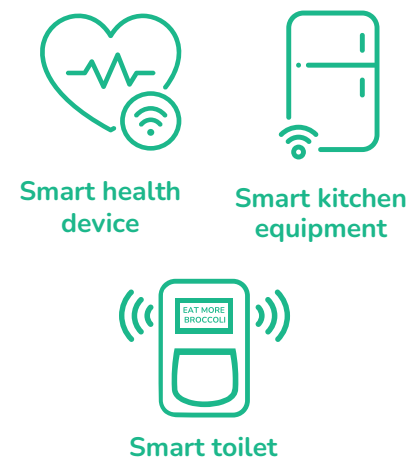## The Future Scenario

In 20 years, the research on gut bacteria and fecal content has sped up, and the capacity to diagnose various illnesses based on fecal matter has increased radically.

Tracking and testing technology has been integrated in connected toilets. These track your poop (shape, size, colour, timings, consistency, etc.) and your gut health, but also analyses the fecal matter and urine. The toilet AI gives advice to the user about diet, health etc. and also coordinates shopping with the connected fridge/freezer and the online grocer. It also communicates with the user's doctor/health provider.

Task 1: Map the situation

Connected devices gather a lot of data but have poor data security. Consider what type of data would/could be collected. How could it be used by different stakeholders? Discuss the scenario, lists stakeholders and data privacy risks. Then use the illustrations below as a starting point to visualise stakeholders, devices and data-flows.

Is this possible?

Current facts making this a possible technology development

Health tracking devices are becoming increasingly common and sophisticated.

Fecal matter and gut microbiome can say something about:
- what you have eaten
- if you are drinking enough water/eating anough fibre
- how you absorb nutrients
- depression, autism, mood disorders - related genetics
- celiac disease, pancreatic cancer, pancreatitis
- additives in your food
- your general health condition

Urine can say something about:
- pregnancy, gender, puberty
- bacteria and infections
- hormones and connected illnesses

Smart health device

Smart kitchen equipment

Smart toilet

Data privacy risks

What data could be lost and what would the risks connected with loosing the data be for the user?

1.

2.

3.

4.

5.

6.

Stakeholders

Who are the stakeholders who could benefit from obtaining the data collected?

1.

2.

3.

4.

5.

6.

Task 2: Roleplay

In this roleplay task you will examine the values and interests of the stakeholders from TASK 1.

Step 1

Make an interview guide in the space below.

Step 2

Choose a stakeholder from the previous task each and imagine their values and interests using the value compass below. How do their values and interests match your own? Note your reflections below.

Step 3

Choose a stakeholder each to impersonate. Interview each other with the help of the interview guide. Note your reflections below.
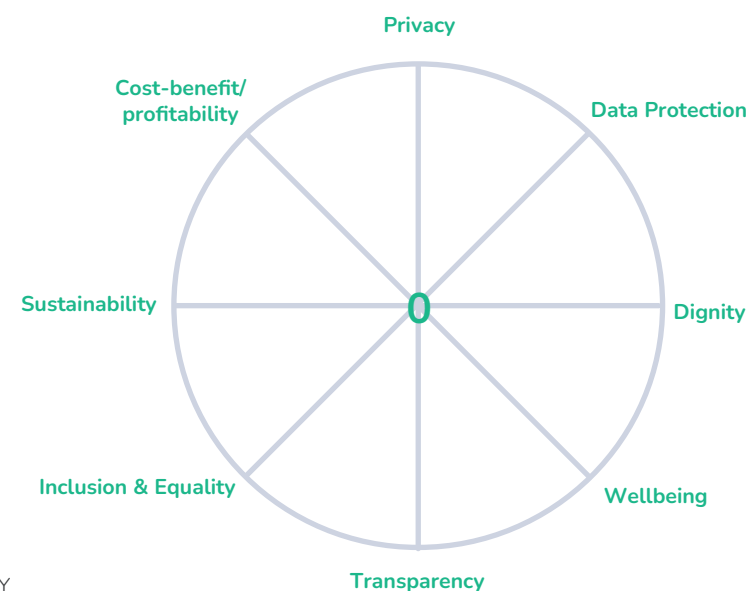
Interview guide

What questions could you ask the stakeholders from TASK 1 about their values and interests in the data collected by the POO-TELLIGENCE?

1.

2.

3.

4.

5.

6.

Value compass

What values does the stakeholder have? Use the compass to help define these.

KEY
Centre of the ring: low priority
Edge of the ring: high priority

Values and interests

Privacy: Safeguarding intimacy, identity, and physical integrity.

Data Protection: Providing users access to their collected data, giving them explanations about how personal information is used. Issues concerning the distinction between anonymous and personal data that could allow companies to avoid data protection but still have impacts on groups and individuals. Ensuring the rights to access, rectification, erasure (right to be forgotten) and to object regarding personal data processed by means of IoT devices and facilitating data portability.

Dignity: Avoiding any forms of surveillance or invasive control over individuals using IoT devices. IoT devices shall not be used to collect unauthorized private information or to publicly disclose private facts.

Wellbeing: Increase individuals' wellbeing and fostering "IoT for good".

Transparency: Providing access to information concerning personal data processing, including third paries involved. Encouraging transparency about data operations, device usage and firmware and software upgrades.

Inclusion & Equality: Preventing any forms of discrimination. Considering diversity and inclusion both in IoT development and with regard to users' experience.

Sustainability: Ensuring the potential negative impact on social and environmental justice is minimised. Creating positive impact.

Cost-benefit/profitability: Ensuring company profitabilty by lowering costs and increasing income.

Task 3: What if?

The new connected toilets are vacuum toilet that decrease water usage and separate urine and fecal matter for localised waste water treatment and reuse of nutrients as fertilisers for agriculture. To alleviate sewage systems, that have been over-burdened for many years it has become mandatory to build new houses with vacuum toilets.

Q What if developpers therefore start installing these high-tech toilets along with connected appliances in new-builds as well as when they refurbushed and updated sewage in older buildings?

Q What if these toilets are also installed in public bathrooms?

Q What good, weird and bad things could happen?

Step 1
Start with writing a scenario for how this could go well.
Sketch a moment in this sceanario.

Step 2
The write write a scenario for how this could go badly.
Sketch a moment in this sceanario.

Describe the scenario   **Sketch a moment in the scenario**

GOOD

BAD

Task 4: Improve security

General Data Protection Regulation (GDPR) already sets out consumers rights to acces and control their data, e.g., explicit consent has to be given when data is collected, and one can ask to see data collected and/or have it erased. These rules are, however, not universal, menaing that they are only valid within the EU/EEA and companies bend these rules until they are caught by regulators and have to pay a fine.

Build on your thoughts from the previous tasks, discuss and answer the following questions:

Q What steps can users take to improve the safety of their data?

Q What should policymakers do to further improve data security?