

COVID-19 pandemic in the age of data science, what have we learned?

ANDRE PERALTA-SANTOS, MD MPH PHDs

UNIVERSITY OF WASHINGTON, WA, USA

TWITTER @ANDRE_PERALTA

GITHUB [HTTPS://GITHUB.COM/APERALTASANTOS](https://github.com/aperaltasantos)

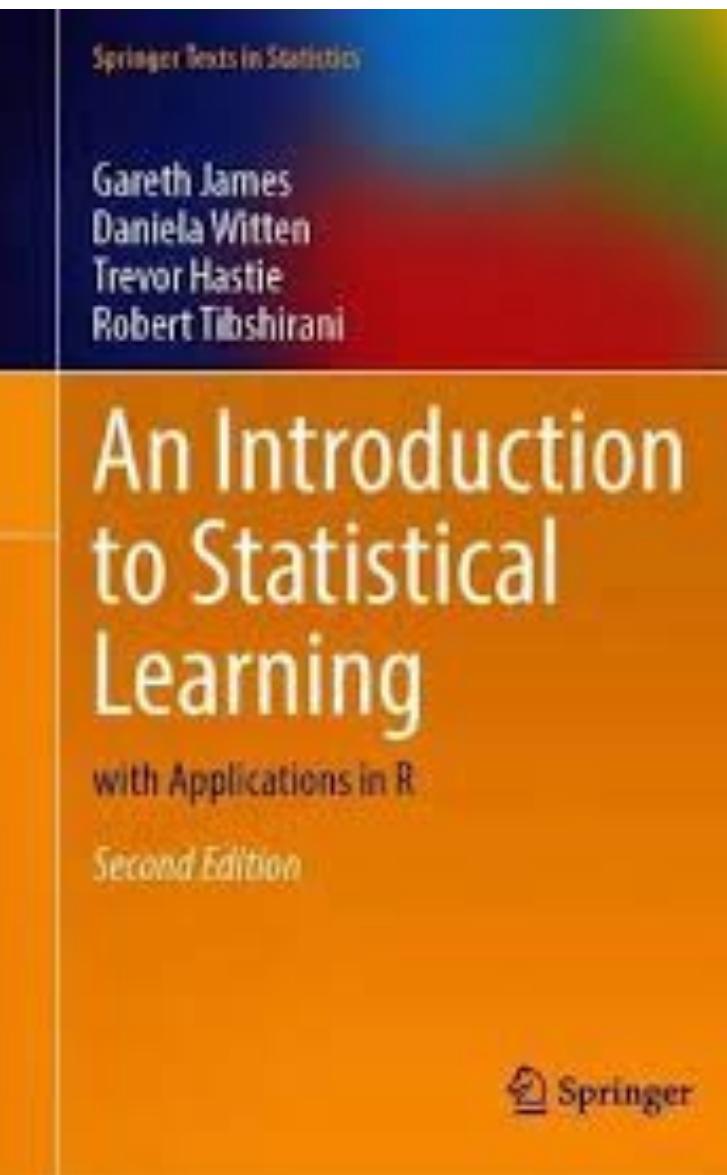
AGENDA

1.A COVID-19 REFUGEE

2.INSIDE THE MAZE

3.LESSONS FOR THE NEXT PANDEMIC

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CSE 446, Winter 2019

Machine Learning

Quick links:

[Lectures](#) [Homework](#) [Office Hours](#) [Section Materials](#)

Instructor: [Sham Kakade](#)

TAs: Kousuke Ariga, Benjamin Evans, Shobhit Hathi, Alina Liokumovich, Mathew Yuchong (Yvonna) Xiang.

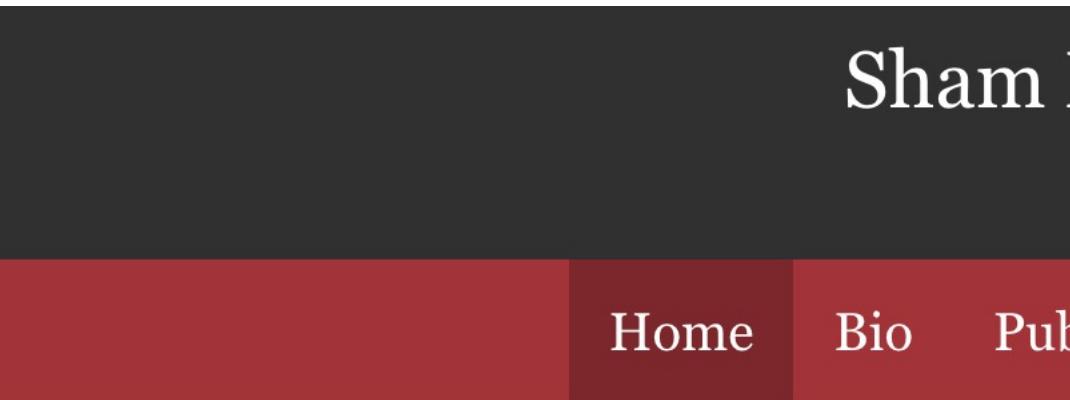
Class lectures: MWF 9:30-10:20am, Room: SIG 134

Contact: cse446-staff@cs.washington.edu

Please communicate to the instructor and TAs only through this account.

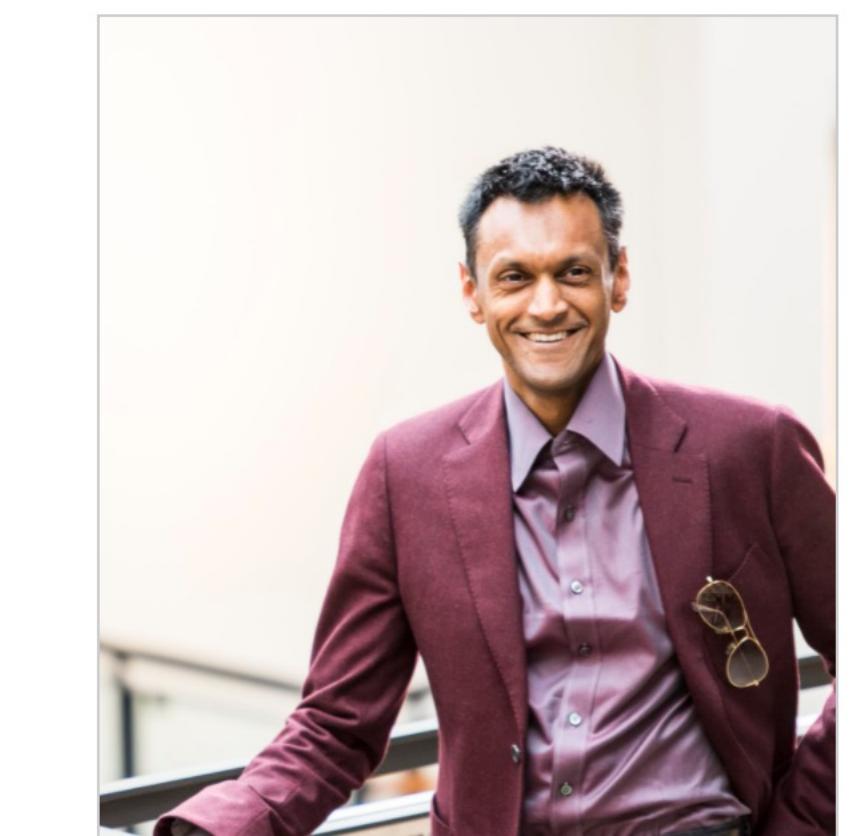
Discussion: [Piazza discussion board](#)

<https://courses.cs.washington.edu/courses/cse446/19wi/#lectures>



Sham M. Kakade

Home Bio Publications News People



[Harvard University](#)

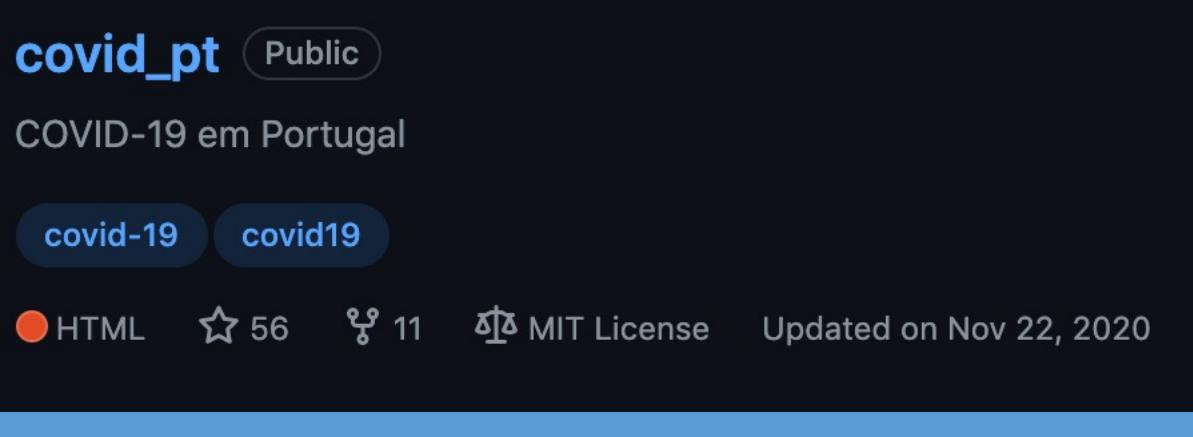
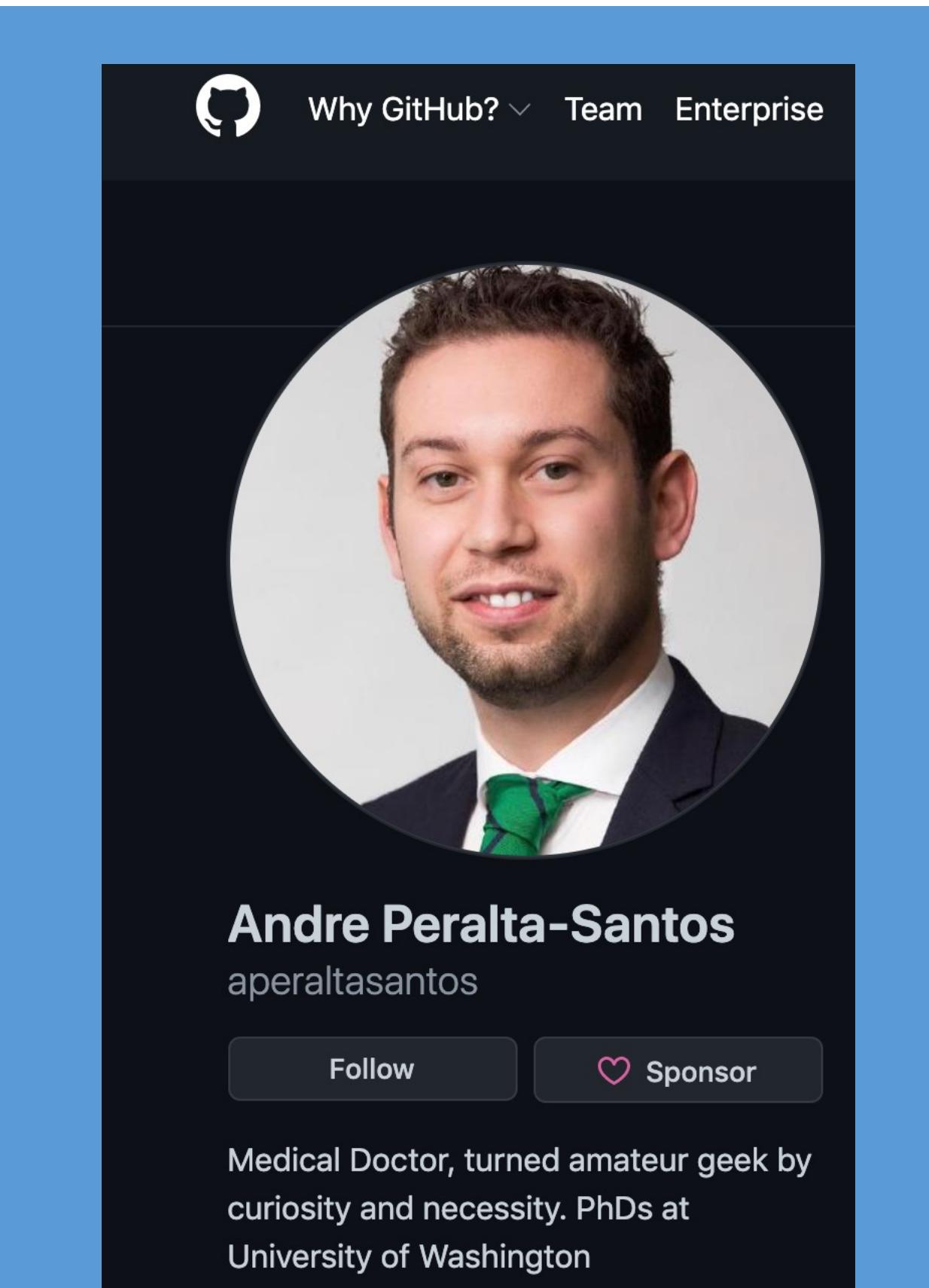
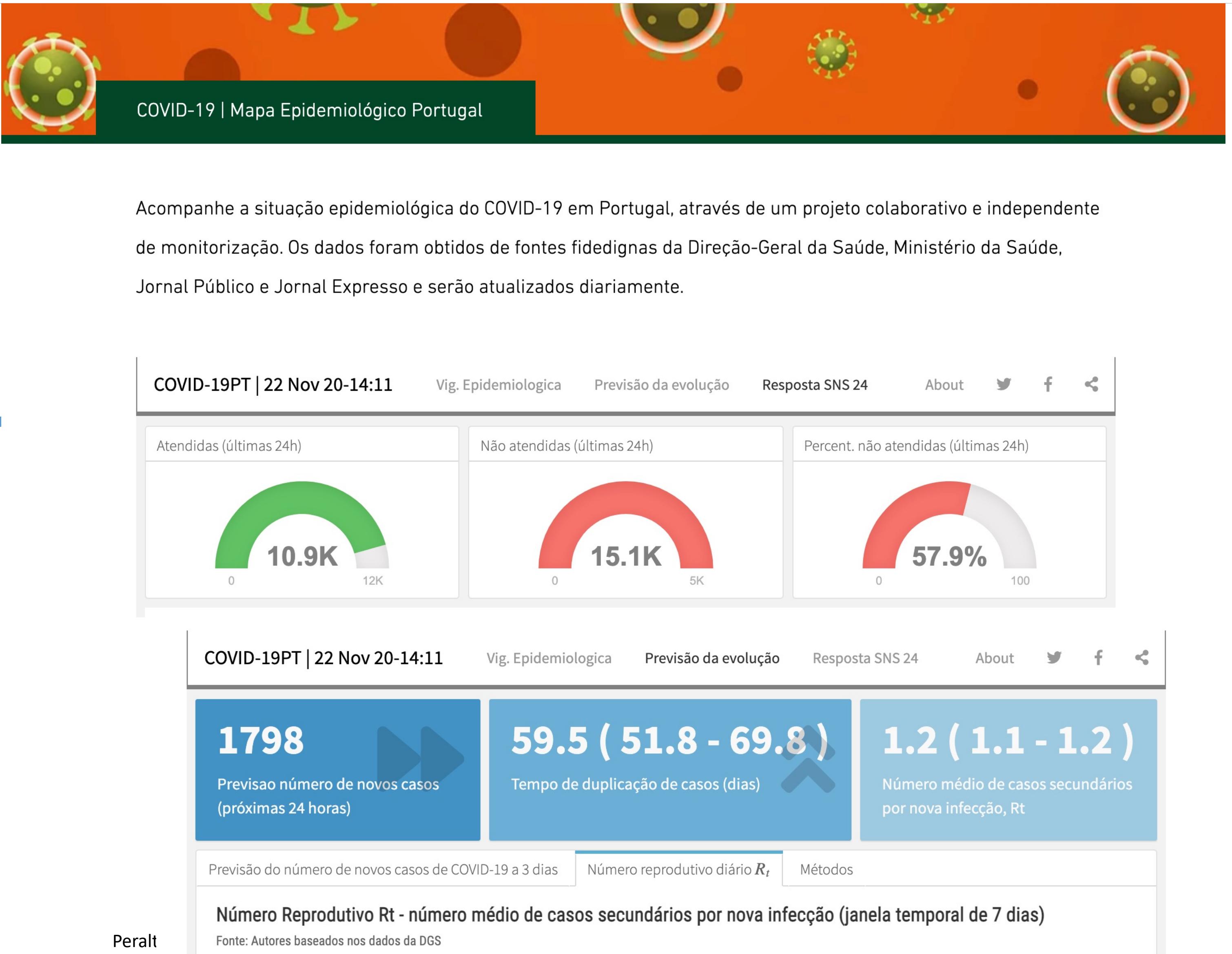
- Gordon McKay Professor of Computer Science & Statistics

[University of Washington](#)

- Affiliate Professor in the Department of Computer Science and Department of Statistics

Sr. Principal Researcher at MSR-NYC

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1. Risk averse public administration

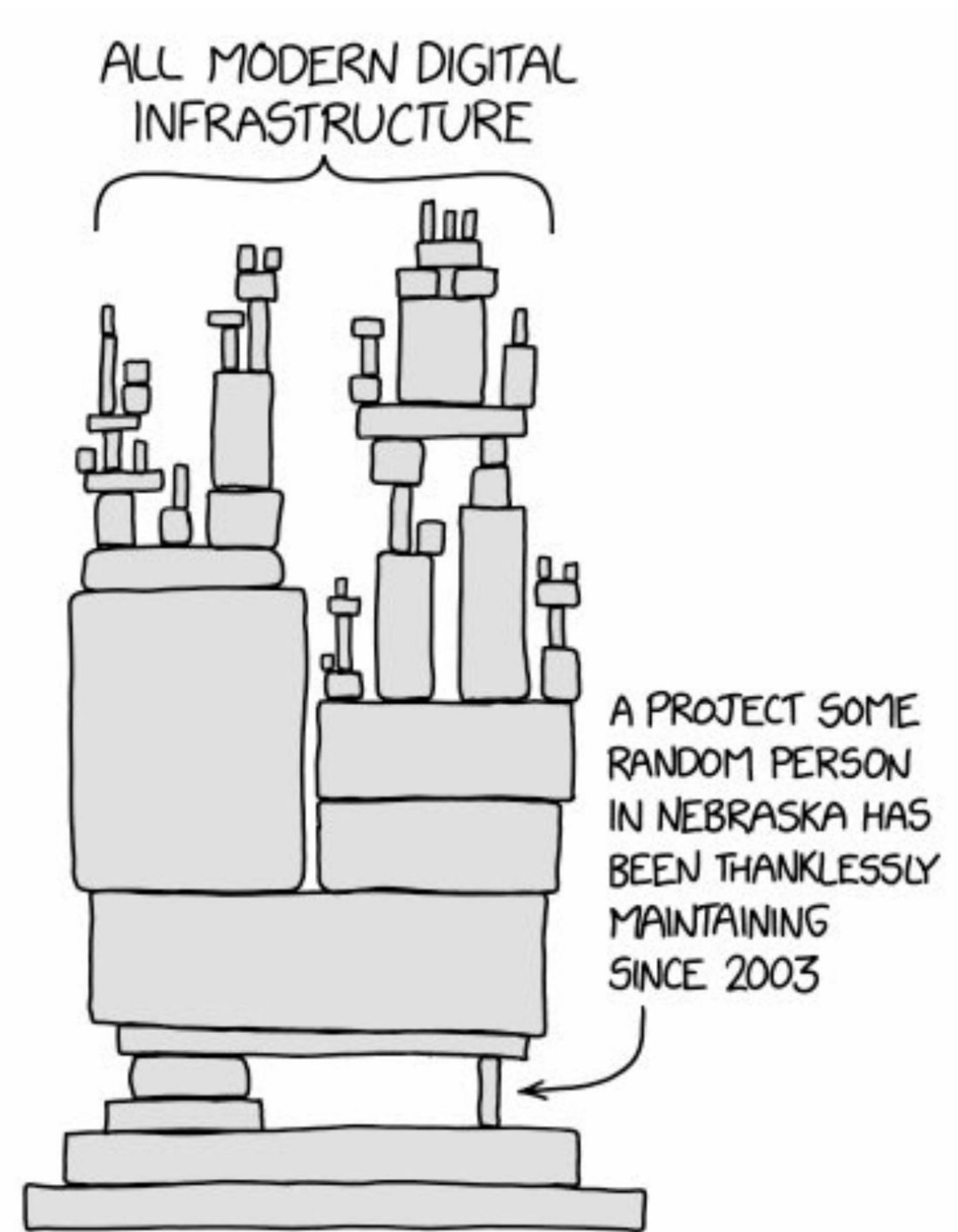
2. Increased scrutiny by media and scientific community

3. Information's systems not prepared to deal with high

volume

Be fast
Have no regrets
You must be the first mover
If you need to be right before you move, you will never win
Perfection is the enemy of the good
Speed trumps perfection
Everyone is afraid of making a mistake
Everyone is afraid of the consequence of error
But the greatest error is not to move
The greatest error is to be paralyzed by the fear of failure

- Dr Michael Ryan, WHO
Executive Director



1. Analysis pipeline using R studio

2. Scripts with routines, validated by a 2nd programmer

**3. Focus on achieving a MVP as fast as possible and
improve It after**

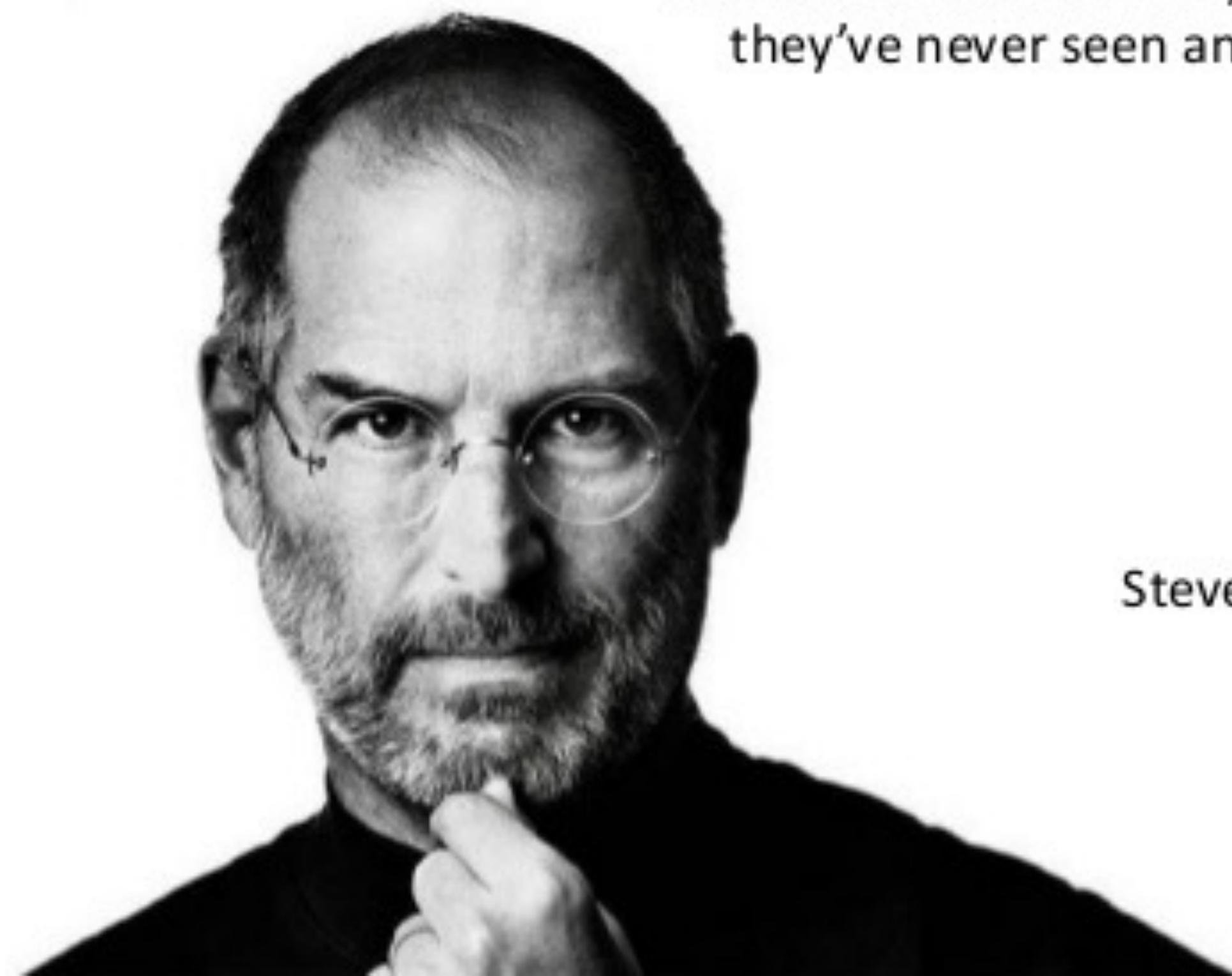


It's really hard to design products by focus groups.

“ ”

A lot of times, people don't know what they want until you show it to them...

That doesn't mean we don't listen to customers, but it's hard for them to tell you what they want when they've never seen anything remotely like it.



Steve Jobs

- 1.Hiring a data scientist with a 1000\$/month budget**
- 2.Data protection fears**
- 3.Lack of agile development or other methods**



**Not fit for purpose**

- Wrong target population
- Expensive predictors
- Discrepancies between development and use
- Complexity/transparency

No validation/impact

- Poor development
- Insufficient reporting
- Incentives
- If done, usually small studies

Regulation/implementation

- MDR
- Soft- and hardware
- Model updating
- Quality control

Not adopted

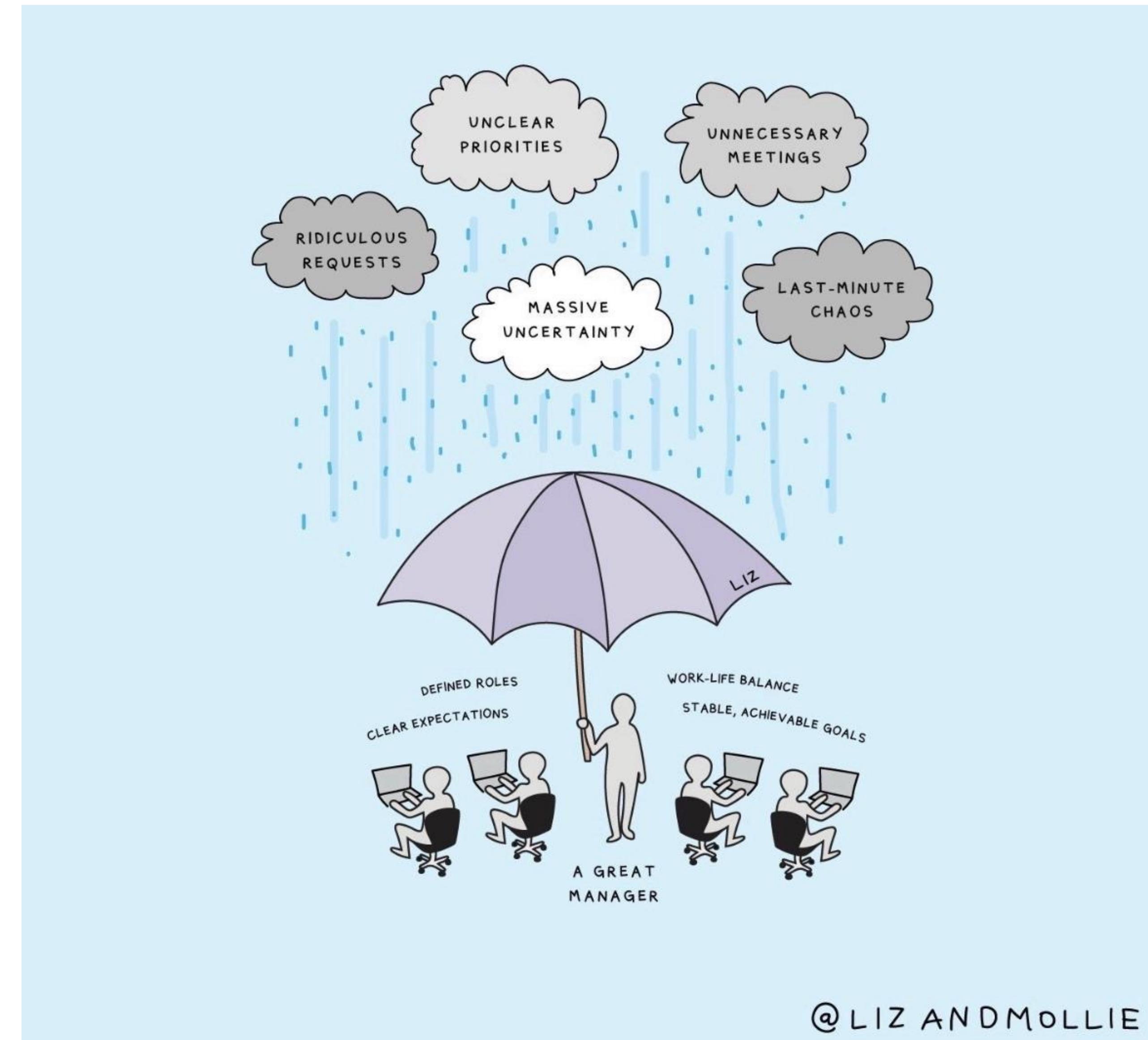
- User time
- No prediction needed

**Portugal is now in the forefront of eHealth in Europe.
The new NHS portal is a potential game changer for access
to services information**

World Health Organization, Review of the Portuguese National System Report 2018

- It is possible to speed up eHealth adoption with a strong eHealth agency and national strategy based on international input.
- New Digital Healthcare Systems are needed. The concept and its benefits are presented, and details briefly outlined.
- Reaching Digital Healthcare Systems is not a matter of digital and healthcare transformation, but of a fundamental revision of the role of professionals and organisations and the new role of digital citizens in health.
- The COVID-19 crisis may be the leverage that many countries, regions and health organisations needed for embracing digital healthcare

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MESSAGE 1. Centralised systems like SINAVE, TRACE COVID-19 and SICO ensured fast adaptation, wide scope (universal) and control over data quality and linkage



CHALLENGES: Scattered data through organisations; limitations imposed by legislation (data protection)

NEED: Uniformization of registries and better data connection across the health ecosystem

MESSAGE 2. Even if the idea is great the technology needs to be ripe to be a success

Digital contact tracing is the future path but the tech needs to get better

 Observador

"A app não funcionava e as pessoas perceberam-no."
Stayaway Covid foi lançada há um ano

Stayaway Covid foi lançada há um ano. Passado um ano do lançamento da aplicação de rastreio Stayaway Covid, a associação de direitos...

01/09/2021



 TSF

Utilizadores e médicos cada vez mais distantes da StayAway Covid

O INESC TEC também aguarda por instruções do Governo para avançar com a interoperabilidade da StayAway Covid com outras aplicações semelhantes...

21/04/2021



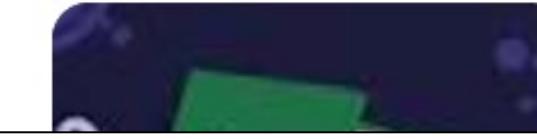
MESSAGE 3. Data saves lives: no system is perfect, but some actions can make it more resilient and tailored to a target population

BBC BBC

Excel: Why using Microsoft's tool caused Covid-19 results to be lost

The badly thought-out use of Microsoft's Excel software was the reason nearly 16,000 coronavirus cases went unreported in England.

05/10/2020



CORONAVIRUS

“Pregnant” men and 134-year-old sick in Portugal data on covid-19

CHALLENGES: Quality control; cyber security; loss of efficiency - interventions not focused

NEED: Access to real time data, retaining the added value from greater use of safe digital health tools during the pandemic, with tighter quality control

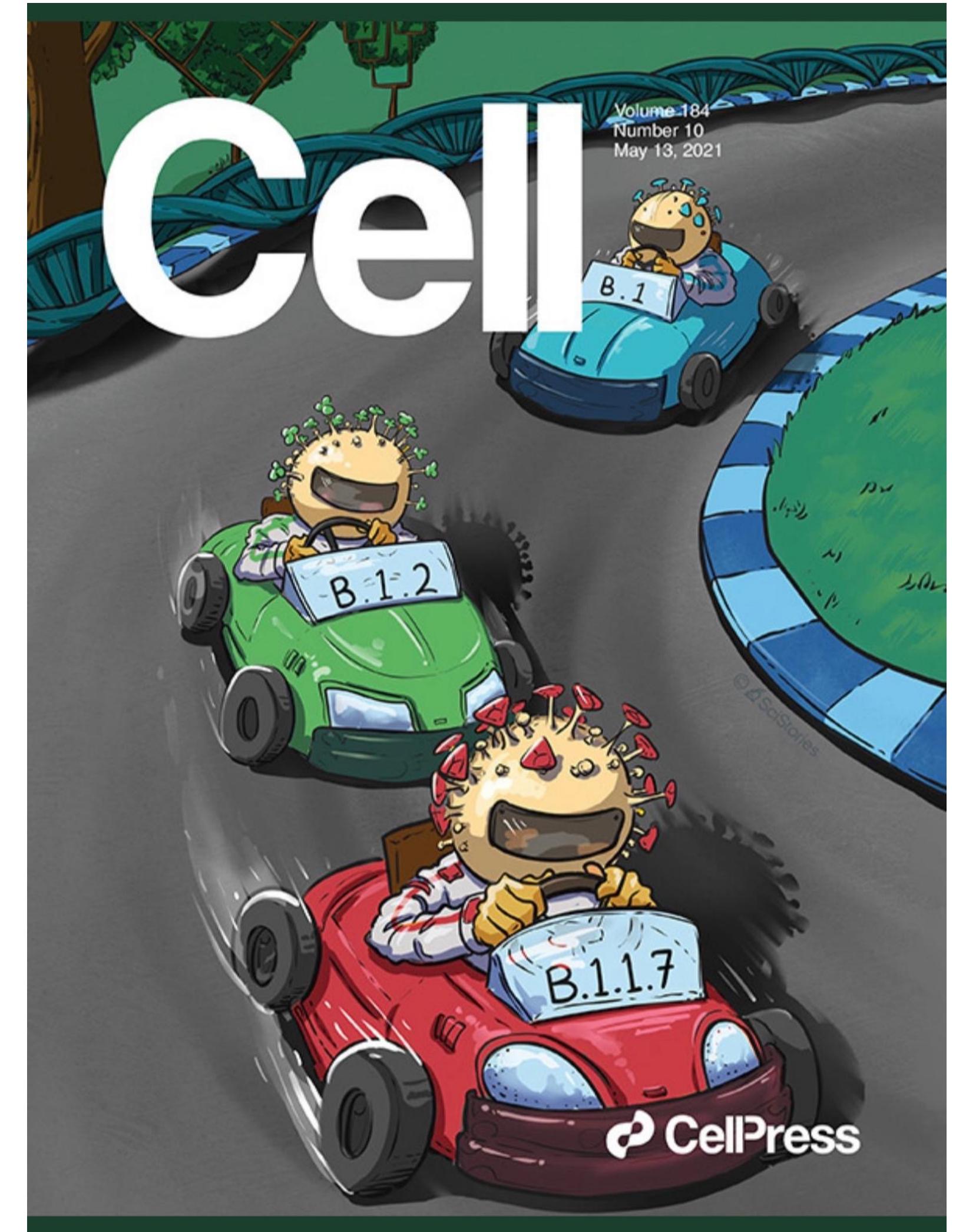
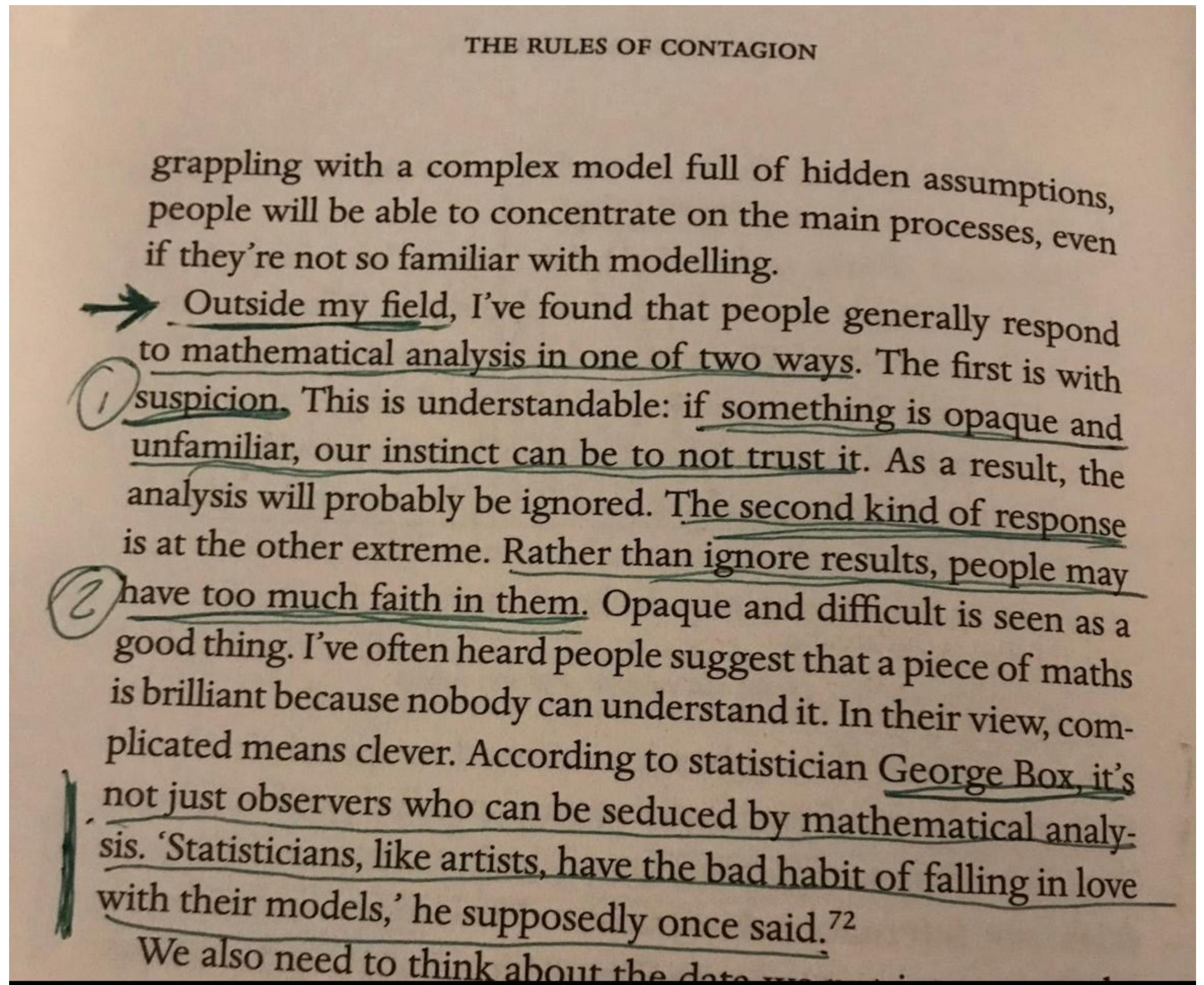
MESSAGE 4. A single infrastructure which fuses all the available health data – a “digital backbone” - will allow a holistic and population-oriented change in surveillance

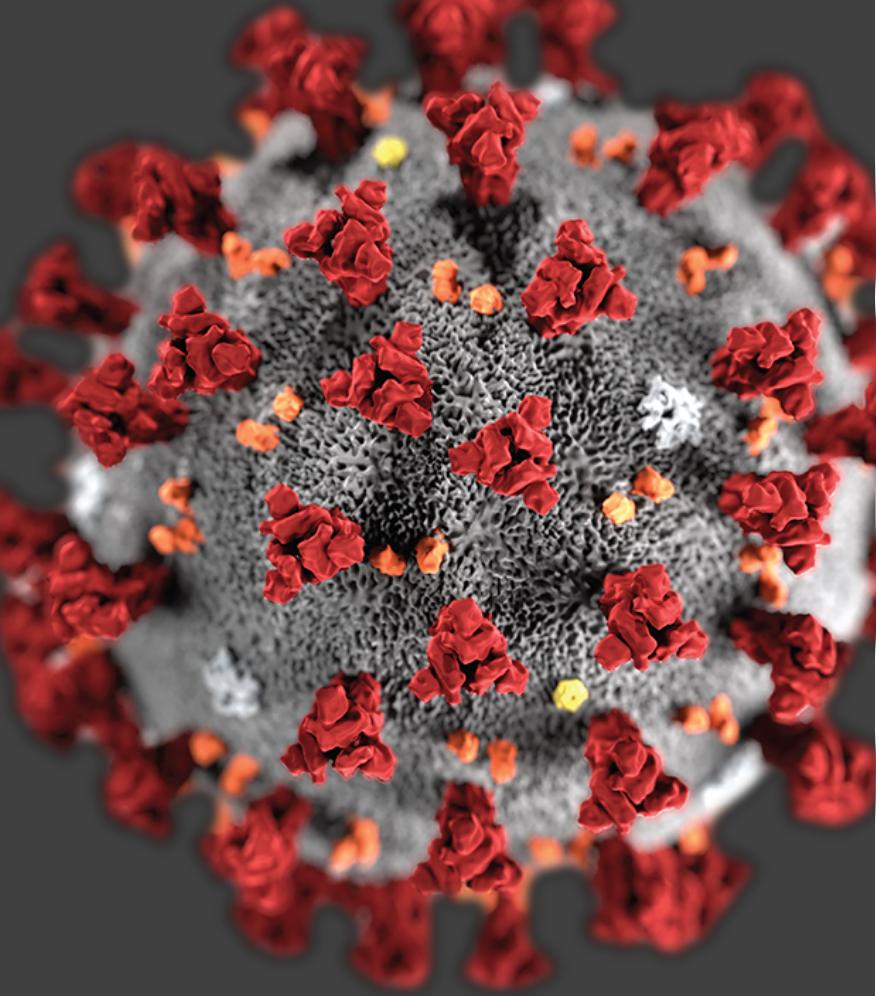
CHALLENGES: Atomization of data uses (the Excel pandemic) is real and hard to control; different regional procedures

NEEDS:

- a) to involve the right stakeholders and user experience**
- b) to be bold in making the first move (LEADERSHIP) to build the technical infrastructure, after financing;**
- c) to train health professionals and other users**

MESSAGE 5. News fields have emerged 1. computational biology 2. modelling





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