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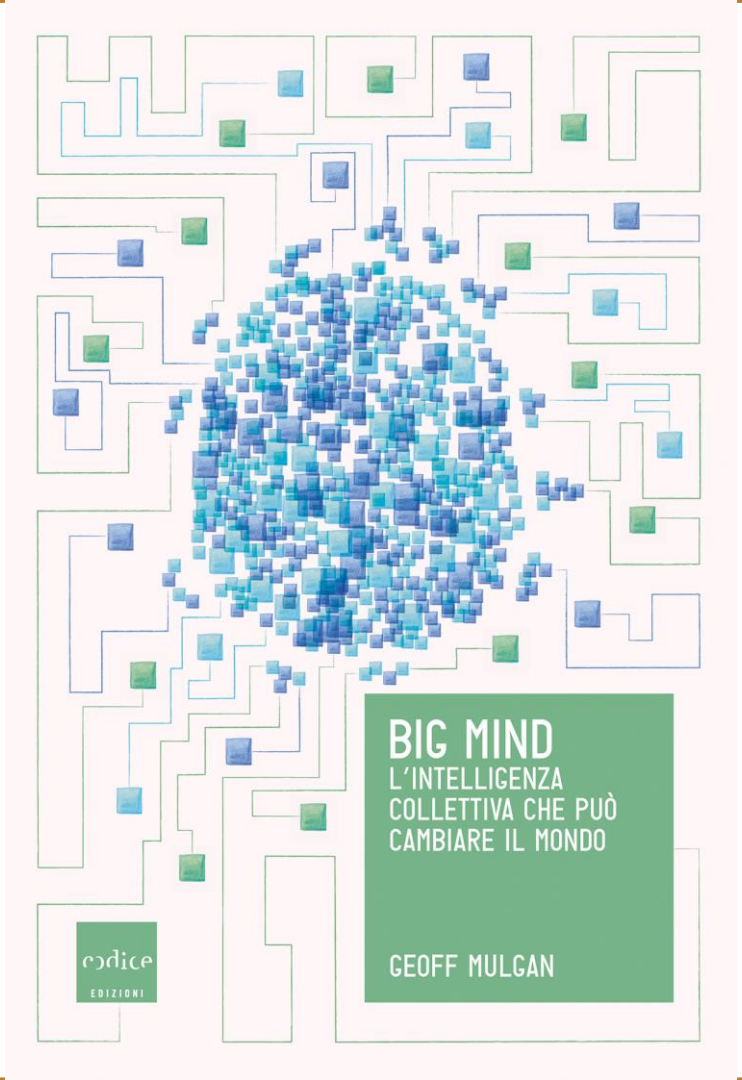
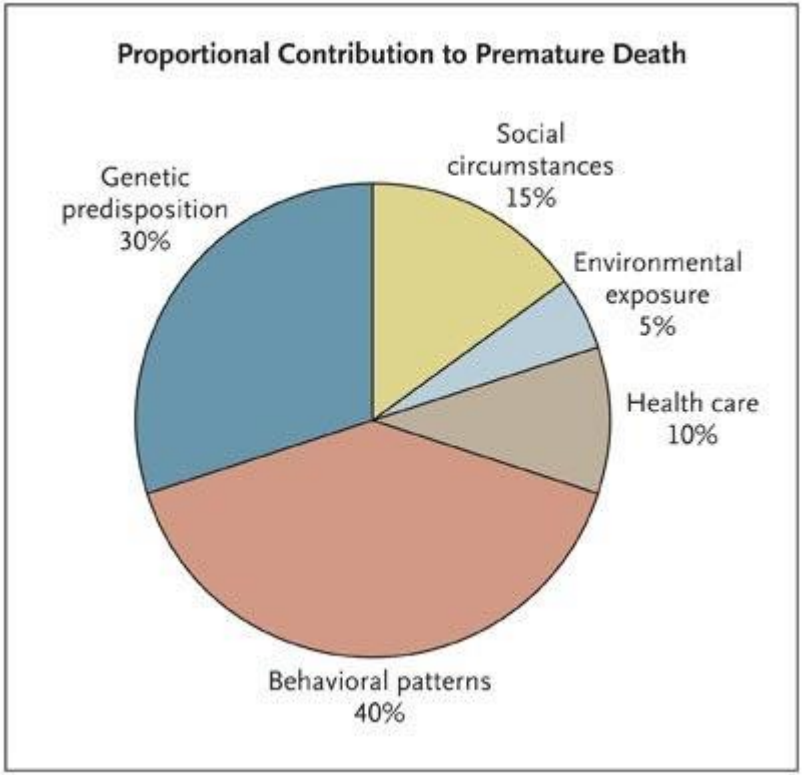
Collective intelligence and digital health

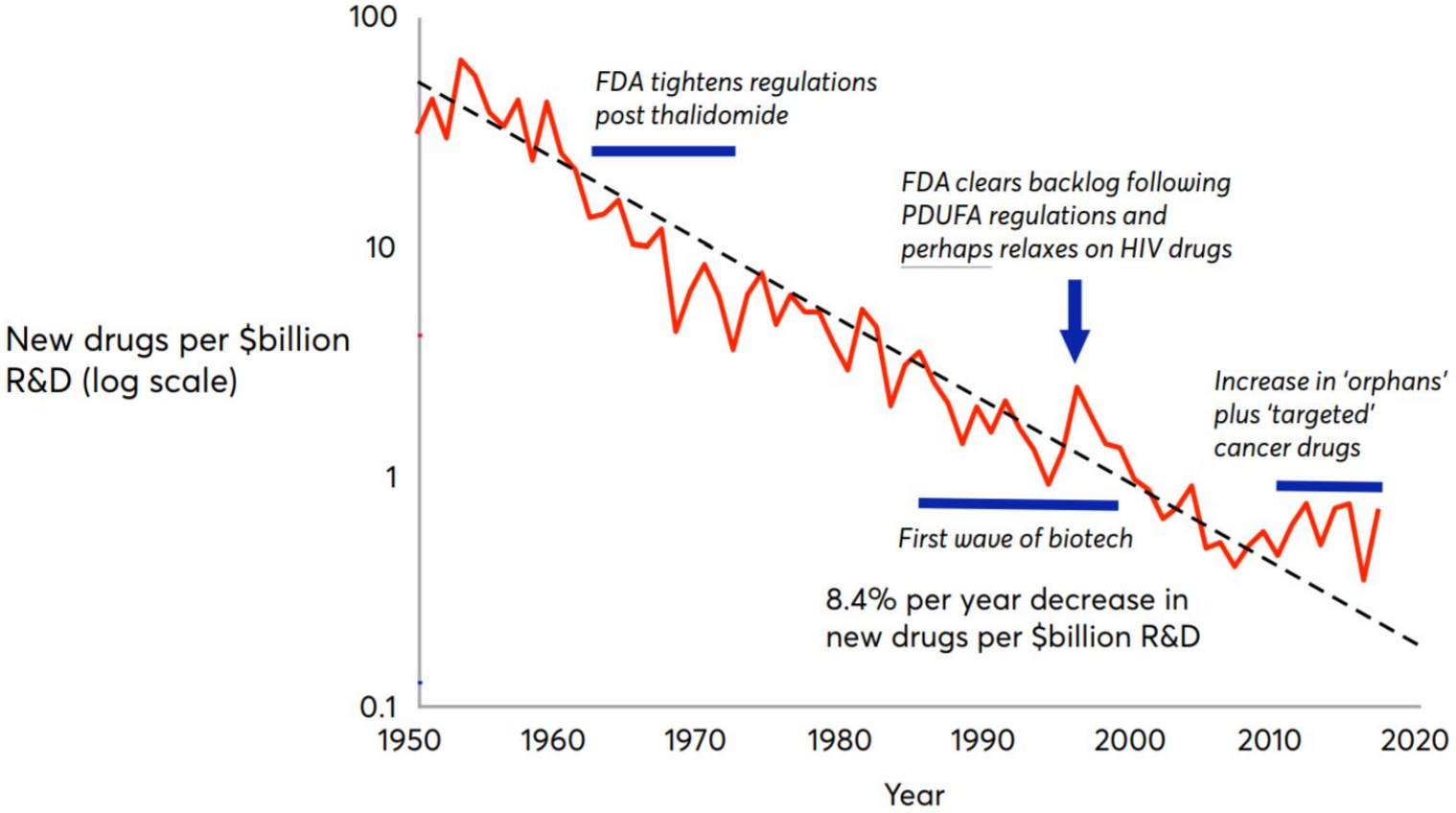
Geoff Mulgan

Milan, October 2018

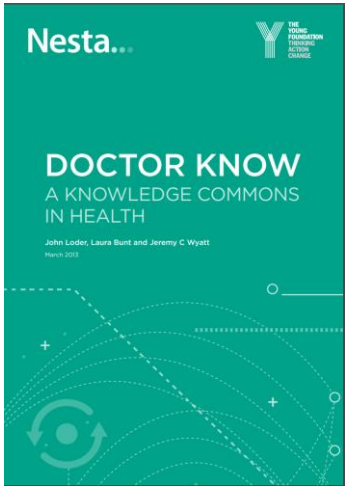

BIG MIND
L'INTELLIGENZA COLLETTIVA CHE PUÒ CAMBIARE IL MONDO
GEOFF MULGAN
codice
EDIZIONI

sources of health




New drugs per $billion R&D (log scale)
100
10
1
0.1
1950
1960
1970
1980
1990
2000
2010
2020
Year
FDA tightens regulations post thalidomide
FDA clears backlog following PDUFA regulations and perhaps relaxes on HIV drugs
Increase in 'orphans' plus 'targeted' cancer drugs
First wave of biotech
8.4% per year decrease in new drugs per $billion R&D

Digital health combining data, AI and people power



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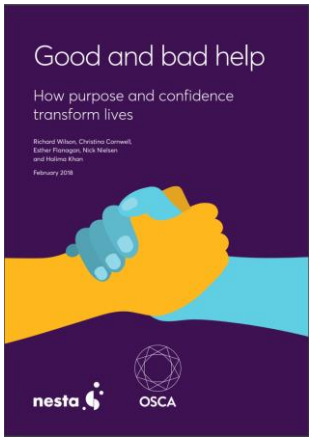
Social health – mobilising peer to peer and mutual support

NHS

10 year plan



NORTH LONDON CARES

Stroke association

GoodGym

British RedCross

SharedLivesPlus
THE UK NETWORK FOR SHARED LIVES AND HOMESHARE

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Innovation methods to help systems think and act as systems

nesta Impact Investments

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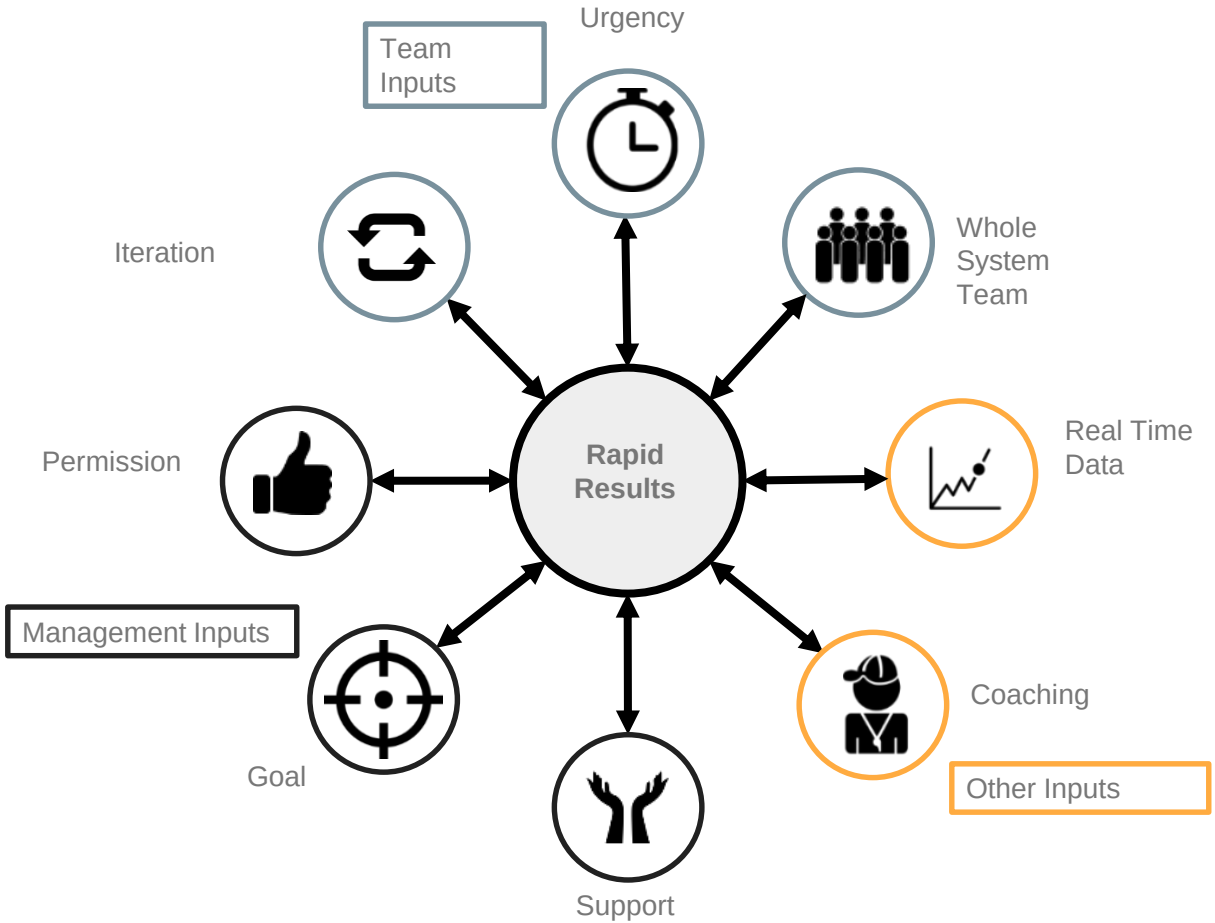
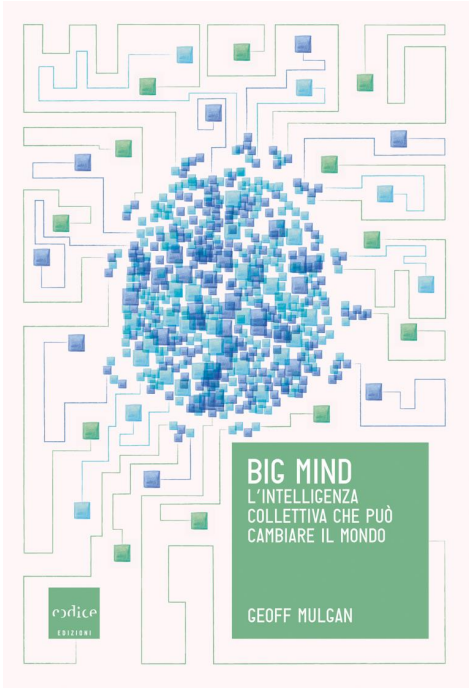
Helping systems think and act as collaborative systems



- Collective intelligence beyond big data and traditional digital models



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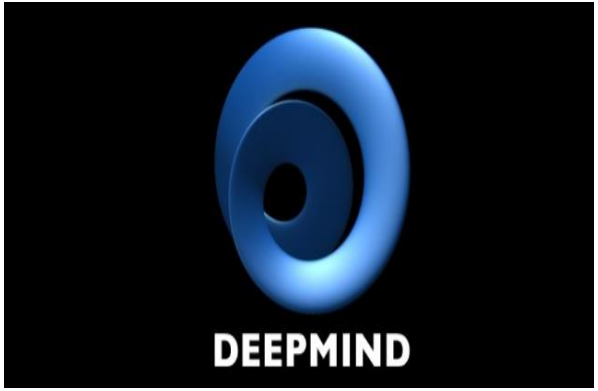
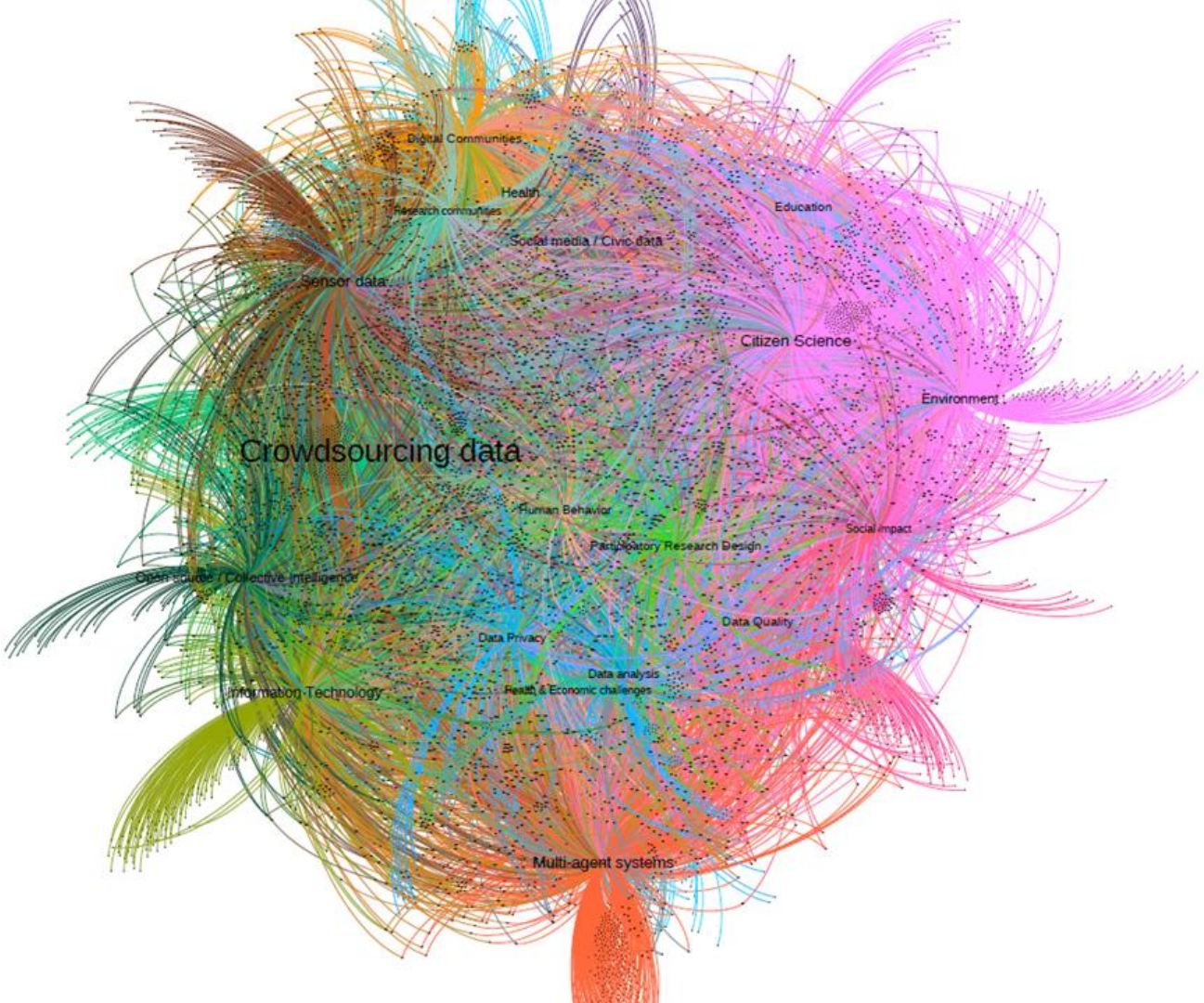
WATSON

amazon


DEEPMIND

LUTZ Pathfinder
Trial Vehicle
www.lutzpods.co.uk

SMILE TO PAY
支付宝
ALIPAY


Digital Communities
Health
Research communities
Education
Social media / Civic data
Sensor data
Citizen Science
Environment
Crowdsourcing data
Human Behavior
Social impact
Participatory Research Design
Open source / Collective intelligence
Data Quality
Data Privacy
Data analysis
Information Technology
Health & Economic challenges
Multi-agent systems

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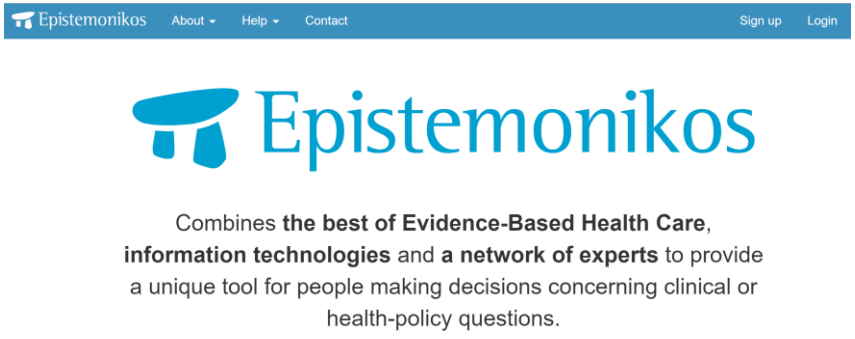
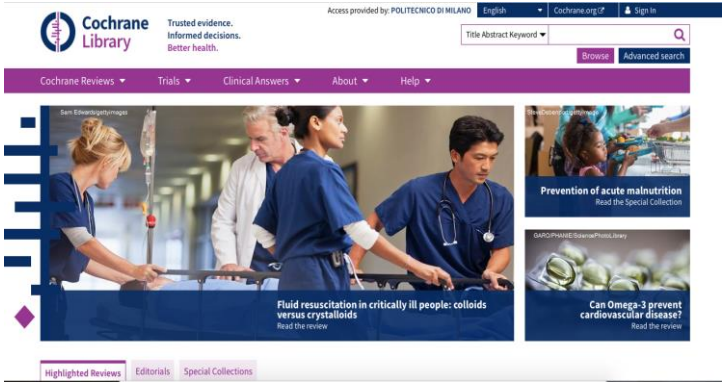
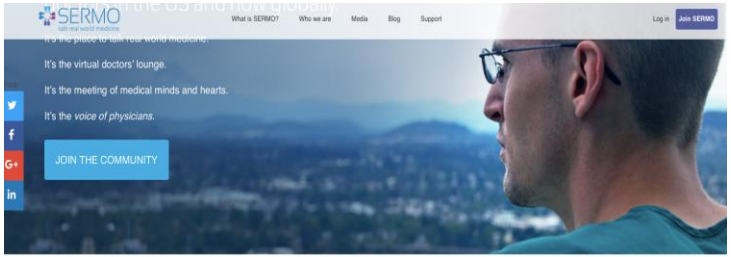
- Live models of the world
- Observation and data
- Analysis and prediction
- Memory
- Empathy
- Motor coordination
- Creativity
- Judgement
- Wisdom

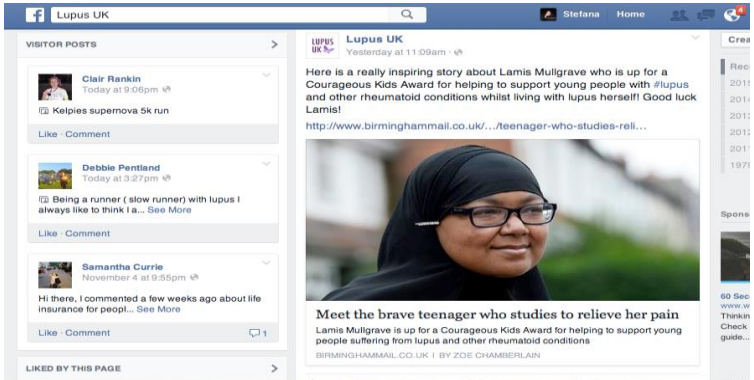
collective intelligence within the discipline – evidence, analytics, online communities of practitioners



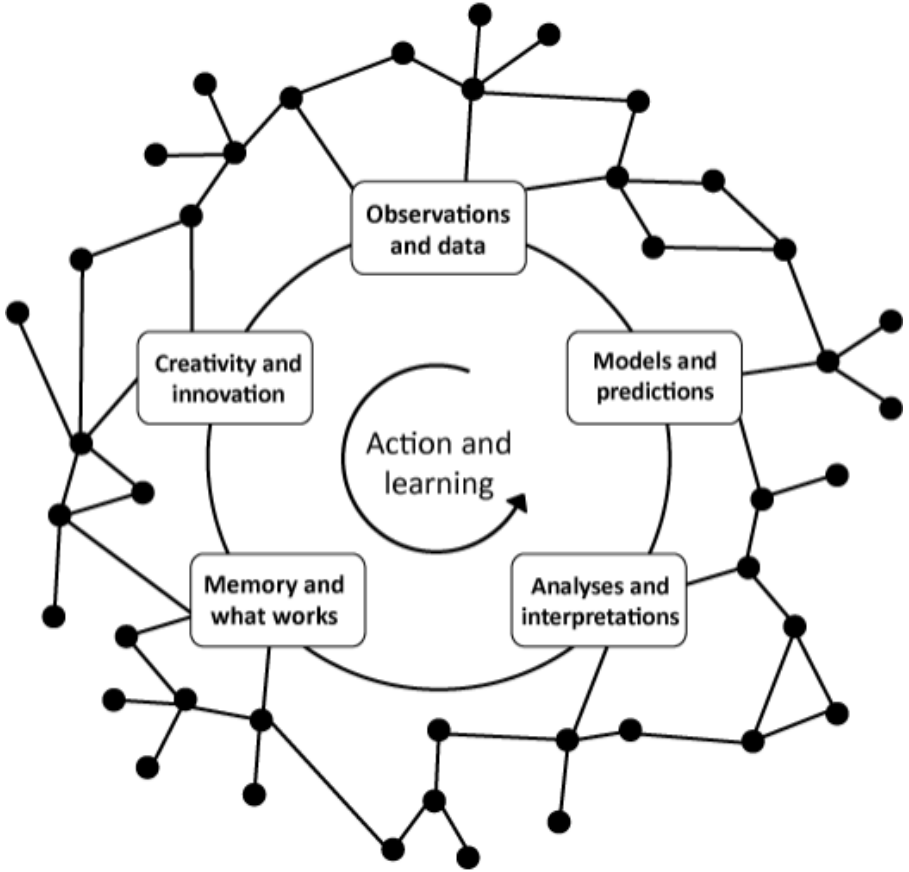


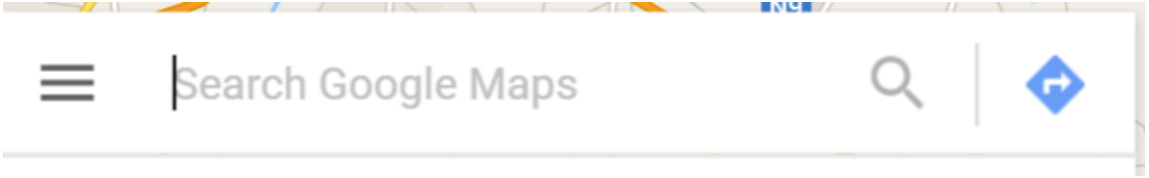


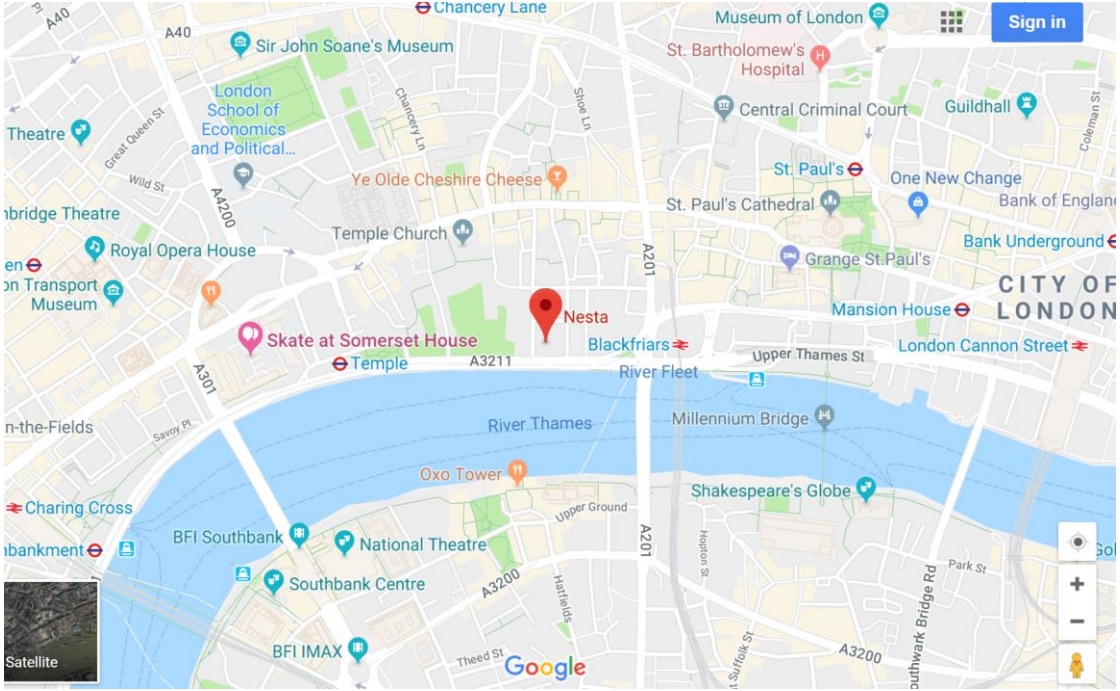
collective intelligence with patients sharing experiential knowledge and synthetic research



Intelligence Assemblies







Google Maps =

Google

+ Where 2 Technologies

+ Keyhole

+ ZipDash

+ Google Maps API

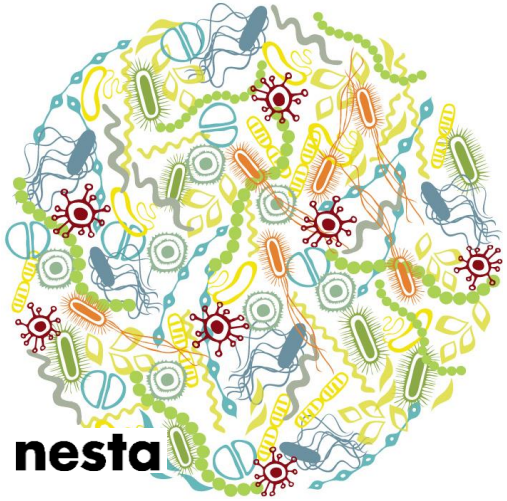
+ Vutool

+ iPhone loading

+ Google Map Maker….

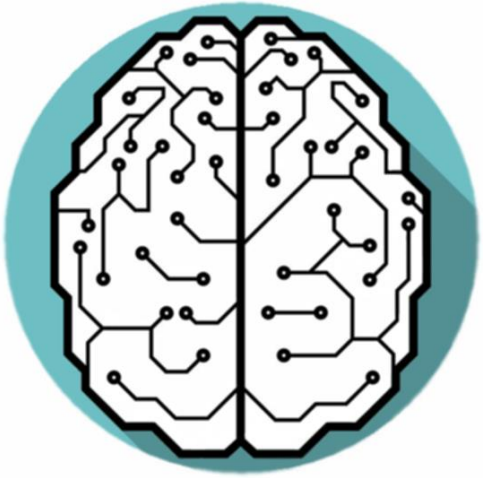
LIME

Epidemiology



DISEASE OUTBREAK PREDICTION

Machine Learning



DENGUE | MALARIA | EBOLA | TUBERCULOSIS | HIV/AIDS | FLU

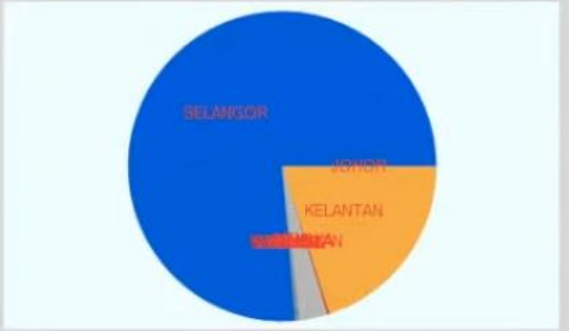
OUTBREAK PREDICTION | BY YEAR | BY STATE

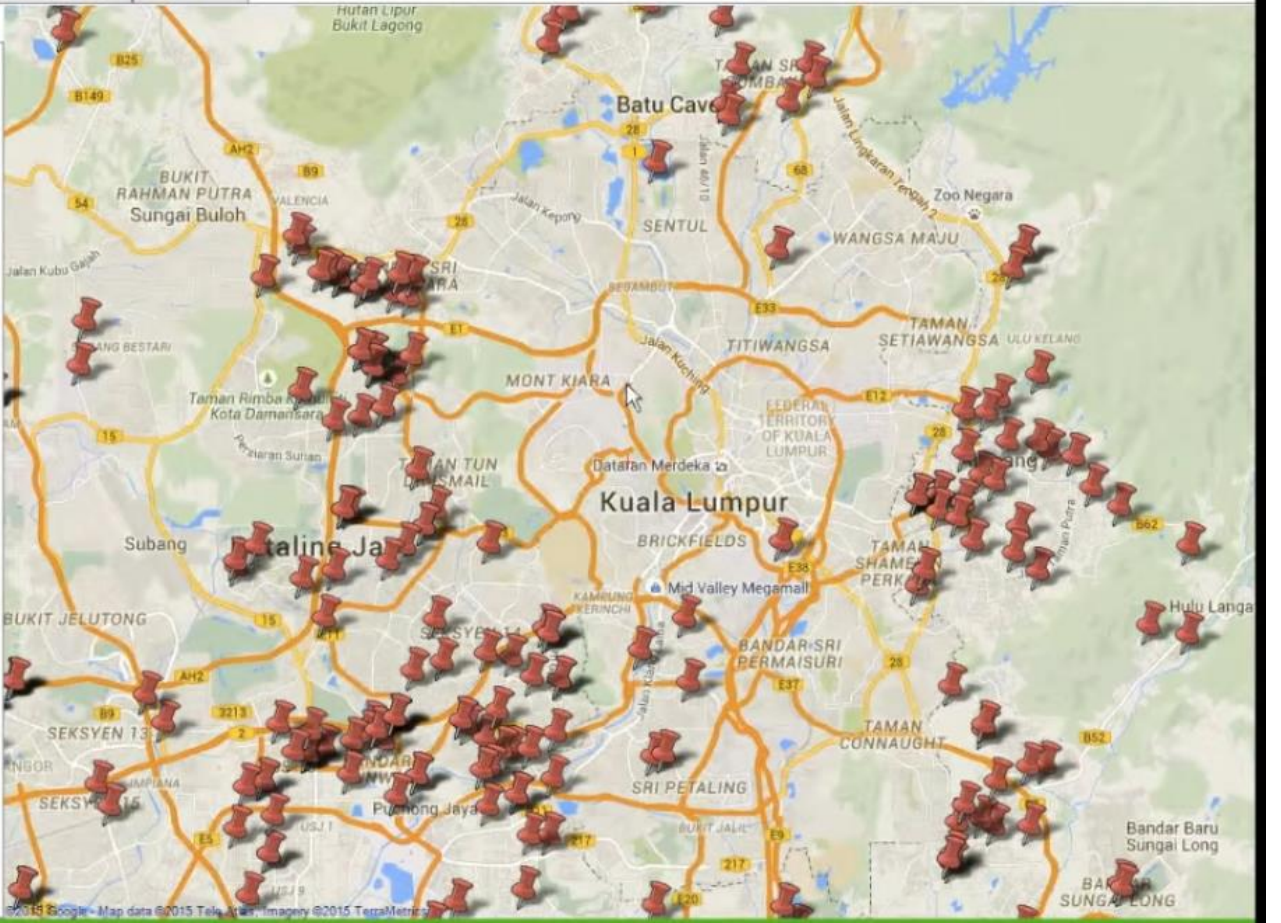
YEAR 2014

EXTRACT DATA

State	Accumulated Cases
JOHOR	4
KELANTAN	5977
KL	87
MELAKA	7
N. SEMBILAN	873
P.PINANG	29
PAHANG	7
PERAK	40

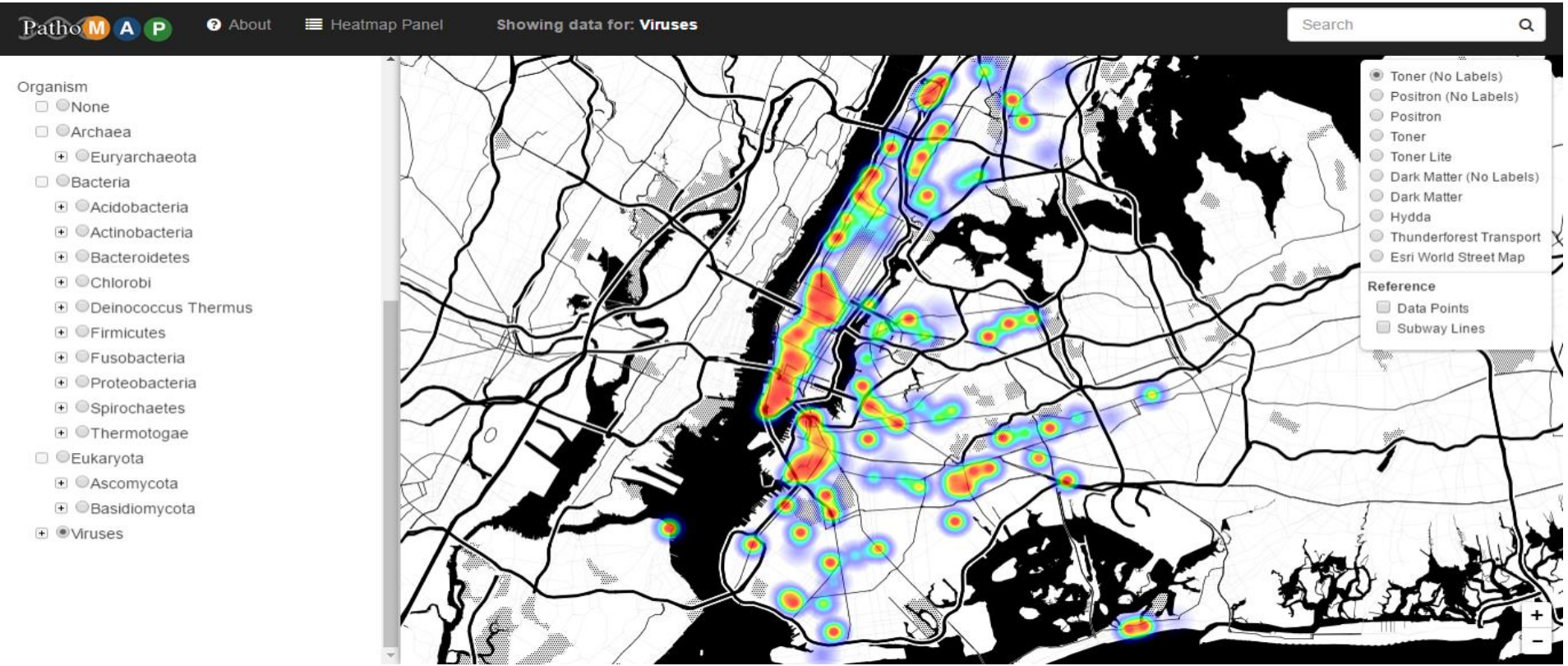
Accumulated Dengue Cases





The Metagenomics and Metadesign of the Subways and Urban Biomes

PathoMAP



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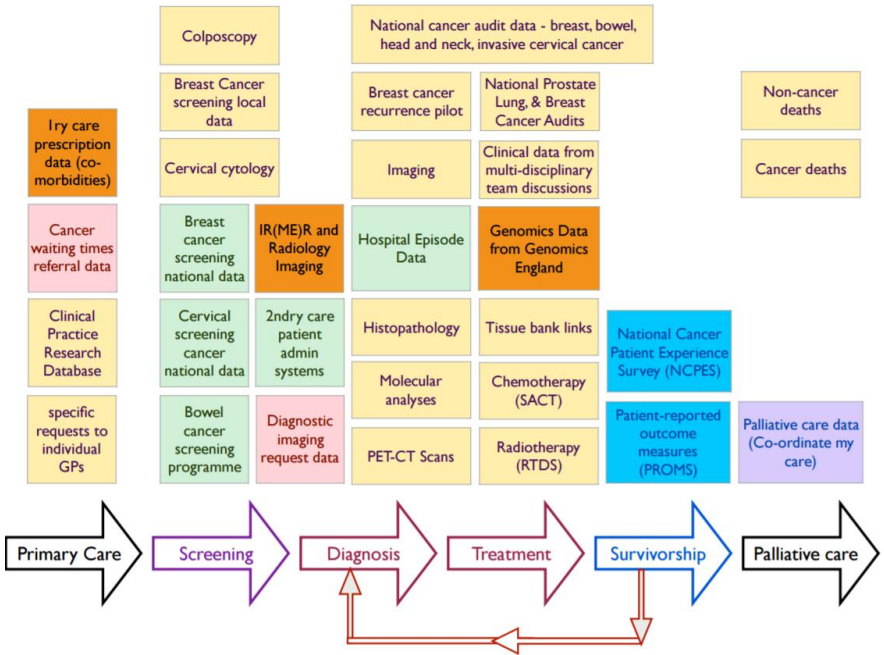
Stockholm

Public Health England

The English National Cancer Registration Service.

Data to support everything for population health to personalised prevention



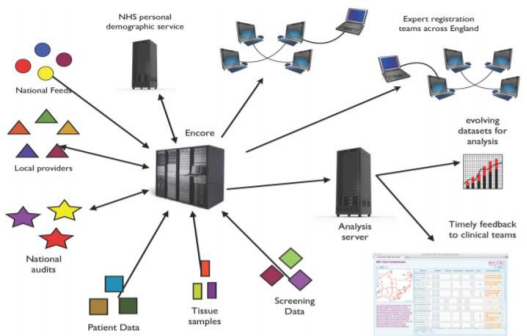
An idea of scale

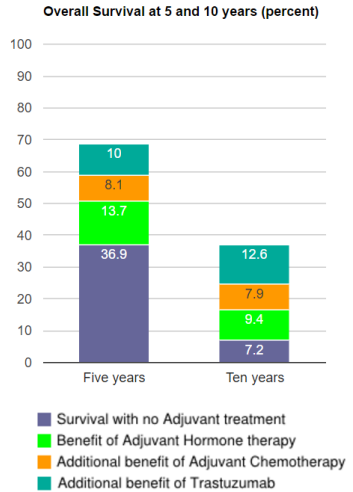
	Number
National Feeds	12
Local Trust systems - Path, PAS, MDT etc	500
Number of MDTs providing data/week	2000
Chemotherapy providers	142
Molecular testing labs	22
Breast screening units	82
Radiotherapy centres	56
Clinical records each month	2,600,000
Primary care prescriptions each month	16,800,000
Historical tumours in registry	14 million
Minimum number of data items/case	180
Complete data schema - data fields	~ 1000
Annual Registrations* (new tumours)	367,793

* Includes *In situ* carcinomas but excludes non-melanoma skin cancers

Figures based annual return of 2015 cases at Nov 2016

predict





Future vision for collective intelligence in health

- A knowledge commons supporting every decision-maker, combining formal and informal knowledge, tailored to cognitive style
- Clinical, digital, peer and self in alignment
- Deep culture of aware health
- Place-based as well as people-centred