

# **How IoT is shaping our society**

Safeguarding public values in our digitized society

*Dr. Dhoya Snijders*  
*d.Snijders@Rathenau.nl*

# Rathenau Instituut

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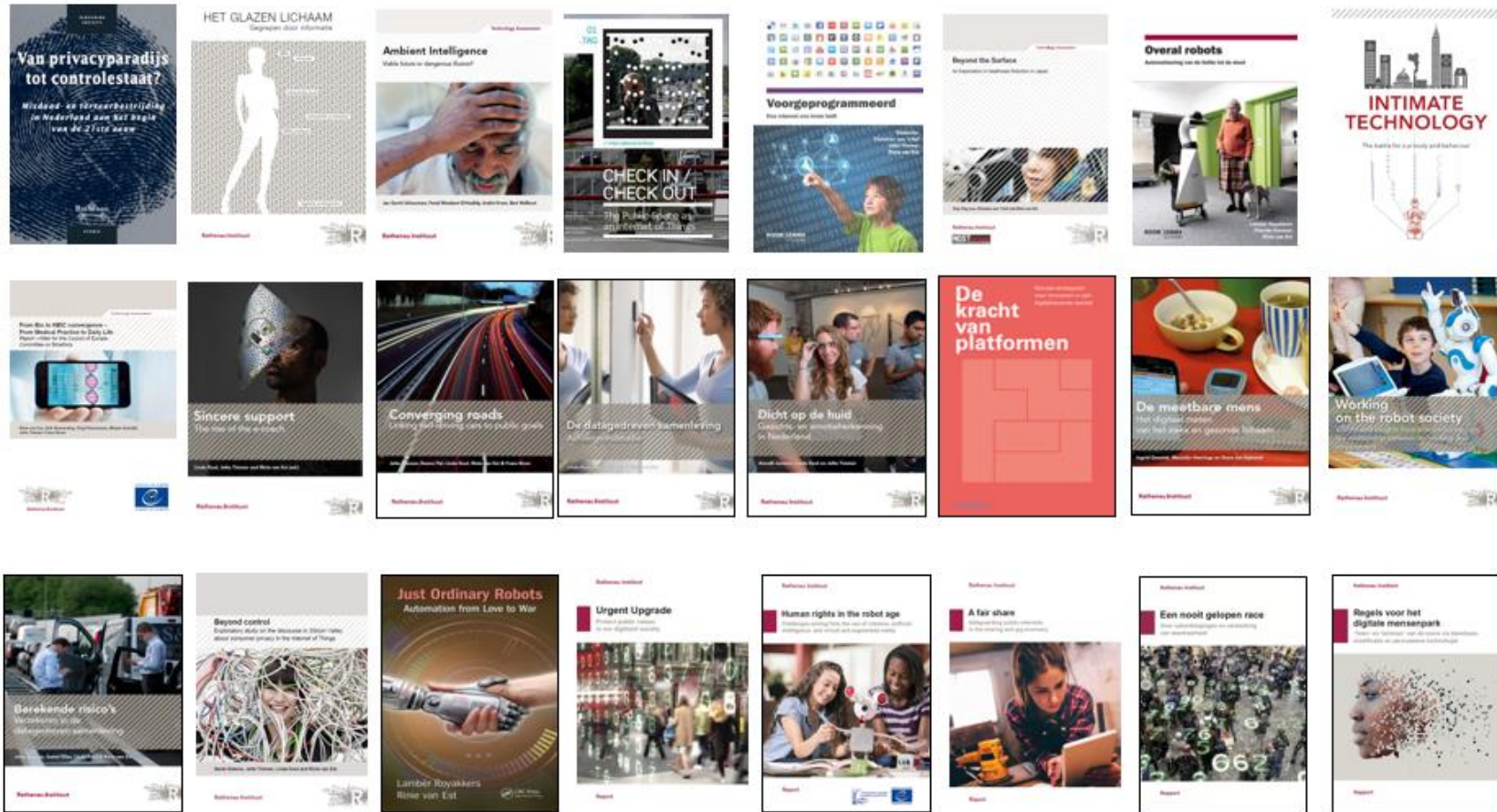
The board



R

- **Mission: Stimulating public and political opinion forming on social and ethical aspects of science, technology and innovation.**
- **Associated with the Royal Netherlands Academy of Arts and Sciences (KNAW)**
- **Main target group: Dutch Parliament**
- **We regularly work for European Parliament, Parliamentary Assembly of Council of Europe, Dutch Ministries, regional & local governments**

# Selection of publications on smart society



**THE AGE OF  
SURVEILLANCE  
CAPITALISM**

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THE FIGHT FOR A  
HUMAN FUTURE  
AT THE NEW  
FRONTIER OF POWER

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**SHOSHANA  
ZUBOFF**



## Georgia Tech, 2000: Aware Home

### Georgia Tech's Aware Home



- Research project and living laboratory
- Ubiquitous computing
- Human-home symbiosis with automatic wireless collaboration

#### *Engineering plan:*

1. It must be the individual alone who decides what experience is rendered as data
2. The purpose of the data is to enrich the individual's life
3. The individual is the sole arbiter of how the data are shared or put to use

## Current Internet of Things: Google Nest



- smart home market 2018: 36 million dollar, 2023: 151 billion dollar
- Thermostats that incorporate AI, predictive analytics and voice assistance
- All connected to internet of things: smart cars, fridges, ovens, beds, health trackers
- 'learns behavior' of the home's inhabitants

### *Engineering plan (Hernandez et al 2014):*

1. All data uploaded to google servers
2. The data gets shared with smart devices, apps, and sold to unspecified parties
3. Black Box. 1 thermostat => review 1000 contracts

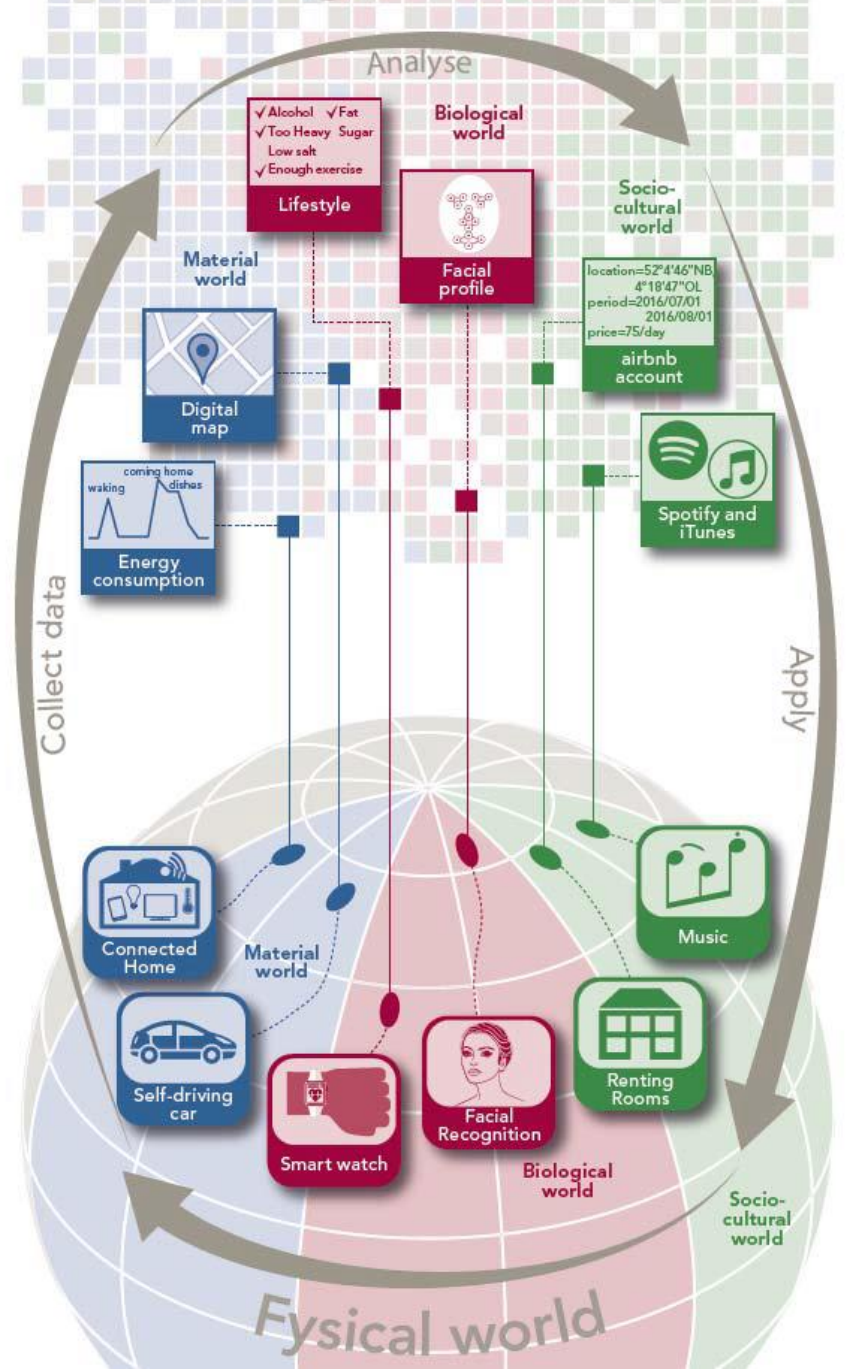


### ***Motion by Senator Gerkens***

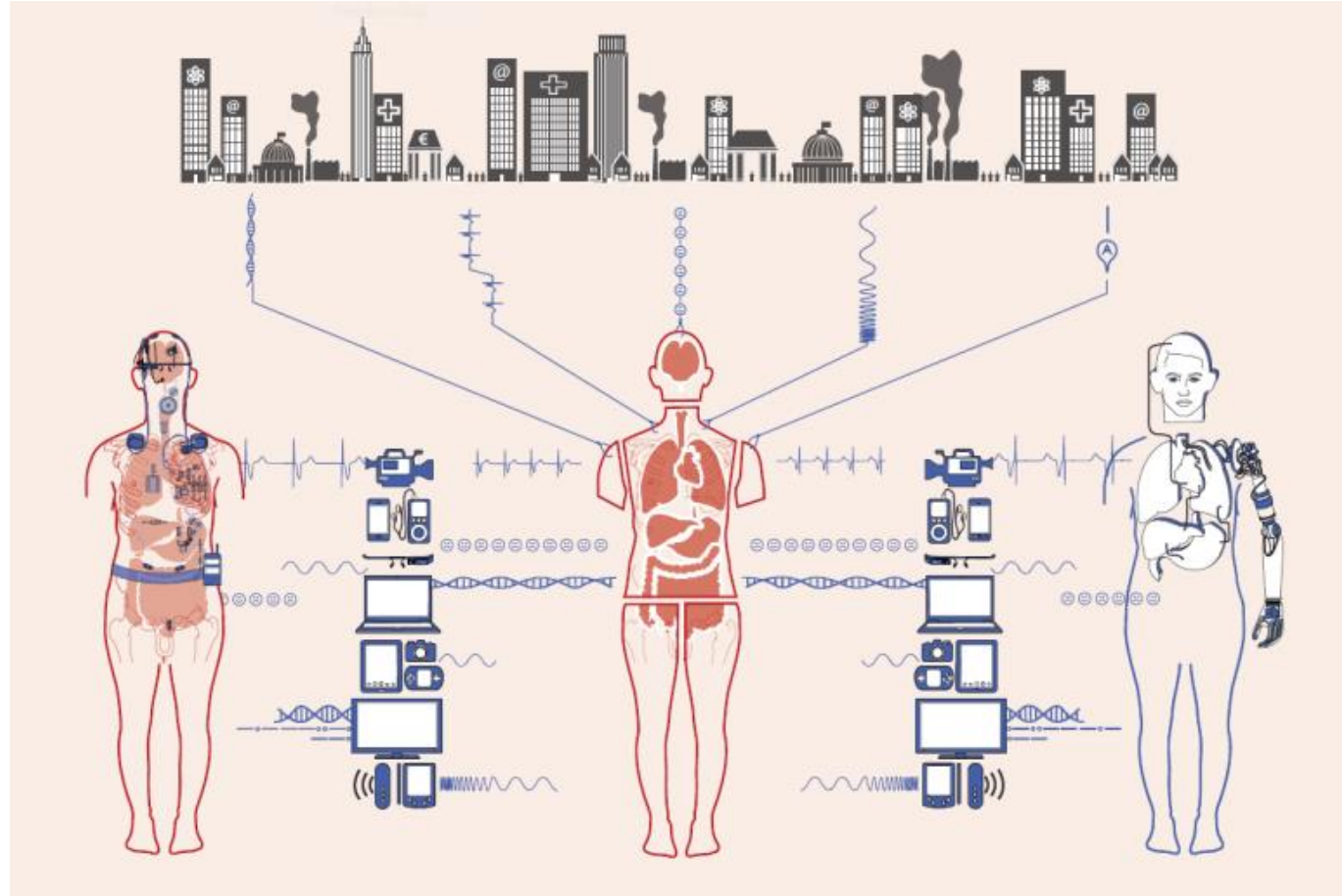
The Senate, having heard the deliberations, concludes that the digital technology involved in the Internet of Things will connect everything and everyone with each other; it further concludes that this unstoppable development will present opportunities for society, but also poses threats; it considers that the impact of this digital development on society is not just technological, but also societal, socio-legal and socio-psychological; it asks for the government to request that Rathenau Instituut investigates the desirability of a committee which can advise on the ethical aspects of the digitizing society, and proceeds with the day's agenda.

Signed by Senators Gerkens, Franken, K.G. de Vries, Strik, Duthler, Van Boxtel.

# Digital world

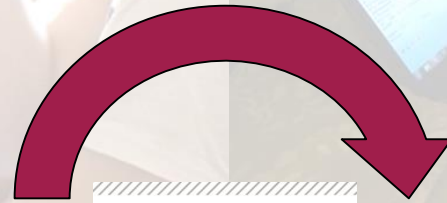




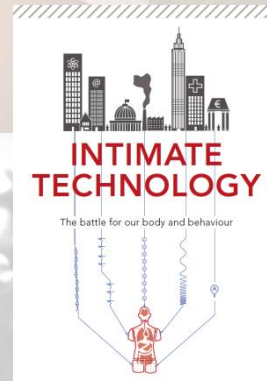


# Intimate technology moment

**Technology  
in and nearby us**



**Technology  
between us**

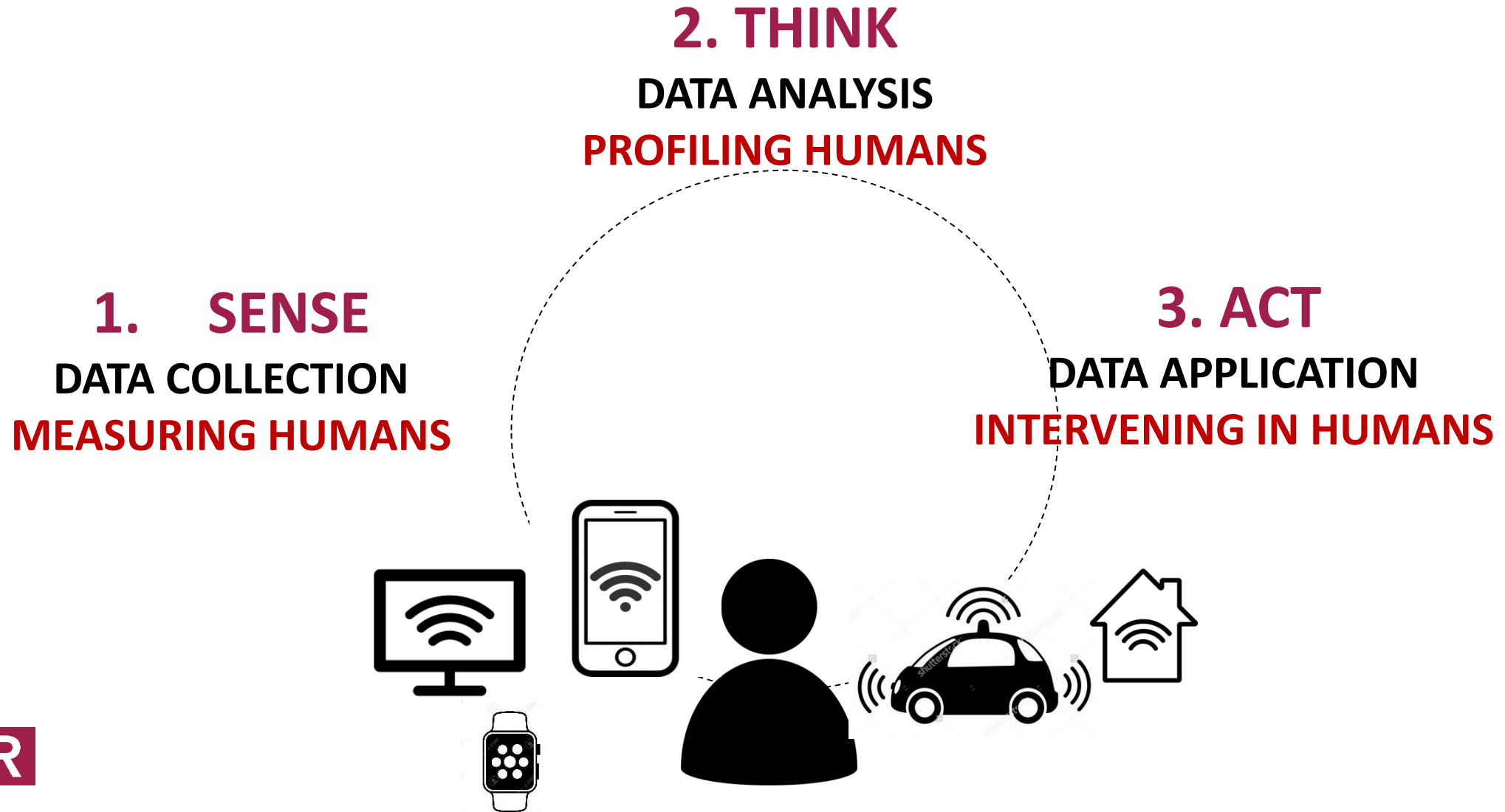


**Technology  
Just like us**



**Technology  
about us**

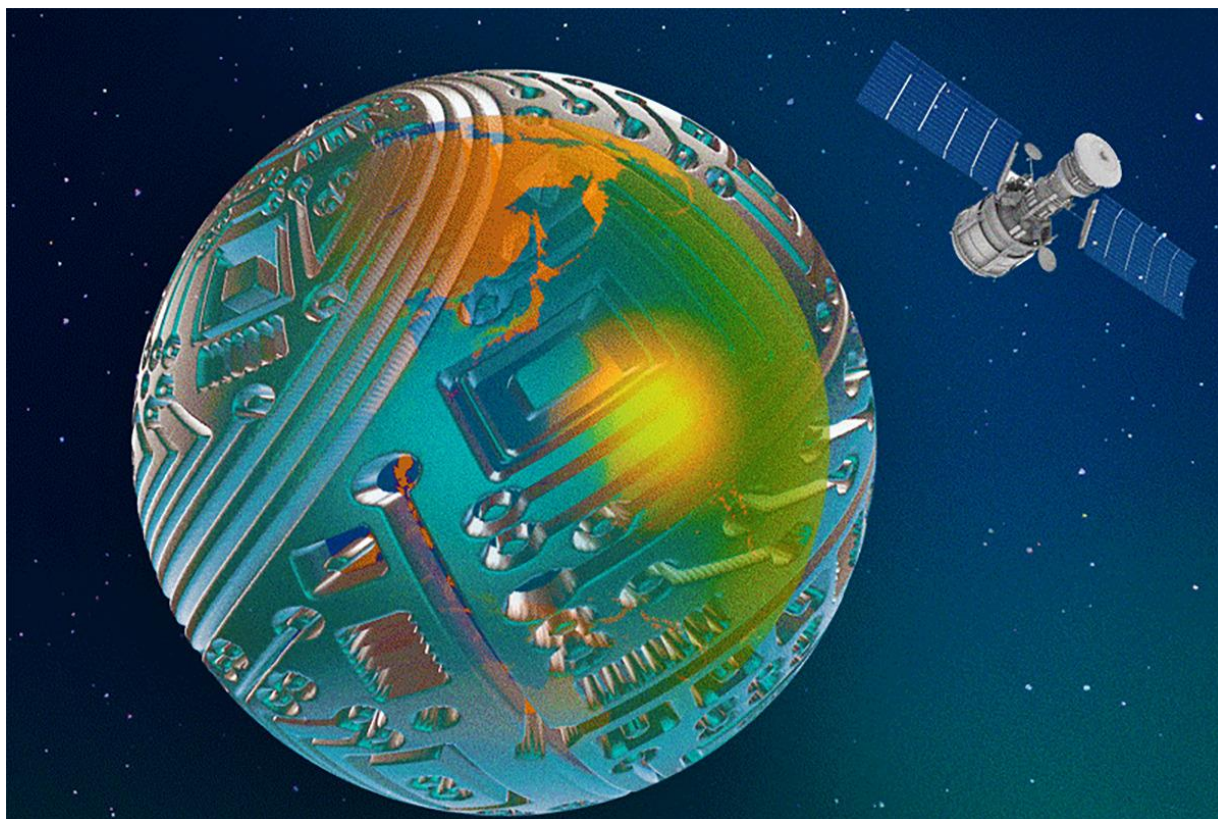
# Digitisation of human life by means of the IoT data value chain



- **Dominated by Big Tech**
- **Paul Nemitz (2018):**  
“...history of failure to assign and assume responsibility in the Internet age, both by legislators and by tech corporations”







## Schneier on Security



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### The Internet of Things Will Be the World's Biggest Robot

The Internet of Things is the name given to the computerization of everything in our lives. Already you can buy Internet-enabled thermostats, light bulbs, refrigerators, and cars. Soon everything will be on the Internet: the things we own, the things we interact with in public, autonomous things that interact with each other.

These "things" will have two separate parts. One part will be sensors that collect data about us and our environment. Already our smartphones know our location and, with their onboard accelerometers, track our movements. Things like our thermostats and light bulbs will know who is in the room. Internet-enabled street and highway sensors will know how many people are out and about -- and eventually who they are. Sensors will collect environmental data from all over the world.

The other part will be actuators. They'll affect our environment. Our smart thermostats aren't collecting information about ambient temperature and who's in the room for nothing; they set the temperature accordingly. Phones already know our location, and send that information back to Google Maps and Waze to determine where traffic congestion is; when they're linked to driverless cars, they'll automatically route us around that congestion. Amazon already wants autonomous drones to deliver packages. The Internet of Things will increasingly perform actions for us and in our name.

Increasingly, human intervention will be unnecessary. The sensors will collect data. The system's smarts will interpret the data and figure out what to do. And the actuators will do things in our world. You can think of the sensors as the eyes and ears of the Internet, the actuators as the hands and feet of the Internet, and the stuff in the middle as the brain. This makes the future clearer. The Internet now senses, thinks, and acts.

We're building a world-sized robot, and we don't even realize it.

I've started calling this robot the World-Sized Web.

The World-Sized Web -- can I call it WSW? -- is more than just the Internet of Things. Much of the WSW's brains will be in the cloud, on servers connected via cellular, Wi-Fi, or short-range data networks. It's mobile, of course, because many of these things will move around with us, like our smartphones. And it's persistent. You might be able to turn off small pieces of it here and there, but in the main the WSW will always be on, and always be there.

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#### About Bruce Schneier



I've been writing about security issues on my blog since 2004, and in my monthly newsletter since 1998. I write books, articles, and academic papers. Currently, I'm the Chief Technology Officer of Resilient, an IBM Company, a fellow at Harvard's Berkman Center, and a board member of EFF.

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## Opwaarderen

Borgen van publieke waarden  
in de digitale samenleving



Rapport

Value	Issue
Privacy	Data protection, privacy, mental privacy, spatial privacy, surveillance, function creep
Autonomy	Freedom of choice, freedom of expression, manipulation, paternalism
Safety & security	Information security, identity fraud, physical safety
Control over technology	Control and transparency of algorithms, responsibility, accountability, unpredictability
Human dignity	Dehumanization, instrumentalization, deskilling, desocialization, unemployment
Equity & Equality	Discrimination, exclusion, equal treatment, unfair bias, stigmatization
Balance of power	Unfair competition, exploitation, shifting relations consumers and businesses, government and businesses

# Get over it?



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## We Experiment On Human Beings!

(So does everyone else.)

**Christian Rudder (OkCupid)**



## Doelgericht digitaliseren

Hoe Nederland werkt aan een digitale transitie  
waarin mensen en waarden centraal staan

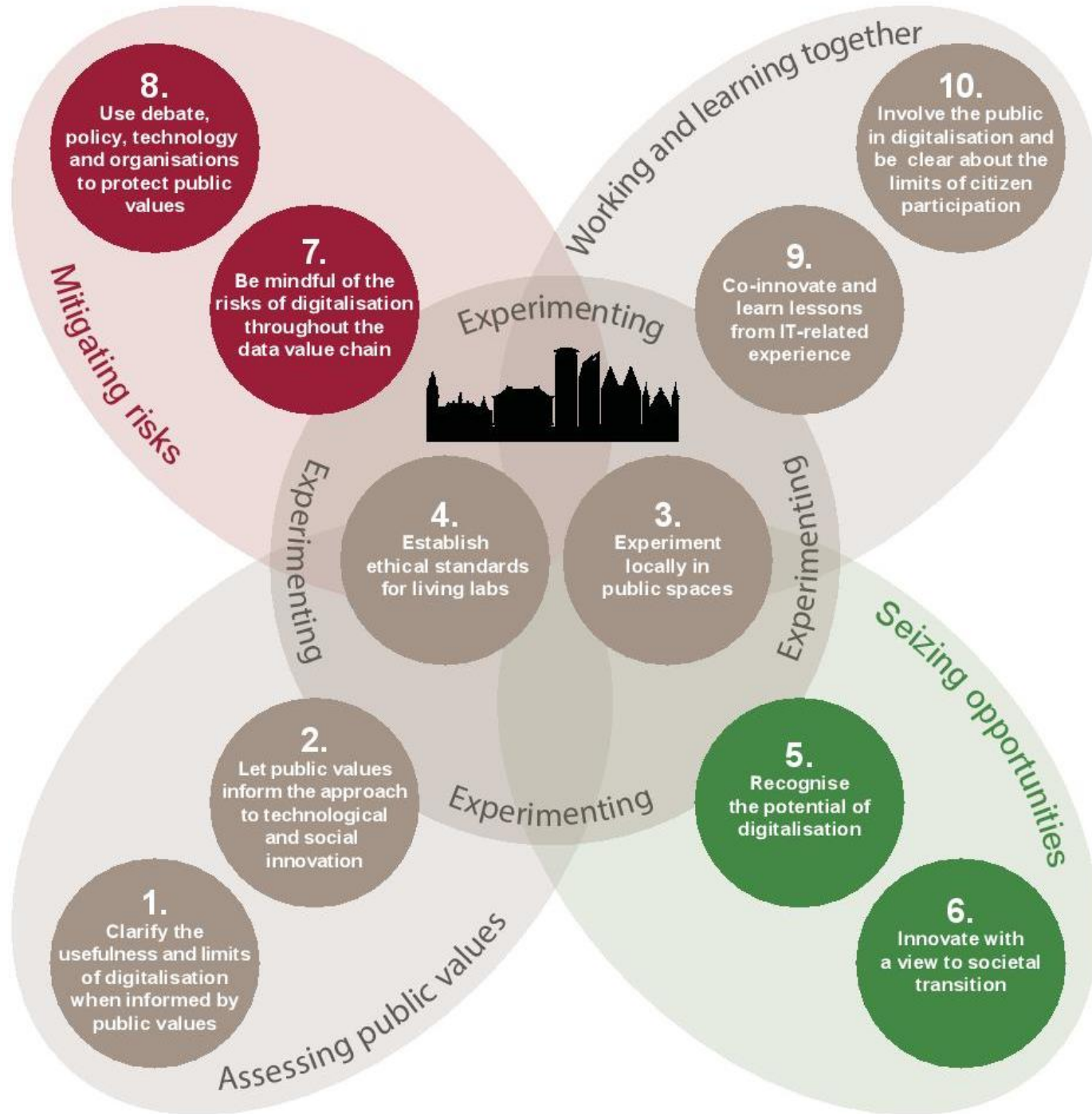


**Design and shape the digital society in such a way that people and values are central. Then a digital society can arise in which people are not excluded.**



## Instruments to strengthen governance

1. Strengthen the role and position of supervisory bodies.
2. Draw up a 'Digitization Agreement' formulating the commitments and responsibilities of businesses, government, and civil society actors with regard to safeguarding public values in the digital society.
3. Hold a national debate on the significance of digitization, in terms of safeguarding public
4. Appoint a working group charged with shaping a government vision on how to deal with the societal and ethical significance of digitization, and with ensuring coordination in the political-governance domain.
5. Schedule regular political debates in the Senate and House of Representatives in the Netherlands on the governance of societal and ethical digitization issues.



# Rathenau Instituut

Thanks for your attention

Contact information

- **Dhoya Snijders**
- **[d.snijders@rathenau.nl](mailto:d.snijders@rathenau.nl)**

