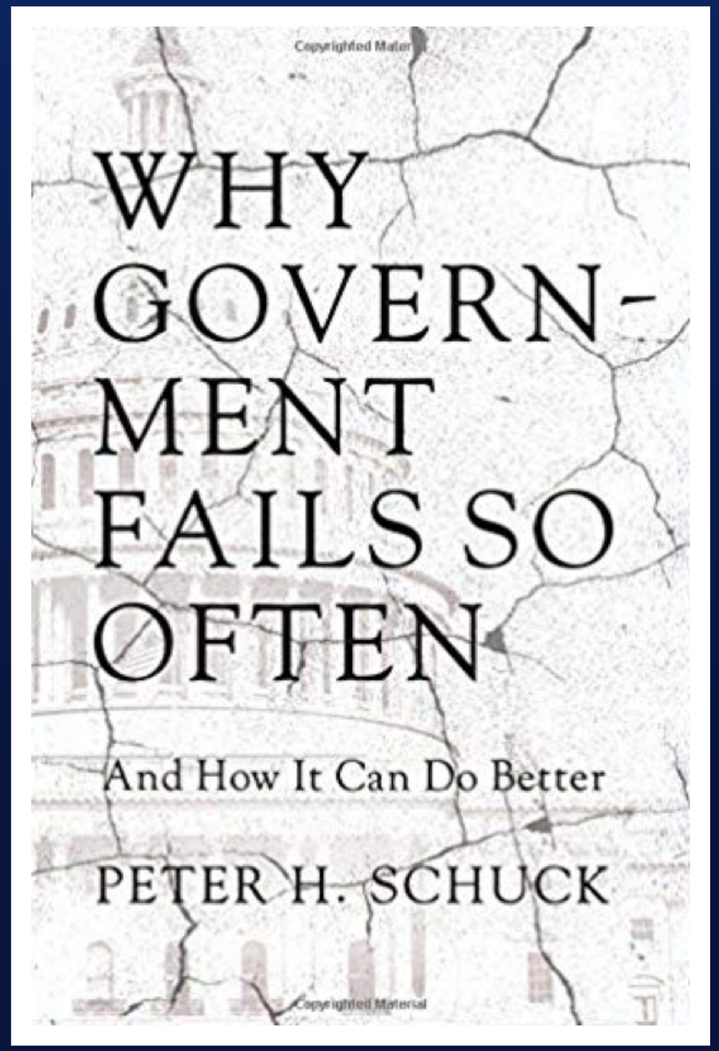
AGILE PROBLEM SOLVING

BETH SIMONE NOVECK

ANZSOG

GOVLAB

SOURCE: MIKE DEKORSKI, WIKIMEDIA COMMONS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WHY GOVERNMENT FAILS SO OFTEN
And How It Can Do Better
PETER H. SCHUCK
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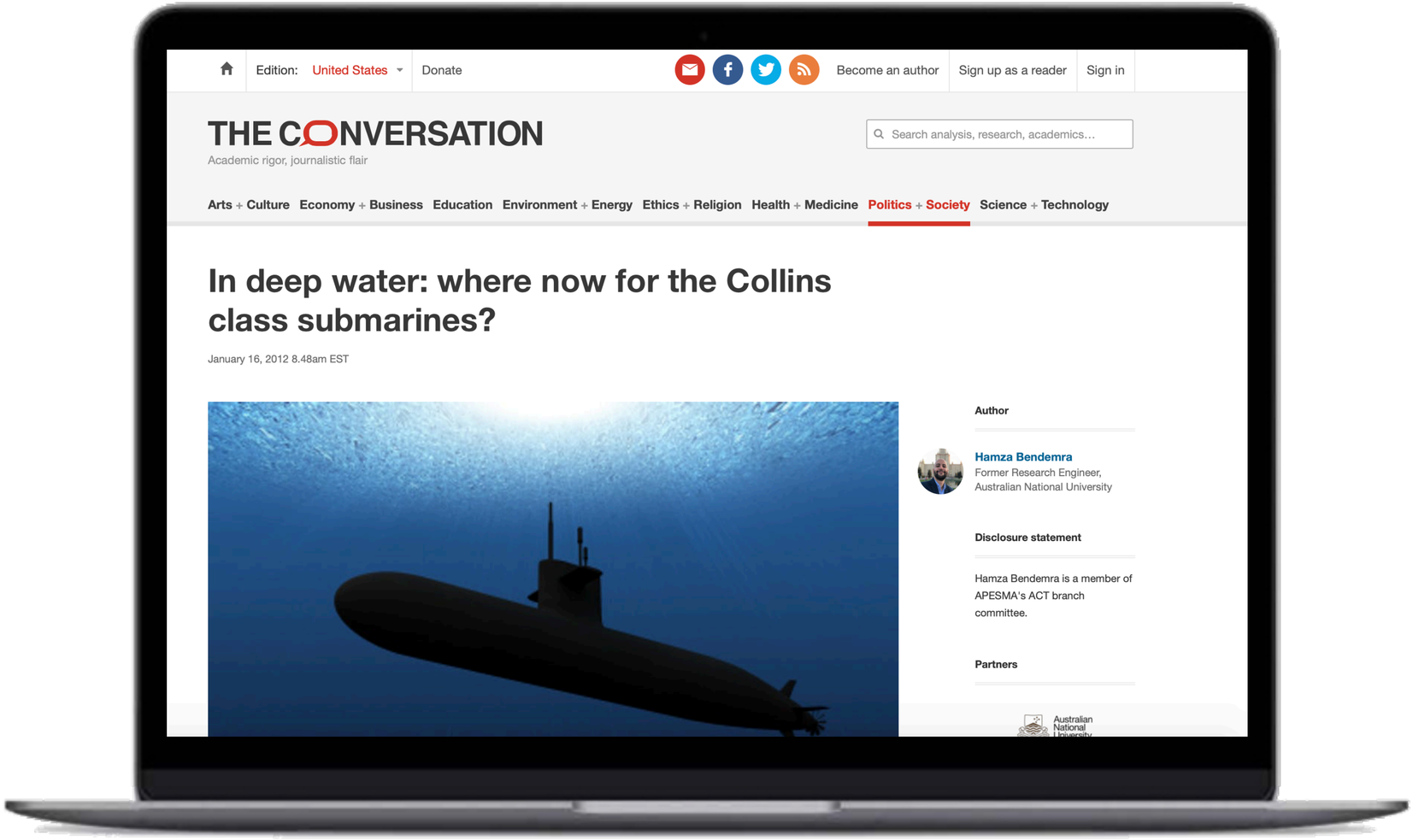
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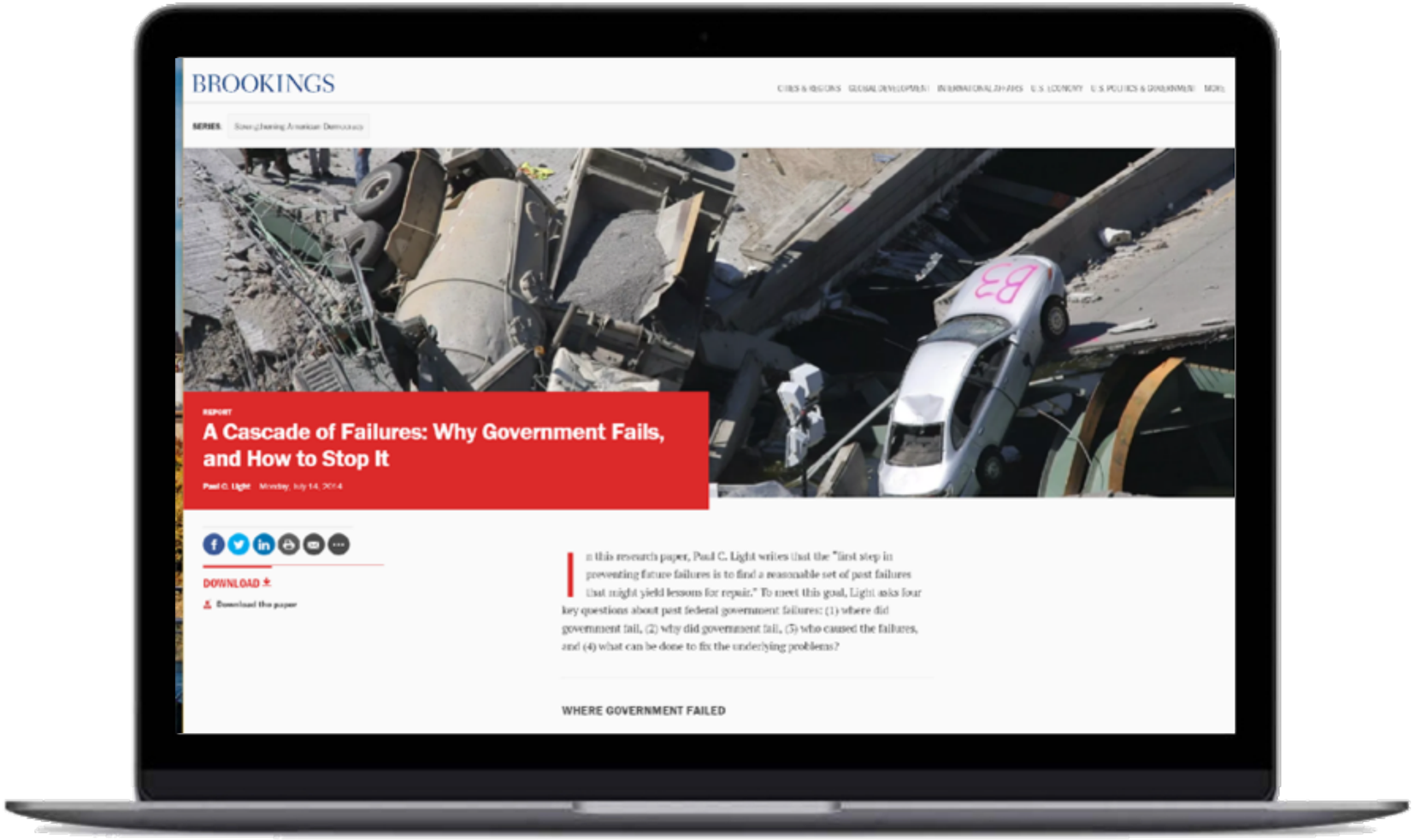
In deep water: where now for the Collins class submarines?
January 16, 2012 8.48am EST
Author
Hamza Bendemra
Former Research Engineer, Australian National University
Disclosure statement
Hamza Bendemra is a member of APESMA's ACT branch committee.
Partners
Australian National University


BROOKINGS
REPORT
A Cascade of Failures: Why Government Fails, and How to Stop It
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In this research paper, Paul C. Light writes that the "first step in preventing future failures is to find a reasonable set of past failures that might yield lessons for repair." To meet this goal, Light asks four key questions about past federal government failures: (1) where did government fail, (2) why did government fail, (3) who caused the failures, and (4) what can be done to fix the underlying problems?
WHERE GOVERNMENT FAILED

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AGILE PROBLEM SOLVING

Report Published August 13, 2019

THE CONVERSATION

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To restore trust in government, we need to reinvent how the public service works

August 12, 2019 3.57pm EDT

LEARNING OBJECTIVES

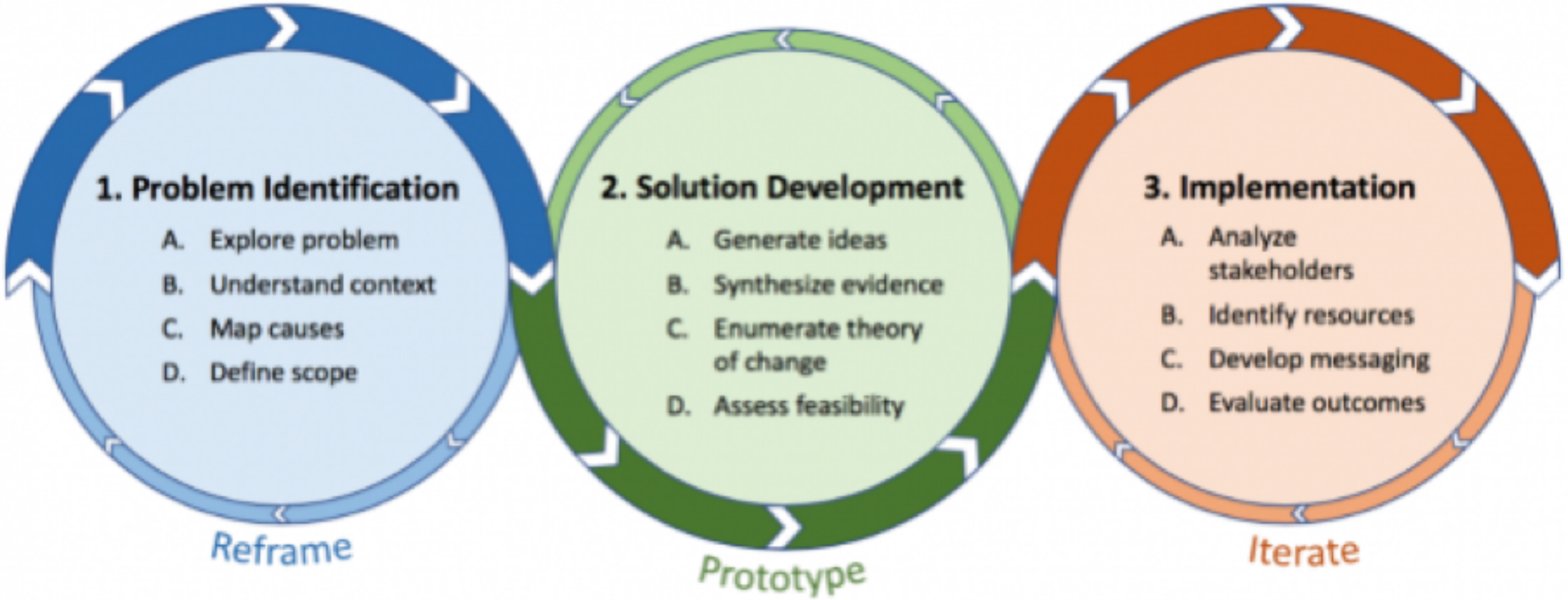
- Develop an understanding of the concept of the new changemaker in government or what we are calling the public entrepreneur.
- Get an overview of some of the new ways of working enabled by new technology.
- The Public Problem-Solving Pathway: Discuss how to connect those methods to take a project from idea to implementation in an agile fashion.

PLAN OF ATTACK

- Public Problem Solving Canvas
- Deep Dive on Problem Definition
- R-Searching
- Using People-Led Innovation to Define the Problem
- Enhancing our Policy Readiness Brainstorm
- If Time, Using Data to Define the Problem
- Discussion of opportunities and impediments

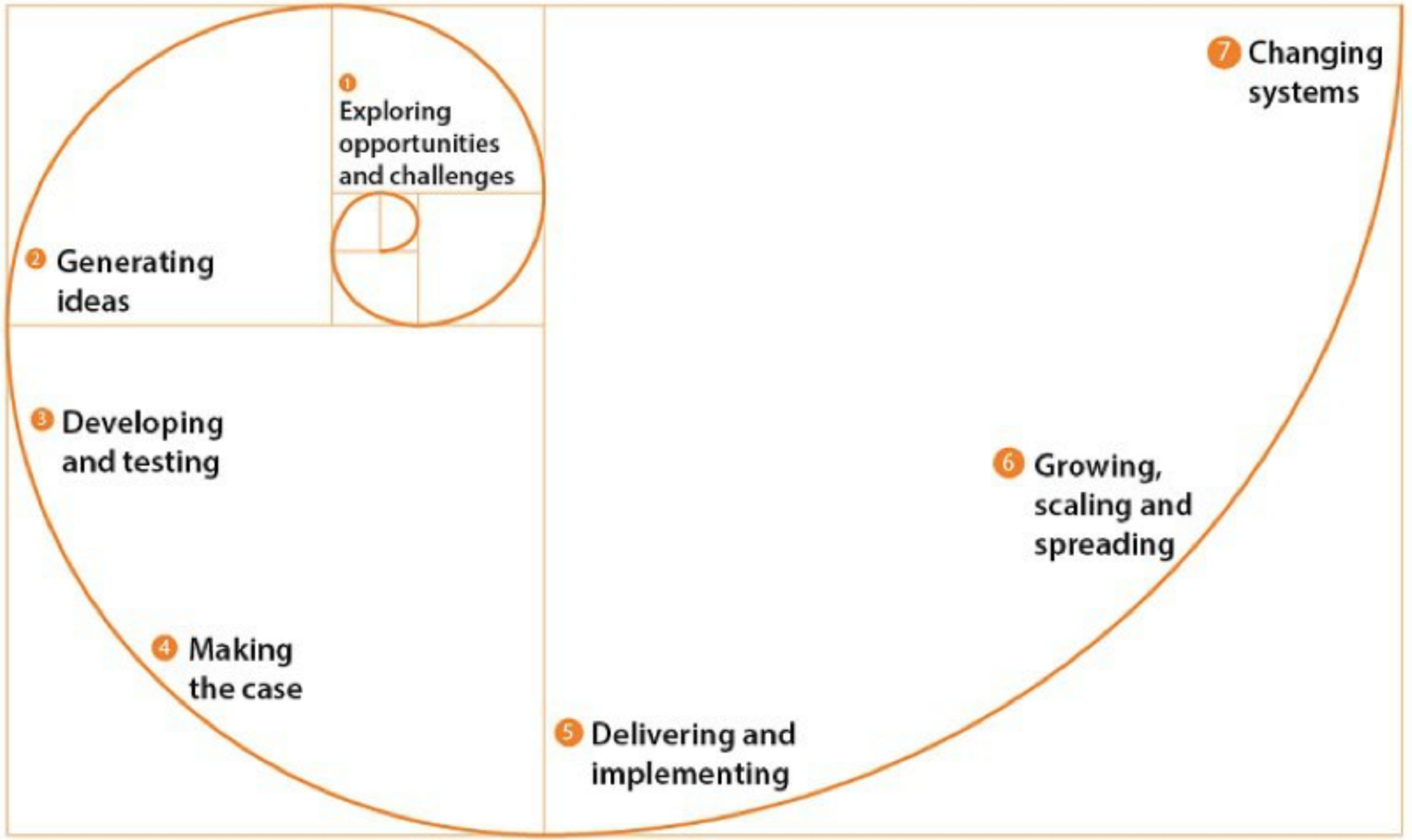
4 PHASES OF PROJECT MANAGEMENT

SOURCE: LUCID CHART

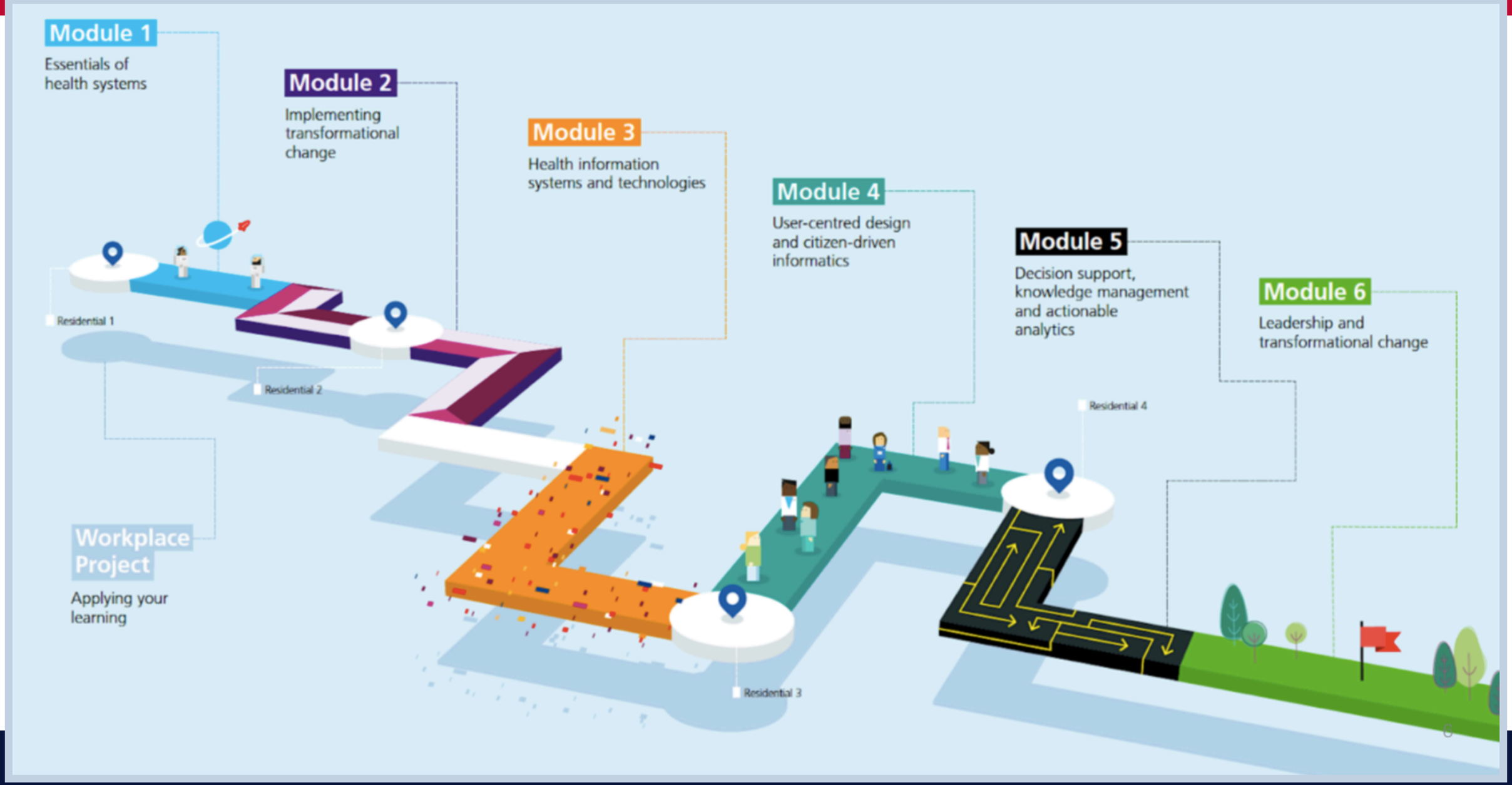


MIP PROBLEM SOLVING FRAMEWORK (STANFORD UNIVERSITY)

Developed by Prof. Francis Fukuyama & Prof. Jeremy Weinstein



NESTA INNOVATION SPIRAL



NHS DIGITAL LEARNING PATHWAY

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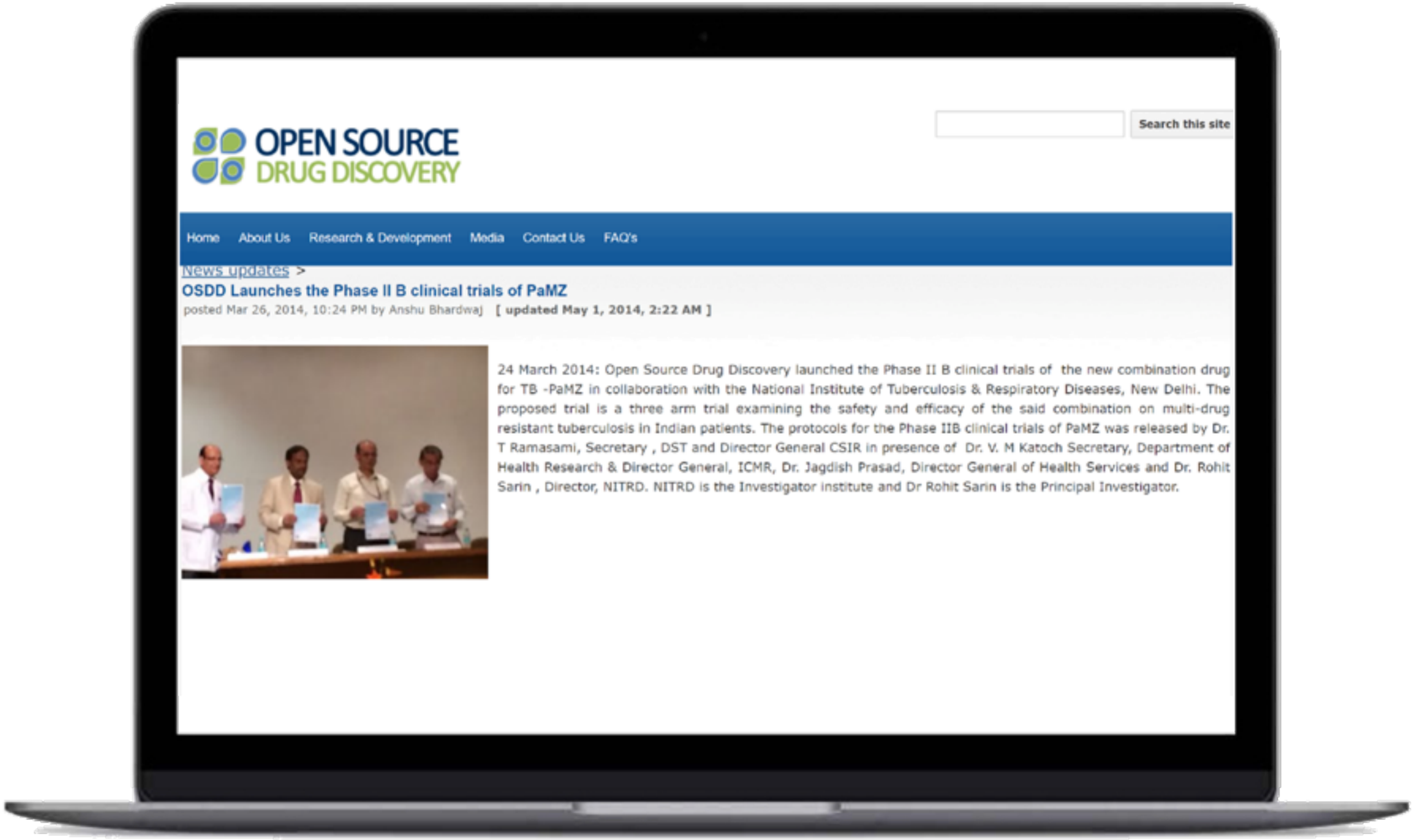
AGILE PROBLEM SOLVING

DR. SAMIR BRAHMACHARI

SOURCE: CSIR, INDIA

OPEN SOURCE DRUG DISCOVERY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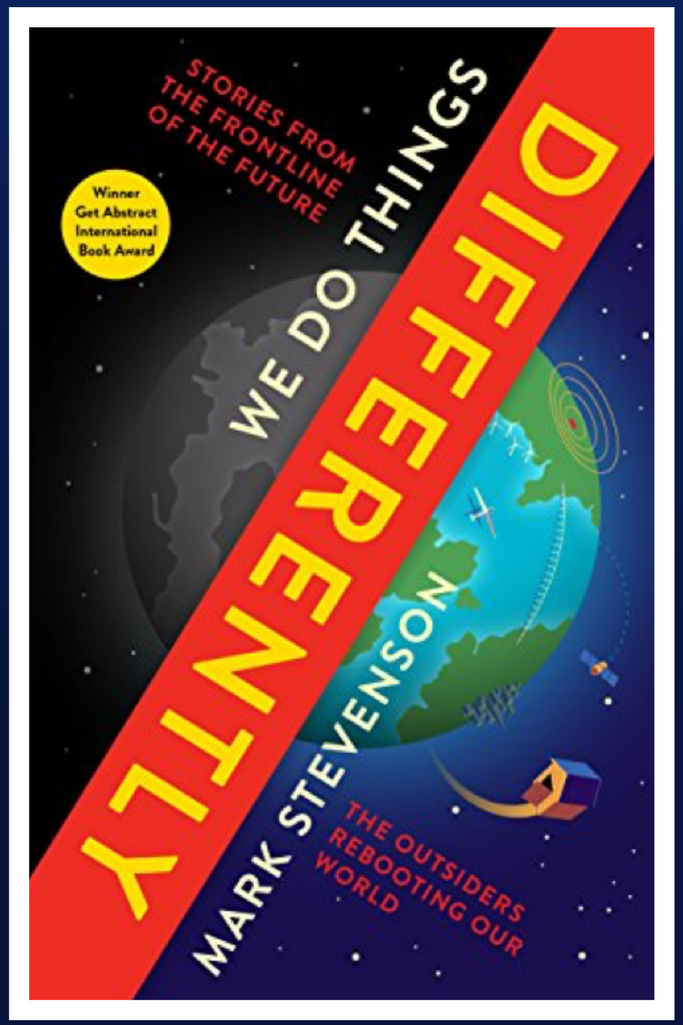
OSDD Launches the Phase II B clinical trials of PaMZ
posted Mar 26, 2014, 10:24 PM by Anshu Bhardwaj [updated May 1, 2014, 2:22 AM]
24 March 2014: Open Source Drug Discovery launched the Phase II B clinical trials of the new combination drug for TB -PaMZ in collaboration with the National Institute of Tuberculosis & Respiratory Diseases, New Delhi. The proposed trial is a three arm trial examining the safety and efficacy of the said combination on multi-drug resistant tuberculosis in Indian patients. The protocols for the Phase IIB clinical trials of PaMZ was released by Dr. T Ramasami, Secretary , DST and Director General CSIR in presence of Dr. V. M Katoch Secretary, Department of Health Research & Director General, ICMR, Dr. Jagdish Prasad, Director General of Health Services and Dr. Rohit Sarin , Director, NITRD. NITRD is the Investigator institute and Dr Rohit Sarin is the Principal Investigator.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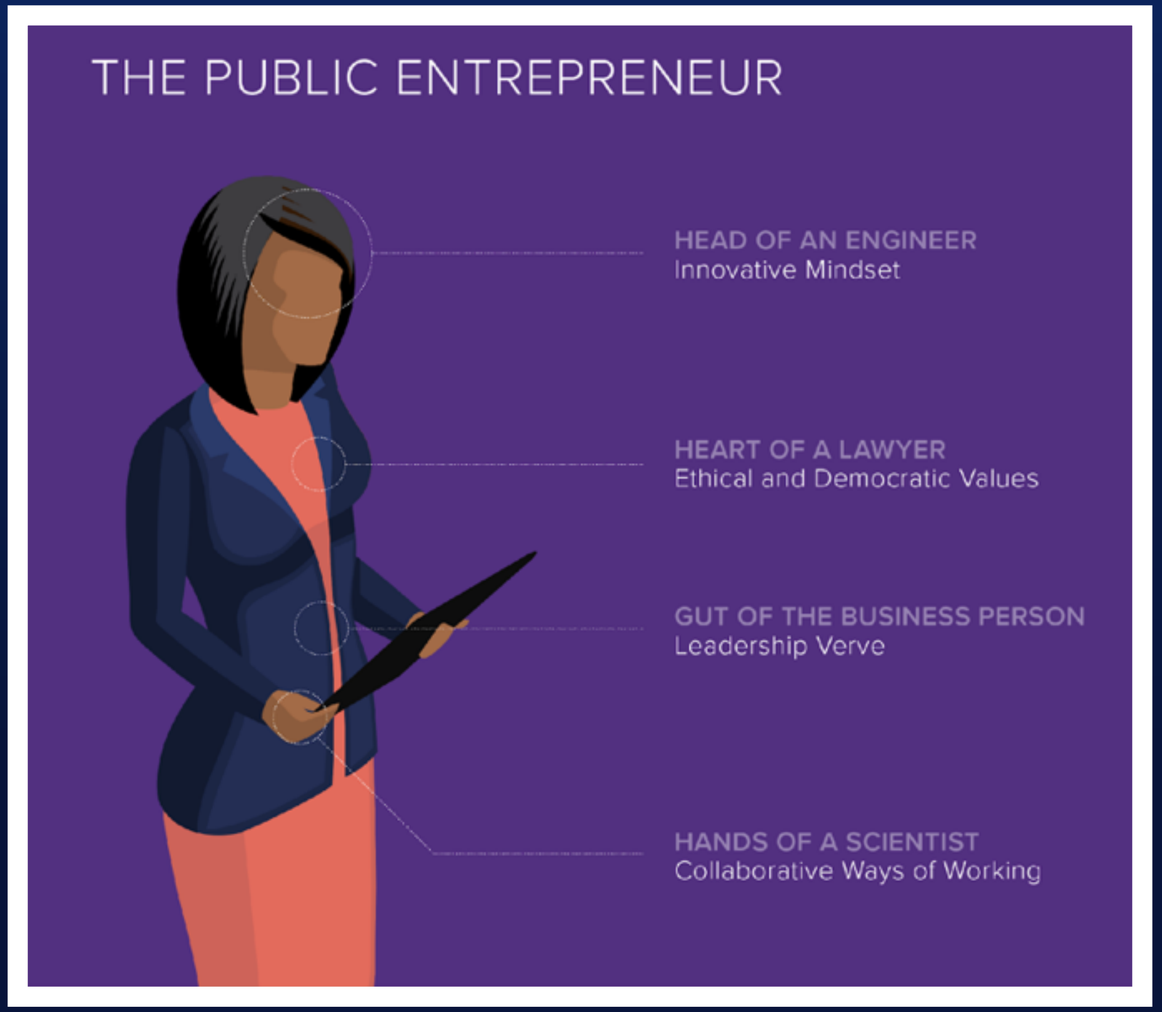

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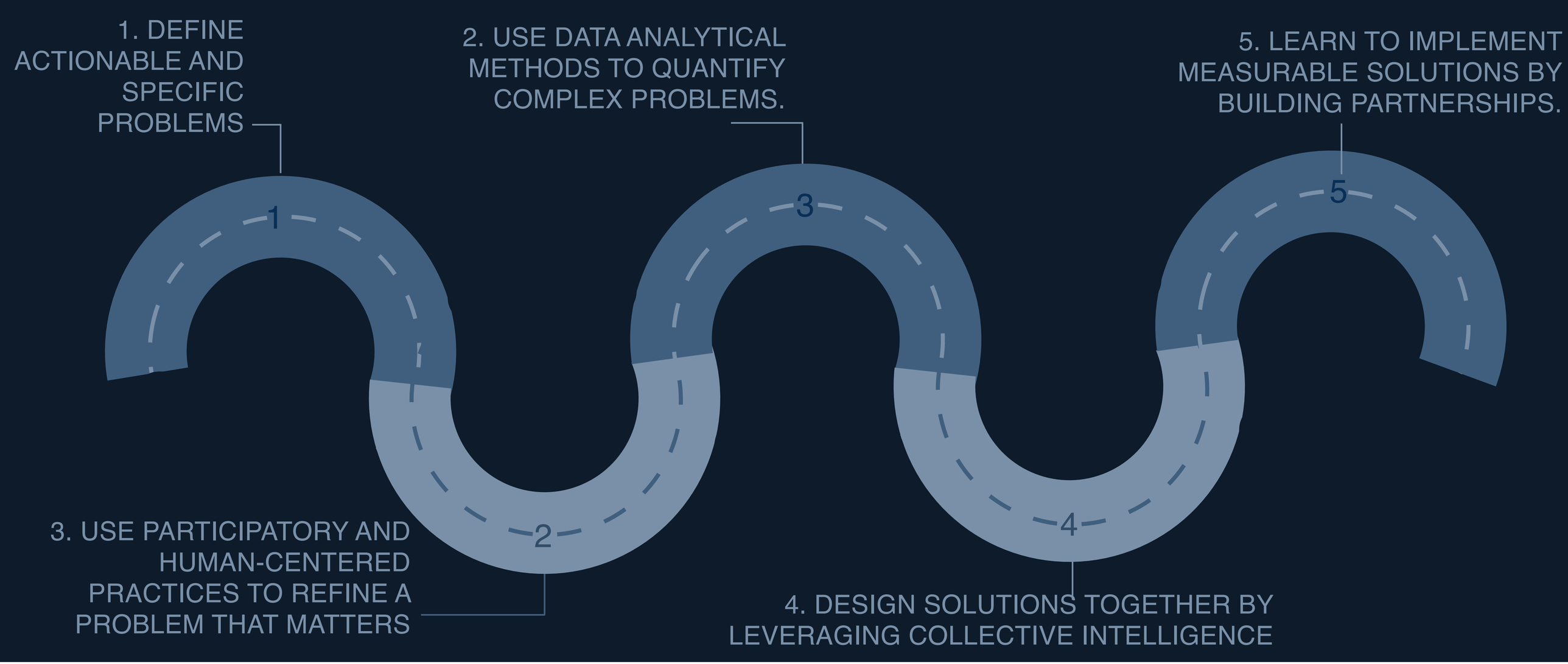

THE SKILLSET OF THE PUBLIC ENTREPRENEUR

PUBLIC ENTREPRENEURS MUST LEARN TO SOLVE PUBLIC PROBLEMS

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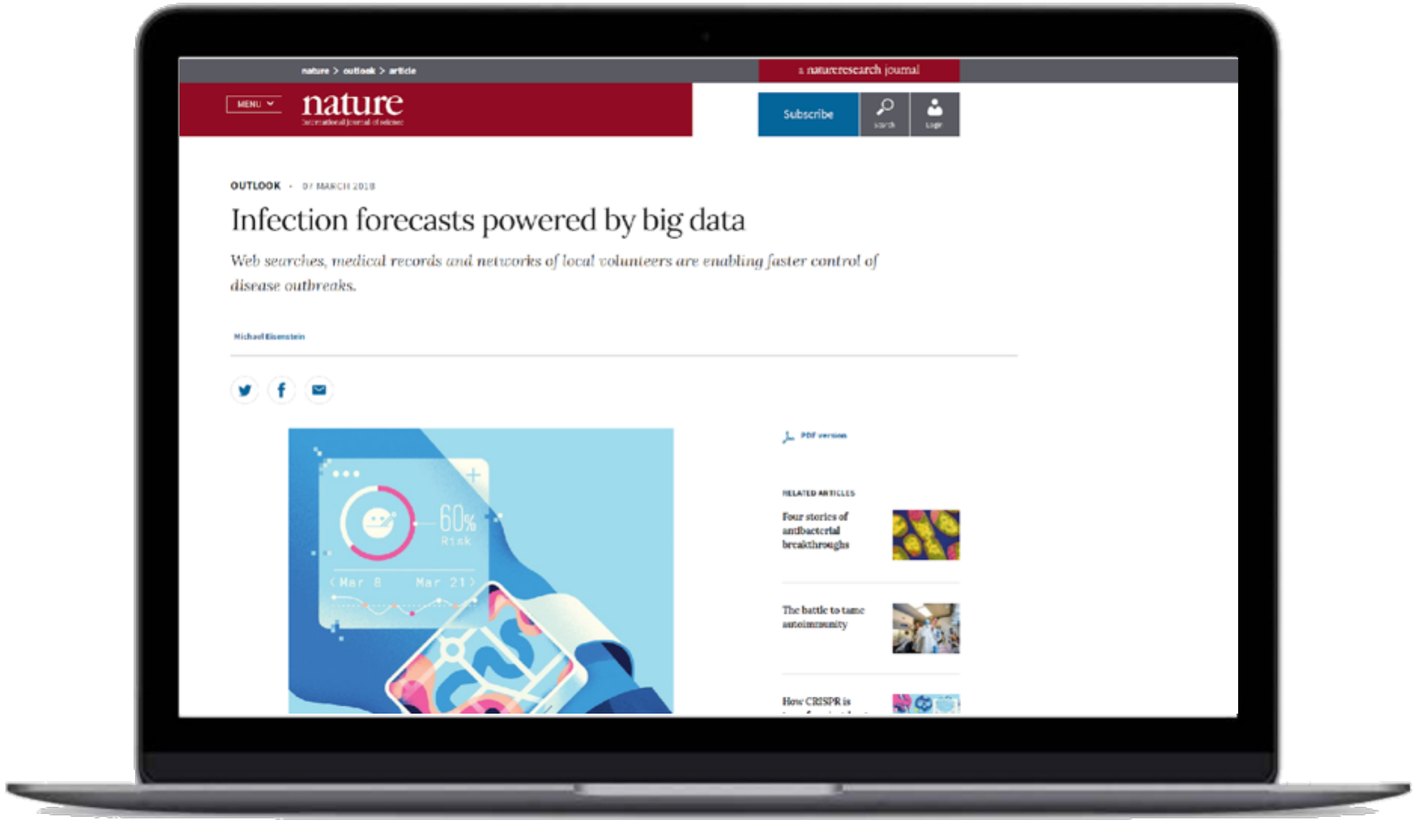
INNOVATION MINDSET

INNOVATION MINDSET

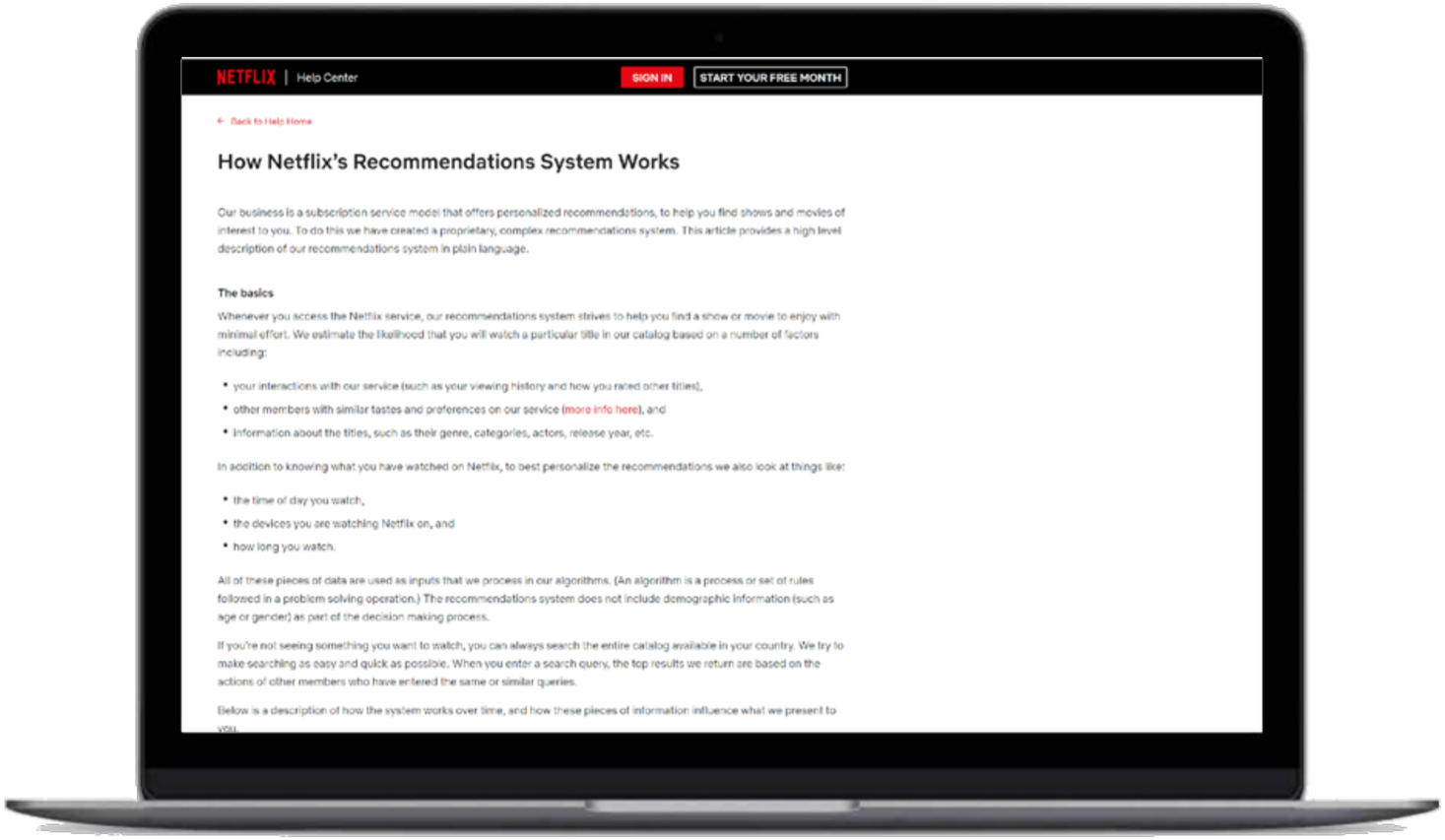
1. NEW TECHNOLOGIES

BIG DATA



"Infection forecasts powered by big data"

BIG DATA

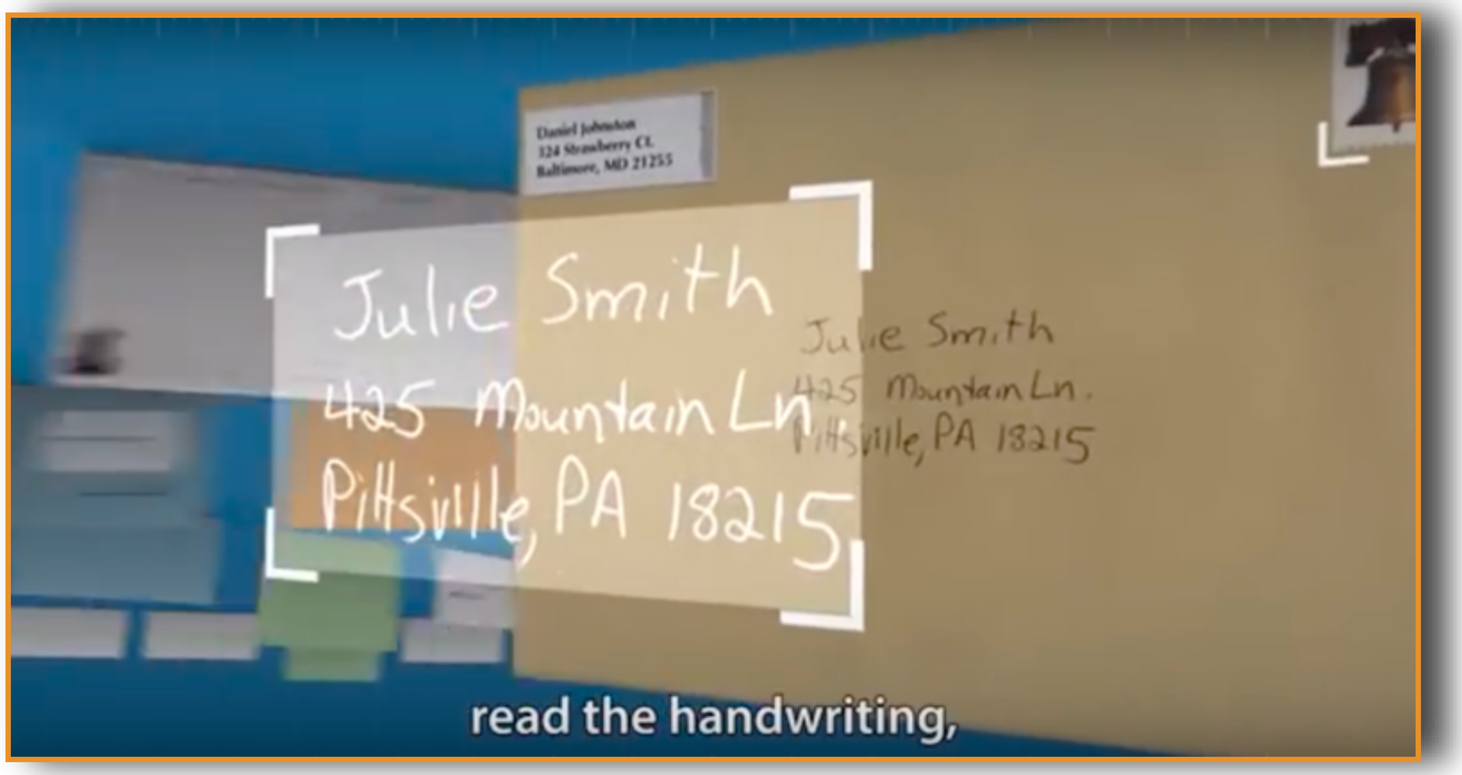


"How Netflix's Recommendation System Works"

ARTIFICIAL INTELLIGENCE: DETECTING PATTERNS

CASE STUDY: BRAZIL'S OPEN BUDGET TRANSPARENCY PORTAL
Source: odimpact.org

ARTIFICIAL INTELLIGENCE: COMPUTER VISION



US Postal Service uses computer vision to recognize handwriting on envelopes

MACHINE LEARNING

ECONOMICS

Predicting poverty and wealth from mobile phone metadata

Joshua Blumenstock,[1]* Gabriel Cadamuro,[2] Robert On[2]

Accurate and timely estimates of population characteristics are a critical input to social and economic research and policy. In industrialized economies, novel sources of data are enabling new approaches to demographic profiling, but in developing countries, fewer sources of big data exist. We show that an individual's past history of mobile phone use can be used to infer his or her socioeconomic status. Furthermore, we demonstrate that the predicted attributes of millions of individuals can, in turn, accurately reconstruct the distribution of wealth of an entire nation or to infer the asset distribution of microregions composed of just a few households. In resource-constrained environments where censuses and household surveys are rare, this approach creates an option for gathering localized and timely information at a fraction of the cost of traditional methods.

Reliable, quantitative data on the economic characteristics of a country's population are essential for sound economic policy and research. The geographic distribution of poverty and wealth is used to make decisions about resource allocation and provides a foundation for the study of inequality and the determinants of economic growth (*1*, *2*). In developing countries, however, the scarcity of reliable quantitative data represents a major challenge to policy-makers and researchers. In much of Africa, for instance, national statistics on economic production may be off by as much as 50% (*3*). Spatially disaggregated data, which are necessary for small-area statistics and which are used by both the private and public sector, often do not exist (*4*, *5*).

In wealthy nations, novel sources of passively collected data are enabling new approaches to demographic modeling and measurement (*6*–*8*). Data from social media and the "Internet of Things," for instance, have been used to measure unemployment (*9*), electoral outcomes (*10*), and economic development (*8*). Although most comparable sources of big data are scarce in the world's poorest nations, mobile phones are a notable exception. They are used by 3.4 billion individuals worldwide and are becoming increasingly ubiquitous in developing regions (*11*).

Here we examine the extent to which anonymized data from mobile phone networks can be used to predict the poverty and wealth of individual subscribers, as well as to create high-resolution maps of the geographic distribution of wealth. That this may prove fruitful is motivated by the fact that mobile phone data capture rich information, not only on the frequency and timing of communication events (*12*) but also reflecting the intimate structure of an individual's social network (*13*, *14*), patterns of travel and location choice (*15*–*17*), and histories of consumption and expenditure. Regionally aggregated measures of phone penetration and use have also been shown to correlate with regionally aggregated population statistics from censuses and household surveys (*8*, *18*, *19*).

Our approach is different from prior work that has examined the relation between regional wealth and regional phone use, as we focus on understanding how the digital footprints of a single individual can be used to accurately predict that same individual's socioeconomic characteristics. This distinction is a scientific one, which also has several important implications: First, it allows for the method to be used in contexts for which recent census or household survey data are unavailable. Second, when an authoritative source of data does exist, it can be used to more objectively validate or refute the model's predictions. This limits the likelihood that the model is overfit on data from a single source, which is otherwise difficult to control, even with careful cross-validation (*20*). Third, our approach allows for a broad class of potential applications that require inferences about specific individuals instead of census tracts. As we discuss in the supplementary materials (section 6), future iterations of this approach could help to improve the targeting of humanitarian aid and social welfare, disseminate information to vulnerable populations, and measure the effects of policy interventions.

For this study, we used an anonymized database containing records of billions of interactions on Rwanda's largest mobile phone network and supplemented this with follow-up phone surveys of a geographically stratified random sample of 856 individual subscribers. Upon contacting and surveying each of these individuals, we received informed consent to merge their survey responses with the mobile phone transaction database. The surveys solicited no personally identifying information but contained questions on asset ownership, housing characteristics, and several other basic welfare indicators. From these data, we constructed a composite wealth index using the first principal component of several survey responses related to wealth (*21*, *22*) (supplementary materials section 1D). For each of the 856 respondents, we thus have ~75 survey responses, as well as the historical records of thousands of phone-based interactions such as calls and text messages (Table 1).

We use the merged data from this sample of 856 phone survey respondents to show that a mobile phone subscriber's wealth can be predicted from his or her historical patterns of phone use (Fig. 1A) (cross-validated correlation coefficient $r = 0.68$). Our approach to modeling combines feature engineering with feature selection by first transforming each person's mobile phone transaction logs into a large set of quantitative metrics and then winnowing out metrics

[1]Information School, University of Washington, Seattle, WA 98195, USA. [2]Department of Computer Science and Engineering, University of Washington, Seattle, WA 98195, USA. [3]School of Information, University of California, Berkeley, Berkeley, CA 94720, USA.
*Corresponding author. E-mail: jblumen@uw.edu

Table 1. Summary statistics for primary data sets. Phone survey data were collected by the authors in Kigali, in collaboration with the Kigali Institute of Science and Technology. Call detail records were collected by the primary mobile phone operator in Rwanda at the time of the phone survey. Demographic and Health Survey (DHS) data were collected by the Rwandan National Institute of Statistics. N/A, not applicable.

Summary statistic	Phone survey	Call detail records	DHS (2007)	DHS (2010)
Number of unique individuals	856	1.5 million	7177	12,792
Data collection period	July 2009	May 2008–May 2009	Dec. 2007–Apr. 2008	Sept. 2010–Mar. 2011
Number of questions in survey	75	N/A	1615	3,896
Primary geographic units	30 districts	30 districts	30 districts	30 districts
Secondary geographic units	300 cell towers	300 cell towers	247 clusters	492 clusters

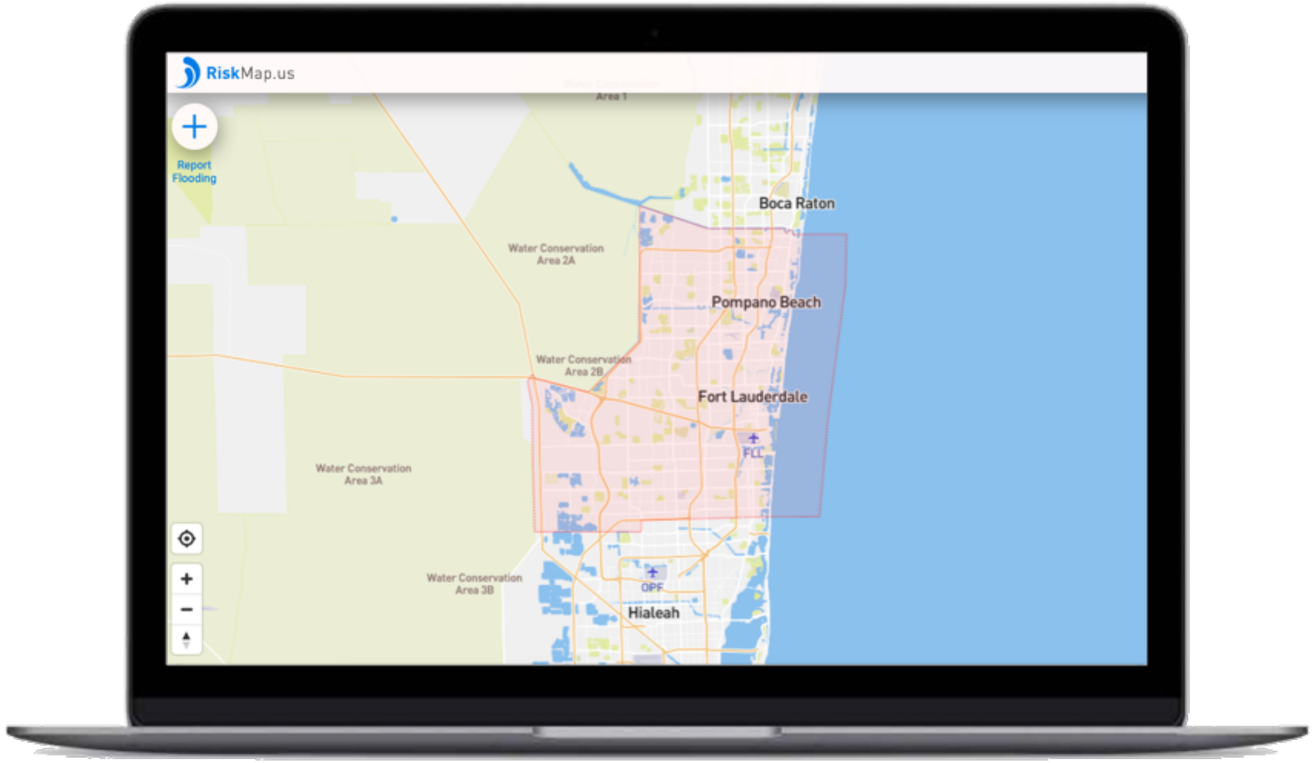
Downloaded from http://sciencesciencemag.org/ on May 7, 2019

"PREDICTING POVERTY AND WEALTH FROM MOBILE PHONE METADATA"

COLLECTIVE INTELLIGENCE

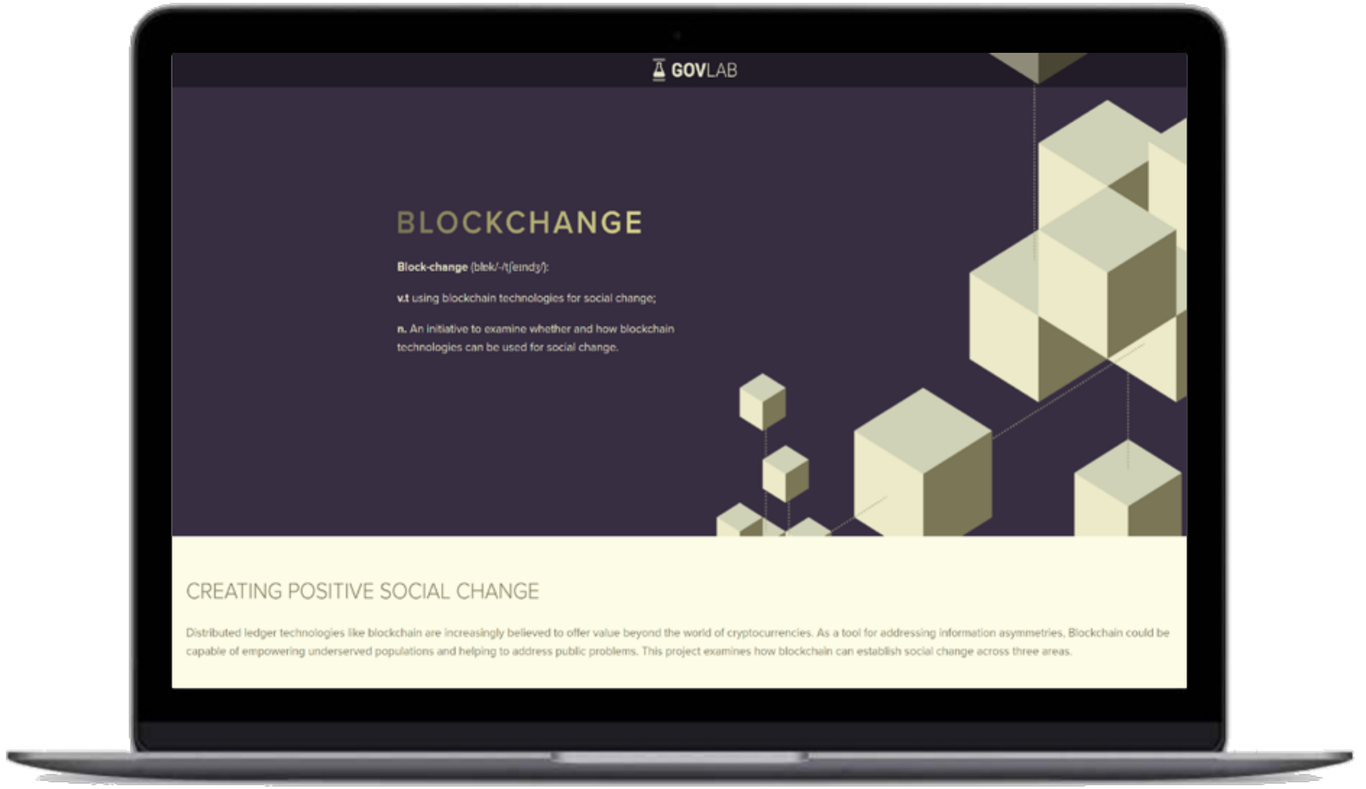
DANA LEWIS AND HER DIY INSULIN KIT

COLLECTIVE INTELLIGENCE



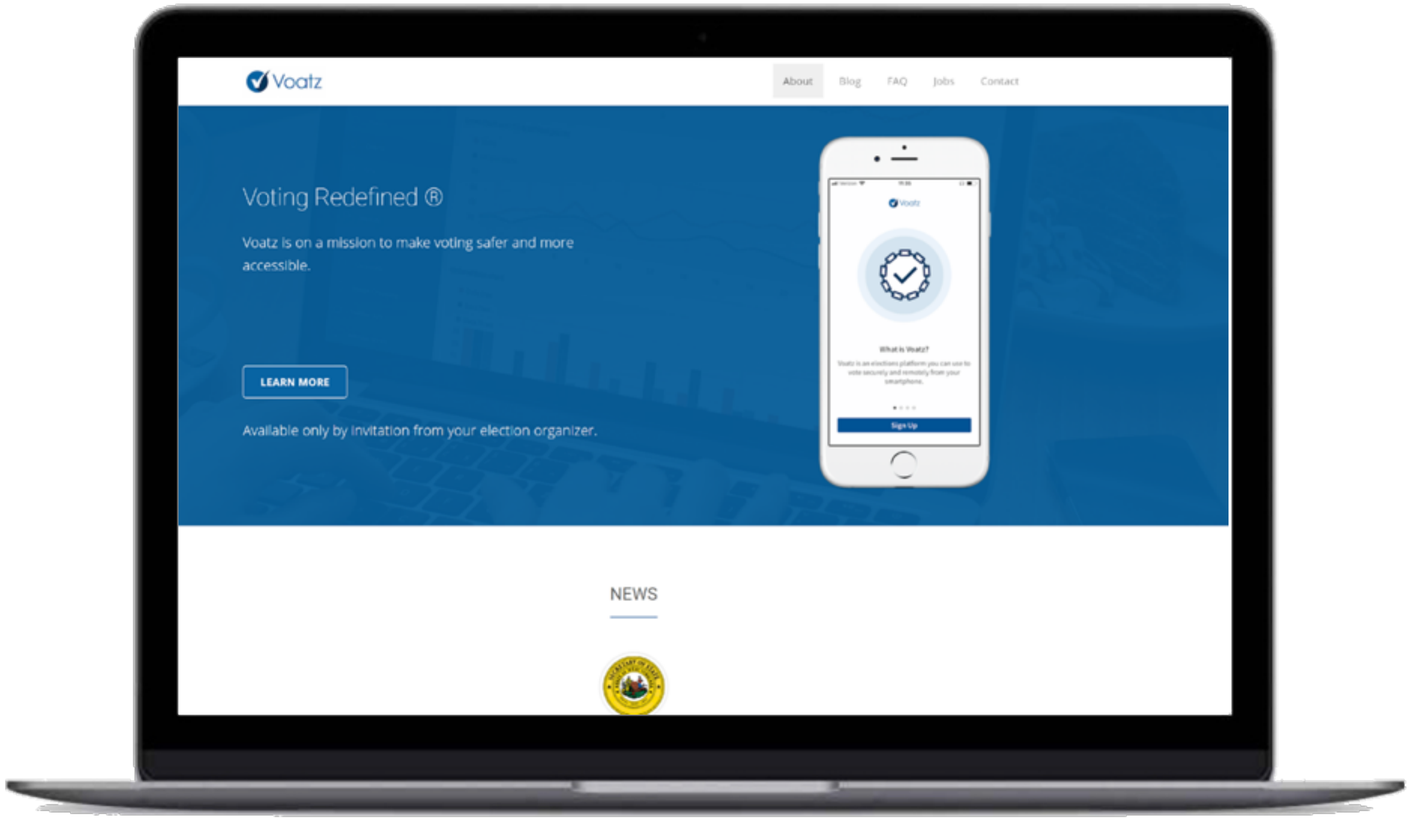
RISKMAP.US

BLOCKCHAIN



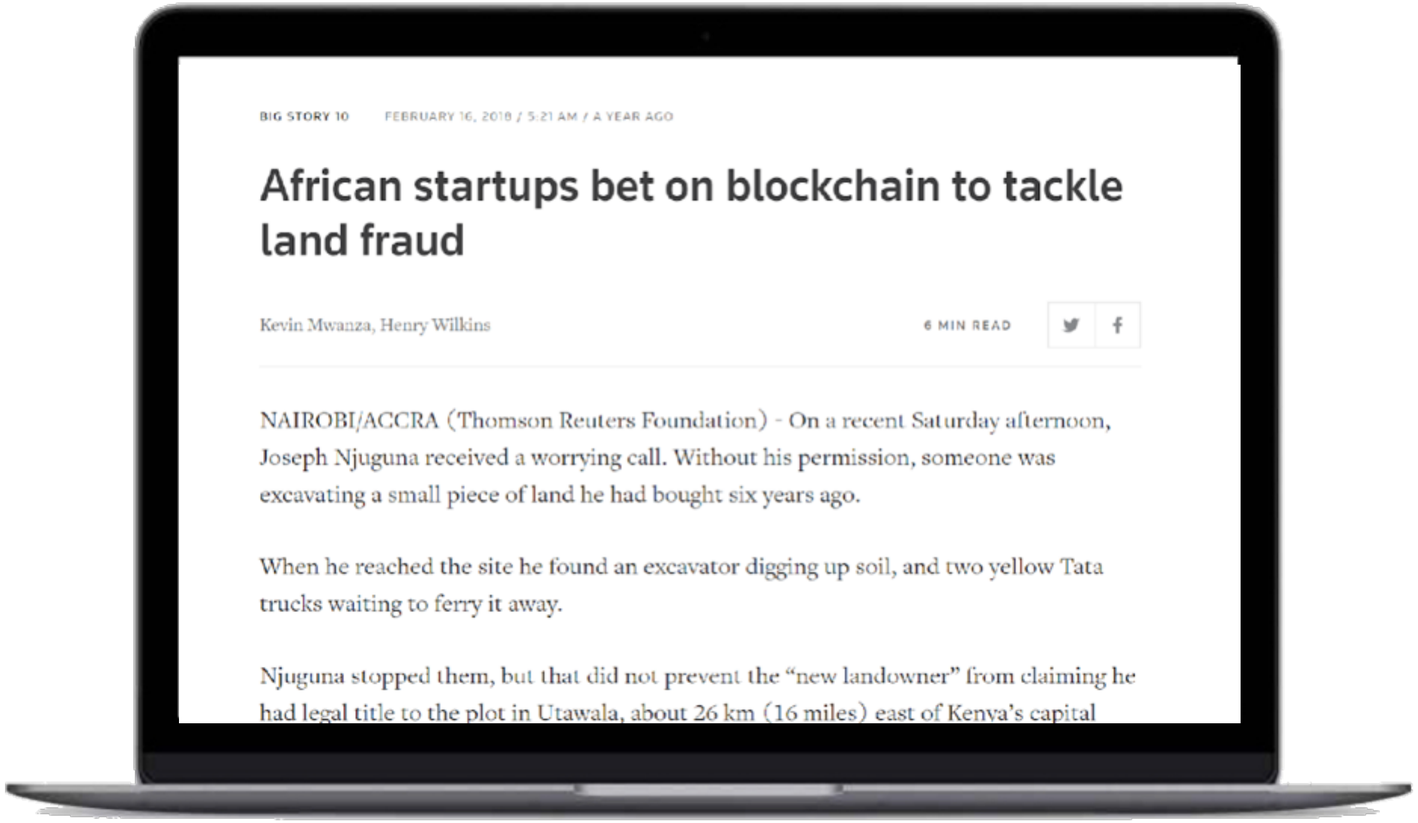
BLOCKCHAN.GE

BLOCKCHAIN



VOATZ APP

BLOCKCHAIN



BIG STORY 10 FEBRUARY 16, 2018 / 5:21 AM / A YEAR AGO

African startups bet on blockchain to tackle land fraud

Kevin Mwanza, Henry Wilkins 6 MIN READ

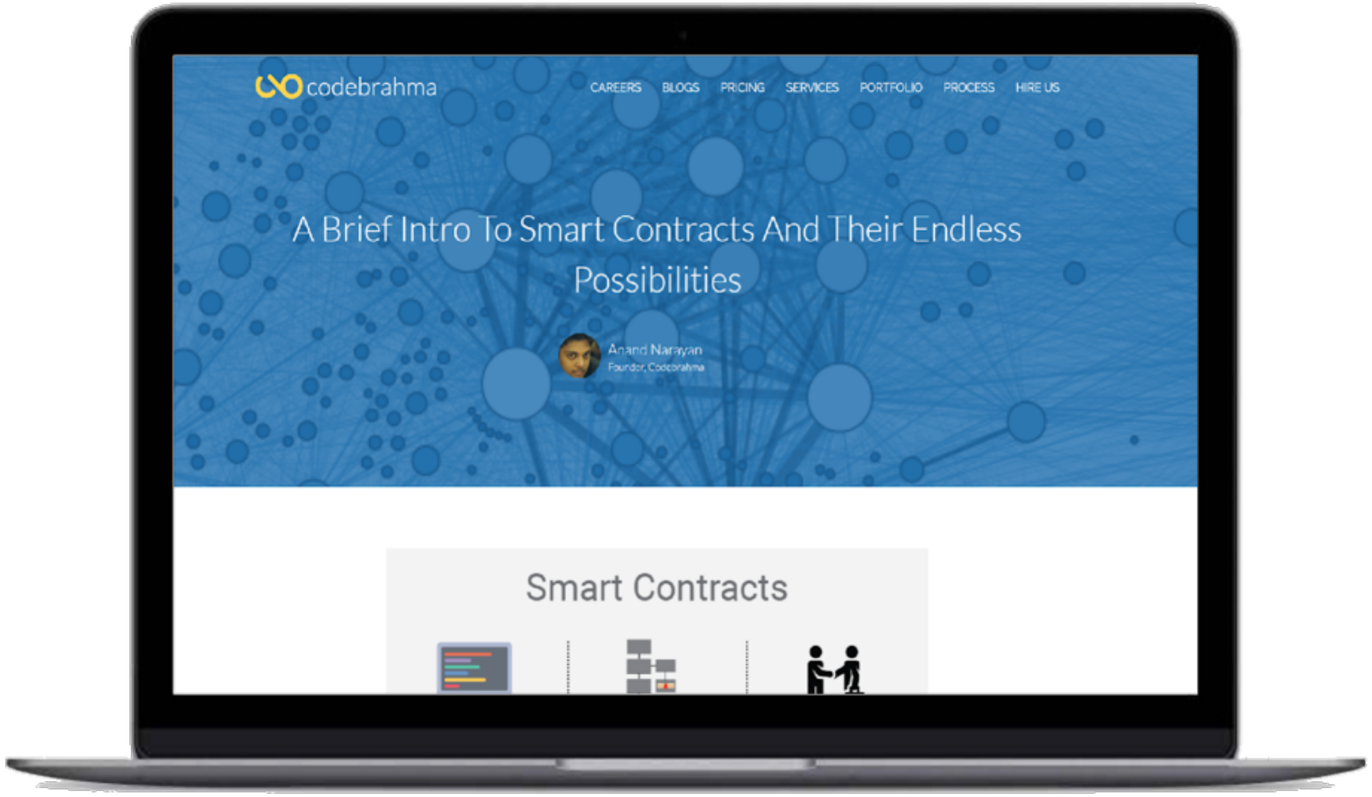
NAIROBI/ACCRA (Thomson Reuters Foundation) - On a recent Saturday afternoon, Joseph Njuguna received a worrying call. Without his permission, someone was excavating a small piece of land he had bought six years ago.

When he reached the site he found an excavator digging up soil, and two yellow Tata trucks waiting to ferry it away.

Njuguna stopped them, but that did not prevent the "new landowner" from claiming he had legal title to the plot in Utawala, about 26 km (16 miles) east of Kenya's capital

AFRICAN STARTUPS BET ON BLOCKCHAIN TO TACKLE LAND FRAUD

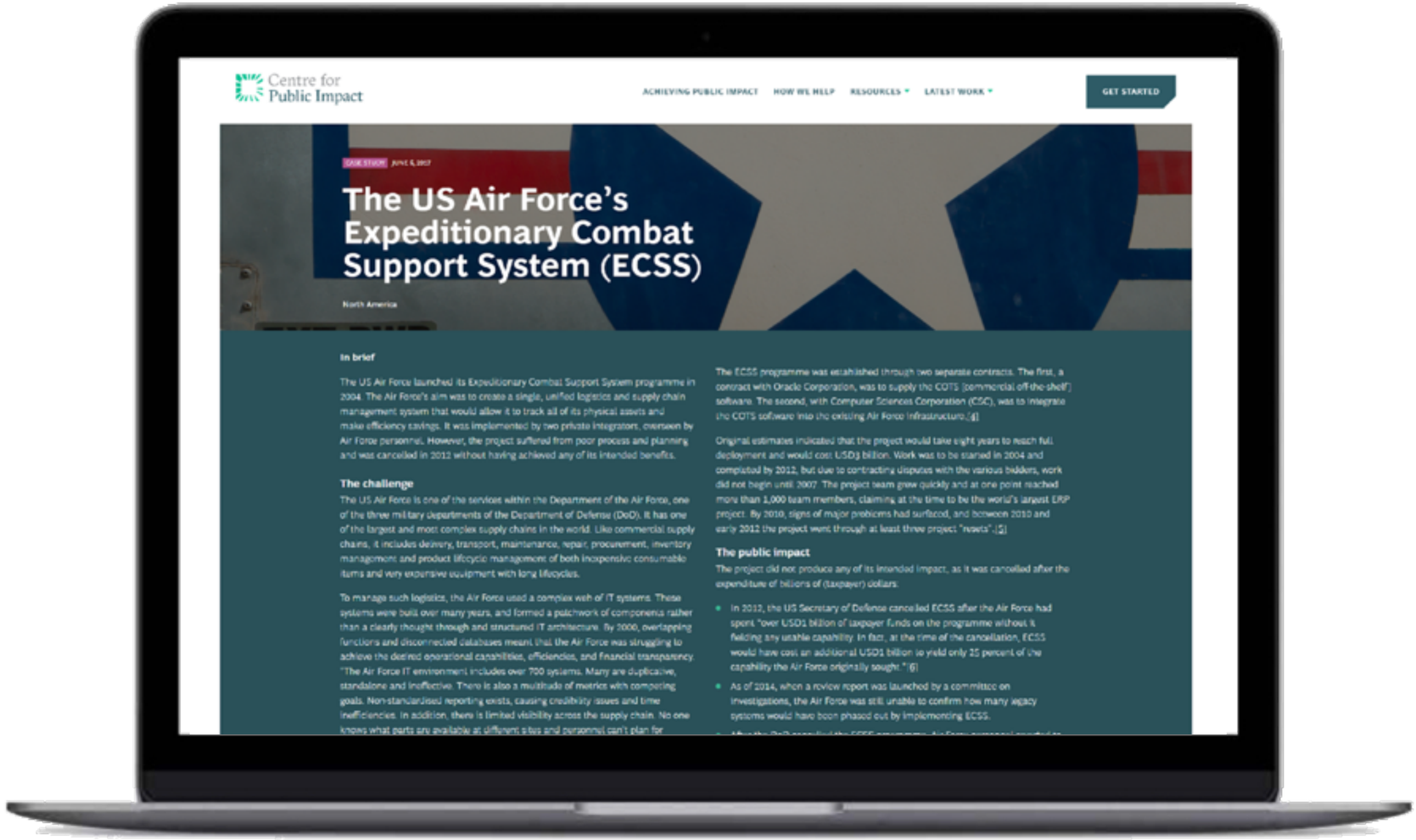
BLOCKCHAIN



SMART CONTRACTS

INNOVATION MINDSET

2. AGILE WAYS OF WORKING


Centre for Public Impact
ACHIEVING PUBLIC IMPACT
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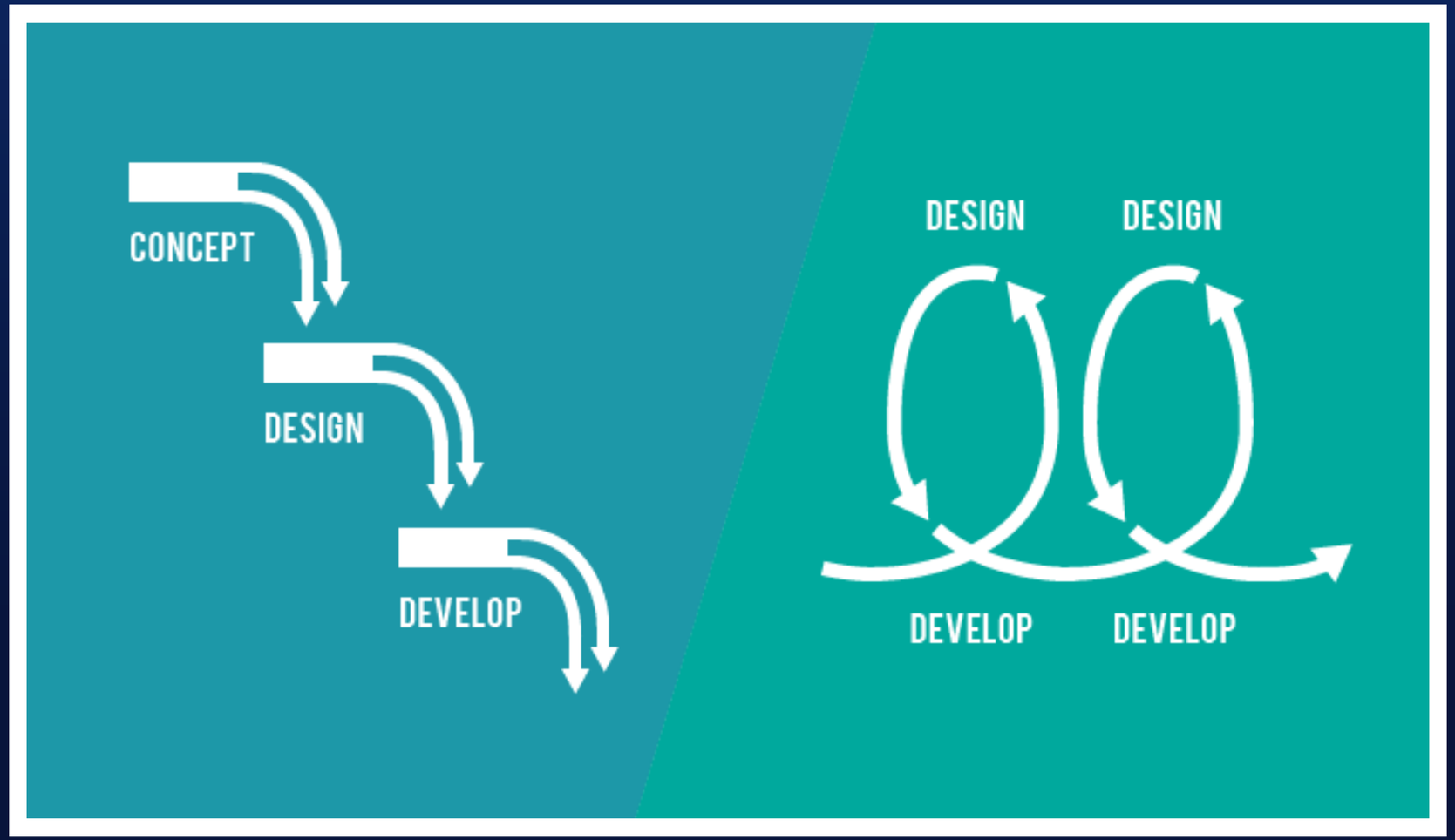
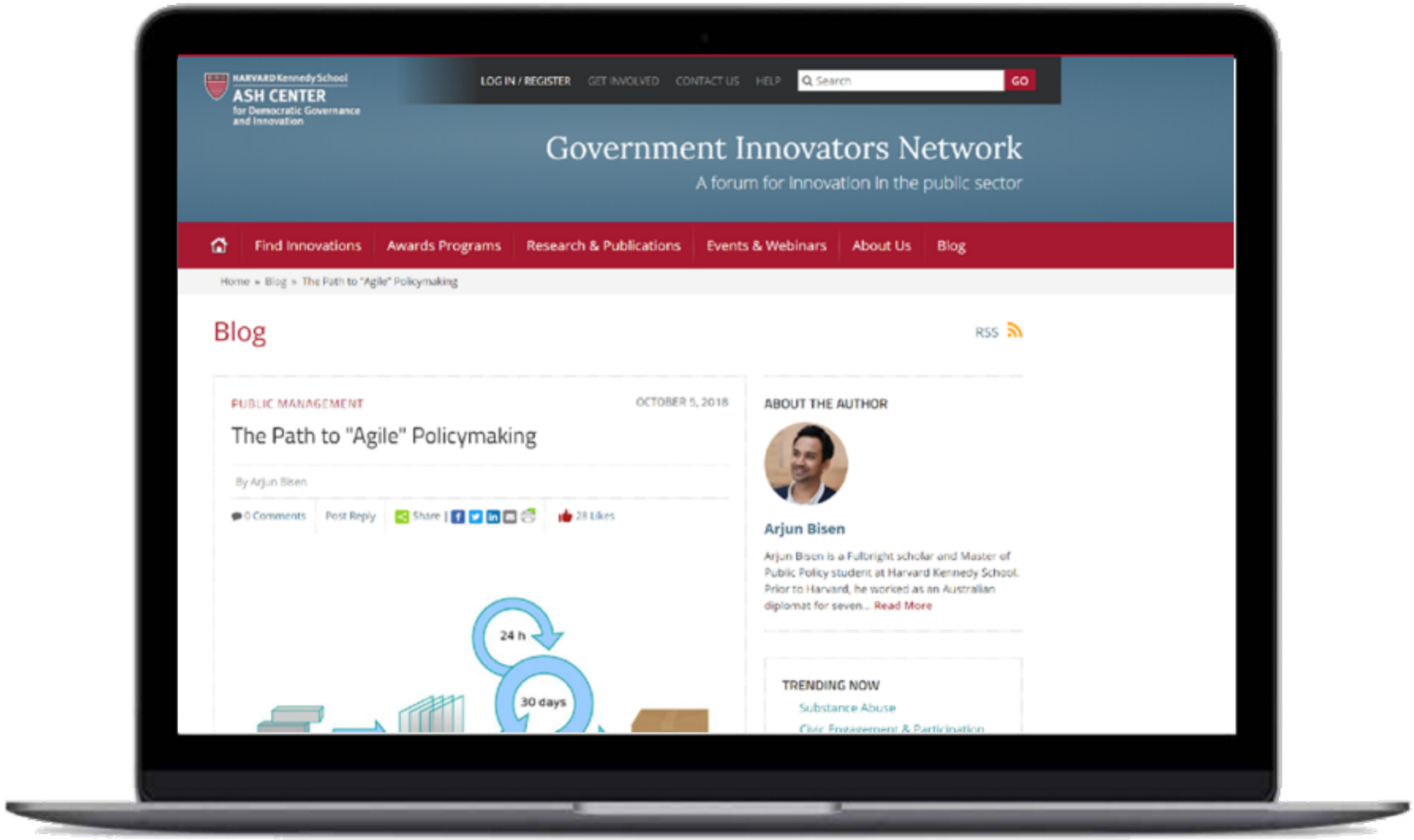
RESOURCES
LATEST WORK
GET STARTED
CASE STUDY
The US Air Force's Expeditionary Combat Support System (ECSS)
North America
In brief
The US Air Force launched its Expeditionary Combat Support System programme in 2004. The Air Force's aim was to create a single, unified logistics and supply chain management system that would allow it to track all of its physical assets and make efficiency savings. It was implemented by two private integrators, overseen by Air Force personnel. However, the project suffered from poor process and planning and was cancelled in 2012 without having achieved any of its intended benefits.
The challenge
The US Air Force is one of the services within the Department of the Air Force, one of the three military departments of the Department of Defense (DoD). It has one of the largest and most complex supply chains in the world. Like commercial supply chains, it includes delivery, transport, maintenance, repair, procurement, inventory management and product lifecycle management of both inexpensive consumable items and very expensive equipment with long lifecycles.
To manage such logistics, the Air Force used a complex web of IT systems. These systems were built over many years, and formed a patchwork of components rather than a clearly thought through and structured IT architecture. By 2000, overlapping functions and disconnected databases meant that the Air Force was struggling to achieve the desired operational capabilities, efficiencies, and financial transparency. "The Air Force IT environment includes over 700 systems. Many are duplicative, standalone and ineffective. There is also a multitude of metrics with competing goals. Non-standardised reporting exists, causing credibility issues and time inefficiencies. In addition, there is limited visibility across the supply chain. No one knows what parts are available at different sites and personnel can't plan for
The ECSS programme was established through two separate contracts. The first, a contract with Oracle Corporation, was to supply the COTS (commercial off-the-shelf) software. The second, with Computer Sciences Corporation (CSC), was to integrate the COTS software into the existing Air Force infrastructure.[4]
Original estimates indicated that the project would take eight years to reach full deployment and would cost USD3 billion. Work was to be started in 2004 and completed by 2012, but due to contracting disputes with the various bidders, work did not begin until 2007. The project team grew quickly and at one point reached more than 1,000 team members, claiming at the time to be the world's largest ERP project. By 2010, signs of major problems had surfaced, and between 2010 and early 2012 the project went through at least three project "resets".[5]
The public impact
The project did not produce any of its intended impact, as it was cancelled after the expenditure of billions of (taxpayer) dollars.
In 2012, the US Secretary of Defense cancelled ECSS after the Air Force had spent "over USD1 billion of taxpayer funds on the programme without it fielding any usable capability. In fact, at the time of the cancellation, ECSS would have cost an additional USD1 billion to yield only 15 percent of the capability the Air Force originally sought."[6]
As of 2014, when a review report was launched by a committee on investigations, the Air Force was still unable to confirm how many legacy systems would have been phased out by implementing ECSS.



WATERFALL MODEL vs AGILE MODEL

SOURCE: UNIFYME



PATH TO AGILE POLICYMAKING, HARVARD UNIVERSITY

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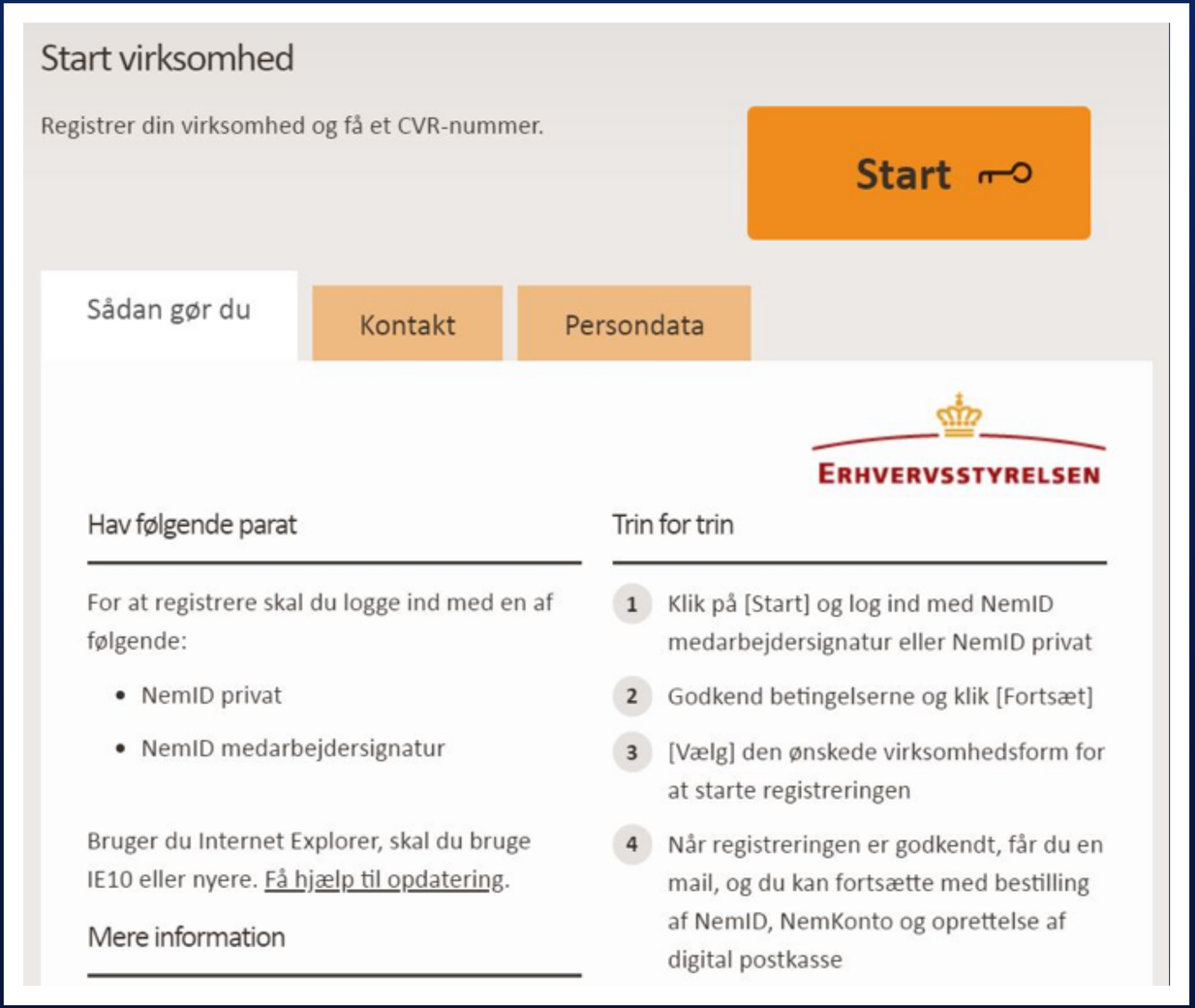
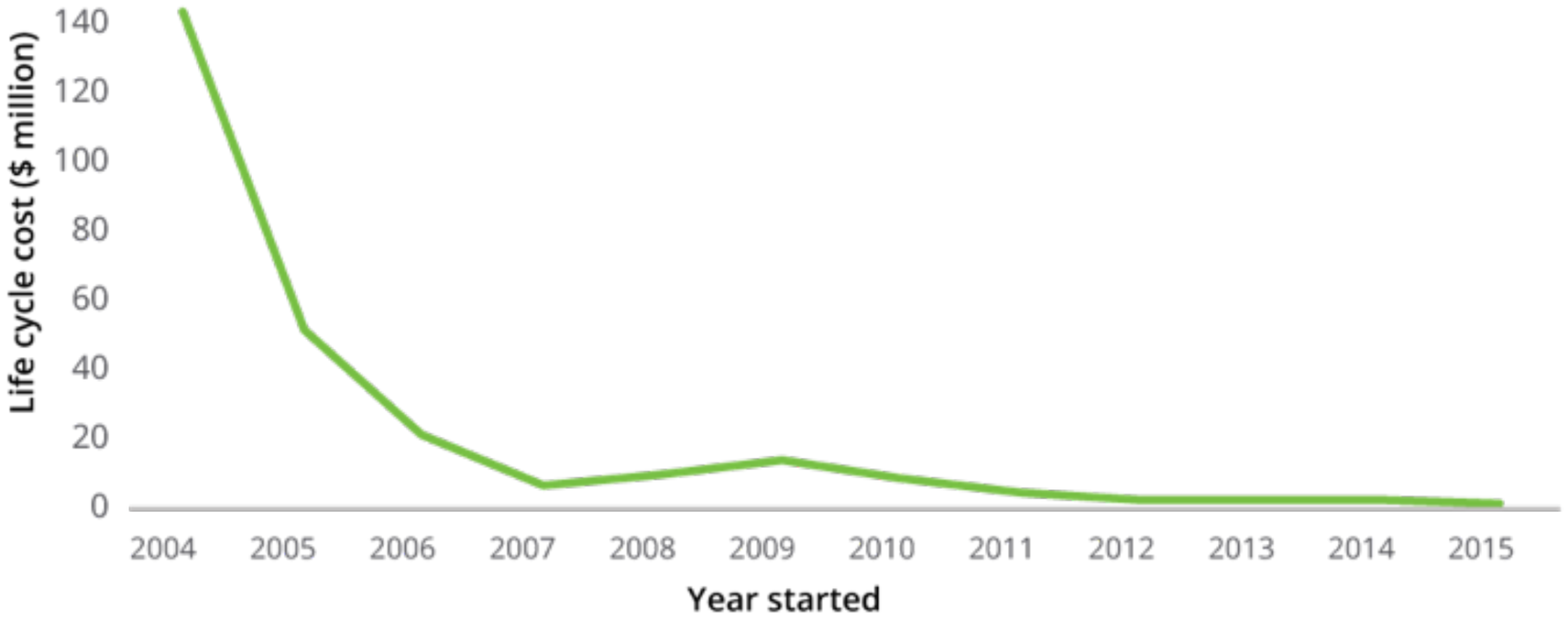
AGILE PROBLEM SOLVING



BUSINESS REGISTRY, DENMARK

Figure 1. Major federal software projects are getting smaller



Note: The life cycle cost in 2015 was $4.09 million.

Source: Deloitte analysis of Office of Management and Budget's ITDashboard.gov.

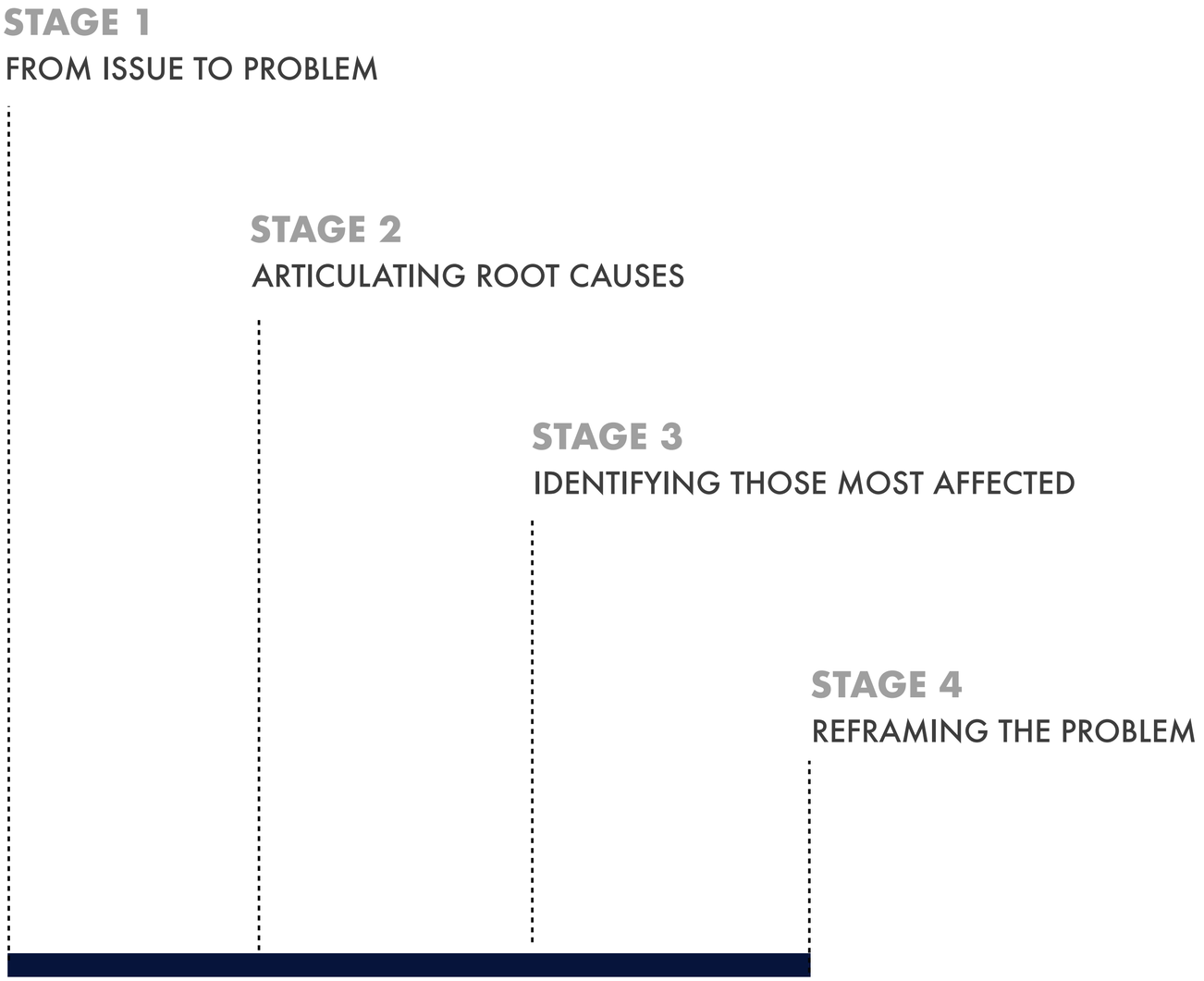
Deloitte University Press | dupress.deloitte.com

SOURCE: DELOITTE UNIVERSITY PRESS

DEFINING PROBLEMS

DEFINING PROBLEMS

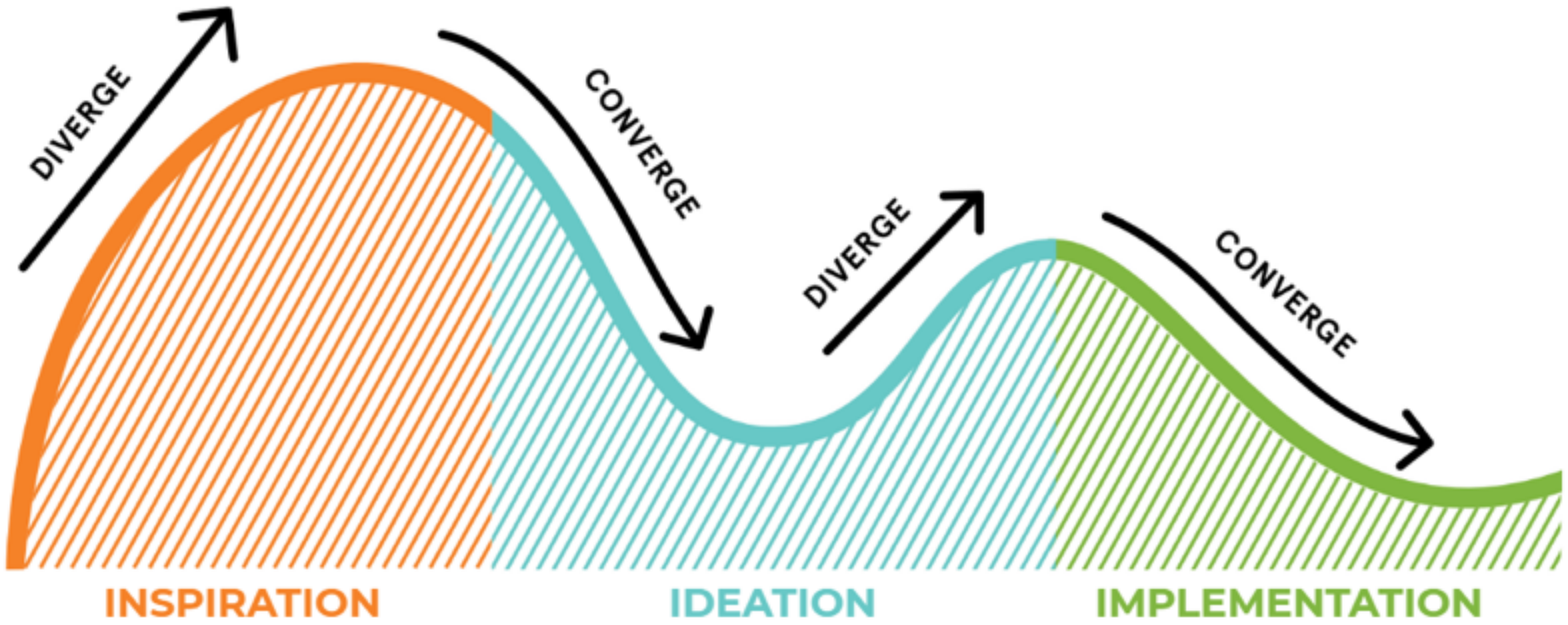
3. PROBLEM DEFINITION


STAGE 1
FROM ISSUE TO PROBLEM
STAGE 2
ARTICULATING ROOT CAUSES
STAGE 3
IDENTIFYING THOSE MOST AFFECTED
STAGE 4
REFRAMING THE PROBLEM

USING HUMAN-CENTRIC AND PARTICIPATORY PRACTICES

USING PARTICIPATORY AND HUMAN-CENTRIC PRACTICES

4. HUMAN-CENTRED DESIGN



SOURCE: IDEO DESIGN KIT MANUAL

SOURCE: NJ OFFICE OF INNOVATION

SOURCE: NJ OFFICE OF INNOVATION

USING DATA ANALYTICAL METHODS TO QUANTIFY COMPLEX PROBLEMS

USING DATA ANALYTICAL METHODS TO QUANTIFY COMPLEX PROBLEMS

5. DATA ANALYTICAL THINKING


Geographical
Transport
Cultural
Natural
Scientific
Types of Data
Meteorological
Financial
Statistical

Source: bbc.co.uk

"Bit by Bit", Matt Salganik

Source: bitbybitbook.com

Why You Can't Find a Taxi in the Rain and Other Labor Supply Lessons from Cab Drivers

Henry S. Farber
Princeton University
and IZA

Discussion Paper No. 8562
October 2014

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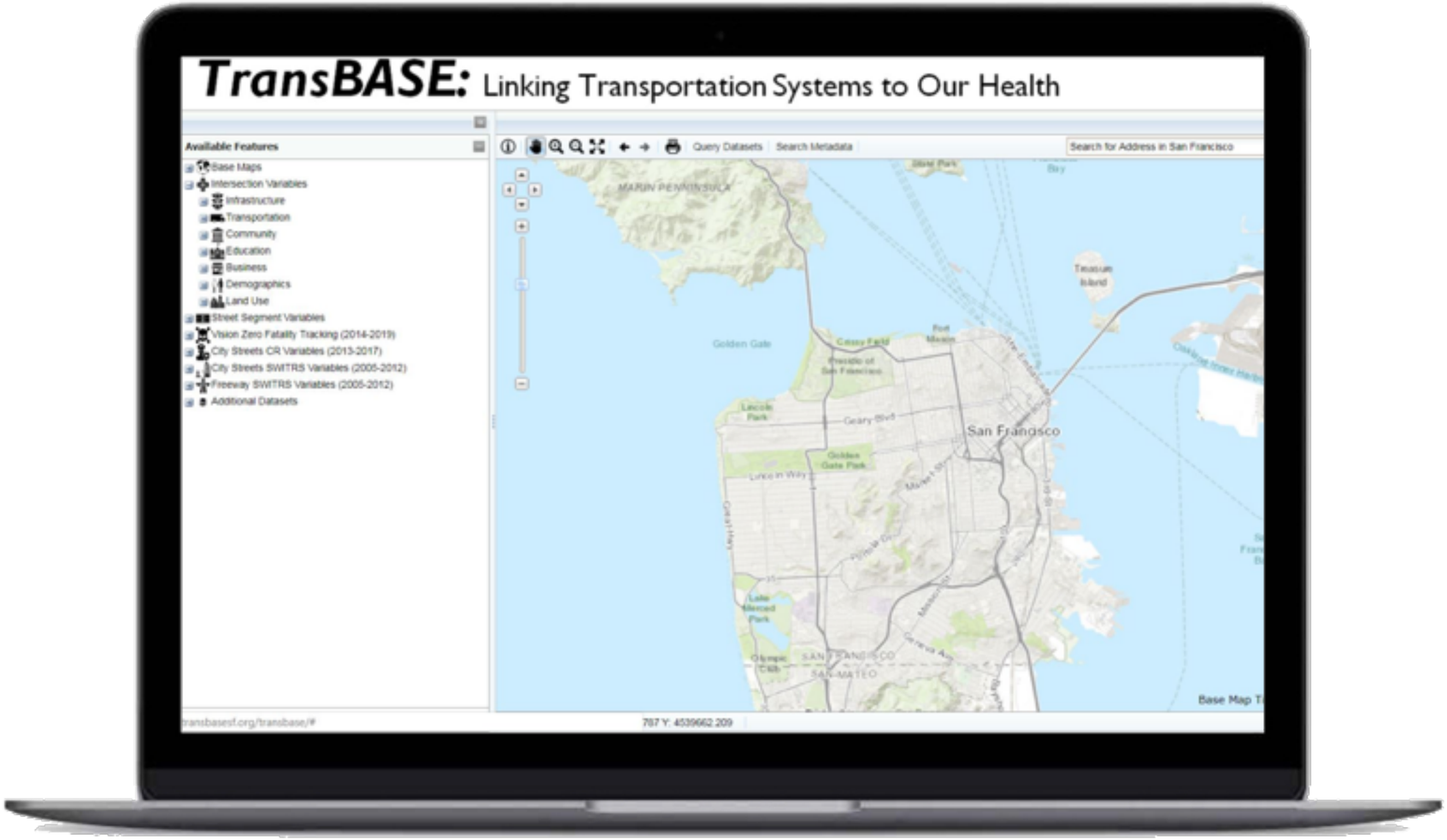

TRANSBASE, SAN FRANSISCO

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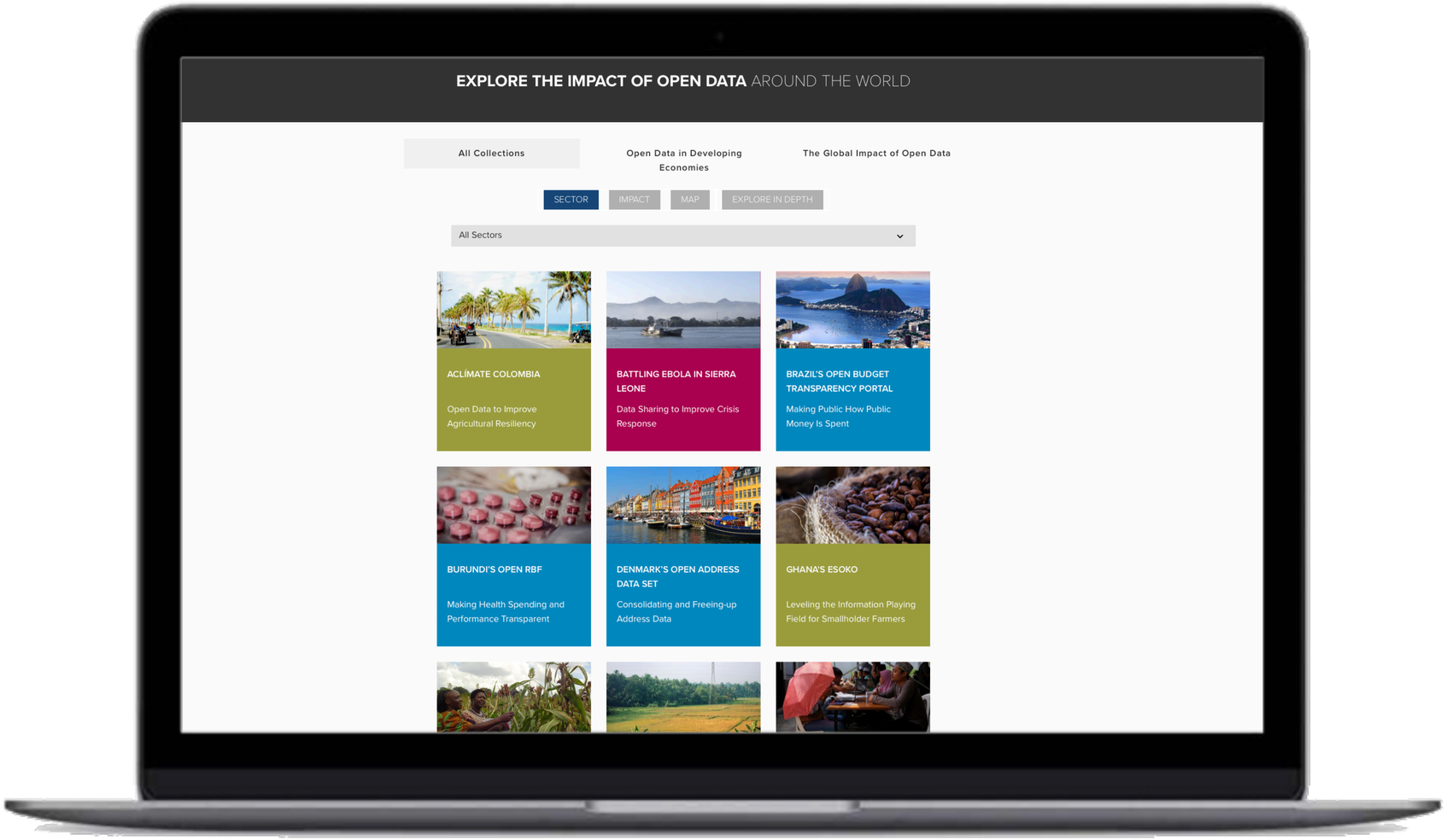
AGILE PROBLEM SOLVING

USING DATA ANALYTICAL METHODS TO QUANTIFY COMPLEX PROBLEMS

6. OPEN DATA



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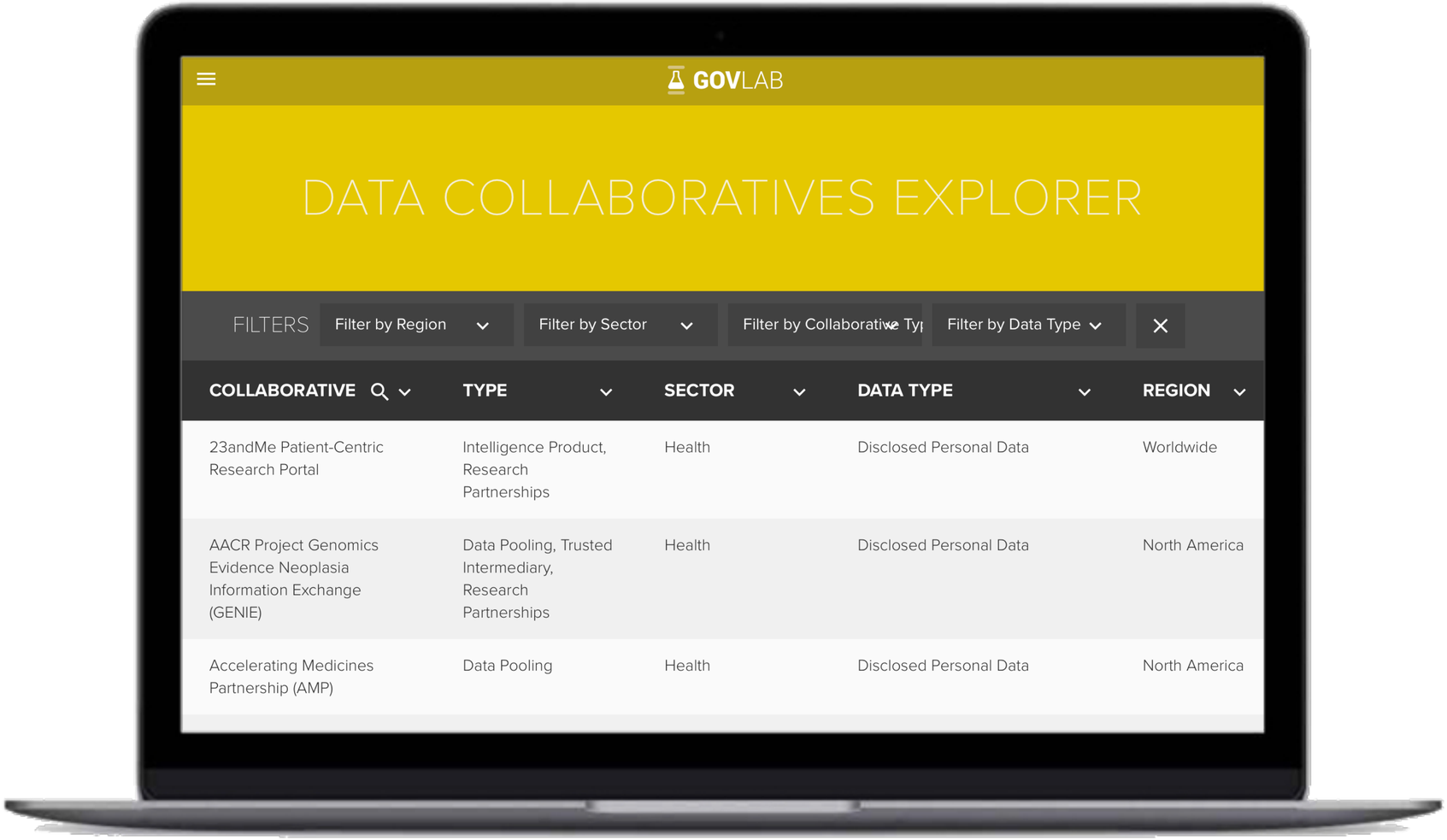
OPEN DATA'S IMPACT, THE GOVLAB

odimpact.org

AGILE PROBLEM SOLVING

USING DATA ANALYTICAL METHODS TO QUANTIFY COMPLEX PROBLEMS

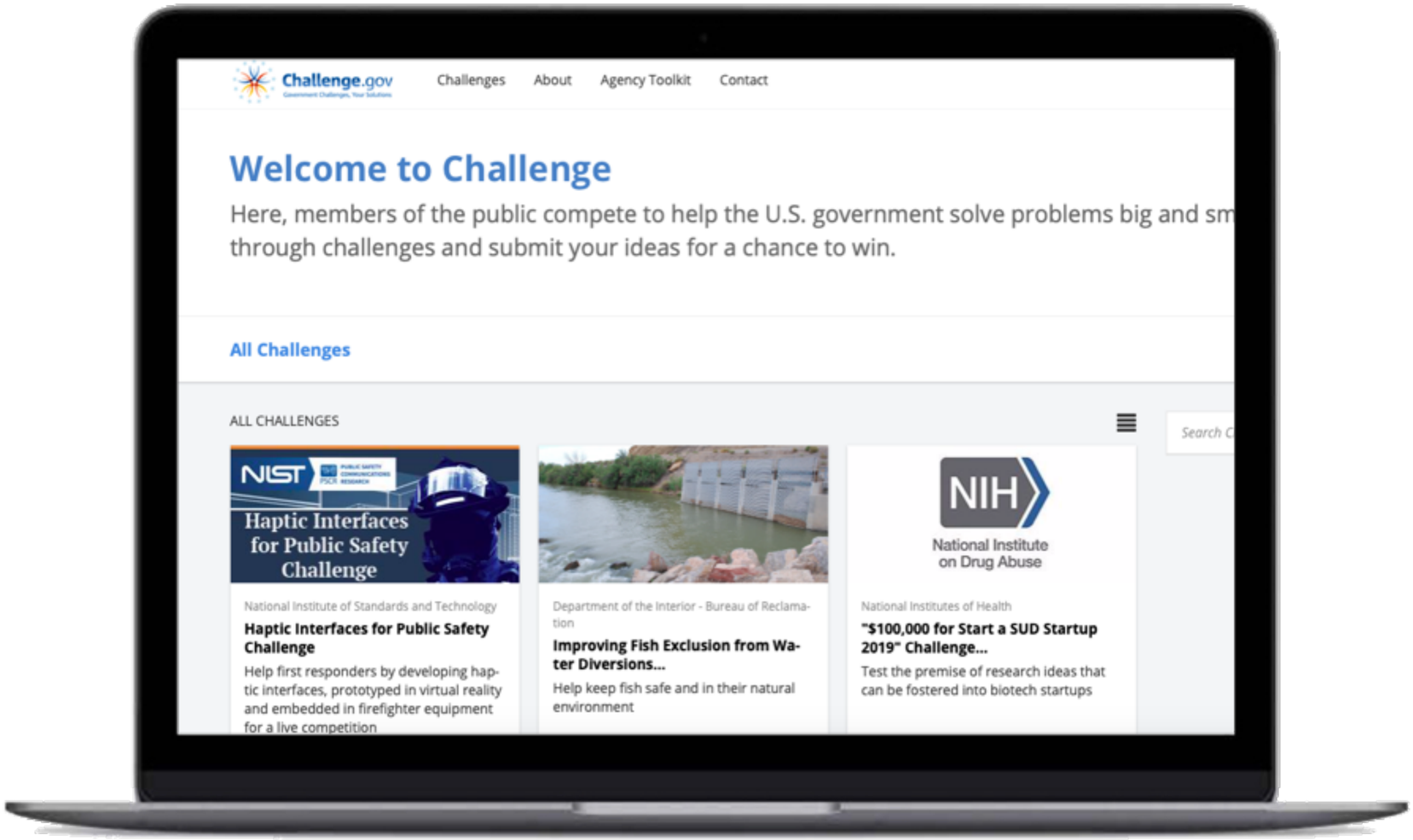
7. DATA COLLABORATIVES


GOVLAB
DATA COLLABORATIVES EXPLORER
FILTERS
Filter by Region
Filter by Sector
Filter by Collaborative Ty
Filter by Data Type
COLLABORATIVE
TYPE
SECTOR
DATA TYPE
REGION
23andMe Patient-Centric Research Portal
Intelligence Product, Research Partnerships
Health
Disclosed Personal Data
Worldwide
AACR Project Genomics Evidence Neoplasia Information Exchange (GENIE)
Data Pooling, Trusted Intermediary, Research Partnerships
Health
Disclosed Personal Data
North America
Accelerating Medicines Partnership (AMP)
Data Pooling
Health
Disclosed Personal Data
North America

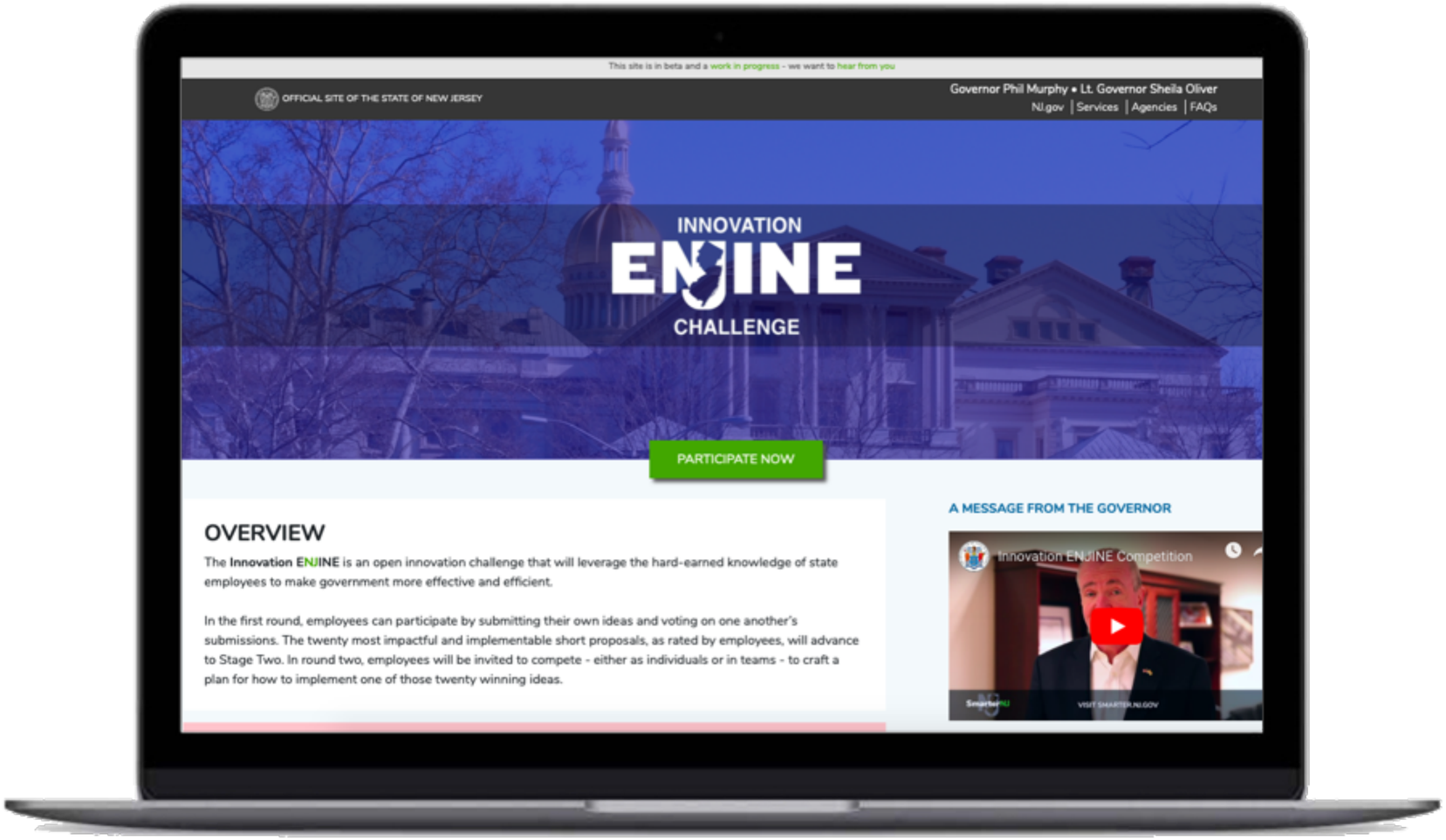
LEVERAGING COLLECTIVE INTELLIGENCE

LEVERAGING COLLECTIVE INTELLIGENCE

8. PEOPLE-LED INNOVATION



CHALLENGE.GOV



INNOVATION ENGINE CHALLENGE, NEW JERSEY

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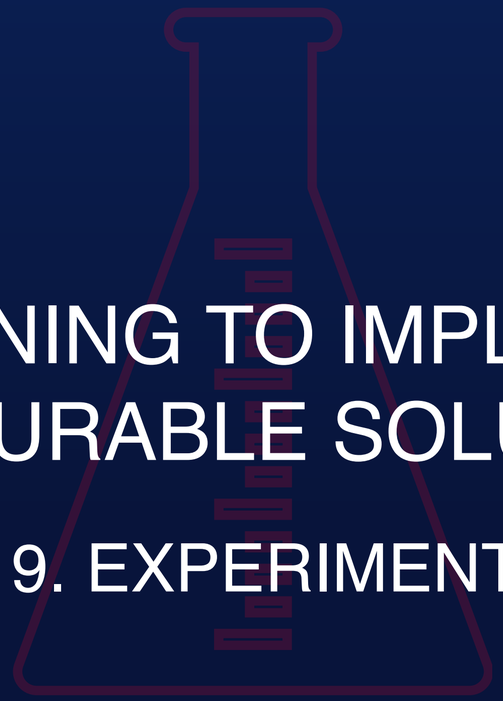
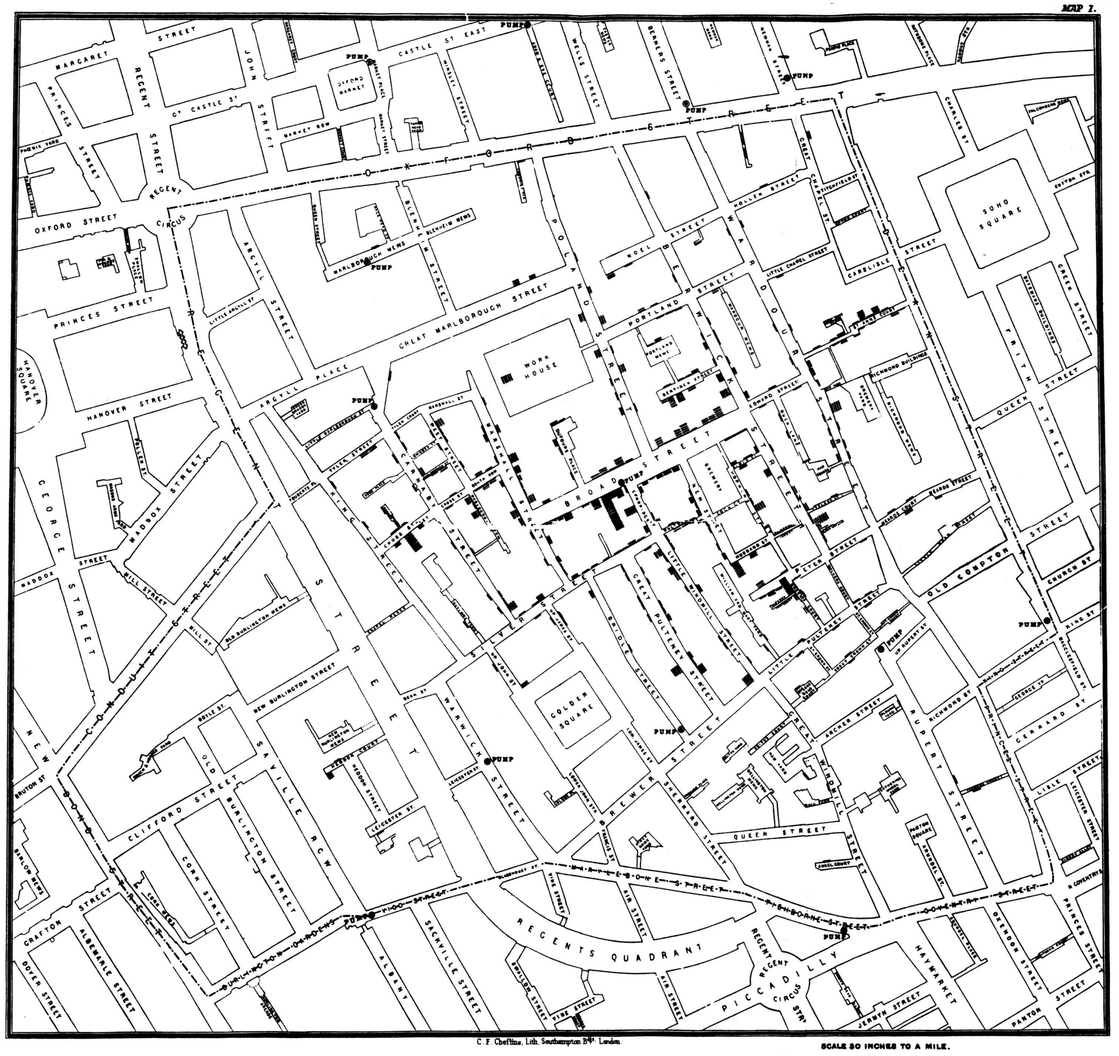
AGILE PROBLEM SOLVING

LEARNING TO IMPLEMENT MEASURABLE SOLUTIONS

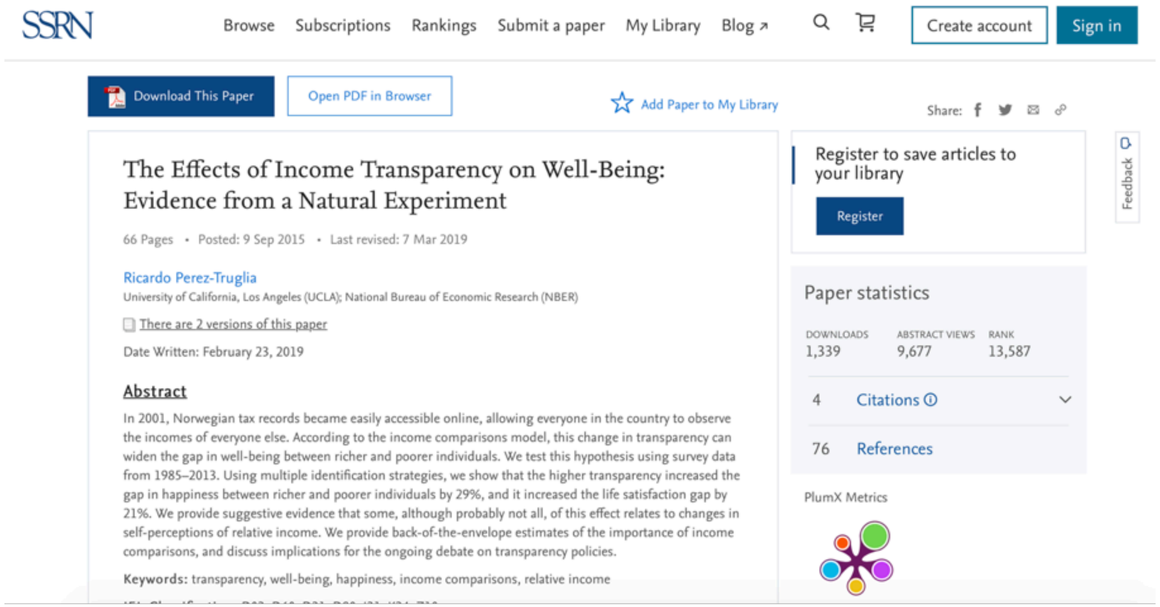


LEARNING TO IMPLEMENT MEASURABLE SOLUTIONS.

9. EXPERIMENTS



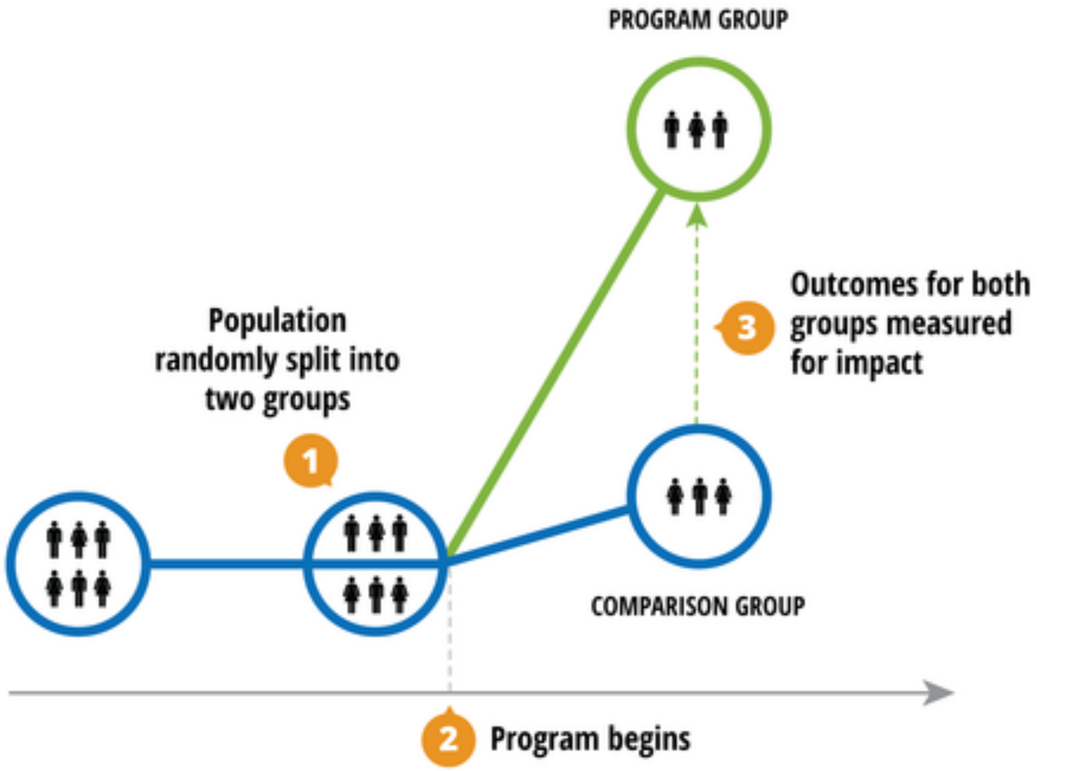
Early example of Natural Experiments:
John Snow's map showing the clustering of cholera cases
in Soho during the London epidemic of 1854



The Effects of Income Transparency on Well-Being: Evidence from a Natural Experiment

Source: Ricardo Perez-Truglia

Randomized Controlled Trials (RCTs)



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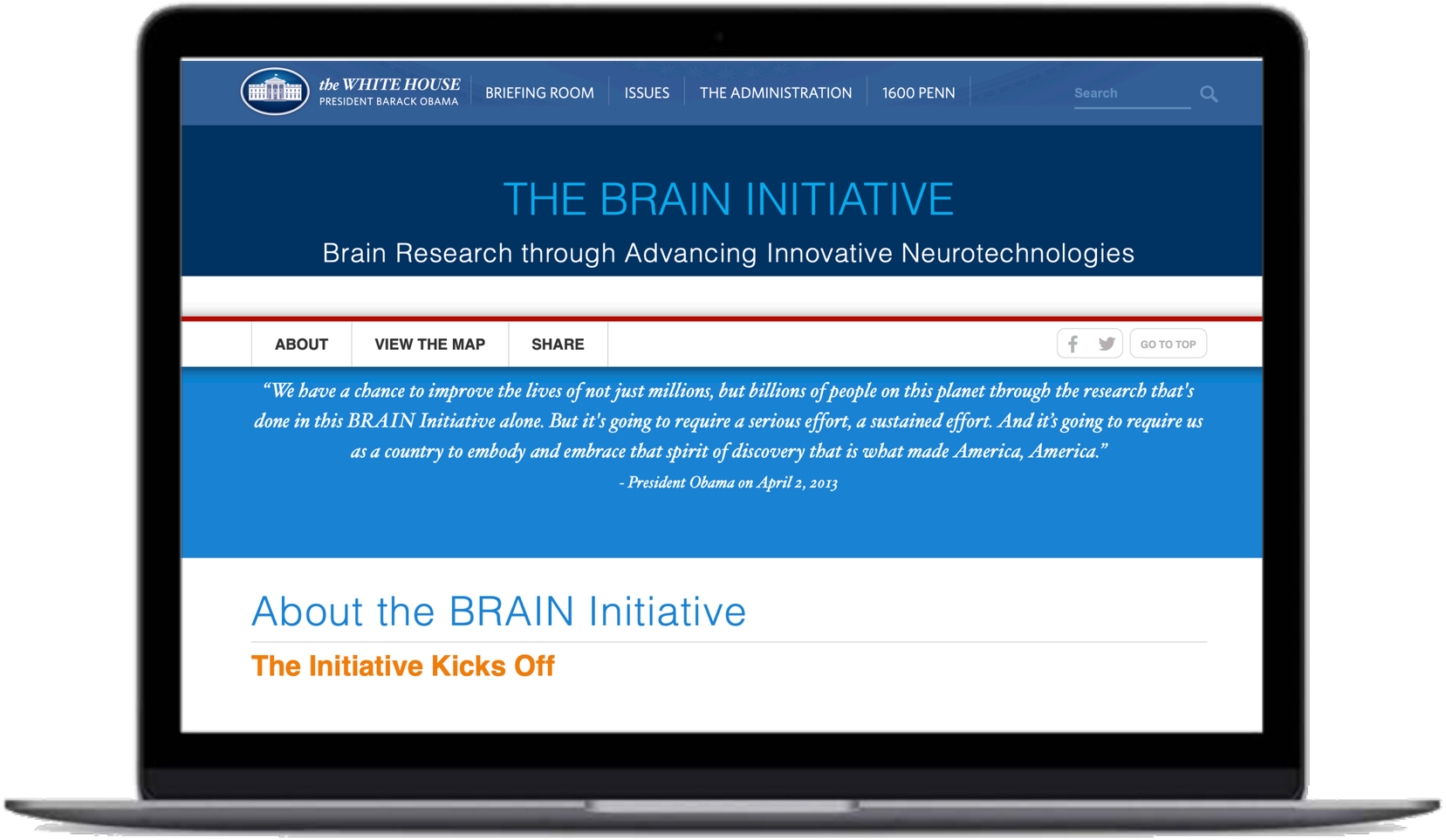
TEST
DRUG
KEEP OUT OF THE REACH OF CHILDREN

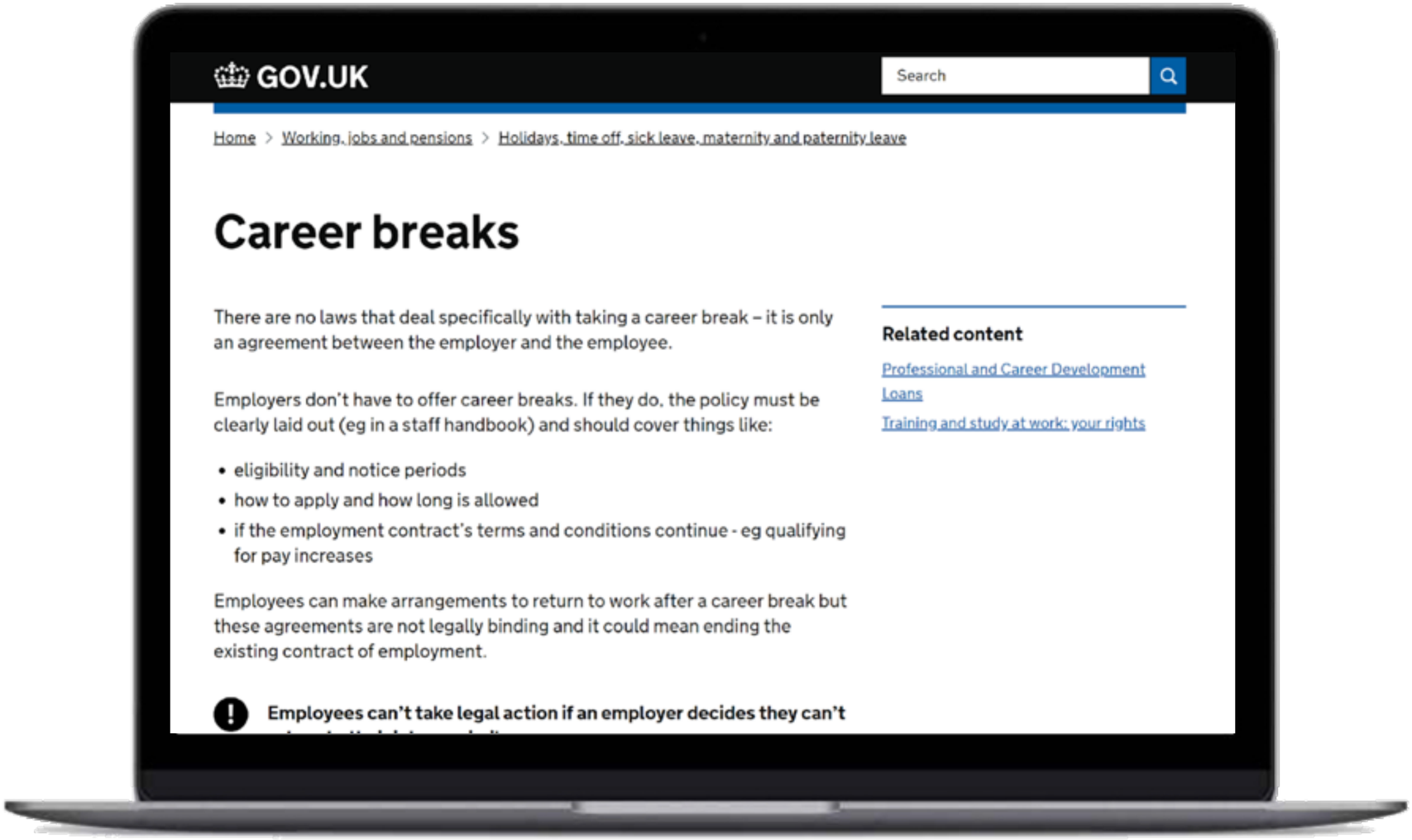

PLACEBO
KEEP OUT OF THE REACH OF CHILDREN

LEARNING TO IMPLEMENT MEASURABLE SOLUTIONS

10. BUILDING COALITIONS FOR CHANGE


the WHITE HOUSE
PRESIDENT BARACK OBAMA
BRIEFING ROOM
ISSUES
THE ADMINISTRATION
1600 PENN
Search
THE BRAIN INITIATIVE
Brain Research through Advancing Innovative Neurotechnologies
ABOUT
VIEW THE MAP
SHARE
GO TO TOP
"We have a chance to improve the lives of not just millions, but billions of people on this planet through the research that's done in this BRAIN Initiative alone. But it's going to require a serious effort, a sustained effort. And it's going to require us as a country to embody and embrace that spirit of discovery that is what made America, America."
- President Obama on April 2, 2013
About the BRAIN Initiative
The Initiative Kicks Off

CATALYZING INNOVATION



CAREER BREAKS, UK

DIEGO PIACIETINI

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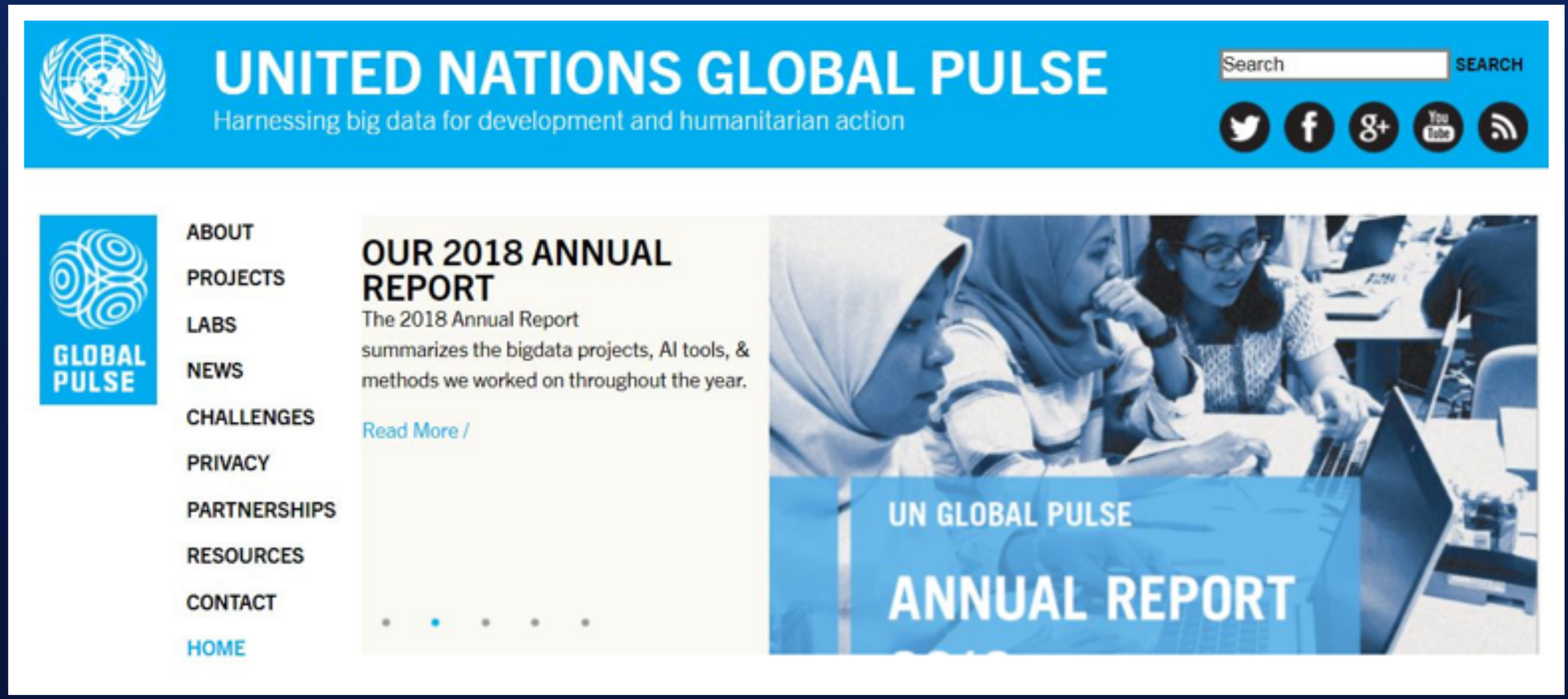
AGILE PROBLEM SOLVING



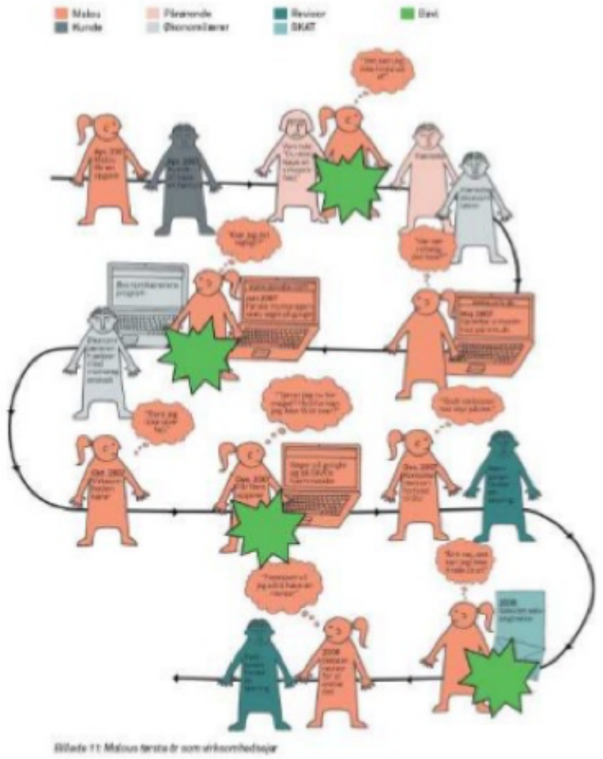
UN GLOBAL PULSE


EXPERIO LAB SVERIGE
Om oss
Labb-miljöer
Vård•Design
Case
Inspirationslådan
Forskning
Ett möte mellan vård och design
Välkommen till Experio Lab Sverige. Vi är en samverkan av flera landsting och regioner runt om i landet. Tillsammans med medarbetare i vården, patienter och närstående utformar vi vårdtjänster som skapar värde i människors vardag.
Läs mer

MIND LAB

The service journey...

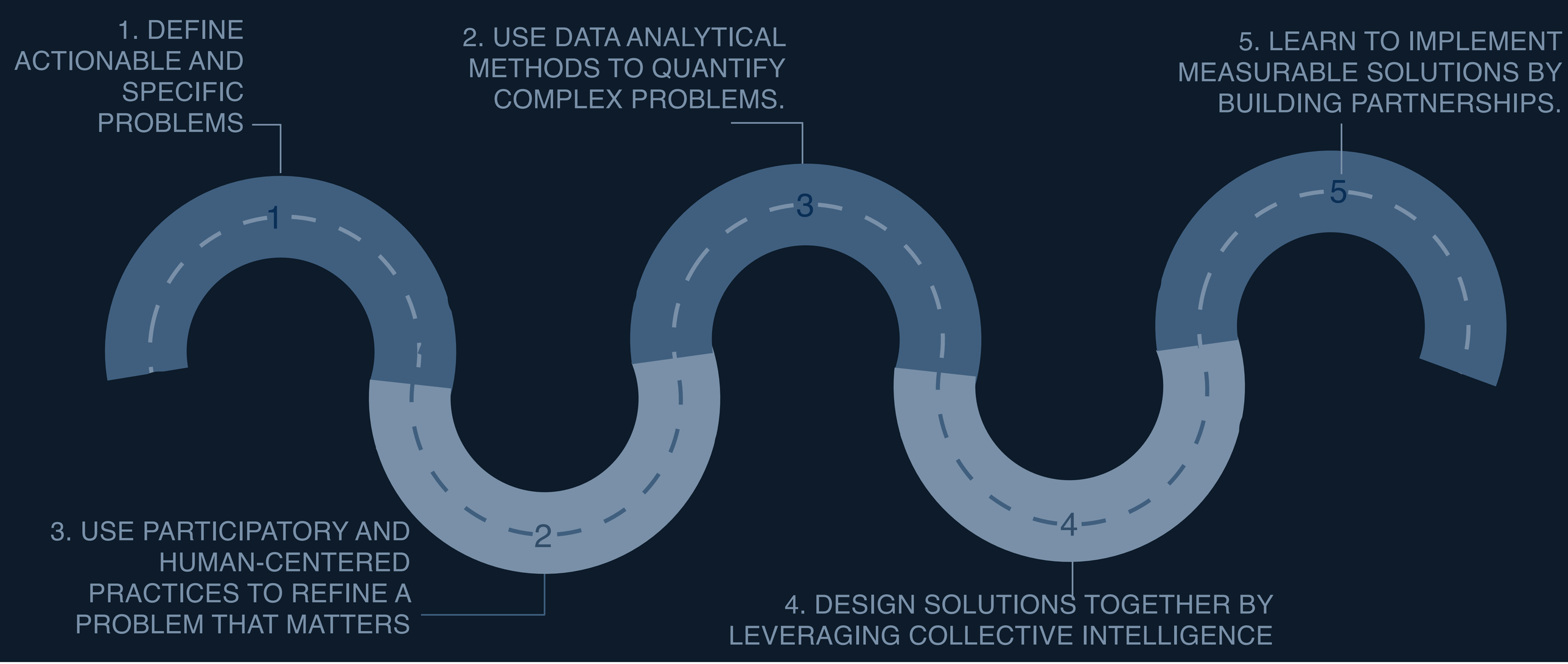
...and points of pain.



MINDLAB, DENMARK

RECAP

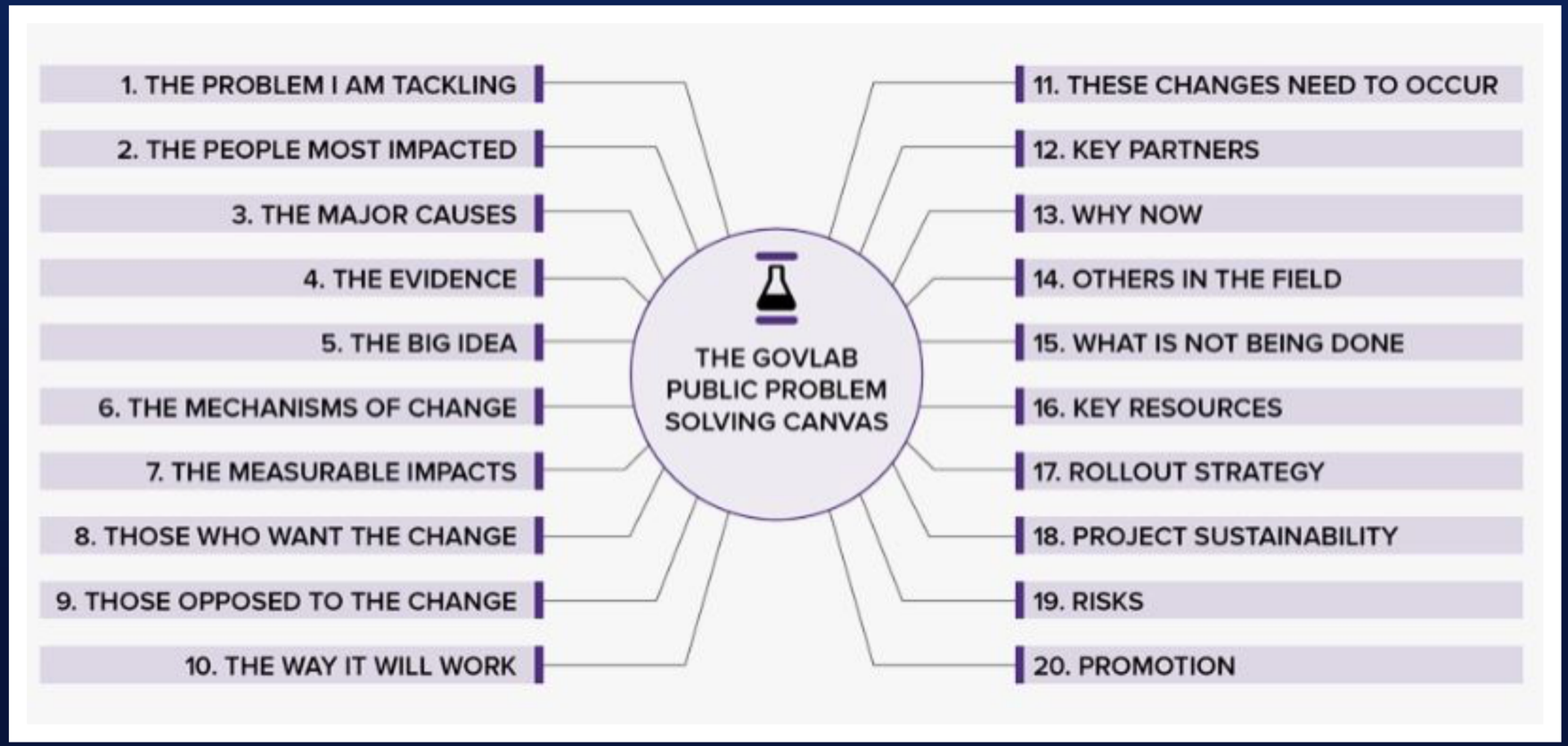
1. Define actionable and specific problems
2. Use participatory and human-centric practices
3. Use data analytical methods to quantify complex problems
4. Design solutions together by leveraging collective intelligence
5. Learn to implement measurable solutions.



THE SKILLSET OF THE PUBLIC ENTREPRENEUR

PUBLIC ENTREPRENEURS MUST LEARN TO SOLVE PUBLIC PROBLEMS

GOVLAB



THE GOVLAB PROBLEM SOLVING CANVAS

SOURCE: CANVAS.GOVLABACADEMY.ORG

THANK YOU