

Public Engagement of Data Science and AI

How to ensure that science and technology build trust and work for the public good

The
Alan Turing
Institute



About Me

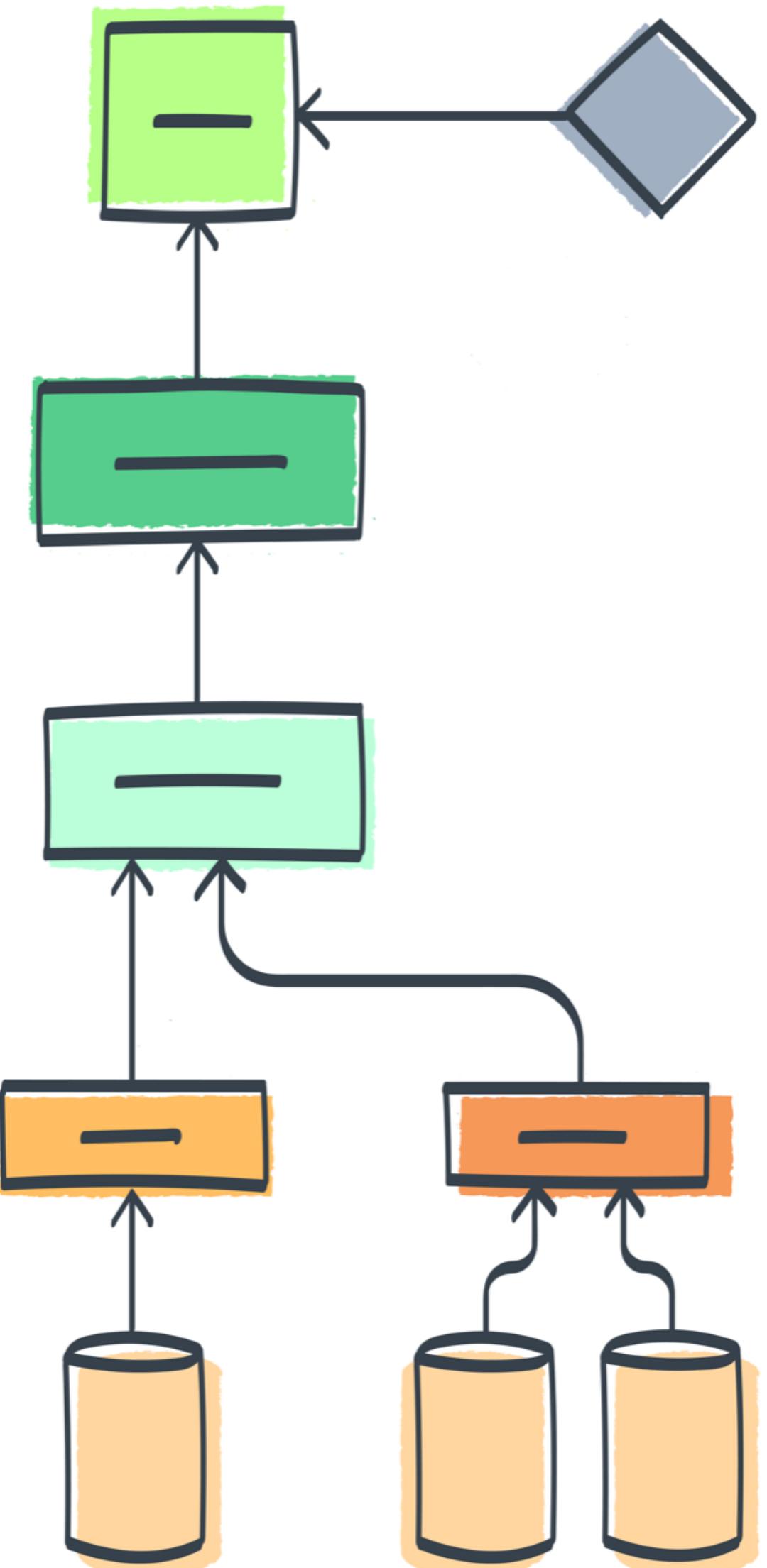
Dr Christopher Burr

I'm an Ethics Fellow in the Public Policy Programme, and a Philosopher of Cognitive Science and AI.

I'm also a lover of technology, rock climber, and an (annoyingly) proud dad!



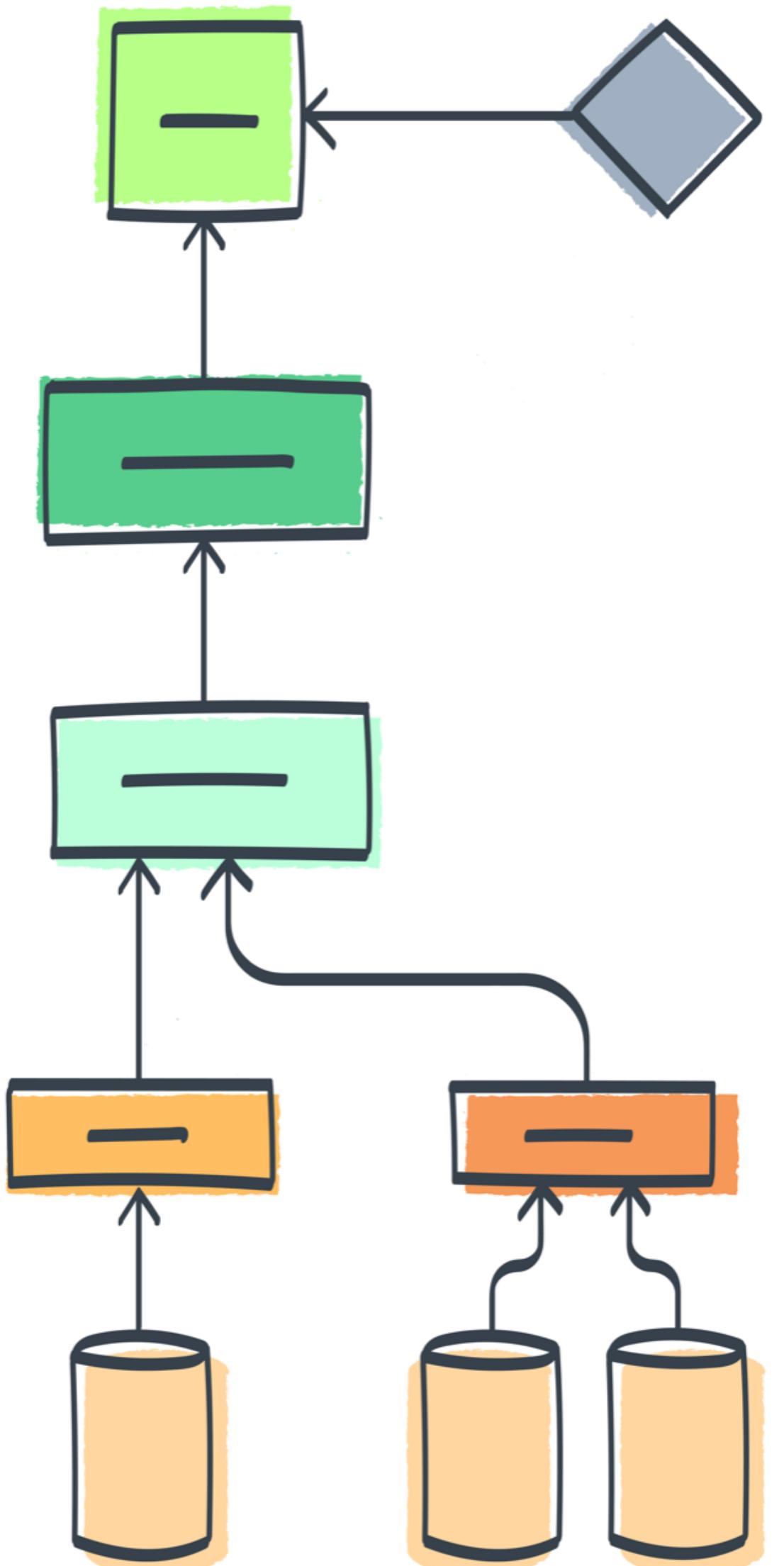
About the Course!



Schedule

About this Course

1. What is Public Engagement?
2. The Values of Public Engagement
3. Facilitating Public Engagement
 - Guest Lecture (Professor David Spiegelhalter)
4. Public Communication
5. Public Trust and Assurance

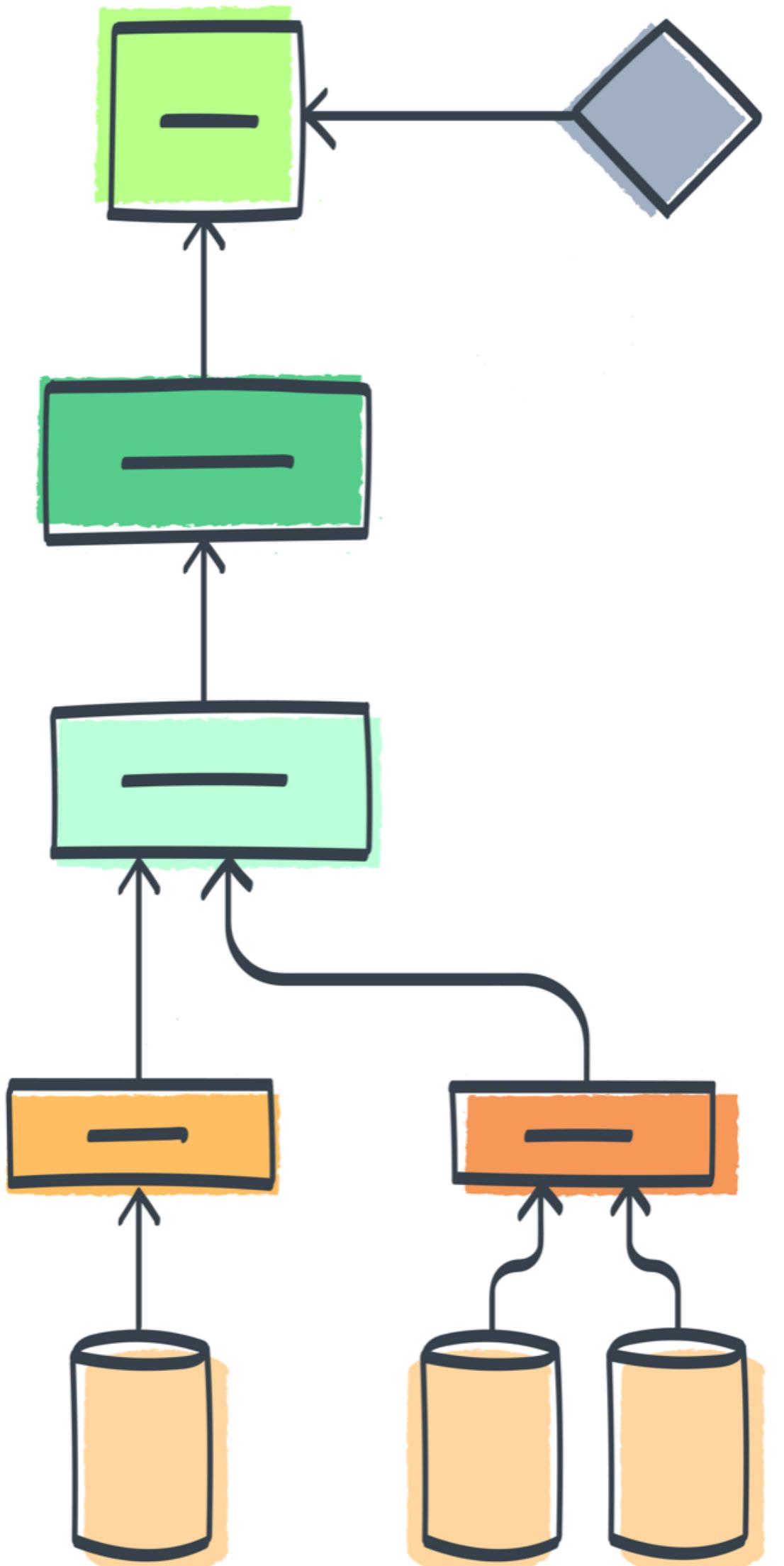


Learning Objectives

About this Course

This guidebook has the following learning objectives:

- *Critically examine what 'public engagement' is, the goals associated with different types of public engagement, and to identify the associated values.*
- Understand the different stages of public engagement as they apply to the typical activities of a *data science or AI research/innovation project*.
- Explore *practical methods* and activities that can help build more effective forms of public engagement.
- Identify the elements of public engagement that help build a more *trustworthy data and AI ecosystem*.

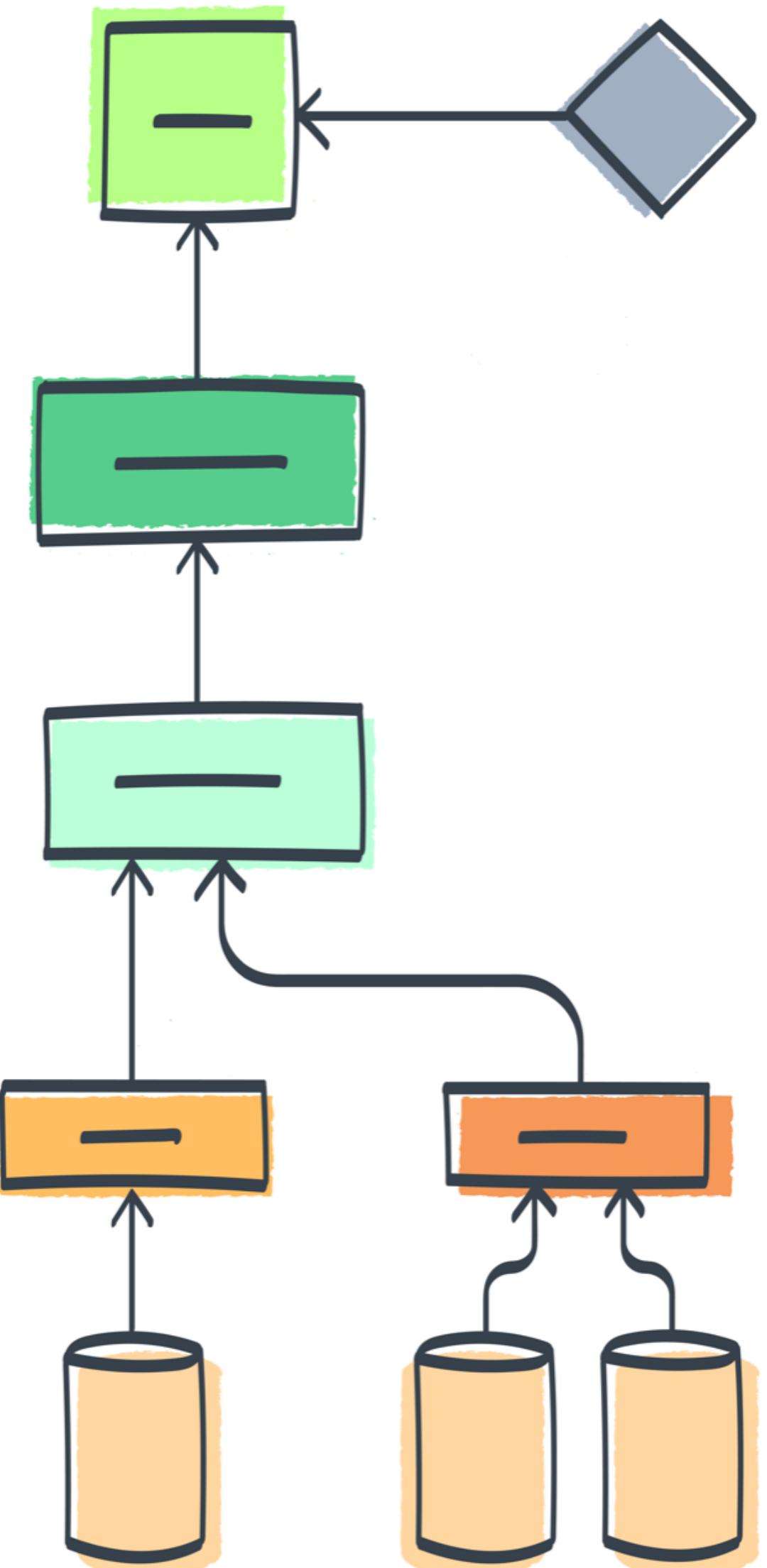


Requirements

About this Course

The following will be used throughout this course:

- Zoom (Plenary Sessions and Breakout Rooms, Chat)
- HackMD (Collaborative Note-Taking)
- Mural (Interactive Whiteboard)
- Slack (Communication)
- GitHub (Raising Issues and Contributing)
- Additional...?



Guidance

About this Course

- Please remain on mute when you are not talking.
- Raise hand if you want to talk during plenary.
- Try to keep your video on in breakout groups.
- Take part using whatever medium you are comfortable using.
- **Disagree but don't be disagreeable!**

About You!

Who are you?

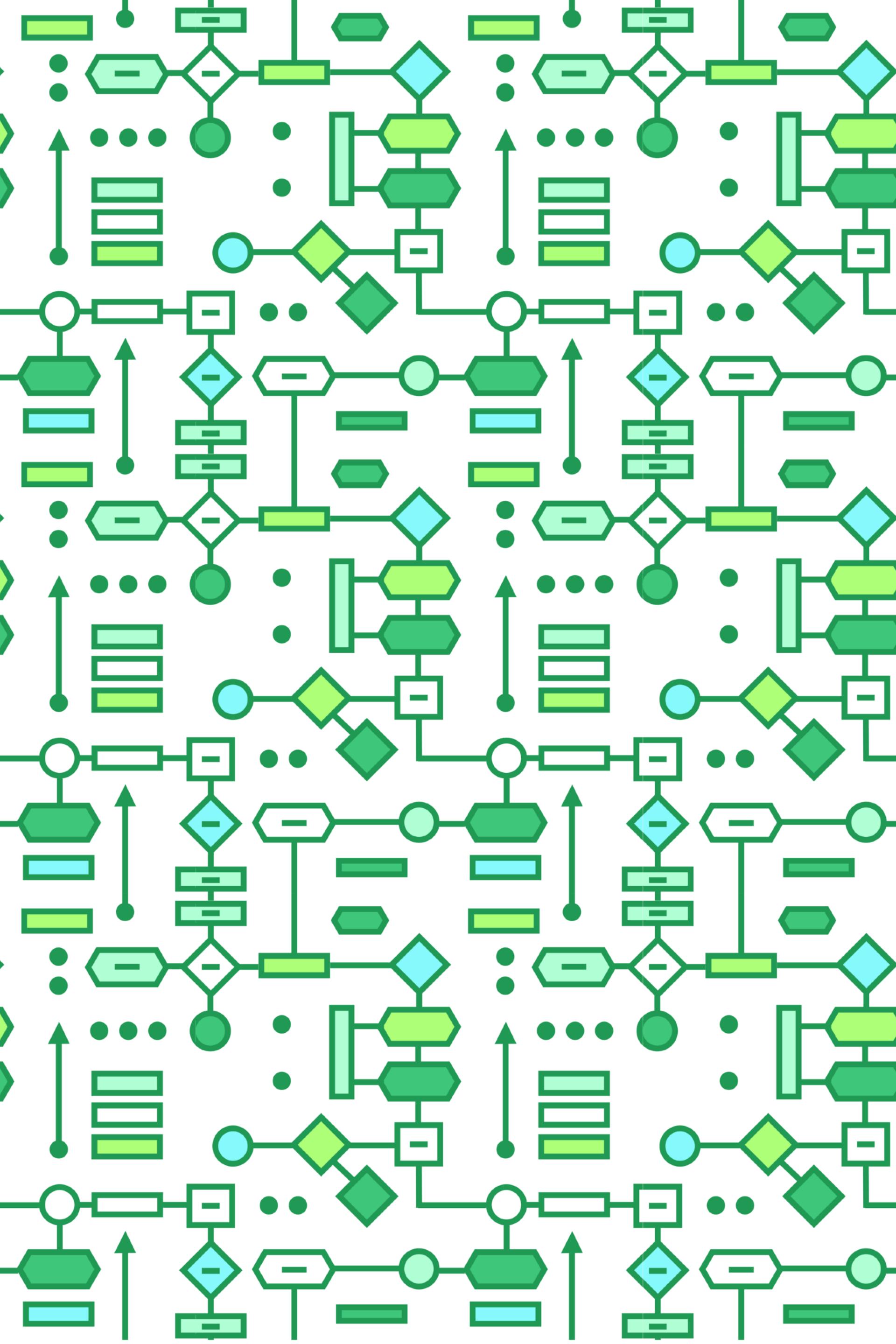
Which area do you work in?

**If you could live in any book or film,
which one would you choose?**



Introduction

What is Public Engagement?





Climbing the Ladder

Arnstein's Ladder of Public Participation

In 1969, Sherry Arnstein published 'A Ladder of Citizen Participation'—a typology of different forms of public participation in science and research.

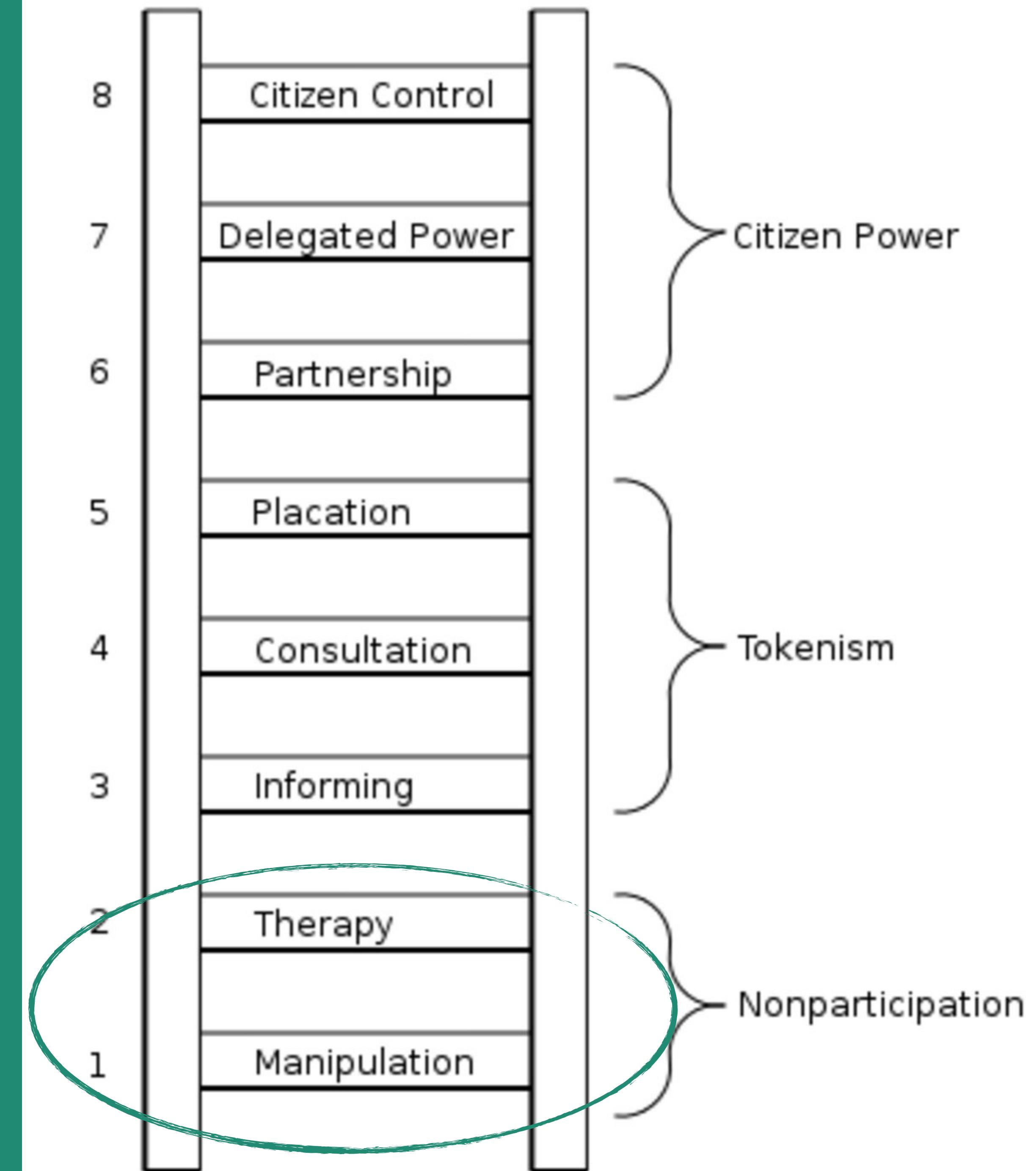
The ladder comprised rungs, organised into three groups:

- Citizen Power
- Tokenism
- Nonparticipation

Climbing the Ladder

Nonparticipation

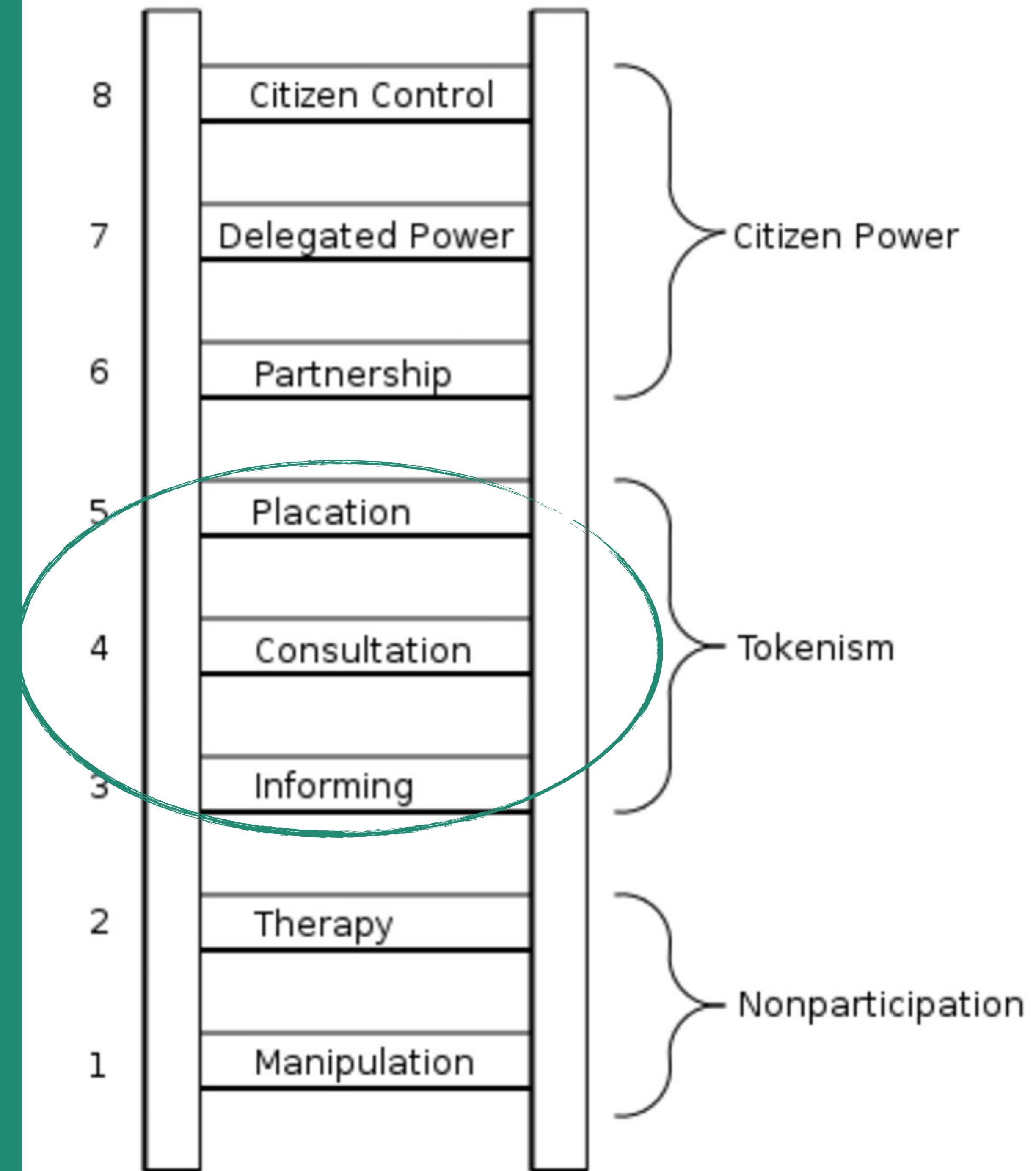
These rungs describe forms of participation that have been "contrived by some to substitute for genuine participation". However, the goal of these *non-participatory* forms of public engagement are often to enable those in power (e.g., researchers) to "educate" participants.



Climbing the Ladder

Tokenism

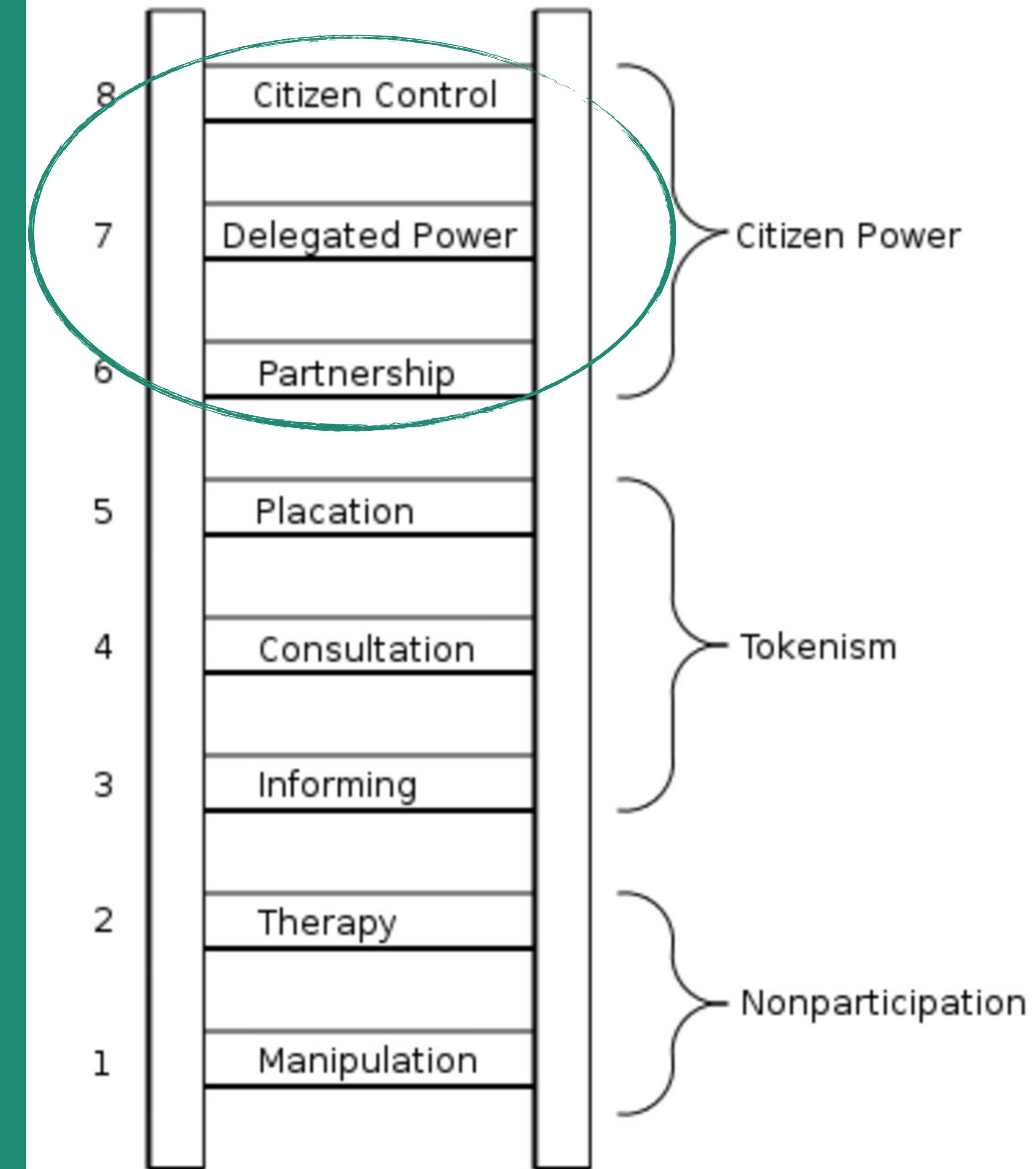
These rungs afford participants a voice but only insofar as their views serve the interests of those who hear them. Participants still lack any real sense of power in such forms of engagement, as researchers still make the final decision based on pre-determined goals or values.



Climbing the Ladder

Citizen Power

The higher rungs empower participants to an increasing degree. Where members of the public can enter in partnerships with researchers, they will likely be granted autonomy over decisions. However, the extent to which this power is truly delegated or under the control of the participants may be limited at this level.





Arnstein's Ladder Critiques

- Publication is over 50 years old
- Model is, like all models, a simplification (a heuristic)
- Does not offer insights into how power imbalances can be addressed
- Unable to capture differences between domains (e.g. healthcare versus education)
- Nevertheless, it has remained relevant

The 'Ladder of Engagement and Participation'

There are many different ways in which people might participate in health depending upon their personal circumstances and interest. The 'Ladder of Engagement and Participation' is a widely recognised model for understanding different forms and degrees of patient and public involvement, (based on the work of Sherry Arnstein⁷). Patient and public voice activity on every step of the ladder is valuable, although participation becomes more meaningful at the top of the ladder.

Devolving	Placing decision-making in the hands of the community and individuals. For example, Personal Health Budgets or a community development approach.
Collaborating	Working in partnership with communities and patients in each aspect of the decision, including the development of alternatives and the identification of the preferred solution.
Involving	Working directly with communities and patients to ensure that concerns and aspirations are consistently understood and considered. For example, partnership boards, reference groups and service users participating in policy groups.
Consulting	Obtaining community and individual feedback on analysis, alternatives and / or decisions. For example, surveys, door knocking, citizens' panels and focus groups.
Informing	Providing communities and individuals with balanced and objective information to assist them in understanding problems, alternatives, opportunities, solutions. For example, websites, newsletters and press releases.

Devolving

Collaborating

Involving

Consulting

Informing

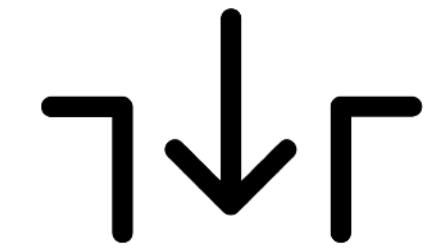
Question

Do you have any personal experience that fits one of the rungs?

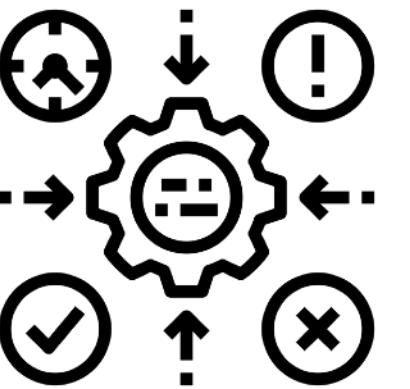


<https://www.menti.com/nyxgecuust>

Deficit Model



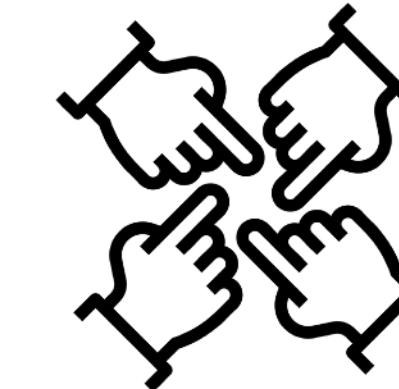
Contextual Model



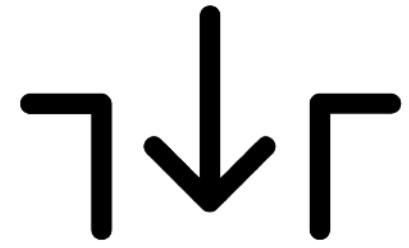
Lay Expertise Model



Public Participation Model



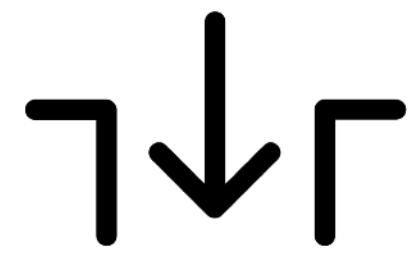
Deficit Model



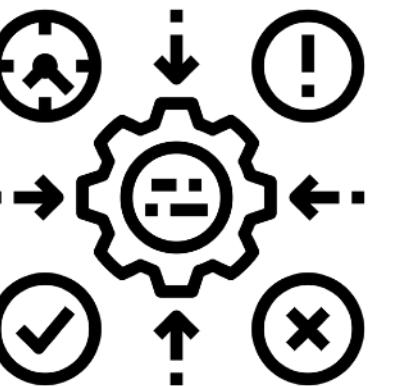
[...] only 10 percent of Americans can define "molecule," and that more than half believe that humans and dinosaurs lived on the Earth at the same time.

- Why, for example, do members of the public need to know that the luminosity of the Andromeda galaxy is $2.6 \times 10^{10} L_\odot$, or that variational autoencoders are popular types of generative models in artificial intelligence?
- Why should the absence of this knowledge be treated as a *deficit* when it is likely to have no application in the daily lives of members of the public?

Deficit Model



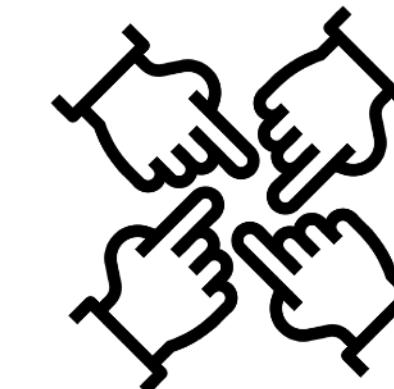
Contextual Model



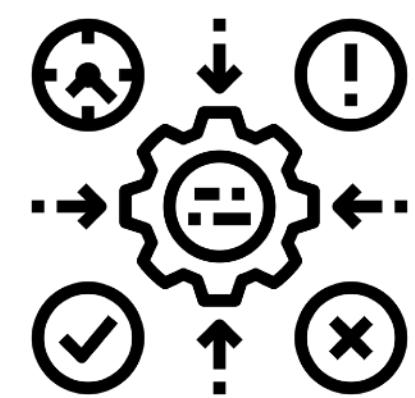
Lay Expertise Model



Public Participation Model

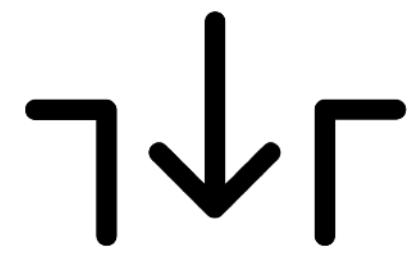


Contextual Model

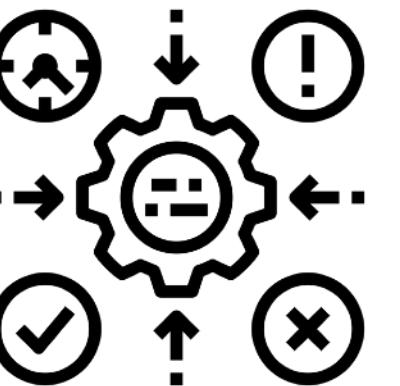


- The way we respond to information differs depending on the context in which it is presented.
 - Our personality type, for example, may affect how we perceive and evaluate risk.
 - Social and cultural attitudes affect levels of trust in scientific authority.
- Information needs to be tailored to audience and context
- Is this that much different from the deficit model?
 - Still presumes a lack of understanding that needs to be addressed.

Deficit Model



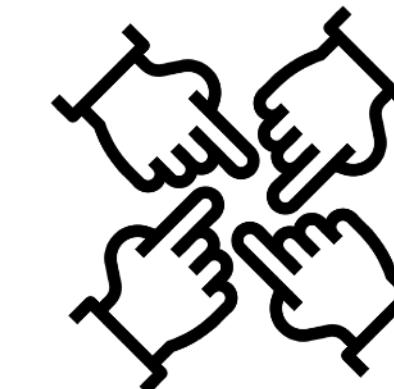
Contextual Model



Lay Expertise Model



Public Participation Model

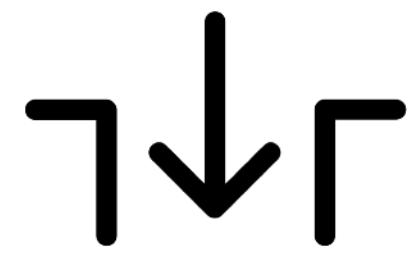


Lay Expertise Model

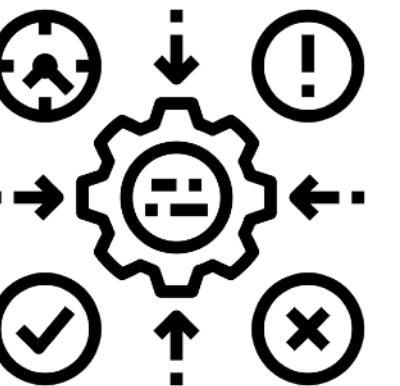


- Previous two models do not adequately address the social or political contexts in which science and technology are developed.
 - This includes possible conflicts of interest that scientific pursuits may have with local communities or expertise (e.g. labour groups).
- Researchers can fall prey to their own biases or limited perspectives and overlook diverse forms of knowledge that are rooted in local communities and practices.
- These processes of local knowledge production may be as relevant (or even more valuable) than "technical" forms when attempting to address (or redefine) some problem.

Deficit Model



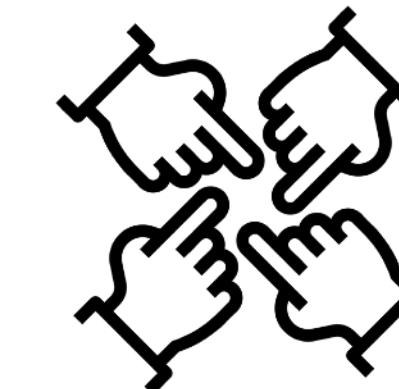
Contextual Model



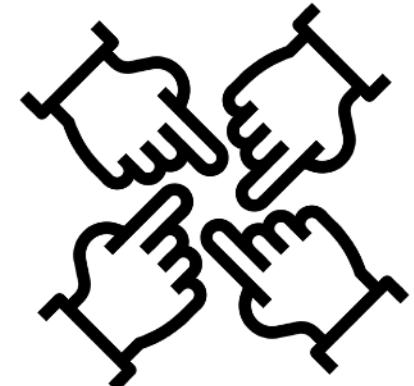
Lay Expertise Model



Public Participation Model



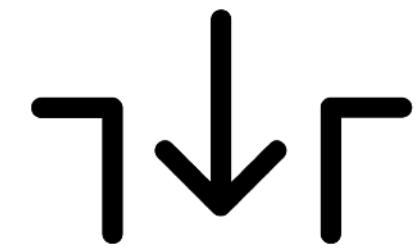
Public Participation Model



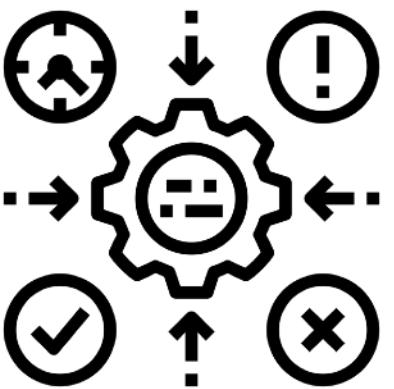
- Lewinstein's model of participation goes beyond the goal of empowerment and control to include additional benefits such as heightened public trust and consensus formation.
- There are myriad activities that can support these objectives:
 - citizen juries
 - consensus building workshops
 - deliberative polling.
- This model seeks to identify means for democratising science and technology in order to rebalance power and control of research and innovation away from elite institutions and politicians.

Where (if at all) on the ladder would you place the four models that Lewinstein describes?

**Deficit
Model**



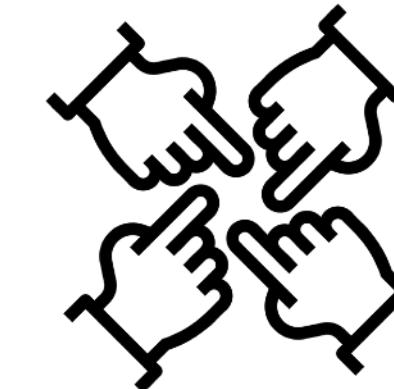
**Contextual
Model**



**Lay Expertise
Model**



**Public
Participation
Model**

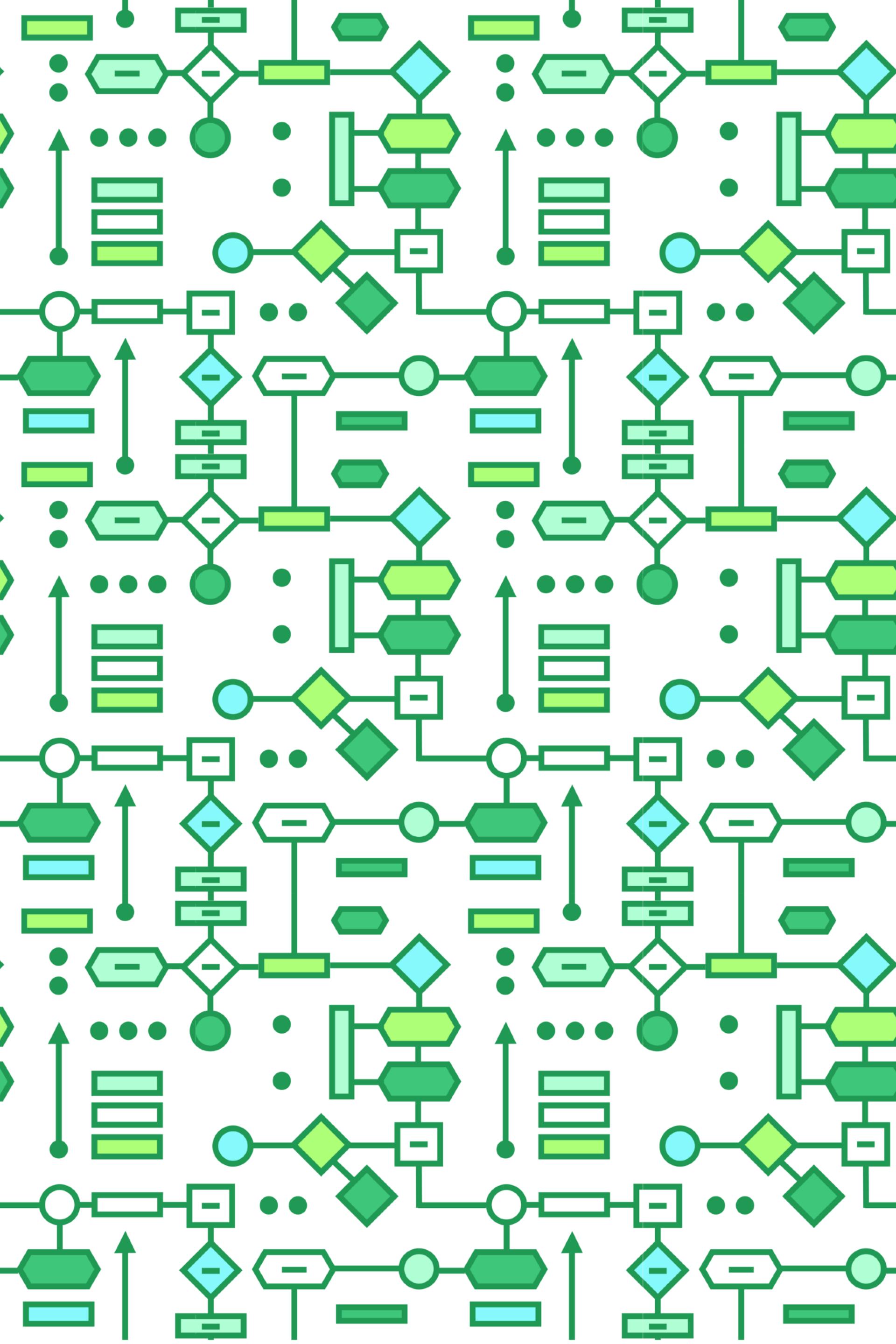


Q&A

Lunch

Presentation 2

The Goals of Public Engagement





Identifying Purpose

The Goals of Public Engagement

Here's a deceptively simple question:

What are the different goals of public engagement?

Question

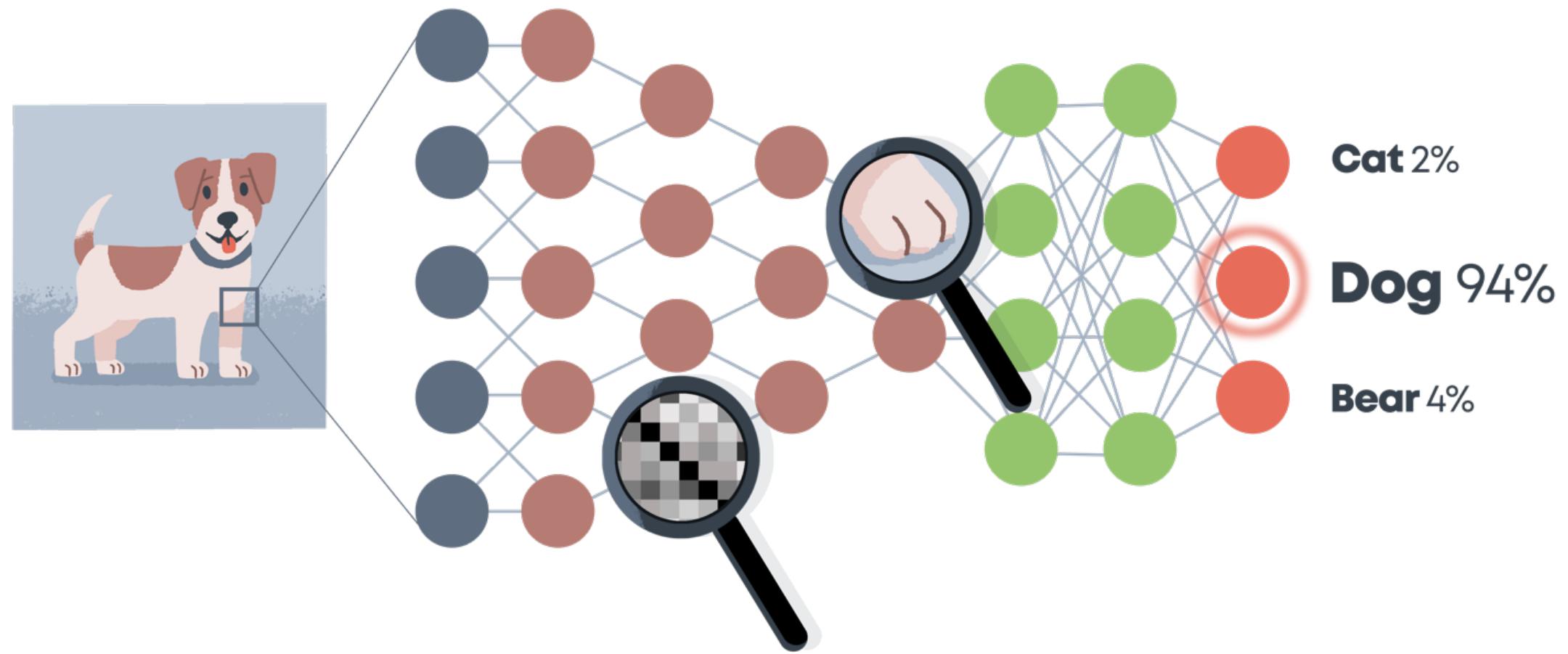
**What are the different goals
of public engagement?**



<https://www.menti.com/y1dxzkkkrkb>

Identifying Purpose

Improving Public Knowledge and Awareness



- An epistemic goal that is intuitive and familiar to most researchers
- Typically, uni-directional in nature (e.g. blog posts, television interviews)
- Unclear if an *intrinsic* good or an *instrumental* good
 - How are members of the public expected to benefit from increased knowledge or awareness?

Identifying Purpose

Public Deliberation



- Deliberation aims at consensus
- Goal associated with Jürgen Habermas—a German philosopher and social theorist:

"[Mutual understanding is] final unanimity wrought by a time-consuming process of mutual enlightenment, for the 'general interest' on the basis of which alone a rational agreement between publicly competing opinions could freely be reached"

- Consensus does not have to involve *unanimous agreement* on a final outcome

Identifying Purpose

Establishing Trust, Legitimacy, and Social License



- As a socially-embedded process, science and technology development can often depend on the support of members of the public (e.g. contact tracing apps).
- The choice of whether to use contact-tracing apps was dependant upon
 - a) how *trustworthy* the app was judged to be,
 - b) whether the operator of the app had *perceived legitimacy* in the eyes of the public, and
 - c) whether there was broad *social license* for the app in the first place.

Identifying Purpose

Improving Social Welfare

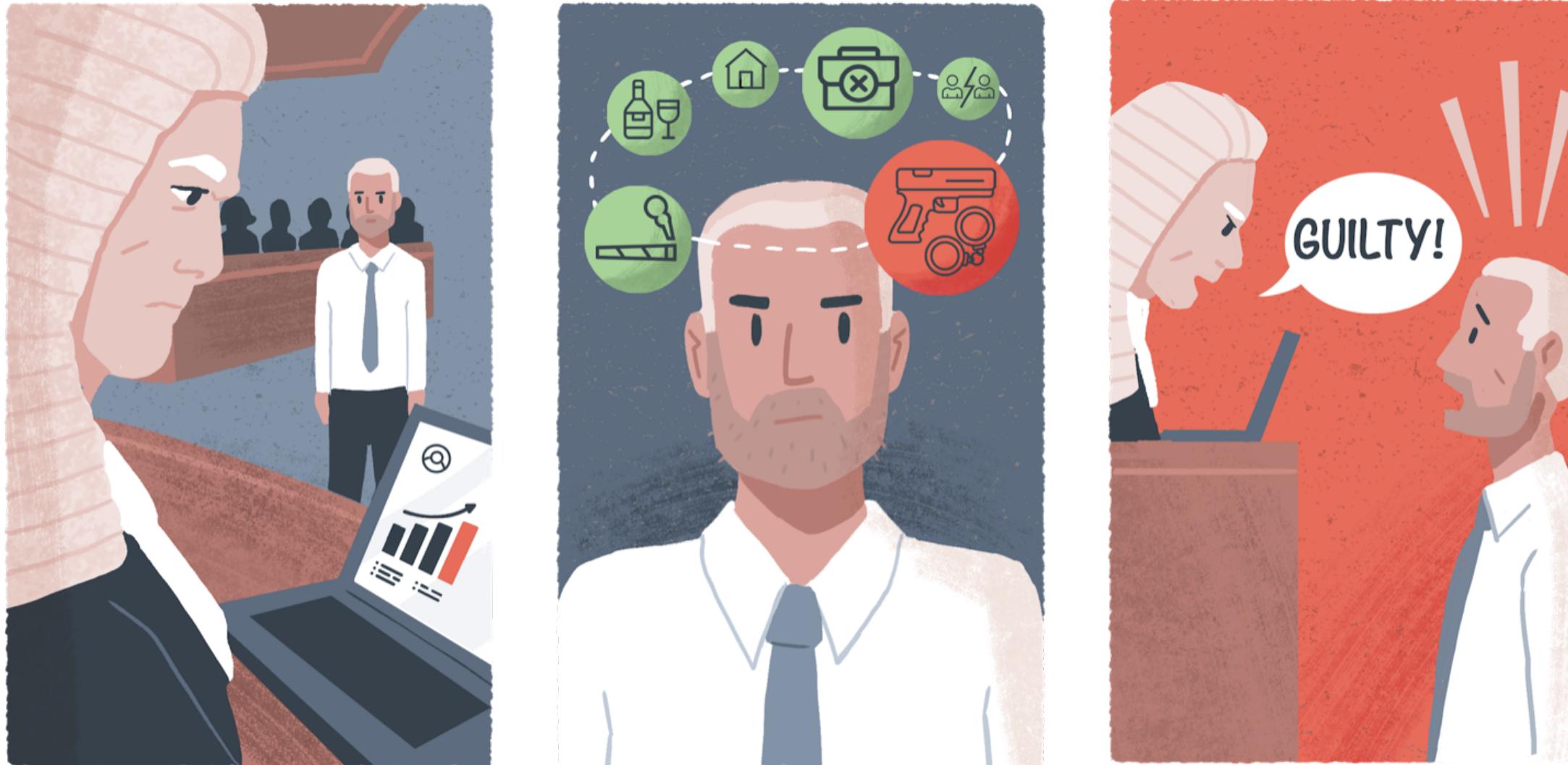


- Science and technology can improve many facets of society and people's lives:
 - cleaner air and water
 - improved health
 - more effective forms of communication
 - agriculture
- But how we define 'social welfare' and the indicators we use to measure its change requires public engagement to satisfactorily address.

Identifying Purpose

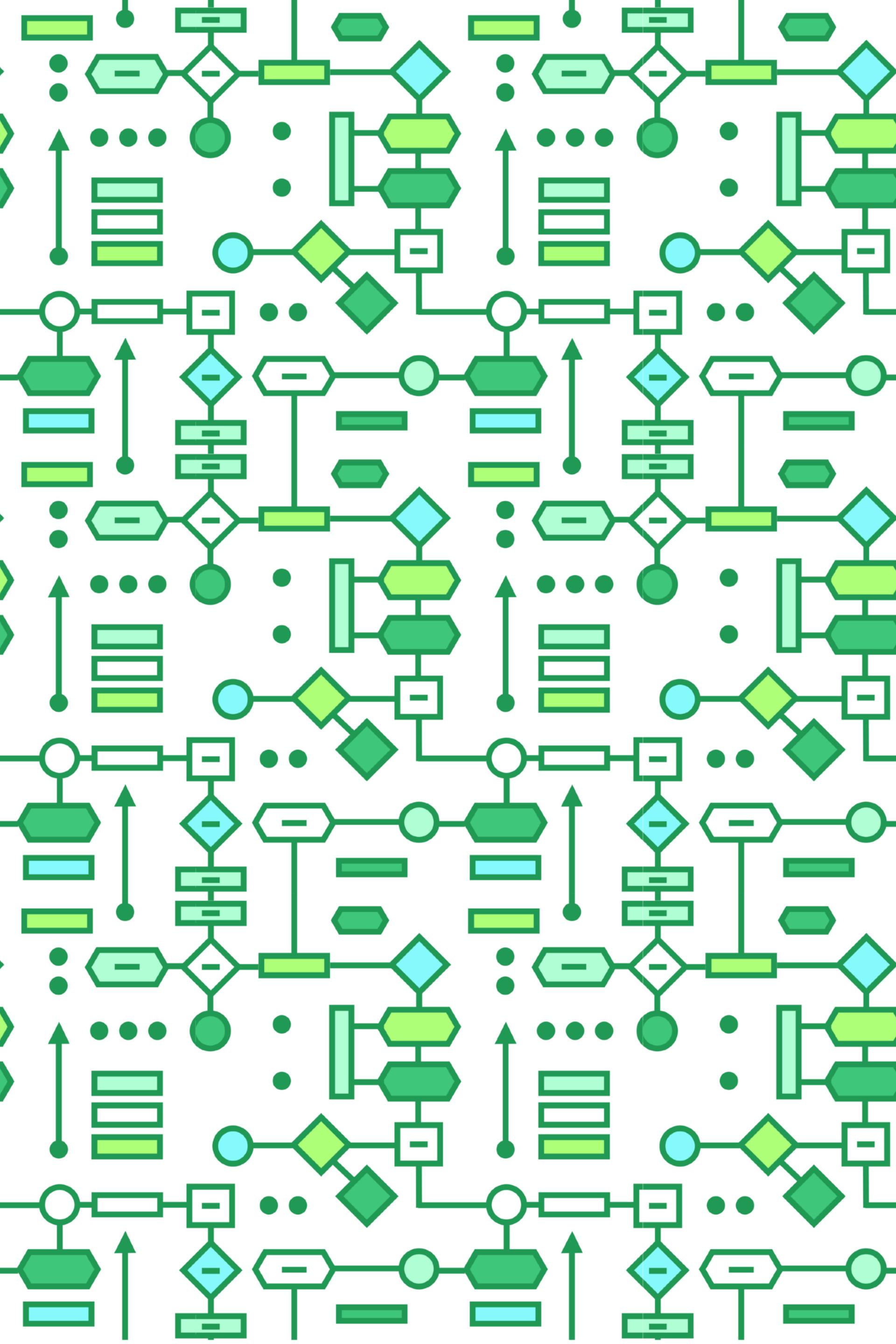
Safeguarding Human Rights

- Article 27 of the United Nation's Universal Declaration of Human Rights:
 1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits
 2. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.
- Can *citizen science* help support the public's access to the goods of science and technology?



Activity 1

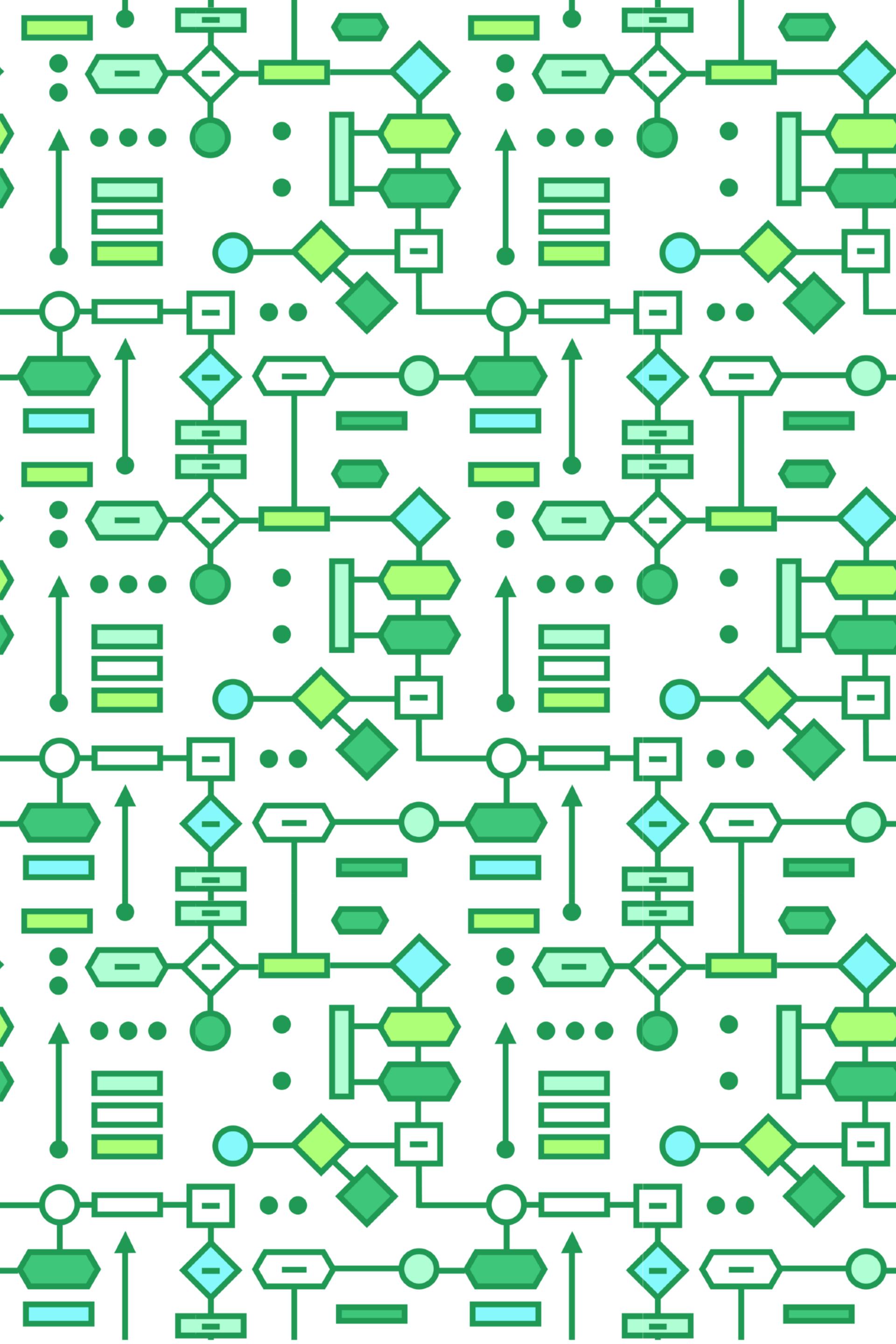
Building a Project Team and Case Study



Break

Activity 1 (Continued)

Building a Project Team and Case Study



Day 2

Tomorrow

- The Values of Public Engagement
 - Deliberative Values
 - Identifying Values for Effective Deliberation
 - Engagement in Principle vs. Engagement in Practice
- Illustrator (~~Johnny Lighthands~~ Eleonore Guerra)
- Responsible Public Engagement
 - SAFE-D Principles



Thank you!

See you tomorrow!