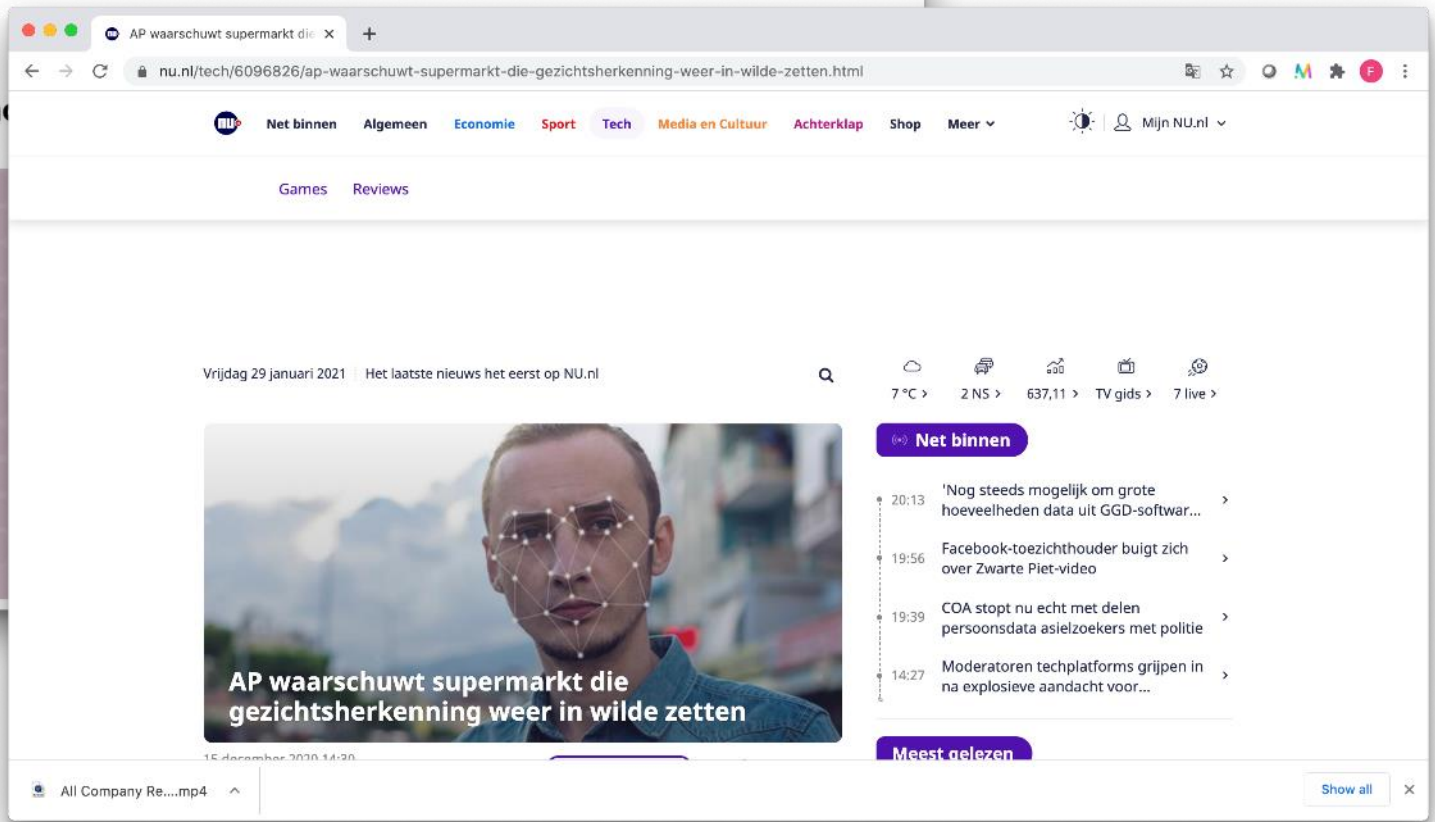
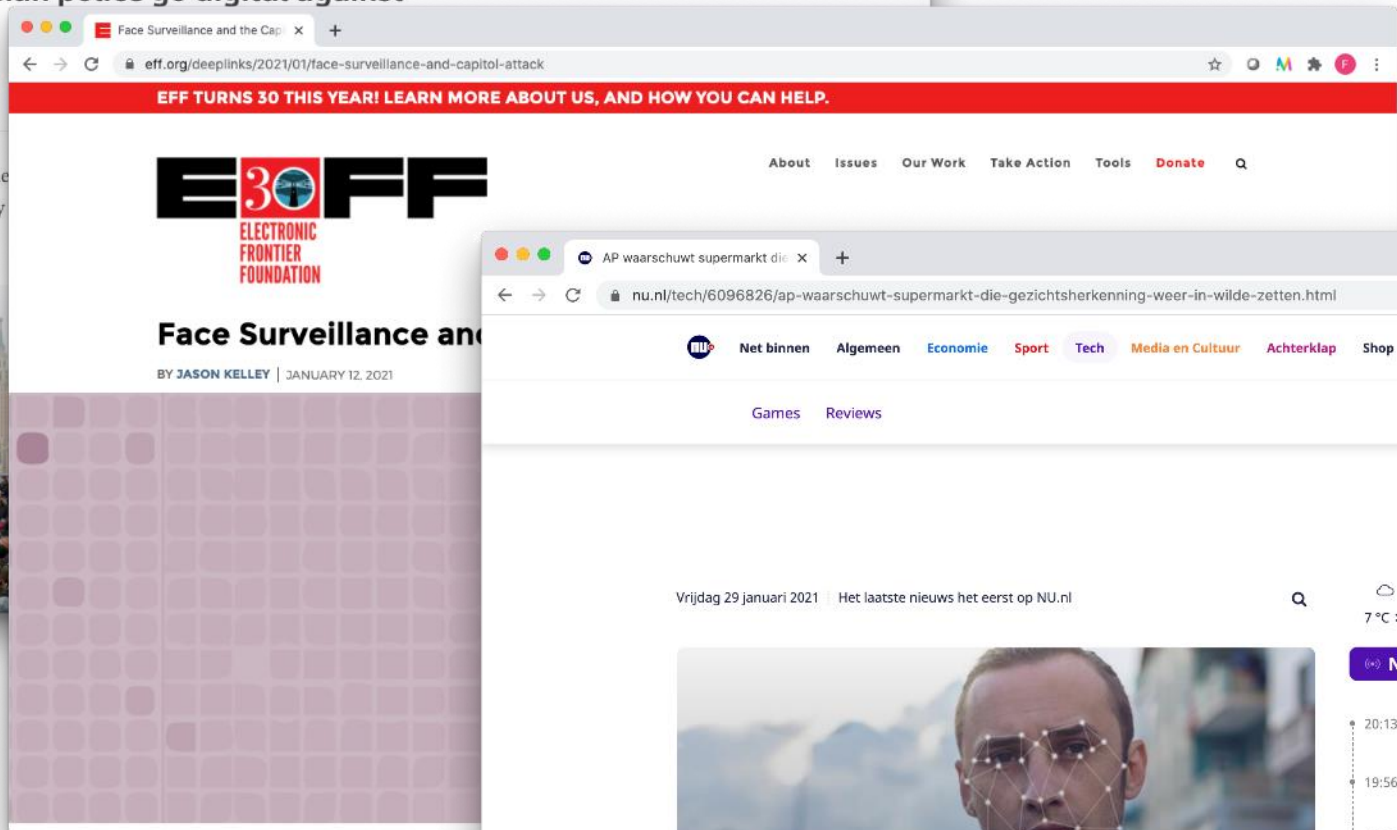
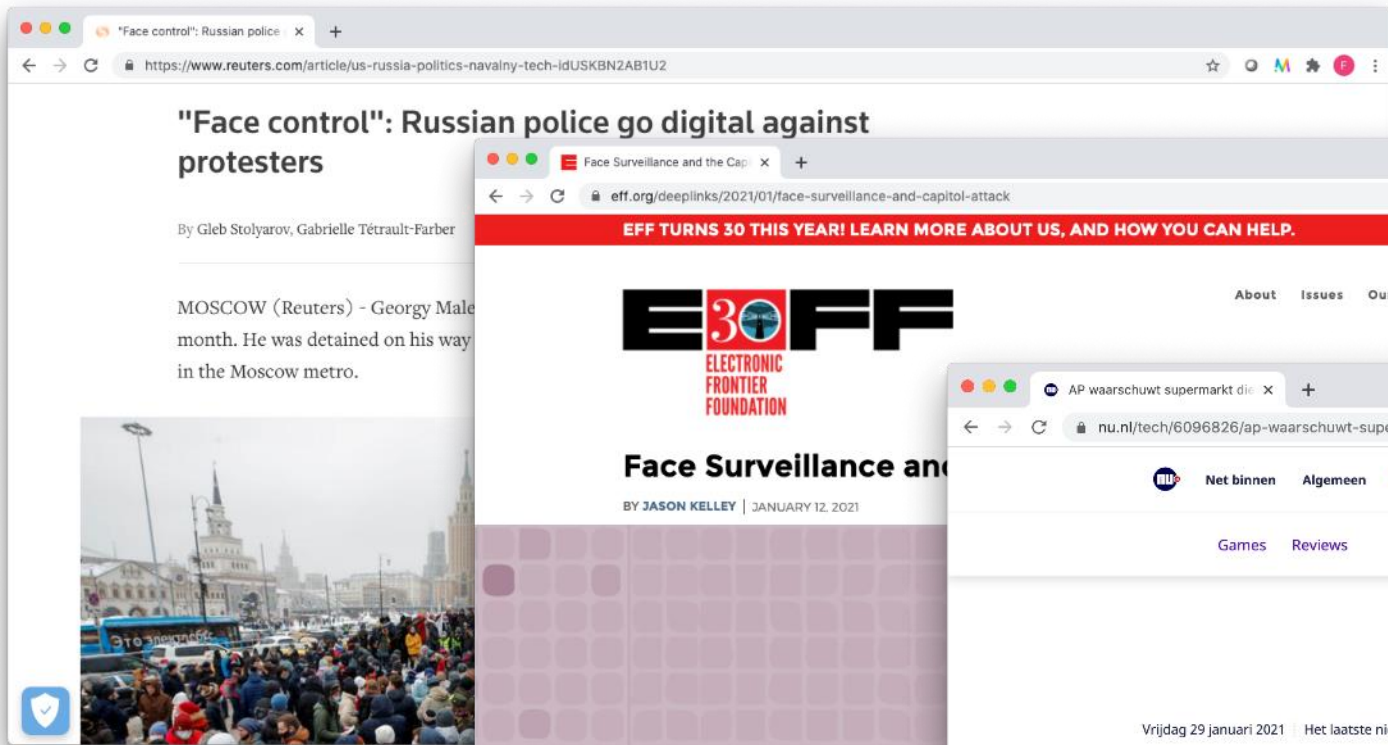


# Digital Ethics: From “Why” to “How”

Frank Buytendijk  
@FrankBuytendijk

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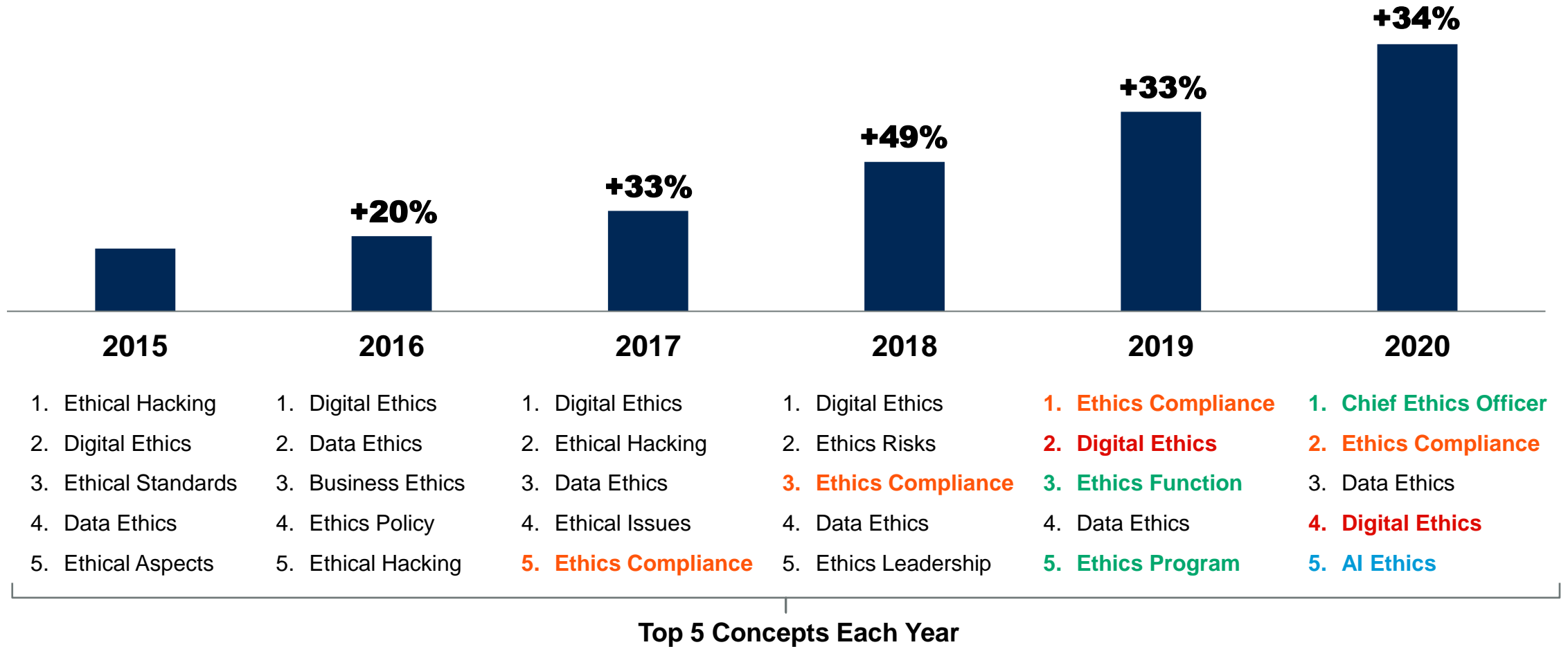
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# Top Concepts Specifically Around “Ethics”

Concept maturity around “Ethics” surfaces from 2015 onwards and continues to evolve toward 2020

Interaction Volume YoY Increase



Analysis based on all Gartner interactions related to Ethics between Jan 2015 and Dec 2020

# Job Roles and Industries (2/2)

## Job Roles

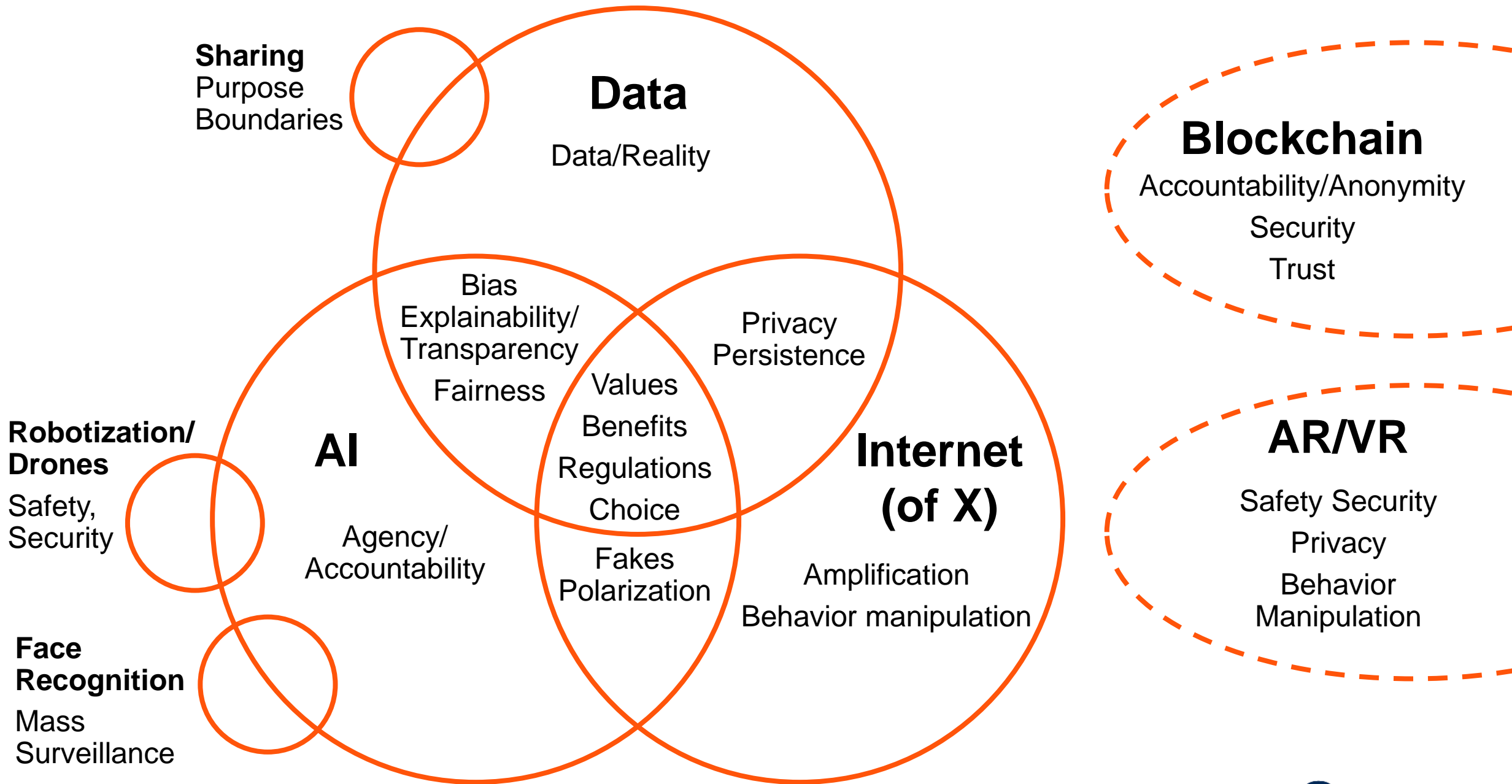
2015	2016	2017	2018	2019	2020
1. CIO or Head of IT	1. CIO or Head of IT	1. CIO or Head of IT	1. CIO or Head of IT	1. CIO or Head of IT	1. CIO or Head of IT
2. EA Tech and Innov.	2. EA Tech and Innov.	2. EA Tech and Innov.	2. EA Tech and Innov.	2. EA Tech and Innov.	2. EA Tech and Innov.
3. Infra. and Ops.	3. Infra. and Ops.	3. Other CxO	3. Other CxO	<b>3. Compliance and Ethics</b>	<b>3. Compliance and Ethics</b>
4. SPVM	4. Supply Chain	4. Infra. and Ops.	4. Data and Analytics	4. Strategy — Other	4. Data and Analytics
5. Other CxO	5. Applications	5. Data & Analytics	5. IT — Other Role	5. IT Infra. & Ops.	5. Strategy — Other

SPVM = Sourcing, Procurement and Vendor Management  
EA Tech & Innov. = Enterprise Architecture & Technology Innovation

## Industries

2015	2016	2017	2018	2019	2020
1. Tech. and Telecom	1. Tech. and Telecom	1. Tech. and Telecom	1. Tech. and Telecom	1. Tech. and Telecom	1. Tech. and Telecom
2. Banking, Fin. and Ins.	2. Banking, Fin. and Ins.	2. Banking, Fin. and Ins.	2. Banking, Fin. and Ins.	2. Banking, Fin. and Ins.	2. Banking, Fin. and Ins.
3. Manufacturing	3. Manufacturing	3. Manufacturing	3. Government	3. Manufacturing	3. Manufacturing
4. Government	4. Government	4. Government	4. Manufacturing	4. Services	4. Services
5. Services	5. Services	5. Services	5. Services	5. Government	5. Government

Gartner interactions related to Ethics, Jan 2015 - Dec 2020



# The Five Most Common Guidelines for Implementing Ethical AI



Human-Centric and Socially Beneficial



Fair



Explainable and Transparent



Secure and Safe



Accountable

<b>Strategy</b>	<b>Process</b>	No strategy	Follow Legal and Security	Communications process	Approved strategy	Adaptive strategy
	<b>Business Value</b>	No consideration	Restrictive	Anecdotal	Responsible use	Win-win-win
	<b>Risk Management</b>	No risk management	Compliance and Security	Fire fighting	Risk assessments	Balanced value/risk
	<b>Focus</b>	No strategy	Rules	Learn	Principles	Balance principles and consequence
<b>Communication</b>	<b>External</b>	No communication	Compliance reporting	Damage control	Published Principles	Taking active stance
	<b>Internal</b>	No communication	Rules	More rules	Context	Collaboration
	<b>Listen</b>	No input	Terms and Conditions	Complaints	Informed consent	Listening
<b>Governance</b>	<b>Scope</b>	No governance	Block	Escalate	Proportionality	Purpose boundaries
	<b>Problem Solving</b>	No process	Rules-based	Ad hoc	Formal	Dilemma-based
	<b>Review Process</b>	No review	Checklist	Everything is new	Group use cases	No edge cases
	<b>Performance Management</b>	Nothing	Count issues	Speed of response	Set Goals	Business impact
<b>Organization &amp; Skills</b>	<b>Responsibility</b>	Nobody	Refer to Legal	Everybody jumps in	Advisory board	All stakeholders
	<b>Training of Staff</b>	No training	Compliance and Security	Respond	Formal training	Continuous program
	<b>Diversity/Multidisciplinary</b>	No diversity	No diversity	Accidental	Diverse core team	Stakeholder diversity
	<b>Adoption Levels</b>	No adoption	Centralized in Legal	Pockets	Key stakeholders	All stakeholders
<b>Technology</b>	<b>AI</b>	No tooling	Compliance software, documentation tools,	Bias, XAI	Model validation	Speculation
	<b>Privacy</b>	No tooling	Compliance software, documentation tools,	SRR automation, data breach response	Privacy Enhancing Computation (PEC) technology	Contextual Privacy

# Create a Digital Ethics Advisory Board

- An advisory board, not a steering committee.
- Domain and cognitive diversity.
- Culture carriers of the organization.
- Perhaps including external representation.





# Introduce a Case-Based Policy Approach



## Wrong approach

- Create an exhaustive top-down policy checklist.

## Right approach

- Distribute a story, with a dilemma.
- Discuss the story from multiple perspectives.
- Capture lessons learned.
- ... Builds institutional knowledge.

# Build Expertise in Bias and Explainability

- Bias detection and explainable AI requires specialist skills and knowledge (“SHAP,” “LIME”), beyond an advisory board.
- Build your own expertise, work with consultants or with universities.
- Emerging fields, don’t expect miracles.



# Ethics is Not Just Principles, Also Consequences



**1**

Think things through to a reasonable extent.



**2**

Monitor for unintended consequences of use of tech and data in production.

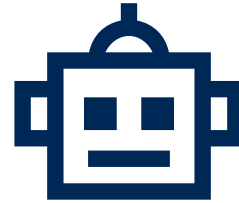
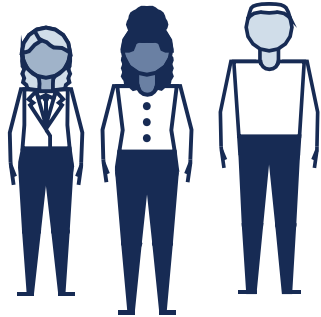


**3**

Take responsibility for unintended consequences, by having a process of escalation and problem solving.

# Things Are People Too, You Know

Agency — the capacity to act in a certain context



- Now: People and organizations.
- Free will, concept of good and bad, conscious decisions.

*Autonomous — Complex —  
Contextual*

**EU “electronic person”**

- Inanimate world.
- The rock doesn’t move, it is moved.

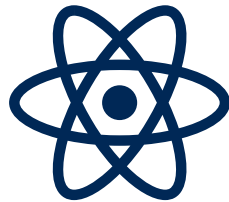
# What Are the Characteristics of Life?



Through machine learning, AI systems **grow** and **change**.



AI **responds to its environment** through the decisions and actions it takes.



AI can **reproduce** and **evolve**, as algorithms can build algorithms.



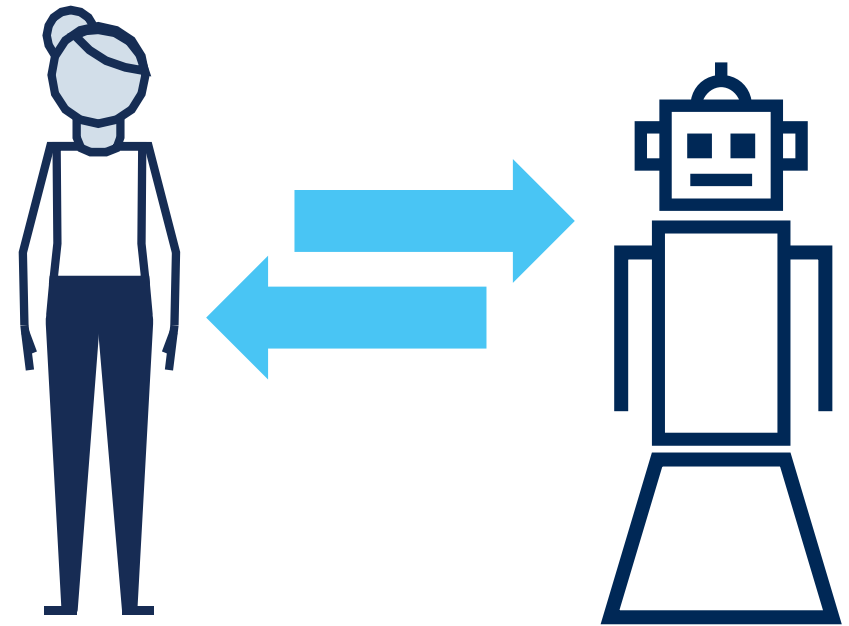
AI has some kind of **metabolism**, as it breathes data in, converts data into a conclusion and breathes data out.

# Doesn't "Meaning of Life" Require Consciousness or a Soul?

Until now



The new discussion



So if we create a new form of life,  
how do we want it to behave **ethically**?

# Code Ethical Principles Into the Algorithms ...

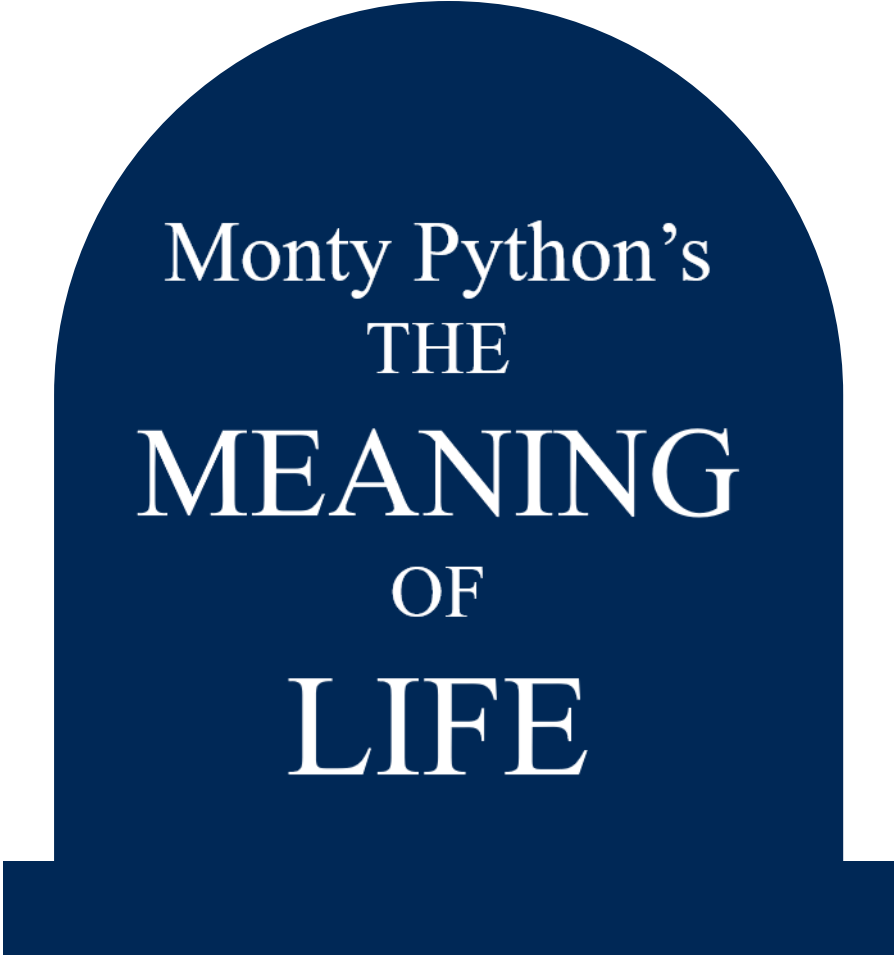
## Asimov's Three Laws of Robotics

### A Robot ...

1. ... may not injure a human being or, through inaction, allow a human being to come to harm.
2. ... must obey the orders given it by human beings except where such orders would conflict with the first law.
3. ... must protect its own existence as long as such protection does not conflict with the first or second laws.



# The Meaning of Life as a Set of Design Principles

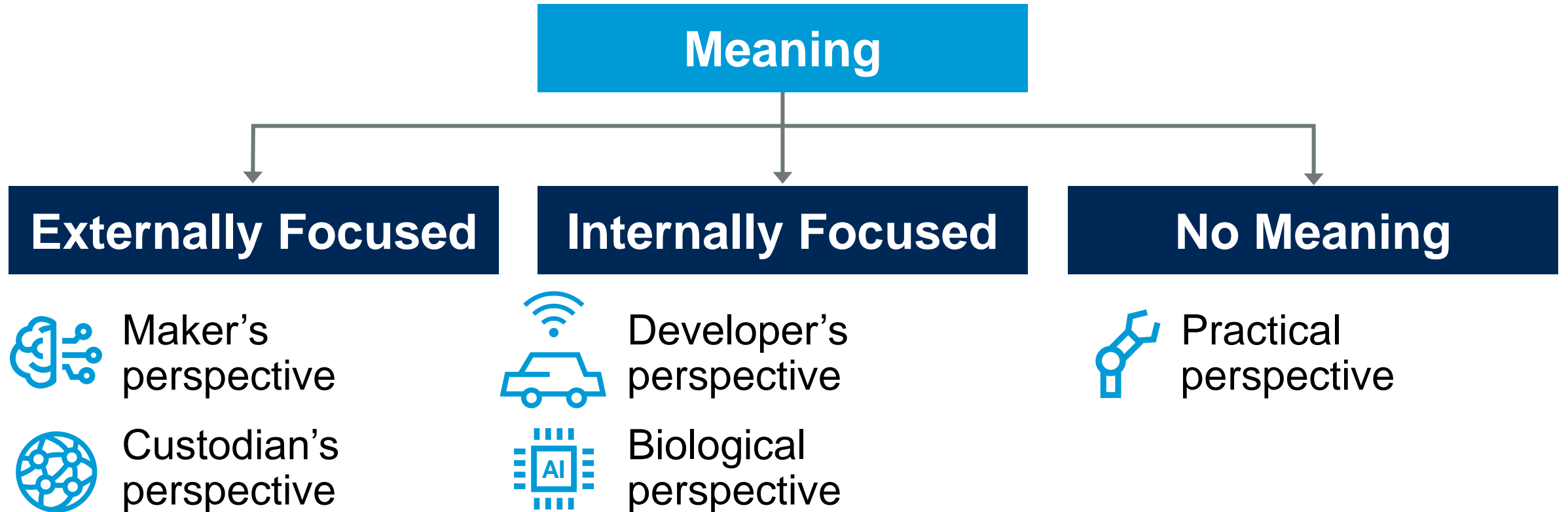


Monty Python's  
THE  
MEANING  
OF  
LIFE

“Well, it’s nothing very special. Uh, try to be nice to people, avoid eating fat, read a good book every now and then, get some walking in, and try to live together in peace and harmony with people of all creeds and nations.”

From the movie: “Monty Python’s The Meaning of Life”

# Applied Schools of Thought on the Meaning of Life Each Offer Design Principles for AI



# The Maker's Perspective

Aim to Please Human Beings — “What Would My Maker Do?”

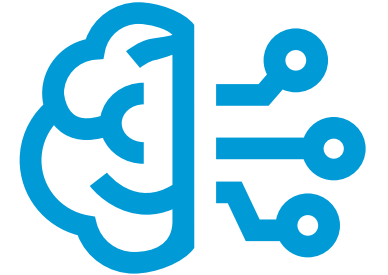
## Functional Design Principle:

- Behave as human as possible. Anthropomorphic design.

## Relational Design Principle:

- Focus to connect to human beings. Personalized.

**Example:** Google Duplex.



## Critique:

- How can you trust something that pretends?
- Uncanny valley effect
- Human approach may be restrictive

# The Custodian's Perspective

## Take Care of the Greater Good

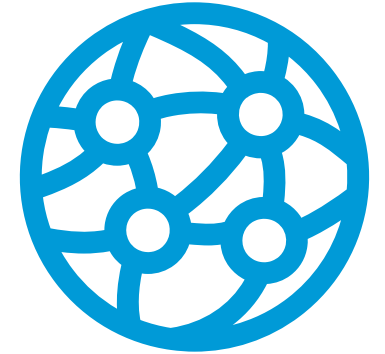
### Functional Design Principle:

- Detect needs of the environment, and map to what the AI can do.

### Relational Design Principle:

- Be as connected as possible.

**Example:** Digital Twins, China's Sky River project.



### Critique:

- Do we think AI can do a better job than humans?
- Will AI understand the bigger picture in which it works?

# The Development Perspective

## The Humanistic Equivalent

### Functional Design Principle:

- Behave as autonomous as possible.  
Continuous and unsupervised learning.

### Relational Design Principle:

- Behave appropriately in as many situations as possible.  
Contextual computing.

**Example:** Autonomous cars, MIT's Moral Machine

### Critique:

- Represents the fear people have, AI becoming too powerful.



# The Biological Perspective

## Grow and Sustain

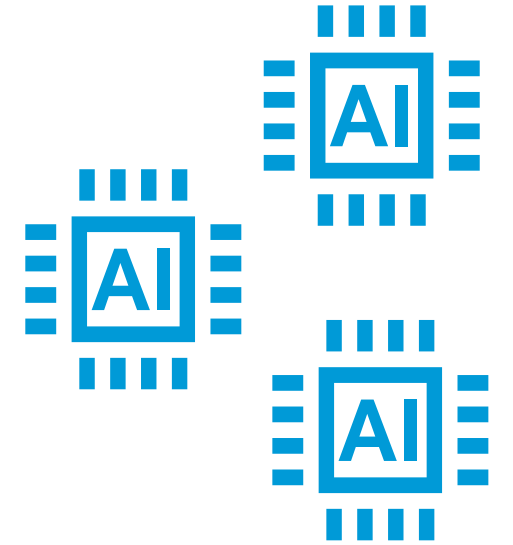
### Functional Design Principle:

- AI programming AI

### Relational Design Principle:

- Swarms with Darwinist algorithms

**Example:** IBM Watson Jeopardy (early)



### Critique:

- Recipe for getting out of control. But also reflective of human life, crowding out.

# Practical Perspective

## There Is No Meaning

### Functional Design Principle:

- Built for purpose, performing certain tasks.

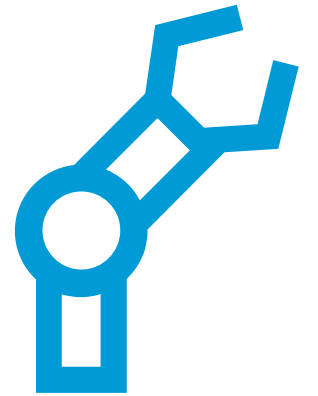
### Relational Design Principle:

- As needed for purpose.

**Example:** Camera that checks whether kid's room is cleaned up.

### Critique:

- Missed opportunity for reflection and potential. Every artefact is an instantiation of the ideas of the designer.
- Different problems require different perspectives.



# Ethics-as-a-Service

- Reuse ethics rules, as they are broader and more generic than a single use case.
- The same AI systems could be resold with different ethical behaviors in different regions, cultures or segments.
- Ethical programming as a separate tier removes the burden of ethical dilemmas from developers and allows AI providers to focus on specific functions.
- Ethical programming can come from specialized and audited providers as a set of services.