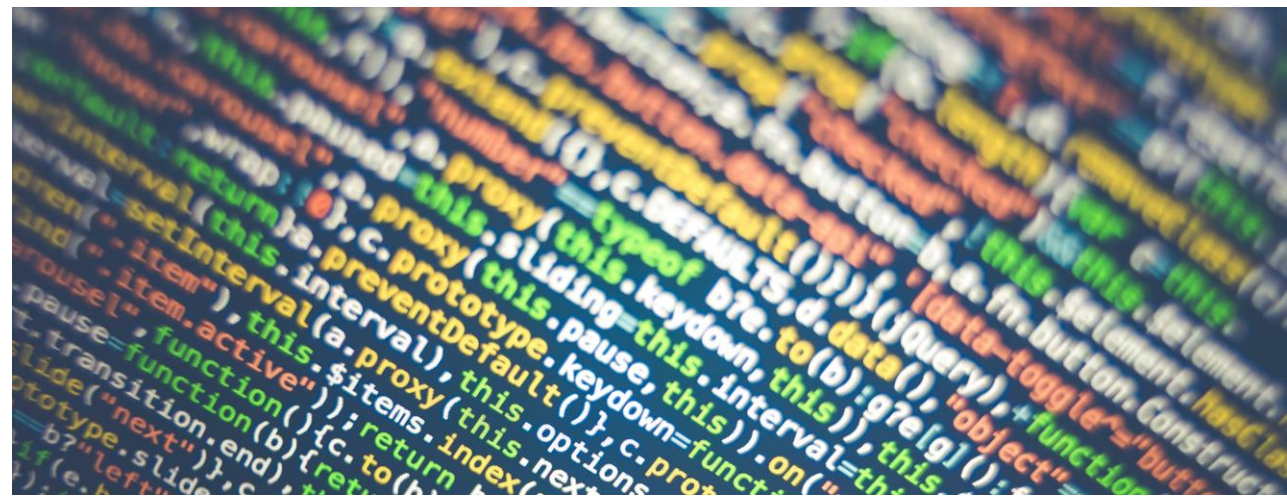
Innovation Evolution

XX Century

- Small data
- Lots of equations
- Physical environment



XXI Century



- Lots of data
- No equations
- Mental environment

25 years of RiskLab-Toronto

Harmonic Analysis and Value at Risk Calculations



RiskLab First Paper 1996

C. Albanese
L. Seco

- **Small data**
- **Lots of equations**
- **Mental environment**

Revista Matemática Iberoamericana (17) 2001, no. 2, p. 195-220

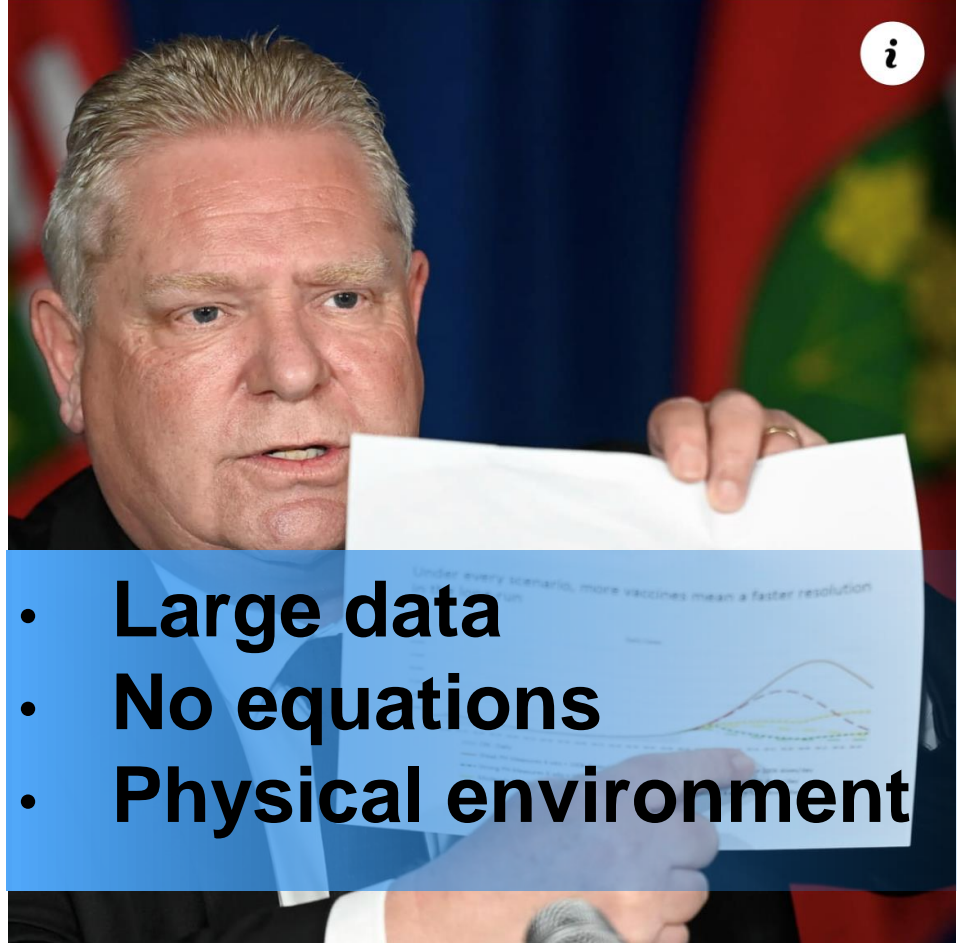


The Toronto Star ✓

Sponsored · Paid for by The Toronto Star

⋮ ✕

RiskLav & COVID 2020-2022



- **Large data**
- **No equations**
- **Physical environment**

Premier of the Province holding
a Fields-COVID report

Fields Institute Centre for Sustainable Development

THE 17 GOALS

169
Targets

3503
Events

1325
Publications

6439
Actions



1	NO POVERTY
2	ZERO HUNGER
3	GOOD HEALTH AND WELL-BEING
4	QUALITY EDUCATION
5	GENDER EQUALITY
6	CLEAN WATER AND SANITATION
7	AFFORDABLE AND CLEAN ENERGY
8	DECENT WORK AND ECONOMIC GROWTH
9	INDUSTRY, INNOVATION AND INFRASTRUCTURE
10	REDUCED INEQUALITIES
11	SUSTAINABLE CITIES AND COMMUNITIES
12	RESPONSIBLE CONSUMPTION AND PRODUCTION
13	CLIMATE ACTION
14	LIFE BELOW WATER
15	LIFE ON LAND
16	PEACE, JUSTICE AND STRONG INSTITUTIONS
17	PARTNERSHIPS FOR THE GOALS



May 24, 1990

Harvard and CUNY Shedding Stocks in Tobacco

By TAMAR LEWIN

Harvard University and the City University of New York have decided to eliminate stocks of tobacco companies from their investment portfolios, in what may be harbingers of a new tactic to highlight the dangers of smoking.

The action by Harvard was disclosed by President Derek Bok in a letter dated May 18 to three students at the university's public health school. He said Harvard had decided on divestiture in September and completed the stock sale in March.

And on Monday the City University of New York's board of trustees voted 9 to 2 to divest itself of tobacco stock.

representing about \$3.5 million of the university's \$60 million portfolio.

Harold Jacobs, a trustee at City University, said, "We didn't know anything about Harvard doing it, and this was the first meeting where tobacco divestiture appeared on the agenda, but our vice chairman, Edith Everett, argued very persuasively that cigarettes are unhealthy and we should not hold tobacco stock, so we passed it."

Ms. Everett and her husband, Henry, have long been active in opposing the tobacco industry, and they serve on the board of trustees of the Tobacco Divestment Project, a Boston-based non-profit group formed earlier this month.

That group and others working against cigarette smoking say the two universities' moves may be the start of a far more widespread divestiture campaign, including a proposal in the Massachusetts Legislature to require state pension funds to sell their tobacco stocks. By some estimates, more than 60 percent of tobacco stock over all is held by institutional investors, primarily banks, pension funds and insurance companies.

"Harvard and CUNY are the two great victories so far, but this is just the beginning," said Brad Krever, ex-

Continued on Page B8, Column 3

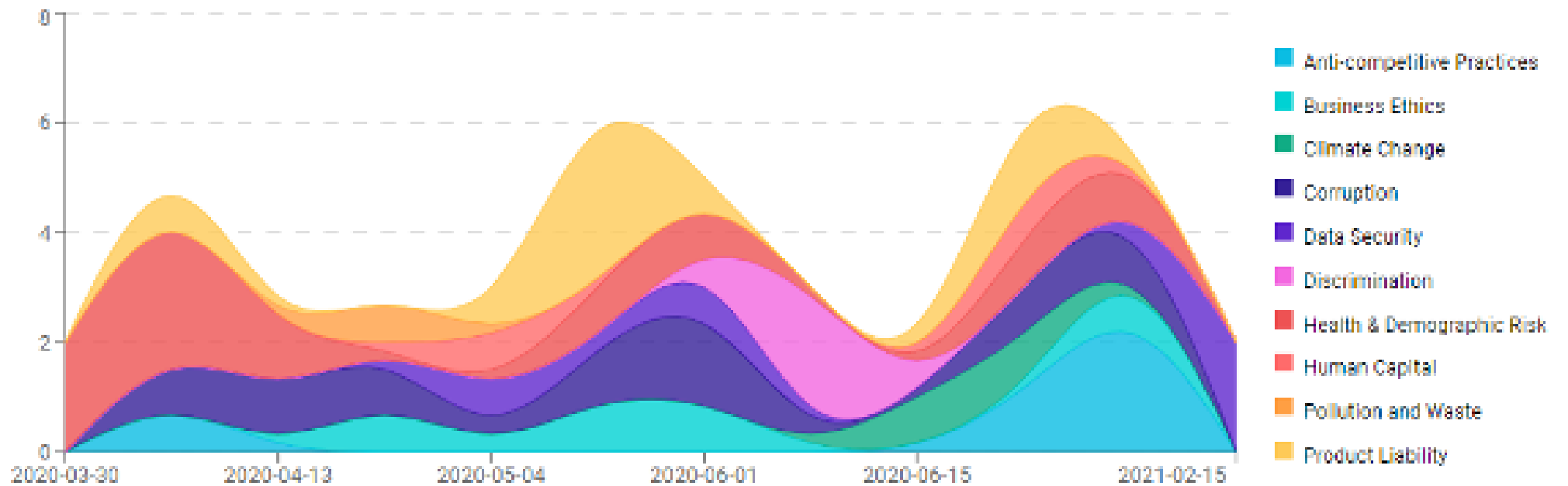
Responsibli output (today, LLM)

Company Search

Type to search...

Issue Summary

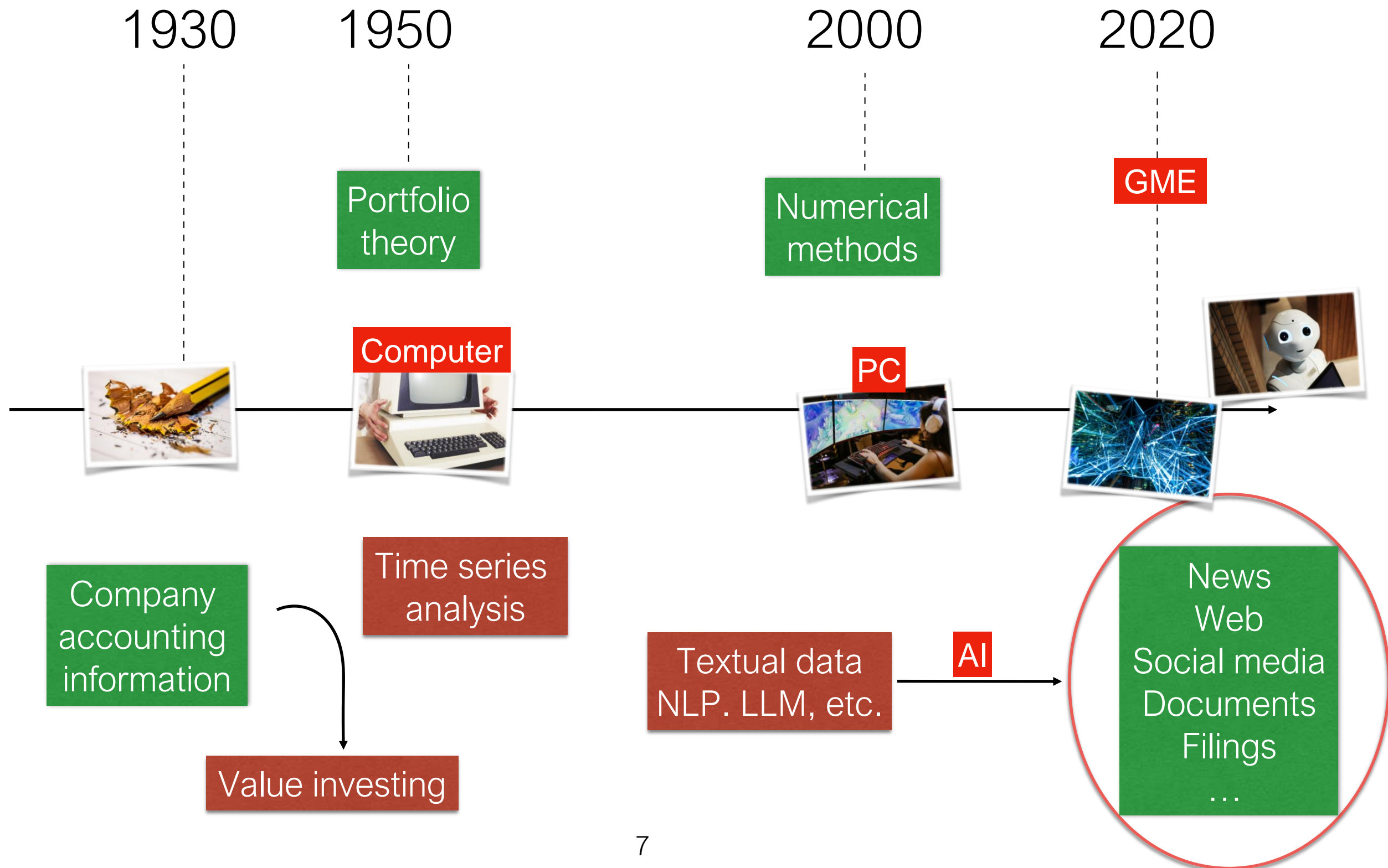
1,804
The New York Times
17
Reddit
5,901
Twitter
49
Y Combinator



Documents



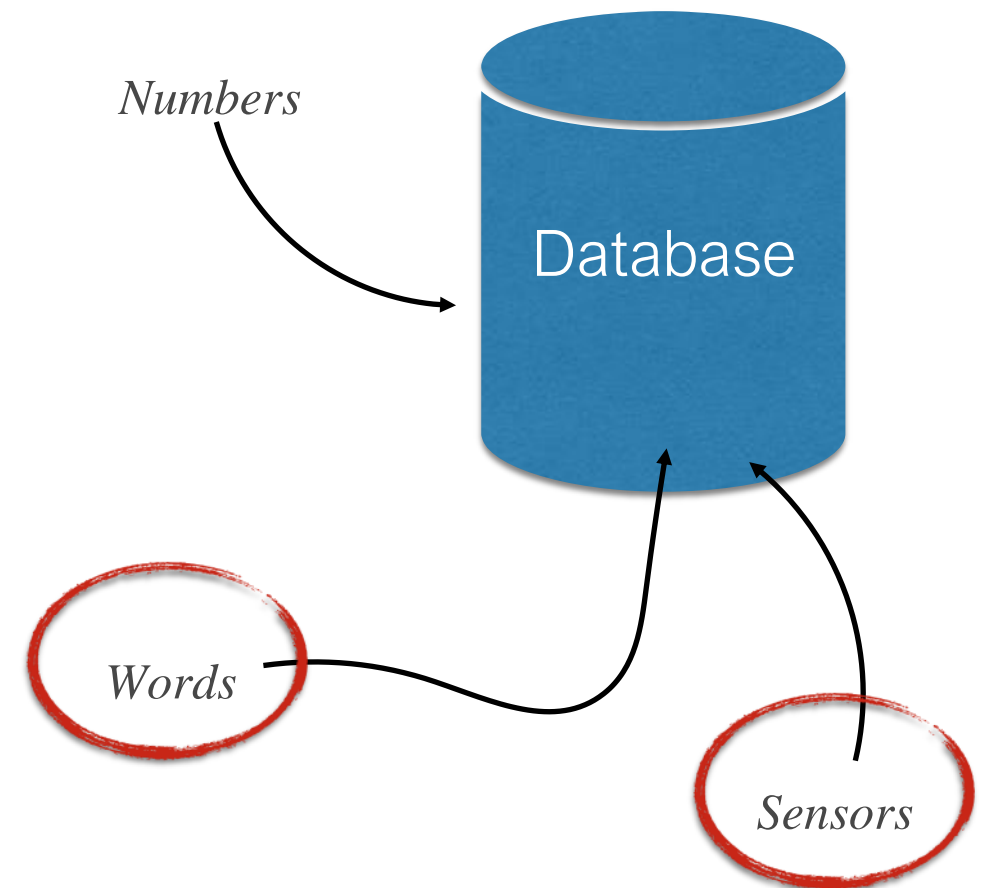
100 years of "FinTech" data inputs



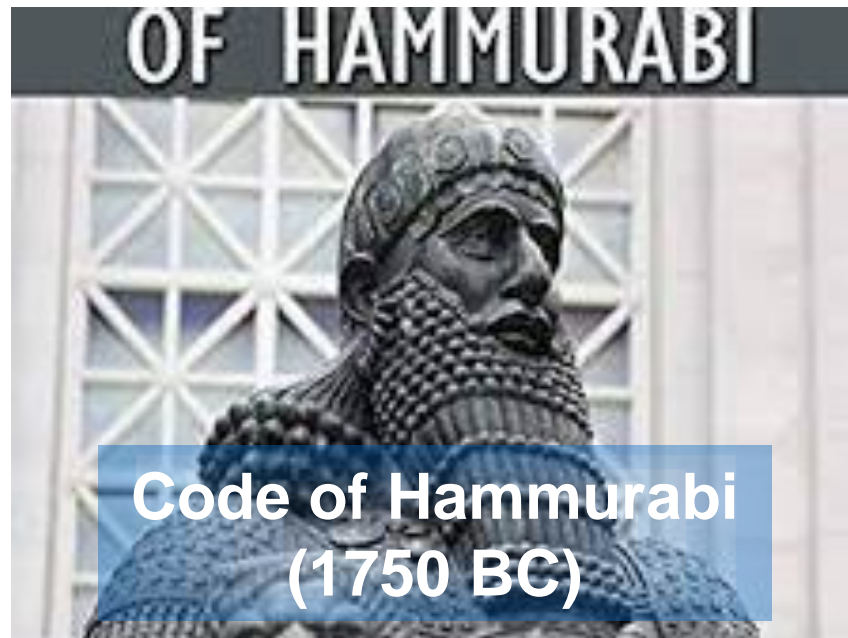


Traditional data sources are being replaced by unstructured data sources

- Numerical data
- Textual data
- Sensor data
- Images, satellite, video, etc.



Risk Trading



The Dōjima Rice Exchange (堂島米市場), Osaka
Established in 1697



Article 2.1.c (Paris Accord, 2015)


(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Carbon trading


CHOOOSE



[Home](#) [Offset flight](#) [Carbon offset projects](#) [FAQ](#) EN ▾


Compensate for your flight's estimated CO₂e emissions when booking on [AirCanada.com](#) or with the widget below. When you do, you support certified carbon offset projects selected with Air Canada by CHOOOSE™ carbon professionals. [i](#)

 **Flights** 0 in cart English · CAD

Enter your travel details:

 From
Search airports

  Add stop

 To
Search airports

Class
Economy ▾

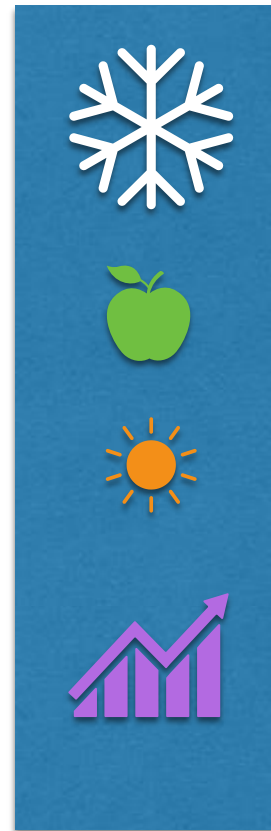
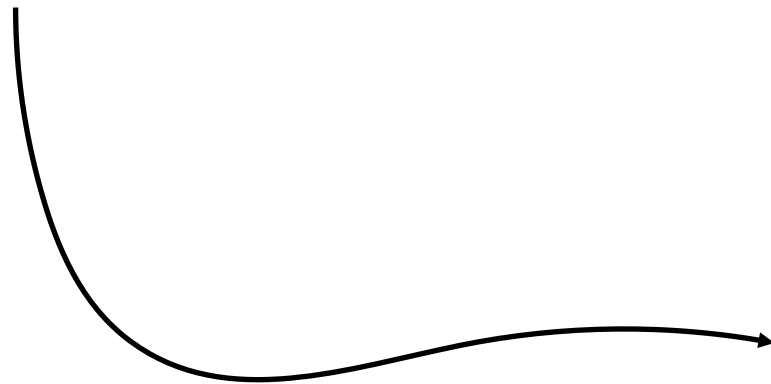
Passenger(s)
1

Round trip



The Carbon Exchange

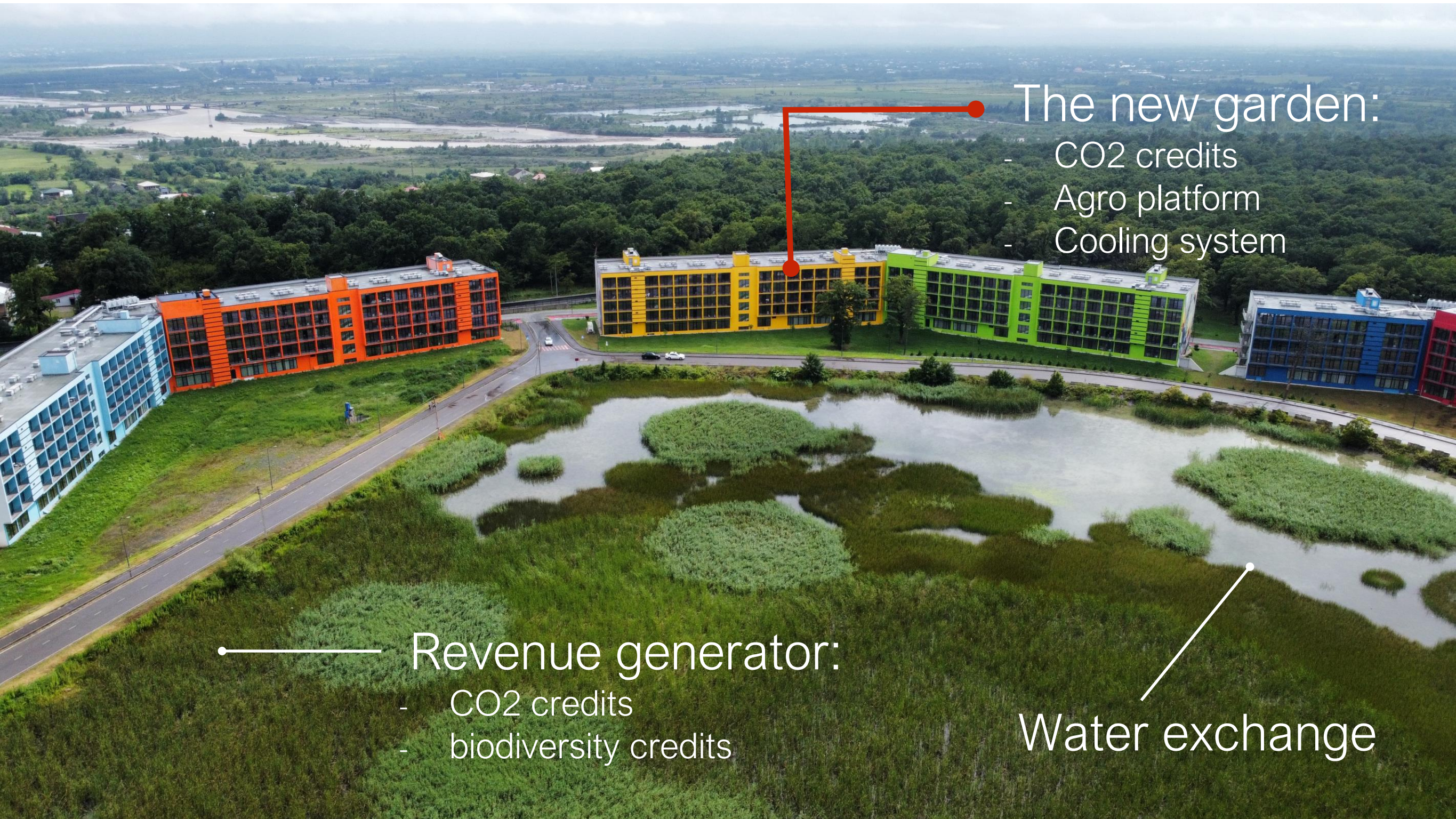
Buyers



Sellers



A new urban paradigm



The new garden:

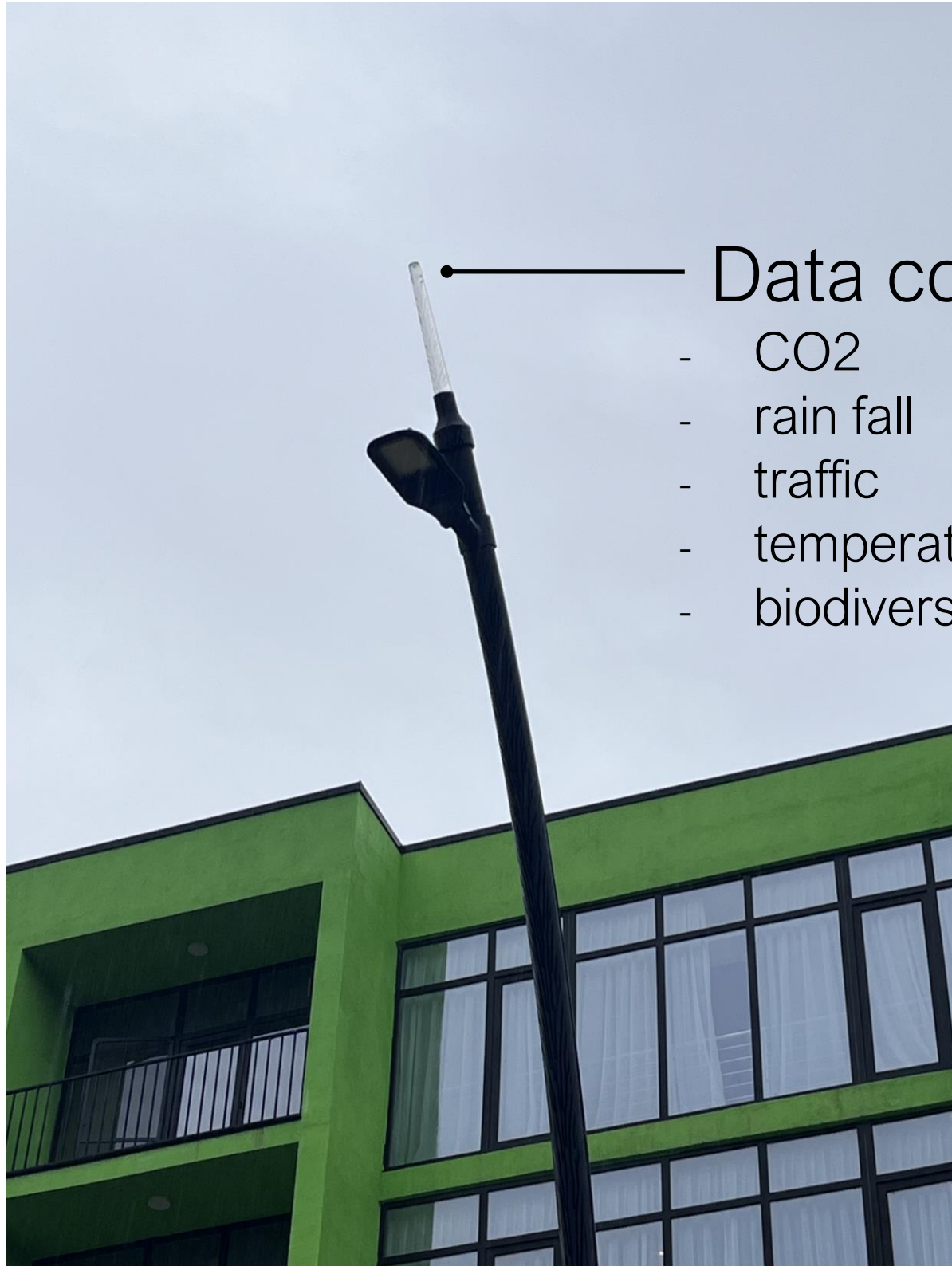
- CO2 credits
- Agro platform
- Cooling system

Revenue generator:

- CO2 credits
- biodiversity credits

Water exchange

The Good City

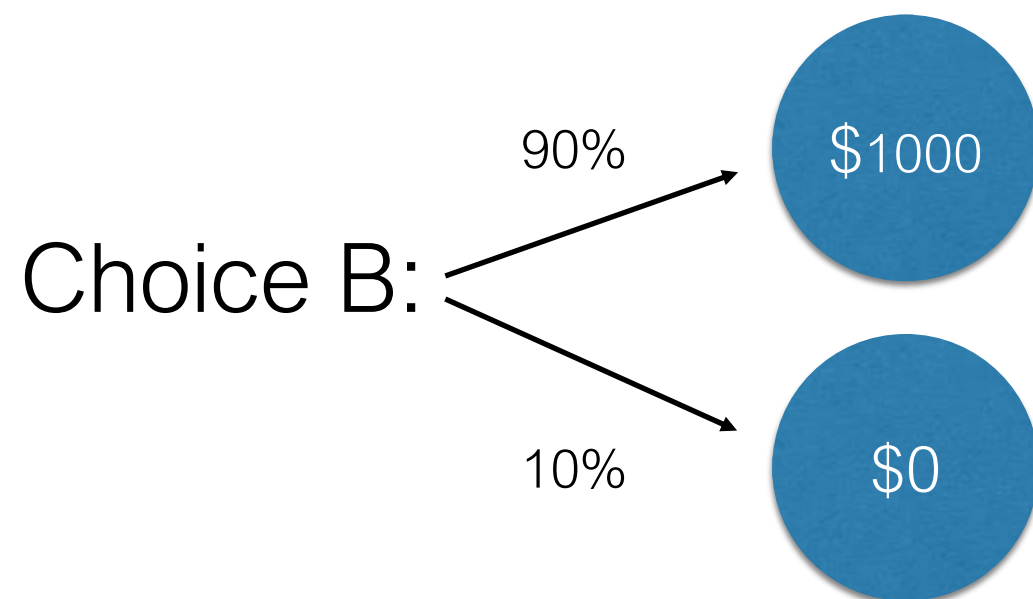
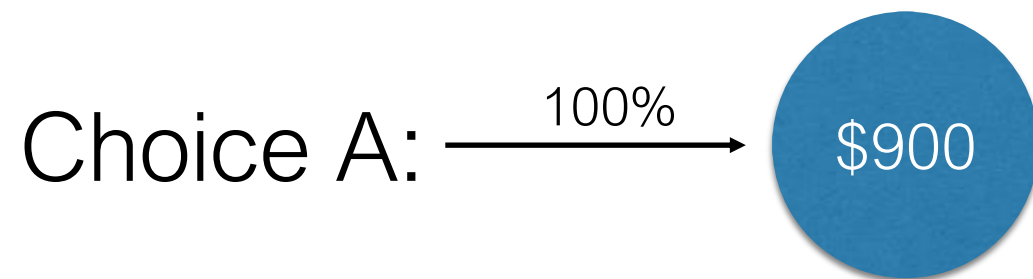


Data collector:

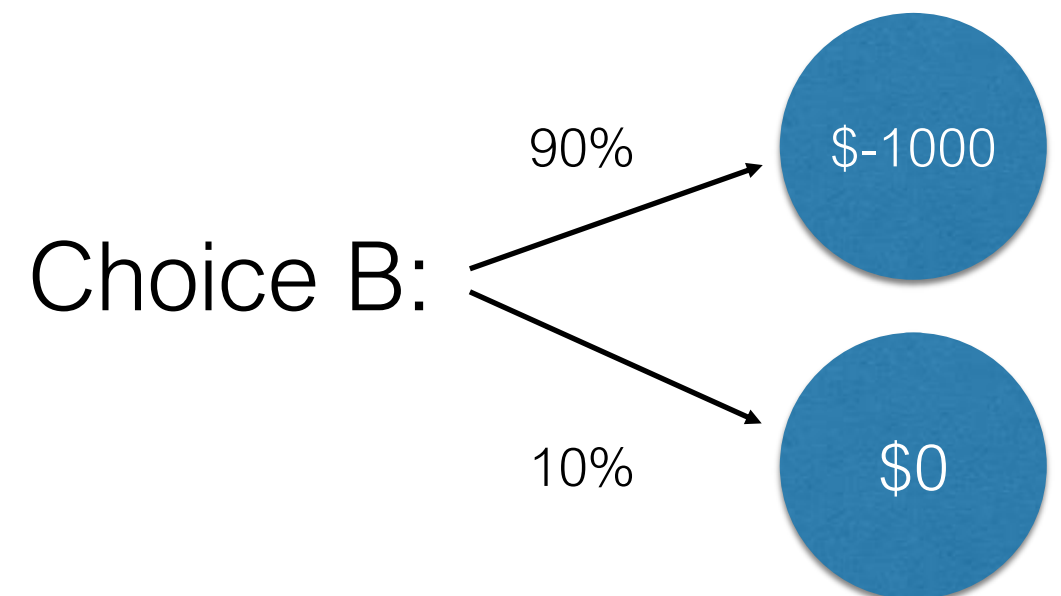
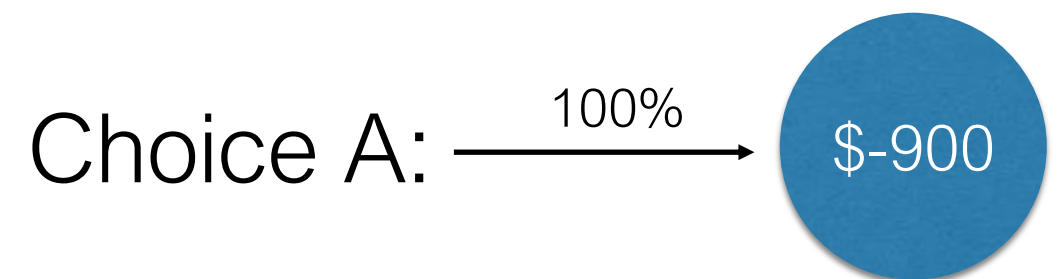
- CO2
- rain fall
- traffic
- temperature
- biodiversity monitor

Decision making

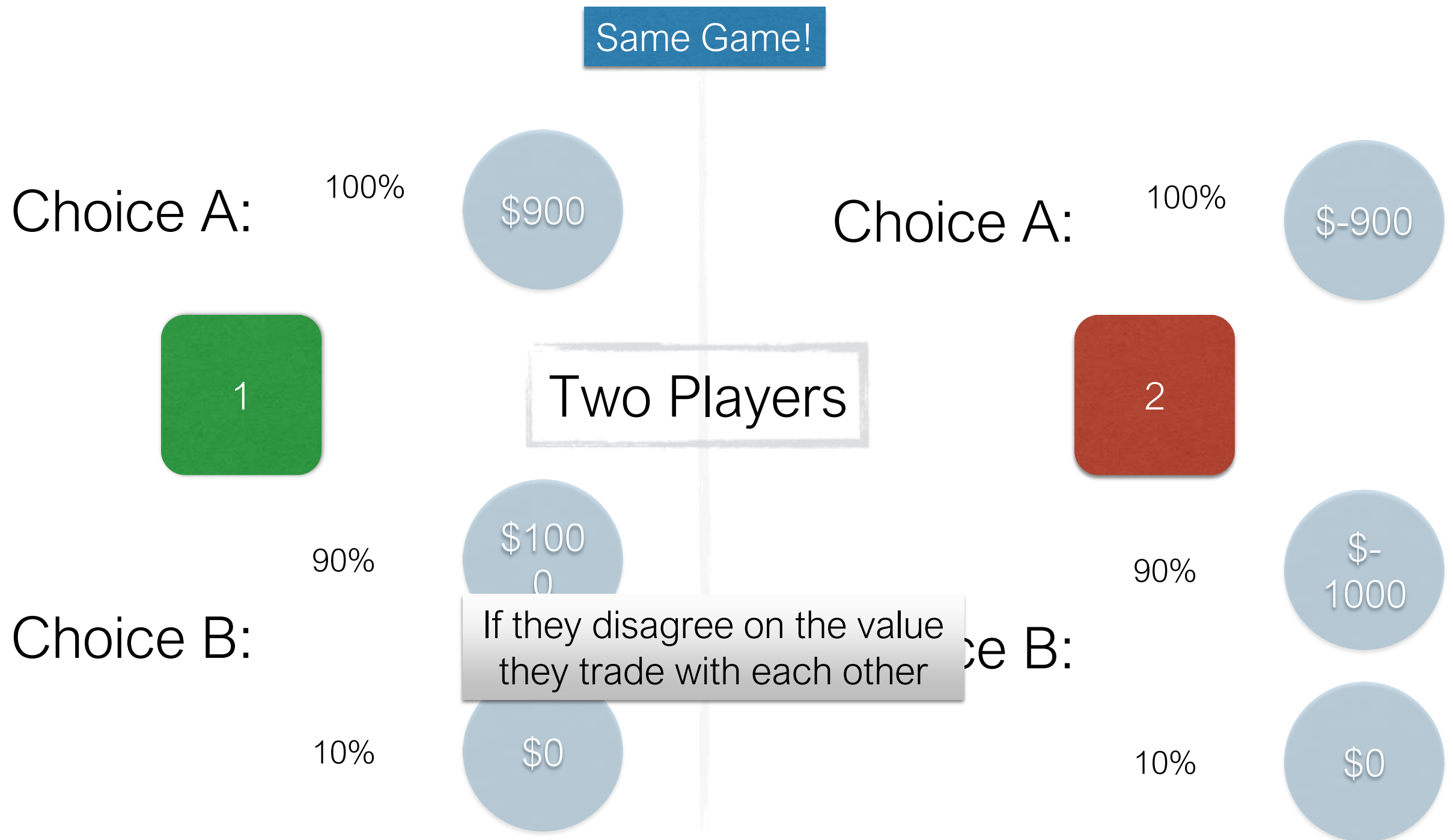
Game 1



Game 2



Game theory



Climate Risk

Single risk factor:

CO₂ Emissions





Contributors to GhG emissions

#	Country	CO2 Emissions per capita (tons)	CO2 Emissions (tons, 2016)	Population (2016)
1	China	7.38	10,432,751,400	1,414,049,351
2	United States	15.52	5,011,686,600	323,015,995
3	India	1.91	2,533,638,100	1,324,517,249
4	Russia	11.44	1,661,899,300	145,275,383
5	Japan	9.70	1,239,592,060	127,763,265
6	Germany	9.44	775,752,190	82,193,768
7	Canada	18.58	675,918,610	36,382,944
8	Iran	8.08	642,560,030	79,563,989
9	South Korea	11.85	604,043,830	50,983,457
10	Indonesia	2.03	530,035,650	261,556,381
11	Saudi Arabia	15.94	517,079,407	32,443,447
12	Brazil	2.25	462,994,920	206,163,053
13	Mexico	3.58	441,412,750	123,333,376
14	Australia	17.10	414,988,700	24,262,712
15	South Africa	6.95	390,557,850	56,207,646
16	Turkey	4.61	368,122,740	79,827,871
17	United Kingdom	5.55	367,860,350	66,297,944
18	Italy	5.90	358,139,550	60,663,060
19	France	5.13	331,533,320	64,667,596

#	Country	CO2 Emissions per capita (tons)	CO2 Emissions (tons, 2016)	Population (2016)
40	Qatar	37.29	98,990,085	2,654,374
92	Montenegro	25.90	16,249,039	627,264
39	Kuwait	25.65	101,492,225	3,956,875
72	Trinidad and Tobago	25.39	34,974,263	1,377,560
28	United Arab Emirates	23.37	218,788,684	9,360,980
42	Oman	19.61	87,835,773	4,479,219
7	Canada	18.58	675,918,610	36,382,944
115	Brunei	18.28	7,672,127	419,800
99	Luxembourg	17.51	10,144,632	579,264
80	Bahrain	17.15	24,458,384	1,425,792
14	Australia	17.10	414,988,700	24,262,712
83	Estonia	17.02	22,402,414	1,316,510
177	Gibraltar	16.98	572,708	33,737
202	Falkland Islands	16.59	48,568	2,928
11	Saudi Arabia	15.94	517,079,407	32,443,447
2	United States	15.52	5,011,686,600	323,015,995
45	Turkmenistan	14.00	79,279,216	5,662,368
26	Kazakhstan	13.01	231,919,540	17,830,901



RiskLab

UNIVERSITY OF TORONTO

Benchmarking through feature engineering

- What drives emissions?
- How to benchmark emissions by country/province?

Emission Feature engineering

Rank	Feature	Importance Value
1	Electricity Production	0.3409
2	Urban Population	0.3113
3	Population	0.2296
4	GDP	0.1770
5	Fossil Fuel per Capita	0.1319
6	Surface Area	0.06596

Rank	Feature	Importance Value
1	Urban Population	0.3647
2	Electricity Production	0.2789
3	Population	0.2633
4	GDP	0.2033
5	Fossil Fuel per Capita	0.1040
6	Surface Area	0.06469

Emission Chromodynamics



Köszönöm תודה

Thanks

ありがとう

Спасибі

Хвала

ευχαριστώ

감사해요

Gracias

cảm ơn

Kösz

Dankon

Teşekkürler

Danke

متشکرم

Merci

Grazie

tack

Takk

rahmat

谢谢

धन्यवाद

Gratias

dzięki

спасибо

धन्यवादा

စဝပ်လဲ

شكراً

asante dankie

շնորհակալություն