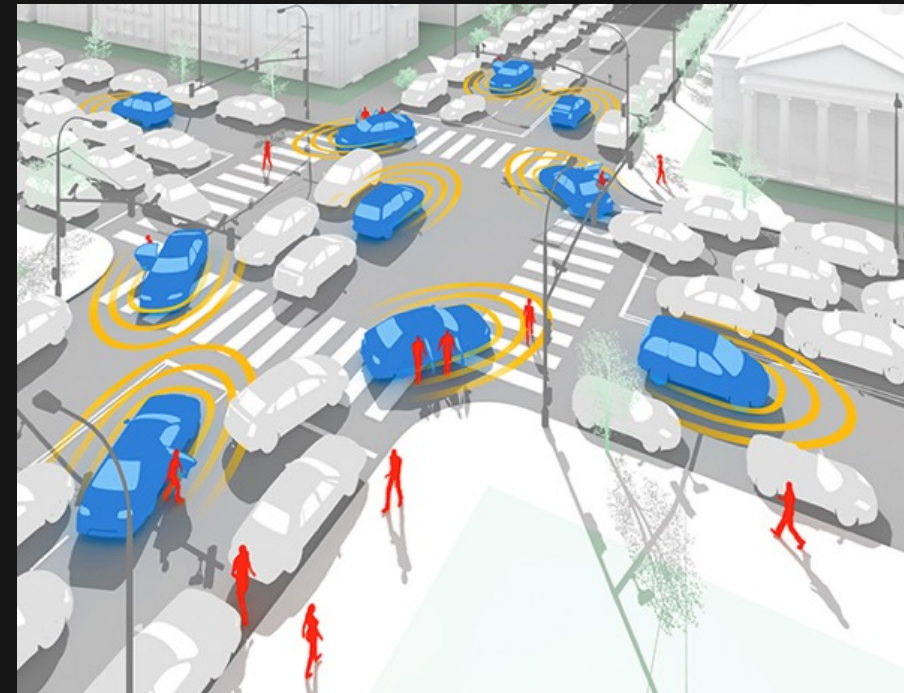# Artificial intelligence that does not discriminate

..my pivotal, galvanizing moment of alarm..

Alice and the unexpected...

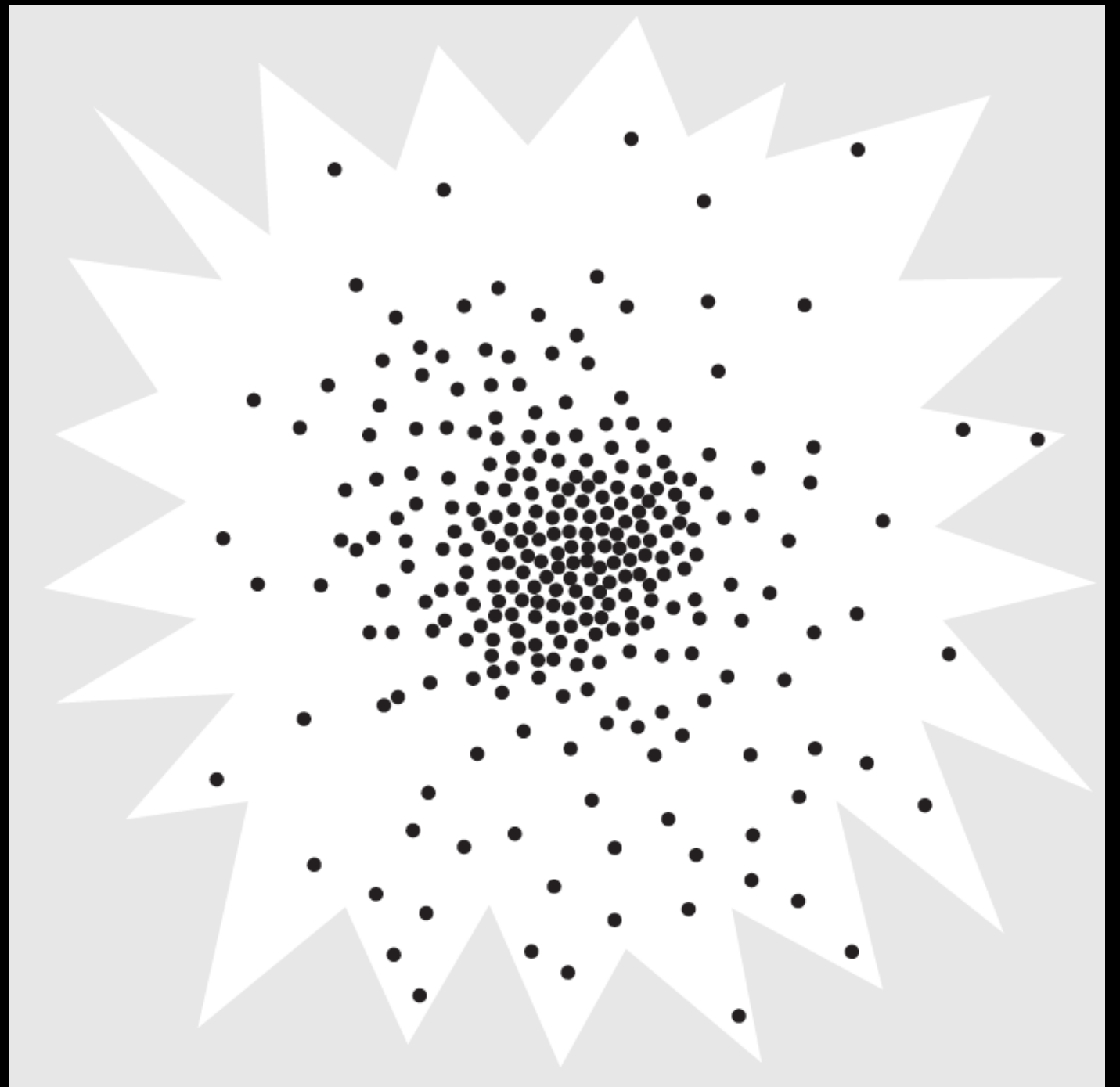# Smarter is not always better…

…more than about automated vehicles,

….same pattern in all population data-based AI

…more than about artificial intelligence

The major flaw..

- Unable to handle diversity & complexity

- Unprepared for the unexpected

- Replicates our own inadequacies

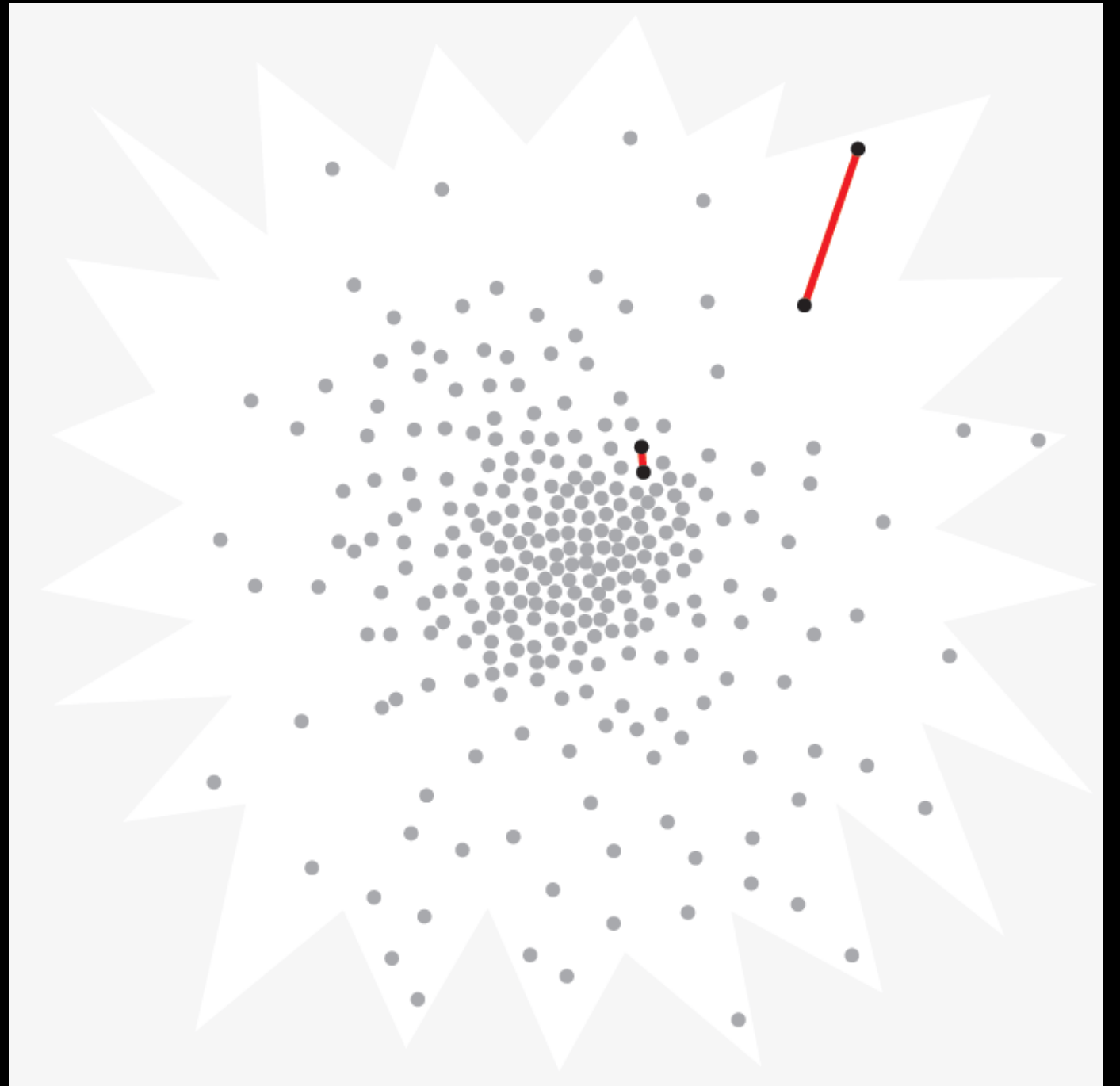- Automates and amplifies them

Our human starburst...

Basis of…

- Pareto principle and 80/20 rule

- Quetelet's notion of the average man

- Normal distribution

- Bell curve, and the tails

- Statistics, probability and basis of prediction

- Any population based or evidence-based decision

Difference…

Design works

Design is difficult to use

Can't use design
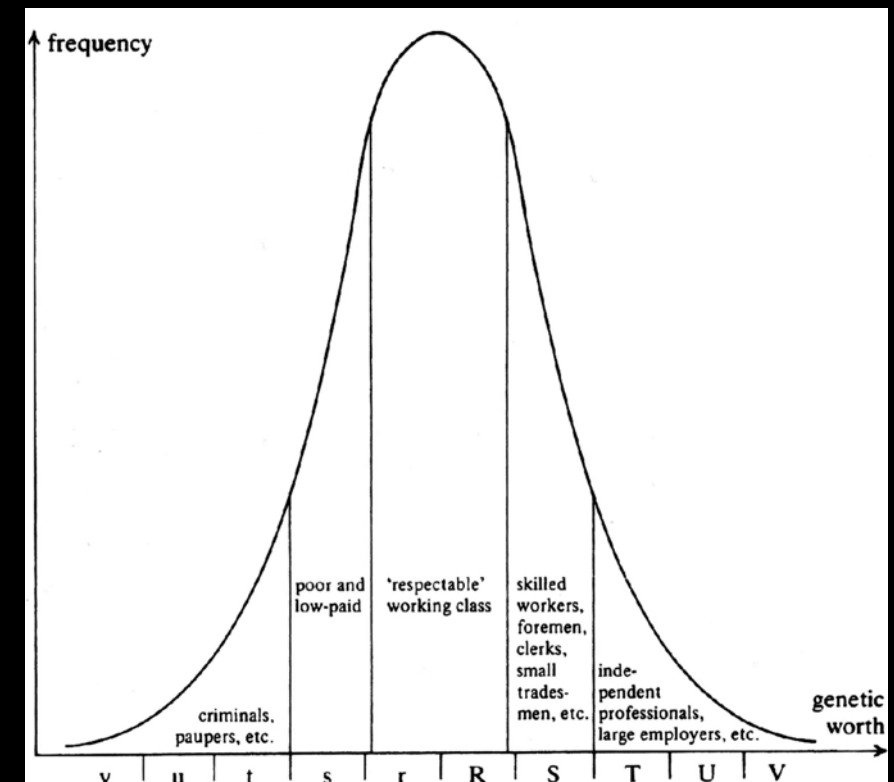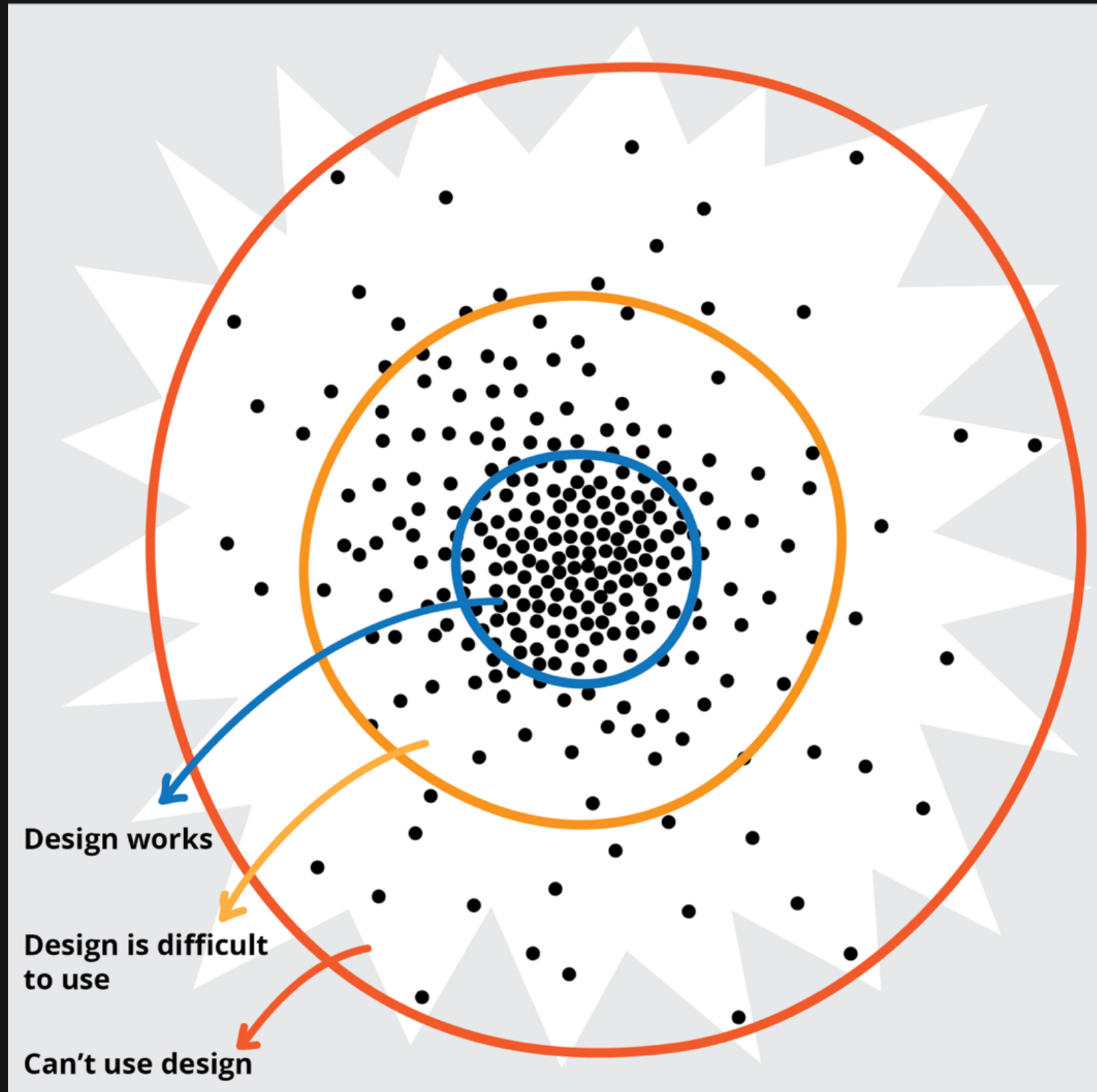
What damage our equity approaches have done…

- You don't fit the categories available

- It becomes your fault that the accessible version doesn't fit you

- You feel even more excluded and stranded

DESIGN
Misfit

PRODUCTS
↓ Availability
↓ Reliability
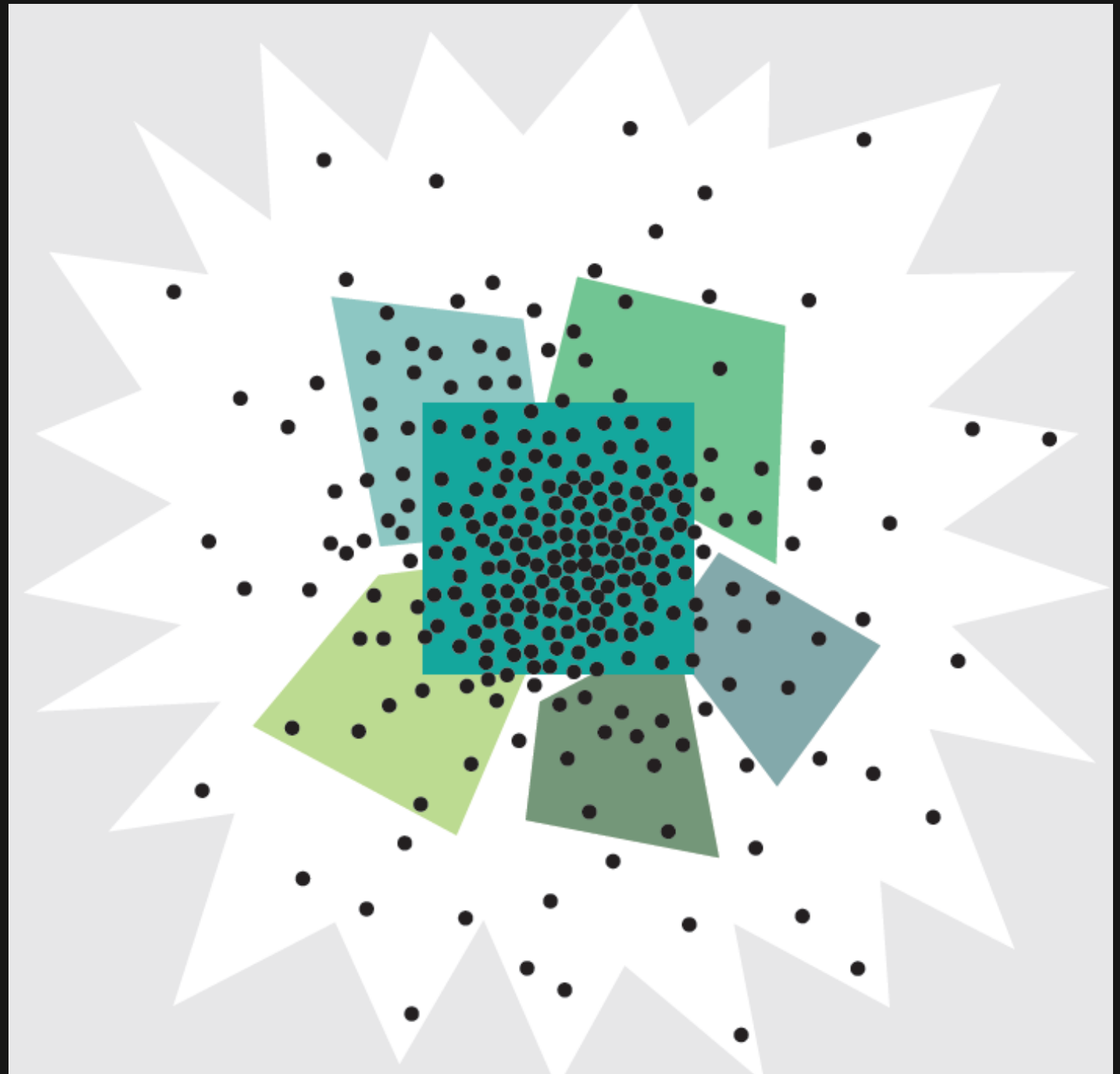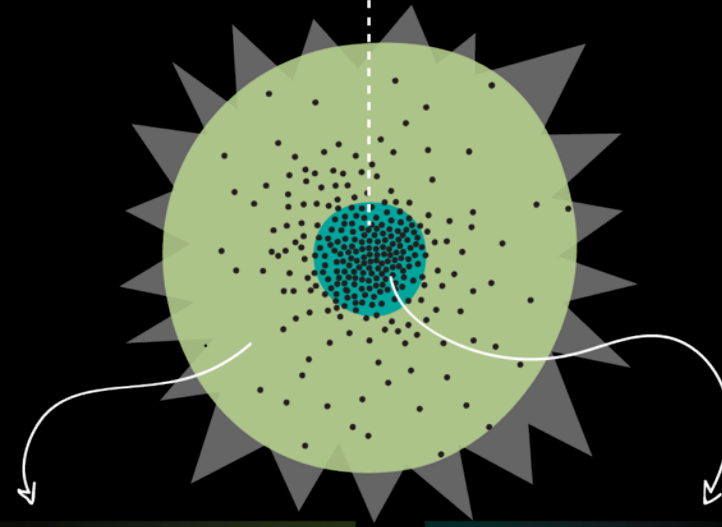↓ Functionality
↑ Cost

KNOWLEDGE
TRUTH: EVIDENCE
Ignored
Not Recognized
Not Understood

EDUCATION
Exclusion
Mismatch & Failure

WORK
Exclusion & Barriers

DEMOCRACY
Charity & Pity
Protest & Transgression

DESIGN
Fit

PRODUCTS
↑ Availability
↑ Reliability
↑ Functionality
↓ Cost

KNOWLEDGE
TRUTH: EVIDENCE
Regression to the mean
Normalization & Homogeneity
Statistical Significance & Power
The Standard

EDUCATION
Competition
Ranking & Conformance

WORK
Replaceable Workers

DEMOCRACY
Majority Rules

20 %

80 %

Afterthought Bolt-On

Mass Production

Segregated & Special

Mass Communication

Treated as Other Mass

Mass Marketing

Coralled into Categories

Popularity Push

↓ **Innovation**

- Greater Conformance
- Lock-in

↓ Flexibility

↓ Extensibility

↓ Resilience & Responsiveness

Room for Change
& Growth
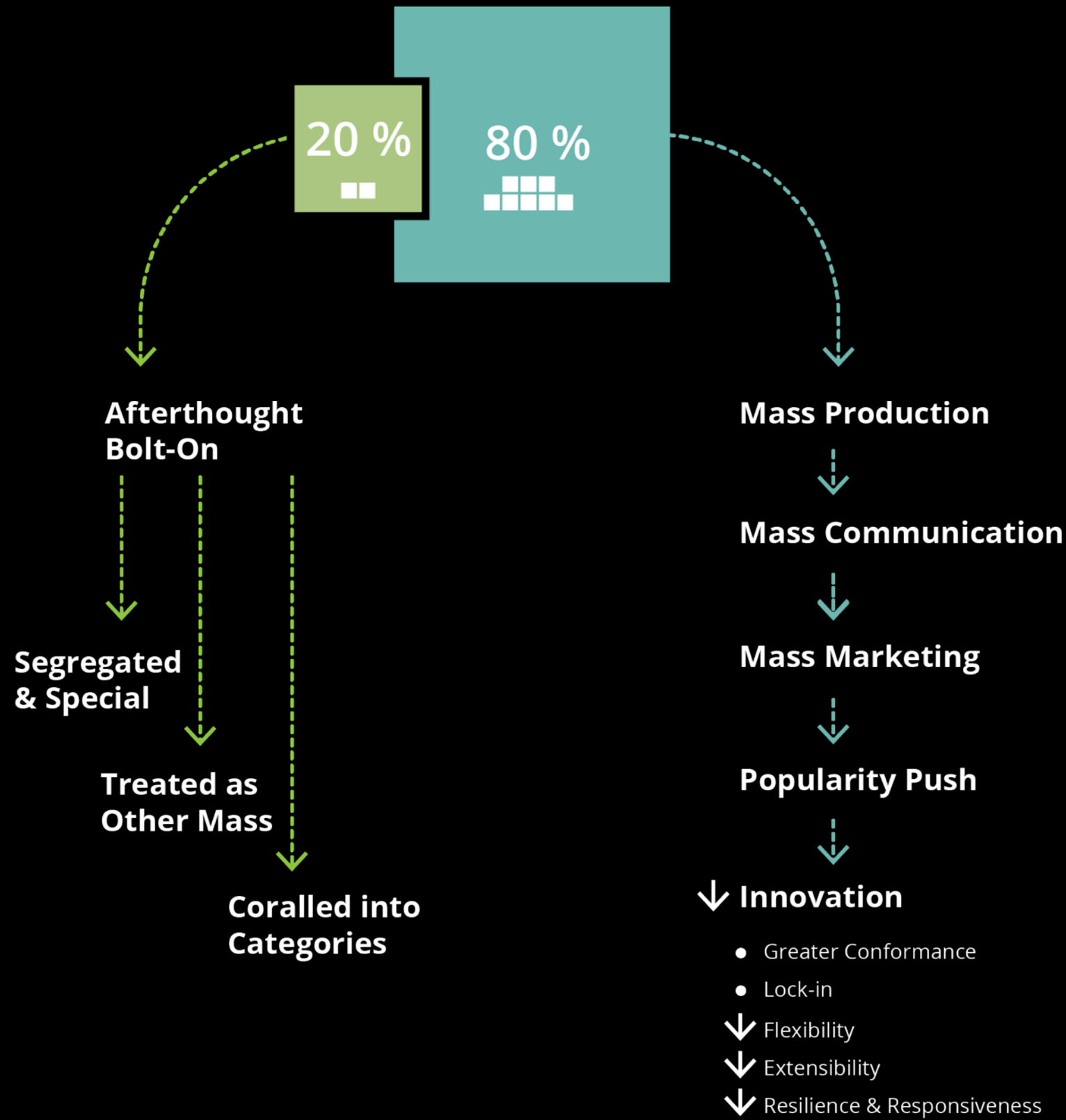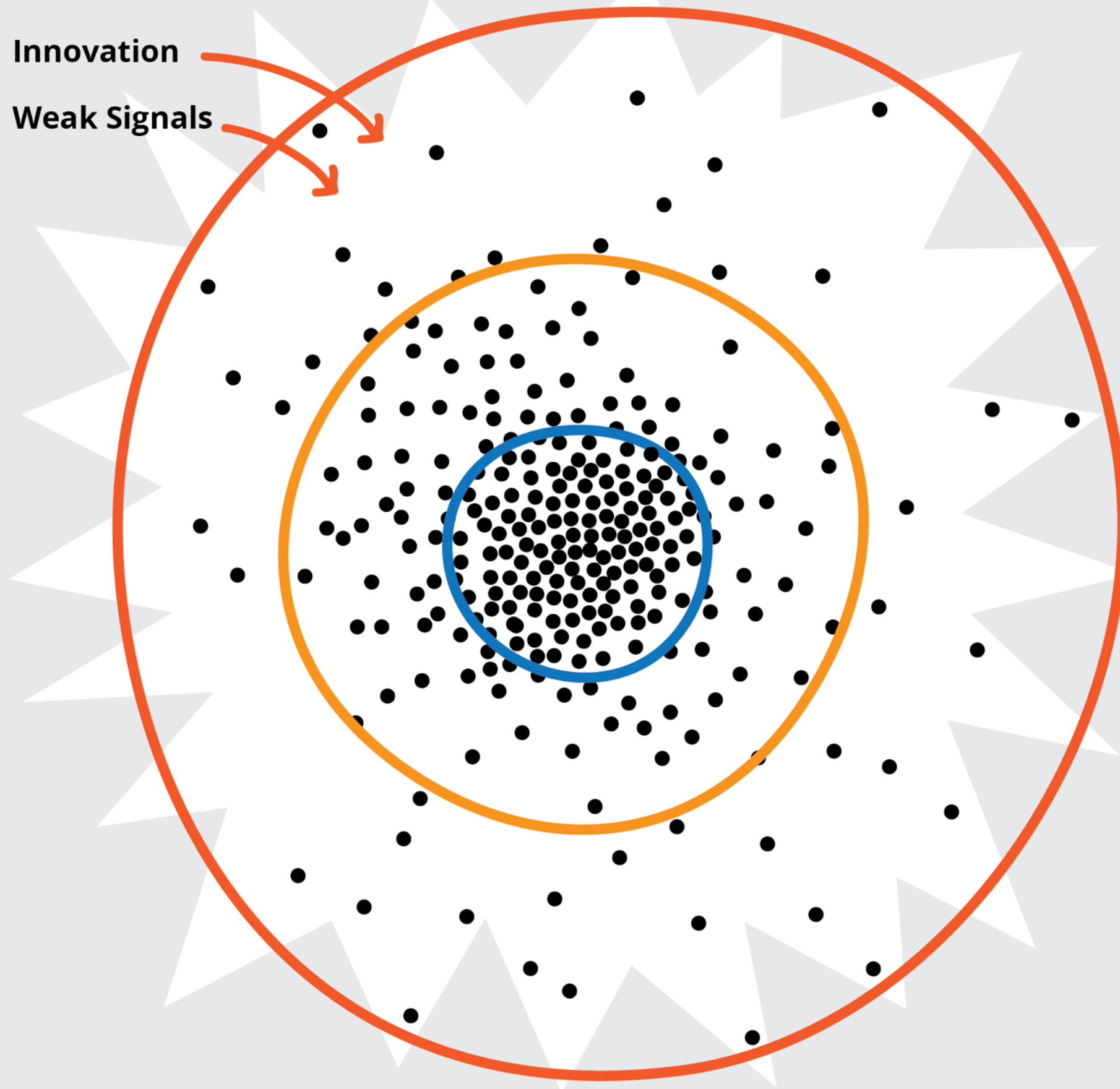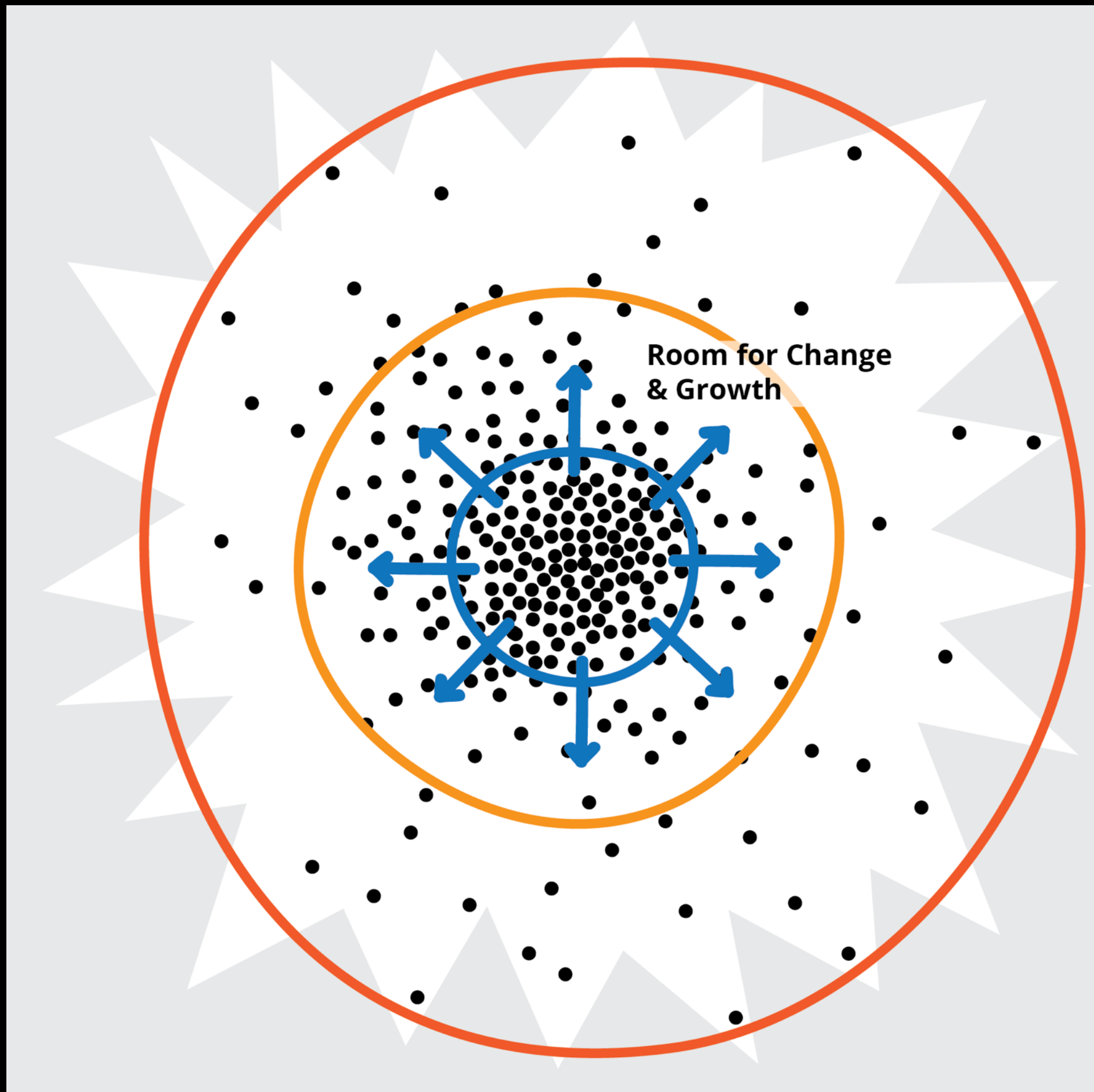
How do we tackle this issue?

Inclusive Design..

One-size-fits-one - recognizing diversity, integrated, self-knowledge

Inclusive process – co-design – diverse team- "who is missing?"

Benefit-for-all - intervention in complex adaptive system
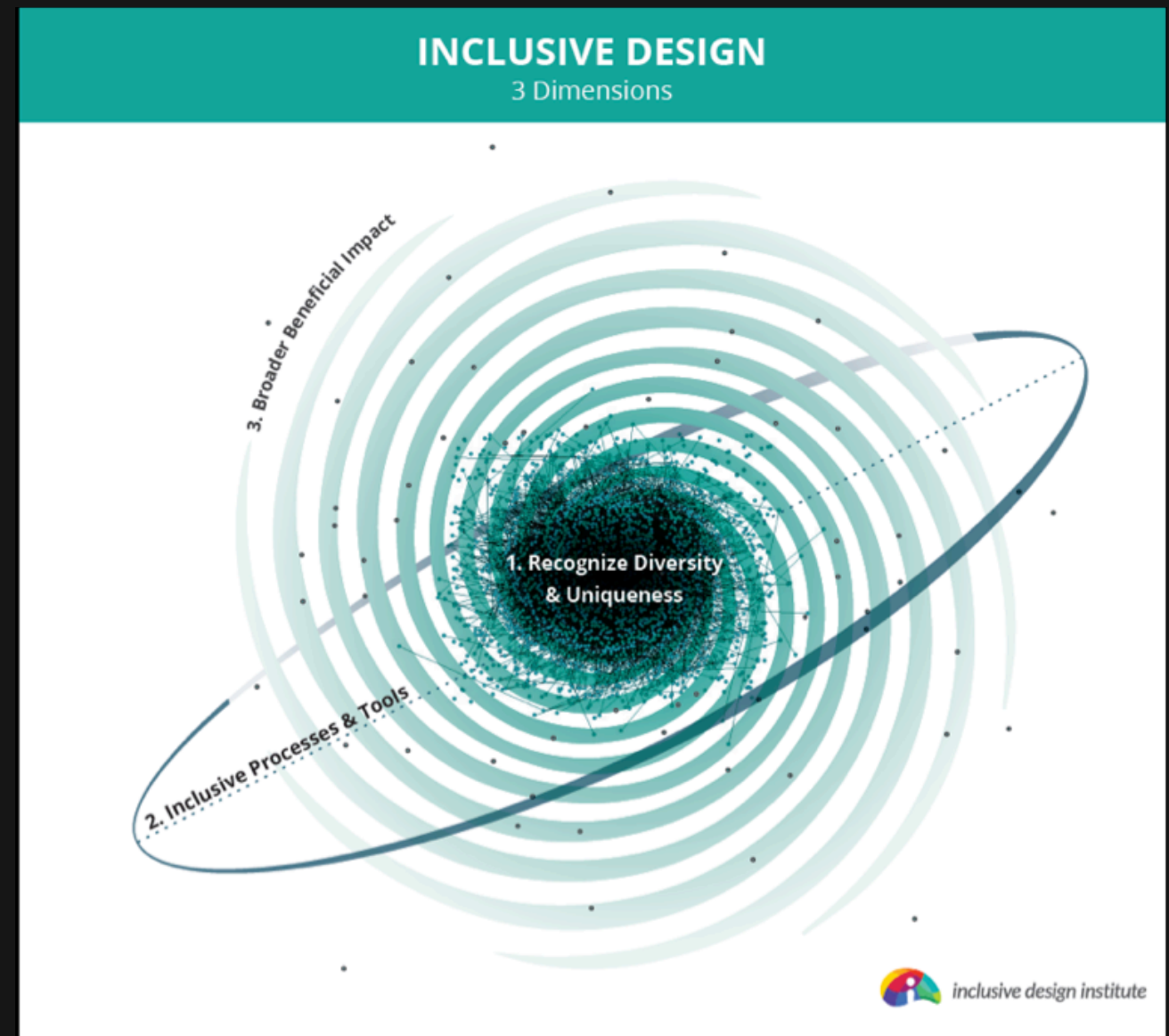
From one-size-fits-all to one-size-fits-one

- Recognizing diversity & variability

- All the criteria in an integrated system

- Extensible infrastructure

- Based on the person, the goal and the context
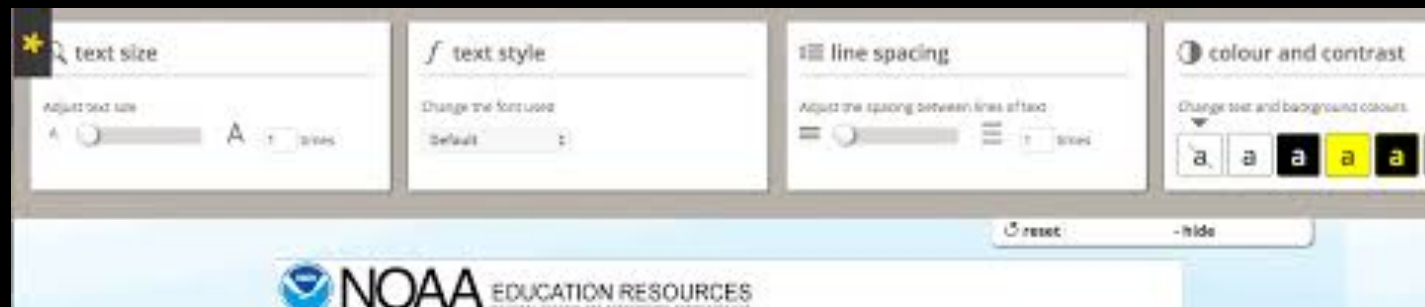
The good & bad side of personalization…

- Personalizing the interface

- Not creating an echo-chamber

- People like us with insider language

- Need exposure to difference

Not invite into a system that is not made for you...

"Project We Count"

community of people experiencing disabilities propose:

problems

data gaps

research Questions

people with disabilities with expertise in problem

other subject matter experts

more inclusive data collection, processing, analysis & visualization methods

IDRC CO-DESIGN & DEVELOP

more accessible data tools

award stackable credentials to workshop participants

organize workshop to address challenge

recruit co-designers

co-design & implement
- data collection
- processing
- analysis
- presentation

DATA PLATFORM COOP

co-design approach to problem/barrier using data insights

- implement approach
- monitor & map progress
- gather feedback
- evaluate results

current & prospective employers propose:

barriers

data gaps

relevant staff & prospective staff

refine & adjust approach using data & feedback

privacy
+
personal data preferences

integrate data into data sets & tools into mainstream market

award inclusive design certificates to employers & employees

augmented reality
+ data + modelling

- escaping the data of the past

- community imaginaries

- Jane Jacob walks

- what if….

JANE JACOBS WALK
walk   observe   connect

Leveraging platforms

- connecting consumers at the edge with producers and suppliers at the edge

- non-extractive platforms governed and owned by the workers

PLATFORM CO-OP DEVELOPMENT KIT
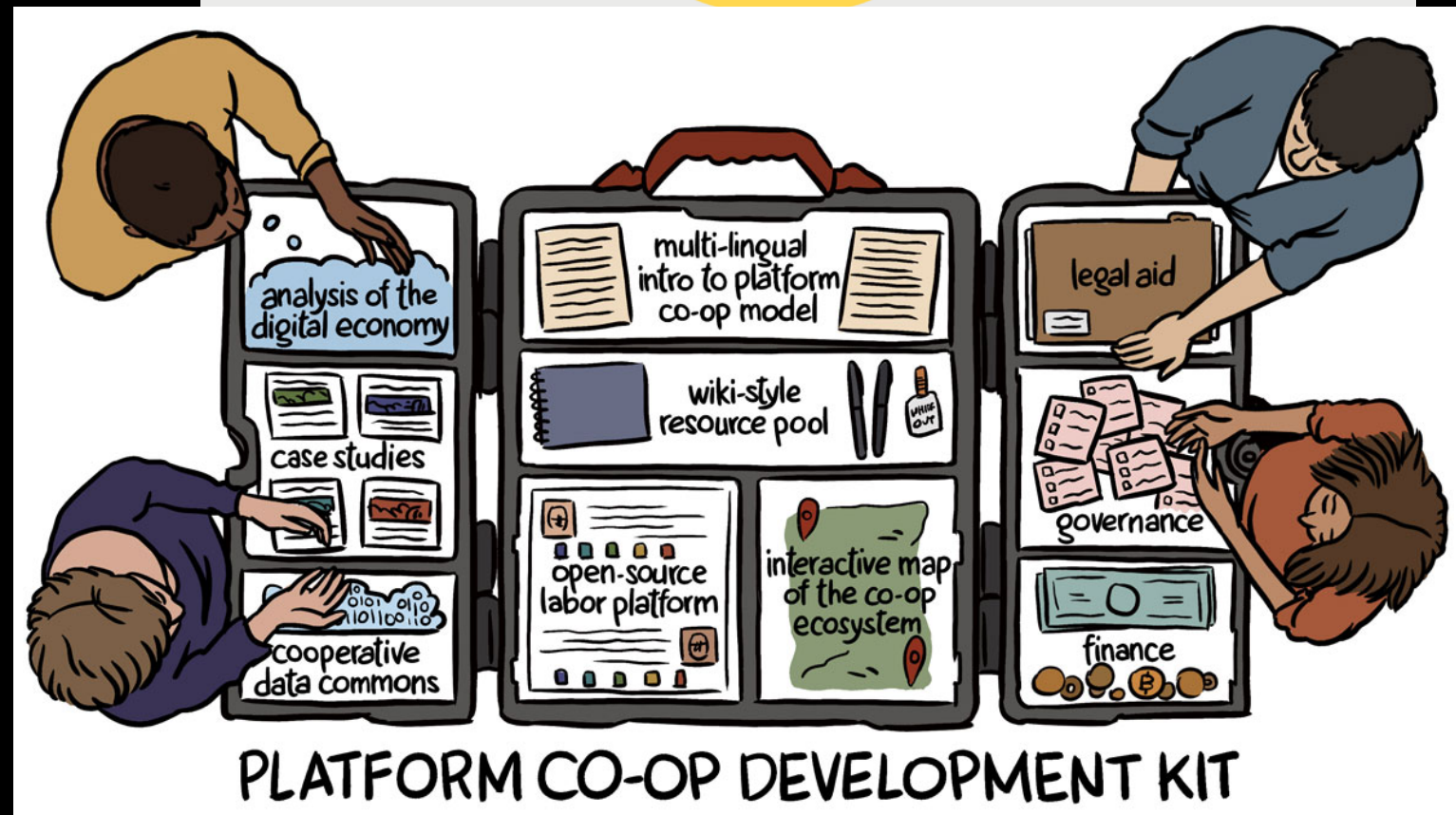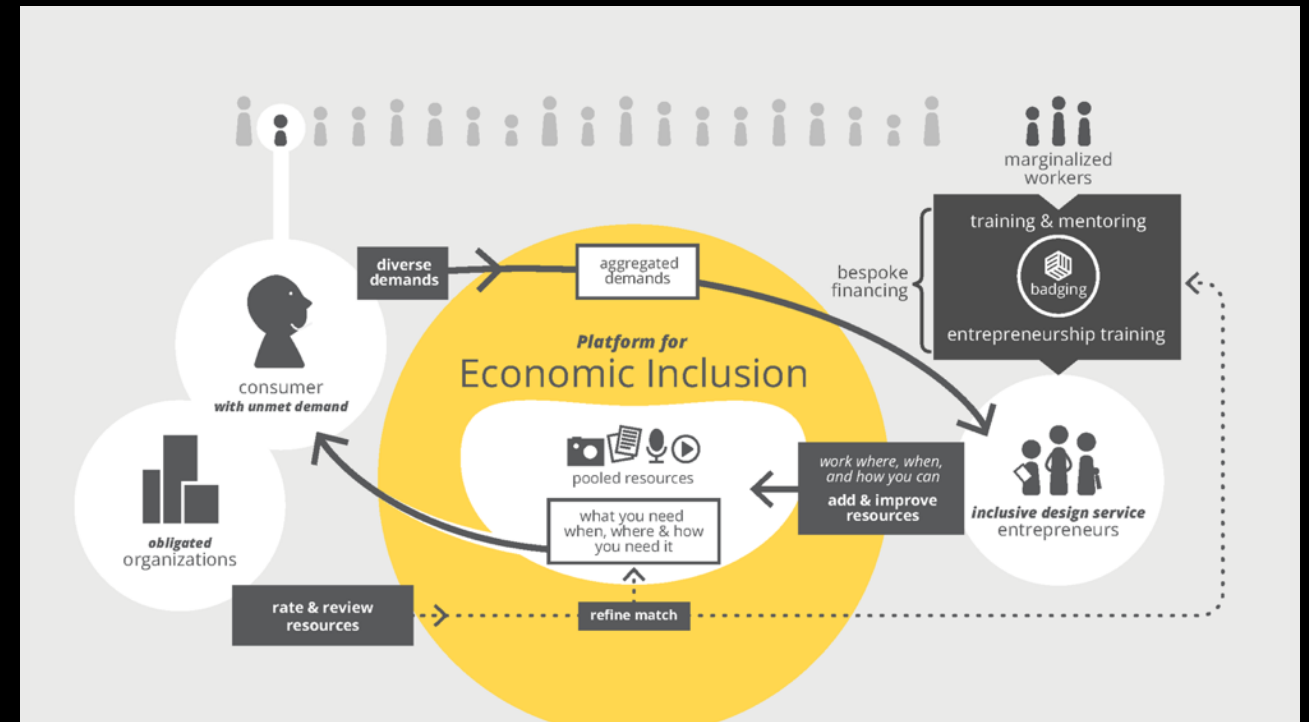
Overwhelming task?

- Non-linear logic models

- alternatives to gantt and pert

- measuring diverse, distributed, diffuse impact

- Iterating to stretch to the edge

Inclusive Design Mapping Tool

Finding the gap

- Yourself
- Product

DEXTERITY

- needs an alternative to a pointing device
- needs a modified pointing device
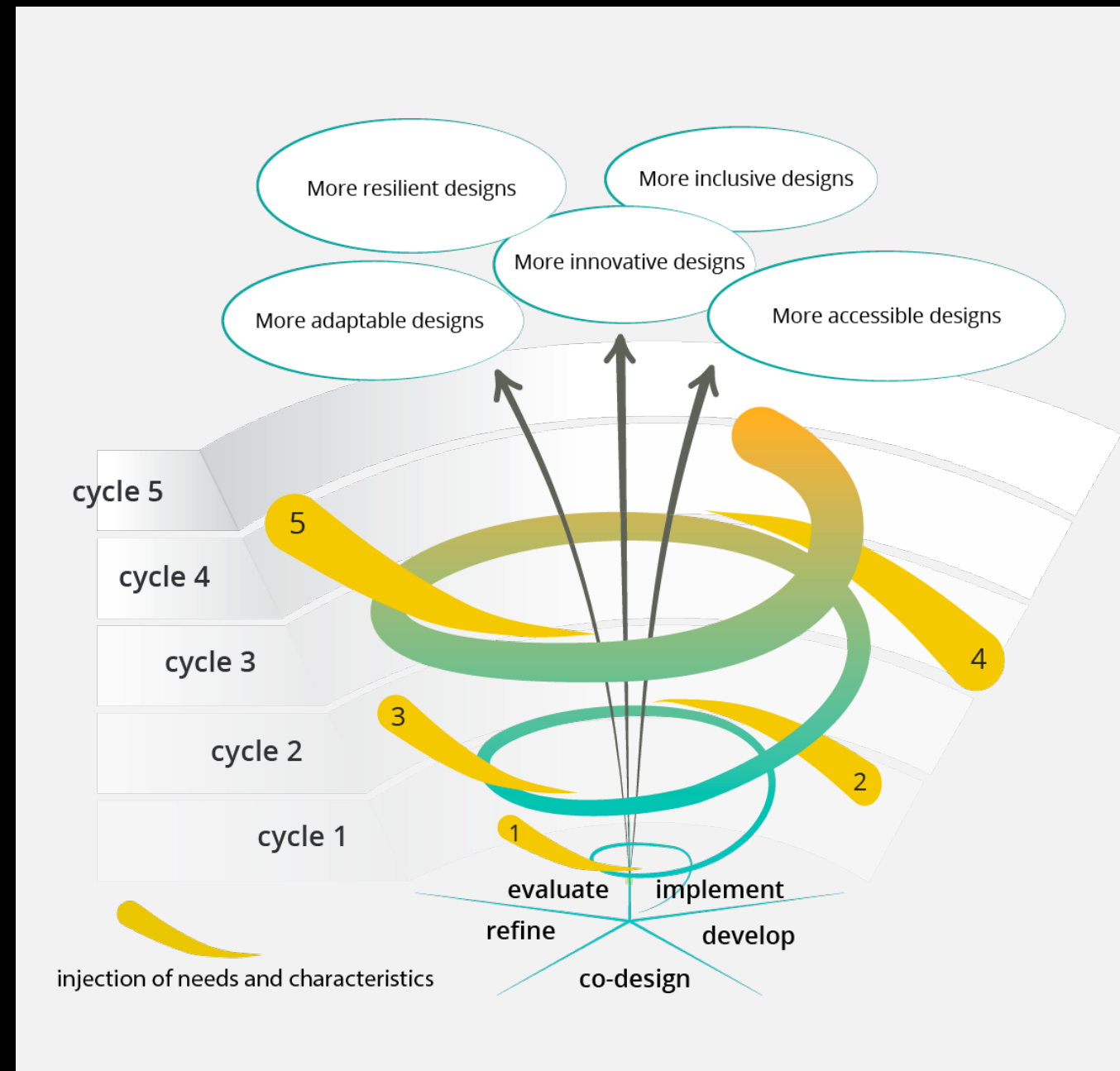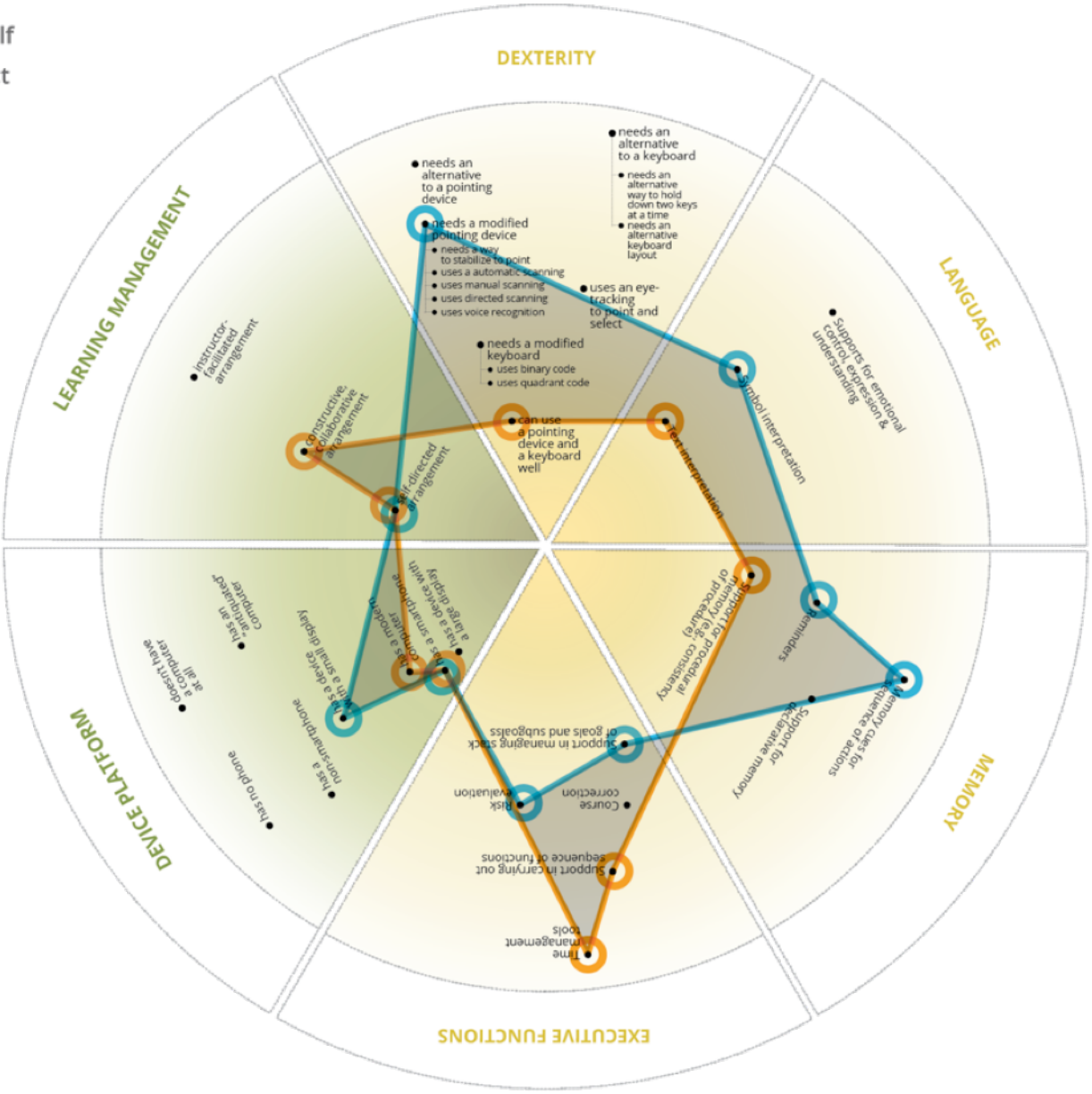 - needs a way to stabilize to point
  - uses a automatic scanning
  - uses manual scanning
  - uses directed scanning
  - uses voice recognition
- needs a modified keyboard
  - uses binary code
  - uses quadrant code
- can use a pointing device and a keyboard well
- needs an alternative to a keyboard
- needs an alternative way to hold down two keys at a time
- needs an alternative keyboard layout
- uses an eye-tracking to point and select

LANGUAGE

- Supports for emotional control, expression & understanding
- Symbol interpretation
- Text interpretation

MEMORY

- Support for procedural memory (e.g. consistency of procedure)
- Support for declarative memory
- Memory cues for sequence of actions

EXECUTIVE FUNCTIONS

- Support in managing stack of goals and subgoals
- Course correction
- Risk evaluation
- Support in carrying out sequence of functions
- Time management tools

DEVICE PLATFORM

- has a device with a small display
- has a device with a large display
- has a device with a monitor
- has an internet connected computer
- Computer doesn't have a mouse
- has a non-smartphone
- has a phone

LEARNING MANAGEMENT

- instructor-facilitated arrangement
- constructive, collaborative arrangement
- self-directed arrangement

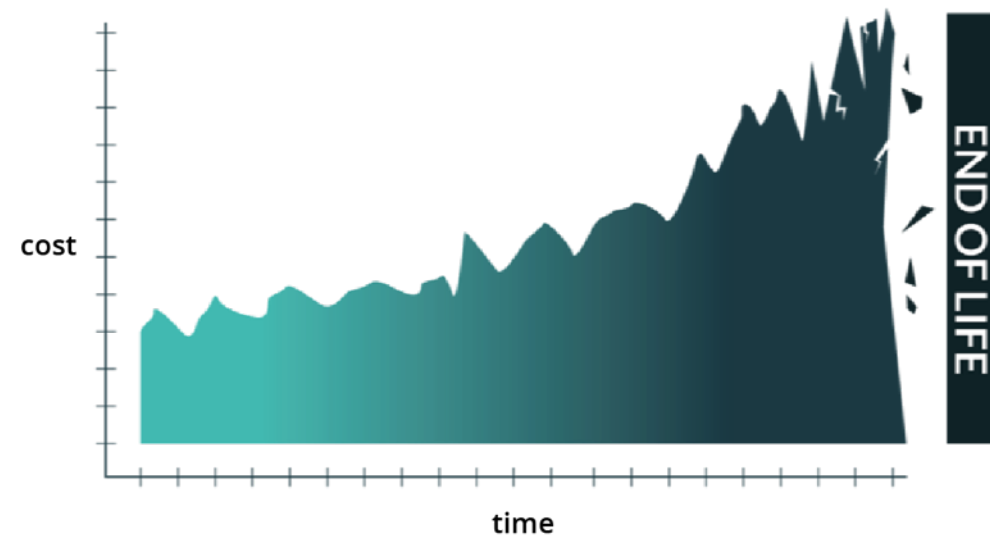# Interoperability is a major issue for people that use alternative access systems ..
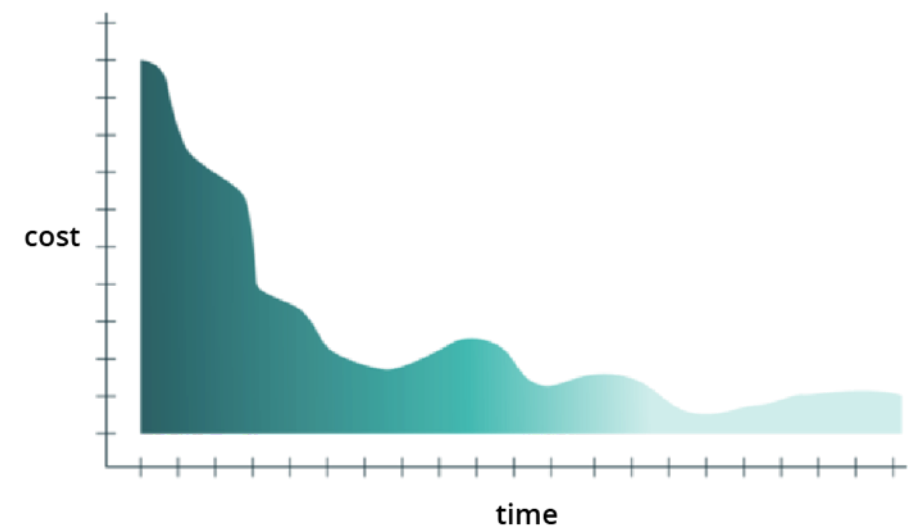
Do privacy protections work?

Data Impasse?

- Beyond current privacy protections

- Too easy to re-identify

- Personal data preference standard

- Data cooperatives – a self-governed data trust

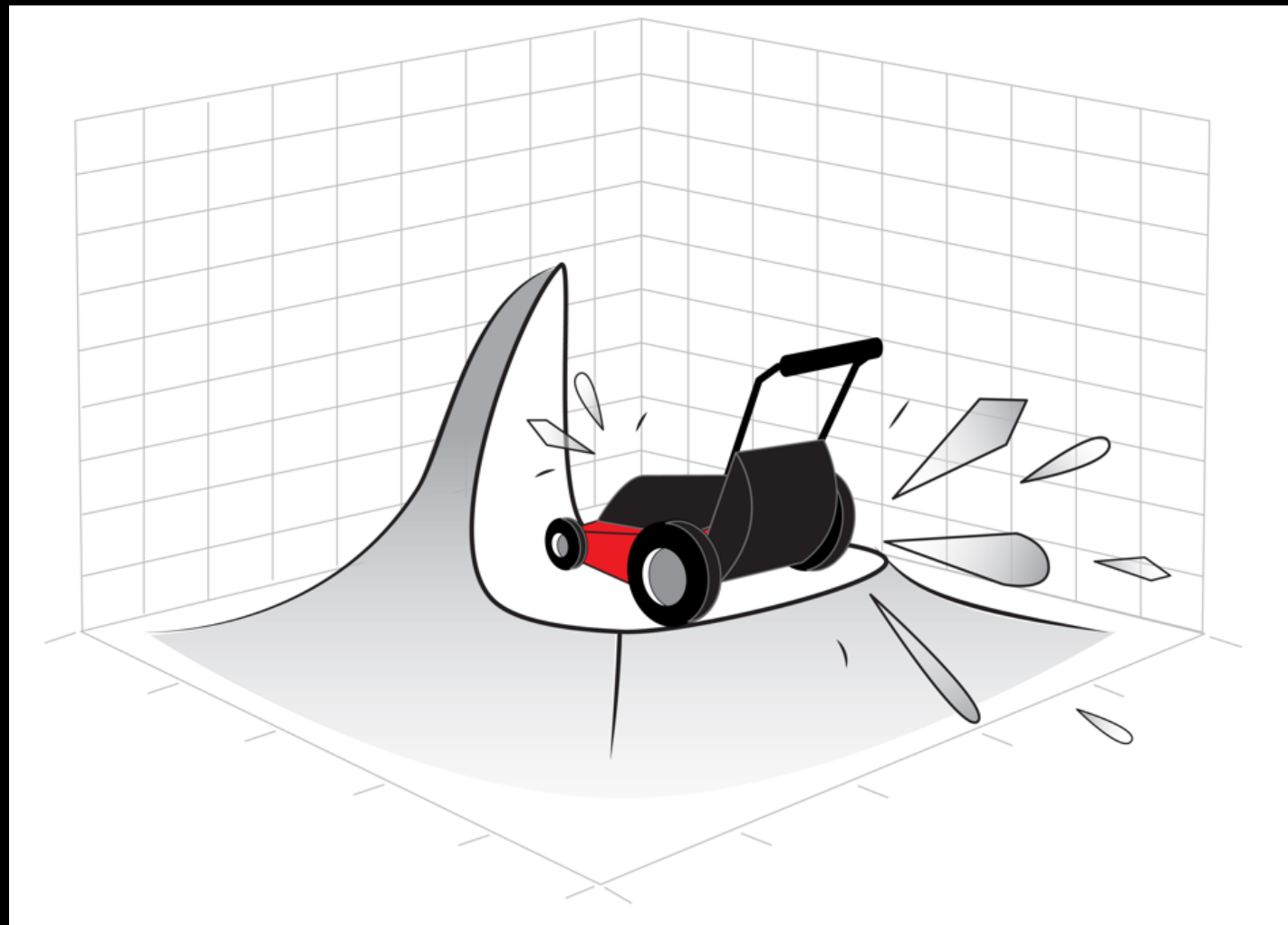# Cost over time and longevity of system..

"lawnmower of justice"

Intelligence & design that understands, recognizes and serves diversity....

- **Better able to**

  - **respond to unexpected**

  - **detect risk**

  - **adapt to change**

  - **transfer to new contexts**

- **Greater longevity**

- **May reduce disparity…**

- **May lift us out of our current ruts…**

Continuing the conversation:

- https://idrc.ocadu.ca

- https://inclusivedesign.ca

- https://deep.idrc.ocadu.ca

- @juttatrevira

- https://medium.com/@jutta.trevira

Questions??